



# CYCLOPÆDIA:

## OR, AN

### UNIVERSAL DICTIONARY

#### OF

# ARTS and SCIENCES;

CONTAINING  
The DEFINITIONS of the TERMS,

And ACCOUNTS of

The THINGS signify'd thereby,

In the several ARTS,

Both LIBERAL and MECHANICAL,

And the several SCIENCES,

HUMAN and DIVINE:

The Figures, Kinds, Properties, Productions, Preparations, and Uses,  
of Things NATURAL and ARTIFICIAL;

The Rise, Progress, and State of Things ECCLESIASTICAL,  
CIVIL, MILITARY, and COMMERCIAL:

With the several Systems, Sects, Opinions, &c. among Philosophers, Divines,  
Mathematicians, Physicians, Antiquaries, Criticks, &c.

---

*The Whole intended as a Course of Antient and Modern LEARNING.*

---

Compiled from the best Authors, Dictionaries, Journals, Memoirs,  
Transactions, Ephemerides, &c. in several Languages.

---

In TWO VOLUMES.

---

By E. CHAMBERS Gent.

---

*Floriferis ut apes in saltibus omnia libant,  
Omnia nos*———LUCRET.

---

VOLUME the SECOND.

---

L O N D O N :

Printed for James and John Knapton, John Darby, Daniel Midwinter, Arthur Bettesworth,  
John Senex, Robert Gosling, John Pemberton, William and John Inuys, John Osborn and Tho.  
Longman, Charles Rivington, John Hooke, Rance Robinson, Francis Clay, Aaron Ward,  
Edward Symon, Daniel Browne, Andrew Johnston, and Thomas Osborn. M.DCC.XXVIII.



**I** The ninth Letter of the *English* Alphabet, is both a Vowel and a Consonant; agreeable to which two different Powers, it has two different Forms. The *Hebrews* call the *j* Consonant *Jod* י from י, Hand and Space, in regard it is supposed to represent the Hand clenched, so as to leave the Space underneath, void. With them, it was pronounced as the Consonant *y*, as it still is among the *Germans* and some other People. The *Greeks* had no *j* Consonant, and for that reason, used their Vowel *i* instead of it, as coming the nearest in Sound. The *French* and *English* have two kinds of *j* Consonants; the first has a snuffling kind of Sound, and serves to modify that of the Vowels, pretty much in the manner of *g*, as *Jew*, *just*, *jovial*; the latter is pronounced like the *Hebrew* *Jod*, Instances of which we have in some of our Words, which are indifferently written with a *y* or an *i* before a Vowel, as *Voilage*, *Voyage*, *Loial*, *Loyal*, &c. in which cases, the *i* is apparently a Consonant, as being a Motion of the Palate, which gives a Modification to the following Vowel. The Vowel *i*, according to *Plato*, is proper for expressing fine and delicate things: On which account, that Verse in *Virgil*,

*Accipiunt inimicum imbrem, rimisque fatiscunt;*

Which abounds in *i*'s, is generally admired. The Vowel *i* was the only Vowel which the *Romans* did not mark with a Dash of the Pen, to shew when it was long; instead of which, to denote its Length, they used to make it bigger than ordinary, as in *Piso*, *Vivus*, &c. According to *Lipsius*, they repeated it, when it was to be long; as in *Dii*. They sometimes also denoted the Length of this Letter, by adding *e* to it, and turning it into a Diphthong, as *Divei* for *Dioi*, *Omneis* for *Omnis*, &c. *I* was antiently a Numeral Letter, and signified a Hundred, according to the Verse, *I. C. Compar erit, & Centum significabit*. *I* in the ordinary *Roman* way of Numbering signifies One; and when repeated, signifies as many Units as it is repeated times. In Abbreviations and Cyphers, *I* frequently represents the whole Word *Jesus*, whercof it is the first Letter.

**JABAJAHITE**, the Name of a Sect among the *Musulmen*, who, according to *Ricaut*, teach, That God is not perfectly wise, that his Knowledge does not extend to every thing; and that Time and Experience have furnished him with the Knowledge of many things whercof he was before ignorant: Thus, say they, not being apprized from all Eternity of every Event that shall happen in the World, he is obliged to govern it according to the Chance and Occurrence of those Events.

**JACK** in a Ship, is that Sail that is hoisted up at the Sprit-Sail-Top-Mast-Head. In Falconry, *Jack* is the Male of the Birds of Sport.

**JACK** by the Hedge, is an Herb that grows wild by Hedge-sides, and under Banks, with a broad Leaf, and hath the Smell of Garlick: It is eaten as other Salad-Herbs, especially by Country People, and much used in Broth.

**JACK** in a Lanthorn, or Will with a Wisp, and sometimes *Ignis Fatuus*, is a certain Meteor, or clammy Vapour in the Air, which reflects Light in the Dark, commonly haunting Church-yards, Fens, and Privies, as steaming out of a fat Soil: It also flies about Rivers, Hedges, &c. where there is a continual Flux of Air, and leads Persons, who unwarily follow it, out of their way.

**JACOB's Staff**, is a Mathematical Instrument for taking Heights and Distances; the same with Cross-Staff.

**JACOBIN**, Dominican. A Name given in France to the Religious who follow the Rule of St. *Dominic*, on occasion of their principal Convent, which is near the Gate of St. *James* at *Paris*, and which before they became possessed of it in the Year 1218, was an Hospital of Pilgrims dedicated to the said Saint. Others maintain, that they have been called *Jacobins* ever since they were established in Italy, in regard they pretended to imitate the Lives of Apostles. They are also called Friars Predicants, and make one of the four Orders of Mendicants. See *Dominican*.

**JACORITE**, a Sect of Hereticks who were antiently a Branch of the *Eutychians*, and are still subsisting in the *Levant*. They were so called from one *James* of Syria, who was one of the Heads of the *Monophysites*, or *Sectaries*, who own'd but one Nature in *Jesus Christ*. The *Monophysites* are a Sect of vast Extent, comprehending the *Armenians*, *Copti*, and *Abyssinians*, but those among them who are properly *Jacobites*, are but few; and among those too, there is a Division, some being *Romaniz'd*, and others perfectly averse to the *Romish Church*: Each of which Parties have their several Patriarchs, the one at *Cyrenit*, and the other at *Derzapharan*. As to their Faith, all the

*Monophysites*, both *Jacobites* and others, follow the Doctrine of *Dioscorus* touching the Unity of Nature and Person in *Jesus Christ*. *Jacobite* in *England*, is a Term of Reproach bestow'd on such Persons as disallow the late Revolution, and still assert the Rights, and adhere to the Interests of the late King *James* and his Line.

**JACOBUS**, a Gold Coin worth 25 Shillings; so called from King *James* the first of *England*, in whose Reign they were struck. We usually distinguish two kinds of *Jacobus*, the Old and the New; the former worth 25 Shillings, weighing 6 Penny Weight 10 Grains; the latter, called also *Carolus*, worth 23 Shillings, in Weight 5 Penny Weight 20 Grains.

**JADE**, a greenish Stone, bordering on the Colour of Olive, much esteem'd for its Hardness, which exceeds that of *Porphyry*, *Agat*, and *Jasper*, and only to be cut with Powder of Diamond. It is in mighty esteem among the *Turks* and *Poles*, who adorn all their fine Works with it, and especially the Handles of their Sabres. This Stone applied to the Reins; is said to be a Preservative from the *Nephritic Cholic*. Mr. *Bernier* tells us, that the Caravans of *Thibet* carry it to *Cachemire*, and that the *Galibis* prize it as highly as Diamond. The Natives of *Somb-America* value it on account of the Virtues they attribute to it in the Epilepsy, Diseases of the Reins, the Stone and Gravel. In a Treatise of it printed at *Paris*, 'tis called the Divine Stone.

**JALAP**, is the Root of a Plant not much unlike our *Bryony*, and is therefore by some called *Bryonia Jalapana*; for it is brought to us chiefly from *Peru* and *New-Spain*. The *Mecchoacan* and this are reckoned of a Species, and therefore as this is sometimes called *Mecchoacana nigra*, that goes as often by the Name of *Jalapium album*. As this does not appear to have been known to the Antients, it has its place in Medicine only since those parts of *America*, which produce it, have been trade'd to by Europeans. That which breaks blackest, most brittle, sound, and shining within side, is the best; by reason the resinous Parts, which give it those Properties, are supposed to contain its Medicinal Virtues. Some take great pains to extract its Resin, which is to be done with any spirituous Menstruum, and afterwards want Correctors for it: The most common, is Salt of Tartar or Loaf-Sugar; but if correcting consists in separating its Parts, as it certainly does, the drawing it from the Root, and making it into a Resin, must be very needless. Monsieur *Bolduc*, who hath made several Experiments upon it, says, it is one of the best Cathartics we have, taken as Nature only has prepared it. See *Quincy's Dispensatory*.

**IAMBUS**, in the Greek and Latin Poetry, is the Name of a Foot in a Verse, consisting of a long and short Syllable, as *Horace* expresses it,

*Syllaba longa brevi subjecla vocatur Iambus.*

The same Poet calls the *Iambus* a swift rapid Foot, *Pes Citus*. The Word, according to some, takes its Name from *Iambus*, the Son of *Pan* and *Echo*, who invented this Foot, or rather used sharp biting Expressions to *Ceres*, when afflicted for the Death of *Proserpine*. Others rather derive it from the Greek *ἰαμ*, *Venenum*, *Poison*, or from *ἰαμίζω*, *maledico*, *I rail* or *revile*, because the Verses composed of *Iambus's* were at first only used in Satire.

**IAMBIC**, a kind of Verse, found in the Greek and Latin Poets. An *Iambic* is a Verse consisting wholly, or at least in great part, of *Iambus's*, or Feet so called. *Iambic* Verses may be considered, either with regard to the Diversity or the Number of their Feet. Under each of which Heads there are distinct kinds, which have different Names. (1.) Pure *Iambics* are those which consist entirely of *Iambus's*, as the fourth Piece of *Catullus*, made in praise of a Ship:

*Phaselus ille, quem videtis Hospites.*

The second kind are those called simply *Iambics*. These have no *Iambus's* but in the even Feet, tho' there are sometimes *Tribachia* added to them, excepting to the last, which is always an *Iambus*; and in the uneven Feet they have Spondees, Anapests, and even a Dactyle in the first: Such is that of *Medea* in *Ovid*,

*Servare potui, perdere an possim rogas?*

The third kind are the Free *Iambic* Verses, in which 'tis not absolutely necessary there should be any *Iambus*, excepting in the last Foot; of which kind are all those of *Phaedrus*:

*Amittit meritò proprium, qui alienum appetit.*



In Comedies the Authors seldom confine themselves more, frequently less, as we may observe in *Plautus* and *Terence*: but the sixth is always indispensibly an *Iambus*.

As to the Varieties, occasioned by the Number of Syllables, we call an *Iambic*, or *Dimetre Iambic*, that which has but four Feet:

*Queruntur in Sylvis Aves.*

Those which have six are called *Trimetres*: These are the most beautiful, and are used principally for the Theatre, particularly in Tragedy; wherein they are vastly preferable to the Verses of ten or twelve Feet used in our modern Drama, in regard they come nearer to the Nature of Prose, and favour less of Art and Affectation.

*Dii Conjugales, tuque genialis Tori  
Lucina Custos, &c.*

Those with eight are called *Tetrametres*, and are only used in Comedies:

*Pecuniam in Loco negligere maximum interdum est Lu-  
crum.* Terence.

Some add an *Iambic Monometre*, with two Feet:

*Virtus beat.*

They are called *Monometres*, *Dimetres*, *Trimetres*, and *Tetrametres*, that is, of one, two, three, and four Measures, because a Measure consisted of two Feet, the *Greeks* measuring their Verses two Feet by two Feet, or by Epitrites, joining the *Iambus* and *Spondee* together. All the *Iambics* hitherto mentioned are perfect; they have their just Number of Feet, without any thing either deficient or redundant. The imperfect *Iambics* are of three kinds, the *Catalectic*, which want a Syllable;

*Musa Jovem canebant.*

The *Brachycatalectic*, which want an entire Foot;

*Musa Jovis Gnate.*

The *Hypercatalectic*, which have either a Foot or a Syllable too much:

*Musa Sorores sunt Minervae,  
Musa Sorores Palladis lugent.*

Many of the Hymns and Anthems, used in the Church, are *Dimetre Iambics*, that is, consisting of four Feet.

S. JAMES of the Sword, a Military Order in Spain instituted in 1170, under the Reign of Ferdinand II. King of Leon and Galicia. Its End was to put a stop to the Incursions of the Moors; three Knights obliging themselves by a Vow to secure the Roads. An Union was proposed and agreed to in 1170, between these and the Canons of St. Eloy; and the Order was confirm'd by the Pope in 1175. The highest Dignity in this Order, is that of Grand Master, which has been united to the Crown of Spain. The Knights are obliged to make proof of their Descent from Families, that have been noble for four Generations on both sides: They must also make it appear, that their said Ancestors have neither been Jews, Saracens, nor Heretics, nor ever to have been called in question by the Inquisition. The Novices are obliged to serve six Months in the Gallies, and to live a Month in a Monastery; heretofore they were truly Religious, and took a Vow of Celibacy: But Alexander III. gave them a Permission to marry. They now make no Vows but of Poverty, Obedience, and Conjugal Fidelity; to which, since the Year 1652, they have added that of defending the immaculate Conception of the Holy Virgin. Their Habit is a white Cloak with a red Cross on the Breast. This is esteem'd the most considerable of all the Military Orders in Spain. The King carefully preserves the Office of Grand Master in his own Family, on account of the rich Revenues and Offices, whereof he gives them the Disposal. The Number of Knights is much greater now than formerly, all the Grandees chusing rather to be received into this, than into the Order of the Golden Fleece; inasmuch as this puts them in a fair way of attaining to Commands, and gives them many considerable Privileges in all the Provinces of Spain, but especially in Catalonia.

JANIZARIES, the Grand Signior's Guard, or Soldiers in the Turkish Infantry. As, in the Turkish Army, the European Troops are distinguished from those of Asia, the Janizaries are also distinguished into Janizaries of Constantinople and of Damascus. Their Pay is from two Aspers to twelve per Diem; for when they have a Child, or do any signal Piece of Service, their Pay is augmented. Their Dress consists of a Polyman, or long Robe, with short Sleeves, which is given them annually, by the Grand Signior, on the first Day of Ramazan. They wear a Turban, but in lieu of that a kind of Bonnet, which they call *Zavola*, and a long Piece of the same Stuff hanging on their Shoulders. On solemn Days they adorn them with Feathers,

which they stick into a little Case in the forepart of the Bonnet. Their Arms in Europe, in a time of War, are a Sabre, a Carabine, or Musquet, and a Cartouch-Box hanging on the left Side. At Constantinople, in a time of Peace, they wear only a Staff in their Hand. In Asia, where Powder and Fire-Arms are more uncommon, they wear a Bow and Arrows, with a Poniard, which they call *Baniare*. The Janizaries were heretofore a Body formidable even to their Masters the Grand Signiors: Osman they first stripped of his Empire, and afterwards of his Life; and Sultan Ibrahim they deposed, and at last strangled in the Castle of the Seven Towers; but they are now much less considerable. Their Number is not fixed. The Janizaries are Children of Tribute, raised by the Turks on the Christians, and bred up to the military Life. They are taken at the Age of twelve Years, to the end, that forgetting their Country and their Religion, they may know no other Parent but the Sultan. However, generally speaking, they are not now-a-days raised by way of Tribute; for the Carach, or Tax, which the Turks impose on the Christians, for allowing them the Liberty of their Religion, is now paid in Money, excepting in some Places, where Money being scarce, the People are unable to pay in Specie, as in Mingrelia, and other Provinces near the Black-Sea. The Officer who commands the whole Body of Janizaries, is called *Janizar Agasi*; in English, Aga of the Janizaries, who is one of the chief Officers of the Empire. Tho' the Janizaries are not prohibited Marriage, yet they rarely marry, nor then, but with the Consent of their Officers, as imagining a married Man to make a worse Soldier than a Bachelor. It was Osman, or Ottoman, or, as others will have it, Amurath, who first instituted the Order of Janizaries. They were at first called *Faja*, that is, Footmen, to distinguish them from the other Turks, the Troops whereof consisted mostly of Cavalry. Menage, after Vossius, derives the Word from *Genizers*, which, in their Language, signifies *Novos Homines*, or *Milites*. Herbelot tells us, that *Jenitcheri* signifies a new Band or Troop, and that the Name was first given by Amurath I. called the Conqueror, who chusing out one fifth part of the Christian Prisoners, whom he had taken from the Greeks, and instructing them in the Discipline of War, and the Doctrines of their Religion, sent them to Hagi Bektasche (a Person whose pretended Piety rendered him extremely revered among the Turks) to the end that he might confer his Blessing on them, and at the same time give them some Mark to distinguish them from the rest of the Troops. Bektasche, after blessing them in his manner, cut off one of the Sleeves of the Fur-Gown which he had on, and put it on the Head of the Leader of this new Militia; from which time, viz. the Year of Christ 1361, they have still retained the Name *Jenitcheri*, and the Fur-bonnet. Viginerius tells us, that the Discipline observed among the Janizaries is extremely conformable, in a great many things, to that used in the Roman Legions.

JANIZARY, at Rome, is the Name of an Officer or Pensioner of the Pope, called also *Participant*, by reason of certain Rights or Dues which they have in the Annates, Bulls, or Expeditions of the Roman Chancellory. Most Authors are mistaken in the nature of their Office; but the truth is, they are Officers of the third Bench or College of the Roman Chancellory. The first Bench whereof consists of Writers, the second of Abbreviators, and the third of Janizaries, who are a kind of Correctors and Revisers of the Pope's Bulls.

JANSENISM, the Doctrine of Cornelius Jansen, commonly called *Jansenius*, late Bishop of Ypres in France, with relation to Grace and Free-Will. *Jansenism* made no great Noise in the World, till after the Death of its Author in 1638. when Fromond and Calenus, his Executors, published his Book, entitled *Augustinus*. The whole Doctrine was reduced by the Bishops of France into five Propositions, which follow: I. Some Commands of God are impossible to righteous Men, even tho' they endeavour, with all their Powers, to accomplish them: the Grace being wanting by which they should be enabled to perform them. II. In the State of corrupted Nature, a Man never resists inward Grace. III. To merit and demerit in the present State of corrupt Nature, 'tis not requisite a Man should have that Liberty which excludes Necessity: that which excludes Constraint is sufficient. IV. The Semi-Pelagians admitted the Necessity of inward preventing Grace to each Act in particular, and even to the beginning of Faith; but they were Heretics, in regard they asserted that this Grace was such, as that the Will of Man might either resist or obey it. V. It is Semi-Pelagianism to say, that Jesus Christ died, or shed his Blood for all Men in general. *Jansenism* consists in maintaining this Doctrine, which is done two ways; (1.) By asserting that these Propositions are sound and orthodox. (2.) In affirming that they are evil and heretical in the Sense wherein the Church has condemned them; but that this Sense is not



not of *Janfenius*. *Janfenism* has been condemned by the Popes *Urban VIII.* *Innocent X.* *Alexander VII.* and *Clement XI.*

**JANUARY**, the Name of the first Month of the Year, according to the Computation now used in the *West*. The word is derived from the *Latin Januarius*, a Name given it by the *Romans*, from *Janus*, one of their Divinities, to whom they attributed two Faces; because, on the one Side, the first Day of *January* looked towards the New Year, and on the other towards the Old one. The word *Januarius* may also be derived from *Janua*, Gate; in regard this Month being the first, is, as it were, the Gate of the Year. It was introduced into the Year by *Numa Pompilius*: *Romulus's* Year beginning in the Month of *March*. The Christians heretofore fasted the first Day of *January*, by way of Opposition to the Superstition of the Heathens, who, in honour of *Janus*, observed this Day with Feastings, Dancings, Masquerades, &c.

**JAPAN-EARTH**, also called *Catechu*, is an Earth of a dark purple Colour. It is very austere upon the Palate, seems to melt, like the Bole, in the Mouth, and leaves somewhat of a sweetish Taste behind it. It is famous for stopping Fluxes of all kinds.

**JAPANNING**, the Art of varnishing and drawing Figures on Wood, &c. after the same manner as the Workmen do who are Natives of *Japan*, a famous Island not far from the Coast of *China*. The manner of it is this; they take a Pint of Spirit of Wine well dephlegmated, and four Ounces of Gum-Lacca (which last is first broke from the Sticks and Rubbish) and bruising it roughly in a Mortar, they put it to steep in Spring-water, tyed up in a Bag of coarse Linen, together with a little Castile-Soap, for the space of twelve Hours. This done, they rub out all the Tincture, and add to it a little Allum, and reserve it a-part; then add as much Mastick and white Amber, distilled in a Matrass, with the Spirit of Wine, by a two Days Digestion, frequently stirring it, that it don't stick to the Glass; then strain and press it out into another Vessel. This done, they take the Wood to be japanned, and cover it with a Layer of this Varnish, till it be sufficiently drenched with it; then taking some of the Colour, of which the Figures are to be, they incorporate it with seven times as much of the Varnish, and apply it with a Pencil, going over each part three several times, each a quarter of an Hour after the other: two Hours after this they polish it with Prestle, or *Dutch* Reeds. As to the Colours used in this Art, for a fair Red, they take *Spanish* Vermillion, with a fourth part of *Venice* Laque. Black, they make of Ivory calcined between two Crucibles; for Blue they use Ultramarine, and only twice as much Varnish as Colour. The rest are applied as above directed, except the Green, which is difficult to make fair and lively, and therefore seldom used. Night-Japanning is performed, by applying three or four Layers with the Colours first, then two of pure Varnish uncoloured, made according to the former Process. Before it be dry, they sift some Venturine, or Gold Wire, reduced to Powder, over it, and then cover it with as many Layers of pure Varnish, as render it like polished Glass; and, lastly, rub it over with Tripoli, Oil of Olive, or a Hatter's Felt.

**JARR of Oil**, is an earthen Vessel containing from 18 to 26 Gallons. A *Jarr* of green Ginger is about 100 Pounds Weight.

**JASPER**, a precious Stone, not much different from the Agate, excepting in this, that it is more soft, and does not take so good a Polish. In some of these, Nature has amused herself, in representing Rivers, Trees, Animals, Landscips, &c. as if they were painted. The florid Jasper, found in the *Pyreneans*, is usually stained with various Colours, tho' there are some that have but one Colour, as Red or Green; but these are the least valuable. The most beautiful is that bordering on the Colour of Laque, or Purple, next to that the Carnation; but what is now usually taken is Green, spotted with Red. Jasper is a *Hebrew* Word, and has neither been changed by the *Latins*, nor us. Some *Greek* Versions give it the Name of *Beryl*. *Onkelos* calls it *Panther*, in regard of its being spotted like that Animal.

**JATRALEPTIC**, the Name of that part of Physick which cures by Frictions, by the Application of Fomentations and Plaisters. It was one *Prodicus*, a Disciple of *Hippocrates*, and a Native of *Corinth*, who first instituted it.

**JAVELIN**, a kind of Spear, or Half-Pike, used by the Antients, both on Horseback and on Foot. It was five Foot and an half long, and the Steel, wherewith it was headed, had three Sides or Faces, which all terminated in a Point.

**JAUNDICE**, a Disease, which consists in an overflowing of the Bile. Of this there are three kinds; the first, properly called the *Jaundice*, is owing to the yellow Bile, which, in this Case, is too exalted or too abundant in

the Mass of Blood; or perhaps to an Obstruction of the Glands of the Liver, which prevents the Gall's being duly separated from the Blood. The second, called, the *Black Jaundice*, is owing to the same yellow Bile, mingled with Acids. The third, bordering on Green, takes its Rise also from a Mixture of Bile with an Acid; this is usually called the *Green-Sickness*, and is a Distemper pretty common in young Women. In the *Jaundice*, the White of the Eye and the Skin are yellow, and troubled with an Itching; in the *Black Jaundice* the natural Colour is lost, by reason of an atrabilary Humour spread underneath the Skin; it first appears brownish, and afterwards of a Lead-Colour. The *Jaundice* often proves a Forerunner of the Dropsy. A Doctor of the Faculty of *Montpellier*, calls the *Yellow Jaundice*, attended with periodical Pains, a Rheumatism of the Liver; and another of the same place, calls it a Quartan Ague of the Liver. In the *Journal of Leipzig*, 'tis asserted that the *Jaundice* is not occasioned by Obstructions. The Acid Spirit of *Sal Ammoniac* is said to be an excellent Remedy against the *Jaundice*. The word is derived from the *French*, *Jaunisse*, *Yellowness*, of *Jaune*, *Yellow*.

**JAW**, see *Maxilla*.

**ICADES**, the Name of an antient Feast, celebrated every Month by the *Epicurean* Philosophers, in memory of their Master *Epicurus*. The Day on which it was held was the 20th Day of the Moon or Month, which was that whereon *Epicurus* came into the World. And hence came the Name *Icades*, *εκαδε*, signifying a Score, from *εκα*, twenty. They adorned their Chambers on this Day, and bore his Image in State about their Houses, making Sacrifices.

**ICE**, a hard transparent Body form'd from some Liquor congeal'd or fix'd. Towards the *Poles* are found vast Piles of *Ice* reaching two or three hundred Feet above the Surface of the Water, and appearing like Islands; about whose Origin there are different Opinions: Some think 'tis Snow, which falling in great Abundance in these cold Climates, and melting in the Sea, accumulates gradually, till those huge Heaps are at length formed. But the more common Opinion is, that the *Ice* is formed from the fresh Waters which flow from the neighbouring Lands. *Bartoli* has written an *Italian* Treatise expressly on Ice and Coagulation. And the *Acta Eruditorum* furnish us with an Account of a *French* Author on the same Subject. See *Freezing* and *Cold*.

**ICH-DIEN**, the Motto under the Arms of the Prince of *Wales*, which Sir *H. Spelman* judges to be in *Saxon* *Ich Thien*, the *Saxon* *D*, with a transverse Stroke, being the same with *Tb*, and signifying, I serve, or am a Servant; as the *Saxon* Kings Ministers were called *Tbiens*.

**ICHOGRAPHY** in Perspective, is the View of any thing cut off by a Plane parallel to the Horizon, just at the Base or Bottom of it. In Architecture it is taken for the Geometrical Plan, or Platform of an Edifice, or the Ground-Plot of an House or Building delineated upon Paper, describing the Form of the several Apartments, Rooms, Windows, Chimneys, &c. and this is properly the Work of the Master Architect or Surveyor, being indeed the most abstruse and difficult of any. In Fortification it is, in like manner, the Plan or Representation of the Length and Breadth of a Fortress, the distinct Parts of which are marked out, either on the Ground itself, or upon Paper. The word is derived from the *Greek*, *ιχνο*, *Vestigium*, and *γραφω*, *scribo*, as being a Description of the Footsteps or Traces of a Work. See *Plan*.

**ICHOGLANS**, the Grand Signior's Pages, or white Eunuchs serving in the Seraglio. They are the Children of Christians, and are bred up in an Austerity scarcely to be conceived. These the Sultan prefers to Offices more or less considerable, as they appear more or less devoted to his Service; but 'tis to be observed, they are incapable of Offices till forty Years of Age, unless they have some particular Dispensation from the Grand Signior. They are educated with a great deal of Care in the Seraglios of *Pera*, *Adrianople*, and *Constantinople*. They are under the Direction of a *Capi Aga*, who presides over their Exercises, and treats them with a World of Severity. They are principally conversant in the *Oda*, or Halls, where, according to their several Talents or Inclinations, they are instructed in the Languages, in their Religion, or in Exercises of the Body. The word, according to some Authors, is composed of the two *Turkish* words, *ich*, or *itch*, which signifies *within*, and *Oglan*, *Page*. In which Sense *Ichoglan* is a Page serving within-side the Palace or Seraglio. Others derive it from the barbarous *Greek*, *ιχολας* or *ιχολα*, which was formed from the *Latin* *Incola*. These two Etymologies give nearly the same Sense to *Ichoglan*, taking *Incola* for *Dominus Incola*.

**ICHOR** strictly signifies a thin watry Humour, like Serum, but it is sometimes also used for a thicker kind, flowing from Ulcers. The word is originally *Greek*, and signifies *Saves*, Rottenness.



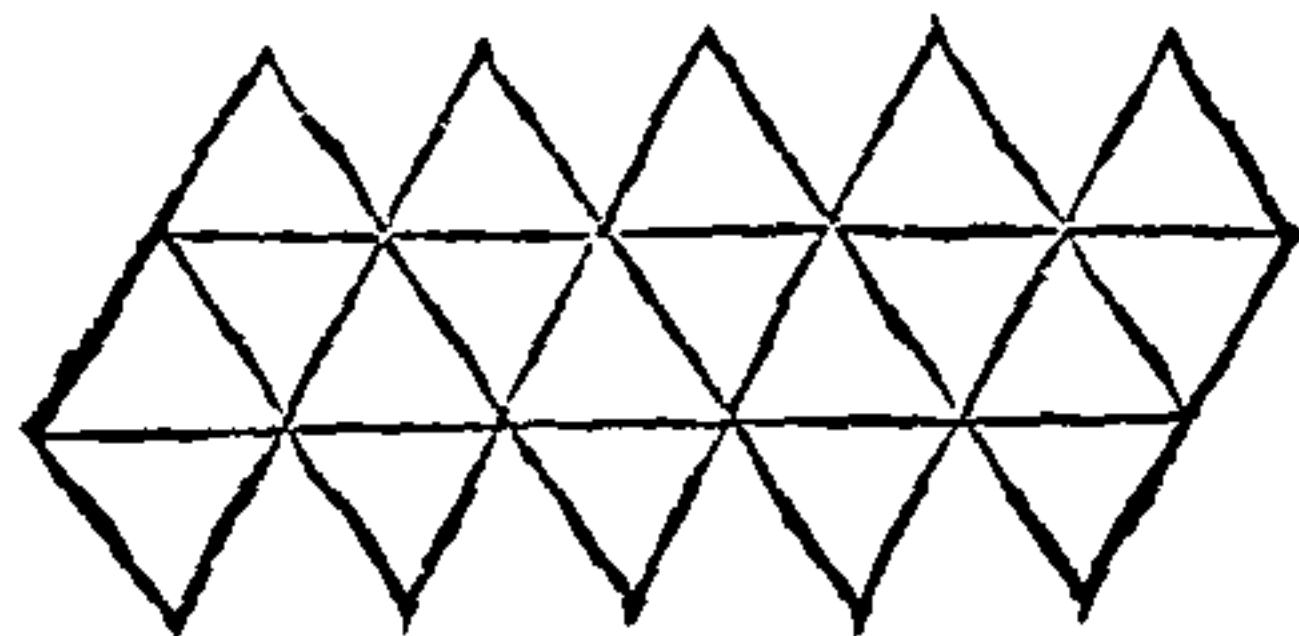
**ICHTHYOPHAGI**, Fish-eaters, the Name given to a People, or rather to several different People, who lived wholly on Fishes. *Pliny* places them in the Provinces of *Nanquin* and *Xantun*. *Agatharcides* calls all the Inhabitants from the *Anteans* and *Ethiopia* to the *Indus*, *Gedrosia*, *Caramania*, *Persia*, and all the neighbouring Islands, by the Name *Ichthyophagi*. From the Accounts given us of them by *Herodotus*, *Strabo*, *Solinus*, *Plutarch*, &c. it appears, indeed, that they had Cattle, but that they made no use of them excepting to feed their Fishes withal. They made their Houses of large Fish-Bones, the Ribs of Whales serving them for their Beams. The Jaws of these Animals served them for Doors, and the Mortars wherein they pounded their Fish, and baked it at the Sun, were nothing else but their *Vertebrae*. The word is derived from the *Greek*, *ἰχθῦς*, *Piscis*, *Fish*, and *φάγομαι*, *edo*, *I eat*.

**ICONOCLASTES**, a Breaker of Images; a Name which the Church of *Rome* attributes to all who reject the Use of Images in religious Matters; in which Sense, not only the Reformed, but also the *Eastern Churches* are called *Iconoclastes*, and esteem'd by them Heretics, as opposing the Worship of the Images of God and the Saints, and breaking their Figures and Representations in Churches. The word is formed from the *Greek*, *εἰκὼν*, *Imago*, *Image*, and *κλαίειν*, *rumpere*, *to break*.

**ICONOGRAPHIA**, Description of Images, or of ancient Statues of Marbles and Copper, of Busts and Semi-busts, of Penates, Paintings in Fresco, Mosaic Works, and ancient Pieces of Mignature. The word is derived from *εἰκὼν*, *Imago*, and *γράφω*, *scribo*.

**ICONOLATER**, one who worships Images. a Name which the *Iconoclastes* give to those of the *Romish* Communion, on account of their adoring Images, and of rendering to them the Worship only due to God. The word comes from the *Greek* *εἰκὼν* and *λατρεύω*, *colo*.

**ICONOLOGIA**, Interpretation of various ancient Images, Monuments, and Emblems, from the *Greek* *εἰκὼν*, and *λέγω*, *I speak*.



**ICOSIHEDRON**, is a Solid, which consists of twenty triangular Pyramids, whose Vertices meet in the Center of a Sphere, that is imagined to circumscribe it, and therefore have

their Height and Bases equal; wherefore the Solidity of one of those Pyramids, multiplied by twenty, the Number of Bases, gives the solid Content of the *Icosihedron*. This Figure being drawn on Pasteboard, cut half through, and then folded up neatly together, will represent an *Icosihedron*.

**ICTERIC**, a Term in Physic, apply'd to such Persons as have the Jaundice, which the *Latins* call *Icterus*, *Aurigo*, or *Morbus Regius*. *Icteric* Medicines are such as are prescribed in Cases of the Jaundice. The Word is derived from the *Greek* *ἰκτερός*, which some derive further from *ἰκτίς*, a kind of Weasel with yellow Eyes.

**ICHTHYOCOLLA**, *Isinglass*: *Schroder* says, that this is made from a Fish, which is common in the *Danube*; the Fish having no Bones but about the Head. After it is cut in small pieces, they boil it in Water to a thick Jelly, which is spread abroad and dried, then rolled up, and brought to us in the form we see it in the Shops. It is of a very glutinous Quality, and consequently good in all Disorders, which arise from too thin and sharp a State of the Fluids. The Word is derived from the *Greek* *ἰχθῦς*, *Piscis*, *Fish*, and *κόλλα*, *Gluten*, *Glue*.

**IDEA**, A Term by which we mean that immediate Object of the Mind about which we are employ'd when we perceive or think: Thus, when we look at the Sun, we do not see that Luminary itself, but its Image or Appearance convey'd to the Soul by the Organ of Sight; and this Image we call *Idea*. The Origin of *Ideas* has been a long time disputed among the Philosophers. The *Peripatetics* maintain, that external Objects emit Species that resemble them all around, and that these Species striking on our Senses, are by them transmitted to the Understanding; that being material and sensible, they are rendered intelligible by the active Intellect, and are at length received by the passive. Others are of opinion, that our Souls have of themselves the power of producing *Ideas* of Things that we would think upon; and that they are excited to produce them by the Impressions which Objects make on the Body, tho' these Impressions are not Images in any respect like the Objects that occasioned them. And in this, say they, it is, that Man is made after the Image of God, and that he partakes of his Power; for as God made all things out of nothing, and can reduce them to nothing when he pleases, so Man can create as many *Ideas* as he pleases, and annihilate them when he has done. Others maintain, that the Mind has no oc-

casion for any thing besides itself to perceive Objects; and that by considering itself and its own Perfections, it is able to discover all things that are without. Others with *Descartes* hold, that our *Ideas* were created and born along with us. *Malebranch* and his Followers assert, that God has in himself the *Ideas* of all Beings that he hath created; that thus he sees all things, in considering his Perfections to which they correspond; and that as he is intimately united to our Souls by his Presence, our Mind sees and perceives things in Him which represent created Beings; and that it is thus we come by all our *Ideas*. He adds, that tho' we see all sensible and material things in God, yet that we have not our Sensations in him. When we perceive any sensible Object, in our Perception is included both a Sensation and a pure *Idea*. The Sensation is a Modification of the Soul, and it is God who causes it in us: but for the *Idea* join'd with the Sensation, it is in God, and it is in him that we see it. The *Cartesians* distinguish three kinds of *Ideas*. The first innate, and such is that we have of God, as of a Being infinitely perfect. The second adventitious, which the Mind receives in proportion as bodily Objects present themselves to our Senses. Such is the *Idea* of Body, Sound, Figure, Light, &c. The third, according to these Philosophers, are factitious, which are those which the Mind forms, by uniting and assembling the *Ideas* which it already had: and these are called complex. But our great Mr. *Locke* seems to have put this Matter out of dispute, having made it appear that all our *Ideas* are owing to our Senses; and that all innate, created, factitious, &c. *Ideas*, are mere Chimeras. He proves, that our Mind has not absolutely any *Ideas* besides those presented to it by the Senses, and those which it forms by its own Operations, on those others which the Senses furnish. So that a Man destitute of one of his Senses, would never have any *Idea* belonging to that Sense; and supposing him destitute of all the Senses, he would never have any *Idea* at all: External Objects having no other way of producing *Ideas* in him, but by means of Sensation. He would have no *Idea*, not even of Reflexion, because in wanting all Sensation, he wants that which should excite in him the Operations of his Mind, which are the Objects of his Reflexion. 'Tis plain therefore there is no innate *Idea*; no general Truth, or first Principle inherent in the Soul, and created with it; no immediate Object of the Mind before it had perceived external Objects by means of the Senses, and reflected on that Perception. Those *Ideas* only seem to be innate, because we find we have them as soon as we come to the Use of Reason, but are, in effect, what we formed from the *Ideas* wherewith the Mind was insensibly filled by the Senses. Thus, when the Mind is employ'd about sensible Objects, it comes by the *Ideas* of bitter, sweet, yellow, hard, &c. which we call Sensation; and when employ'd about its own Operations, perceiving and reflecting on them, as employ'd about the *Ideas* before got by Sensation, we get the *Ideas* of Perception, Thinking, Doubting, Willing, &c. which we call inward Sensation or Reflexion: And these two, viz. external material Things as the Objects of Sensation, and the Operations of our own Minds as the Objects of Reflexion, are the only Originals, whence all our *Ideas* have their Rise. When we have considered these, and their several Modes and Combinations, we shall find they contain our whole Stock of *Ideas*; inasmuch, that the Understanding does not seem to have the least Glimmering of any *Ideas* that it did not receive from one of those Sources. And thus far the Mind appears merely passive, as not having it in its power to chuse whether it will have these first Beginnings or Materials of Knowledge, or not. For the Objects of Sense will obtrude their *Ideas* upon the Mind, and the Operations of the Mind will not let us be without some (however obscure) Notion of them.

The same excellent Author distinguishes *Ideas* into two kinds, viz. Simple and Complex. Of the former kind are all those *Ideas* which come into the Mind by Sensation: And though the Qualities of Bodies that affect our Senses are in the things themselves so mix'd and united, that there is no Separation between them; yet the *Ideas* they produce in the Mind are simple and unmix'd. Again, some *Ideas* we acquire purely by means of one Sense, as the *Ideas* of Colours only by the Eye, of Sounds by the Ear, of Heat by the Touch, &c. Other *Ideas* we gain by several Senses, as of Space, Extension, Figure, Rest, Motion, &c. for these have their Effect both on the Sight and the Touch. There are other simple *Ideas*, again, form'd in the Mind both by Sensation and Reflexion jointly, as Pleasure, Pain, Power, Existence, Unity, Succession, &c. And of some of these kinds of *Ideas* are all, or at least the most considerable of those simple *Ideas* which the Mind hath, and out of which is made all its other Knowledge. The better to comprehend the Nature of these simple *Ideas*, it will be convenient



nient to distinguish between them as they are *Ideas* or Perceptions in our Minds, and as they are Modifications of the Bodies that cause such Perceptions in us; that we may not think, as is usually done, that they are exactly the Images and Resemblances of something inherent in the Subject: for most of those of Sensation, are in the Mind no more the Likeness of any thing existing without us, than the Names that stand for 'em are the Likeness of the *Ideas*. But here the Qualities of Bodies which produce those *Ideas* in our Minds, are to be distinguish'd into Primary and Secondary. Primary Qualities are such as are utterly inseparable from the Body, in what State soever it be; and such as our Senses constantly find in every Particle of Matter, which are Solidity, Extension, Figure, Mobility, and the like. Secondary Qualities are such as are, in reality, nothing in the Objects themselves, but only Powers to produce various Sensations in us by means of their primary Qualities; that is, by the Figure, Bulk, Texture, &c. of their Particles, as Colour, Sounds, Taste, &c. Now the *Ideas* of primary Qualities are in some sense Resemblances of them, and their Patterns do really exist in the Bodies themselves; but the *Ideas* produced in us by those secondary Qualities have no Resemblance of them at all. There is nothing like our *Ideas* existing in the Bodies themselves that occasion them. They are in the Bodies we denominate from them, only a Power to produce those Sensations in us; and what is sweet, warm, blue, &c. in the *Idea*, is no more than the Bulk, Figure and Motion of the Particles of the Bodies themselves that we call so.

The Mind hath several Faculties of managing these simple *Ideas* that are worthy of notice: as, 1. That of discerning justly and distinguishing rightly between one and another; in this consists the Accuracy of Judgment. 2. That of comparing them one with another in respect of Extent, Degree, Time, Place, or any other Circumstances of Relation or Dependence one on another. 3. The Faculty of compounding or putting together the simple *Ideas* received by Sensation and Reflexion, in order to make complex ones. 4. Children by repeated Sensations having got some *Ideas* fix'd in their Memories, by degrees learn the Use of Signs; and when they can speak articulately, they make use of Words to signify their *Ideas* to others: Hence, the Use of Words being to stand as outward Marks of our internal *Ideas*, and those *Ideas* being taken from particular things; if every particular *Idea* that we take in, should have a particular Name affixed to it, Names would grow endless. To prevent this Inconvenience, the Mind has another Faculty whereby it can make the particular *Ideas* received from such Objects, become general; which is done, by considering them as they are in the Mind such Appearances, separate from all other Existences and Circumstances of Existence, as Time, Place, and other concomitant *Ideas*: and this is called Abstraction; whereby *Ideas* taken from particular Things become general Representatives of all of that kind, and their Names, general Names applicable to whatever exists conformable to such abstract *Ideas*. Thus the same Colour being observed to-day in Chalk or Snow, which we observed yesterday in Paper or Milk, we consider that Appearance alone, make it a Representative of all the same Kind, and give it the Name of Whiteness: By which Sound we always signify the same Quality, wheresoever to be met with or imagined.

From the Power which the Mind has of combining, comparing, and separating or abstracting the simple *Ideas*, which it acquires by Sensation and Reflexion, all its complex *Ideas* are formed; and as before in the Perception of *Ideas*, the Understanding was passive, so here 'tis active, exerting the Power it hath in the several Acts and Faculties abovementioned, in order to frame compound *Ideas*. All complex *Ideas*, tho' their Number be infinite, and Variety endless, yet may they be all reduced to these three Heads, viz. Modes, Substances, and Relations. Modes are such complex *Ideas*, as however compounded, are not supposed to exist by themselves, but are consider'd as Dependencies on, or Affections of Substances: Such are the *Ideas* signified by the words Triangle, Gratitude, Murder, &c. And these Modes are of two kinds: 1. Such as are only Variations, or different Combinations of the same simple *Idea*, without the Mixture of any other, as a Dozen, a Score, &c. and these may be called simple Modes. 2. There are others compounded of simple *Ideas* of several sorts put together, to make one complex one, as Beauty, Theft. Substances have their *Ideas* from such Combinations of simple *Ideas*, as are taken to represent distinct particular things, subsisting by themselves, in which the supposed or confused *Idea* of Substance, such as it is, is always the first and chief. Relations are a kind of complex *Ideas*, arising from the Consideration or Comparison of one *Idea* with another. Of these, some only depend on the Equality or Excess of the same simple *Idea* in several Subjects, and these may be called proportional Relations,

such as equal, more, bigger, sweeter. Another occasion of comparing things together, is owing to the Circumstances of their Origin and Beginning; which, not being afterwards to be altered, make the Relations depending thereon as lasting as the Subjects to which they belong. Thus it is with natural Relations, such as Father, Mother, Uncle, Cousin, &c. Thus also it is with Relations by Institution, as Prince and People, General and Army, &c. As to moral Relations, they are the Conformity or Disagreement of Mens free Actions to Laws and Rules, whether Human or Divine.

Further, with regard to our *Ideas* it may be observed, that some are clear and distinct, others obscure and confused. Our simple *Ideas* are clear, when they continue such as the Objects represent them to us, when our Organs of Sensation are in a good Tone and Order, when our Memories retain them, and can produce and present them to the Mind whenever it hath occasion to consider them; and when, with this, the Mind sees that these simple *Ideas* are severally different one from another: The contrary to which, is what we call Obscurity and Confusion.

Again, *Ideas*, with respect to the Objects whence they are taken, or which they are supposed to represent, come under a threefold Distinction; being, 1. Either real or fantastical. 2. True or false. 3. Adequate or inadequate. By real *Ideas* is meant such as have a Foundation in Nature, such as have a Conformity with the real Being or Existence of Things, or with their Archetypes. Fantastical are such as have no Foundation in Nature, nor any Conformity with that Being to which they are referred as their Archetypes.

Now if we examine our several kinds of *Ideas*, we shall find that, 1. All our simple *Ideas* are real; not that they are Images or Representations of what does exist, but as they are the certain Effects of Powers in Things without us, ordained by our Maker to produce in us such Sensations. They are real *Ideas* in us, in regard, by them we distinguish the Qualities that are really in the Bodies themselves: their Reality lies in the steady Correspondence they have with the distinct Constitutions of real Beings, but whether with those Constitutions to Causes or Patterns, it matters not, so long as they are constantly produced by them. As to complex *Ideas*, in regard they are arbitrary Combinations of simple *Ideas* put together, and united under one general Name, in forming whereof the Mind useth its own Liberty, some are found real, and some imaginary. 1. Mix'd Modes and Relations having no other Reality than what they have in the Minds of Men, are real; nothing more being required to their Reality, but a Possibility of existing conformable to them. These *Ideas* being themselves Archetypes, cannot differ from their Archetypes, and so cannot be chimerical, unless any one jumbles inconsistent *Ideas* in them: Indeed, those that have Names assign'd to them, ought to have a Conformity to the ordinary Signification of those Names, to prevent their appearing fantastical. 2. Our complex *Ideas* of Substances being made in reference to things existing without us, whose Representations they are thought, are no further real, than as they are Combinations of simple *Ideas* really united and co-existing in things without us. Those are fantastical, that are made up of several *Ideas* that never were found united, as Centaur, &c.

As to true and false *Ideas*, it may be observed, that Truth and Falshood in Propriety of Speech belong only to Propositions; and when *Ideas* are term'd true or false, there is some tacit Proposition, which is the Foundation of that Denomination. Our *Ideas* being nothing else but Appearances or Perceptions in the Mind, can no more be said to be true or false, than single Names of things can be said to be so; for Truth and Falshood lying always in some Affirmation or Negation, our *Ideas* are not capable of them, till the Mind passeth some Judgment of them. In a Metaphysical Sense they may be said to be true, i.e. to be really such as they exist; tho' in things called true, even in that Sense, there seems to be a secret Reference to our *Ideas*, look'd upon as the Standards of that Truth; which amounts to a mental Proposition. When the Mind refers its *Ideas* to any thing extraneous to it, they are then capable of being true or false, because in such a Reference, the Mind makes a tacit Supposition of their Conformity to that thing; which Supposition, as it is true or false, so the *Ideas* themselves come to be denominated. Real *Ideas* are either adequate or inadequate. Those are adequate which perfectly represent those Archetypes which the Mind supposeth them taken from, and which it makes them stand for. Inadequate are such as do but partially or incompletely represent those Archetypes to which they are referred. See Adequate, Truth, Pleasure, Name, Knowledge, Association, Modes.

IDENTITATE NOMINIS, is a Writ that lies for him who upon a Capias or Exigent is taken and committed to Prison for another Man of the same Name.



**IDENTITY** of a thing, is its Sameness, or that by which it is itself, and not any thing else. Our Ideas of *Identity* we owe to that Power which the Mind has of comparing the very Beings of Things, whereby considering any thing as existing at any certain Time and Place, and comparing it with itself as existing at any other Time, &c. we accordingly pronounce it the same or different. When we see any thing in any certain Time and Place, we are sure it is that very thing; and can be no other, how like soever it may be in all other respects: In regard we conceive it impossible, that two things of the same kind, should exist together in the same Place, we conclude, that whatever exists any where at the same Time, excludes all of the same kind, and is there itself alone. When therefore we demand, whether any thing be the same or no, it refers always to something, that existed at such a Time, in such a Place, which it was certain, at that instant, was the same with itself, and no other. We have Ideas of three sorts of Substances. *First*, of Gods; *Secondly*, of Finite Intelligences; *Thirdly*, of Bodies. *First*, God being Eternal, Unalterable, and every where, concerning his *Identity* there can be no doubt. *Secondly*, Finite Spirits having had their determinate Place and Time of beginning to exist, the Relation to that Time and Place will always determine to each, its *Identity*, as long as it exists. *Thirdly*, The same will hold of every Particle of Matter to which no Addition or Subtraction is made. These three exclude not one another out of the same Place, yet each exclude those of the same kind, out of the same Place. The *Identity* and Diversity of Modes and Relations are determined after the same manner, that Substances are: only the Actions of Finite Beings, as Motion and Thought, consisting in Succession, cannot exist in different Times and Places, as permanent Beings: For no Motion or Thought considered as at different Times, can be the same, each Part thereof having a different beginning of Existence. From whence it is plain, that Existence itself is the *Principium Individuationis*, which determines a Being to a particular Time and Place incommunicable to two Beings of the same kind. Thus, suppose an Atom existing in a determined Time and Place, it is evident, that consider'd in any instant, it is the same with itself, and will be so, as long as its Existence continues. The same may be said of two, or more, or any Number of Particles, whilst they continue together. The Mass will be the same, however jumbled: but if one Atom be taken away, it is not the same Mass. In Vegetables, the *Identity* depends not on the same Mass, and is not applied to the same Thing. The Reason of this, is the difference between an animate Body, and Mass of Matter; this being only the Cohesion of Particles any how united; the other, such a Disposition, and Organization of Parts, as is fit to receive and distribute Nourishment, so as to continue and frame the Wood, Bark, Leaves, &c. (of an Oak, for instance) in which consists the Vegetable Life. That therefore, which hath such an Organization of Parts, partaking of one common Life, continues to be the same Plant, tho' that Life be communicated to new Particles of Matter vitally united to the living Plant. The Case is not so much different in Brutes, but that any one may hence see what makes an Animal, and continues it the same. The *Identity* of the same Man likewise consists in a Participation of the same continued Life, in succeeding Particles of Matter vitally united to the same organized Body. To understand *Identity* aright, we must consider what Idea, the Word it is applied to, stands for: it being one thing, to be the same Substance; another, the same Man; and a third, the same Person. An Animal is a living organized Body: and the same Animal is the same continued Life communicated to different Particles of Matter, as they happen successively to be united to that organized living Body; and our Notion of Man, is but of a particular sort of Animal. Person stands for an intelligent Being, that reasons, and reflects, and can consider itself the same thing in different Times and Places; which it doth by that Consciousness, that is inseparable from Thinking. By this every one is to himself, what he calls Self, without considering, whether that Self be continued in the same or diverse Substances. In this consists Personal *Identity*, or the Sameness of a Rational Being: and so far as this Consciousness extends backward to any past Action, or Thought, so far reaches the *Identity* of that Person. It is the self-same now, it was then: And it is by the same Self, with this present one, that now reflects on it, that that Action was done. Self is that conscious Thinking Thing, whatever Substance, it matters not, which is conscious of Pleasure and Pain, capable of Happiness or Misery; and so is concerned for itself, as far as that Consciousness extends. That with which the Consciousness of this present Thinking Thing can join itself, makes the same Person, and is one Self with it; and so attributes to itself, and owns all

the Actions of that thing, as its own, as far as that Consciousness reacheth. This Personal *Identity* is the Object of Reward and Punishment, being that by which every one is concerned for himself. If the Consciousness went along with the little Finger, when that was cut off, it would be the same Self, that was just before concern'd for the whole Body. If the same *Socrates*, waking, and sleeping, did not partake of the same Consciousness, they would not be the same Person: *Socrates* waking could not be in justice accountable for what *Socrates* sleeping did; no more than one Twin, for what his Brother Twin did, because their Outfides were so like, that they could not be distinguish'd. But suppose I wholly lose the Memory of some Parts of my Life, beyond a possibility of retrieving them, so that I shall never be conscious of them again; am I not again the same Person that did those Actions, tho' I have forgot them? I answer, We must here take notice what the word *I* is applied to, which in this Case is the Man only: And the same Man being presumed to be the same Person, *I* is easily here supposed to stand also for the same Person. But if it be possible for the same Man, to have distinct incommunicable Consciousness at different times, it is past doubt the same Man would at different times make different Persons. Which we see is the Sense of Mankind in the solemnest Declaration of their Opinions; Human Laws not punishing the Madman for the sober Man's Actions, nor the sober Man, for what the Madman did; thereby making them two Persons. Thus we say in *English*, Such an one is not himself, or is besides himself; in which Phrases it is insinuated, that Self is changed, and the self-same Person is no longer in that Man. But is not a Man, drunk or sober, the same Person? Why else is he punished for the same Fact he commits when drunk, tho' he be never afterwards conscious of it? Just as much the same Person, as a Man that walks, and does other things in his Sleep, is the same Person, and is as answerable for any Mischief he shall do in it. Human Laws punish both with a Justice suitable to their way of Knowledge: Because, in these Cases, they cannot distinguish certainly, what is real, and what is counterfeit; and so the Ignorance in Drunkenness or Sleep is not admitted as a Plea. For tho' Punishment be annexed to Personality, and Personality to Consciousness, and the Drunkard is not conscious perhaps of what he did; yet Human Judicatures justly punish him, because the Fact is proved against him, but want of Consciousness cannot be proved for him. But in the great Day, wherein the Secrets of all Hearts shall be laid open, it may be reasonable to think no one shall be made to answer for what he knows nothing of, but shall receive his Doom, his own Conscience accusing, or else excusing him. To conclude, Whatever Substance begins to exist, it must, during its Existence, be the same: Whatever Composition of Substances begin to exist, during the Union of those Substances, the Concrete must be the same. Whatsoever Mode begins to exist, during its Existence it is the same: And so if the Composition be of distinct Substances, and different Modes, the same Rule holds. Whence it appears, that the Difficulty or Obscurity that has been about this matter, rather arises from Names ill used, than from any Obscurity in the things themselves. For whatever makes the specific Idea, to which the Name is applied, if that Idea be steadily kept to, the Distinction of any thing into the same and diverse, will easily be conceived.

**IDEOT** in the original *Greek* *ἰδιώτης*, signifies a private Person who has no public Office. Among the *Latins* it is used for *Illiteratus*, *Imperitus*; and in our *English* Law, for a Person *non compos mentis*, or a natural Fool. A Person that has Understanding enough to measure a Yard of Cloth, number 20 rightly, tell the Days of the Week, &c. is not an Ideot in the Eye of the Law.

**IDES**, is a Word which was used by the *Romans*, in their Calendar, to distinguish the Days of the Month by. They commonly fell out the 13th of every Month, except in the Months of *March*, *May*, *July*, and *October*, for in these, the *Ides* were on the 15th of the Month. This word is said to be derived from the *Hebrew* word *Iduare*, that is, to divide; because the Month is, in a manner, equally divided into two Parts by the *Ides*; and the *Nones* were perhaps so called from *Nono Idus*, the ninth of the *Ides*, because they were in the room of the ninth of the *Ides*. Some others observing, that there were three considerable Varieties in the Motion of the Moon; the first, when she is quite hid under the Beams of the Sun; the second at the first Day of her appearing, when we see her in an Evening, with her Horns proceeding out of his Rays; and the third when she is in her full Light: The common Opinion was, that from thence *Romulus* took occasion to divide the Days of the Months; which he began always by the Calends, in the time that the Moon, *sub Radiis Solis celaretur*, was hid under the

Beams



Beams of the Sun; then gave the Name of *Nones*, or *Nonæ Lune*, to the Day of the first appearing of the New Moon; and *Idus*, say they, took the Name when she was full, and appeared in her Beauty, from the Greek word ἰδῶ, that is, Beauty. From thence they draw an Argument for the Inequality of the Days of the *Nones*: for as it falls out by the Composition of the Motions of the Sun and the Moon, that the Moon comes out of the Beams of the Sun, sometimes sooner, and sometimes later, and that this Diversity is commonly included in the space of two Days; it is likely, they say, that in the time that *Romulus* instituted his Calendar, the Moon was kept a longer time hid under the Beams of the Sun, in the Month of *March*, *May*, *July*, and *October*: wherefore he allowed seven Days to the *Nones* in those four Months, and five Days only to the others, during which, it may be, the Moon got off from these Beams, and appeared sooner. Others draw the word *Idus* from *Idulium*, which was the Name of the Victim offered to *Jupiter*, the Day of the *Ides*, that was consecrated to him. Some derive it from the Tuscan word *Itis*, which signifies, amongst that Nation, the same as *Idus* among the *Romans*. They allowed eight Days for the *Ides*: Thus the eighth Day of the Month, in those four Months, and the sixth, in the other eight, were accounted the eighth of the *Ides*, and so on, always decreasing to the 12th or 14th, which was called the *Pridie*, or *Eve of the Ides*, and on the 13th or 15th was the Day of the *Ides*. This way of accounting is still in use in the *Roman Chancery*, and in the Calendar of the *Breviary*.

The *Ides of May* were consecrated to *Mercury*; the *Ides of March* were ever esteemed unhappy, after *Cæsar's* Murder on that Day; the Time after the *Ides of June* was reckoned fortunate for those who entered into Matrimony; the *Ides of August* were consecrated to *Diana*, and were observed as a Feast-Day by the Slaves. On the *Ides of September* Auguries were taken for appointing the Magistrates, who formerly entered into their Offices on the *Ides of May*, afterwards on those of *March*. See *Rosinus*, and others, who have written of the *Roman Antiquities*.

**IDIOM**, *Dialect*, the Language of some particular Province, differing, in some respects, from the Language of the Nation in general, whence it is derived. The word comes from the Greek, ἰδιόματι, *Propriety*, of ἰδῶ, *proper, self*.

**IDIOPATHY**, a Disease or Indisposition proper to some particular Member, or Part of the Body, not caused by any other Disease, or preceding Affection, nor having any thing to do with the rest of the Body. It is opposed to *Sympathy*, which happens when the Indisposition takes its Rise from a Disorder in some other Part of the Body. Thus a Cataract in the Eye is an *Idiopathy*: an Epilepsy is either *Idiopathic* or *Sympathic*; *Idiopathic* when it happens purely thro' some Fault in the Brain, *Sympathic* when it is preceded by some other Disorder. The word is derived from the Greek, ἰδῶ, *proper, particular*, and παθῶ, *Passion, Affection*.

**IDIOSYNCRASY**, in *Physic*, is a Temperament peculiar to some Body, in consequence whereof, whether in Sickness or in Health, it has a more than ordinary Aversion or Inclination to certain things, or is more affected with them, than others usually are. The word is derived from the Greek, ἰδῶ, *proper*, σύν, *with*, and κρῆσις, *Crafsis, Mixture, Temperament*.

**IDIOTA** *Inquirenda vel Examinanda*, is a Writ issued out to the Escheator or Sheriff of any County, where the King has notice that there is an Idiot naturally born, so weak of Understanding, that he cannot govern or manage his Inheritance, directing him to call before him the Party suspected, and examine him: for the King has the Protection of his Subjects, [and by his Prerogative the Government of the Lands and Substance of such as are naturally defective in their own Discretion.

**IDIOTISM**, in Grammar, is an Inflection of some Verb, a particular Construction of some Phrase or Particle that is anomalous, and deviates from the ordinary Rule of the Language of the Nation, but which is in use in some particular Province of it. Several Authors have written of the *Idiotisms* in the Greek and Latin Languages; that is, of the particular Turns in those Tongues which vary the most from each other, and from the more popular among the modern Tongues: But the Examples of these *Idiotisms* being borrowed from the best Authors, *Idiotism*, in this Sense, cannot properly be called an Irregularity. The word is derived from the Greek, ἰδῶ, *proper*.

**IDOL**, a Statue or Image of some false God, to whom Divine Honours are paid, Altars and Temples erected, and Sacrifices made. Thus the *Colossus* at *Rhodes* was an Idol of the Sun, the *Palladium* an Idol of *Minerva*, &c. The word comes from the Greek εἰδωλον, of ἰδῶ, *Imago, Figura*.

**IDOLATRY**, the Worship and Adoration of false Gods, or the giving those Honours to Creatures, or the

Works of Man's Hand, which are only due to God. Several Authors have written of the Origin and Causes of Idolatry, and among the rest *Vossius*, *Selden*, *Goodwin*, and *Tennison*; but 'tis still a Doubt who was the first Author of it. 'Tis generally allowed, however, that it had not its Beginning till after the Deluge, and many are of Opinion that *Belus*, who is supposed to be the same with *Nimrod*, was the first Man that was deified. But whether they had not paid Divine Honours to the Heavenly Bodies before that time, cannot be determined, our Acquaintance with those remote Times being extremely slender. All that can be said with Certainty, is, That 426 Years after the Deluge, when God lead *Tbara* and his Family out of *Chaldea*, and *Abraham* passed over *Mesopotamia*, *Canaan*, the Kingdom of the *Philistines* and *Egypt*, it does not appear that Idolatry had then got any footing in any of those Countries, tho' some pretend that *Abraham* himself was an Idolater. The first mention we find made of it, is in *Genesis*, chap. xxxix, ver. 19. where *Rachel* is said to have taken the Idols of her Father; for tho' the meaning of the Hebrew word עֲבֹדָה be disputed, yet 'tis evident they were Idols. *Laban* calls them his Gods, and *Jacob* calls them strange Gods, and looks on them as Abominations. *Cluverius*, *Germ. Antiq.* l. 1. maintains *Cain* to have been the first Idolater, and the false Gods that he worshipped to have been the Stars, to whom he supposed God had left the Government of the lower World: but this is mere Conjecture. The principal Causes that have been assigned for Idolatry, are these: (1.) The indelible Idea which every Man has of a God, and the Evidence which he gives of it to himself. (2.) An inviolable Attachment to Sense, and an Habitude of judging and deciding by it, and it only. (3.) The Pride and Vanity of the human Soul, which is not satisfied with simple Truth, but mingles and adulterates it with Fables. (4.) The Ignorance of Antiquity, or of the first Times, and the first Men, whereof we have but a very dark and confused Knowledge by Tradition, they having left no written Monuments or Books. (5.) The Ignorance and Changes of Languages. (6.) The Style of the Oriental Languages, which is figurative and poetical, and personifies every thing. (7.) The Superstition, Scruples, and Fears, inspired by Religion. (8.) The Flattery of Writers. (9.) The false Relations of Travellers. (10.) The Fictions of Poets. (11.) The Imaginations of Painters and Sculptors. (12.) A smattering of Physics, that is, a slight Acquaintance with natural Bodies, and Appearances, and their Causes. (14.) The Establishment of Colonies, and the Invention of Arts, which have been perverted by barbarous People. (15.) The Artifices of Priests. (16.) The Pride of certain Men, who have affected to pass for Gods. (17.) The Affection and Gratitude bore by the People to certain of their Great Men and Benefactors. (18.) The Scriptures themselves ill understood. The word comes from the Greek εἰδωλατρία, which is composed of ἰδῶ, *Imago, Image*, and λατρεύειν, *servire, to serve*.

**IDYLLION**, in Poetry, is a little gay Poem, containing the Description or Narration of some agreeable Adventures. *Theocritus* is the oldest Author who has written *Idyllions*. The *Italians* imitate him, and have brought the *Idyllion* into modern Use. The *Idyllions* of *Theocritus* have a world of Delicacy; they appear with a clownish, rustic kind of Simplicity, but are full of the most exquisite Beauties; they seem drawn from the Breast of Nature herself, and to have been dictated by the Graces. The *Idyllion* is a kind of Poetry, which paints the Objects it describes; whereas the *Epic* Poem relates them, and the *Dramatic* acts them. The modern Writers of *Idyllions* don't keep up to that original Simplicity observed by *Theocritus*; the People of our Days would not bear an amorous Fiction, resembling the clumsy Gallantries of our Peasants. *Boileau* observes that the shortest *Idyllions* are usually the best. The word is derived from the Greek ἰδύλλιον, of ἰδῶ, *Figure, Representation*; in regard this Poetry consists in a lively natural Image, or Representation of Things.

**JET**, sometimes called *Black Amber*, is a Mineral, or a fossile Stone, extremely black, formed of a lapidific or bituminous Juice in the Earth, in the manner of Coal: It works like Amber, and has most of its Qualities. It abounds in *Dauphine*, but the best in the World is said to be produced in some of the Northern Parts of *England*. There is also a factitious Jet made of Glass, in imitation of the Mineral Jet. This is drawn out into long hollow Strings, which are cut, and formed at pleasure. It is much used in Embroideries, and in the Trimmings of Mourning, and may be made of any Colour, tho' 'tis usually black and white.

**JECTIGATION**, in *Physic*, is a Trembling or Palpitation felt in the Pulse of a sick Person, which shows that the Brain, which is the Origin of the Nerves, is attacked and threatened with Convulsions.



JECUR. See *Liver*.

JECUR UTERINUM: The *Placenta* is by some thus called, from the supposed Similitude of its Office with that of the Liver.

JEJUNUM. See *Intestines*.

JEFOFAYLE; a Compound of three French words, *Je ay faille, I have failed*. It is used in a legal Sense, when the Parties to any Suit have, in pleading, proceeded so far, that they have joined Issue, which shall be tryed, or is tryed by a Jury, and this Pleading or Issue is badly joined, so that it will be Error if they proceed. In this Case one of the Parties might, by their Counsel, shew it to the Court, as well after Verdict given, as before the Jury was charged: But this occasioning great Delays in Suits, for the Redress thereof several Statutes were made, viz. 32 H. VIII. c. 30. by which it was enacted, 'That if the Jury have once passed upon the Issue, tho' afterwards there be found a *Jeofayle* in the Pleading, yet shall Judgment be given according to the Verdict of the Jury.' Other Statutes have also been made relating to the same thing, in the time of King James I. and Queen Elizabeth, and yet the Fault little mended.

S. JEROM, the Name of four several Orders of Religious, who are sometimes also called *Jeronymites*. The first, called the Order of St. Jerom of Spain, owe their Origin to the third Order of St. Francis, whereof the first *Jeronymites* were Members. Gregory the Eleventh confirmed this Order, under the Name of St. Jerom, whom they had chosen for their Patron and their Model, and gave them the Constitutions of the Convent of St. Mary of the Sepulchre, with the Rule of St. Augustine; and for Habit, a white Tunic, with a Scapulary, a little Capuche, and a Mantle, all of their natural Colour, without Dying, and of a mean Price. The *Jeronymites* are in possession of the Convent of St. Laurence, in the *Escorial*, where the Kings of Spain are buried. In Spain is likewise an Order of Nuns of St. Jerom, founded by a Lady towards the close of the 15th Century. Sixtus put them under the Jurisdiction of the *Jeronymites*, and gave them the Constitutions of the Monastery of St. Martha of Cordova, which were afterwards changed by Leo X. for those of the Order of St. Jerom. The second Order of St. Jerom is that of Lombardy, called St. Jerom of the Observance, founded by Loup d'Olmudo in 1424. in the Mountains of *Cazalla*, in the Diocese of *Sevil*. The third Order of *Jeronymites* was founded by Peter Gambacorti about the Year 1377; but the Vows they made were only simple till 1568, when Pius V. appointed them to be solemn. They have Houses in *Tirol*, *Italy*, and *Bavaria*. The fourth Congregation of *Jeronymites*, are the Hermites of St. Jerom of *Trezoli*, begun in 1360, when Charles de Montegraneli, of the Family of the Count of that Name, retiring into Solitude, first established it at *Verona*. It was approved by Innocent VII. under the Rule and Constitutions of St. Jerom. But Eugenius, in 1441 changed it for that of St. Augustine. As the Founder was of the third Order of St. Francis, they preserved that Habit; but in 1460, Pius, permitting such as pleased to change it, occasioned a Division among them. This Order was finally suppressed by Clement XI. in 1668.

JESILBASCH, Green-Head, is the Name which the *Perissians* give to the *Turks*, because their Emirs wear a Green Turband.

JESGANT, a Term in Heraldry, used when, in a Coat of Arms, a Lion or other Beast is borne over some Ordinary; as over a Chief, a Bend, a Fesse, &c. that Lion or Beast is blazoned *Jesgant*, or *Jacent*, that is, lying over all.

JESUATES, an Order of Religious, otherwise called *Apostolic Clergy*. They were founded by John Columbin, and approved of by Urban V. in 1367. at *Viterba*; where he himself gave, to such as were present, the Habit they were to wear. They followed the Rule of St. Augustine, and were ranked by Pius V. among the Orders of Mendicants. They were called *Jesuates*, because their first Founders had the Name of Jesus continually in their Mouths. For two Centuries the *Jesuates* were mere Seculars; but in 1506, Paul V. gave them leave to enter into Holy Orders. In most of their Houses they were employed in Pharmacy, others practised Distillation, and sold *Aqua Vitæ*, which occasioned their being called *Aqua Vitæ-monachs*. Being very rich in the State of *Venice*, that Republick solicited their Suppression, and obtained it of Clement IX. their Effects being employed towards supporting the Expences of the War in *Candia*.

JESUITS, an Order of Religious, founded by Ignatius Loyola, who are also called the *Company of Jesus*. This Order has rendered itself very considerable by its Missions into the *Indes*, and by its other Employments relating to the Study of the Sciences, and the Education of Youth. The Council of Trent calls them, *Clerks Regulars of the Company of Jesus*. It was in the Year 1538. that Ignatius

having assembled ten of his Companions at *Rome*, chosen mostly out of the University of *Paris*, proposed to them to make a new Order. After this he presented the Plan of his Institution to Paul III. who appointed three Commissioners to examine it; upon whose Report, the Pontiff confirmed the Institution, under the Name of *The Company of Jesus*, by a Bull in 1540. By this Bull, their Number was restrained to Sixty, but that Restriction was taken away, two Years afterwards, by another Bull. The Order has since been confirmed by several succeeding Popes, who have added many new Rights and Privileges to it. The End principally proposed by this Order, is to gain Converts to the Romish Church, with which View they disperse themselves in every Country and Nation, and with amazing Industry and Address pursue the End of their Institution. No Difficulty so great that they cannot surmount, no Danger so imminent that they will not undergo, no Crimes so shocking that they will not perpetrate, provided it may be of any Service to their Cause. They have no particular Habit, but change and accommodate it to Times and Occasions. This Order consists of five different Classes; Fellows, spiritual Coadjutors, approved Scholars, Lay-Brothers, called also temporal Coadjutors, and Novices. The Fellows, which make the Body of the Company, make the three solemn Vows of Religion publickly, and to these add a special Vow of Obedience to the Head of the Church, as to what regards Missions among Idolaters, Heretics, &c. The spiritual Coadjutors also make public Vows of Chastity, Poverty, and Obedience, but omit the fourth relating to Missions. Approved Scholars are those, who, after two Years Noviciate, have been admitted, and have made three Vows of Religion; not solemn, indeed, but yet declared. These are in the way to become Fellows, or spiritual Coadjutors, according as the General thinks fit. These Degrees, especially that of Fellow, are never conferred till after two Years Noviciate, and seven Years Study, seven of Regency, a third Year of Noviciate, and thirty three Years of Age. The Vows of the Scholars are absolute on their side, but only conditional on the side of the Order; the General having it in his power to dispense with them.

The Order is divided into Assistances, the Assistances into Provinces, and the Provinces into Houses. It is governed by a General, who is perpetual and absolute. He resides at *Rome*, and is elected by a General Congregation of the Order. He has with him, five Persons, who are, as it were, his Ministers. They are called Assistants, and bear the Name of the Kingdom or Country to which they belong, and by whom they are appointed, viz. of *Italy*, *France*, *Spain*, *Germany*, and *Portugal*. To these belongs the Care of preparing the Matters of their respective Assistances, and of putting them in a Method to facilitate their Expedition. It is by these, that both Inferiors and Superiors go regularly before the General. They are chosen by the Congregation, and are not only the General's Counsellors to assist him in his Business, but also to observe his Conduct; and, if they find occasion, they may call a general Congregation without his Consent, who may depose him in form; or they have it in their power to depose him, themselves, after having, by Letter, obtained the Suffrages of their Provinces.

Each Province has four kinds of Houses, viz. professed Houses, which can have no Lands belonging to them; Colleges, where the Sciences are taught; Residences, where are a Number of Workmen employed in such Offices, as have any immediate relation to Preaching, Confession, Missions, &c. and Houses of Novices. Among the Colleges there are some called simply Colleges, and others called Seminaries. These last are set aside, for the young *Jesuits* to go through their Courses of Philosophy and Theology in; the others are for Strangers. Each Province is governed by a Provincial, and each House by a Superior, who is called a Pector in the Colleges, and a Superior in the other Houses. Ignatius regulated the Discipline of these Houses, and especially of the Colleges, by what he had observ'd in the *Sorbonne*, while he studied at *Paris*. The Fellows of this Order renounce, by a solemn Vow, all Preferment, and especially Prelacy; and cannot receive any, unless enjoined thereto by the Pope under pain of Sin. This the Pope sometimes does; inasmuch that they have had eight Cardinals of their Order.

JET D'EAU, a French Word signifying a Fountain, that casts up Water to any considerable Height in the Air. Mr. Mariotte saith, That a Jet d'Eau will never rise so high as its Reservatory, but always falls short of it by a Space, which is in a subduplicate Ratio of that Height; and this he proves by several Experiments. He saith also, That if a greater, branches out in many smaller ones, or is distributed thro' several Jets, the Square of the Diameter of the main Pipe, must be proportioned to the Sum of all the



the Expences of its Branches ; and particularly, That if the Reservatory be 52 Foot high, and the Adjutage half an Inch in Diameter, the Pipe ought to be three Inches in Diameter. See *Fountain, Water, &c.*

JETSON. See *Flotson*.

JEWEL-OFFICE. An Office that takes care of fashioning and weighing the King's Plate, and delivering it out by such Warrants, as they receive from the Lord Chamberlain. When his Majesty makes any Present of Plate, &c. they have the Charge of providing it, with some other things less material. The principal Officer is the Master of the Jewel-Office, whose Salary is 450*l.* per ann. and besides, the Yeoman and Groom, at 106*l.* 15*s.* per ann. each, and a Clerk at 13*l.* 6*s.* 8*d.* which are in the King's Gift. Besides, there are in this Office, in the Gift of the Lord Chamberlain, the Poet-Laureat, at 100*l.* per ann. Salary ; the King's Historiographer, at 200*l.* per ann. the History Painter, and Principal Painter, at 200*l.* per ann. the Painter in Enamel, and the Surveyor and Keeper of the Pictures at 200*l.* per ann. The Goldsmith and Jeweller are employ'd by the Master, and are usually in his Gift.

JEWS-EAR ; a kind of Fungus, Mushroom, or Spungy Substance, that grows about the Root of the Elder-tree. It is chiefly used in Decoction, which is found Detergent and Vulnerary, and a good Gargle in sore Throats.

JEZIDE, or *Jezidean*, a Term used among the Mahometans to signify an Heretic. *Leunclavius* tells us, that the Name is derived from an Emir call'd *Jezide*, who kill'd the two Sons of *Ali*, *Hasan* and *Husein*, two Nephews of *Mahomet* on their Mother's side, and persecuted the Posterity of the Prophet. The *Agarenians*, whose Emir or Prince he was, look'd on him as an Impious and Heretical Person ; and hence took occasion to call all whom they accounted Heretics, *Jezideans*. Some Authors mention the *Jezides* as a particular People, speaking a Language different both from the *Turkish* and *Persian*, tho' somewhat akin to the last. They further tell us, that there are two kinds of *Jezides* ; the one Black, the other White. The White have no Slit in the Bosom of their Shirt ; but barely an Opening for the Head to pass thro' : a thing that they observe with a great deal of Strictness, in memory of a Circle of Gold and Light which fell from Heaven upon the Neck of their Grand Scheik or Chief of their Sect. The Black *Jezides* are Fakirs, or Religious. The *Turks* and *Jezides* bear a strong aversion to each other ; and the greatest Affront one can put on a *Turk*, is to call him *Jezide*. On the contrary the *Jezides* love the Christians ; being persuaded that *Jezide*, their Chief, is Jesus Christ : Or rather because some of their Traditions mention that *Jezide* made an Alliance with the Christians against the Mussulmen. They drink Wine even to Excess when they can get it, and eat Swine's Flesh. They never undergo Circumcision, excepting when they are forced to it by the *Turks*. Their Ignorance is surprizing ; they have no Books. Indeed they pretend to believe in the Gospel, and in the Sacred Books of the Jews, but go without ever reading either one or other of 'em. They make Vows, and go in Pilgrimage ; but have no Mosques, Temples, nor Oratories, no Feasts nor Ceremonies ; all their Religious Worship consisting in singing Hymns to Jesus Christ, the Virgin, *Moses*, and *Mahomet*. When they pray, they look towards the East, in imitation of the Christians ; whereas the Mussulmen turn towards the South. They believe the Devil may possibly, one day, come into favour again with God ; and that he is the Executor of God's Justice in the other World : for which reason they make it a Point of Conscience not to speak ill of him, lest he should revenge himself of 'em.

The Black *Jezides* are reputed Saints, and 'tis forbidden to weep at their Death ; instead whereof, they make Rejoicings : and yet for the generality they are no more than Shepherds. They are not allow'd to kill the Animals they eat ; that Office belongs to the White *Jezides*. The *Jezides* go in Companies like the *Arabs*. They often change their Habitations, and live in black Tents made of Goats-Hair, and encompass'd with large Rushes and Thorns interwoven. They dispose their Tents in a Circle, placing their Flocks in the middle. They buy their Wives ; the stated Price whereof is 200 Crowns, be they better or worse. They are allow'd Divorce, provided it be to become Hermits. 'Tis a Crime among them to shave the Beard, tho' ever so little. They have some Customs which intimate that they sprang originally out of some Sect of Christians : for instance, in their Feasts one of 'em presents a Cup full of Wine to another, bidding him take the Cup of the Blood of Jesus Christ ; which last kisses the Hand of him who presents it, and drinks.

IGNIS FATUUS. See *Jack with a Lamborn*.

IGNITION, in Chymistry, signifies the Application of Fire to Metals, till such time as they become red-hot, without melting : which happens in Gold and Silver, but especially in Iron. Lead and Tin are too soft and fusible to bear Ignition.

IGNORAMUS is a Word used by the Grand Inquest, impannel'd in the Inquisition of Causes Criminal, and Publick, and written upon the Bill, when they dislike their Evidence, as defective or too weak to make good the Presentment. The Effect of which is, that all farther Enquiry upon that Party for that Fault is thereby stop't, and he deliver'd without farther Answer.

IGNORANCE, or *Want of Knowledge*, is chiefly owing to these three Causes ; *First*, Want of Ideas ; *Secondly*, Want of a discoverable Connection between the Ideas we have ; *Thirdly*, Want of tracing and examining our Ideas. *First*, There are some things we are ignorant of for want of Ideas. All the simple Ideas we have, are confined to the Observation of our Senses, and the Operations of our own Minds, that we are conscious of in ourselves. What other Ideas it is possible other Creatures may have, by the assistance of other Senses or Faculties, more or perfecter than we have, or different from ours, it is not for us to determine : but to say or think there are no such, because we conceive nothing of them, is no better an Argument, than if a blind Man should be positive in it, there was no such thing as Sight and Colours, because he had no manner of Idea of any such thing. What Faculties therefore other Species of Creatures have, to penetrate into the Nature and inmost Constitutions of Things, we know not : This we know, and certainly find, that we want other Views of them, besides those we have, to make Discoveries of them more perfect. The Intellectual and Sensible World are in this perfectly alike, that the Parts which we see of either of them, hold no proportion with that we see not ; and whatsoever we can reach with our Eyes, or our Thoughts of either of them, is but a Point, almost nothing in comparison of the rest. Again, the Want of Ideas, which we yet seem capable of, is another great Obstacle in our way, and keeps us in Ignorance of things, we conceive capable of being known. Bulk, Figure and Motion we have Ideas of ; yet not knowing what is the particular Bulk, Motion, and Figure of the greatest part of the Bodies of the Universe, we are ignorant of the several Powers, Efficacies and Ways of Operation, whereby the Effects we daily see are produced. These are hid from us in some things, by being too remote, in others by being too minute. When we consider the vast Extent of the known and visible Parts of the World, and the Reasons we have to think, that what lies within our Ken, is but a small Part of the immense Universe ; we shall then discover an huge Abyss of Ignorance : What are the particular Fabricks of the great Masses of Matter, which make up the whole stupendous Frame of Corporeal Beings, how far they are extended, and what is their Motion, and how continued, and what influence they have upon one another, are Contemplations, that at first glimpse our Thoughts lose themselves in. If we confine our Thoughts to this little Canton, this System of our Sun, and the grosser Masses of Matter, that visibly move about it ; what several sorts of Vegetables, Animals, and Intellectual Corporeal Beings, infinitely different from those of our little Spot of Earth, may probably be in other Planets, to the knowledge of which, even of their outward Figures and Parts, we can no way attain, whilst we are confin'd to this Earth, there being no natural Means, either by Sensation or Reflexion, to convey their certain Ideas into our Minds ? There are other Bodies in the Universe no less conceal'd from us by their Minuteness. These insensible Corpuscles being the active Parts of Matter, and great Instruments of Nature, on which depend all their secondary Qualities and Operations, our Want of precise distinct Ideas of their primary Qualities keeps us in incurable Ignorance of what we desire to know about them.

Did we know the mechanical Affections of Rhubarb or Opium, we might as easily account for their Operations of purging and causing Sleep, as a Watchmaker can for the Motions of his Watch. The dissolving of Silver in *Aqua Fortis*, or Gold in *Aqua Regia*, and not *vice versa*, would be then perhaps no more difficult to know, than it is to a Smith, to understand, why the turning of one Key will open a Lock, and not the turning of another. But whilst we are destitute of Senses acute enough to discover the minute Particles of Bodies, and to give us Ideas of their mechanical Affections, we must be content to be ignorant of their Properties and Operations ; nor can we be assured about them any farther, than some few Tryals we make, are able to reach : but whether they will succeed again another time, we cannot be certain. This hinders our certain Knowledge of universal Truths concerning natural Bodies ; and our Reason carries us herein



very little beyond particular Matter of Fact ; and therefore it is Matter of Doubt, that how far soever human Industry may advance useful and experimental Philosophy in Physical Things, yet scientific will still be out of our reach ; because we want perfect and adequate Ideas of those very Bodies which are nearest to us, and most at our Command. This, at first sight, shews us how disproportionate our Knowledge is to the whole Extent, even of material Beings : to which, if we add the Consideration of that infinite Number of Spirits that may be, and probably are, which are yet more remote from our Knowledge, and whereof we have no cognizance ; we shall find this Cause of Ignorance conceals from us, in an impenetrable Obscurity, almost the whole Intellectual World ; a greater, certainly a more beautiful World, than the material : For abating some very few Ideas of Spirit, which we get from our own Mind by Reflection, and from thence the best we can collect of the Father of all Spirits, the Author of them, and us, and all things, we have no certain Information, so much as of the Existence of other Spirits, but by Revelation ; much less have we distinct Ideas of their different Natures, States, Powers, and several Constitutions, wherein they agree, or differ one from another, and from us : and therefore in what concerns their different Species and Properties, we are under an absolute Ignorance.

The second Cause of Ignorance, is the want of discoverable Connection between those Ideas we have : where we want that, we are utterly incapable of universal and certain Knowledge, and are, as in the former Case, left only to Observation and Experiment. Thus the mechanical Affections of Bodies, having no Affinity at all with the Ideas they produce in us, we can have no distinct Knowledge of such Operations beyond our Experience, and can reason no otherwise about them, than as the Effects or Appointments of an infinitely wise Agent, which perfectly surpass our Comprehensions. The Operation of our Minds upon our Bodies is as unconceivable : How any Thought should produce a Motion in Body, is as remote from the Nature of our Ideas, as how any Body should produce any Thought in the Mind. That it is so, if Experience did not convince us, the Consideration of the Things themselves would never be able, in the least, to discover to us. In some of our Ideas there are certain Relations, Habitues, and Connections, so visibly included in the nature of the Ideas themselves, that we cannot conceive them separable from them by any Power whatsoever ; in these only we are capable of certain and universal Knowledge. Thus the Idea of a right-lined Triangle necessarily carries with it an Equality of its Angles to two right ones ; but the Coherence and Continuity of the Parts of Matter, the Production of Sensation in us, of Colours and Sounds, &c. by Impulse and Motion, being such wherein we can discover no natural Connection with any Ideas we have, we cannot but ascribe them to the arbitrary Will and Good-Pleasure of the wise Architect. The Things that we observe constantly to proceed regularly, we may conclude do act by a Law set them ; but yet by a Law we know not, whereby the Causes work steadily, and Effects constantly flow from them, yet their Connections and Dependencies being not discoverable in our Ideas, we can have but an experimental Knowledge of them. Several Effects come every day within the notice of our Senses, of which we have so far sensitive Knowledge ; but the Causes, Manner, and Certainty of their Production, we must, for the foregoing Reasons, be content to be ignorant of. In these we can go no further than particular Experience informs us of Matter of Fact, and, by Analogy, guess what Effects the like Bodies are upon other Trials like to produce. But as to perfect Science of natural Bodies (not to mention spiritual Beings) we are so far from being capable of any such thing, that it may be reckoned lost Labour to seek after it.

The third Cause of Ignorance, is our want of tracing those Ideas we have, or may have ; and finding out those intermediate Ideas, which may shew us what Habitude of Agreement or Disagreement they may have one with another : and thus many are ignorant of Mathematical Truths for want of Application, in enquiring, examining, and by due ways comparing those Ideas. See Knowledge.

ILIAC, a Term in Physick, applied to a violent and dangerous Disease, called the *Iliac Passion*, or *Miserere*. It consists in an Expulsion of seculent Matter by the Mouth, accompanied with a Swelling of the lower Ventricle, an intense Pain, and a total Constipation. The immediate Cause of the *Iliac Passion* seems owing to an Irregularity in the Peristaltic Motion of the Guts, viz. when it begins with the lower, and is continued to the higher. Other Causes are the Hardness of the Excrements, Inflammation of the Intestines, and their Engage-

ment in the Anus or Scrotum, as it frequently happens in Hernia's, their twisting, and their entering within one another. Persons afflicted with the *Iliac Passion*, have sometimes been found to return Suppositories and Glitters by the Month. Some have been cured of it by swallowing a great Quantity of Quick-silver, or a Musket-Ball : When the Guts are twisted, or enter one within another, the Weight of these Bodies sometimes setting them to rights again. The *Iliac Passion* takes its Name from the Intestine *Ilium*, in regard of its being usually affected in that Distemper, or perhaps from the Greek Verb *ελάω*, to turn, twist ; whence also the Latins call it *Volvulus*.

ILIAC VESSELS. See Artery and Vein.

ILIACUSEXTERNUS, or *Pyriformis*, is a Muscle of the Thigh, which arises from the internal concave Part of the *Os Sacrum*, towards the bottom, and descending obliquely along the great Sinus of the *Os Ilium*, from a round fleshy Origin, joins the *Gluteus Medius*, and is inserted by a round Tendon at the Bottom of the Great Trochanter.

ILIACUS INTERNUS, the Name of the Muscle of the Thigh, which arises fleshy from the internal concave Part of the *Os Ilium* ; and in its Descent over the inferior Part of it, joins with the *Psoas magnus*, and is inserted with it, under the Termination of the *Pectineus*. This, with the *Psoas magnus*, moves the Thigh forward, in walking.

ILIAD, the Name of the first of Homer's Poems. The Poet's Design in the *Iliad*, was to shew the Greeks, who were divided into several little States, how much it was their Interest to preserve an Harmony and good Understanding among them. In order to which, he sets before their Eyes, the Calamities that befel their Ancestors from the Wrath of Achilles, and his Misunderstanding with Agamemnon, and the Advantages that accrued to them from their Union. The *Iliad* is divided into twenty four Books, which are marked with the Letters of the Alphabet. Pliny gives us an Account of an *Iliad* written on so very slender a Paper, that the whole might be contained in a Nut-shell. For the Conduct of the *Iliad*, see F. Boffin, Madam Dacier, and M. de la Motte. The Critics maintain the *Iliad* to be the first, and yet the best Poem that ever appeared in the World. Aristotle's Poetics are almost taken wholly from it ; the Philosopher had nothing to do but to form Precepts from the Poet's Practice. Some Authors tell us, that Homer invented not only Poetry, but all other Arts and Sciences ; and that there are the visible Marks of a perfect Knowledge in every one of them, to be seen in the *Iliad*. The ingenious Mr. Barnes of Cambridge had prepared a Work for the Press, to prove Solomon to have been the Author of the *Iliad*. The word is derived from the Greek *ιλιάς*, of *ιλιον*, *Ilium*, Troy, a famous City in Asia, which the Greeks besieged for the space of ten Years, and at last destroyed, on account of the Rape of Helena, which makes the Subject of the Work.

ILIUM. See Intestines.

ILIUM OS. See *Ossa Innominata*. These are both derived from *ελάω*, *circumvolvō*, to roll about ; because the Gut, which is principally called by this Name, is long, and lies in Folds towards the bottom of the Abdomen, and therefore gives many of the adjacent Parts these Appellations.

ILLEVIABLE in Law, signifies something that cannot be levied, and therefore the word *Nihil* is set on a Debt or Due that is illeivable.

ILLUMINATION, the Action of a luminous Body, or Body that emits Light, or the Passion of an opaque Body that receives it.

ILLUMINED, a Church-Term, antiently applied to such Persons as had received Baptism. This Name was occasioned by a Ceremony in Baptism, which consisted in putting a lighted Taper in the Hand of the Person baptized, as a Symbol of the Faith and Grace he had received in the Sacrament.

ILLUMINED, is also the Name of a Sect of Heretics, who sprang up in Spain about the Year 1575, and called by the Spaniards, *Alumbrados*. Their Leaders were Villalpando, a Priest, originally of the Isle of Tenerife, and a Carmelite called Catherine de Jesus. These had a great Number of Disciples and Followers, most of whom were apprehended, and clapp'd up in the Inquisition at Cordova ; some whereof were put to death, and the rest abjured their Errors. Their principal Doctrines were, That by means of a sublime manner of Prayer, which they had attained to, they entered into so perfect a State, that they had no occasion for Ordinances, Sacraments, nor good Works, and that they could give way, even to the vilest Actions without Sin. The Sect of *Illumined* was revived in France in the Year 1634, and were soon after joined by the *Guerinets*, or Disciples of Peter Guerin, who together, made but one Body, called also *Illumined* ; but they were so hotly pursued by Louis XIII. that



that they were soon destroyed. The Brothers of the Rosy-Cross are also called *Illumined*.

**ILLUSTRIOUS**, heretofore in the Roman Empire was a Title of Honour peculiar to People of a certain Rank. It was first given to the most distinguished among the Knights, who had a right to bear the *Latus Clavus*, afterwards they were entitled *Illustrious*, who held the first Rank among those called *Honorati*; that is, to the *Præfetti Prætorii*, the *Præfetti Urbis*, *Treasurers*, *Comites*, &c. There were, however, different Degrees among the *Illustres*: As in Spain they have *Grandeos* of the first and second Class, so in Rome they had their *Illustres*, whom they called *Great*, *Majores*, and others *Less*, called *Minores*. For instance, the *Præfetus Prætorius* was a Degree below the Master of the Offices, tho' they were both *Illustres*. The Novel of *Valentinian* distinguishes as far as five kinds of *Illustres*, among whom the *Illustres Administratores* bear the first Rank.

**IMAGE**, a natural, lively Representation of an Object, opposed to a smooth well-polished Surface. The Latin word *Imago*, comes originally from the Greek *μιμήσειν*, *imitari*. Image also signifies any artificial Representation performed by Man, as in Painting, Sculpture, and the like: In which sense, the word is now generally used in speaking of Things holy, or Things imagined to be so.

The Use, and Adoration of Images, are Things that have been a long time controverted in the World. The Lutherans condemn the Calvinists, for breaking the Images in the Churches of the Catholics, looking on it as a kind of Sacrilege; and yet they condemn the Romanists, (who are professed Image-worshippers) as Idolaters: nor can these last keep pace with the Greeks, who go far beyond them in this Point, which has occasioned abundance of Disputes among them. The Jews absolutely condemn all Images, and don't so much as suffer any Statues or Figures in their Houses, much less in their Synagogues, or Places of Worship. The Mahometans have a perfect Aversion to Images, which was what led them to destroy most of the beautiful Monuments of Antiquity, both Sacred and Profane, at Constantinople.

The noble Romans preserved the Images of their Ancestors with a great deal of Care and Concern, and had them carried in Procession at their Funerals and Triumphs. They were commonly made of Wax or Wood, tho' sometimes of Marble or Brass: They placed them in the Vestibles of their Houses, and they were to stay there, even if the Houses happened to be sold: it being accounted impious to displace them. Appian Claudius was the first who brought them into the Temples, in the Year of Rome 259, and he added Inscriptions to them, shewing the Origin of the Persons represented, and their brave and virtuous Achievements. It was not, however, allowed for all, who had the Images of their Ancestors in their Houses, to have them carried at their Funerals; this was a thing only granted to such as had honourably discharged themselves of their Offices, for those who failed in this respect forfeited that Privilege, and in case they had been guilty of any great Crime, their Images were broken in pieces.

**IMAGE**, in Philosophy, signifies the Trace or Mark which outward Objects impress on the Mind, by means of the Organs of Sense. Image, in Opticks, signifies an Object projected on the Base of a Convex-Mirror. As the Distance of the Object from the Mirror, is to the Distance from the Image to the Glass; so is the Diameter of the Object, to the Diameter of the Image. This is a Rule which Mr. Molyneux gives us for finding the Diameter of an Image on the Base of a Convex-Glass. See Optics. Image also signifies the Description of any thing in a Discourse.

**IMAGES**, in Discourse, are defined, by Longinus, to be, in general, any Thoughts proper to produce Expressions, and which present a kind of Picture to the Mind. But, in the more limited Sense, he says, Images are such Discourses as come from us, when by a kind of Enthusiasm, or an extraordinary Emotion of the Soul, we seem to see the Things whereof we speak, and present them before the Eyes of those who hear.

**IMAGES**, in Rhetoric, have a very different Use from what they have among the Poets; the End principally proposed in Poetry is Astonishment and Surprise, whereas the thing chiefly aimed at in Prose, is to paint things naturally, and to shew them clearly. They have this, however, in common, that they both tend to move, each in its kind. These Images, or Pictures, are of vast use, to give Weight, Magnificence, and Strength to a Discourse. They warm and animate a Discourse, and when managed with Art, according to Longinus, seem, as it were, to tame and subdue the Hearer, and put him in the power of the Speaker.

**IMAGINATION**, a Power or Faculty of the Soul, by which it conceives, and forms Ideas of Things, by means

of certain Traces and Impressions that had been before made in the Fibres of the Brain, by Sensation. The Organs of our Senses are composed of little Threads, or Fibres, which, at one end, terminate in the outward Parts of the Body and Skin, and at the other in the middle of the Brain. These little Fibres may be moved two ways; either beginning at that end which terminates in the Brain, or that which terminates without. Now the Agitation of these Fibres cannot be communicated to the Brain, but the Soul will perceive something. If then the Agitation begins where Objects make their first Impression, viz. on the external Surface of the Fibres of our Nerves, and is communicated thence to the Brain, the Soul, in that Case, judges that what she perceives is without, that is, she perceives an Object as present: but if only the interior Fibres be moved by the Course of the animal Spirits, or in some other manner, the Soul then imagines, and judges, that what she perceives is not without, but within the Brain; that is, she perceives an Object as absent: And herein lies the Difference between Sensation and Imagination.

But in order to give a more precise and distinct Idea of the Imagination, it must be observed, that as often as there happens to be any Alteration in that part of the Brain where the Nerves terminate, there also happens an Alteration in the Brain; that whenever there is any Motion in that part, to change the Order of its Fibres, there also happens a new Perception in the Soul, and she finds something new, either by way of Sensation or Imagination; neither of which can be without an Alteration of the Fibres in that part of the Brain. So that the Faculty of Imagining, or Imagination, only consists in the Power which the Soul has of forming Images of Objects, by producing a Change in the Fibres of that part of the Brain, which may be called the principal Part, because it corresponds to all the Parts of our Body, and is the Place where the Soul (if it may be so said) immediately resides. It matters not which that Part is, nor whether the Opinion of Willis be true, who places the common Sense in the two Bodies, called *Corpora Striata*, and the Imagination in the *Corpus Callosum*; or that of Fernelius, who places Sensation in the *Pia Mater*, that encompasses the Substance of the Brain; or that of Descartes, who places it in the Pineal Gland: it suffices that there is some such Part.

Since then the Imagination only consists in a Power which the Soul has of forming Images of Objects, by impressing them on the Fibres of the Brain, it follows, that the larger and more distinct the Vestigia, or Tracks of the animal Spirits, which are the Lines or Strokes, as it were, of those Images, are, the more strongly and distinctly the Soul imagines those Objects. Now as the Breadth, Depth, and Cleanness of the Strokes of a Graving depend on the Force wherewith the Graver acts, and the Obedience which the Copper yields; so the Depth and Cleanness of the Tracks of the Imagination depend on the Force of the animal Spirits, and the Constitution of the Fibres of the Brain; and it is that Variety which is found in those two things, to which we owe almost all that vast Difference which we observe in Peoples Minds. Thus, on the one side are Abundance and Scarcity, Briskness and Slowness, Largeness and Smallness of the animal Spirits; and on the other hand Delicacy or Grossness, Humidity or Dryness, Stiffness or Flexibility of the Fibres of the Brain; and, lastly, a particular Relation which the animal Spirits may have with those Fibres. From the various Combinations of which Things, will result a sufficiently great Variety, to account for all the different Characters which appear in the Minds of Men: and from the same Principle flows that Difference which is observed in the same Person's Mind, at different Times, and under different Circumstances, as in Childhood, Manhood, and Old Age, in Sickness, Health, &c. See Animal Spirits. It may here be observed, that the Fibres of the Brain are much more agitated by the Impression of Objects, than by the Course of the animal Spirits; and for this reason the Soul is more affected with Objects, which it perceives by Sensation, and which it looks on as present, and capable of giving it Pleasure or Pain, than by those perceived by Imagination, which it judges to be distant. And yet it sometimes happens, that in Persons, whose animal Spirits are extremely agitated by Fastings, Waking, Drinking, a Fever, or some violent Passion, these Spirits move the inward Fibres of the Brain as forcibly as outward Objects do; so that those Persons perceive things by Sensation, which they should only perceive by Imagination; for Imagination and Sensation only differ from each other, as the greater from the less. See Father Malebranch, *Recher. de la Verité*, lib. 2.

**IMAM** or **IMAN**: A Minister in the Mahometan Church answering to a Vicar among us. The Word properly signifies Prelate, or Chief; but the Mussulmen frequently apply



apply it to a Person who has the Care and Intendancy of a Mosque, who is always there the first, and reads Prayers to the People, which they repeat after him.

The word *Imam* is also applied by way of Excellence to the four Chiefs, or Founders of the four principal Sects in the *Mahometan* Religion. Thus *Ali* is the *Imam* of the *Persians*, or of the Sect of *Schiaiens*; *Abu-baker* the *Imam* of the *Sunniens*, which is the Sect follow'd by the *Turks*. *Sapbi* or *Safi-y*, the *Imam* of another Sect, &c. The *Mahometans* don't agree among themselves about the *Imamat* or Dignity of the *Imam*. Some think it of divine Right, and attach'd to a single Family, as the Pontificate of *Aaron*. Others hold, that it is indeed of divine Right, but deny it to be so attach'd to any single Family, as that it may not be transfer'd to another. They add, that the *Imam* is to be clear of all gross Sins, and that otherwise he may be deposed, and his Dignity confer'd on another. However this be, 'tis certain that after an *Imam* has once been own'd as such, by the Mussulmen, he who denies that his Authority comes immediately from God, is accounted impious; he who does not obey him, a Rebel; and he who pretends to contradict what he says, a Fool, among the orthodox of that Religion.

IMBARGO, a Stop or Stay put upon Ships usually by public Authority.

IMBECILITY, is a State of Languor, or Decay, wherein the Body is not able to perform its usual Exercises or Functions.

IMBEZZLE, to waste, scatter and consume; as where a Person intrusted with Goods, wastes and diminishes them, he is said to *imbezzle* them.

IMBIKE, is used commonly in the same Sense as *absorb*; as where a dry porous Body takes up another that is moist.

IMBRICATED, is used by some Botanists to express the Figure of the Leaves of some Plants, which are hollow like an *Imbrex*, or Gutter Tile.

IMITATION, in Music, is where one Party imitates the singing of another either throughout the whole Piece, which is one of the Kinds of Canon, or only during some Measures, which is a simple *Imitation*. Sometimes the Motion or the Figure of the Notes, alone, is imitated; and that, sometimes even by a contrary Motion, which makes what they call a *Retrograde Imitation*. The *Imitation* differs from the *Fugue*, in regard, in the former the Repetition must be a 2d, a 3d, a 6th, 7th, or 9th, either above or below the first Voice: Whereas were the Repetition to an Unison a 4th, 5th, or 8th, it would be a *Fugue*.

IMMACULATE, without Stain or Sin: A Term much used among the *Romanists*, when speaking of the Conception of the Blessed Virgin, they call it *immaculate*: intimating that she was free from Original Sin. When the Cap is given to a Doctor of the *Sorbonne*, he is obliged to swear that he will defend the *immaculate* Conception. This was decreed by an Act of the *Sorbonne* in the 14th Century; in imitation of which, 80 other Universities made the same Order. The Military Orders in *Spain* are all solemnly obliged to defend this Prerogative of the Virgin. See *Conception*.

Congregation of the *Immaculate Conception*. In most Nunneries there is a Society of secular Maids, whose End is to honour the *immaculate* Conception: Of which they make a public Protestation every Year, and a private one every Day.

IMMANENT: A Term in Logic. The Schoolmen distinguish two kinds of Actions; the one transitory, which pass from the Agent to the Patient; the other *immanent*, which continue in the Agent.

IMMATERIAL, something devoid of Matter; or that is pure Spirit. Thus God, Angels, the Human Soul, are *immaterial* Beings. *Plato* argues the *Immateriality* of the Soul from these six Topics. 1. From its Simplicity. 2. From its Independency on the Body, which is two-fold; in its *Esse* and its *Operare*, in existing, and in acting or operating separately. 3. From its Rule and Authority over the Body. 4. From its Likeness and Similitude to God, which discovers itself in the Pleasure it enjoys in spiritual Things, in its aiming at spiritual Objects, &c. 5. From its spiritual Manner of perceiving material Objects. Lastly, From its Indivisibility, Capacity, Activity, Immortality, &c.

IMMEDIATE, that which precedes or follows some other thing without any Interposition.

IMMEDIATE, also signifies something that acts without Means, without Medium, as *immediate* Grace, an *immediate* Cause, &c. There have been great Disputes among Divines about *immediate* Grace. The question in debate was, Whether Grace acted on the Heart and Mind by an *immediate* Efficacy, independent of all external Circumstances; or, Whether a certain Assemblage and Improvement of Circumstances join'd to the Ministry of the Word, might produce a Conversion of Soul.

IMMEMORIAL, an Epithet given to the Time of Duration of any thing, whose Beginning we know nothing of: in a legal Sense, a thing is said to be of Time *immemorial*, or Time out of mind, that was before the Reign of our King *Edward II*.

IMMENSE, is that whose Amplitude or Extension no Finite Measure whatsoever, or how oft soever repeated, can equal.

IMMERSION, an Action by which any thing is plunged into Water or other Fluid. In the first Ages of Christianity, Baptism was performed by *Immersion*; by three *Immersion*s. The Custom of *Immersion* is still preserved in *Portugal*, and among the *Anabaptists* in other Parts. *Immersion*, in Pharmacy, is a Preparation of some Medicine, by letting it steep for some time in Water, in order to take some ill Faculty or Taste from it: as is done in *Rhubarb*, to moderate its Force; in *Lime*, to take away its Salt; and in *Olives*, which are preserved in Brine.

IMMERSION, in Astronomy, is when a Star or Planet is so near the Sun with regard to our Observations, that we cannot see it; being as it were envelop'd and hid in the Rays of that Luminary. *Immersion* is also the Beginning of an Eclipse of the Moon; that is, the moment when the Moon begins to be darkened, and to enter into the Shadow of the Earth. And the same Term is used with regard to an Eclipse of the Sun, when the Disk of the Moon begins to cover it. Emergence is the Term opposite to *Immersion*, and signifies the moment wherein the Moon begins to come out of the Shadow of the Earth; or the Sun begins to show the Parts of his Disk which were hid before. *Immersion* is frequently applied to the Satellites of *Jupiter*, and especially to the first Satellite; the Observation whereof is of so much Use for discovering the Longitude. The *Immersion* of that Satellite is the moment in which it appears to enter within the Disk of *Jupiter*; and its *Emergence* the moment wherein it appears to come out. The *Immersion*s are observed from the Time of the Conjunction of *Jupiter* with the Sun, to the Time of his Opposition: And the *Emergence*s from the Time of his Opposition to his Conjunction. The peculiar Advantage of these Observations, is, that during eleven Months of the Year, they may be made, at least, every other Day. The Perfection of this Theory, and the Praxis thereon, we owe to *M. Cassini*.

IMMORTAL, that which will last to all Eternity, that has in itself no Principle of Alteration or Corruption. Thus God and the Human Soul are *immortal*. *Plato* defines *Immortality*, *ἡ ἀθάνατος καὶ αἰδύνητος φύσις*, animated Essence and eternal Mansion; and proves the *Immortality* of the Soul from two kinds of Arguments; the one Artificial, the other Inartificial. Inartificial Arguments are Testimonies and Authorities, whereof he cites several, and adds in general, that all the great Men and Poets, who had any thing divine in 'em, asserted the *Immortality* of the Soul. His Artificial or proper Arguments are either speculative or practical: Of the first kind are those drawn, 1. From the simple, uniform, spiritual and divine Nature of the Soul. 2. From its infinite Capacity. 3. From its desiring and longing after *Immortality*, and its inward Horror of falling into Nothing; proving it absurd that the Soul should die, when Life is its proper and adequate Object. 4. From its rational Activity; proving that whatever has in itself a Principle of rational and spontaneous Motion, by which it tends towards some supreme Good, is immortal. 5. From the various Ideas which it has of spiritual things; particularly from the Idea it has of *Immortality*. 6. From its *Immateriality*. His practical or moral Arguments for the *Immortality* of the Soul, are drawn, 1. From the Justice of God, which can never suffer the Wicked to escape unpunished, nor the Good unrewarded after Death. 2. From that Dependence which Religion has on this Opinion, in regard, without this Persuasion there would be no Religion in the World. 3. From the Opinion which Men have, that Justice and every kind of Virtue are to be cultivated, that they may at last live with God. 4. From the Stings of Conscience, and anxious Sollicitude we are under about a future State.

IMMUNITY, a Privilege or Exemption from some Office, Duty, or Imposition: It is particularly understood of the Liberties granted to Cities and Communities. The Princes heretofore granted all kind of *Immunities* to Ecclesiastics, exempting them from all Impositions; but the Ecclesiastics of those Days were not so rich as those of ours: They gave all they had to the Poor. There is still a Privilege of *Immunity* in some Places, and especially in *Italy*, belonging to Ecclesiastical Things and Persons; these are exempted from certain Dues, and are shelter'd from the Pursuits of Justice. Tho, there are some Crimes for which they cannot plead the Privileges of *Immunity*, as premeditated Murder, &c.

IMMUTABILITY, the Condition of something that cannot change. *Immutability* is one of the Divine Attributes.



butes. There is a two-fold *Immutability* in God; a Physical and a Moral one. The Physical *Immutability* consists in this, that the Substance of God does not, nor cannot receive any Change or Alteration. His Moral *Immutability* consists in his not being liable to any Change in his Thoughts, or Designs; but that what he wills, he has will'd from all Eternity.

**IMPALED**, when the Coats of Arms of a Man and his Wife (who is not an Heiress) are borne in the same Escutcheon, they must be marshalled in Pale, i. e. the Husband's on the Right-side, and the Wife's on the Left; and this the Herald calls *Baron and Femme*, two Coats impaled. If a Man hath had two Wives, he may impale his Coat in the middle between theirs; and if he hath had more than two, they are to be marshalled on each side of his, in their proper Order.

**IMPALPABLE**, that, whose Parts are so extremely minute, that they cannot be distinguish'd by the Senses, particularly by that of Feeling.

**IMPANATION**, a Term used among Divines to signify the Opinion of the Lutherans with regard to the Eucharist; who believe, that the Species of Bread and Wine do remain, together with the Body of our Saviour, after Consecration.

**IMPARLANCE**, or *Emparlance*, is a Motion made in Court, on the account of the Demandant by the Tenant, or Declaration of the Plaintiff by the Defendant, whereby he craveth Respite, or any other Day to put in his Answer.

*Imparlance* is either general or special. Special is with this Clause, *Salvo omnibus Advantageis, tam ad Jurisdictionem Curie, quam breve & Narrationem*. General is made at large, without inserting that, or any like Charge.

**IMPASSIBLE**, that which is exempt from Suffering, which cannot undergo Pain or Alteration. The Stoics place the Soul of their Wise Man in an *impassible* imperturbable State.

**IMPASTATION**, a Work of Masonry, made of Stuc, or Stone beaten and wrought up in manner of a Paste. Authors are of opinion that the Obelisks, and the huge Antique Columns still remaining, were made some by *Impastation*, and others by Fusion.

**IMPEACHMENT** of *Waste*, comes from the French *Empeschement*, Impediment, and signifies a Restraint from committing of Waste upon Lands and Tenements. And therefore he that hath a Lease without *Impeachment of Waste*, hath by that, a Property or Interest given him in the Houses and Trees, and may make waste in them without being called to account for it.

**IMPECCABILITY**, the State of a Person who cannot sin. The Word also signifies the Grace, Privilege, or Principle which puts him out of a condition of sinning. The Schoolmen distinguish several kinds and degrees of *Impeccability*: That of God belongs to him by Nature: That of Jesus Christ consider'd as Man, belongs to him by the Hypostatical Union: That of the Blessed is a Consequence of their Condition: That of Men is the Effect of a Confirmation in Grace, and is rather called *Impeccance* than *Impeccability*; accordingly the Divines distinguish between these two, this being found necessary in the Disputes against the *Pelagians*, in order to explain certain Terms in the Greek and Latin Fathers, which without this Distinction are easily confounded.

**IMPENETRABILITY**, Quality of that which cannot be pierced or penetrated; a Property of Body which so fills up a certain Space, as that there is no room in it, for any other Body. Dr. Harris defines *Impenetrability*, the Distinction of one extended Substance from another, by means whereof the Extension of one thing is different from that of another: so that two extended things cannot be in the same place, but must necessarily exclude each other. See *Solidity*.

**IMPENITENCE**, a Hardness of Heart, which makes a Person persevere in Vice, and prevents his Repentance. Final *Impenitence* is the Sin against the Holy Ghost, which is neither pardoned in this Life nor that to come.

**IMPERATIVE**, in Grammar, is one of the Modes or Manners of Conjugating a Verb, serving to express a Commandment; as *Go, Come, &c.* In the Hebrew and other Oriental Languages, the Future Tense has frequently an *Imperative* Signification.

**IMPERFECT TENSE**, in Grammar, signifies an indefinite Time between the present and the past: as, *I taught, I heard.*

**IMPERFECT FLOWERS**, are those which have some Defects, and either want the *Petala*, the little Leaves which stand round the *Flowers*, or the like.

**IMPERFECT NUMBERS**, in Arithmetic, are those whose aliquot Parts taken together, don't make the just Number itself, but either come short of it; in which case they are called *deficient Numbers*; or exceed it, and then they are called *abundant Numbers*.

**IMPERFECT PLANTS**, among the Botanists are such as either really want Flower, and Seed, or are supposed to want them; since no Flower or Seed hath yet been discover'd to belong to the greatest part of them. These Mr. Ray distinguishes according to the Place of their Growth, into,

(1.) *Aquatics*, or such as grow in the Water: and that either, 1. In the Sea, and then they are called *Marine Plants*; and those are either of an hard and stony Consistence, as the Corals, Corallines; or Porous, that is, of a more soft and herbaceous one. Of these some are like Herbs, and are of two kinds; the greater, which are Cauliferous, as the Fucus; the lesser, as the Alga: the others are more of the Muscus, or Fungus Appearance, as the Spongia. 2. *Fresh Water Plants*, and those have either no Leaves, but are Capillaceous, as the *Conservæ*; or their Leaves divided into three Parts, as the *Lens Palustris, Lenticula*.

(2.) Such *imperfect Plants* as grow in dry Ground, he divides into, First, Such as have Substance, either woody or fleshy; and these have scarce any thing common to the *perfect Plants*, neither the green herbaceous Colour, nor the Texture of Herbs, nor Flower, Seed, nor Leaf, properly speaking, as all the Fungi, which are, 1. Such as grow on Trees, and therefore called *Arboreous*, as the *Fungus Laricis*, called Agarick, and the *Fungus Sambuci*, which we call Jews-Ear. 2. *Terrestrial*, and these are either Cauliferous, with Heads either lamellated, or porous underneath, or without Stalks, as the *Pezize* of Pliny, and *Fungus Pulverulentus, Crepitus Lupi*, or common Puff-Balls. 3. *Subterraneous*, as the *Tubera Terre*, or Truffles. Secondly, Such as have a more soft and dry Consistence, and more like that of Herbs; of which some are both cauliferous and branched, as the *Musci*, or Mosses: Others are without Stalks, adhering like a Crust to the Surface of the Earth, Stones, Trees, or Wood; as the *Lichen Terrestris* and *Arboreus*.

**IMPERIAL**, something belonging to the Empire; thus we say, his *Imperial Majesty*, the *Imperial Crown*, &c.

*Imperial Cities* in Germany are those which own no other Head but the Emperor. These are a kind of little Commonwealths, the chief Magistrate whereof does Homage to the Emperor, and pays him the *Roman Month*; but in other respects, and in Administration of Justice, he is Sovereign. *Imperial Cities* have a Right of Coining Money, and of Keeping Forces and fortified Places. Their Deputies assist at the *Imperial Diets*, where they are divided into two Branches, that of the *Rhine*, and that of *Swabia*. There were formerly 22 in the former, and 37 in the latter; but there are now only 48 in all.

*Imperial Chamber* is a Sovereign Court, establish'd for the Affairs of the immediate States of the Empire.

*Imperial Diet*, is an Assembly or Convention of all the States of the Empire. It is usually held at *Ratisbon*; where the Emperor, either in Person, or by his Commissioner, the Electors, Secular and Ecclesiastical Princes, Prelates, Princesses, Counts, and Deputies of *Imperial Cities*, assist. The *Diet* is divided into three Colleges, which are those of the Electors, the Princes, and the Cities. The Electors alone form the first; the second consists of Princes, Prelates, Princesses, and Counts; and the third of the Deputies of *Imperial Cities*. Each College has its Director, who presides in the Consultations. The Elector of *Mentz* in the College of Electors; the Archbishop of *Salzburg* in that of the Princes; and the Deputy of the City of *Cologne* in that of the Cities. In the *Diet*, each Principality has a Voice, but all the Prelates (so they call the Abbots and Provosts of the Empire) have but two Voices, and all the Counts but four. Tho the three Colleges agree, yet the Emperor has a negative Voice: when he too consents, the Resolutions pass into a Law, which oblige all the States of the Empire, both mediate, and immediate.

**IMPERSONAL**, Verb in Grammar, is such an one, as is only used in the third Person Singular; as *Oportet, Licet, &c.*

**IMPERVIOUS**, expresses such a Closeness of Pores, or particular Configuration of Parts, as will not admit another thro'.

**IMPETIGO**, is a Cutaneous Foulness, divided into many kinds by the Antients; but a better Knowledge in Secrecion, and the Office of the Cutaneous Glands, has taught us the Cure of all such Disorders, without having any necessary Recourse to such Distinctions: The Itch and Leprosy take in the several kinds, from the most easy to the most obstinate degree of Infection, according to which the Means of Cure are proportioned.

**IMPETRATION**, an obtaining by Request or Prayer; this Word is used in our Statutes for the pre-obtaining of Benefices and Church-Offices in *England* from the Court of *Rome*, which did belong to the Disposal of the King and other Lay-Patrons of the Realm; the Penalty whereof was the same with Provisors, 25 E. 3.



**IMPING**, is a Term used in Falconry, and signifies the inserting of a Feather in the Wing of a Hawk, in the place of one that is broke.

**IMPLANTATION**: One of the six kinds of Transplantation; used by some People for the Cure of certain Diseases. *Implantation* is performed by placing Plants, or at least the Roots of Plants, in a Ground prepared for that purpose, and water'd with what the Patient used to wash himself withal. By which means 'tis pretended the Disease is translated into the Plant. If the Plant happen to die before the Cure be perfected, by reason of the ill Qualities it imbibes, other Plants must be placed instead of it, and the Process be continued as in the first.

**IMPLEAD**, from the *French Plaidier*, to sue, arrest; or prosecute by Course of Law.

**IMPLEMENTS**, comes either from the *French* Word *Employer*, to employ, or the *Latin Impleo*, to fill up; and is used for all things necessary for a Trade, or the Furniture of an Household: in which Sense we frequently find it used in Wills, and Conveyances of Moveables.

**IMPLICITE**, something tacitly comprized or understood; that is, contain'd in a Discourse, Clause, or Proposition, not in express Terms, but only by Induction and Consequence. The Word is derived from the *Latin Plico*, I fold.

**IMPLY** a Contradiction; a Term used among Philosophers to signify the Object of Divine Omnipotence. Thus we say, God can do every thing that does not *imply* a Contradiction proceeding from God: By which is not meant a Respect of the Action to the Executive Power of God; for God by this Power could do whatever does not *imply* a Contradiction proceeding from this Power, which would be to say, that God can do what he can do. In that Proposition therefore is intended a Respect to the other Attributes and simple Perfections of God. Thus God can do whatever does not *imply* a Contradiction to some other of his Attributes. For instance, he cannot attest a false Religion by his Word, or by Miracle, because this is repugnant to his Goodness and Truth. But because all things that *imply* a Contradiction, cannot be said to have such a Respect to the Attributes of God; therefore we may say more generally, that those things *imply* a Contradiction, which involve a Contrariety from the Terms or Object. For there are two things requisite to the Being of any thing; the one on the side of the Agent, *viz.* a Power of Acting; the other on that of the Patient or Object, *viz.* a Non-resistance. For want of the first Condition, there are a thousand things which we cannot do; and for want of the second Condition, there are many things that God cannot do: for that which, when it is affirmed, is yet denied, is impossible.

**IMPORTATION**, is the importing or bringing in of Merchandizes from foreign Countries.

**IMPOSITION OF HANDS**, an Action by which the Evangelical Mission, and the Power of Absolving, is convey'd. *Imposition of Hands* was a Jewish Ceremony, introduced, not by any Divine Authority, but by Custom; it being the Practice among those People, whenever they pray'd to God for any Person, to lay their Hands on his Head. Our Saviour observ'd the same Custom, both when he conferred his Blessing on Children, and when he cured the Sick; adding Prayer to the Ceremony. The Apostles likewise laid Hands on those whom they bestow'd the Holy Ghost on. The Priests observed the same Custom when any one was received into their Body. And the Apostles themselves underwent the *Imposition of Hands* a-fresh, every time they entred upon any new Design. In the ancient Church *Imposition of Hands* was practised on Persons when they married; which the *Abyssinians* still observe. But this Term, which in its original Signification, is general; is restrain'd by Custom, to that *Imposition* which is practised at Ordination. *Spanheim* has written a Treatise *de Impositione Manuum*; and *Tribenhorius* and *Braunius* have done the same.

**IMPOSITION**, is also a kind of Transplantation practised for the Cure of certain Diseases. It is performed, by taking some of the implanted Spirit or Excrement of the Part affected, or of both together, and placing them in a Tree, or a Plant, between the Bark and the Wood, after which it is covered up with Mud. Instead of this, some bore a Hole in the Tree with an Auger; and shutting up the Hole again with a Tampion of the same Wood, cover it over with Mud. If 'tis desired the Effect should be lasting, a Tree is chosen that will continue long, as an Oak. If 'tis desired the Effect should be speedy, they chuse a Tree that grows fast; in which last case, the Matter serving as the Medium of Transplantation must be taken out of the Tree as soon as the Effect has followed, because the too great Alteration of the Spirit, might be some prejudice to the Patient.

**IMPOSSIBLE**, that which cannot be done: A Thing is said to be *impossible*, when it contains two Ideas which

mutually destroy each other, and which can neither be conceived, nor united together in the Mind. Thus it is *impossible* that a Circle should be a Square; because we conceive clearly that Squareness and Roundness destroy each other by the Contrariety of their Figure. There are two kinds of *Impossibilities*; the one Physical, the other Moral. A Physical *Impossibility* is that which cannot be done by the Powers of Nature. A thing is morally *impossible*, when of its own nature it is possible, but yet is attended with such Difficulties, as that all things consider'd, it appears *impossible*. Thus it is morally *impossible* that all Men should be virtuous; or that a Man should throw the same Number with three Dyes an hundred times successively.

Any thing contrary to Decency and good Sense is also said to be *impossible*, among those who reason from Moral Topics; thus the Lawyers say, *Omne turpe impossibile*: Those Conditions are *impossible*, which Sense and Decorum don't allow to be perform'd, tho in themselves very possible to those who have no regard to good Sense, &c.

**IMPOST**, in Law, is the Tribute or Tax appointed by the Prince, for such Merchandize as is brought into any Haven in his Dominions from foreign Nations: 31 *Eliz.* 5. It may be distinguish'd from Custom, in that, Custom properly signifies the Duties paid to the King for Goods shipp'd off or exported: but they are frequently confounded together.

**IMPOSTHUME**, is a Collection of Matter or Pus in any Part of the Body, either from an Obstruction of Fluids in that Part, which makes them change into such Matter; or from a Translation of it from some other Part where it is generated.

**IMPOSTS**, in Architecture, are what are sometimes called Chaptrels: being the Parts on which the Feet of Arches stand; or the Capitals of Pillars, that support Arches. These *Imposts* conform to their proper Orders. The Tuscan hath a Plinth only; the Dorick two Faces crown'd; the Ionick a Larmier, or Crown, over the two Faces, and its Mouldings may be carved; the Corinthian and Composite have a Larmier, Freeze, and other Mouldings. The Projectures of the *Imposts* must not exceed the Naked of the Pilaster. Sometimes the Entablature of the Order serves for the *Impost* of the Arch; and this looks very grand and stately. The *Impost* is a thing very essential to the Composition of the Ordonnances; inasmuch that without it, in the place where the curve Line of the Arch meets with the perpendicular Line of the Pillar, there always seems a kind of Elbow.

**IMPOTENCE**, a Want of Strength, Power, or Means to perform any thing. *Impotence* also signifies a natural Defect or Inability to Generation. The Decretals distinguish three kinds of *Impotence*, *viz.* Frigidity, Enchantment, and Inability to the Act. *Impotency* annuls Marriage. The Word is derived from the Preposition *in*, taken privatively, and *Potentia* Power.

Divines and Philosophers distinguish two kinds of *Impotency*. The one Natural, the other Moral. The first is a Want of some Physical Principle necessary to an Action, or is something absolutely defective, or that is not free, and at liberty to act; the second is only a great Difficulty, as a strong Habitude to the contrary: a violent Passion or Inclination.

**IMPRECATION**, a Curse, or Wish that some Evil may befall any one. The Antients had their Goddesses call'd *Imprecations*, in *Latin Diræ*, i. e. *Deorum Ire*, who were supposed to be the Executioners of evil Consciences. They were called *Imprecations* in Heaven, *Furies* on Earth, and *Eumenides* in Hell. The Romans own'd but three of these *Imprecations*, and the Greek two. They invoked them with Prayers and Pieces of Verses to destroy their Enemies. The Word is derived from the *Latin in* and *precor*.

**IMPREGNATION**, is the Emission of the Seed of the Male in Coition, by which the Female conceives, or becomes with young. It is also, hence, figuratively used in Pharmacy, when a Liquor imbibes the Juice of some other Body: Thus a Menstruum is said to be impregnated with a Body dissolved in it, as much as its Pores are able to receive. The Word is derived from the *Latin Impregnare*, of *Pregnans*, a Woman with Child.

**IMPRESSION**, a Term in Philosophy, apply'd to the Species of Objects, which are supposed to make some Mark or *Impression* on the Senses, the Mind, and the Memory. The *Peripatetics* tell us, that Bodies emit Species resembling them, which Species are convey'd by the exterior Senses to the common Sense. These *impressions*, or impress'd Species, being material and sensible, are render'd intelligible by the active Intellect; and when thus spiritualiz'd, are called Expressions or express Species, as being express'd from the others.

**IMPRESSION**, is also frequently used in speaking of the Editions of a Book, or of the Number of Times that they



they have been printed. Thus M. *Arnaud* assures us, there were above 200 *Impressions* of the *Lovain Bible* in one Age; and 'tis affirm'd, that *Thomas à Kempis* of the *Imitation of Christ*, has undergone more *Impressions* than there have been Months since it was first compos'd. *Impression*, however, differs from Edition. *Impression*, properly speaking, takes in no more, than what belongs to the Printing, the Letter, Paper, Margin, Page, Distances of Words and Lines, and the Disposition of every thing that may have a good or bad Effect on the Eye. Edition, besides all this, takes in the Care of the Editor, who revised the Copy, corrected or augmented it, adding Notes, Tables, and other like things, which he judg'd might contribute towards making the Book more useful, and correct. Indeed very frequently the word Edition only refers to this latter part; as when, in speaking of the Works of *St. Augustin*, we quote the Edition of *Erasmus*, the *Lovanists*, *Benedictins*, &c. where we have no regard to the Printing Part, but only to the Care and Pains of the Editors.

**IMPROPER FRACTIONS**, are such as have their Numerators equal to, or greater than their Denominators; as  $\frac{4}{3}$ ,  $\frac{11}{7}$ , &c. which, properly speaking, are not *Fractions*, but either whole, or mixed Numbers; and are only put into the Form of *Fractions*, in order to be added, subtracted, multiplied, or divided, &c. See *Fractions*.

**IMPROPRIATION** is a Term used where the Profits of an Ecclesiastical Benefice are in the hands of a Layman: As Appropriation is the Term when it is in the hands of a Bishop, College, &c. tho' these two are often now used promiscuously; there are said to be 3845 *Improprations* in *England*.

**IMPROPRIETY**, Quality of something that is not fit or proper. Grammarians observe three kinds of Faults in Language, a Solæcism, a Barbarism, and an *Impropriety*. An *Impropriety* is committed when a Word is used that is not proper, or that has not a suitable Signification.

**IMPULSIVE**, a Term in Philosophy, applied to the Action of a Body that impels or pushes another; as the Arm is said to give an impulsive Motion to the Stone that it throws. Sir I. *Newton* accounts for most of the Phenomena of Nature from attractive and *impulsive* Powers.

**IMPUTATION**, a Term much used among Divines, sometimes in a good, and sometimes in an ill Sense; in the latter it is used to signify the Attribution of a Sin committed by another. Thus the *Imputation* of *Adam's* Sin is made to all his Posterity; all his Descendants, by his Fall, becoming criminal in the sight of God, as if they had fallen themselves, and bearing the Punishment of his first Crime. *Imputation*, when used in a good Sense, signifies the *Imputation* of another's Justice or Merit. Thus the Justice of Jesus Christ is imputed to us, his Merits and the Price of his Sufferings being applied to us: So that the *Imputation* of the Merits of Christ signifies no more among the Reformed, than an extrinsec Justice, which does not make us truly just, but only appear so, which hides our Sins, but does not efface them. For this reason those of the *Romish* Communion decline the Use of the word *Imputation*, and assert that the justifying Grace, which applies to us the Merits of Jesus Christ, not only covers our Sins, but also effaces them; that this Grace is intrinsic and inherent, renewing entirely the inward Man, and renders him pure, just, and without spot before God, and that this Justice is given him on account of the Justice of Jesus Christ, that is, by the Merits of his Death and Passion. In a word, say they, 'tis the Obedience of Jesus Christ that has merited justifying Grace for us, yet it is not the Obedience of Jesus Christ that renders us formally just: And in like manner 'tis not the Disobedience of *Adam* that makes us formally Sinners, but 'tis this Disobedience that has merited for us, both that we should be Sinners, and that we should undergo the Punishment of Sin. The Protestants say, that the Sin of the first Man is imputed to his Descendants; they being looked on as culpable, and punished as such, because of the Sin of *Adam*. The Catholics hold, that this is not enough; we are not esteemed and punished as Criminals, say they, but we are actually criminal ourselves by original Sin. Again, the Protestants say, that the Justice of Jesus Christ is imputed to us, and that our Justification is no more than the *Imputation* of that of Christ; his Sufferings standing instead of ours, and God accepting his Death as a Satisfaction in lieu of our own. But the Catholics teach, that the Justice of Christ is not only imputed, but actually communicated to the Faithful, by the Operation of the Holy Ghost: So that they are not only reputed just, but also made so.

**INACCESSIBLE** Height, or Distance, is that which cannot be measured, by reason of some Impediment in the way, as Water, &c. See *Height*.

**INACTION**, Cessation of Action, a Term much in use in the mystical Divinity; by which is understood a Privation of Motion, or an Annihilation of all the Faculties; by which

the Door is, as it were, shut to all external Objects, and a kind of Extasy is procured, during which God speaks immediately to the Heart. 'Tis this State of *Inaction* that is the most proper for receiving the Holy Spirit, and in this Fit of Dozing, it is that God communicates sublime and ineffable Sentiments and Graces to the Soul. Some don't make it consist in this stupid kind of Indolence, or general Suspension of all Sensation. They say that by *Inaction* they only mean a Cessation of Desires, in which the Soul does not determine itself to certain positive Acts, nor does it abandon itself to useless Meditations, or the vain Speculations of Reason; but demands in general every thing that may be agreeable to God, without prescribing any thing to him. This latter is the Doctrine of the antient mystic Divines; and the former, that of the modern ones, or Quietists. In general, however, it may be said, that *Inaction* is not the most likely way of pleasing God; 'tis our Actions chiefly by which we are to gain his Favour: he will have us to act, so that *Inaction* cannot be agreeable to him.

**INACTIVITY** of Matter. See *Vis Inertia*.

**INADEQUATE** Idea, is a partial or incomplete Representation of any thing to the Mind. See *Adequate Idea*.

**INALIENABLE**, that which cannot be validly alienated, or made over to another; thus the Dominions of the King, the Church, Minors, &c. are *inalienable*, unless it be with a Reserve of the Right of Redemption, for ever.

**INANIMATE**, a Body that has lost its Soul, or that is not of a Nature capable of having any. Thus a dead Man is an *inanimate* Lump, and Metals are *inanimate* Bodies. The word is derived from the Latin Preposition *in* taken privatively, and *Anima*, Soul.

**INANITION**, a Term in Physic, signifying Emptiness, or the State of the Stomach, when it is empty, and needs Food. There are Flatuosities which proceed from Repletion, and others from *Inanition*, which last are the more dangerous.

**INARTICULATE**, an Epithet applied to such words as are not pronounced distinctly.

**INAUGURATION**, the Ceremony performed at the Coronation of an Emperor or King, or the Consecration of a Prelate; so called, in imitation of the Ceremonies used by the *Romans*, when they were received into the College of Augurs. The word comes from the Latin *Inauguratio*, *inaugurare*, which signifies to dedicate a Temple, or to raise any one to the Priesthood, having, in order to that, first taken Auguries.

**INCA**, or **YNCA**, the Name which the Natives of *Peru* give to their Kings, and Princes of the Blood. The Chronicle of *Peru* relates the Origin of the *Incas*, and says, that this Country had been a long time the Theatre of all sorts of Wars, horrible Crimes, and Diffensions, till at length appeared two Brothers, the one called *Mangocapa*, of whom the *Indians* use to tell Wonders; he built the City of *Cusco*, settled Laws and Policy, and taught them to adore the Sun; and he and his Descendants took the Name of *Inca*, which, in the Language of *Peru*, signifies King, or Great Lord. They grew so powerful, that they made themselves Masters of the whole Country, from *Pasto* to *Chili*, 1300 Leagues long, and held it till the Divisions between *Inca Guascar*, and *Atabalipa*; which the *Spaniards* laying hold of, made themselves Masters of *Peru*, and put an end to the Empire of the *Incas*. They do but number twelve of these *Incas*. 'Tis said the most considerable among the Nobles of the Country, still bear the Name of *Inca*.

**INCALESCENCE** denotes the growing hot of any thing by Motion and Friction, or as Quick-lime does, by pouring Water on it, &c. from *in* and *calco*, to grow warm.

**INCAMERATION**, a Term used in the Apostolical Chancery, signifying the Union of some Land, Right, or Revenue to the Dominion of the Pope. The word is derived from the Latin *in*, and *Camera*, Chamber.

**INCANTATION**, Enchantment, Words and Ceremonies used by Magicians to raise Devils; or rather to abuse the Simplicity of the People. The word is derived from the Latin, *in*, and *canto*, I sing.

**INCAPACITY** in Matters of Benefices, among the *Romanists*, &c. is of two kinds; the one renders the Provision of a Benefice null in its Original; the other is accessory, and annuls the Provisions, which at first were valid. *Incapacities* of the first kind, are the want of a Dispensation for Age in a Minor, for Legitimation in a Bastard, for Naturalization in a Foreigner, &c. Of the other kind, are grievous Offences and Crimes, the being concerned in seeing a Sentence of Death executed, &c. which vacate the Benefice to all intents, or render the holding it irregular.

**INCARNATION**, in Divinity, signifies the Union of the Son of God with the Human Nature. The Mystery by which Jesus Christ, the Eternal Word, was made Man, in



in order to accomplish the Work of our Salvation. The *Indians* own a kind of Trinity in the Godhead, and say, that the second Person thereof, has been incarnate nine times, and will be incarnate a tenth, and give him a different Name in each of these Incarnations. See *Kercher. China Illust.* The *Æra* used among Christians, whence they number their Years, is the time of the Incarnation. This *Æra* was first established by *Dionysius Exiguus* about the beginning of the 6th Century, till which time the *Æra* of *Dioclesian* had been in use. Some time after this, it was considered, that the Years of a Man's Life were not numbered from the time of his Conception, (as was done in that *Æra*) but from that of his Birth: which occasioned them to postpone the beginning of this *Æra*, for the space of one Year, retaining the Cycle of *Dionysius* entire, in every thing else. At *Rome* they reckon their Years from the Incarnation, or from the Birth of Christ, that is, from the 25th of December, which Custom has obtained from the Year 1431. In *France*, *England*, and several other Countries, they also reckon from the Incarnation; but then they differ from the others in the Day of the Incarnation, fixing it not to the Day of the Birth, but to the Conception of our Saviour. However, the *Florentines* stick to the Day of the Birth, and begin their Year from Christmas. See *Petav. de Doct. Temp. Grædamicus de Die Nat.*

INCARNATION signifies the healing and filling up Ulcers and Wounds with new Flesh; and the Medicines which effect this, are commonly called *Incarnatives*, from *in* and *caro*, *Flesh*.

INCARNATIVE, in *Chirurgery*, is something that makes *Flesh* grow, rejoin, or unite, and is applied to Remedies, Bandages, and Sutures. An *incarnative* Remedy is such a one as makes the *Flesh* heal and unite; an *incarnative* Bandage, is a Fillet, with an Eye or Noose at one end of it, so as the other end may be put thro' it. To make use of this Bandage, they apply the middle of it to the Side opposite to the Wound, so that the Aperture may be over the Wound itself; and slipping the other end thro' it, draw the Lips of the Wound close to each other, that they may grow together. An *incarnative* Suture, is such a one as, by rejoining the Lips of a Wound, and keeping them together, by means of a Thread drawn thro' them with a Needle, occasions them to grow up and heal.

INCARTATION, in *Chymistry*, is a Purification of Gold, by means of Silver and *Aqua-Fortis*.

INCENSE, an aromatic, odoriferous Resin. It distils from a Tree, that, according to *Theophrastus*, has Leaves like those of a Pear-Tree, and grows in the Country of *Saba*, in *Arabia Felix*, called by the Antients *Tburifera*, Incense-bearing. The Incision for the Resin to ooze out at, is made in the Dog-Days. The Male *Incense* is the best; it is in round, in white drops, fat within, and inflames immediately, when laid on the Fire. This is also called *Olibanum*. The Female *Incense* is softer, and more resinous, but of less Virtue than the former. *Incense* is of considerable Use in Physic, it warms, dries, and binds. It is used in several Diseases of the Head and Breast, in case of Vomiting, a Diarrhæa, or a Dysentery; externally it is used to fortify the Brain, and in healing of Wounds.

Bark of *Incense*, is the Bark of the Tree whence the *Incense* flows, which has the same Qualities with the *Incense* itself. There is another Bark brought from the *Indies*, called also *Bark of Incense*, and sometimes *Jews Incense*, in regard the *Jews* make frequent Use thereof in their Perfumes.

Manna of *Incense*, is the Flower or Farina of *Incense*, occasioned by the Friction of the Grains against each other in the Sacks wherein they carry it. There is also a Soot of *Incense*, which is a Preparation of it.

*Incense* was formerly burnt in the Temples of all Religions, to do honour to the Divinities that were there adored. Many of the Primitive Christians were put to death, because they would not offer *Incense* to Idols. In the *Romish* Church they still retain the Use of *Incense* in many of their Ceremonies, particularly at solemn Funerals, bestowing it on such Persons as they would honour, as on Prelates, &c. and sometimes also on the People. The word comes from the *Latin*, *incensum*, burnt; taking the Effect, for the Thing itself.

INCEPTIVE, a Word used to express such Moments, or first Principles, which tho' of no Magnitude themselves, are yet capable of producing such. Thus a Point hath no Magnitude itself, but is *inceptive* of a Line which it produceth by its Motion. A Line, considered one way, has no Magnitude as to Breadth, but is capable, by its Motion, of producing a Surface which hath Breadth, &c.

INCEST, a Crime committed by Persons having to do with each other, who are related in a Degree prohibited by the Laws of the Country. Some are of opi-

nion that Marriage ought to be permitted between Kinsfolks, to the end that the Affection, so necessary in Marriage, might be heightened by this double Tye; and yet the Rules of the Church have formerly extended this Prohibition even to the seventh Degree, but time has brought it down to the third or fourth Degree. The words *Adultery* and *Incest* are not infamous and indecent, tho' they signify very infamous things; because they represent them as covered with a Veil of Horror, which makes us look on them only as Crimes: the words, therefore, rather signify the Crime of those Actions, than the Actions themselves. Most Nations look on *Incest* with Horror, *Persia* alone excepted. In the History of the ancient Kings of that Country, we meet with Instances of the Brother's marrying the Sister: the Reason was, because they thought it too mean to join in Alliance with their own Subjects, and still more so, to have married into the Families of any foreign Princes.

INCEST, SPIRITUAL, is a Crime committed, in like manner, between Persons who have a spiritual Alliance, by means of Baptism or Confirmation. *Spiritual Incest* is also understood of a Vicar, or other Beneficiary, who enjoys both the Mother and the Daughter; that is, holds two Benefices, the one whereof depends on the Collation of the other. Such a *Spiritual Incest* renders both the one and the other of those Benefices vacant.

INCESTUOUS, the Name of a Sect that arose in *Italy* about the Year 1065. It had its Beginning at *Ravenna*; the Learned of which Place being consulted by the *Florentines* about the Degrees of Affinity which prohibit Marriage, made answer, that the seventh Generation, mentioned in the Canons, was to be taken on both sides together; so that four Generations were to be reckon'd on one side, and three on the other. They proved this their Opinion by a Passage in *Justinian's* Institutes, where 'tis said, That a Man may marry his Brother's or Sister's Granddaughter, though she be but in the fourth Degree: Whence they concluded, that if my Brother's Grandchild be in the fourth Degree with respect to me, she is in the fifth with respect to my Son, in the sixth with respect to my Grandson, and in the seventh with respect to my great Grandson. *Peter Damian* wrote against this Opinion, and Pope *Alexander II.* condemn'd it in a Council held at *Rome*.

INCH, is a known Measure, the twelfth Part of a Foot, containing the Space of three Barley Corns in length.

Goods are said to be sold by *Inch of Candle*, when a Merchant, or Company of Merchants, as the *East-India* Company, &c. having a Cargo of Foreign Goods arrived, are inclined to make a speedy Sale of them; in which case, notice is usually given upon the *Exchange* by Writing, and elsewhere, when the Sale is to begin: against which time the Goods are divided into several Parcels, called Lots, and Papers printed of the Quantity of each, and of the Conditions of Sale, as that none shall bid less than a certain Sum more than another has bid before. During the time of Bidding, a small Piece of about an *Inch* of Wax-Candle is burning, and the last Bidder, when the Candle goes out, has the Lot or Parcel exposed to Sale.

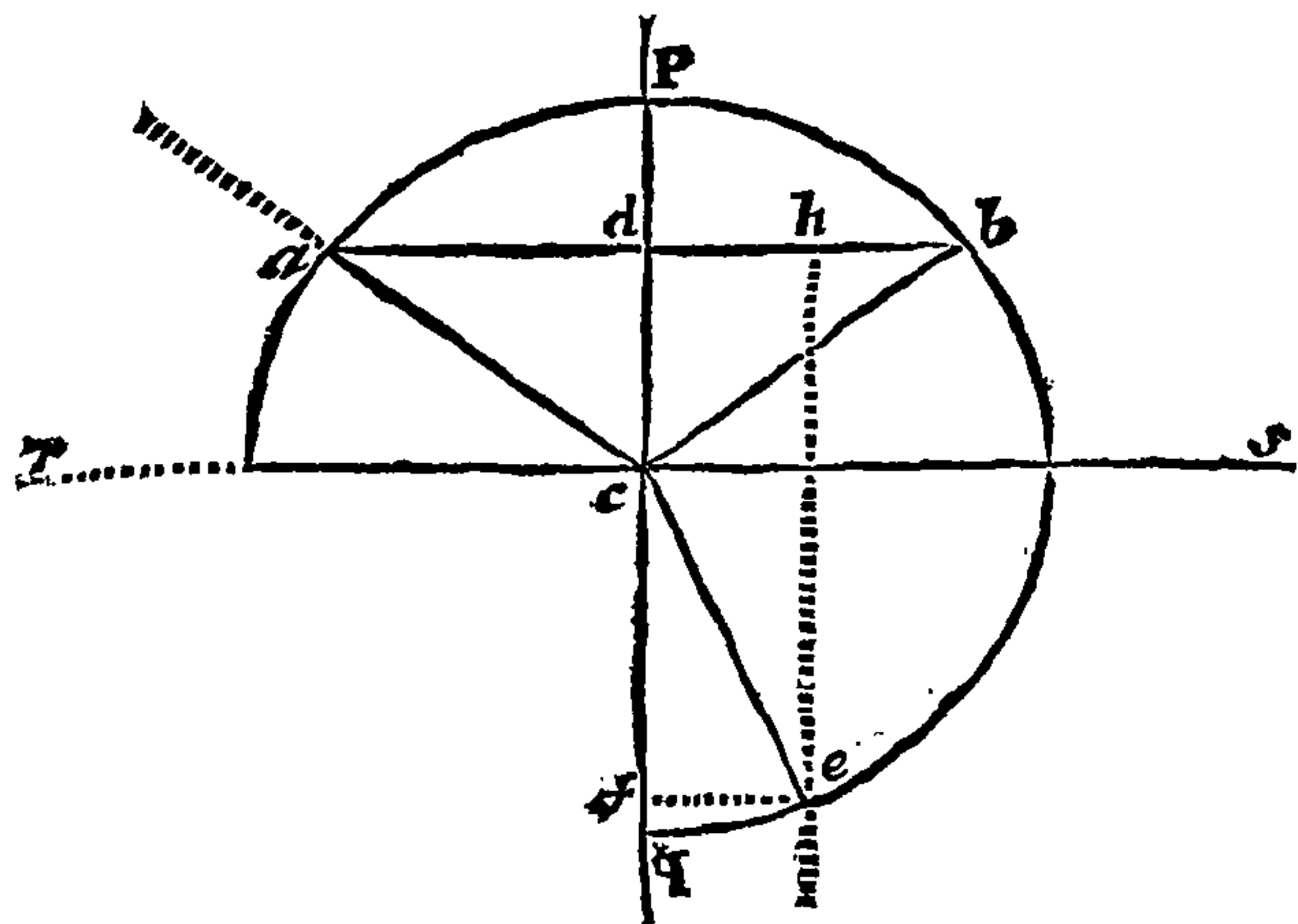
INCHOATIVE, a Term signifying the Beginning of a Thing or Action. *Inchoative* Verbs, according to the strict Rules of the *Latin* Tongue, are used by the best Authors indifferently with Primitives, having almost all the Tenses in common with them; nay, ordinarily they express our Sentiments with more Violence, and the Actions themselves in a more perfect State.

INCIDE. Those Medicines are said to *incide*, which consist of pointed and sharp Particles, as Acids, and most Salts; by the Force or Insinuation of which, the Particles of other Bodies are divided from one another, which before cohered. And thus some expectorating Medicines are said to *incide*, or cut the Phlegm, when they break, it so as to occasion its Discharge.

INCIDENCE, expresses the Direction with which one Body strikes upon another, and the Angle made by that Line, and the Plane struck upon, is called the *Angle of Incidence*. In the Occursions of two moving Bodies, their *Incidence* is said to be perpendicular or oblique, as their Directions or Lines of Motion, make a strait Line, or an oblique Angle at the Point of Contact. Besides what is said under *Angle of Incidence*, (which see) Sir *Isaac Newton* saith in his *Opticks*, That the Sine of *Incidence* is either accurately, or very nearly in a given Ratio to the Sine of Refraction: (And the Angles of *Incidence*, Reflexion, and Refraction, are all in one and the same Plane.) Wherefore if that Proportion be known in any one Inclination of the incident Ray, it is known in all; and thereby the Refraction in all Cases of *Incidence* on the same Refracting Body, may be determined. Thus if the Refraction be made out of Air into Water, the Sine of *Incidence* of the Red Light, is to the Sine of Refraction, as 4 to 3. If out of Air into Glass, the Sines are as 17 to 11. In Light



Light of other Colours, the Sines have indeed other Proportions; but the Difference is so little, that it need seldom be consider'd. As for example; Let  $rs$  (in the Figure) be the Surface of the still Water,  $c$  the Point of Incidence, in which any Ray coming in the Air from  $a$  in the Line  $ac$ , is reflected or refracted: To know whither this Ray shall go after such Reflexion, or Refraction; on the Sur-



face of the Water  $rs$ , and in the Point  $c$ , erect the Perpendicular  $cp$ , and produce it downwards to  $q$ . Knowing therefore that the Ray after Reflexion or Refraction will be found somewhere in the Plane of the Angle of Incidence  $acp$  produced; let fall the Sine of that Angle (viz.  $ad$ ) on the Perpendicular  $pc$ ; and then if the Reflected Ray be sought, produce  $ad$  to  $b$ , so that  $db = ad$ , and draw  $cb$ , which shall be the reflected Ray, because the Angle of Reflexion, and its Sine, are equal to the Angle and Sine of Incidence, as they ought to be. But if the refracted Ray be sought, produce  $ad$  to  $b$ ; so that  $db$  may be to  $ad$ , as the Sine of the Refraction, to that of Incidence: that is, as 3 to 4. Then with the Radius  $ac$  describing the Circle  $abe$ , and in the Plane  $acp$ ; draw the Line  $be$  parallel to  $pq$ , and cutting the Circumference in  $e$ : Then drawing  $ce$ , That shall be the refracted Ray. For if  $ef$  be let fall perpendicularly on the Line  $pq$ , it shall be the Sine of the Angle of Refraction of the Ray  $ce$ ; and this Sine is equal to  $db$ , and consequently in proportion to the Sine of the Angle of Incidence  $ad$ , as 3 to 4.

**Incidence Point**, in Opticks, is that Point in which a Ray of Light is supposed to fall on a Piece of Glass.

**INCIDENT**, an Event or particular Circumstance. *Incident*, in a Poem, is an Episode or particular Action, tack'd to the principal Action, or depending on it. Thus a good Comedy is full of agreeable *Incidents*, which divert the Spectators, and form the Intrigue. The Poet ought always to make choice of such *Incidents* as are susceptible of Ornaments suitable to the Nature of his Poem. The Variety of *Incidents* well conducted make the Beauty of an Heroic Poem, which ought always to take in a certain number of *Incidents* to suspend the Catastrophe, that would otherwise break out too soon.

**INCINERATION**, in Chymistry, is the Reduction of Vegetables into Ashes; which is done by burning them gently. Thus Fern is reduced into Ashes for the making of Glass. The Word is derived from the Latin Preposition *in*, and *Cinis*, Ashes.

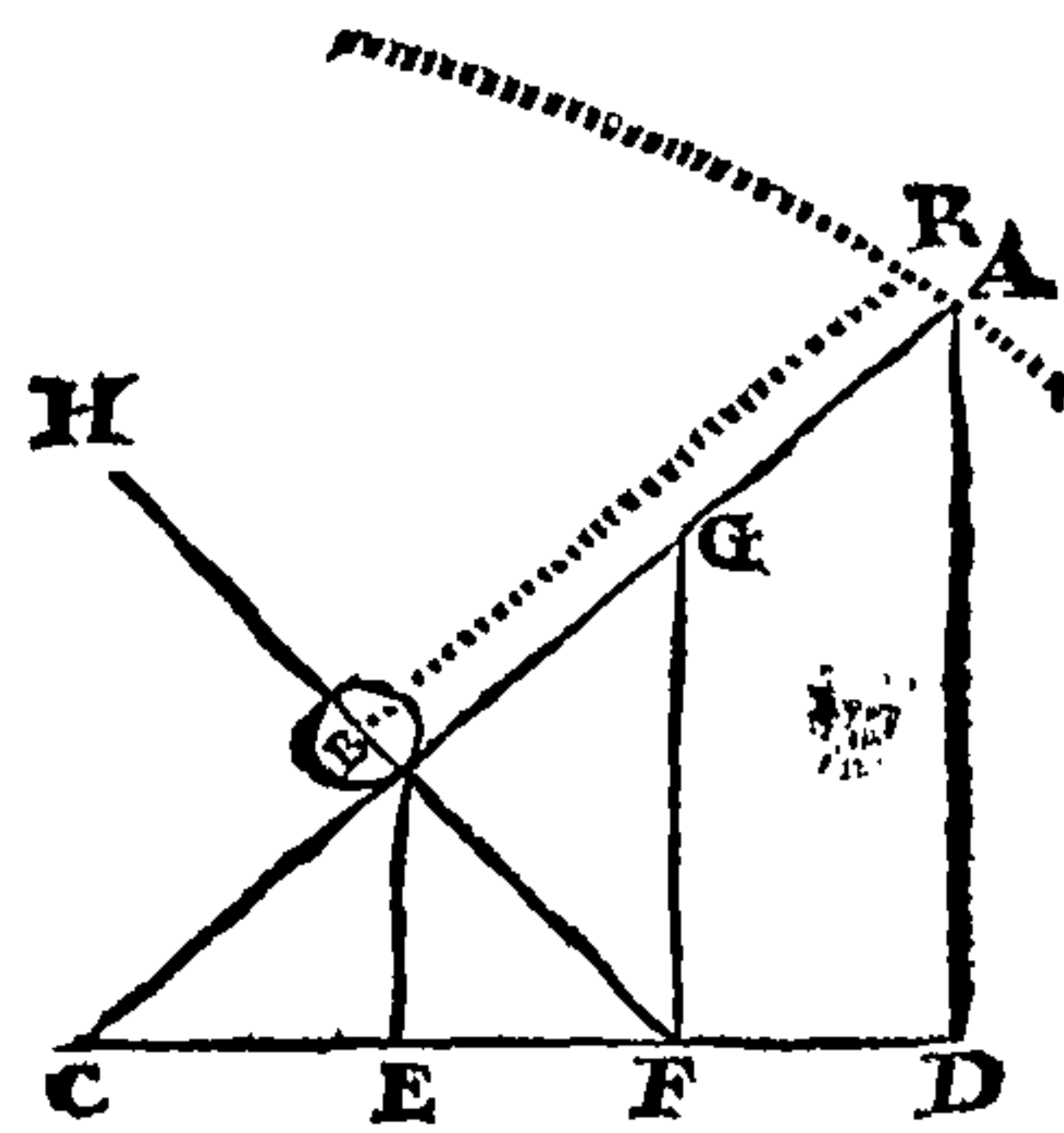
**INCISIVE**, in Anatomy, is understood of several Teeth, a double Muscle, and certain Orifices belonging to those Teeth. The *incisive* Teeth, *Incisores* or Cutters, sometimes also called *Risores*, because they show themselves in Laughing, are eight in number, four in each Jaw, situate in the Fore-side, and in the middle of the others. They are shorter and sharper than the others, and are inserted into their *Alveoli* by a single Root or Twang; for which reason they fall easily, especially those of the upper side. They are called *incisive*, because their Office is to cut or incise the Meat. The first proper Muscle of the upper Lip has also the Epithet of *incisive*, because it has its Origin in the Bone of the upper Jaw, near the Place of the *incisive* Teeth; hence it passes, and is inserted into the upper Lip, which it serves to draw up. The maxillary Bones have four internal Orifices, two whereof are called *incisive*, as being directly under the *incisive* Teeth.

**INCLINATION**, a Term used in Medicine and Chymistry, when a clear Liquor is poured off from some Feces, or Sediment, by only gently sloping the Vessel; which is also called Decantation.

**INCLINATION**, in Physics, expresses the mutual Approach or Tendency of two Bodies, Lines, or Planes towards one another; so that their Directions make either a Strait Line at the Point of Contact, or an Angle of a

greater or lesser Magnitude. What the *Angle of Inclination* signifies in Opticks, see in *Angle of Incidence*. The *Inclination* of two Planes is the acute Angle made by two Lines drawn one in each Plane, and perpendicular to their common Section. *Inclination* of the Axis of the Earth is the Angle which it makes with the Angle of the Ecliptick; or the Angle between the Planes of the Equator and Ecliptick. *Inclination* of a Planet is an Arch of the Circle of *Inclination*, comprehended between the Ecliptick, and the Place of a Planet in his Orbit. *Inclination* of a Plane in Dialling, is the Arch of a vertical Circle, perpendicular to both the Plane and the Horizon, and intercepted between them. To find this, take a Quadrant and apply its side to the side of a Square, and apply the other side of your Square to your Plane; if the Plumbet fall parallel to the side of the Square, then draw an Horizontal Line, whereon erect a Perpendicular, and apply your Square to that Perpendicular; and if the Plumbet falls parallel to the side of the Square, then that is also a level Line, and your Plane stands horizontally: If the Plumbet falls not parallel to the side of the Square, then turn your Square, until it does, and draw an horizontal Line, on which erect a Perpendicular, to which apply your Square, and observe what Angle your Plumbet makes on the Quadrant, with the side of the Square; that is, the Angle of the *Inclination* of the Plane. *Inclination* of a Ray in Dioptricks, is the Angle which this Ray makes with the Axis of Incidence in the first Medium, at the Point where it meets the second Medium. *Inclination* of a Right Line to the Plane is the acute Angle, which this Right Line makes with another Right Line drawn in the Plane thro the Point where the inclined Line intersects it, and thro the Point, where it is also cut by a Perpendicular drawn from any Point of the inclined Lines. *Inclinations* of the Planes of the Orbits of the Planets to the Plane of the Ecliptick, are thus. Saturn's Orbit makes an Angle of 2 Degrees 30 Minutes. Jupiter's 1 Degree, and  $\frac{1}{2}$ . Mars's little less than 2 Degrees. Venus's is 3 Degrees and  $\frac{1}{2}$ . Mercury's is almost 7 Degrees.

**INCLINED PLANE**. Besides what has been said under *Descent* of heavy Bodies upon *inclined Planes*, it may be here added: If a Body as  $B$  be partly supported by the *inclined Plane*  $AC$ , and partly by the Power  $R$  acting on a Direction parallel to the Plane  $AC$ ; then that Power  $R$  is to the Body, or Weight  $B$ : as the Sine of the Angle of the Plane's Inclination  $ACB$ : is to the Radius  $CA$ .  $CD$ ,  $AD$ ,  $GF$ ,  $ED$ , and  $HF$ , being drawn, as in the Figure; the Body  $B$  will be sustained, as it



were, by three Forces, or Powers, all acting according to different Directions, and in Equilibrio one to another. The first of which is the Force of Gravity, expressed by  $BE$  perpendicular to the Horizon  $CD$ . The second the Power  $R$ , according to the Direction  $BR$  parallel to the Plane  $AC$ . And the third is supplied by the Resistance or Contraintence of the Plane  $AC$ ; and is expressed by  $BH$  perpendicular thereunto. For Action and Reaction being equal, and one acting directly contrary to the other; the Plane which is pressed by the Body or Weight  $B$ , according to the Direction of the Perpendicular  $HB$ , must act on that Body by a contrary Direction, viz. that of  $FB$  or  $BH$ . And since these three Powers are all mutually in Equilibrio, and that the Body  $B$  is sustained by them, it is plain (when  $GF$  is drawn perpendicular to  $CD$ , or parallel to  $BE$ ) that the Force of Gravity will be expressed by  $GF$ ; and that the Power  $R$  will be to the Power of Gravity: as  $GB$ : to  $GF$ ; but in the Right-angled Triangle  $CFG$ , ( $FB$  being a Perpendicular to the Base  $CG$ )  $BG:GF::GF:GC$ , and as  $FG:GC::AD:AC$  (by similar Triangles) wherefore the Power  $R$  is to the Force of Gravity: as  $AD$ : to  $AC$ , or as the Sine of the Angle of Inclination to the Radius. Wherefore the Force by which any heavy Body would descend on any *inclined Plane*, to the Force of the Descent in the Perpendicular, is as the Sine of the Angle of the



*Plane's Inclination*, to the Radius. From hence also it follows, the Inclination of the *Plane* may be so little, that the greatest Weight may be sustained on it by the least Power. For practice therefore, Let the Weight of any Body be *W*, and *P* the Power wanted to sustain it on an *inclined Plane*. By this Theorem,  $R : W :: S. Incl. : P$ ; that is, As Radius is to the Weight :: so is the Sine of the Angle of the *Plane's* Inclination to the Horizon : to the Power sought. The three first of which are given, wherefore the fourth is known.

**INCOGNITO**, a Term borrow'd literally from the *Italian*, used when a Person is in any Place where he would not be known. It is particularly applied to Princes or Great Men, who enter Towns or walk the Streets without their ordinary Train, or the usual Marks of their Distinction. The Grandees in *Italy* make a common Custom of walking the Street *incognito*; and always take it amiss, on such Occasions, when People pay their Compliments to them. 'Tis not barely to prevent their being known, that they take these Measures, but because they would not be treated with Ceremony, nor receive the Honours due to their Rank. When the Horses in Princes, Cardinals, and Ambassadors Coaches have no Tassels, which they call *Fiocchi*; and the Curtains, which they call *Bandinelle*, are drawn, they are judg'd to be *incognito*; and no body that meets them is obliged to stop or make his Honours to them. The Cardinals also, when they would be *incognito*, leave off the red Hat or Calotte.

**INCOMBUSTIBLE**, that which cannot be burnt or consumed by Fire. Metals melt, Stones calcine, and are yet *incombustible*. Cloth made of *Lapis Amianthus* is *incombustible*; it is clean'd by Fire, but not burnt. See *Asbestos*. At Dole in France is an *incombustible Tower*. Gregory of Tours speaks of some wooden Kettles in his Time that bore the Fire as long as those of Iron. Sylla undertook to burn down a Tower of Wood which defended *Archelaus*, one of *Mithridates's* Lieutenants, but he could not attain his End, it being plaister'd with Alumn. 'Tis Alumn Water wherewith those People besmear themselves, who handle burning Coals, and melt *Spanish Wax* on their Tongues.

**INCOMMENSURABLE**, a Term in Geometry, used where two Lines, when compared to each other, have no common Measure, how small soever, that will exactly measure them both. So that after ever so many Repetitions and Subtractions of equal Parts, there will always remain some Part, by which the one is greater than the other. And in general, two Quantities are said to be *incommensurable*, when no third Quantity can be found that will exactly measure them both; or when those Quantities are not to one another as Number to Number, or cannot be express'd by Numbers. For every thing that may be express'd by Number, is commensurable. The Side of a Square is *incommensurable* to the Diagonal, as is demonstrated by *Euclid*; but it is commensurable in Power: the Square of the Diagonal being equal to twice the Square of the Side. *Pappus*, lib. 4. prob. 17. speaks also of *incommensurable* Angles. As to Surfaces which cannot be measured by a common Surface, they are said to be *incommensurable* in Power.

**INCOMPATIBLE**, that which cannot subsist with another without destroying it. Thus Cold and Heat are *incompatible* in the same Subject; the strongest overcomes the weakest.

**INCOMPOSITE NUMBERS**, are the same with those *Euclid* calls Prime Numbers. In Dr. Pell's Edition of *Branner's Algebra*, there is a Table of *incomposite Numbers*: It doth not only give an orderly Enumeration of all odd Numbers which are not *composite*; but it shews also, that none of the rest are so. This Table being of good use, the Reader is refer'd to it.

**INCORPORATION**, is the mixing of the Particles of different Bodies so together, as to make an uniform Substance or Composition of the whole, without leaving a possibility of discerning the Ingredients, or Bodies mixed in any of their particular Qualities. From *in* and *Corpus* Body.

**INCORPOREAL**, a spiritual Substance; that has no Body. Thus the Soul of Man is *incorporeal*, and may subsist independent of the Body. Those Ideas which are independent of Bodies, can neither be corporeal themselves, nor be received within a corporeal Subject. They discover to us the Nature of the Soul, which receives within itself what is *incorporeal*, and receives it in a corporeal Manner too. Whence it is that we have *incorporeal* Ideas even of Bodies themselves. *Tenelon*.

**INCORRUPTIBLE**, that which cannot corrupt. Thus spiritual Substances, as Angels, Human Souls, &c. and thus also Glass, Salt, Mercury, &c. may be called *incorruptible*.

**INCORRUPTIBLES**, is the Name of a Sect that sprung out of the *Eusebians*. Their distinguishing Tenet

was, That the Body of Jesus Christ was *incorruptible*; by which they meant, that after and from the Time wherein he was formed in the Womb of his holy Mother, he was not susceptible of any Change or Alteration; not even of any natural and innocent Passions, as of Hunger, Thirst, &c. So that he eat without any occasion, before his Death, as well as after his Resurrection. And hence it was that they took their Name.

**INCRASSATING**, is the rendering Fluids thicker than before, by the Mixture of less fluid Particles. See *Agglutinating*.

**INCRUSTATION**, an Ornament in Architecture, consisting of hard polish'd Stones, or other brilliant Matter disposed in Compartments in the Body of a Building. The *Incrustations* in the Castle at *Madrid* are of Pottery Work: Those in the *Louvre* of Marble. We say 'tis an *Incrustation* of Stone or Marble, when a Wall is lined with them. The Antients call'd their Plaisters *Incrustations*.

**INCRUSTED COLUMN**, is a *Column* consisting of several Pieces or slender Branches of some precious Marble, masticated or cemented around a Mould of Brick, or other Matter; which is done, not only to save the precious Stone, whether it be Agat, Jasper, or the like, but also for the sake of shewing Pieces of it of uncommon Largeness, by the Neatness and Closeness of the *Incrustation*, which renders the Joints imperceptible, where the Mastic is of the same Colour.

**INCUBATION**, the Action of a Hen, or any other Fowl, hatching their Eggs.

**INCUBUS**, or the *Night-Mare*, is the Name of a Disease consisting in an Oppression of the Breast, so very violent, that the Patient cannot speak, or even breathe. In this Disease the Senses are not quite lost, but drown'd and astonish'd, as is the Understanding and Imagination; so that the Patient seems to think some huge Weight thrown on him ready to strangle him. Children are very liable to this Distemper; so are fat People, and Men of much Study and Application of Mind: By reason the Stomach in all these finds some difficulty in Digestion. The *Incubus* seems to be Cousin-German to the Epilepsy and Apoplexy; for if it lasts long, it degenerates into one or other of those Distempers. Others reckon it a kind of Asthma, and call it *Asthma Nocturnum*, and say it proceeds from the same Causes, and is helped by the same Means as the common Asthma. The word *Incubus* is derived from the Latin *Incubare*, to lie down on any thing and press it. The Greeks called it *ἐπίδακνος*, *Saltator*, Leaper, or one that rushes on a Person.

**INCUMBENT**, in Law, is a Clerk resident in his Benefice with Cure, who is called *Incumbent* of that Church, because he ought to bend his whole Study to discharge his Cure.

**INCURVATION**, is the bending a Bone, or any other Body from its natural Shape. For *Incurvation* of the Rays of Light, see *Light* and *Refraction*. From *in* and *curvus*, crooked.

**INCUS**. See *Ear*.

**INDEFEISIBLE**, in our Law, signifies what cannot be defeated or made void: As a good and *indefeisible* Estate.

**INDEFINITE**, indeterminate, that which has no certain Bounds, or to which the Human Mind cannot conceive any. *Descartes* uses this Word, in his Philosophy, instead of infinite, both in Numbers and Quantities, to signify an inconceivable Number, or Number so great, that an Unit cannot be added to it: and a Quantity so great, as not to be capable of any Addition. Thus he says, Stars, visible and invisible, are in Number *indefinite*, and not as the Antients held, infinite; and that Quantities may be divided into an *indefinite* Number of Parts, not an infinite Number. *Indefinite* is sometimes used in the Schools to signify something that has but one Extreme; as for instance, a Line drawn from any Point, and extended infinitely: Thus what they call Eternity *à parte ante*, or Eternity *à parte post*, are *indefinite* Durations.

*Indefinite*, in Grammar, is understood of Nouns, Pronouns, Verbs, Participles, Articles, &c. that are left in an uncertain indeterminate Sense, and not fix'd to any particular Time, Thing, or other Circumstance.

**INDELIBLE**, that which cannot be blotted out, or effaced. Thus, Baptism, and the Order of the Priesthood, are *indelible* Characters. The Word is form'd from the Latin *delere*, to blot, with the Preposition *in* taken negatively.

**INDEMNITY**, an Act by which one promises to guarantee or save harmless some other Person from any Loss or Damage that might accrue to him on any particular account. From the Negative *in* and *Dammum*, Loss.

**INDEMNITIES**. When a Church is appropriated to an Abbey or College, then the Arch-Deacon loseth his Induction-



duction-Money for ever: In recompence whereof, he shall have yearly out of the Church so appropriate, one or two Shillings, more or less, for a Pension, as was agreed at the time of the appropriating: And this Pension is call'd an *Indemnity*.



**INDENTED**, is a Term in Heraldry, when the Outline of a Bordure, Ordinary, &c. is in the Form of the Teeth of a Saw. Thus

**INDENTURE**, in Law, is a Writing comprizing some Contract between two at least; being indented at top answerable to some other, which likewise containeth the same Contract. It differs from a Deed-Poll; in that this last is a single Deed, and is unindented.

**INDEPENDENTS**. The Name of a Religious Sect in England in Holland. They are so call'd, as denying not only any Subordination among their Clergy, but also all Dependency of any other Assembly. They teach, that every separate Church or particular Congregation among them has in itself radically and essentially every thing necessary for its own Government; that it has all Ecclesiastical Power and Jurisdiction; and is not at all subject to other Churches or their Deputies, nor to their Assemblies or Synods. Tho the *Independents* don't think it very necessary to assemble Synods; yet, they say, if any are held, they look on their Resolutions as wise and prudential Councils, not as Decisions to be peremptorily obey'd. They agree, that one or more Churches may help another Church with their Advice and Assistance, and even reprove it when it offends, provided they don't pretend to any superior Authority or Right to excommunicate, &c. In Matters of Faith and Doctrine, the *Independents* agree with the rest of the Reformed; so that the Difference is rather Political than Religious. During the Civil Wars in England, the *Independents* becoming the most powerful Party, and getting to the Head of Affairs, most of the other Sects that were averse to the Church of England, join'd them: Which occasion'd them to be distinguish'd into two Sects. The first are in effect *Presbyterians*, only differing from them in Matters of Discipline. The others, whom M. *Spanheim* calls *Pseudo-Independents*, are a confused Assemblage of *Anabaptists*, *Socinians*, *Antinomians*, *Familiarists*, *Libertines*, &c.

F. *Orleans* speaks of their Rise in the following Terms. ' Out of the same Sect (the *Presbyterians*) had risen some time ago, on pretence of further Reformation, a new Sect, that was not only averse to the Monarch, but the Monarchy, both which it undertook to destroy; and in lieu thereof to form a Republic----They were called by the Name of *Independents*, in regard that professing to carry the Gospel-Liberty still further than the Puritans, they rejected not only Bishops, but also Synods, pretending each Assembly ought to govern itself independently of all others; in which, said they, consists the Liberty of the Children of God. At first they were only distinguish'd among the *Presbyterians* as the more zealous from the more indifferent, the more rigid from the more remiss, by a greater Aversion to all Pomp and Pre-eminence both in Church and State, and by a more ardent Desire to reduce the Practice of the Gospel to its primitive Purity. It was their Maxim of Independence that first distinguish'd them, and render'd them suspected to the rest. But they had Address and Artifice enough to gain ground, and in effect made abundance of Proselytes out of all other Parties and Persuasions.'

**INDEPENDENTISM** is peculiar to Great Britain, the British Colonies, and the United Provinces. One *Morel* in the 16th Century endeavour'd to introduce it into France, but it was condemn'd at the Synod of *Roche*, where *Beza* presided, and again at the Synod of *Roche* in 1644.

**INDETERMINATE**, in Geometry, is understood of a quantity of Time or Place that has no certain or definite Bounds; see *Indefinite*. An *indeterminate* Problem is that, whereof there may be various Solutions. For instance, if a Number is required that may be a Multiple of 4 and 5; the Answer may be 20, 40, 60, &c. to Infinity. Mr. *Prestet* calls an *indeterminate* Analysis, that which admits of an infinite Number of different Solutions.

**INDEX**, the Fore-Finger, from *indico*, to point or direct; because that Finger is generally so used. Hence also the *Extensor Indicis* is call'd Indicator. The Greeks call it *αὐχάνη*, *Licker*; this Finger being us'd to be dip'd in Sauces, &c. in order to taste 'em; after which 'tis usually lick'd: or, as others will have it, because the Nurses use it to take up the Food wherewith they feed their Infants; first licking it, to taste whether or no it be hot.

*Index*, in Arithmetic, is the same with what is sometimes call'd the Characteristic, or Exponent of a Loga-

rithm; and shews always of how many Places the absolute Number belonging to the Logarithm doth consist, and of what nature it is, that is, whether an Integer or a Fraction: Thus, In this Logarithm 2.521293, the Number standing on the Left-hand of the Point is called the *Index*; and because it is 2, shews you that the absolute Number answering to it, consists of 3 places: for it is always one more than the *Index*, because the *Index* of 1 is 0; of 10 is 1; and of 100 is 2, &c. As in this Example:

0 1 2 3 4 5 6 7 8 9  
1 2 3 4 5 6 7 8 9

Where the upper Numbers are *Indices* to the lower, And therefore in those small Tables of Briggs's Logarithms, where the *Index* is omitted, it must be always supply'd, before you can work by them. If the absolute Number be a Fraction, then the *Index* of the Logarithm hath a negative Sign, and is marked thus, 2.562293; which shews the corresponding Number to be a Decimal Fraction of three Places; viz. 1.365. Mr. *Townly* hath a peculiar way of noting these *Indices*, when they express Fractions, and it is now much in use, viz. by taking, instead of the true *Index*, its Arithmetical Complement to 10; and therefore he would write the Logarithm now mention'd, thus, 8.562293. How they are added and subtracted, see in *Addition* and *Subtraction*.

*Index of a Globe*, is a little Stile fitted on to the North-Pole, and turning round with it, pointing to certain Divisions in the Hour-Circle. It is sometimes also call'd *Gnomon*. See *Globe*.

*Index*, or *Indice*: At Rome there is a Congregation that goes by this Name, whose Business is to examine Books, and to put such as they think fit to prohibit the reading and the selling of, into an *Index*: *Indices*, or expurgatory *Indices*, being the Name by which the Catalogues of prohibited Books are call'd; among which, however, there is this difference, that some are condemn'd purely and absolutely; and others only *donec corrigantur*, till they be corrected. Philip II. of Spain, was the first who procured an *Index* to be printed of the Books condemn'd by the Inquisition of Spain. Pope Paul IV. took the hint, and in 1559 order'd the Congregation of the Holy Office at Rome to print a second. Pius V. recommended the Matter to the Council of Trent, who made another. After this, the Duke of *Alva* procured another to be printed at Antwerp in 1571. Clement VIII. in 1596. printed a very copious one, call'd by the Name of the *Roman*. There were two others publish'd in 1583 and 1612, by the Cardinals *Guisio* and *Sandoval*, and several others by the Inquisitors and Masters of the Sacred Palace. The most considerable of all the *Indices* is that of *Sottomayor*, which was made by all the States subject to the King of Spain, and comprehends all the others; coming down as low as the Year 1667.

**INDIAN WOOD**, call'd also *Jamaica* and *Campeche Wood*, is taken out of the Heart of a large Tree growing plentifully in the Isles of *Jamaica*, *Campeche*, &c. It is used in Dying; its Decoction is very red: and it has been observ'd, that putting some of this Decoction into two Bottles, and mixing a little Powder of Alum with the one, it will become of a very beautiful Red, which will hold; the other in a day's time becoming yellow, though both Bottles were stop'd from the Air alike: and if a little of the same Decoction were exposed to the Air, it would become black as Ink in the same space of Time.

**INDICATION**, a Sign discovering or pointing out something to be done. The Physicians use the Word to signify the Invention of a Remedy proper to cure a Disease, from the Knowledge which they have of the Qualities of that Remedy. *Indication* either tends to preserve a natural sound State, which is call'd vital *Indication*, or to remove something disagreeable to Nature. The second *Indication* either relates to Sickness, and is call'd curative *Indication*; or to some antecedent Cause, in which case 'tis call'd preservative or symptomatic *Indication*. That part of Physic which treats of *Indications*, is call'd *Semeiotica*.

**INDICATIVE**, in Grammar, is the first Mode or Manner of Conjugating Verbs, shewing either the Time present, past, or future. *I love*, is the present Tense; *I loved*, the past; and *I will love*, the future of the *Indicative* Mode.

**INDICATOR**, in Anatomy, a Muscle of the Index, or second Finger following the Thumb. The *Indicator* is the first proper Muscle of the Index; and is so call'd, because it serves us to point at any thing withal. It has its Origin in the middle and hind part of the Cubitus, and is inserted by a double Tendon into the second Phalanx of the Index, and to the Tendon of the great Extensor, acting in conjunction with it, in stretching out that Finger.



**INDICTION** signifies the Convocation of an Ecclesiastical Assembly, as of a Synod or Council, and even a Diet. The word is also used of the several Sessions of the same Councils. And hence it is, that at the end of the Sessions of the Council of Trent, the Decree by which the Council appoints the Day of the future Session, is called the *Indiction* of that Session.

By *Roman Indiction* is meant an Epoche, or Manner of accounting Time used by the Romans, containing a Cycle or Revolution of fifteen Years, which when expired it returns to Unity again. This Method of Computation has no Dependence on the heavenly Motions. *Petavius* says, there is nothing in Chronology less known than the *Roman Indiction*; he means, than its Origin and Commencement. 'Tis the general Opinion it was instituted in the time of *Constantine*, but this is a mere Guess. There were *Indictions* in the time of the Emperor *Constantin*, as appears from the *Theodosian Code*. The Learned hold that the *Indictions* were no more than certain annual Taxes, the Tariff whereof was published every Year: but why they were so called, why confined to a Cycle of fifteen Years, when or on what Occasion instituted, is not known. We find three kinds of *Indictions* mentioned in Authors; the *Indiction* of *Constantinople*, beginning on the Calends of September; the Imperial or *Cæsarian Indiction*, on the 24th of September; and the *Roman Indiction*, which is that used in the Pope's Bulls, and begins on the 1st of January. The Popes have dated their Acts by the Year of *Indiction*, ever since *Charlemagne* made them Sovereign; before which time they dated them by the Years of the Emperors. At the time of the Reformation of the Calendar in 1582, was reckoned the tenth Year of the *Indiction*: So that beginning to reckon hence, and dividing the Number of Years elapsed between that time and this by 15, the Remainder will be the Year of *Indiction*, corresponding to the present Year of our Lord 1722. viz. 15. This may also be found by adding 3 to the Year of our Lord, and dividing the Sum by 15. The word *Indiction* comes from *Indictio*, which signifies Establishment, Order, or Denunciation. The Time of the *Indiction* among the Romans, was that wherein the People were summoned to pay a certain Tribute; and 'tis for this Reason that the Imperial *Indiction* began towards the end of September, because the Harvest being then got in, it was supposed the People could easily pay their Tribute.

**INDICTIVE**, an Epithet given to certain Feast-Days appointed by the *Roman Magistrates*, viz. the Consul or Prætor. See *Feria*.

**INDICTMENT**, or **ENDITEMENT**, in our common Law, signifies as much as *Accusatio* among the Civilians; tho' in some Points it differs. An *Indictment* is a Bill, or Declaration, made in form of Law for the Benefit of the Commonwealth, exhibited as an Accusation of one for some Offence, either criminal or penal, unto Jurors, and by their Verdict found to be true, and presented before an Officer that has Power to punish the same Offence. It seems to be an Accusation, because the Jury that enquireth of the Offence does not receive it, till the Party that offereth the Bill, appearing, subscribe his Name, and proffer his Oath for the Truth of it. It is always at the Suit of the King, and differs from an Accusation in this, that the Preferrer is no way tied to the Proof thereof upon any Penalty, if it be not proved, except there appear a Conspiracy. The word is derived from the French *enditer*, *indicare*, or according to Mr. Lambert, *ἐνδίκνυμι*.

**INDIGESTION**, a want of Digestion. In the System of Trituration, *Indigestion*, which is a Crudity, may be very naturally accounted for, from the Relaxation of the Fibres of the Stomach. A bilious *Indigestion*, in the Opinion of *Hequet*, a great Advocate for Trituration, is owing to too much Force in the Stomach, too much Vivacity in its Oscillations, which spoil the Digestion, by rendering the Trituration imperfect. But this is hardly satisfactory, for it should seem that Digestion would be the more perfect, in proportion as the Force of the Stomach increased. See *Digestion*.

**INDIGETES**, a Name which the Antients gave to their Gods, or at least to some of them. There are various Opinions about the Origin and Signification of this word; some pretending it was given to all the Gods in general, and others only to the Great Men whom they deified; others say it was given to such Gods as were originally of the Country, or rather such as were the Gods of the Country that bore this Name; and others again hold it was ascribed to such Gods as were Patrons and Protectors of Cities.

Those of the first Opinion maintain, that the Gods were so called by *anuphrasis*, because they wanted nothing; the word coming from the Verb *indigeo*, I want. If this were true, the word *Indigetes* would signify nearly

the same thing in Latin with the Hebrew *יְהוָה*, *Schaddai*, which the Scripture frequently gives to God, as signifying, that he is sufficient for himself, and needs nothing. Those of the second Opinion derive the word from *indigitare*, to call, invoke; it being these Gods who were ordinarily invoked, and who lent the readiest Ear to the Vows that were made them. To this purpose they cite *Macrobius*, who uses the word *indigitare* in that Sense, telling us the Vestals make their Invocations thus, *Apollo Phycian! Apollo Pæan! Vestales ita indignant, Apollo Medice! Apollo Pæan!* They add, that their Book of Prayers and Forms of Invocation were called *Indigitamenta*. Lastly, others hold *Indigetes* to be derived from *inde genitus*, or *in loco degens*, or from *inde* and *ago* for *dego*, I live, I inhabit; which last Opinion seems the most probable. In effect it appears, that these *Indigetes* were also called *Local Gods*, *Dii Locales*, or *Topical Gods*, which is the same thing. (2.) The *Indigetes* were ordinarily Men deified, who indeed were, in effect, Local Gods, being esteemed the Protectors of those Places where they were deified; so that the second and third Opinion are very consistent. (3.) *Virgil* joins *Patrii* with *Indigetes*, as being the same thing, *Geor. I. Dii Patrii, Indigetes*. (4.) The Gods to whom the Romans gave the Name *Indigetes*, were *Faunus*, *Vesta*, *Æneas*, *Romulus*, all the Gods of Italy; and at *Athens* *Minerva*, says *Servius*, and at *Carthage* *Dido*. 'Tis true we meet with *Jupiter Indiges*, but that *Jupiter Indiges* is *Æneas*, not the Great *Jupiter*; as we may see in *Livy*, l. 1. c. 3. in which last sense *Servius* assures us, *Indiges* comes from the Latin, *in Diis ago*, I am among the Gods.

**INDIGNATORIUS MUSCULUS**, that Muscle is thus called, which is supposed to draw the Eye from its inner Corner outwards, which gives an Appearance of Scorn and Anger; but this is properly a compound Motion of two Muscles: for which see *Eye*.

**INDIGO**, a Drug of a deep blue Colour, brought hither from the *West-Indies*. It is drawn from the Leaves of a Plant which the Spaniards call *Anil*, and we *Indigo*. The Method of Preparation is this. When the Plant has attained to a certain height, and its Leaves are in a good Condition, they cut them down, and throw them into a kind of Vat, covering them with Water. These they boil together for the space of twenty four hours: at the Top swims a Scum, with all the different Colours of the Rainbow. Then the Water is let off into another Vessel, where they agitate and churn it, as it were, with five or six long Poles, fitted together for that purpose. This they continue to do till the Water becomes of a deep Green, and till the Grain, as they call it, forms itself, which they discover by taking a little of it out into another Vessel, and spitting in it; for if then they perceive a bluish Dreg subsiding, they cease to beat. The Matter then precipitates of itself to the Bottom of the Vessel, and when it is well settled, they pour off the Water. After this they take out the *Indigo*, and put it into little Linen Bags, and let it drain; this done, they put it into shallow wooden Boxes, and when it begins to dry, they cut it into slices, and let them harden in the Sun.

There are several kinds of *Indigo*; the best is that called *Serquisse*, from the Name of a Village where 'tis prepared. We chuse it in flat Pieces, of a moderate thickness, pretty hard, clean, light enough to swim in the Water, inflammable, of a fine blue Colour, marked a little on the Inside with Silver Streaks, and appearing reddish when rubbed on the Nail.

*Indigo* is used among the Painters, who grind and mix it with white to make a blue Colour; for without that Mixture it would paint blackish. They mix it with Yellow, to make a Green Colour. It is also used in Dying, and by the Laundresses, to give a bluish Cast to their Linen.

In the *Hortus Malabaricus* is an Account of the Plant whence *Indigo* is drawn: The Decoction of whose Root is said to be excellent against Nephritic Cholics; its Leaves, applied to the lower Ventricle, good to promote Urine; and the *Indigo* itself of good Use in drying Tumours.

**INDIRECT** Modes of Syllogisms in Logic, are the five last Modes of the first Figure, expressed by the barbarous words *Baralipon*, *Celantis*, *Dabitis*, *Frisesomorum*. 'Tis the Conversion of the Conclusion which renders the Modes *indirect*. For instance, a Syllogism in *Darii*, and another in *Dabitis* would be perfectly alike, were it not for that Conversion; the Propositions having the same Quantity, and the same Quality, and the middle Term being the Subject in the Major, and the Attribute in the Minor in both. It remains then, that to make a Distinction, that which is the Subject of the Conclusion in *Darii*, is the Attribute in the Conclusion of *Dabitis*; and that which is the Attribute in the first, the Subject in the last.



Along-



Monasteries, and even to private Persons; and 'tis a frequent thing to have general *Indulgences* for the time of the principal Feasts of a Year. Their Casuists say, that a plenary *Indulgence* does not always prove effectual, for want of complying with the Conditions whereon it was granted.

*Indulgence*, *Indult*, or *Indulto*, signifies also a special Favour or Privilege, conferred either on a Community, or a particular Person, by the Pope's Bulls, in virtue whereof he is licensed to do or obtain something contrary to the Intention and Disposition of the common Laws. There are two kinds of *Indulto's*; the one active, which consists in a Power of nominating and presenting freely, and without reserve, to Benefices that are otherwise limited and restrained by the Laws of the Apostolical Chancery; such are those ordinarily granted to Secular Princes, Cardinals, Bishops, &c. Passive *Indulto's* consist in a power of receiving Benefices and expectative Graces; of which kind are those of a Parliament, of Graduates, and Mandatories. The *Indulto* of Kings is the Power given them of presenting to Consistorial Benefices, either by Treary, by Favour, or special Privilege. The *Indulto* of Cardinals is a Licence for holding Regular as well as Secular Benefices, in disposing of them in *commendam*, or continuing them, &c. *Indulto* of Parliament is a Right or Privilege granted to the Chancellor, Presidents, Counsellors, and other Officers in the Parliaments, to obtain a Benefice of the Collator, upon the King's Nomination directed to him. This is a kind of Advowson or Patronage belonging to the French King, the *Indulto* being a Mandate or Grace, by which he is permitted to name to any Collator he pleases, a Counsellor, or other Officer of Parliament, on whom the Collator shall be obliged to bestow a Benefice: so that the Right of the *Indulto* resides radically in the King, the Officers being only the Objects thereof. See *Dispensation*.

INDURATING, a Term applied to such Things as give a harder or firmer Consistence to others, by a greater Solidity of their Particles, or as dissipate the thinner Parts of any Matter, so as to leave the Remainder harder. Thus a Tumour is indurated, either by the Addition of earthy and solid Particles, as in *Schirri* and knotty Swellings, or by transpiring the thinner Parts thro' the Skin, whereby the Remainder grows more fixed, as in an *Oedema*.

INEQUALITY of Natural Days. See *Equation*.

INERTIE VIS. See *Vis Inertia*.

INESCATION, a kind of Transplantation, practis'd for the Cure of certain Diseases; it consists in impregnating a proper Medium or Vehicle, with some of the Mumia or vital Spirit of the Patient, and giving it to some Animal to eat. 'Tis pretended the Animal unites and assimilates that Mumia with itself, correcting it, and imbibing its vicious Quality, and by that means restoring Health to the Person whereto the Mumia belonged. If the Animal happens to die before the Cure be effected, a second Animal must be pitched on, and the Experiment repeated. Some tell us, that the Blood of the Patient well putrefied or fermented, does the Business better than any other Part. The word is derived from the privative Preposition *in*, and *esca*, Food.

INESCUTCHEON, in Heraldry, signifies all the *Escutcheons* containing  $\frac{3}{4}$  of the Field, and is borne within it, as an Ordinary. Thus, 'tis said, he beareth Ermin, an *Inescutcheon* Gules. This is also sometimes called an *Inescutcheon of Pretence*, which is borne when a Man marries an Heiress; for then he bears her Coat of Arms on an *Inescutcheon*, or *Escutcheon of Pretence*, in the middle of his own Coat.

IN ESSE, Authors make this Difference between a thing *in esse*, and a thing *in posse*; a thing that is not, but may be, they say is *in posse*, or *potentia*; but a thing apparent and visible, they say is *in esse*, that is, has a real Being *co instanti*, whereas the other is casual, and at best but a Possibility.

INFALLIBLE, that which cannot deceive, or be deceived. Upon this Term stands one of the principal Heads of Controversy between the Reformed and the Catholics. The latter of whom maintain, that the Church, assembled in General Council, is *infallible*, which the former deny. The principal Reasons they give for the *Infallibility*, are drawn from the Obscurity of the Scriptures, the Insufficiency of private Judgment, and the Necessity there is of some *infallible* Judge for the Decision of Controversy. The *Infallibility* of the Pope is a Doctrine of a late standing, and not entirely acquiesced in even in their own Communion. *Du Pin*, a Doctor of the Sorbonne, has written against it, and the late Behaviour of the Cardinal de Noailles, and the protesting Bishops, seconded by a considerable Part of the Clergy of France, shew to how low an Ebb the Pope's *Infallibility* is reduced

in that Country. The word comes from the Latin Preposition *in*, taken privatively, and *fallo*, I deceive.

INFAMOUS, in the ordinary Use of the Word, signifies something notoriously contrary to Virtue or Honour. *Aulus Gellius* uses the words *Infames Materias*, for what we ordinarily call *Paradoxes*, i. e. Discourses remote from the common Opinion; Propositions that appear opposite to Truth, &c. as the Elogy of *Thersites*; the Praise of a Quartan Ague, &c.

*Infamous*, in Law, is something void of Honour, that has no Repute or Esteem in the World. There are two kinds of *Infamy*; some being *infamous* by Right, *de Jure*; as those who have been noted by the Laws, or stigmatized by publick Judgments: Others are *infamous* in Fact, *de Facto*, as those who exercise some scandalous Profession, as a Catchpole, a Merry Andrew, a Hangman, an Informer, &c. Heretofore there were Crowns of *Infamy* given by way of Punishment to Criminals: they were made of Wooll. The word *infamous* is derived from the Latin, *in*, and *Fama*, Fame, Report.

INFANT, any Man or Woman under the Age of one and twenty Years is an *infant* in Law. An *Infant* eight Years of Age, or upwards, may commit Homicide, and be hanged for it, if it appear by any other Act that he had Knowledge of Good and Evil; for here *Malitia supplebit Aetatem*; yet Coke on *Littleton*, Sect. 405. says, *An Infant shall not be punished till the Age of Fourteen*; which, according to him, is the Age of Discretion.

INFANTE, INFANTA, a Title of Honour given to the Children of some Princes, particularly to those of the House of Spain and Portugal. It is usually said that this Title was introduced into Spain, on occasion of the Marriage of *Eleanor* of England with King *Ferdinand* of Castile, and that their Son *Sancho* was the first that bore it. But this is contradicted by *Pelagius* Bishop of Oviedo, who lived in the Year 1100, and informs us, that the Titles *Infante* and *Infanta*, were used in Spain ever since the Reign of King *Evremond II*.

INFANTRY, Troops, or Forces, consisting of Foot-Soldiers.

INFATUATE, to prepossess any one in favour of a Person or Thing that does not deserve it, so far as that he can't easily be disabused. The Romans called those infatuated Persons *Infatuati*, who fancied they had seen Visions, or imagined the God *Faunus*, whom they called *Fatuus*, had appeared to them. The word *infatuate* comes from the Latin *Fatuus*, Fool, of *fari*, to speak out, which is borrowed from the Greek *φάωμι*, whence *φῶμις*, which signifies the same with *Vates* in Latin, or Prophet in English; and the reason is, because their Prophets or Priests used to be seized with a kind of Madness or Folly, when they began to make their Predictions, or deliver Oracles.

INFECTION, is the catching a Disease by some Effluvia or fine Particles, which fly off from some distempered Bodies, and mixing with the Juices of others, occasion the same Disorders, as in the Bodies they came from. The word comes from the Latin Verb *inficere*, which properly signifies to dye of some other Colour; *inficere*, i. e. *facere ut aliquid intus sit*, to occasion something to be imbibed. See *Poison*.

INFIDEL, a Term applied to such Persons as are not baptized, and that do not believe the Truths of the Christian Religion. 'Tis Baptism that makes the specific Difference between an Heretic and an *Infidel*.

INFINITE, that which has neither Beginning nor End; in which sense God alone is *infinite*. The word is also used to signify that which has had a Beginning, but will have no End, as Angels, and human Souls. This is what the Schoolmen call *infinitum a parte post*; as, on the contrary, by *infinitum a parte ante*, they mean that which has an End, but had no Beginning.

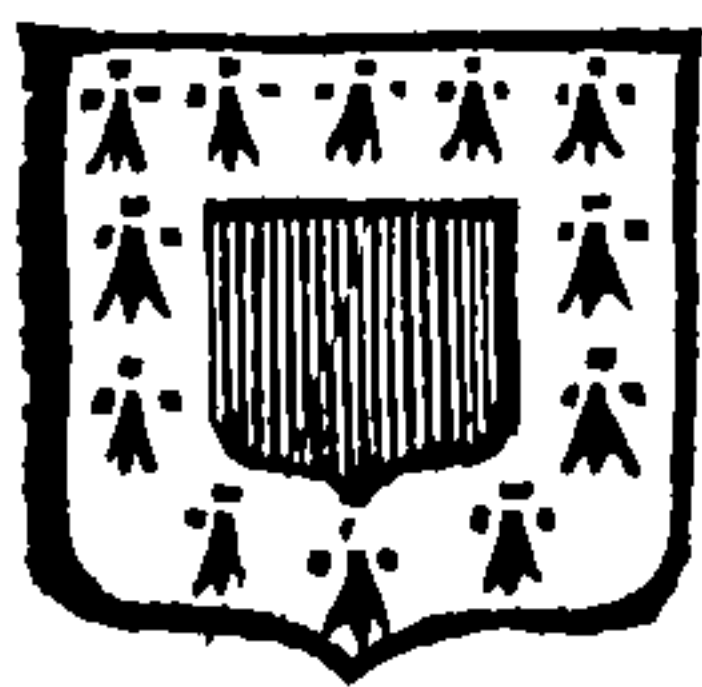
An *infinite* Line in Geometry, is an indefinite or indeterminate Line, to which no certain Bounds or Limits are prescribed.

*Infinite* Quantity. See *Quantity Infinite*.

*Infinite* Series. See *Series*.

INFINITELY INFINITE FRACTIONS, a Term used where all the Fractions, whose Numerator is 1, are together equal to an Unit: and hence it is deduced, that there are not only *infinite* Progressions, or Progressions *in infinitum*; but also *infinitely* farther than one kind of Infinity. That these *infinitely* infinite Progressions are notwithstanding computable, and to be brought into one Sum; and that not only finite, but into one so small, as to be less than any assignable Number: That of Infinite Quantities, some are equal, others unequal; that one infinite Quantity may be equal to two, three, or more Quantities, whether infinite or finite.

INFINITIVE, in Grammar, is the Name of one of the Modes serving for the conjugating of Verbs. It does not denote any precise time, nor does it determine the Number or Persons, but expresses things in a loose indefinite Sense, as *to teach*, &c. In most Languages, both antient and modern, the *Infinitive* is distinguished by a Termina-





Termination peculiar to it, as *ῥήσις* in the Greek, *scribere* in the Latin, *écrire* in the French, *scrivere* in the Italian, &c. but the English is defective in this point; so that to denote the Infinitive, we are always obliged to have recourse to the Article *to*, excepting sometimes when two or more Infinitives follow each other. The Practice of using a Number of Infinitives successively, is a great, but a common Fault in Language, as *he offers to go to teach to write English*. Indeed, where these Infinitives have no dependence on each other, they may be used elegantly enough; as *to mourn, to sigh, to sink, to swoon, to die*.

**INFINITY.** The Idea signified by the name *Infinity* is best examined, by considering to what *Infinity* is by the Mind attributed, and then how it frames it. Finite and Infinite are looked upon as the Modes of Quantity, and attributed primarily to things that have Parts, and are capable of Increase or Diminution, by the Addition or Subtraction of any the least Part. Such are the Ideas of Space, Duration, and Number. When we apply this Idea to the Supreme Being, we do it primarily in respect of his Duration and Ubiquity; more figuratively, when to his Wisdom, Power, Goodness, and other Attributes, which are properly inexhaustible and incomprehensible: For when we call them infinite, we have no other Idea of this Infinity, but what carries with it some Reflection on the Number or the Extent of the Acts or Objects of God's Power and Wisdom, which can never be supposed so great, or so many, that these Attributes will not always surmount and exceed, tho we multiply them in our Thoughts with the *Infinity* of endless Number. We do not pretend to say, how these Attributes are in God, who is infinitely beyond the reach of our narrow Capacities; but this is our way of conceiving them, and these our Ideas of their *Infinity*. We come by the Idea of *Infinity* thus. Every one that has any Idea of any stated Lengths of Space, as a Foot, Yard, &c. finds that he can repeat that Idea, and join it to another, to a third, and so on, without ever coming to an end of his Additions. From this Power of enlarging his Idea of Space, he takes the Idea of infinite Space, or Immensity. By the same Power of repeating the Idea of any Length or Duration we have in our Minds, with all the endless Addition of Number, we come by the Idea of Eternity. If our Idea of Infinity be got, by repeating without end our own Ideas, why do we not attribute it to other Ideas, as well as those of Space and Duration; since they may be as easily and as often repeated in our Minds as the other? yet no body ever thinks of infinite Sweetness, or Whiteness, tho he can repeat the Idea of Sweet or White, as frequently as those of Yard or Day? To this it is answer'd, that those Ideas which have Parts, and are capable of Increase by the Addition of any Parts, afford us by their Repetition an Idea of *Infinity*; because with the endless Repetition there is continued an Enlargement, of which there is no end: but it is not so in other Ideas; for if to the perfectest Idea I have of White, I add another of equal Whiteness, it enlarges not my Idea at all. Those Ideas, that consist not of Parts, cannot be augmented to what proportion Men please, or be stretch'd beyond what they have received by their Senses; but Space, Duration, and Number being capable of Increase by Repetition, leave in the Mind an Idea of an endless room for more; and so those Ideas alone lead the Mind towards the Thought of *Infinity*. We are carefully to distinguish between the Idea of the *Infinity* of Space, and the Idea of a Space infinite. The first is nothing but a supposed endless Progression of the Mind over any repeated Idea of Space: But to have actually in the Mind the Idea of a Space infinite, is to suppose the Mind already passed over all those repeated Ideas of Space, which an endless Repetition can never totally represent to it; which carries in it a plain Contradiction. This will be plainer, if we consider *Infinity* in Numbers. The *Infinity* of Numbers, to the End of whose Addition every one perceives there is no Approach, easily appears to any one that reflects on it: But how clear soever this Idea of the *Infinity* of Numbers be, there is nothing yet more evident, than the Absurdity of the actual Idea of an infinite Number.

**INFIRMARY,** a Place where the Sick belonging to any Society or Community are disposed.

**INFLAMMATION,** in Physic, is understood of a Tumour, occasioned from an Obstruction; by means whereof the Blood flowing into some Part faster than it can run off again, swells up, and causes a Tension, with an unusual Soreness, Redness, and Heat. The immediate Cause, therefore of all *Inflammations*, is an overflowing of Blood. Other Causes, more remote, may be the Density and Coagulation of the Blood, or the Relaxation and Contusion of the Fibres. Physicians have given particular Names to the *Inflammations* of several Parts. That of the Eyes is call'd *Ophthalmia*, that of the Lungs *Peripneumonia*, and that of the Liver *Hepatitis*. The word *Inflammation*

comes from the Latin *in*, and *Flamma*, Flame.

**INFLATION,** a blowing up; is the stretching or filling any flaccid or distendable Body, with a flatulent or windy Substance. From the Latin *in* and *flatus*, of *flō*, I blow.

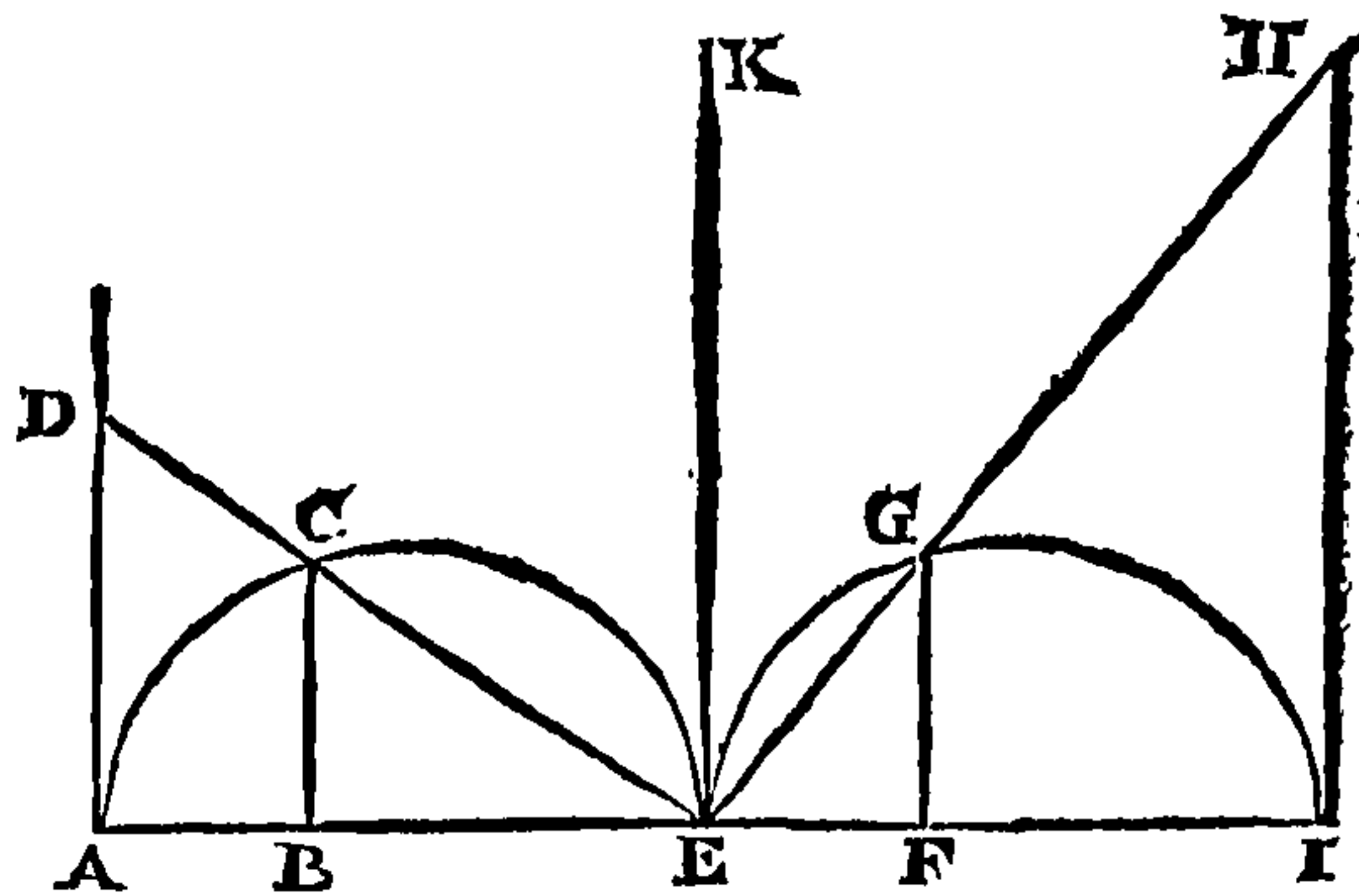
**INFLECTION,** in Optics, is a multiplicate Refraction of the Rays of Light, caused by the unequal Density of any Medium, whereby the Motion or Progress of the Ray is hindered from going on in a right Line, and is inflected or deflected by a Curve, saith Dr. Hook, who first took notice of this Property: And this, he saith, differs both from Reflection and Refraction, which are both made at the Superficies of the Body, but this in the middle of it within. Sir Isaac Newton, as you will find under *Light*, discover'd also by plain Experiment this *Inflection* of the Rays of Light; and M. de la Hire saith, he found, That the Beams of the Stars being observed in a deep Valley, to pass near the Brow of a Hill, are always more refracted, than if there were no such Hill, or the Observations were made on the top thereof; as if the Rays of Light were bent down into a Curve by passing near the Surface of the Mountain. Sir Isaac Newton in his Optics makes several Experiments and Observations on the *Inflection* of the Rays of Light; which see under *Light* and *Rays*.

**INFLECTION,** in Grammar, is the Variation of Nouns and Verbs, in their several Cases, Tenses, and Declensions. *Inflection* is a general Name, under which are comprehended both the Conjugation and Declension.

**INFLECTION POINT** of any Curve, in Geometry, signifies the Point or Place where the Curve begins to bend back again a contrary way: As for instance, when a curve Line, as A F K, is partly concave, and partly convex towards any right Line, as A B, or towards a fixed Point, then the Point F, which divides the concave from the convex Part, and consequently is at the Beginning of the one, and End of the other, is called the *Point of Inflection*, as long as the Curve, being continued in F, keeps its Course the same; but it is called the Point of Retrogression, when it inflects back again towards that Part or Side, from whence it took its Original. See Fig. 2.

Before the Theory of this *Inflection*, and Retrogression of Curves, can be understood, it may be necessary to explain this general Principle. Whatsoever finite Quantity (or if it be a Fluxion, it is all one) goes on continually increasing or decreasing, it cannot change from a positive to a negative Expression, or from a negative to a positive one, without first becoming equal to an infinite or nothing. It is equal to nothing, if it doth continually decrease, and equal to an infinite, if it doth continually increase. To illustrate this, let there be two Circles touching one another in the Point E (Fig. 1.) their Diameters A E and E I lying in one and the same right Line. Let A E or E I be  $= d$ . Let the Distance between the Extremity A and any Ordinate in either of the Circles be  $= x$  perpe-

(Fig. 1.)

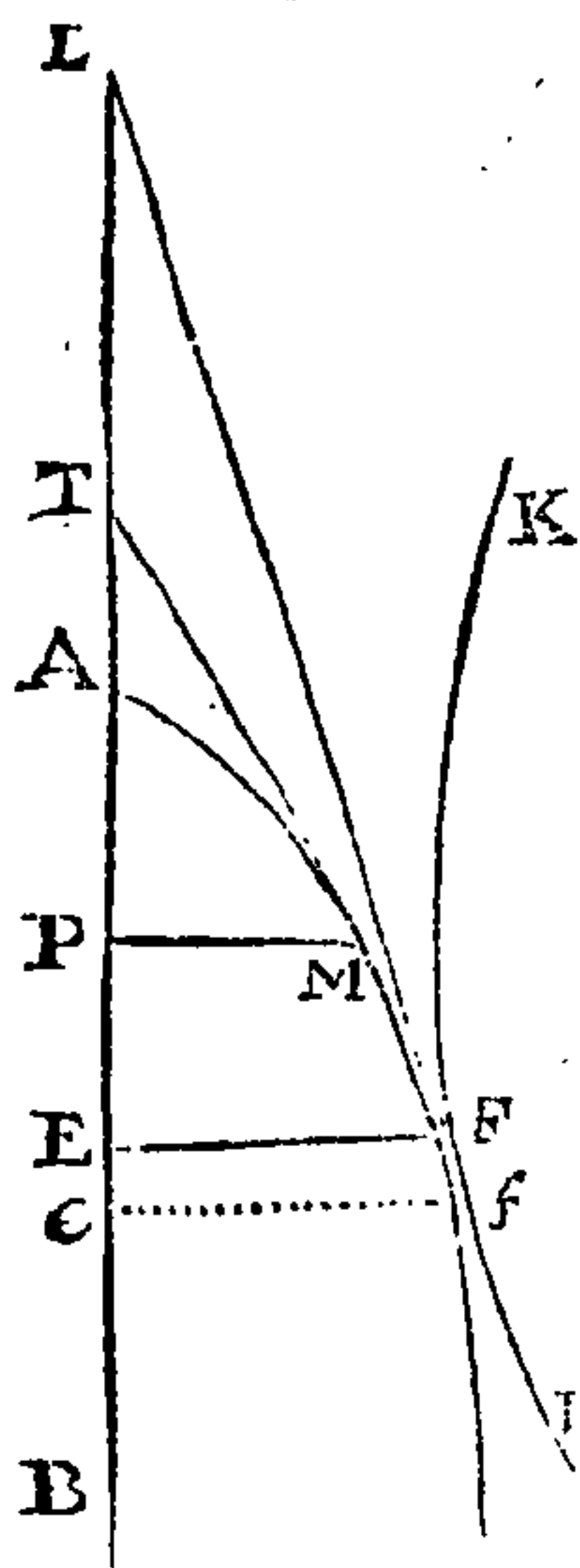


tually. I consider now, what will be the Expressions of the Lines intercepted between E the Point of Contact of the Circles; such as are the Lines E B and E F intercepted between E and the Ordinates C B and G F. It is certain therefore, that taking a Point, as B, any where between A and E, that then the Expression of the intercepted B E is  $d - x$ ; but taking a Point, as F between E and I, the Expression of the intercepted E F, shall be  $x - d$ . For A B, or A F, being taken for  $x$  indifferently, the Values of the intercepted Lines will appear with this Change of Signs. In one case therefore the Expression is positive, in the other negative. But as the Points B or F approach to E, the Quantities B E and E F decrease continually, and at the Point E are equal to nothing. So that it is plain there is no passing from a positive to a negative Expression, in this case, of a Quantity continually decreasing, without passing thro nothing. For the other part, let us consider the Tangents (as D A or H I) cut off by Lines continually drawn from E, the Point of the Circle's Contact. If C B, or G F, be put equal to  $y$ , the Expression



Expression of any such Tangent will be  $\frac{y d}{d-x}$ , or  $\frac{y d}{x-d}$ , according as we take it on the one or the other side of the Point E; in one case therefore it is positive, in the other negative. But as the Points B or F approach to E, the Tangents DA and HI increase continually, and at the Point E they become infinite. Therefore a Quantity that continually increaseth, cannot pass from a positive to a negative Expression, without being infinite. All this is universally true, whether it be a finite Quantity or a Fluxion that we consider. There is no changing from positive to negative, without passing thro' nothing or infinite. Applying this therefore to a Fluxion, it will follow from hence, That the Fluxion of a Quantity that expresseth a Maximum or a Minimum, must be equal to nothing, or to infinite. And upon this Foundation, we may now easily proceed to the Points of Inflection and Retrogression. In order to find a general Theorem to assist us in this Matter, let us consider the Curve AFK, (Fig. 2.) whose Diameter is the right Line AB; and its Ordinates PM, ef, parallel to one another. If through the Point F be drawn the Ordinate Applicate EF, together with the Tangent FL; and from any other Point, as M on the same side with AF, be drawn the Ordinate Applicate MP, as likewise the Tangent MT: It is evident, (1.) In these Curves that have a Point of Inflection, that the Abscissa AP increases continually, and that the Part AT of the Diameter, intercepted between A the Origin of the Axis, and T the Concourse of the Tangent and the Axis, increaseth such time as the Point P fall upon E, and after it again begins to diminish: From whence it is apparent, that AT

(Fig. 2.)



must become the Maximum AL, when the Point P falls upon the Point E required. (2.) In those Curves that have a Point of Retrogression, it is evident that the Part AT increaseth continually, and that the Abscissa increaseth so long, till the Point T fall upon L, after which it again diminisheth: From whence it is clear, that AP must become a Maximum, when the Point T falls upon L. Now if

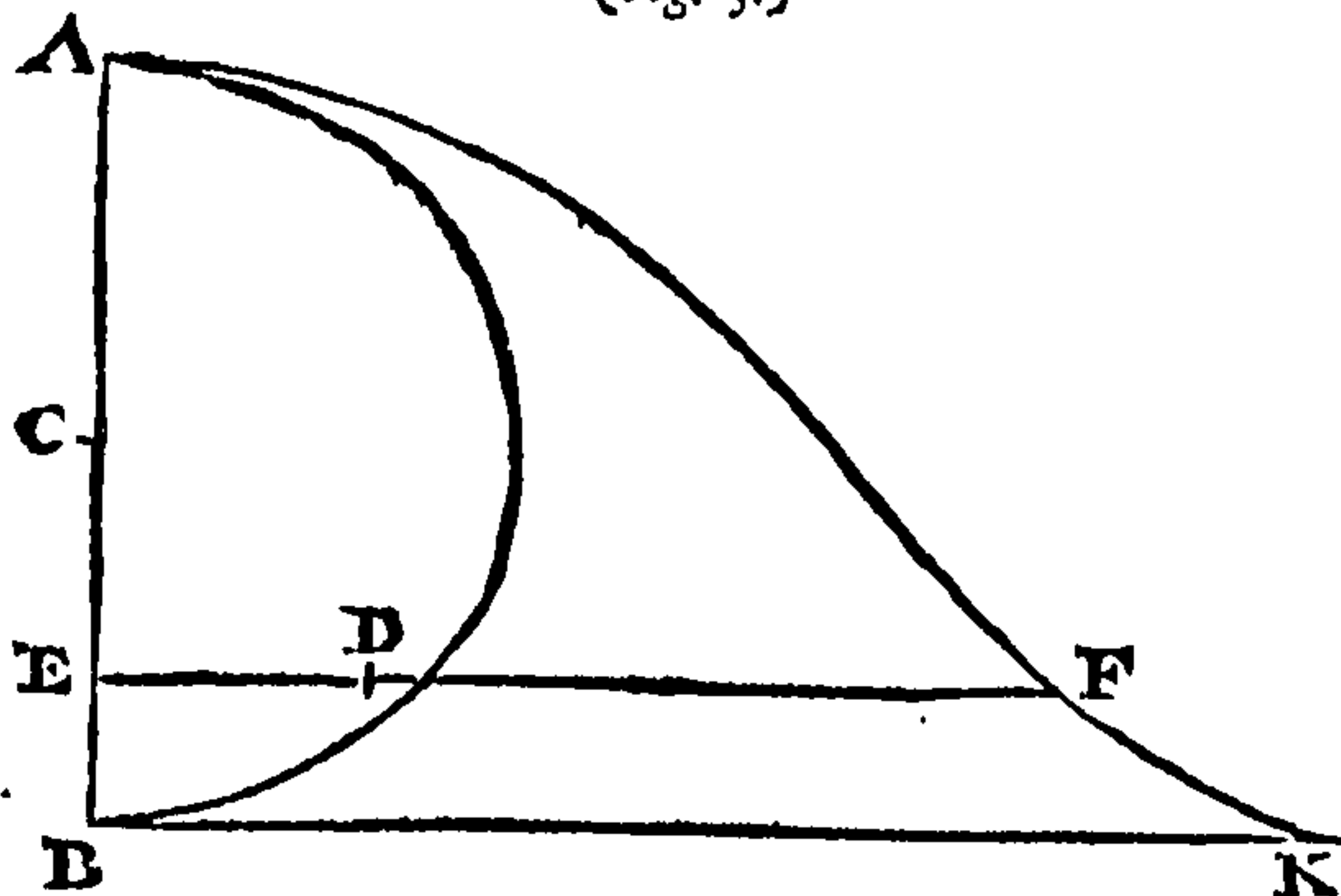
AE be put  $=x$ , EF  $=y$ , then will AL be  $=\frac{y \dot{x} - x}{y}$ ,

whose Fluxion, which is  $\frac{y^2 \dot{x} - y \dot{x} \dot{y} - x}{y^2}$  (supposing  $\dot{x}$  invariable) being divided by  $\dot{x}$ ; the Fluxion of AE must become nothing or infinite; that is,  $\frac{-y \dot{y}}{y^2} = \text{nothing or infinite}$ :

So that multiplying by  $y^2$ , and dividing by  $-y$ ,  $\dot{y}$  will be  $=$  to nothing or infinite; which in the Sequel will serve for a general Form to find F the Point of Inflection or Retrogression. For the nature of the Curve AFK being given, the Value of  $\dot{y}$  may be found in  $\dot{x}$ ; and taking the Fluxion of this Value, and supposing  $\dot{x}$  invariable, the Value of  $\dot{y}$  will be found in  $x^2$ , which being put equal to nothing, or Infinity, serves in either of these Suppositions to find such a Value of AE, as that the Ordinate EF shall intersect the Curve AFK in F, the Point of Inflection or Retrogression. Of this we shall only give one Example.

Let AFK (Fig. 3.) be a protracted Semicycloid, whose

(Fig. 3.)



Base is longer than the Circumference of the generating Circle ADB, whose Center is C. It is required to find

E in the Diameter AB; so that the Ordinate Applicate EF shall cut the Semi-cycloid in F, the Point of contrary Flexion. Suppose the known Quantities AD  $=a$ ; BK  $=b$ ; AB  $=2c$ , and the unknown Quantities AE  $=x$ , ED  $=z$ , the Ark AD  $=u$ , EF  $=y$ , then by the Property of the Cycloid  $y = z + \frac{b u}{a}$ , and therefore

$\dot{y} = \dot{z} + \frac{b \dot{u}}{a}$ : But by the Property of the Circle

$z = \sqrt{2cx - xx}$ , consequently  $\dot{z} = \frac{cx - x \dot{x}}{\sqrt{2cx - xx}}$ ,

and  $\dot{u}(\sqrt{x^2 + z^2}) = \frac{cx}{\sqrt{2cx - xx}}$ : Therefore substituting for  $\dot{z}$ , and  $\dot{u}$  their respective Values, we have

$\dot{y} = \frac{ac \dot{x} - ax \dot{x} + bc \dot{x}}{a \sqrt{2cx - xx}}$ , and the Fluxion thereof, (supposing  $\dot{x}$  invariable) is  $\frac{bcx - acx - bcc \times x}{2cx - xx \times \sqrt{2cx - xx}} = 0$ ,

that is, AE  $(x) = c + \frac{ac}{b}$  and CE  $= \frac{ac}{b}$ . Hence

it is evident, That to have F a Point of contrary Fluxion,  $b$  must be greater than  $a$ ; for if it be less, then CE would exceed CB. Concerning the Inflection of the Rays of Light, see *Light*.

**INFLUENCE**, a Quality supposed to flow from the Bodies of the Stars, or the Effect of their Heat and Light, to which the Astrologers vainly attribute all the Events that happen on the Earth. The Alchymists, who make it the Philosopher's Stone, tell us, that every thing in Nature is produced by the Influence of the Stars, which, in their Passage thro' the Atmosphere, imbibe many of its moist Parts, the grossest whereof they deposite in the Sands and Earths where they fall; that these filtrating thro' the Pores of the Earth, descend even to the Center, whence they are driven, by the central Fire, back again to the Surface, and in their Ascent, by a natural kind of Sublimation, as they find Earths well disposed, they form natural Bodies, as Metals, Minerals, and Vegetables, &c. Thus Chymistry consisting in an artificial Imitation of these natural Operations, and in applying active Principles to passive Principles, 'tis pretended it can form natural Bodies, make Gold, &c.

**INFLUENT**, a Term used where any Liquor or Juice, by the Contrivance of Nature, and the Laws of Circulation, falls into another Current and Receptacle. Thus with respect to the common Receptacle in the human Body, the Chyle is its influent Juice, and so is the Bile to the Gall-Bladder, and Venal-Blood to the Heart in its Diastole; and the like.

**IN FORMA PAUPERIS**, in Law, is when any Man that hath a just Cause or Suit, either in the Chancery, or any of the Courts of Common Law, will come before the Lord-Chancellor, or Master of the Rolls, or either of the Chief Justices, or Chief Baron, and make Oath, that he is not worth five Pounds, his Debts paid; either of the said Judges will, in his own proper Court, admit him to sue *in Forma Pauperis*, and he shall have Counsel, Clerk, or Attorney assigned to do his Business, without paying any Fees.

**INFORMATION**, in Law; see *Inditement*. Information for the King is the same; that for a common Person we call Declaration, and is not always done directly by the King, or his Attorney, but sometimes by another, who sues as well for the King as himself; on a Breach of some Penal Law or Statute, wherein a Penalty is given to the Party that will sue for the same.

**INFORMATUS NON SUM**, or *Non sum Informatus*; a formal Answer made of course by an Attorney, who is commanded by the Court to say any thing he thinks good in behalf of his Client; who having nothing material to say, makes answer he is not inform'd; on which, Judgment passes for the other Party.

**INFORMIS**, *informed*, that which has not the Form or Perfection it should have. In Astronomy we use the Terms *Stelle Informes*, for such Stars as have not yet been reduced into any Constellation. Of which kind there was a great Number left by the antient Astronomers, tho' *Hewelius*, and some others of the Moderns, have provided for the greatest part of them, by making new Constellations.

**INFRACTION**, a Rupture or Violation of a Treaty, a Law, Ordinance, &c. from the Preposition *in*, and the Supine of *franco*, to break.

**INFRA-LAPSARII**, the Name of a Sect, who maintain, that God has created a certain Number of Men only to be damned, without allowing them the means necessary to save themselves, if they would. This Doctrine they maintain in different manners, the Sect itself being divided into two Branches. Some of them hold, that



that God independently of every thing, and antecedently to all Knowledge or Foresight of the Fall of the first Man, resolved to signalize both his Mercy and his Justice; his Mercy, by creating a certain Number of Men, to make them happy to all Eternity; and his Justice, by creating likewise a Number of other Men, to be miserable to all Eternity. Others hold, that God did not take this Resolution, but in consequence of Original Sin, and of the Knowledge which he had from all Eternity, that *Adam* would commit it: for, say they, Man, by this Sin, having forfeited all Pretences to his original Justice, deserves nothing now but Punishment. All Mankind is become a Mass of Corruption, which God may abandon to eternal Destruction, without any Impeachment of his Justice. However, to shew his Mercy too, as well as his Justice, he has resolved to select some out of this Mass, to sanctify them, and to make them happy. Those who maintain the Doctrine in the first manner, are called *Supra-lapsarii*, as believing that God formed the Resolution of damning a Number of Men, *supra Lapsum*, before *Adam's* Fall, and independently of it. Those of the second Opinion, are called *Infra-lapsarii*, as holding that God made that Resolution, *infra Lapsum*, after his Knowledge of the Fall, and in consequence thereof.

**INFRA-SPINATUS**, a Muscle that arises from the inferior Parts of the Basis, Spine, and Under-Costa of the Scapula, and filling the lower Inter-scapulum, passes on between the Spine and Teres Minor in a triangular Form, and growing tendinous at the Cone, is inserted into the Head of the Humerus, and draws directly backwards.

**INFULA**, a Name antiently given to some of the Pontifical Ornaments. *Festus* tells us, that the *Infule* were Filaments or Fringes of Wooll, wherewith the Antients used to adorn their Priests, their Victims, and even their Temples. Several Authors confound the *Infula* with the Mitre, Tiara, or Cap wore by the Priests; but there was a great deal of Difference. The *Infula* was properly a Fillet or Headband of white Wooll, covering that Part of the Head where the Hair grows, as far as the Temples, whence, on each Side, hung down two Strings, called *Vittæ*, to bind it withal; and this has given occasion to some Authors to confound the *Infula* with *Vittæ*. The *Infula* was the same thing to Priests that the Diadem was to Kings, viz. the Badge of their Dignity and Authority. The Difference between the Diadem and the *Infula* consisted in this, that the Diadem was flat and broad, and the *Infula* rounded and twisted.

**INFUNDIBULUM**, a *Latin* Word, signifying a Funnel; whence many Parts in an human Body, having a Resemblance thereto in Shape, are thus called; as the *Infundibulum Cerebri*, and *Infundibulum Renum*; for which see *Brain* and *Kidneys*: and some Parts of Plants, for the same reason, are called *Infundibuliformes*. See *Flowers*.

**INFUSION** is a Part of Pharmacy, whereby the Virtues of Plants, Roots, and the like, are drawn out, by letting them steep in some convenient Menstruum. *Infusion* is used in Bodies of a lax Texture, whose Parts are so light, as not to admit of a greater Motion, without hazard of flying away in Vapour. Its Use is to communicate the Virtues out of Bodies to Liquors, either in order to augment their Force, or correct their ill Qualities. Some *Infusions* are made in common Water, others in Wine, Vinegar, Milk, Spirit of Wine, &c.

*Infusion* is also used to signify the Action of conveying a Liquor into the Body by the Veins. Some Physicians have found out a new Method of Purging, by infusing a Cathartic into the Veins, which operates pretty much after the manner of a Clyster.

**INGEMINATED FLOWERS**, are when one Flower stands on, or naturally grows out of another.

**INGENIT**, inborn, signifies any Disease, or Habit, that comes into the World with a Person, and is nearly the same with Hereditary.

**INGENUOUS**, among the *Romans*, was a Title applicable to a Person who was born free, or of free Parents. A Person was accounted *ingenuous* if only the Mother were free, and the Father a Servant. These could give their Votes, and enjoy Offices, from which the *Liberti*, or Freed Men, &c. were debarred. *Isidore* says, they are called *Ingenui qui Libertatem habent in Genere, non in Fæsto*, who are born free, not those who acquire their Freedom.

*Ingenuous* is sometimes also used to signify the Native of a Country, in contradiction to a Foreigner.

**INGLUVIES**, or Crop, a part which in granivorous Fowls serves for the immediate Reception of the Food, where it remains some time for Maceration, before it be transmitted to the Stomach. This *Ingluvies* is furnished with Glands, which, the Patrons of Fermentation maintain, convey a Menstruum thither, that impregnates the Aliment, and serves instead of Mastication.

**INGOT** is a little Wedge or Mass of Gold and Silver, or an uncertain Quantity of Bullion.

**INGREDIENTS** are all the Simples which go into the Composition of any Medicine, Ointment, Sauce, &c.

**INGRESS**, in Astronomy, signifies the Sun's entering the first Scruple of one of the four Cardinal Signs, especially *Aries*.

**INGRESSU**, in Law, a Writ of Entry, whereby a Person seeks Entry into Lands or Tenements. It lies in various Cases, and has various Forms.

**INGROSSATOR MAGNI ROTULI**, is the same as Clerk of the Pipe, which see.

**INGROSSER**, in Common Law, is one that buys Corn growing, or any Provisions, before the Market, to sell again; it also signifies a Clerk, who writes Records or Instruments of Law in Skins of Parchment.

**INGUEN** is that Part of the Body, reaching from the Head of the Thigh to above the secret Parts, and is commonly called the Groin. *Inguinalis* is given to any Subdivisions made of that Part, or any thing therein contained, or applied thereunto by way of Medicine, or the like. The word is pure *Latin*, and is derived, according to some, from *Unguen*, Ointment, because these Parts are frequently anointed. Others derive it from *ango*, because Pains happen frequently there; others again from *ingenor*, because the genital Parts are here.

**INHARMONICAL RELATION** is a Term in Music. See *Relation inharmonical*.

**INHERENCE**, a Term in Philosophy, applied to the Juncture or Connexion of an Accident with its Substance. Thus Quantity has a necessary *Inherence* with a natural Body.

**INHERITANCE** is a Perpetuity in Lands and Tenements to a Man and his Heirs: This word *Inheritance* is not only understood where a Man hath *Inheritance* of Lands and Tenements by Descent or Heritage, but also every Fee-Simple and Fee-Tail, that a Man hath by his Purchase, may be said to be by *Inheritance*, for that his Heirs may inherit after him.

**INHIBITION** is a Writ to inhibit or forbid a Judge from farther proceeding in the Cause depending before him; sometimes *Prohibition* and *Inhibition* are put together; but *Inhibition* is most commonly a Writ issuing out of a higher Court to a lower and inferior; and *Prohibition* out of the King's Court to an inferior Court.

**INJECTION**, in Pharmacy, is any liquid Medicine made to be injected by a Syringe, Clyster-Pipe, or any other Instrument into any Part of the Body. It is likewise a common Term for filling the Vessels with coloured Wax, or any other proper Matter, to shew their Figures and Ramifications; a thing frequent among Anatomists.

**INITIALIA**, a Name antiently given to the Mysteries of *Ceres*. See *Cerealia*.

**INITIATED**, a Term properly used in speaking of the Religion of the antient Heathens, where it signifies to be admitted to a Participation of the Mysteries of Religion; tho' the word is also sometimes used in speaking of other Religions, and even of Philosophy and other Sciences. The Antients never discovered the deeper Mysteries of their Religion, nor even permitted some of their Temples to be open to any but those who had been initiated in certain Orders. The word comes from the *Latin* *initiatum*, of *initiare*, *initiare*. *Initiare* properly signifies to begin sacrificing, or to receive or admit a Person to the beginning of Mysteries, or of Ceremonies of less importance. *Cassanbon*, upon *Athenaus*, observes, that all the Mysteries were not communicated at once to the Persons who presented themselves for the Priesthood, but that at first they purified them, then admitted them to the less considerable Matters to dispose them for the more important, and at last they drew the Veil quite, and laid open all the most sacred and solemn Parts of Religion.

**INJUNCTION** is a Writ grounded upon an interlocutory Order in Chancery, sometimes to give possession to the Plaintiff, for want of the Defendant's Appearance; sometimes to the King's ordinary Court, and sometimes to the Court-Chrillian, to stop Proceedings in a Cause, upon Suggestion made, that the Rigour of the Law, if it take place, is against Equity and Conscience in that Case.

**INJURY**, in the general meaning of the word, signifies any thing contrary to Justice and Equity. The Civilians define *Injury* a private Offence, committed designedly, and with an evil Intention, to any Man's Prejudice. The Author of the *Rhetorics* to *Herennius* says, *Injuria est quæ aut Pulsatione, aut Convicio, aut Turpitudine, Corpus, Aure, aut Vitam alienius violavit*. Action on an *Injury* is annual, that is, no Reparation could be required after the Expiration of a Year. By the Law of the twelve Tables, where the *Injury* was the breaking of a Limb, the injured Person might demand *Talionem*, that is, he might break the



same Limb of the Criminal. For the breaking of a Bone there were considerable pecuniary Punishments assigned: For other *Injuries* only twenty *Asses* were decreed, which the Poverty of those times thought a sufficient Penalty; but the Prætors afterwards finding this too slender a Satisfaction, in lieu thereof appointed the injured Person to set a Rate on the *Injury*, which they afterwards increased or lessened as they thought good. The word is derived from the *Latin* Preposition *in*, which here has a negative Power, and *Jus, Law, Right*; *Injuria dicitur omne quod non Jure fit*. The Antients made a Goddess of *Injury*, and called her *Aie*. *Homer* makes her the Daughter of *Jupiter*, and says, she did mischief to every body, even to her Father; that she was very nimble and tender-footed, and walked altogether on Mens Heads, without ever touching the Ground.

INK, the common Writing-Ink is a Composition of *Vitriol, Galls, Gum and Water*. Printing-Ink is made of *Nut-Oil or Linseed-Oil, Turpentine, and a kind of Black*.

*Indian, or Chinese Ink*, is an admirable Composition, and has been in vain attempted to be imitated in *Europe*. It is not fluid like our Writing-Inks, but solid, like our Mineral Colours, tho much lighter. They make it of all Figures, but the most usual is rectangular about a quarter of an Inch thick. Some of them are gilt with Figures of Dragons, Birds, Flowers, &c. In order to this, they have little wooden Molds, so curiously wrought, that we could hardly equal them in Metals. Before you use this *Ink*, there must be a little hollow Marble, or other Stone, with Water in it, on which the Stick of *Ink* must be ground, till the Water becomes of a sufficient Blackness. It makes a very black shining *Ink*, and tho' it be apt to sink when the Paper is thin, yet it never runs or spreads; so that the Letters are always smooth and evenly terminated, how big soever they be. It is of great Use in designing, because it may be weakened or diminished to any degree one pleases; and there are abundance of things which can't be represented to the Life without it. The *Chinese* make it with Smoak-Black of different kinds, but the best is made of the Smoak of fat Pork, burnt at a Lamp. They mix a kind of Oil with it, to make it more smooth, and add other odorous Ingredients to take away the Rankness of the Smell. After they have mixed it into a Paste of a proper Consistence, they put it into a Mold to figure it.

INLAND, implies any thing situated in the main Land, or Heart of a Country far from the Sea-Coasts. Hence *Inland Bills in Traffic* are such Bills as are payable in the same Land wherein they are drawn.

INMATES, are such Persons as are admitted (for their Money) to live in the same House with another Man, tho in different Rooms, and which go in at the same Door jointly with others to whom the House belongeth, and which are not able to maintain themselves. These are inquirable in a Court-Leet.

INNATE HEAT. See *Calidum Immatum*.

INNATE IDEAS, or Principles, are certain primary Notes or Characters, supposed to be stamped on the Mind of Man when it first receives its Being, and which it brings into the World with it; but the Doctrine of *Innate Ideas* is abundantly confuted by *Mr. Locke*. See *Idea*.

INNINGS; Lands recovered from the Sea, by draining and banking, are so called.

INNOCENTS-DAY, the Name of a Feast celebrated in Commemoration of the Infants murdered by *Herod*. heretofore it was the Custom to have Dances in the Churches on this Day, wherein were Persons who represented Bishops, by way of Derision of the Episcopal Dignity. This appears by a Canon of the Council of *Cognac*, held in 1260, which expressly forbids it.

INNOMINATI, *Gli Innominati, Anonymi*, Persons who have no Names; a Title by which the Academists of *Parma* distinguish themselves. Most Cities in *Italy* have an Academy, and each has its proper Name; thus those at *Parma* entitle themselves *Gli Innominati*, as if it was their Name to have no Name at all.

INNOMINATUM, in general, signifies any thing without a Name. Many Parts of the Body are left under this indistinct Term, as the *Innominata Glandula Oculi*, now called *Caruncula Oculi*. See *Eye*. *Innominata Tunica Oculi*. See *Eye*. *Innominatum Os*. See *Ilium*.

INNS. Our Colleges of Municipal or Common Law, Professors, and Students, are still called *Inns*; the old *English* word for Houses of Noblemen, Bishops, and others of extraordinary Note, which is of the same Signification with the *French* word *Hôtel*.

*Inns of Court*, are so called, as some think, because the Students there are to serve the Courts of Judicature, or else because antiently these Colleges received none but the Sons of Noblemen and better sort of Gentlemen, as *Fortescue* affirms. Of these we have four; viz. the two *Temples*, heretofore the Dwelling of the Knights-Templers,

purchased by some Professors of the Common Law about 300 Years ago; and *Lincolns-Inn* and *Grays-Inn*, antiently belonging to the Earls of *Lincoln* and *Gray*. These Societies are no Corporations, nor have any Judicial Power over their Members, but have certain Orders among themselves, which have, by Consent, the force of Laws: for lighter Offences they are only excommunicated, or put out of Commons; for greater, they lose their Chambers, and are expelled the College; and when once expelled out of one Society, they are never received by any of the others. The whole Company of Gentlemen in each Society may be divided into four Parts, Benchers, Utter-Barristers, Inner-Barristers, and Students. See *Benchers* and *Barrister*.

*Inns of Chancery* were probably so called, because antiently inhabited by such Clerks as chiefly studied the forming of Writs, which regularly belonged to the Curators, who are Officers of Chancery. The first of these is *Thavies-Inn*, begun in the Reign of *Edward III.* and since purchas'd by the Society of *Lincolns-Inn*; then *New-Inn, Clements-Inn*; *Cliffords-Inn*, antiently the House of the Lord *Clifford*; *Staple-Inn*, belonging to the Merchants of the Staple; *Lyons-Inn*, antiently a common Inn with the Sign of the Lion; *Furnivals-Inn*, and *Bernards-Inn*.

These were heretofore preparatory Colleges for younger Students, and many were entered here before they were admitted into the *Inns* of Court. Now they are mostly taken up by the Attorneys, Solicitors, &c. They belong all to some of the *Inns* of Court, who send yearly some of their Barristers to read to them.

INNUENDO, from *innuo*, to beck or nod with the Head, is a word frequently used in Writs, Declarations, and Pleadings. The Use of it is only to declare and ascertain the Person or Thing which was named, or left doubtful before; as he (*innuendo*, the Plaintiff) is a Thief, mention being before made of another Person.

INOCULATION, in Agriculture, is a kind of Grafting, or an artificial Operation, by which the Bud of one Fruit-Tree is set into the Stock or Branch of another, so as to make different sorts of Fruit grow on the same Tree. There are various ways of performing this. The antient Method was by making a shallow Incision in the Bark, where the Knot of a Shoot or Oculus (whence the Operation takes its Name) begins to bud forth, into which a promising Shoot of another kind was inserted, and the Incision closed up with fat Earth or Clay. The Method of *Inoculation*, now in the best Repute, is as follows: They cut off a vigorous Shoot from the Tree that is to be propagated, a Month before or after *Midsummer*; then chuse out a smooth Place in the Stock (which should not be of above three or four Years Growth) making a perpendicular Slit in the Bark a little above an Inch long, and another at right Angles to it, at the lower end, to give way to the opening of the Bark. This done, the Bark is gently loosened from the Wood on both Sides with a Penknife, beginning at the bottom; they then prepare the Bud, cutting it off from the aforesaid vigorous Shoot, and taking with it as much of the Wood above as below it, and as near as may be to the Length of the slit in the Stock. When the Bud is thus cut off, they take out the woody part of the Bud, and put the Bud itself in, between the Bark and the Wood of the Stock, at the Cross-slit before opened, leading it upwards by the Stalk, where the Leaf grew, till it exactly closes. They then bind it about with Woollen Yarn, the better to make all Parts of it close exactly, that the Bud may imbody itself with the Stock, which it will do in three Weeks time. This Operation is said to be best performed in a cloudy Day, or in an Evening; and 'tis observed, that the quicker 'tis done, the better it succeeds. This Practice has the advantage of Engrafting in a great many respects, both as it is more secure, it seldom failing of having effect, especially if two or three Buds are put into the same Stock, and as its Success is more readily discovered. Indeed when large Stocks are to be practised on, *Inoculation* is not proper, and they are obliged to have recourse to Grafting. This one Rule is observed to hold universally, viz. that no Success is to be expected in *Inoculation*, if the Sap does not run well, that is, if the Bark won't part readily from the Wood of the Stock.

In a Physical Sense, *Inoculation* is used for the Transplantation of Distempers from one Subject to another, particularly for the Ingraftment of the Small-Pox, which is a new Practice among us, but of antient Original in the *Eastern* Countries. The best Method of performing the Operation is as follows: After the Body is rightly disposed and prepared, by proper Diet and Evacuations, two small Incisions are made, one in the muscular part of the Arm, about the Place where an Issue is usually cut, and the other in the Leg of the opposite Side; then being provided of a small Quantity, as a Drop or less of well-concocted *variolous Matter*, chose from the distinct or best sort of Pustules, before the Turn of the Distemper, and imbibed



imbibed by two small Dossils of Lint; these are immediately put into the Incisions, whilst the Matter remains warm, and are kept on by a proper Bandage. In a day or two the Bandages are opened, the Lint thrown away, and only Colewort-Leaf applied over the Incisions. This Dressing is continued daily. The Incisions usually grow sore, inflame and enlarge of themselves, and discharge Matter more plentifully as the Distemper rises. The Eruptions generally appear within eight or ten days after the Operation, during which time the Patient is not confined, or obliged to observe a very strict Regimen. The Practice seems to be useful, because the most proper Age, the most favourable Season of the Year, most regular Method of Preparation, and all possible Precautions may here be used, according to the Wishes of the Patient, his Parents, and Physician; Advantages impossible to be had when the Distemper is caught in the natural way. It has also been constantly observed, that the best sort of Small-Pox is hereby occasioned, that the Eruptions are few, the Symptoms light, the Danger next to none, the Recovery easy, and that the Patient is equally secured from this Distemper for the future, as he would be by having gone thro' it in the natural manner.

INORDINATE PROPORTION is thus: Supposing three Magnitudes in one Rank, and three other proportional to them in another, you compare them in a different Order; as if there are in one Rank these three Numbers, 2, 3, 9; and in another Rank these other three, 8, 24, 36, proportional to the precedent, in a different Order, so that 2 shall be to 3 as 24 to 36, and 3 to 9 as 8 to 24. Then casting away the mean Terms in each Rank, conclude the first 2 in the first Rank is to the last 9, as 8, the first of the other Rank, to the last 36.

INOSCULATION. See *Anastomosis* and *Artery*.

IN PACE, a Latin Term, in use among the Monks, to signify a Prison, where such of them are shut up as have committed any grievous Fault. Formerly there us'd to be a world of Ceremony at the putting a Religious *in pace*, but now 'tis not much regarded. Such as are shut up in perpetual Imprisonment, are also said to be *in pace*. Sometimes also the words *requiescat in pace* are used by way of Allusion to a Custom in the *Romish* Church, of praying that the Souls of the Defunct may rest in Peace. Those words are also frequently seen at the bottom of Epitaphs, in lieu of those used by the antient *Romans*, S.T.T.L. i. e. *Sit tibi Terra levis*, Light lie the Earth; & *Sit humus Cineri non onerosa tuo*.

IN PROMPTU, a Latin word used among the *French*, tho' but rarely in the *English*. It signifies a Piece made off-hand, extemporary, without any previous Meditation, by the mere Vivacity of Imagination. Many Authors pique themselves on their *in promptu's*, which yet were done at leisure, and in cold blood.

INQUIRENDO, is an Authority given to a Person, or Persons, to enquire into something for the King's advantage.

INQUISITION, or the Holy Office, an Ecclesiastical Jurisdiction established in *Spain*, *Portugal*, and *Italy*, for the Trial and Examination of such Persons as are suspected to entertain any religious Opinions contrary to those professed in the Church of *Rome*. It is called *Inquisition*, because the Judges of this Office take cognizance of Crimes on common Report, without any legal Evidence. Some People fancy they see the Original of the *Inquisition* in a Constitution made by Pope *Lucius*, at the Council of *Verona*, in 1184. in regard he there orders the Bishops to get Information, either by themselves, or by their Commissaries, of all such Persons as were suspected of Heresy; and distinguishes the several Degrees, of Suspected, Convicted, Penitent, and Relapsed, &c. However, 'tis generally allowed, that it was Pope *Innocent III.* who laid the first Foundations of the Holy Office, and the *Vandois* and *Albigenses* were what gave the occasion to it. He sent several Priests, with St. *Dominic* at their head, to *Tholouse*, in order to blow up a Spirit of Zeal and Persecution amongst the Prelates and Princes. These Missionaries were to give an account to the Pope of the Number of Heretics in those Parts, and of the Behaviour of the Princes and Persons in Authority, and thence they acquired the Name of *Inquisitors*; but these original *Inquisitors* had not any Court, or any Authority, they were only a kind of Spiritual Spies, who were to make Report of their Discoveries to the Pope. The Emperor *Frederic II.* at the beginning of the 13th Century, extended their Power very considerably, and committed the taking cognizance of the Crime of Heresy to a Set of Ecclesiastical Judges; and as Fire was the Punishment decreed for the Obdurate, the *Inquisitors* determined indirectly with regard both to the Persons and to the Crimes: by which means the Laity was cut off from its own Jurisdiction, and abandoned to the Zeal and devout Madness of the Ecclesiastics. After the Death of *Frederic*, who had long

ago repented the Power he had given the Churchmen, as having seen some of the Fruits of it; Pope *Innocent IV.* erected a perpetual Tribunal of *Inquisitors*, and deprived the Bishops and Secular Judges of the little Power the Emperor *Frederic* had left them. And this Jurisdiction, which depended immediately on himself, he took care to introduce into most of the States in *Europe*. But the *Inquisitors* were so fiery hot, and made such horrible Butchery among the reputed Heretics, that they raised an universal Detestation, even in some Catholic Countries, themselves. Hence it was that their Reign proved very short both in *France* and *Germany*, nor was even *Spain* entirely subject to them till the time of *Ferdinand* and *Isabella* in 1448, when their Power was increased, under pretence of clearing the Country of *Judaism* and *Mahometanism*.

The Power of the *Inquisition* is very much limited in some Countries, particularly at *Venice*, where it is received under such Modifications, as prove a great Check on its Authority. Indeed at *Venice* it seems rather a political than a religious Contrivance, and serves rather for the Security of the State than of the Church. There are Appeals from the Subaltern *Inquisitions* in *Italy*, to the Congregation of the Holy Office residing at *Rome*. 'Tis the constant Practice of the *Inquisition*, to affect, in all their Procedures, to inspire as much Terror and Amazement as possible; every thing is done with the profoundest Silence and Secrecy, and with the greatest Rigour and Impartiality. When a Person is seized, all the World abandons him, not the nearest Friend dares speak a Word in his Defence; that alone would be enough to render them suspected of Heresy, and would bring them within the Claws of the *Inquisition*. The Criminals are seized, examined, tried, tortured, and, unless they recant, condemned and executed, without ever seeing or knowing their Accusers; whence the Revengeful have a fair occasion of wreaking their Malice on their Enemies. When the *Inquisition* has done with them, and condemned them to death, they are turned over to the Secular Arm, with a world of Prayer and pious Intreaty, that their Lives may not be touched. Time is no manner of Security in points of Heresy, nor does the Grave itself shelter the Accused from the Pursuits of the *Inquisition*; even the Deceased have their Trials, and they proceed in all their Form and Solemnity against dead Carcases. The Executions are always deferred till the Number of the Condemned is very great, that the Multitude of Sufferers may strike the deeper Horror, and make the Scene more terrible and shocking.

The *Inquisition* of *Rome* is a Congregation of twelve Cardinals, and some other Officers, where the Pope presides in Person. This is accounted the highest Tribunal in *Rome*; it began in the time of Pope *Paul IV.* on occasion of the spreading of *Lutheranism*.

The *Inquisition* is very severe in the *Indies*. 'Tis true, there must be the Oaths of seven Witnesses to condemn a Man; but then the Depositions of Slaves or Children are taken. The Person is tortured till he condemns himself, for his Accusers are never brought to confront him. Persons are accused for the slenderest Expression against the Church, or even for a disrespectful Word of the *Inquisition*. The Standard of the *Inquisition* is a red Damask, on which is painted a Cross, with an Olive-Branch on one side, and a Sword on the other, with those words of the Psalm, *Exurge, Domine, & judica Causam meam*.

INQUISITION, in Law, is a manner of proceeding in Matters criminal by the Office of the Judge, or by the great Inquest before Justices in Eyre. *Inquisitors* among us are Sheriffs, Coroners *super visum Corporis*, or the like, who have Authority to enquire into certain Cases.

INROLMENT, in Law, is the Registering, Recording, or Entering of any lawful Act in the Records of Chancery; as a Recognizance acknowledg'd, or a Statute, or a Fine levied: or in the Rolls of the Exchequer, King's-Bench, or Common-Pleas, or in the Hustings at *Guild-Hall*, *London*, or by the Clerk of the Peace in any County.

INSCONCED, is a Term in the Military Art, implying that a Part of an Army have fortified themselves with a Sconce or small Fort, in order to defend some Pass, &c. See *Sconces*.

INSCRIBED, in Geometry: A Figure is said to be inscribed in another, when all the Angles of the Figure inscribed touch either the Angles, Sides, or Planes of the other Figure.

Inscribed Hyperbola, is such an one, as lies intirely within the Angle of its Asymptotes, as the Conical Hyperbola doth.

INSCRIPTION, a Title affixed to any thing, to give some particular Knowledge thereof. Antiquaries are very curious, in examining ancient *Inscriptions* found on Stones, and other Monuments of Antiquity. *Sanckmatho*, Contemporary, as 'tis said, with *Gideon*, drew most of the Memoirs, whereof



whereof his History is composed, from *Inscriptions*, which he found in Temples and on Columns, both among the Heathens and the Hebrews. It appears indeed that the Antients engraved upon Pillars the Principles of Sciences, as well as the History of the World. Those mentioned by *Herodotus* shew, that this was the first way of instructing People, and transmitting Histories and Sciences to Posterity. This is confirmed by *Plato*, in his *Hyparchus*, wherein he says, that *Pisistratus* engraved, on Stone-Pillars, Precepts useful for Husbandmen. *Pliny* assures us, that the first publick Monuments were made with Plates of Lead; and the Treaties of Confederacy, made between the Romans and the Jews, were written upon Plates of Brass; that, says he, the Jews might have something to put them in mind of the Peace and Confederacy concluded with the Romans. The Greeks and Romans were great Dealers in *Inscriptions*, and were extremely fond of being mentioned in them; and hence it is that we find so many, in those Countries of antient Learning, as that large Volume have been composed of them; as the Collection of *Gruterus*, &c. Since *Gruter's* Collection, *Th. Reinesius* has published another huge Volume of *Inscriptions*. *M. Fabretti* published another Volume at Rome in 1699, wherein he has corrected abundance of Errors that had escaped *Gruter*, *Reinesius*, and other Antiquaries, &c. and added a great Number of *Inscriptions* omitted by them. Since all these, *Grevius* has published a compleat Collection of *Inscriptions*, in three Volumes in Folio.

In France is an Academy of *Inscriptions* and Medals, consisting of ten honorary and ten pensionary Members, ten Associates, and as many Novices, who are to meet twice a Week, and to employ themselves in the Examination of Medals and antient Monuments, and other Parts of Greek and Roman Literature, and to compose a History of the Kings of France, from Medals. Such was the Academy at the time of its Institution, or rather Restauration, in the beginning of this Century; but as they are not now wholly employed about Medals and *Inscriptions*, they have changed their Name for one of a greater Latitude, and are called the Academy des Belles Lettres.

INSCRUTABLE, in Theology, is usually understood of the Secrets of Providence, and the Judgments of God, which cannot be found out, or into which Human Reason cannot penetrate.

INSECTS, a kind of little Animals so called by the Antients, because in some of 'em the Body seems to be cut; as in Ants, whose Belly seems divided into two: or perhaps, because the Bodies of *Insects* are composed of several Circles or Rings, as Worms, Caterpillars, &c. which are a kind of Incisions, whence the Name might probably arise. Mr. Ray, in his *Methodus Insectorum*, thus distinguisheth the several kinds of *Insects*. *Insects* are either, 1. *Ἀμεταμορφωτα*, or such as do not change their Form: Or, 2. *Μεταμορφωμενα*, such as do really change their Form. Those that do not change their Form, are either, (1.) *Ἄπυδα*, without Feet; or, (2.) *Πεδατα*, with Feet: and of these there are some kinds that cast their Skins, and others that do not. *Insects* without Feet are either Terrestrial or Land-*Insects*, or Aquatic. Terrestrial *Insects* are, 1<sup>st</sup>, either such as are produced on the Land, or in the Earth, and not in Water; as the *Lumbrici Terrestres*, which are either of the larger sort, and are call'd Dew-Worms; or of a smaller size: And of these, there are some Red, and others Green with yellow Tails; which last are commonly call'd Gilt-Tails. Or, 2<sup>dly</sup>, such as are found in the Bowels of Animals: And of these some are found in the Intestines of Men; as, (1.) The *Lumbrici Teretes*; (2.) *Lumbrici Lati*, which are also call'd *Tenia*; (3.) *Cucurbitini*, which some will have to be only the Fragments of the *Tenia*. (4.) The *Ascarides*, which are chiefly found in the *Rectum*. Those Worms which are found in the Intestines of Beasts are of two sorts, the *Oblongi*, and *Pelucidi*, of the thickness of an Horse-hair, and therefore call'd *Vermiculi Setiformes*: And the *breves* and *Craffiores*, which often are found in Horses, and are call'd the *Botts*. To this Genus of Terrestrial *Insects*, many natural Historians refer Snails, whether with or without Shells.

Water *Insects* without Feet, not changing Form, are either, 1<sup>st</sup>, of the greater sort, which have a peculiar way of moving, by first fixing their Head to the ground, and then drawing up their Tail towards it, &c. Of these, some are *Teretes*, round and smooth, of which there are three sorts; as the Medicinal *Hirudines* or Leaches, the common black Horse-Leaches, and the ash-colour'd Sea-Leaches: But there is also a sort of this kind, which is smaller and flatter, which are found sticking to Stones in the bottom of little Brooks. Or, 2<sup>dly</sup>, of the lesser sort, which have a different way of crawling or moving from the former. These are also either round or flat: Of the round sort, there is one that is black with two small Horns on its Head, and is found sticking to wet Stones in the watry Tops of Hills; and another which is red, of about a finger's length, with a For-

ceps at the Tail, found at the bottom of Fishponds, and stagnant Waters. The flat sort are very small and thin, and are call'd Flukes, being sometimes found in Waters, and sometimes in the Branches of the *Porus Bilurius* in Sheep.

*Insects* not changing Form, and having Feet, are either, 1. *Hexapoda*, with 6 Feet. 2. *Ottapoda*, with 8 Feet. 3. *Decatessarapoda*, with 14 Feet. 4. *Polypoda*, with many Feet. Those that have but six Feet, are either, (1.) Terrestrial, and these are, first, of a larger kind; as, [1.] The yellowish *Insect*, found in rotten decaying Oaks. [2.] The black one, on the Ground, called by *Mouffet*, *vermivorous*. [3.] The black one, living under Ground, with a Forceps at the Tail. [4.] A white sort, with square black Spots on its Back. [5.] The *Farinarium*, bred in Meal, of a whitish Colour. Or, secondly, a Smaller Sort; some of which are found about the Bodies of Animals: as, (1.) The *Cimex*, Bug or Wall-Louse, of a stinking Smell. (2.) *Ricinus*, the Tick. (3.) *Pediculus*, the common Louse. (3.) *Pediculus fenus seu inguinalis*, the Crab-Louse. (5.) *Pulex*, the Flea; of all which there are various kinds. Others are not troublesome to Animals, as, 1. One that in Bigness and Figure resembles a Louse, but is very nimble and swift, and is found in Books and rotten Wood. 2. Another there is with a very long Body, and a forcipital Tail. 3. The black *Insect*, found often in the Flowers of the *Chelidonium*. 4. A subterraneous Sort, a little whitish. 5. One that skips like a Grasshopper, but is much less.

(II.) Aquatic; as, [1.] The *Pediculus Marinus Grandis*, which adheres to Fishes. [2.] The *Squilla Fluviatilis*, with a Pyramidal Tail, and two Hairs or Bristles at the end. *Insects* not changing Form, and having eight Feet, are either with a Tail, as the Scorpion, or without, as the Spider; of which some spin no Web, have but two Eyes, and very long Legs, as the *Opilio* or the Shepherd. Some do spin a Web, and of these they count three sorts: 1. The *Aranea Colcestrensis Abdomine tumido, subrotundo, & elato*. 2. The Spider with the Thorax, or middle part of his Body, as big as the Abdomen. 3. The Spider with the long Abdomen, found among Reeds, Rushes, Grasses, &c. (2.) The *Ricini Ottopedes*, which are some more flat and compress'd; as the rambling Ticks that run over the Bodies of Animals, but don't fasten; and some more round and thick, which do adhere to the Skin. (3.) The *Syrones* or Mites.

*Insects* not changing Form, and with fourteen Feet, and therefore call'd *τεσσαρεκκαίδεκαποδα*, are the *Aselli*; of which there are three sorts: As, 1. the *Sea-Asellus*; the longest and largest of all; living amongst the Rocks. 2. *Asellus Lividus*, which rolls itself up into a Ball. The common Wood-Lice, Sows, or Cheese-bugs. 3. *Asellus Asininus*, with a forked Tail; not rolling itself up. To this Species may be added, (1.) The *Asellus Marinus figura brevioris*, rolling itself up. (2.) *Asellus Aquarium dulcium*, with long Legs and two Bristles on its Tail. (3.) *Pulex Aquaticus*, both in fresh and salt Water. (4.) *Pediculus Aquaticus*, which fastens upon Fish.

*Insects* not changing Form, with twenty-four Feet. These have the eight Fore-Feet lesser, and the sixteen hinder-ones larger. There are two kinds of them observed; both with long Bodies, one larger and of an obscure Colour, among the Rocks by the Sea-side; the other of a Silver Colour, found in Houses. There is a Kind with thirty Feet, of an oblong Shape, Chestnut Colour, and full flattish Body, usually lying under Logs, and Trunks of Trees. It is very agile and swift.

*Insects*, not changing Form, with many Feet, called, *πολυπυδα*, are some on Land, and either roundish in Body, with all their Legs rising out of the middle of the Belly, (nearly) as the *Julus*, or more flat and compress'd, with their Legs, not rising, as before, from a Point in the middle of their Body, but growing along on the Sides; as the *Scolopendra*. And some of this kind are aquatic, of which Mr. Ray makes three Differences: (1.) The *Cornis* Lugs, used for Baits in catching Fish, with 38 Legs, and a smooth roundish Body. (2.) The *Scolopendra Marina Corpore plano*. (3.) *Animalculum Bicorn*, or rather *Bicaudatum*, lying in the Clefts of Stones, under the Salt-water.

*Insects* which do really undergo a Change of their Form, are called *μεταμορφωμενα*; of which *Swammerdam* hath given the best Account: Tho' he shews that this word is improperly used, since there is by no means any real Transformation, but only an Explication of the Parts of the Animal, latent before, in miniature, (as it were in the *Ovum*, or *Nympha*, like the Plant in the Seed) and an Increase of all the Parts by proper Degrees.

The first Species of Transmutation or Change, which *Swammerdam* makes the second, is instantaneous, there being no sensible Rest or Stop between the old and the new Form. And the *Insects* of this Order do not lose their Motion at the time they shift the *Pellicula*, at least not to appearance. And *Swammerdam* describes the second Order



der of Change to be, when the *Vermiculus* (leaving the former Shape of the *Nympha*, with which it appeared in the Egg, and subsisted without Food) now beginning to feed, hath its Members or Parts visibly increased and stretched out, and takes the Form of a new *Nympha*, which is not without Motion; and from thence becomes a flying *Insect*. Of this sort are, (1.) The *Libella*, or *Perla*, which are produced from an *Insect* of six Feet, and which *Mouffet* takes for the *Pulex Marinus*, or, as before he calls it, *Locusta Aquatica*. Out of the crustaceous Skin, or Husk, of this *Insect*, the *Libella* breaks by a Fisure, which begins between the Eyes, and is continued to the Roots of the Wings, and is there joined to the lateral Fitures. (2.) The *Cimices Sylvestres*, whose characteristic Marks (according to *Willoughby*) are, 1. A long *Proboscis*, not spiral, but strait. 2. Their upper Wings to the middle are thick, and like Leather; thence to the Ends thin and membranous. 3. There is the Figure of St. Andrew's-Cross on their Backs. (3.) The *Locusta*, which *Willoughby* refers to the *Austromorphota*. (4.) The *Grylli-Campetres*. (5.) The *Grylli-Domestici*, or Crickets. (6.) The *Gryllo-Talpa*, Mole-Cricket. (7.) The *Cicada*, or Grasshopper. (8.) The *Blatta*, according to *Swammerdam*. (9.) The *Tipula Aquatica*, which run very swiftly on the Surface of the Water, and have a Sting in their Mouths like the *Cimices*, or Ticks. (10.) The *Scorpius Aquaticus*, with a Sting also in its Mouth. (11.) The *Musca Aquatica*, called by *Andronandus*, *Apes Amphibia*. (12.) The *Hemerobius*, or *Ephemera*, or *Diaria* of *Swammerdam*. (13.) The *Forficula*, or *Auricularia*.

The second Species of Transmutation includes such *Insects*, as undergo a double Metamorphosis, or Change of Shape. (1.) Into a *Chrysalis*, or something analogous to it. (2.) Into a flying *Insect*. These Kinds of *Insects*, a while before they change, lie quite still, without Feeding, or changing Place; and in respect of their Wings are, (1.) *Κτερόπτεγ*, or *Vaginipennia*, as the *Scarabæi*, Beetles. (2.) *Ἀνδρογύττεγ*, whose Wings are open and expanded: And the Wings of these are either farinaceous, as the *Papiliones*, &c. or membranous, as the *Apes*, *Muca*, &c. and these are either *Διπτεγ*, with two Wings, or *Τετραπτεγ*, with four Wings.

The *Scarabæi* may be divided, (1.) In respect of their Horns, into the *Nasicornis*, *Bucerota*, and *Cervus volans*, or *Taurus*. (2.) In respect of their *Antennæ*, which are of many Kinds; whereof the most eminent are those called *Capricorni*. (3.) With regard to their Motion, as the *Saltatrices*. (4.) With regard to their Colour, as *Cantharides*. To the Beetle-kind may be refer'd the *Cicindela*, or Glow-Worm; the *Staphylinus* called by *Willoughby* *ἡμικυλίστιες*; the *Proscarabæus*, or Oil-Beetle, so called from its emitting from its Joints a kind of Oil, on its being pressed or squeezed. The *Anelytra*, with farinaceous or mealy Wings, are called *Papiliones*, Butter-flies; and these are either Diurnal, or Nocturnal. The specific Distinction of the Diurnal is, that they always settle with their Wings erect, are produced from an angulous *Aurelia*, and have their *Antennæ* fludded: of these there are about fifty sorts observed in England. The nocturnal Butterflies, or *Phalena*, are vastly numerous, and cannot very clearly be methodized. But for Memory and Distinction's sake, they may be divided into, (1.) The *Geometrigene*, which come from the *Eruca*, (called *Geometra* from the Manner of its Walk, which is *Ansatinus*, by curling up its Back like the Handle of a Cup) with 8 or 10 Feet. (2.) Such as come from *Eruca* with 14 Feet: Of this kind, which is very numerous, there hath been distinguished the *Phalena Fasciata*, whose Wings are in Patches or Arca's of different Colours. *Phalena Lineata*, whose Wings are marked with transverse Lines. *Phalena Punctata*, whose Wings are marked with one or more Points: and these excepted, all the others are distinguished into greater and lesser, and of a middle Size, between both. One of the larger Kinds may be distinguished also by their inner Wings running out beyond the upper, when they sit, or rest: And another by the Appearance of the Figure of Eyes upon the Wings: And a third, by their long Tails, and narrow sharp Wings; which by some are called *Phalena Prædatrices*, or *Accipitrine*. The *Anelytra*, with membranous Wings, are Bees, Flies, Wasps, *Bombylii*, *Crabrones*, &c. And to this kind the *Culex Vulgaris*, according to *Swammerdam*, or Gnat is referred; as also the *Formica*, or Ant. And hither must be referred such Water *Insects*, as are covered by a *Theca*, according to the Observations of *Willoughby*. These have either, (1.) an immoveable *Theca*, or Case, which is fixed to the Stones; and this Case is either of a round Figure, or one more compress'd and flat. (2.) A moveable, portable *Theca*, and these are commonly called *Phryganea*: And this *Theca* is either, (1.) Strait, and that either composed of Straws, and little *Festucæ* lying parallel one to another; of which there are two Kinds, a greater, where the *Festucæ* are two Inches

long; and a lesser, which are very common, and are called Straw-Worms. Or else the *Festucæ* lie transversely, and are shorter, having sometimes pieces of Shells, or Stones, intermixed with them: Others, whose Cases are strait also, have no *Festucæ*; but always either Sand, or Gravel: And of these some have the *Theca* round, and are called Cod-baits; others are flat and compressed. (2.) Crooked, or horned, which run tapering; of these Mr. Ray reckons four Kinds; a greater and less Black sort; and a greater and less Ash-colour'd one. These all produce Flies with large Wings like Butter-flies.

The third Species of Transmutation, is a simple Change from a *Vermiculus* to a flying *Insect*; but yet with a sensible *diastia*, rest, or stop, between one Form and the other. This Change *Swammerdam* thus describes: "The *Vermicle* excluded from the Egg gets Nourishment by little and little from without, and under that first Skin, or Covering, hath its Members increased by Degrees; not slipping it, or putting it off as other *Vermiculi* do when they change into *Nympha*, but assuming the Figure of a *Nympha* in it: For a time it is quite motionless, till the superfluous Moisture is evaporated, and then, in a few Days, recovers its Motion again, and casting off this Skin, which is as it were double, it becomes a Fly." Of this kind are our Flesh-flies, and all the *Nympha Vermiformes*, the *Vespeæ* *Ichneumones*, &c.

As to the Generation of *Insects*, the World is now generally convinced that they are not bred of Corruption, but *ex Ovo*; tho the contrary was believ'd by the Ancients, because of the vast Numbers that were sometimes hatch'd as it were at once, and because they cou'd not discern the particular Manner of their Propagation. *Malpighi*, *Swammerdam* and *Redi*, have abundantly disproved the Doctrine of Equivocal Generation, as well as the Chimerical Transformation of the Caterpillar into the Butter-fly, and other the like Metamorphoses; and have shewn, that all the Members of the Butter-fly were enclosed under the Skin or *Nympha* of the Caterpillar, as the Parts of a Plant are in the Seed.

*Insects* take particular Care to deposite their Eggs, or Seed, in such Places where they may have a sufficient Incubation, and where the Young when hatch'd may have the Benefit of proper Food till they become able to shift for themselves. Those whose Food is in the Water, lay their Eggs in the Water; those to whom Flesh is a proper Food, in Flesh; and those to whom the Fruits, or Leaves of Vegetables are Food, are accordingly reposit, some in this Fruit, some in that Tree, and some in that Plant, and some on another, but constantly the same Kind on the same Tree, &c. As for others that require a more constant and greater Degree of Warmth, they are provided by the Parent Animal with some Place in or about the Body of other Animals; some in the Feathers of Birds, some in the Hair of Beasts, some in the Scales of Fishes, some in the Nose, some in the Flesh, nay some in the Bowels, and inmost Recesses of Man, and other Creatures. And as for others to whom none of those Methods are proper, they make them Nests by Perforation in the Earth, in Wood, in Combs, and the like, carrying in and sealing up Provisions that serve both for the Production of their Young, and for their Food, when produced.

In Flies, Butter-flies, &c. it is observ'd, there is a kind of Gluten, by which the Female fastens her Eggs to the bearing Buds of Trees, &c. so that the Rains cannot wash them off. These Eggs will not be hurt by the greatest Frost. Mr. *Andry*, in his Book *De la Generation de Vers dans le Corps de l'Homme*, takes notice, that the Ancients were mistaken in denying that *Insects* did breathe, on the account of their wanting Lungs: For modern Observations convince us, that *Insects* have a greater Number of Lungs than other Animals. The Ancients thought also that *Insects* had no Blood, because many of them had no red Liquor like our Blood: But it is not the Colour, but the Use of the Liquor that is to be regarded. They believed also that *Insects* had no Hearts; whereas our Microscopes do now discover, that when *Insects* have several Lungs, they have also several Hearts; and in particular, it is found, that Silk-Worms have a continued Chain of Hearts, from the Head almost to the very Extremity of the Tail. And it is this Number of Hearts and Lungs that occasions those *Insects* to give Signs of Life a long while after they are divided into several Parts. He observes also, that it is wrong to call *Insects* imperfect Animals, since they want no Parts either necessary or convenient for their Use, or to render them compleat in their Kind. There are some, who affirm that the Earth-Worms, and those Round-tailed Worms, which are found in the Intestines of Men and Horses, &c. also Snails and Horse-Leaches are Hermaphrodites; but that such Worms as become Flies, and Silk-Worms are not so, being of no Sex; but are Nests full of real Animals, which we see in time come out with Wings.



The Moderns have proceeded much further in the Knowledge of *Insects* than the Antients, as having the Advantages of the Microscope which distinguishes their minute Parts, whereof they have publish'd Draughts and Descriptions. Dr. *Hook* has publish'd a *Micrographia* in *Folio*; and *Fran. Redi*, a Physician at *Florence*, has publish'd several Figures with new and curious Experiments of his own. *Sig. Malpighi*, *Bartolin*, the *Philosophical Transactions* of *London*, *Paris*, and *Leipsic*, have a great Number of fine Observations and Experiments on *Insects*. *Swammerdam* has written a general History of *Insects* in *Dutch*, and assures us, there are above 400 Writers on this Subject; among others are *Wotton*, *Gesner*, *Aldrovandus*, *Mouffet*, *Harvey*, *Fabricius ab Aquapendente*, *Goedart*, &c. *Hoeffnagel*, Painter to the Emperor *Rudolphus*, has given very good Designs of above 300 Species, *Goedart* has described above 400, and Mr. *Albin* has given us a new History of our *English Insects*, with very beautiful Figures.

**INSEMINATION**, one of the four Kinds of Transplantation, in use for the Cure of certain Diseases. It is performed by mixing the Medium impregnated with the *Mumia* taken from the Patient with some fat Earth wherein has been sown the Seed of a Plant appropriate to that Disease; but Care must be taken from time to time to sprinkle it with the Water wherein the Part affected has been wash'd. 'Tis supposed the Diseases will decline in proportion as the Plant grows. By *Mumia*, is here meant a Part of the vital Spirit of the Patient.

**INSERTION**, a Term frequently us'd in Physic, to signify the Implication of one Part within another. The *Insertion* of the Bones, Muscles, and Nerves in the Members of an Animal, is exceedingly artful. The *Vena Cava* has its *Insertion* in the right Ventricle of the Heart. *Insertion* is also used in Agriculture for the Inclosing a Graft within the Cleft of a Tree.

**INSESSUS**, is a kind of Half-Bath, usually prepared with a Decoction of several Herbs, proper for the lower Parts, wherein the Patient sits down to the Navel. It has several Uses, as the easing of Pain, softening of Parts, dispelling of flatulent Matter, and frequently, promoting of the *Menses*.

**INSINUATION**, a cunning and covert way of creeping into Favour. *Insinuation* of a Will, among the Civilians, is the first Production of it, or the leaving it with the Register in order to its Probate.

**INSIPID**, that which has nothing in it sharp or pungent enough to affect the Palate, Tongue, &c. and to occasion that Sensation we call Tasting.

**INSITIO**, a Term in Botany, used in the same Sense with engrafting; signifying in general the Insertion and Uniting of any Cyon, Bud, &c. into the Substance of the Stock: And is of various kinds.

**INSOLATION**, in Pharmacy, is a Preparation of Fruits, Drugs, &c. by exposing them to the Heat of the Sun's Rays; either to dry them, or to bake or sharpen them, as is done in Vinegar, Figs, &c. The Word comes from the *Latin* Verb *insolare*, which is used by *Pliny* and *Columella*, and signifies to expose to the Sun.

**INSOLVENT**, a Term applied to such Persons as have not wherewithal to pay their just Debts: A Person dying, and not leaving Estate sufficient to discharge these, is said to die *insolvent*.

**INSPECTOR**, a Person to whom the Care and Conduct of any Work is committed.

The *Jews* have an Officer in their Synagogue, whom they call *Inspector*, *ἰσχυρ*, *Ibazan*. His Business consists principally in inspecting or overlooking the Prayers and Lessons, in preparing and shewing them to the Reader, and in standing by him to take care he reads right, and if he make Mistakes, to correct him. In the *Roman* Law, *Inspectors* were such Persons as examin'd the Quality and Value of Lands and Effects, in order to the adjusting or proportioning Taxes and Impositions to every Man's Estate.

**INSPIRATION**, among Divines, &c. implies the conveying of certain extraordinary and supernatural Notices or Motions into the Soul. Thus the Prophets are said to have spoken by Divine *Inspiration*; and the Sinner is converted, when he ceases to resist the *Inspiration* of Grace. Some Authors reduce the *Inspiration* of the Sacred Writers to a particular Care of Providence, which prevented any thing they had said from failing, or coming to nought; maintaining they never were really inspired, either with Knowledge or Expression. According to M. *Simon*, *Inspiration* is no more than a Direction of the Holy Spirit, which never permitted the Sacred Writers to be mistaken. And it is a common Opinion, that the *Inspiration* of the Holy Spirit regards only the Matter, not the Style or Words; which seems to fall in with M. *Simon*'s Doctrine of Direction. Among the Heathens, their Priests and Priestesses were said to be divinely inspired when they gave Oracles. The Poets, too, laid claim to it; and to this end, always invoked *Apollo* and the Muses at the beginning of any great Work.

*Inspiration*, in Physic, is understood of that Action of the Breast, by which the Air is admitted within the Lungs. This Admission of the Air depends immediately on its Spring or Elasticity, at the time when the Cavity of the Breast is enlarged by the Elevation of the Thorax and Abdomen, and particularly by the Motion of the Diaphragm downwards: so that the Air does not enter the Lungs, because they are dilated; but those dilate, because the Air enters within them. Nor is it the Dilatation of the Breast which draws in the Air, as is commonly thought; tho this is a Condition absolutely necessary to *Inspiration*, but an actual Intrusion of the Air into the Lungs. See *Respiration*.

**INSPISSATE**, a Term used in Pharmacy for that Operation whereby a Liquor is brought to a thicker Consistence, by evaporating the thinner Parts: and thus Juices, as that of Liquorice, are *inspissated*.

**INSTALMENT**, is a Settlement, or inflating any Person in his proper Place. It is sometimes confounded in Law with Abatement. The Word is chiefly used for the Induction of a Dean, Prebendary, or other Ecclesiastical Dignitary into the Possession of his Stall, or proper Seat in the Cathedral Church to which he belongs: it is sometimes called *Installation*. This Term is likewise commonly used for that Ceremony wherein the Knights of the Garter are placed in their Rank at *Windfor*. The Word is derived from the *Latin* *in* and *Stallum*, a Term used for a Seat in Church, in the Choir, or a Seat or Bench at a Court of Justice, &c. Tho *Vossius* is of opinion, the Word is pure *German*.

**INSTANT**, is such a part of Duration, wherein we perceive no Succession; or is that which takes up the time of only one Idea in our Minds. The Schools distinguish three kinds of *Instants*; a temporary, a natural, and a rational *Instant*. A temporary *Instant* is a part of Time immediately preceding another: Thus the last *Instant* of a Day precedes immediately and really the first *Instant* of the following Day. A natural *Instant* is what we otherwise call a Priority of Nature, which is observed in things that are subordinated in acting; as first and second Causes; Causes and their Effects. For the nature of things requires, that if there be a second Cause, there must be a first; and that there must be a Cause, if there be an Effect. A rational *Instant*, is not any real *Instant*, but a Point which the Understanding conceives to have been before some other *Instant*, founded on the nature of the things which occasion it to be conceiv'd. For instance, as God has made several things voluntarily, which he could, otherwise, have let alone; there is a reasonable Foundation to conceive God such as he is in himself, before he had made any of those voluntary Determinations: but as there was no real *Instant*, when God had not form'd any Determination, this *Instant* is call'd a rational *Instant*, by way of opposition to an *Instant* of Time.

**INSTAURATION**, the Re-establishment of a Religion, a Church, &c. The Word is derived from the old *Latin* *Instaurum*, which signified every thing necessary for the tilling and managing of Grounds; as Cattel, Tools, Harness, &c.

**INSTINCT**, a Disposition or natural Sagacity wherewith Animals are endued, by virtue whereof they are enabled to provide for themselves, know what is good for them, and determined to preserve and propagate the Species. It bears some Analogy to Reason, and supplies the Defect of it in Brutes.

**INSTITUTE**, to ordain, found, or establish any thing. Thus *Moses* instituted the Ceremonies of the Old Law, and *Jesus Christ* the Sacraments of the New.

**INSTITUTION**, is the Act of the Bishop, or one commission'd by him to act, whereby any Clerk is invest'd with the Spiritualities of a Rectory or Vicarage. The Clerk kneels down before the Bishop, whilst he pronounces these Words of *Institution*: (*Instituo te Rectorem Ecclesie de A. B. cum Cura Animarum, & accipe Curam tuam & meam*) and the Clerk holds the written Instrument, with the Episcopal Seal annexed, in his hand during the Ceremony. But the Clerk must have Induction after this, without which he has no Right to his Temporalities, if the Benefice be not a Donative. Before the Clerk is instituted, he must subscribe the 39 Articles of Religion, in the Presence of the Ordinary (or his Substitute) and the Ordinary is not bound to offer them, but the Clerk is to offer to subscribe them: and he must subscribe them without Reserve, Exception, or Qualification, or else his *Institution* is *ipso facto* void, and null, and the Church is still vacant. At the same time the Ordinary requires the Clerk to subscribe the other two Articles, mention'd in the 26th Canon about the King's Supremacy, and the Lawfulness and Use of the Liturgy. The Clerk must also before *Institution* subscribe to that part of the Declaration enjoin'd by the Act of Uniformity, 14 Car. 2. c. 24. viz.



I will conform to the Liturgy of England, as by Law established. Before Institution, he must also take the Oaths mention'd in the first Statute of William and Mary, c. 8. instead of the former Oaths of Allegiance and Supremacy required by Stat. 1 Eliz. And then he must take the Oath against Simony, enjoin'd by the 40th Canon, and the Oath of Canonical Obedience. And he is to have Certificates given him of his subscribing the Declaration contained in the Act of Uniformity, in English, in a distinct Instrument, under the Hand and Seal of the Bishop; and of his other Subscriptions and Oaths in Latin. The Clerk ought by all means to have Witnesses of his Institution, his taking the Oaths, making Subscriptions, &c. and therefore he should desire some present to write their Names on the back of his Instruments; and make Memorandums who they are, and where they live. The Church, by Institution, is full against all Persons, but the King; and the Clerk by it may enter upon the Glebe, and take the Tythes: but he cannot let or grant them, nor sue for them, if they are refused to be paid. After Institution the Clerk is to receive a written Mandate from the Ordinary to the Arch-Deacon, or other proper Person, in order to his Induction: which see.

INSTITUTIONS, or *Institutes*: Part of the first of the four Tomes or Volumes of the Civil Law; being a Compendium or Summary of the whole in four Books, composed by *Tribonianus*, *Theophilus* and *Dorotheus*, by order of the Emperor *Justinian*, for the Use of young Students; who having the first Elements of the whole Profession in this little Treatise, might the sooner gain a competent Knowledge of it, without being discouraged by the Bulk of the former Books. *Institutions* are likewise a System of Laws, or Rules in any particular Science; and so Physical or Medicinal *Institutions* are such as teach the necessary *Præcognita* to the Practice of Medicine, or the Cure of Diseases.

INSTRUMENT, properly signifies any thing that serves as a Cause to produce an Effect.

*Instrument*, is also used in Law to signify some public Act or authentic Deed, by means whereof any Truth is made apparent, or any Right or Title establish'd in a Court of Justice.

*Instruments of Sacrifice*, are Ornaments in the Antique Architecture; as Vases, Paterns, Candlesticks, Knives, wherewith the Victims were kill'd, &c. Instances of which, we see in a Corinthian Freeze in the Remains of a Temple behind the Capitol at Rome, &c.

INSULATED, by the French called *Isolee*, and the Latins *Insulatus*; is a Term apply'd to a Column that stands alone, or free from any contiguous Wall, &c. like an Island in the Sea; whence the Word is derived.

INSULT, a Military Term, used for the attacking of any Post with open Force, without the Apparatus of Trenches, Saps, or any regular Approaches.

INSUPER is a Word used by the Auditors of the *Exchequer*: In their Accompts, they say, so much remains *insuper* to such an Accomptant; that is, so much remains due on such an Accompt.

INSURANCE, is Security given in Consideration of a Sum of Money paid in hand, to make good Ships, Merchandizes, Houses, &c. to the Value of that for which the Reward is received, in case of Loss by Storm, Pirates, Fire, &c.

INTACTÆ are Right Lines to which Curves do continually approach, and yet can never meet with them: These are usually called *Asymptotes*, which see.

INTAGLIO's, precious Stones, having the Heads of great Men, Inscriptions, and the like, engraven on 'em; such as we frequently see set in Rings, Seals, &c.

IN-TAKER, a Name antiently given to certain Banditti or Robbers, who inhabited a part of the North of England, and who made frequent Excursions into the very middle of Scotland, plundering the Inhabitants wherever they came. Those who made the Expeditions were called *Out-Parters*, and those who were left behind to receive the Booty *In-Takers*.

INTEGERS, from the Latin *Integrum*, signifies, in Arithmetic, whole Numbers, in contradistinction to Fractions.

INTEGRAL: the *Integral Calculus* in the new Analysis, is that which answers to the differential Calculus. This last has been compleatly explained by the Marquis de l'Hospital, but the other still remains imperfect, having been but little cultivated.

*Integral*, among the Schoolmen, is understood of those Parts which enter the Composition of any Whole. Thus the Arms, Legs, &c. are *integral* Parts of the Body.

INTEGUMENT, a Term in Anatomy, applied to the Skins or Membranes, which cover the Parts within the Body, as the Coats or Tunics of the Eye. The word is originally Latin, and signifies any kind of Covering.

INTELLECT, a Term used among the Philosophers, to signify that Faculty of the Soul, usually called the Un-

derstanding. The *Peripatetics* make two kinds of *Intellect*, the Active and the Passive; the Active is that which receives the impressed Species emitted by Objects to the exterior Senses, which convey to the common Sensorium. These impressed Species being material and sensible, are rendered intelligible by the Active *Intellect*, and fit to be received into the Passive *Intellect*. The Species, so spiritualized, are called expressed Species, as being expressed from those others impressed, and it is by these that the *Intellect* comes to know material things: in effect, however, the two *Intellects* have nothing really distinct from each other.

INTELLIGIBLE; any thing capable of being understood or conceived by the Mind. The Philosophers have invented certain Beings that are purely intelligible, and only subsist in the Understanding; such are the *Entia Rationalis*, Universal Ideas, and other Chimeras. The intelligible, or intellectual World, is the Idea of the World in the Divine Mind, frequently referred to by Malebranch.

INTENDANT, one who has the Conduct, Inspection, and Management of any thing. This is a Title very frequent among the French: they have their *Intendants* of the Marine, who are Officers in the Sea-Ports, whose Business is to take care the Ordinances and Regulations relating to Sea-Affairs be observed; *Intendants* of the Finances, who have the Direction of the Revenues; *Intendants* of Provinces, who are appointed by the King, to take care of the Reformation of Justice, Policy, and Finances in the Provinces; *Intendants* of Buildings, of Houses, &c.

INTENDMENT OF LAW, the Understanding, Intention, and true Meaning of the Law. The Judges ought to judge according to the common *Intendment* of the Law. Coke.

INTENT, in the Civil Law, is to begin or commence an Action or Process.

INTENTION, in Law, is a Writ which lies against him who enters after the Death of the Tenant in Dower, or other Tenant for Life, and holds out him in the Reversion or Remainder.

INTENTION, in Physic, is that Judgment or particular Method of Cure, which a Physician forms to himself from a due Examination of Symptoms.

In Physics, it signifies the Increase of any Power or Quality, as Heat, Cold, &c. as Remission signifies its Decrease or Diminution.

In Metaphysics, it is used for the Exertion of the intellectual Faculties with more than ordinary Vigour: When the Mind with Earnestness fixes its View on any Idea, considers it on all sides, and will not be called off by any Solicitation.

The Schoolmen also use the Terms first and second *Intention*. A Term of first *Intention* is that which signifies a thing; the first *Intention* of Man, in establishing Words, being to express Things, or the Ideas they have of Things. A Thing of second *Intention* is that which does not signify a Thing, but another Term or Sign. Thus a Tree, a Man, &c. are Terms of first *Intention*, and the Terms in Rhetoric, Grammar, &c. as Figure, Kind, &c. are Terms of second *Intention*.

INTERCALARY-DAY, is usually understood of the odd Day inserted in the Leap-Year. The Word is derived from the Latin *Intercalaris*, of *Calo calare*, which antiently signified to call with a loud Voice: an *Intercalary* among the Romans signifying a Day inserted between two other Days; which for that reason was proclaim'd by the Priests with a loud Voice.

INTERCOLUMNS, or *Intercolumniation*, in Architecture, signify the Spaces between the Columns. The *Intercolumns* must always be proportion'd to the Height and Bulk of the Columns. *Vitruvius* calls it *Intercolumnium*: And according to that Author, the *Intercolumniation* is of five kinds; viz. Pycnostyle, Systyle, Eustyle, Diostyle, and Aræostyle: which see explain'd in their places. For a Medium, some Authors have laid down the following Proportions for the *Intercolumns*. In the Tuscan Order, the *Intercolumn* must be four Diameters of the Body of the Column below; in the Doric three; in the Ionic two; in the Corinthian two, one quarter; in the Composite one and a half.

INTERCESSOR, a Person who prays or intercedes in behalf of another. In the Roman Law *Intercessor* was the Name of an Officer, whom the Governours of Provinces appointed principally to raise Taxes and other Dues. See the third Law of Just. Code.

*Intercessor* was also a Term heretofore applied to such Bishops, as, during the Vacancy of a See, administer'd the Bishopric, till a Successor to the deceased Bishop had been elected. The third Council of Carthage calls these *Interventors*. The word *Intercessor* comes from the Latin *inter* and *cedo*, I go between.

INTERCOMMONING, is when the Commons of two Mannors lie together, and the Inhabitants of both have



time out of mind caused their Cattel to feed promiscuously in each.

**INTERCOSTAL**, in Anatomy, signifies any thing between the Ribs. There are two *intercostal* Nerves, which are so call'd, because in descending they pass near the Roots of the Ribs. They are formed in the Brain, by three Branches of Nerves, two whereof come from the sixth Pair, and the third from the fifth. The *intercostal* Nerves have a great Communication with those of the eighth Pair, and send several Branches to the Breast and lower Ventricle. There are also two *intercostal* Arteries; the upper, which comes from the Subclavian, and distributes itself within the four Spaces of the upper Ribs; and the under, which comes from the lower Trunk of the great Artery, and diffuses itself within the Spaces between the eight lower Ribs and the neighbouring Muscles. There is also a Vein call'd *Intercostal*, which arises from the four Spaces between the upper Ribs, and terminates in the Subclavian.

• *Intercostal Muscles* are the external and internal, which are forty-four in number, one of each sort being between every two Ribs: They arise from the lower Edges of each superior Rib, and are inserted into the upper Edges of each inferior Rib. Their Fibres cross one another; those of the external run obliquely from the back-part forwards; but those of the internal from the fore-part backwards: they are thin and fleshy.

**INTERDICT**, a Censure inflicted by a Pope or Bishop suspending the Priests from their Functions, and depriving the People of the Use of Sacraments, Divine Service, and Christian Burial.

*Interdict* is properly understood of a general Excommunication of a Country or City, as appears by the Decretals. There is a local and a personal *Interdict*; where these two are join'd, the *Interdict* is said to be mix'd. This Punishment, as well as general Excommunications, were but little known till the Time of Pope Gregory VII. In Excommunicating a Prince, all his Adherents, that is, his Subjects who retain their Allegiance, are excommunicated, and the whole Country is under an *Interdict*. In the Reign of King John, the Kingdom of England lay under a Papal *Interdict* for above six Years together: It began A.D. 1208. In Imitation of the Popes, the Bishops also began to *interdict*; and it became a common thing for a City or Town to be excommunicated for the sake of a single Person whom they undertook to shelter. But this Severity was found to have such ill Effects, that they have been oblig'd to moderate it. An *Interdict* is denounced, and taken off again, with the same Formalities as an Excommunication.

In the Common Law, the word *Interdiction* is used also in the same Sense as in the Canon Law, where it is defin'd to be *Censura Ecclesiastica prohibens Administrationem Divinorum*.

*Interdicts*, in the Roman Law, were certain *Formulae* of Words, by which the Praetor, when the Possession of any thing was contested between many, order'd or forbid something to be done with it, till the Business of Right or Property should be legally determin'd. Which *Formulae* were call'd *Interdicts*, because they related to the Possession of the thing in the *interim*; or till the Right was ascertain'd. They had three kinds of *Interdicts*, *Prohibitoria*, *Restitutoria*, and *Exhibitoria*. *Prohibitoria* were those by which the Judges forbid any one to vex another in the Possession of any thing legally belonging to him. *Restitutoria* were those by which the Judges appointed any one, who had been expelled out of his Estate, to be repossessed before his Right was legally ascertain'd; and this was the same with what they call'd the *Reintegrant*. *Exhibitoria* were those by which any thing in dispute was order'd to be exhibited, as a Testament, &c.

There was also a second Division of *Interdicts*, viz. into *Adipiscende*, *Retinende*, and *Recuperande*. The first tend'd to the acquiring a new Possession, as the *Interdict quorum bonorum*, &c. the second to the keeping an old one

till it was further determin'd, as the *Uti possidetis*, &c. the last to the recovering one lost, as *Unde vi*, &c.

*Interdiction of Water and Fire*; a Sentence antiently pronounced against such, as for some Crime were to be banish'd. They were not directly adjudged to Banishment; but by giving order that no body should receive them, but deny them Fire and Water, they were condemned, as it were, to a Civil Death; and this they call'd *Legitimum Exilium*. Livy.

**INTEREST**, is the Sum reckoned for the Loan and Forbearance of some principal Sum lent for, or due at a certain time, according to some certain Rate, and therefore call'd Principal, because it is the Sum that procreates the *Interest*, or from which the *Interest* is reckoned, and is either Simple or Compound.

(1.) Simple *Interest* is counted from the Principal only, and is easily computed by the Simple or Compound Golden Rule, thus: Let that which is the principal Cause of the *Interest* be put in the first place, and that which betokeneth Time be in the second place, and the remaining in the third; under this conditional Part place the two other Terms, each under its like, and there will be a Blank to supply under one of those above, either under the first, second, or third: As for Example, if 100 £. in twelve Months gain 6 £. (this is the conditional Part) what shall 50 £. get in three Months? Place them down as in the Rule.

| l.  | Months. | l. |
|-----|---------|----|
| 100 | 12      | 6  |
| 50  | 3       |    |

Here the Blank will be under the third Place, multiply the three last for a Dividend, and the two first for a Divisor, the Quotient of these gives the sixth; that is,  $6 \times 50 \times 3 = 900$ , and  $100 \times 12 = 1200$ . Now  $1200 \div 900 = 1\frac{2}{3}$  (73 = 15 s. required. But if the Demand had been, In how many Months would 50 £. have gained 15 s. or if 100 £. in twelve Months gain 6 £. what shall the Principal be that in three Months would gain 15 s. In these two Cases the Blank would have been under the first or second Term: Then, by the Rule, multiply the first, second, and last for a Dividend, and the third and fourth for a Divisor; the Quotient is the Answer.

| l.  | Months. | l.    |
|-----|---------|-------|
| 100 | 12      | 6     |
| 3   | 75      | 15 s. |

Rule  $100 \times 12 \times 75 = 900.00$  and  $6 \times 3 = 18$  900. (50 £. required.

This Rule shews Simple *Interest*, and all that belongs to it with Ease, and was thus found: Put P for the Principal, T for the Time, and G for the Gain in the Conditions, and p, t, g answering, it will be, P: G :: t: p:  $\frac{G p t}{P}$ . And T: G p :: t:  $\frac{G p t}{T P} = g$ , which is the first

Rule; that is, multiply the three last for a Dividend, and the two first for a Divisor. And because  $\frac{G p t}{T P} = g$ , therefore  $G t p = T P g$ , and consequently  $t = \frac{T P g}{G p}$  and  $p = \frac{T P g}{G t}$ , which is the second Rule.

(2.) Compound *Interest* is that which is counted from the Principal, and Simple *Interest* forborn, called also *Interest upon Interest*; but because this hath now no Place in human Affairs, it being rendered illegal, it is not worth while to know how to compute it. But besides the ways of computing *Interest*, we shall here give another very plain, easy, and ready Method of computing all Simple *Interest* and Discount; as also the way to find the Amount or present Value of any Sum of Money, or of any Annuity, or other yearly Payment, &c. for any Term not exceeding an hundred Years. And in order to this, the following Table of Shillings, Pence, and Farthings, reduced to the Decimal Parts of Pounds, is previously necessary.



# SHILLINGS, PENCE, and FARTHING S, reduced to the Decimal Parts of a POUND.

| s. | d.             | Decimal Parts of a Pound. | s. | d.              | Decimal Parts of a Pound. | s. | d.             | Decimal Parts of a Pound. | s. | d.              | Decimal Parts of a Pound. |
|----|----------------|---------------------------|----|-----------------|---------------------------|----|----------------|---------------------------|----|-----------------|---------------------------|
| —  | —              | —                         | —  | —               | —                         | —  | —              | —                         | —  | —               | —                         |
| —  | $\frac{1}{4}$  | .001042                   | —  | $7\frac{1}{4}$  | .030208                   | —  | $2\frac{1}{4}$ | .059375                   | —  | $9\frac{1}{4}$  | .089583                   |
| —  | $\frac{1}{2}$  | .002083                   | —  | $7\frac{1}{2}$  | .03125                    | —  | $2\frac{1}{2}$ | .060417                   | —  | $9\frac{1}{2}$  | .090625                   |
| —  | $\frac{3}{4}$  | .003125                   | —  | $7\frac{3}{4}$  | .032292                   | —  | $2\frac{3}{4}$ | .061458                   | —  | 10              | .091667                   |
| —  | —              | .004167                   | —  | 8               | .033333                   | —  | 3              | .0625                     | —  | $10\frac{1}{4}$ | .092708                   |
| —  | $1\frac{1}{4}$ | .005208                   | —  | $8\frac{1}{4}$  | .034375                   | —  | $3\frac{1}{4}$ | .063542                   | —  | $10\frac{1}{2}$ | .09375                    |
| —  | $1\frac{1}{2}$ | .00625                    | —  | $8\frac{1}{2}$  | .035417                   | —  | $3\frac{1}{2}$ | .064583                   | —  | $10\frac{3}{4}$ | .094792                   |
| —  | $1\frac{3}{4}$ | .007292                   | —  | $8\frac{3}{4}$  | .036458                   | —  | 4              | .065625                   | —  | 11              | .095833                   |
| —  | 2              | .008333                   | —  | 9               | .0375                     | —  | $4\frac{1}{4}$ | .066667                   | —  | $11\frac{1}{4}$ | .096875                   |
| —  | $2\frac{1}{4}$ | .009375                   | —  | $9\frac{1}{4}$  | .038542                   | —  | $4\frac{1}{2}$ | .067708                   | —  | $11\frac{1}{2}$ | .097917                   |
| —  | $2\frac{1}{2}$ | .010417                   | —  | $9\frac{1}{2}$  | .039583                   | —  | $4\frac{3}{4}$ | .06875                    | —  | $11\frac{3}{4}$ | .098958                   |
| —  | $2\frac{3}{4}$ | .011458                   | —  | $9\frac{3}{4}$  | .040625                   | —  | 5              | .069792                   | —  | —               | .1                        |
| —  | 3              | .0125                     | —  | 10              | .041667                   | —  | $5\frac{1}{4}$ | .070833                   | —  | —               | .15                       |
| —  | $3\frac{1}{4}$ | .013542                   | —  | $10\frac{1}{4}$ | .042708                   | —  | $5\frac{1}{2}$ | .071875                   | —  | —               | .2                        |
| —  | $3\frac{1}{2}$ | .014583                   | —  | $10\frac{1}{2}$ | .04375                    | —  | $5\frac{3}{4}$ | .072917                   | —  | —               | .25                       |
| —  | $3\frac{3}{4}$ | .015625                   | —  | $10\frac{3}{4}$ | .044792                   | —  | 6              | .073958                   | —  | —               | .3                        |
| —  | 4              | .016667                   | —  | 11              | .045833                   | —  | $6\frac{1}{4}$ | .075                      | —  | —               | .35                       |
| —  | $4\frac{1}{4}$ | .017708                   | —  | $11\frac{1}{4}$ | .046875                   | —  | $6\frac{1}{2}$ | .076042                   | —  | —               | .4                        |
| —  | $4\frac{1}{2}$ | .01875                    | —  | $11\frac{1}{2}$ | .047917                   | —  | $6\frac{3}{4}$ | .077083                   | —  | —               | .45                       |
| —  | $4\frac{3}{4}$ | .019792                   | —  | $11\frac{3}{4}$ | .048958                   | —  | 7              | .078125                   | —  | —               | .5                        |
| —  | 5              | .020833                   | —  | —               | .05                       | —  | $7\frac{1}{4}$ | .079167                   | —  | —               | .55                       |
| —  | $5\frac{1}{4}$ | .021875                   | —  | $\frac{1}{4}$   | .051042                   | —  | $7\frac{1}{2}$ | .080208                   | —  | —               | .6                        |
| —  | $5\frac{1}{2}$ | .022917                   | —  | $\frac{1}{2}$   | .052083                   | —  | $7\frac{3}{4}$ | .08125                    | —  | —               | .65                       |
| —  | $5\frac{3}{4}$ | .023958                   | —  | $\frac{3}{4}$   | .053125                   | —  | 8              | .082292                   | —  | —               | .7                        |
| —  | 6              | .025                      | —  | —               | .054167                   | —  | $8\frac{1}{4}$ | .083333                   | —  | —               | .75                       |
| —  | $6\frac{1}{4}$ | .026042                   | —  | $1\frac{1}{4}$  | .055208                   | —  | $8\frac{1}{2}$ | .084375                   | —  | —               | .8                        |
| —  | $6\frac{1}{2}$ | .027003                   | —  | $1\frac{1}{2}$  | .05625                    | —  | $8\frac{3}{4}$ | .085417                   | —  | —               | .85                       |
| —  | $6\frac{3}{4}$ | .028125                   | —  | $1\frac{3}{4}$  | .057292                   | —  | 9              | .086458                   | —  | —               | .9                        |
| —  | 7              | .029167                   | —  | 2               | .058333                   | —  | $9\frac{1}{4}$ | .0875                     | —  | —               | .95                       |
| —  | —              | —                         | —  | —               | —                         | —  | —              | .088542                   | —  | —               | —                         |

## Examples of the Use of the preceding TABLE.

What Decimal Part of a Pound is 7 d? Look in the Table for 7 d. and even with it you will find .029167, which is the Decimal required. What Decimal Part of a Pound is 17 s. 6 d? You will find the Decimal of 17 s. to be .85, and the Decimal of 6 d. to be .025; which added, makes .875. and answers the Question. What is the Value of this Decimal .09375 in Shillings, Pence, and Farthings? Look in the Table, and you will find it to be 1 s. 10 d.  $\frac{3}{4}$ . Observe, that if you cannot find in the Table the exact Decimal sought for, to take that which is nearest to it, and you can never err above half a Farthing. Knowing thus the Use of these Decimal Tables, all the Business of Simple Interest will be very easily understood, and dispatched as followeth.

The yearly Interest of any Sum of Money is had, by only multiplying the principal Sum by the hundredth Part of the Rate of Interest: For the Product in Decimals is the true Answer. For Example, what is the Interest of 75 l. for one Year, at the Rate of six per Cent?

75 = Principal.

06 = the hundredth Part of 6 l.

4.50 the Product, which is 4 10 00

What is the yearly Interest of 157 l. 17 s. 6 d. at 5 l. per cent?

157.875 is the Decimal for 157 l. 17 s. 6 d.

05 the Hundredth Part of five Pounds.

7.89375 which is the Decimal answering to 7 l. 17 s. 10 d.  $\frac{3}{4}$ , the Interest of 157 l. 17 s. 6 d. for one Year at 5 l. per Cent. and so for any other Rate or Sum whatsoever. When thus the Interest for one Year is found, divide it by 365, and the Quotient will be the Interest for one Day. Thus 01 being the Interest of one Pound for one Year, if you divide that Decimal by 365, (continuing the Work as long as you please) you will have .0002739726028, &c. for a Quotient, which will be the Interest of one Pound for one Day, and at one per Cent. Then will this Decimal .00027, &c. found as above, if you multiply it continually by the Principal, the Number of Days, and the Rate of Interest, become of itself an Interest-Table for any Sum of Money, for any Time, and at any Rate:

As for Example, what is the Interest of 150 l. for 365 Days at 6 l. per Cent:

.0002739726028  
150

410958904200  
365

150000000033000  
6

9.00000000198000, which Decimal gives the Answer, near enough for any Use, to be nine Pounds.

By the same Rule .02 divided by 365, will give, in the Quotient, the Interest of one Pound for one Day, at 2 per Cent. and 03, divided by 365, will do the same at 3 per Cent. and thus these Numbers following were found.

The Interest of one Pound for one Day, at all Rates, from 1 to 10 per Cent.

At 1 l. per Cent. is .00027397260, &c. as above.

2 ——— .00054794512

3 ——— .00082191781

4 ——— .00109589041

5 ——— .00136986301

6 ——— .00164383562

7 ——— .00191780822

8 ——— .00219178082

9 ——— .00246575342

10 ——— .00273972603, &c.

And when thus the Interest of one Pound for one Day and any Rate is found, then that Interest, multiplied by 2, 3, 4, 5, 6, 7, 8, and 9, &c. gives the Interest of any Sum of Money at the same Rate.

Take an Example at 3 l. per Cent.

Interest of 1 l. for 1 Day is .0008219178

2 ——— .0016438356

3 ——— .0024657534

4 ——— .0032876712

5 ——— .0041095890

6 ——— .0049315068

7 ——— .0057534246

8 ——— .0065753424

9 ——— .0073972602

11111

And



And then it is easy to find that the *Interest* of 1 l. being, as before, 000082, &c. that of

10 will be 000822 \*  
100 ——— 008219  
1000 ——— 082192 \*  
10000 ——— 8219178 \*  
100000 ——— 82191781

Because moving the Point of Separation still one Place nearer to the Left-Hand, multiplies any Decimal by 10, 100, 1000, &c. as is shewn under Decimals. And thus Tables of daily *Interest* may be made at pleasure. The Reason of the Stars above set to some of the Numbers, is to shew, that in the Contraction of a Decimal Fraction to fewer Places, it is proper to add one to the last Figure retained, when the next Figure to it, which is omitted, exceeded 5.

To finish this Account of *Interest*, we shall here subjoin the ingenious Mr. Barton's new and universal Method of Simple *Interest*, correctly, concisely, and easily finding the *Interest* of any Sum, for any Number of Days, at any Rate *per Cent.* by one General Rule.

Places ——— 1 2 3 4 5 6 7 8 9 10  
**RADIX** ——— .0000027397  $\frac{1}{100}$  l. Sterling.  
(General Rule) multiply the Principal, Time, Rate, and Radix one into another, and it's done.

## EXAMPLE 1.

*Interest* of l. 271 for 112 Days at l. 3 *per cent. per ann.*

112  
20352  
3  
91056  
2.4657  
273  
13  
1  
2.494 *Ans.* l. 2 : 9 : 10  $\frac{3}{4}$

## EXAMPLE 2.

*Interest* of l. 110 for 71 Days at l. 5 *per cent. per ann.*

11  
781  
5  
3905  
.8219  
.2465  
13  
1.069 *Ans.* l. 1 : 1 : 4  $\frac{1}{2}$

## EXAMPLE 3.

*Interest* of 5000 l. for 60 Days at l. 4. *per cent. per ann.*

6  
3  
4  
12  
32.876 *Ans.* l. 32 : 17 : 6  $\frac{3}{4}$

## EXAMPLE 4.

*Interest* of l. 800 for 125 Days at l. 6 *per cent. per ann.*

8  
1  
6  
6  
26.438 *Ans.* l. 16 : 8 : 9  $\frac{1}{4}$

Any Annual Sum given, to find what that is *per Day*.

## EXAMPLE 5.

l. 164 *per ann.* what is that *per Day*?

.2739  
.1643  
109  
449  
Ans. 8 : 11  $\frac{1}{2}$

## EXAMPLE 6.

l. 1000 *per ann.* what is that *per Day*?

2.739 *Ans.* l. 2 : 14 : 9  $\frac{1}{2}$

## EXPLICATION.

In Example 1. the principal Time and Rate multiplied one into another, make 91056, by which I multiply the Radix thus; because 9 is in the \* 5th Place, with my Left-hand I hold a Quill's Point in the \* 5th Place in the Radix; then I multiply by the said 9, beginning five Figures (more or less) to the right of the Quill, and when I come to the fourth Figure, on the right of the Quill, I set its Product down, and all the rest onwards, observing when I come to the said 5th Place to make the [.] and the Product is 2.4657: Then I remove the Quill into the fourth Place of the Radix (because 1 stands there in the whole Number) and multiply by 1 (ever observing punctually the last Rule) and the Product is .0273; then 0 in the third place makes nothing, for 5 in the second place (putting the Quill there) the Product is .0013; and for 6 in the first Place the Product is .0001: (placing them ever in the Order you see) I add them together (never setting but three Decimals down) and find their Sum 2.494, and its Value thus.

If anything is to the left of the [.] it's Pounds (l. 2) the first Figure to the right of the [.] doubled is Shillings (8 s): from the second Figure take 5 if you can (if you cannot its whole is Tens) and make the Shillings one more (9): the Remainder (4) in the second place, is Tens, which added to the third (4s Units) is Farthings (44 Farthings): for every 20 in that put away 1 (44 Farthings put away 2 is 42 Farthings): the Remainder brought into Pence (10 d  $\frac{1}{2}$ ) compleats the Answer (l. 2. 9. 10  $\frac{3}{4}$ ).

*Contraction.*] A Cypher or Cyphers (having no Figure to the Right) may be cancelled (I have noted them with a Dash) multiplying the real Figures one into another; but observe that the Figures by which you are to multiply the Radix, are to be used as if every cancelled Cypher stood before them. In Example 2. the 3905 is used like and in reality is 39050. In Example 3. five 0's are cancelled, therefore I use 12 like 1200000, putting the Quill for the 2 in the 6th Place in the Radix, and, for brevity's sake, multiply by 12 or once.

Any annual Sum given, to find what that is *per Day*; ever imagine two 0's put to the Right of it, then multiply the Radix by it, and it's done.

*Remarks.*] (1.) If Cyphers be added to the Numerator of the Vulgar Fraction, and that Dividend be divided by the Denominator, the Radix may be increased to any Number of Places.

(2.) If the Radix be multiplied by 3, 4, 5, 6, &c. it will be a Radix for 3, 4, 5, 6, &c. *per cent.* and save the trouble of always multiplying by the Rate.

**INTERJECTION**, in Grammar, is an Expression used to denote some sudden Motion or Passion of the Mind; as *oh! ha! &c.* As the greatest part of the Expressions used on these occasions, are taken from Nature alone; the real *Interjections* in most Languages are Monosyllables. And as all Nations agree in those natural Passions, so do they agree in the Signs and Indications of them; as of Love, Mirth, &c. Some deny the *Interjections* to be Words, or any part of Speech, and make them mere natural Signs of the Motions or Passions of the Mind, expressed by these inarticulate Sounds, several whereof, Brutes have in common with us. But as these are Passions, and must be represented in Discourse, the *Interjection* has a good Foundation in Nature, and is a necessary Part of Speech. The *Greeks* confound their *Interjections* with Adverbs, and the *Hebrews* confound them with their Adverbs and Prepositions, calling them all by the general Name *Particle*.

**INTERIM**: A Term borrow'd from the *Latin*, signifying *in the mean time*. Charles the Vth was the first who brought it into use, in order to compose the Disturbances of *Germany*. It was a kind of Ordonnance or Regulation to be observ'd in the Empire, with regard to the Articles of Religion then controverted, till such time as they should be determin'd by a Council; and was therefore call'd *Interim*. It was said to have been drawn up by two Catholics and a Protestant. But as it retain'd most of the Doctrines and Ceremonies of the *Romanists*, excepting that of Marriage, which was allow'd to Priests, and Communion, which was administer'd to the Laity under both Kinds; most of the Protestants rejected it: those who admitted it, were nick-named *Interimists* or *Abolitionists*: Indeed the *Interim* equally disgusted both Parties, the Protestants and Catholics. Besides this, there were two other

*Interims*



*Interims* made; the one call'd the *Interim* of *Leipfic*; the other made by the Divines of *Franconia*, who refusing to accept the two former, made another for themselves.

**INTERLINEATION**, something inserted between two Lines.

**INTERLOCUTORY ORDER**, is that which decides not the Cause, but only settles some intervening Matter relating to the Cause; as where an Order is made by Motion in Chancery, for the Plaintiff to have an Injunction, to quit his Possession till the hearing of the Cause: This, or any other such Order, not being final, is *interlocutory*.

**INTERLOPE**, is to intercept or disturb the Traffic of a Company; to take up a new Trade or Employment, to the prejudice of those who were brought up in it: And *Interlopers* are properly those, who without due Authority hinder the Trade of a Company or Corporation lawfully establish'd, by dealing in the same way.

**INTERLUCATION**, in Husbandry, is a letting in of Light between, by lopping, or cutting away of Boughs.

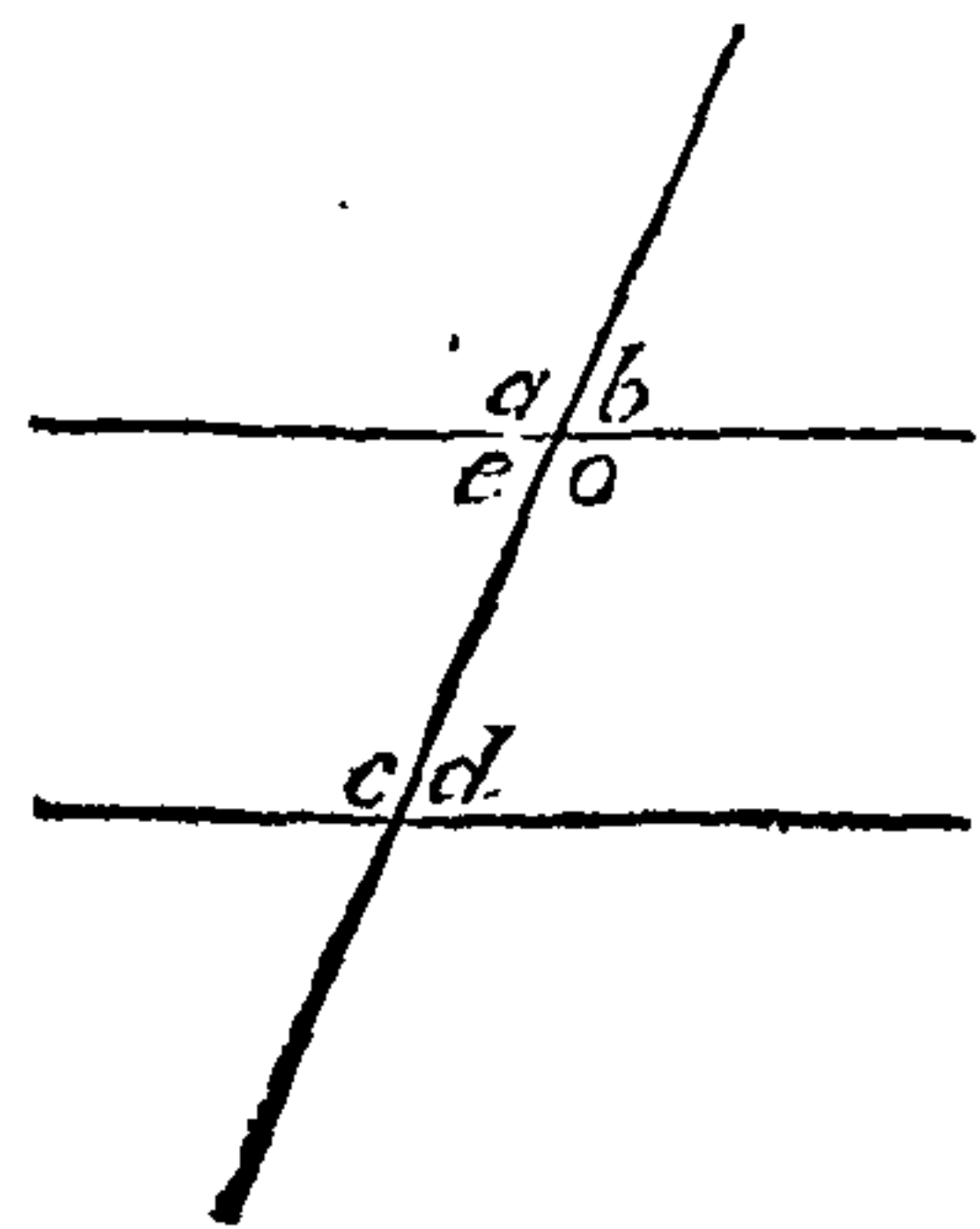
**INTERLUDE**, an Entertainment exhibited on the Theatre between the Acts of a Play; to amuse the Spectators while the Actors take breath, and shift their Dress; or to give time for changing the Scenes and Decorations. These *Interludes* usually consist of Songs, Dances, Feats of Activity, Concerts of Music, &c. In the antient Tragedy, the Chorus sung the *Interludes*, to shew the Intervals between the Acts. *Aristotle* and *Horace* give it for a Rule, that the *Interludes* should consist of Songs built on the principal Parts of the Drama: But since the Chorus has been laid down, Dancers, Buffoons, &c. ordinarily furnish the *Interludes*.

**INTERMEDIATE**, something betwixt two. It is usually understood of the Space of Time elapsed from any certain Point to any other.

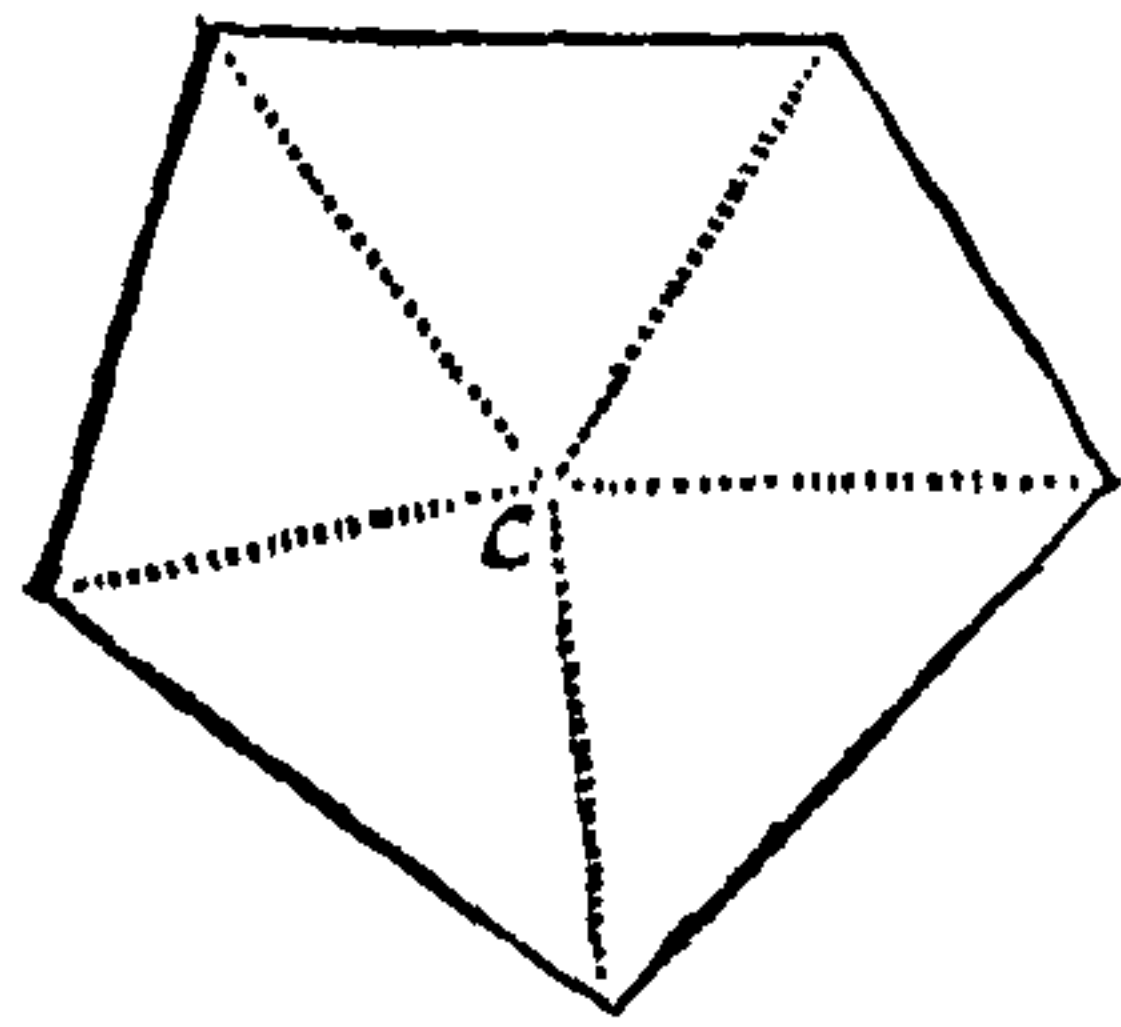
**INTERMEWING**, in Falconry, is an Hawk's Mewing from the first Change of her Coat till she turn white.

**INTERMITTENT** signifies a Cessation of any particular Action for some time, and that Time is called the *Interval*: Thus Fevers which go off, and soon return again, as also any other Distempers, are called *Intermittents*, in opposition to those which are always continued; and a Pulse which after so many Strokes, stops, or loses one in its due time, is call'd an *intermitting Pulse*. With regard to this it has been observed, that as often as the Ventricle is much inflated with Wind, the *Nervus* or *Plexus Cardiacus* at its Orifice must suffer a Contraction, which being continued to the Heart, will occasion a Twitching; and this, as it is more or less violent, will produce a simple Intermision of Pulse, or a real Palpitation of the Heart.

**INTERNAL ANGLES**, are all *Angles* made by the Sides of any right-lin'd Figure within: also the two *Angles*



between the parallel Lines on each side the crossing Line, as *o* and *d*, *e* and *c* in the Figure are call'd the two *internal Angles*, and are always equal to two right ones. The *Angles c* and *d* are also called *internal* and opposite *Angles* in respect of *a* and *b*. The Sum of all the *internal Angles* of any right-lin'd Figure, is equal to twice as many right *Angles* as the Figure hath Sides, except 4. For since every such Figure from a Point taken within it, can be divided into as many Triangles as it hath Sides,



and since the Sum of the *Angles* of each Triangle is equal to 2 right *Angles* (32, *Prop. 1. Eucl.*) that will make twice as many *Angles* as the Figure hath Sides; from which Sum take away all those *Angles* about the Point *c*, which (by 13. *Pr. . . Eucl.*) are equal to 4 right *Angles*; wherefore the remaining Sum of all

the *internal Angles* is equal to twice as many right *Angles*, as the Figure hath Sides, except 4.

**INTERNODII**, in Botany, are those little Spaces contained between any two Knots or Joints of the Stalk of a Plant; and in Anatomy, the *Extensores Pollicis*, which see, are also so called.

**INTEROSSEI MANUS**, are the Muscles which move the Fingers, thus called from their Situation, as being contained between the Spaces of the Bones of the *Metacarpus*: Some reckon six of them, and others eight; the one half lie between the Spaces these Bones leave towards the Palm of the Hand, and they are called the *internal Interossei*, arising from the upper part of the Bones

of the *Metacarpus* next the *Carpus*; and being inserted on the internal Sides of the first Bones of the Fingers with the *Lumbricales*, they are the *Adductores Digitorum*, for they bring the Fingers to the Thumb. The other half are contained in the Spaces that the Bones of the *Metacarpus* leave on the Back of the Hand; they rise from the upper Part of the Bones of the *Metacarpus*, next the *Carpus*, and are inserted on the external Sides of the first Bones of the Fingers; and these are the *Adductores Digitorum*, for they draw the Fingers from the Thumb.

*Interossei Pedis*, the Muscles which move the Toes; in Number, Use, Origin, and Insertion, they answer exactly to those of the Hand. See *Interossei Manus*.

**INTERPOLATION**, a Term used by the Critics in speaking of antient Writings and Manuscripts, to which some spurious Additions or Alterations have been since made. For the ascertaining an *Interpolation*, *P. Ruinart* gives us the five following Rules. 1. That the Piece supposed to be interpolated appear to have all the Antiquity it pretends to. 2. That there be good Proofs that it has been interpolated. 3. That the supposed *Interpolations* agree to the Time of the Interpolator. 4. That the *Interpolations* don't touch the Foundation of the Work, be not too frequent, nor entirely disfigure the Piece. 5. That the Restitution made, agree perfectly to the rest of the Work.

**INTERPOSITION**, the Situation of a Body between two others hiding them, or preventing their Action. Thus the Eclipse of the Sun is occasion'd by an *Interposition* of the Moon between the Sun and us; and that of the Moon by the *Interposition* of the Earth between the Sun and Moon.

**INTERPRETER**, a Person who explains the Thoughts, Words, or Writings of some others, which before were unintelligible. The word *Interpres*, according to *Isidore*, is composed of the Preposition *inter* and *partes*, as signifying a Person in the middle betwixt two Parties, to make them mutually understand each other's Thoughts. Others derive it from *inter* and *præ*, i. e. *Fidejussor*, a Person who cautions another.

There have been great Debates about interpreting the Scripture: The *Romanists* contend, that it belongs absolutely to the Church, adding, that where she is silent, Reason may be consulted; but where she speaks, Reason is to be disregarded. The Protestants generally allow Reason the Sovereign Judge in the Case; tho some among them have a strong regard to Synods and others to the Authority of the Primitive Fathers. Lastly, others have recourse to the Spirit within every Person to interpret for them. Which is what *Bochart* calls *ἀνθρώπινος τοῦ πνεύματος*.

**INTERREGNUM**, the Time during which a Throne is vacant, or a Kingdom without a Head. In Hereditary Kingdoms there are no *Interregnums*, at least they are very rare. In Elective Kingdoms, the *Interregnums* are extremely liable to Factions and Disorders. In Germany, the Emperors have lost the greatest part of their Dominions during the *Interregnums*.

**INTERREX**, a Magistrate who governs during an *Interregnum*, or in the Interval between the Death of a Monarch, and the Election or Inauguration of his Successor. This Magistrature was establish'd in old Rome, and was almost as antient as the City itself. After the Death of *Romulus* there was an *Interregnum* of a Year, during which the Senators were each *Interrex* in their turn, five Days a-piece. After the Establishment of Consuls and a Commonwealth, tho there were no Kings, yet the Name and Function of *Interrex* was still preserved. For when the Magistrates were absent, or there was any Irregularity in their Election, or they had abdicated, so that the *Comitia* could not be held, provided they were unwilling to create a Dictator, they made an *Interrex*, whose Office and Authority was to last five Days; after which they made another. To the *Interrex* was delegated all the Regal and Consular Authority, and he perform'd all their Functions. He assembled the Senate, held *Comitia* or Courts, took care the Election of Magistrates was according to the Rules. Indeed, at first it was not the Custom for the *Interrex* to hold *Comitia*; at least we have no Instance of it in the antient Roman History. The *Patricii* alone had the Right of electing an *Interrex*. This Office fell with the Republic, when the Emperors made themselves Masters of every thing.

**INTERROGATE**, a Judiciary Act, performed by a Judge or Commissioner deputed to examine or question a Party; who first gives his Oath that he will answer truly to every thing he is *interrogated*.

**INTERROGATION** is a Figure in Rhetoric, in which the Passion of the Speaker introduceth a thing by way of Question, to make its Truth more conspicuous. It is a kind of *Apollrophe* which the Speaker makes



makes to himself; and it must be own'd, that this Figure adds an uncommon Briskness, Action and Force to Discourse.

*Interrogation*, in Grammar, is a Point which serves to distinguish such Parts of a Discourse, where the Author speaks as if he were asking Questions. Its Form is this ?

**INTERRUPTION**, is the same with Disjunction of Proportion in Geometry, it is noted thus ( $:$ ) and signifieth the breaking off of the Ratio in the middle of four disjunct or discrete Proportionals, as  $A : B :: C : D$ ; that is, as  $A$  is to  $B$  so is  $C$  to  $D$ .

*Interruption* is also a Figure in Rhetoric, wherein a Person breaks off his Discourse suddenly, to shew some Passion.

**INTERSECTION**, in Mathematics, signifies the Point or Line wherein two Lines or two Planes cut each other. Thus we say, that the mutual *Intersection* of two Planes is a Right Line. The Centre of a Circle is in the *Intersection* of two Diameters. The Central Point of a regular or irregular Figure of four Sides is the Point of *Intersection* of the two Diagonals. The Equinox happens when the Sun is in the *Intersection* of the Equator and Ecliptic.

**INTERSOILING**, in Husbandry, is laying one kind of Soil or Mould upon another; as Clay on Sand, Sand on Earth, &c.

**INTERSPINALES COLLI**, the Name of five Pair of small Muscles discover'd by Mr. Cowper; and by him so call'd from their Position. They arise from each double Process of the Spine of the Neck, and run from the upper one to the next below, into which they are inserted. They serve to approximate and draw together the *Vertebrae* of the Neck, and are more especially proper to this Part, as having both Origin and Insertion in it.

**INTERSTELLAR**, is a Word used by some Authors to express those Parts of the Universe that are without and beyond our Solar System; in which are supposed to be several other Systems of Planets moving round the fixed Stars as the Centers of their respective Motions: And if it be true, as it is not improbable, That each fixed Star is thus a Sun to some habitable Orbs, that move round it, the *Interstellar* World will be infinitely the greater part of the Universe.

**INTERTIES**, or **INTERDUCES**, in Architecture, are those small Pieces of Timber that lie horizontally betwixt the Summers, or betwixt them and the Sill or Reson.

**INTERTRANSVERSALES COLLI**: Certain Muscles between the transverse Processes of the *Vertebrae* of the Neck, of the same Size and Figure with the *Interspinales*, and observed by the same Author. See *Philosoph. Transact.* vol. 21. p. 132.

**INTERVAL**, the Distance or Space between two Extremes, either of Time or Place. The Word comes from the Latin *Intervallum*, which, according to *Isidore*, signifies the Space *inter Fossam & Murum*, between the Ditch and the Wall. Others say, that the Stakes or Piles, driven into the Ground in the ancient Roman Bulwarks, were called *Valla*, and the Interslices or Vacancy between them *Inter-valla*.

**INTERVAL**, in Music, is the Difference between two Sounds in respect of Acute and Grave, or that imaginary Space terminated by two Sounds differing in Acuteness or Gravity. When two or more Sounds are compared in this Relation, they are either equal or unequal in the Degree of Tune. Such as are equal are call'd *Unisons*, with regard to each other, as having one Tune; the other being at a distance from each other, constitute what we call an *Interval* in Music, which is properly the Distance in Tune between two Sounds. *Intervals* are distinguish'd into Simple and Compound. A simple *Interval* is without Parts or Division, a Compound consists of several lesser *Intervals*. But this Distinction regards Practice only, because there is really no such thing as a least *Interval*. Besides, by a simple *Interval* is not meant here the least practis'd, but such as tho it were equal to two or more lesser which are in use, yet when we would make a Sound move so far up or down, we always pass immediately from one of its Terms to the other. What is meant then by a compound *Interval*, will be very plain: It is such, whose Terms are in Practice taken either in immediate Succession, or such where the Sound is made to rise and fall from the one to the other, by touching some intermediate Degrees; so that the whole becomes a Composition of all the *Intervals* from one Extreme to the other. What we here call a simple *Interval*, the Antients call'd a *Diastem*, and the Compound they call'd a *System*. Each of these has Differences; even of the Simple there are some greater, and others less: but they are always Discord; but of the Compound or System, some are Concord, others Discord. *Unisons*, 'tis plain, cannot possibly have any Variety; for where there is no difference, as in Unisonance, which flows from a Relation of Equality, 'tis plain there can be

no Distinction: *Unisons* therefore must all be Concords. But an *Interval* depending on a Difference of Tune, or a Relation of Inequality, admits of Variety; and so the Terms of every *Interval*, according to their particular Relation or Difference, make either Concord or Discord. Some indeed have restrained the word *Concord* to *Intervals*, making it include a Difference in Tune, but this is precarious; for as the word *Concord* signifies an Agreement of Sounds, 'tis certainly applicable to *Unisons* in the first Degree: *Intervals*, 'tis plain, may differ in Magnitude, and there may be an infinite Variety according to the possible Degrees of Tune; for there is no Difference so great or little, but a greater or a less may possibly be conceived. 'Tis true, with regard to Practice, there are Limits which are the greatest and least *Intervals* our Ears are Judges of, and which may be actually produced by Voice or Instrument.

The Degrees of Tune are proportional to the Numbers of Vibrations of the sonorous Body in a given Time, or the Velocity of their Courses and Recourses. Now these Differences in Tune constitute, as has been already said, the *Intervals* in Music; these therefore must be greater or less, as the Differences are; and 'tis the Quantity of these, which is the Subject of the Mathematical Part of Music. Those *Intervals* are measured not in the simple Differences or Arithmetical Ratio's of the Numbers expressing the Lengths or Vibrations, but in their Geometric Ratio's; so that the same *Interval* depends on the same Geometrical Ratio, and *vice versa*. It is however to be observed, that in comparing the Equality of *Intervals*, the Ratio's expressing them must be all of one Species; otherwise this Absurdity will follow, that the same two Sounds may make different *Intervals*. To describe the particular Methods of measuring the Inequality of *Intervals*, would be too tedious: this one Rule may be observed, that, to determine in general, which of two or more *Intervals* are the greatest, take all the Ratio's as proper Fractions, and the least Fraction will be the greatest *Interval*.

The Antients were extremely divided about the measuring of *Intervals*. *Pythagoras* and his Followers measur'd them by the Ratio's of Numbers. They supposed the Differences of Gravity and Acuteness to depend on the different Velocities of the Motion that causes Sound; and thought, therefore, that they could only be accurately measured by the Ratio's of those Velocities. Which Ratio's were first investigated by *Pythagoras*, on occasion of his passing by a Smith's Shop, and observing a Concord betwixt the Sounds of Hammers striking on the Anvil. *Aristoxenus* oppos'd this. He thought Reason and Mathematics had nothing to do in the case, and that Sense was the only Judge in the Dispute; the other being too subtle to be of any use. He therefore determined the 8ve, 5th, and 4th, which are the most simple Concords, by the Ear; and by the Difference of the 4th and 5th, he found out the Tone: which once settled as an *Interval* the Ear could judge of, he pretended to measure every *Interval* by various Additions and Subtractions made of these mentioned one with another: But this Method is very inaccurate. *Ptolemy* keeps a middle Course betwixt the two. He finds fault with the one for despising Reason, and with the other for excluding Sense; and shews how these two may mutually assist each other in this Matter. See *Tone*, &c.

**INTESTATE**, a Person who dies without making a Will. An Heir *ab Intestate*, is a Person who inherits an Estate by some other Right, than that of Will or Testament. Heretofore, those who died *Intestate*, were held infamous, and accursed; in regard, by the Canons of several Councils, every Person was injoin'd to bequeath a part of his Estate (and *Matthew Paris* says it was at least to be a tenth part) to the Church, for the Safety of his Soul; which, a Person who neglected to make a Will, and to leave this Legacy to the Church, was judg'd to have abandon'd. Several Councils took on them to command the Priests to sollicit dying Persons to be charitable to the Church; and this they did so earnestly, that Absolution and the Viaticum were denied to those whom they could not prevail on; so that they made no difference between these *Intestates* and Self-Murderers; and they were alike denied Christian Burial. *Du Cange* adds, that all who died without Absolution, without receiving the Viaticum, and without leaving Alms to the Church (even tho they died suddenly) had their Effects seiz'd and confiscated to the Use of the Church, the Bishop, &c.

In our *English* Law there are two kinds of *Intestates*; the one *de facto*, which are those who make no Will at all, the other *de jure*, which are those who make a Will; but it is null and void, either from the Executors refusing to act, or from some other Cause, in which he is judg'd to die *intestate*.



**INTESTINE MOTION**, of the Parts of Fluids. Where the attracting Corpuscles of any Fluid are elastick, they must necessarily produce an *Intestine Motion*; that is, a visible Motion or Change of Place among the minute Parts of a fluid Body: and this greater or less according to the Degrees of their Elasticity, and attractive Forces. For two elastic Particles after meeting will fly from one another (abstracting the Resistance of the Medium) with the same degree of Velocity, with which they met: But when in flying back from one another, they approach other Particles, their Velocity will be increased. See *Elasticity* and *Fermentation*.

**INTESTINES**, in Anatomy, are the same with what we ordinarily call the Guts or Bowels. These seem to be nothing but a Continuation of the Stomach, consisting of the same Number of Coats, and fabricated in the same manner; they are protended with various Circumvolutions and Inflexions to the *Anus*, thro' which they discharge the excrementitious part of their Contents out of the Body. They are, when separated from the Mesentery, to which they are all along connected, of a very great Length, ordinarily about six times as long as the Persons whose they were. And tho' they seem to be but one continued Channel or Fistula, yet because in several Parts their Magnitude, Figure, and Thickness are different, they are in general divided into the thick and thin, and these again are each of them subdivided into three; the three thin are called *Duodenum*, *Jejunum*, and *Ileum*; and the thick *Cecum*, *Colon*, and *Rectum*. They have all of them in common a kind of Vermicular Motion, which, beginning at the Stomach, is propagated downwards, and is called the *Peristaltic Motion*. To facilitate that, they are generally lubricated with a great deal of fat, especially the thick ones, whose Surface being somewhat more uneven, and the Contents less fluid than those of the thin, they need somewhat more to make them slide easy.

The first of the thin Guts is called *Duodenum*, and reaches from the right Orifice of the Stomach, as far as the *Vertebrae* of the Back on the left Side, where, at the first Angle made by the *Intestines* it ends, which is about 12 Inches, from which Measure it seems to have taken its Name. This Measure however is far from being very exact, as being much too largely computed. Into this Gut the Gall-Duct and Pancreatic-Duct empty themselves, and their several Liquors mix with the Chyle. The next *Intestine* is the *Jejunum*, so called, because it is generally found more empty than the rest; which may be occasioned partly by the Fluidity of the Chyle, which is greater in this *Intestine* than in any of those that follow it; and partly by its Capacity, being somewhat larger than that of the *Duodenum*, and therefore it gives a freer Passage, and perhaps also the Irritation of this Gut thro' the Acrimony of the Bile, which is discharged upon the *Intestines* a little before the beginning of this Gut, may contribute something towards accelerating the Passage of the Contents. However, it may seem sufficient, that thro' the great Number of Lacteals, with which this Gut abounds more than any other, the Descent of the Contents, which are here deprived of the most fluid Parts, should in the rest be more sluggish, by reason of their greater Consistence. This *Intestine* is allowed to possess almost the whole Umbilical Region, and its Length is generally computed to be about twelve or thirteen Hands breadth. The *Ileum*, which is the third *Intestine*, is situated below the Navel, and fills the *Iliac* with its numerous Folds and Convolution. It is the longest of all the *Intestines*, being esteemed to be one and twenty Hands long: But these Estimates are somewhat arbitrary, because it is not exactly settled among Anatomists, where the *Jejunum* ends, or the *Ileum* begins; neither is it easy or necessary to do it. In both this and the preceding *Intestine*, the Inner Tunic is much corrugated, the loose Folds of which have been thought to do in some measure the Office of Valves, and have therefore by Authors been called *Valvulae Conniventes*; which are framed, as in the Stomach, only by the inner Coat being larger than the outward.

Next follow the thick *Intestines*, the first of which is called the *Cecum*, which has a lateral Insertion into the upper end of the *Colon*, and is not perforated at its other Extremity, but hangs to it like the Finger of a Glove, and is about three or four Inches long. The true Use of this part is not yet determined, and some late Anatomists have thought that the Name likewise is mistaken, not allowing this to be the *Cecum* of the Antients, which they imagined to be that thick globous part of the *Colon*, which is immediately appended to the *Ileum*, and therefore they have given this part the Name of *Appendicula Vermiformis*. This *Cecum*, or Appendix, is proportionably bigger in Infants than Adults, and in many other Animals even smaller than in Men, and is, at the unperforated Extremity, slightly connected to the right Kidney. The next of the thick *Intestines* is the *Colon*, which is much the largest, and

most capacious of them all. It begins with the *Cecum*, and is with that connected to the right Kidney. Thence with a winding Course it proceeds towards the Liver, where it is sometimes tied to the Gall-Bladder, and by that tinged with yellow. From the Liver it runs across under the Bottom of the Stomach, where it is by very fine thin Membranes fastned to the Spleen, and marches over the left Kidney, where its Cavity is sometimes very much streightned, and descending so to the bottom of the *Os Ileum*, and from thence returning to the upper part of the *Os Sacrum*, and there making the Figure of a Circumflex, it ends in the *Rectum*. At the Entrance of the *Ileum* into this Gut is placed a *Valve*, formed out of the Production of the inward Coat of the *Ileum*, which, like the Finger of a Glove, when its Extremity is cut off, hangs loose in the Cavity of the *Colon*, by which means it stops the return of the Excrements, tho' sometimes, as in Inversions of the Peristaltic Motion, it proves not sufficient for that Use. It has a great many *Cellulae*, or, as it were, distinct Cavities, framed by a Coarctation of the Gut by two Ligaments, or Bundles of membranous fleshy Fibres, about half a Finger broad, each running on either side the Gut opposite to each other, the whole Length of it, and as it were girding it in at certain Distances, thereby making it resemble a Glass Incorporator, used in mixing Oil and Vinegar. The next and last of the *Intestines* is the *Rectum*, which reaches from the *Os Sacrum* to the *Anus*, and is plain without Cells. It is fast tied to the *Ossa Sacrum* and *Coccygis*, by means of the *Peritonaeum*, and in Men to the Neck of the Bladder of Urine, in Women to the *Vagina Uteri*, to which it is strongly connected by a membranous Substance. That Substance of the *Vagina* and *Intestine* are hardly distinguishable from one another. The Length of this Gut is ordinarily about a hand's Breadth and an half, and its Capacity about the Thickness of three Fingers; its lower end, the *Anus*, is furnished with three Muscles, viz. the *Sphincter Ani*, and *Levatores Ani*; which see.

There are also in the *Intestines*, a great Number of Glands, which, in the *Intestina Tenuia*, are gathered together in Heaps, as it were like Bunches of Grapes. In these *Intestines* they are very small, and were it not for their Coacervations, scarce remarkable. But in the *Intestina Crassa* they are much larger, not gathered like the others, but dispersed; and, tho' very numerous, come under the Denomination of *Solitary Glands*. These Glands discharge a Liquor into the *Intestines*, whether ordinarily for any thing more than the Lubrication of the *Intestines*, and diluting their Contents, is not certain; tho' thro' these seems the greatest part of the Discharge to be made, which, either upon extraordinary Fluxes, or upon the Administration of Cathartics, we have frequent Occasion to observe. These *Intestines*, in general, are furnished with Blood from the Mesenteric Arteries, which is returned by the Meseraic Veins: But the *Duodenum* receives a Branch of an Artery from the *Celiac*, which is called *Duodena*, to which answers a Vein of the same Name, that likewise returns the Blood to the *Porta*; the *Rectum* receives others, which are called *Hemorrhoids*; the internal from the inferior Mesenteric, and the external from the Hypogastric, with Veins corresponding of the same Name, that also go to the *Porta*. These Vessels spread the *Intestines* with abundance of Ramifications, and are frequently diversified in several Subjects of the same Species; much less are they to be depended upon for an uniform Appearance in Animals of different kind. The Nerves of the *Intestines* come some of them from those of the Stomach, and some from the great Mesenteric Plexus, which distributes Branches to all the *Intestines*. The remaining Vessels of the *Intestines* are the *Lymphaducts*, and *Vene Lacteae*, which see.

**INTRIGUE**, an Assemblage of Events or Circumstances occurring in an Affair, and perplexing the Persons concerned in it. *Tripaud* tells us the word is properly understood of Chickens, that have their Feet entangled in Hair, and is derived from the Greek *ειν* and *αιξ*.

In this sense *Intrigue* is used to signify the Nodus, or Plot of a Play or Romance, or that Point wherein the principal Characters are the most embarrassed, through the Artifice and Opposition of certain Persons, or the unfortunate falling out of certain Accidents and Circumstances. In a Tragedy, Comedy, or Epic Poem, there are always two Designs; the first and principal is that of the Hero of the Piece; the second contains the Designs of all those who oppose him. These opposite Causes produce opposite Effects, to wit, the Efforts of the Hero for the Execution of his Design, and the Efforts of those who thwart it. As those Causes and Designs are the beginning of the Action, so those Efforts are the middle, and form a Knot or Difficulty, which we call an *Intrigue*, that makes the greatest part of the Poem. It lasts as long as the Mind of the Reader or Hearer is suspended about the Event of those opposite



site Efforts ; the Solution or Catastrophe commences when the Knot begins to unravel, and the Difficulties and Doubts begin to clear up. The *Intrigue* of the *Iliad* is twofold ; the first comprehends the three Days fighting in *Achilles's* Absence, and consists, on the one side, in the Resistance of *Agamemnon* and the *Greeks*, and on the other in the inexorable Temper of *Achilles*. The Death of *Patroclus* unravels this *Intrigue*, and makes the beginning of a second. *Achilles* resolves to be revenged, but *Hector* opposes his Design, and this forms the second *Intrigue*, which is the last Day's Battel. In the *Aeneid* there are also two *Intrigues* ; the first is taken up in the Voyage and Landing of *Aeneas* in *Italy*, the second in his Establishment there. The Opposition he met with from *Juno*, in both those Undertakings, forms the *Intrigue*. As to the Choice of the *Intrigue*, and the Manner of unravelling it, 'tis certain they ought both to spring naturally from the Ground and Subject of the Poem. *Bossu* gives us three Manners of forming the *Intrigue* of a Poem ; the first is that already mentioned ; the second is taken from the Fable and the Design of the Poet ; in the third the *Intrigue* is so laid, as that the Solution follows from it of course. See *Catastrophe*.

**INTRINSIC**, a Term applied to the inner, real, genuine Values, Properties, &c. of any thing, in opposition to their extrinsic, apparent, or popular Values, &c.

**INTRONATI**, the Name of an Academy at *Sienna* in *Italy*. The Members of this Academy contented themselves, at their first Institution, with establishing the following six short Laws : (1.) To pray. (2.) To study. (3.) To be merry. (4.) To offend nobody. (5.) Not to credit too lightly. (6.) To let the World talk.

**INTRUSION**, in the Canon Law, signifies the Enjoyment of a Benefice, or the Exercise of an Office, without a good Title to it. *Intrusion* disqualifies the Party from ever holding the Benefice. The word is derived from the Latin Verb *intrudere*, to thrust in, or enter by Force.

**INVALID**, a Person wounded, maimed, or disabled for Action by Age. At *Chelsea* and *Greenwich* are magnificent Hospitals, or rather Colleges, built for the Reception and Accommodation of *Invalids*, or Soldiers wore out and disabled in the Service. At *Paris* is a College of the same kind, called *les Invalides*, which is accounted one of the finest Buildings in that City.

**INVECTED**, in Heraldry, signifies the just Reverse of *Engrail'd* ; which see.

**INVENTION**, a Subtily of Mind, or somewhat peculiar in a Man's Genius, which leads him to the Discovery of things that are new.

*Invention*, in Rhetoric, signifies the finding out, and the Choice of Arguments which the Orator is to use for the proving of his Point, or the moving of his Hearers Passions. *Invention*, according to *Cicero*, is the principal Part of Oratory. He wrote four Books *de Inventione*, whereof we have but two remaining. This *Invention* of the Orators cannot, according to my Lord *Bacon*, be properly called *Invention* ; to *invent* is to discover things not yet known, not to recollect those that are ; whereas the Use and Office of this Rhetorical *Invention* is only out of the Stock of Knowledge laid up in the Mind, to select such Articles as make for the purpose. The same Author divides this Faculty of *Invention* into two Parts, the one topical, the other promptuary ; the first points out the way in which we are to pursue the Argument, the latter only lays up and disposes things, for which we have frequent occasion in the Mind.

*Invention*, in Poetry, is understood of every thing, that the Poet adds to the History of the Subject he has chosen, and of the Turn that he gives it.

*Invention*, in Painting, is the Choice which the Painter makes of the Objects that are to enter the Composition of his Piece. *Du Pile* observes, that *Invention* is different from Disposition, and that 'tis those two things together that form Composition : For after having made a good Choice of Objects proper for the Subject, they may be ill-disposed ; and then tho' the *Invention* be never so good, the Disposition or Ordonnance will be faulty, and the Piece will displease. Of all the Parts of Painting, *Invention*, doubtless, is that which gives the Painter the fairest Occasions of shewing his Genius, his Imagination, and good Sense. *M. Felibien* gives the general Name *Invention* to every thing that depends on the Genius of the Painter, as the Ordonnance, the Disposition of the Subject, and even the Subject itself, when it is new. But the Term *Invention*, taken in this Sense, is no Term peculiar to Painting, but agrees also to other Arts. In another place *M. Felibien* distinguishes *Invention* into two kinds ; to wit, that which arises immediately from the Mind of the Painter, and that which he borrows from some other. The first is, when he invents the Subject himself, and the second when he borrows it from History, Fable, &c. but he always affixes the same Idea to *Invention*.

*Janfon d'Almeloveen* has written an *Onomasticon* of *Inventions*, wherein are shewn, in an Alphabetical Order, the Names of the Inventors, and the Time, Place, &c. where they were made. *Pancirollus* has written a Treatise of old *Inventions* that are lost, and new ones that have been made : *Polydore Virgil* has also published six Books of the *Inventions* of Things.

**INVENTORY**, in Law, is a Catalogue or Repertory orderly made of all a dead Man's Goods and Chattels, prized by four or more credible Men, which every Executor or Administrator is obliged to exhibit to the Ordinary at such time as he shall appoint. The Use of the *Inventory* is borrow'd from the Civil Law, for whereas by the Law of the antient *Romans*, the Heir was obliged to answer all the Testator's Debts ; by which means, Heritage sometimes became rather prejudicial than profitable : To obviate this Inconvenience, *Justinian* ordained, That if the Heir would first exhibit a true *Inventory* of all the Testator's Effects, he should be no farther charged than to the Value of the *Inventory*.

*Inventory*, in Trade, is a List or particular Valuation of Goods, &c.

**INVERSE** is understood of a manner of working the Rule of Three, or of Proportion, that seems to be inverted, or to go backwards. In the Rule of Three direct the first Term is to the second, as the third is to the fourth ; that is, if the second be greater than the third, or less than the first, in any Proportion, the fourth is less than the third in the same Proportion. But in the *Inverse* Rule, the fourth Term is as much greater than the third, as the second is less than the first. In the *inverse* Rule, therefore, the Proportion is not, as the first is to the second, so is the third to the fourth ; but as the fourth is to the first, so is the second to the third. For instance, in the Direct Rule we say, If three Yards of Tapestry cost twenty Pound, how many will six cost ? The Answer is forty. In the *Inverse* Rule we say, If twenty Workmen make ten Yards in four Days, in how many Days will forty do it ? The Answer is in two Days.

**INVERSE PROPORTION**. See *Proportion*.

**INVERSION**, an Action, by which any thing is inverted, or turned backwards. Problems in Geometry and Arithmetic are often proved by *Inversion*, or making a contrary Rule or Demonstration.

**INVERSION**, in Grammar, is where the Words of a Phrase are ranged in a manner, not so natural as they might be ; for instance, Of all Vices the most abominable, and that which least becomes a Man, is Impurity. Here's an *Inversion* ; the natural Order is this, The most abominable of all Vices, and that which least becomes a Man, is Impurity. An *Inversion* is not always disagreeable, but sometimes has a good Effect, and is used with Design.

**INVEST** signifies to confer on any one the Title of a Fee, Dignity or Office, or to ratify and confirm what has been obtained elsewhere. The Emperor pretends to a Right of investing several Princes both in *Germany* and *Italy*. There was formerly a particular Ceremony for the investing of Bishops.

*Invest*, in the military Art, signifies the opening of the Siege of a Place, and the incamping an Army round it to block up all its Avenues, and to prevent all Ingress and Egress. 'Tis the Cavalry that always begin to *invest* a Place. The word comes from the Latin *in* and *vestire*, to clothe.

*Invest*, in Law, signifies to put in possession. A Tenant is *invested* by giving him a Verge or Rod into his Hands, and administering an Oath, which is call'd *Investing*. Others define it thus, *Investire est in suum Jus aliquem introducere*, to give Livery of Seisin or Possession. See *Investiture*.

**INVESTIGATION** properly signifies the searching or finding any thing out by the Tracks or Prints of the Feet. Hence the Mathematicians and Schoolmen, &c. came to use the Term in their respective Researches. *Investigation* of a Theme is the Art, Method, or Manner of finding the Themes in Verbs, that is, the primitive Tense, Mode, and Person of any Verb, far removed from its Source. To understand a *Greek* Author, 'tis absolutely necessary to be well acquainted with the Method of investigating a Theme. This Theme, in the *Greek* Tongue, is the present Tense of the Indicative Mood. *Clenard* was the first who introduced this Term into Grammar ; he gives the Title *Investigatio Thematis*, to that part where he teaches the manner of finding whence any Person or Tense of a Verb proceeds, and of reducing it to its primitive Diction, or of finding its Indicative.

**INVESTITURE** is used both for the Right of investing any one, and the Act of investing him. This consists in receiving the Faith and Homage, by which the Vassal becomes seized and possessed of a Fee by his Lord. *Investiture* was antiently performed by a Form of Words, afterwards by the Delivery of such things as had the nearest Resem-



Resemblance to what was transferred. Thus Land passed by the Delivery of a Turf, and to shew the Trees were transferred at the same time, a Bough was cut, and delivered along with it. But in After-times the things by which *Investitures* were made, were not so strictly observed. Many were invested by the Delivery of a Staff, a Glove, a Knife, a Piece of a Cloak, of a Strap, and a Girdle, by pricking the Thumb, by giving the Keys, a Spit, a Blow, a Ring, a Turf, a Bough, a Straw, &c. The *Investiture* of a Kingdom, or Lordship, was performed by a Standard, a Banner, a Cap, a Sword, a Bow, Arrows, Spurs, &c. The Symbols were sometimes preserved in the Repositories of the Houses, and were annexed to the Titles.

*Investiture* was also used with regard to spiritual Benefices. This was frequently performed by delivering the Crosier and Pastoral Ring. The Kings of *England* and *France*, the Emperors of *Germany*, &c. had formerly this Right: so that on the Death of a Prelate, his Clergy sent the Crosier, &c. to their Sovereign, to be used at the Ceremony of investing his Successor. The first who disputed this Privilege with them, was Gregory VI. Gregory VII. did it to some purpose; he excommunicated the Emperor Henry IV. and forbade all Ecclesiastics, under pain of Excommunication, to receive the *Investiture* at the hands of Secular Princes. Paschal II. however, was obliged to confirm Henry V. in the Right of giving *Investitures*; but repenting what he had done, he excommunicated him, and reduced him to a Necessity of begging Absolution. At length that Emperor was obliged, by Pope Gelasus II. solemnly to renounce all *Investitures* and Elections. In antient Authors we meet with eighty different Forms of *Investiture*.

**INVOCATION**, an Action by which we adore God, and call on him for his Assistance. The *Romanists* also practise *Invocation* of Saints, begging them to intercede with God in their behalf. This is one of the grand Articles of Dispute between the *Romanists* and the *Reformed*.

*Invocation*, in Poetry, is an Address which the Poet makes at the beginning of his Work, wherein he calls for the Assistance of some God, particularly of his Muse, or the Divinity of Poetry. This part is absolutely necessary in an Epic Poem, in regard the Poet relates things which he could not be supposed to know, unless some Deity inspired him. Besides, this serves his Readers as an Example of Piety and Devotion, which is the Foundation of his whole Work. To these it may be added, that the Gods themselves are to have a part in the Action, and 'tis not decent he should set them to work, without first asking them leave. Indeed in the Course of an Epic Poem, there are usually several *Invocations*, particularly where any thing extraordinary or miraculous comes to be related: as when *Virgil* describes the Metamorphosis of *Aeneas's* Fleet into Sea-Nymphs; but the first *Invocation* is always the most considerable.

In the *Invocation*, *Bosch* considers two things; the first is what the Poet requests, the second to what Deity he addresses his Request. As to the first, *Homer* has joined the *Invocation* so closely to the Proposition, that he seems to invoke his Muse for the whole Work. *Virgil*, on the contrary, only requests his Muse to furnish him with a part of his Subject, and even mentions what particular Part it is he desires. After proposing his Matter in all its Extent, he begs the Muse to acquaint him with the Cause of it. As to the Deity invoked, the same Author observes, that it must always be, either the Divinity that presides over Poetry in general, or that which presides over the particular Subject of this Work. *Ovid's Invocation*, in his *Metamorphoses*, is of this latter kind, and so is that of *Lucretius*, those of *Homer* and *Virgil* are of the former kind; they only invoke the Muses, and thus they distinguish between the Divinities who preside over Poetry, and those who preside over the Actions of the Poem, and who have Parts in it. By the way, it may be observed, that the Deities invoked are not looked on, even by the Poets themselves, as Divine Personages, whence they expect any real Assistance. Under the Name of Muse, they wish for the Genius of Poetry, and for all the Conditions and Circumstances necessary for the Execution of their Design. These are mere Allegorics, or Manners of expressing themselves poetically; just as when they make Gods of Sleep, of Rest, Fame, and other natural and moral Things. Thus the Muses come to be of all Ages, Countries, and Religions; there are *Pagan*, *Christian*, *Greek*, *Latin*, and *English* Muses.

**INVOLUTION**, a Term in Algebra signifying the raising of any Quantity from its Root to any Height assigned. Suppose, for instance,  $a + b$  were to be squared or raised to its second Power; we say, *involve*  $a + b$ ; that is, multiply it into itself, and it will produce  $a^2 + 2ab + b^2$  of the same Quantity. And if it be *involved* again, or if that Square be multiplied by the Root, the Cube or

third Power will be produced, viz.  $aaa + 3aab + 3bba + bbb$ . See *Evolution*.

**INVOYCE**: A particular Account of Commodities, Custom, Provision, Charges, &c. sent by a Merchant to his Factor or Correspondent in another Country.

**JOACHIMITES**: The Name of a Sect the Followers of *Joachim*, Abbot of *Flora* in *Calabria*, who was esteemed a Prophet while he lived, and left, at his Death, several Books of Prophecies, besides other Works. In 1215, he and his Works were condemn'd together by the Council of the *Lateran*, and by the Council of *Arles* in 1260. It seems they were particularly fond of certain Ternaries. The Father, said they, operated from the Beginning till the Coming of the Son; the Son from that time to theirs, viz. the Year 1260. and the Holy Spirit then took it up, and was to operate in his turn. They divided every thing that related to Men, Time, Doctrine, and Manner of Living, into three Classes or States, according to the three Persons in the Trinity; every one of which States either had already, or was hereafter to succeed in its turn: and hence they call'd their Divisions *Ternaries*. The first Ternary was that of Men. This comprehended three States or Orders of Men; the first State was that of married People, which had lasted, according to them, the whole Period of the Father; that is, the time of the Old Testament: The second was that of Clerks, which lasted during the time of the Son: The third was that of Monks, wherein was to be an uncommon Effusion of Grace, by the Holy Spirit. The second Ternary was that of Doctrine, which they divided also into three: The Old Testament, which they attributed to the Father; the New, which they attributed to the Son; and the Everlasting Gospel, which they attributed to the Holy Spirit. In the Ternary of Time, they gave all the Time elapsed from the Beginning of the World till the Coming of Christ, to the Father; in which Time, said they, the Spirit of the Law of *Moses* prevailed. They gave to the Son the 1260 Years from Jesus Christ to their Time; during which, the Spirit of Grace prevailed. Lastly, the third, which was to come, and which they call'd the Time of the greatest Grace, was for the Holy Spirit. Another Ternary consisted in the Manner of Living. In the first Time, under the Father, Men lived according to the Flesh; in the second, under the Reign of the Son, Men lived according to the Flesh and the Spirit; in the third, which was to last to the end of the World, they were to live according to the Spirit. The *Joachimites* maintain'd, That in the last Times all Sacraments and Signs were to cease; and the Truth was to appear openly, and without any Veil.

**JOBBER**, a Person who undertakes *Jobs*, or small Pieces of Work. In some Statutes it is used for a Person who buys and sells Cattel for others.

**JOGHIS**: The Name of a Sect of Heathen Religious in the *East-Indies*. They never marry, nor hold any thing in private Property; but live on Alms, and practise strange Severities. They are subject to a General, who sends them from one Country to another to preach. They are properly a kind of penitent Pilgrims, and are supposed to be a Branch of the antient *Gymnosophists*. They frequent principally such Places as are consecrated by the Devotion of the People; and pretend to live several Days together without eating or drinking. After having gone thro a Course of Discipline for a certain Time, they look on themselves as impeccable, and privileged to do any thing: upon which they give a Loose to their Passions, and run into all manner of Debauchery.

**JOINING OF ISSUE**. See *Issue*.

**JOINT**, the Juncture, Articulation, or Assemblage of two or more things. *Joint*, in Architecture, is the Separation between the Stones, which is fill'd with Mortar, Plaster, or Cement. In Carpentry, &c. *Joint* signifies the several Manners of assembling or fitting Pieces of Wood together: Thus we say, *A Dove-tail Joint*, &c.

**JOINT-RULE**. See *Carpenters Joint-Rule*.

**JOINT-TENANTS**, in Law, are those who come to, and hold Lands and Tenements by one Title, *pro Indiviso*, or without Partition. These are distinguish'd from sole or several Tenants, from Parceners and from Tenants in Common: Antiently they were call'd *Participes*, and not *Heredes*. They must jointly plead, and jointly be impleaded by others; which is common to them and Coparceners. But *Joint-Tenants* have a sole Quality of Survivorship, which Coparceners have not. So that if there be two or three *Joint-Tenants*, and one hath Issue, and dies; then he, or those *Joint-Tenants* that survive, shall have the whole by Survivorship.

**JOINTURE**, is a Covenant whereby the Husband, or some other Friend in his behalf, maketh over to his Wife, on condition of Marriage, certain Lands and Tenements for Term of Life, or otherwise.

**JOISTS**, in Architecture, are those Pieces of Timber framed into the Girders and Summers, on which the Boards



**Boards of the Floors** are laid : They are from six to eight Inches square, and ought seldom to lie at a greater distance from each other than ten Inches, never than twelve ; nor ought they ever to be longer than ten Foot, or to lie less into the Wall than eight Inches. Sometimes the Carpenters furr their *Joists*, as they call it, that is, lay two Rows of *Joists* one over the other.

**JONCTURE, or JOINTURE** : The same with Joint.

**IONIC**, in Architecture, is the Name of one of the five Orders. The first Idea of it was given by the People of *Ionia* ; who, according to *Vitruvius*, form'd it on the Model of a young Woman, dress'd in her Hair, and of an easy elegant Shape : whereas the Doric had been form'd on the Model of a strong, robust Man. The *Ionic* Column is the third in order ; and is distinguish'd from the Composite, in that it has none of the Leaves of *Acanthus* in its Capital ; and from the Tuscan, Doric and Corinthian, by the Volutes, or Rams-Horns, which adorn its Capital : and from the Tuscan and Doric, too, by the Channels or Flutings in its Shaft. These Flutings are in number 24. They are not always concave from the top of the Shaft to the bottom ; but for that third of it next the Base, are fill'd up with a kind of Rods or Canes, by the French call'd *Batons* : and in the other two thirds, are left hollow, or striated, in imitation of the Folds or Plaits of a Garment. This Column is a Medium between the Massive and the Delicate Orders, the Simple and the Rich. Its Height is 18 Modules, or 9 Diameters of the Column taken at the bottom. When it was first invented, its Height was but 16 Modules ; but the Antients, to render it still more beautiful than the Doric, augmented its Height, by adding a Base to it, which was unknown in the Doric. *M. le Clerc* makes its Entablement 4 Modules and 10 Minutes, and its Pedestal 6 entire Modules : so that the whole Order makes 28 Modules 10 Minutes. 'Tis said, the Temple of *Diana* at *Ephesus*, the most celebrated Edifice of all Antiquity, was of this Order. At present it is properly used in Churches and Religious Houses, in Courts of Justice, and other Places of Tranquillity and Devotion. This Order has one advantage above any of the rest, and it consists in this, that the fore and hind-parts of its Capital are different from its Sides. But this is attended with an Inconvenience, when the Ordonnance is to turn from the Front of the Building to the Side : To obviate which, the Capital may be made Angular, as is done in the Temple of *Fortuna Virilis*. *Scamozzi*, and some other modern Architects, have introduced the upper part of the Composite Capital in lieu of the *Ionic* ; imitating that of the Temple of *Concord*, whose four Sides are alike : to render it more beautiful, the Volute may be made a little oval and inclining. See *Order* and *Volute*.

*Ionic Dialect*, in Grammar, is a manner of Speaking peculiar to the People of *Ionia*. At first it was the same with the ancient *Attic*, but passing into *Asia*, did not arrive at that Delicacy and Perfection to which the *Athenians* attain'd. Instead of that, it rather degenerated, in *Asia Minor* ; being corrupted with the Admission of foreign Idioms. In this *Dialect* it was that *Herodotus* and *Hippocrates* wrote.

*Ionic Transmigration* was heretofore a very celebrated Epocha. It took its Rise from the Retreat of the *Athenian* Colonies, who, upon the Death of *Codrus*, put themselves under the Command of his Son *Neleus*, and establish'd the twelve Cities of *Ionia* in *Asia*. These Colonies, according to *Erastosthenes*, were establish'd 50 Years after the Return of the *Heracleide* ; and, according to *Marshall*, 77 Years after the taking of *Troy*.

*Ionic Sect*, was the first of the ancient *Sects* of Philosophy ; the others were the *Italic* and *Eleatic*. The Founder of this *Sect* was *Thales*, who being a Native of *Miletus* in *Ionia*, occasion'd his Followers to assume the Appellation of *Ionic*. 'Twas the distinguishing Tenet of this *Sect*, That Water was the Principle of all Natural Things. This is what *Pindar* alludes to in the beginning of his first *Olympic Ode*.

**JOURNAL**, a Day Book, Register, or Account of what passes daily.

In Merchants Accounts, the *Journal* is a Book into which every particular Article is posted out of the Waste-Book, and made Debtor : This is to be very clearly express'd, and fairly engross'd.

*Journal*, in Sea-Affairs, is a Register kept by the Pilots ; wherein particular notice is taken of every thing that happens to the Ship from Day to Day, and from Hour to Hour, with regard to the Winds, the Rhumbs, the Rake, Soundings, &c. in order to enable them to adjust their Reckoning, and determine the Place where they are.

*Journal* is now become a common Name for many of our News-Papers, which detail the daily Transactions of Europe. It is also used for the Title of several Books

which come out at stated Times, and give Abstracts, Accounts, &c. of the several new Books that are publish'd, and the several new Improvements daily made in Arts and Sciences. The first *Journal* of this kind was the *Journal des Sçavans*, printed at *Paris*. The Design was set on foot for the Ease of such as are too busy or too lazy to read the entire Books themselves. It seems an excellent way of satisfying a Man's Curiosity, and of becoming learned upon easy Terms : And so useful is it found, that it has been executed in most other Countries, tho' under a great Variety of Titles. Of this kind are the *Philosophical Transactions* of *London* ; the *Acta Eruditorum* of *Leipsic* ; the *Republique des Lettres* ; the *Bibliothèque Universelle & Choisie* of *M. le Clerc* ; the *Memoirs* of *Treves*, &c. In 1692, *Juncker* printed in *Latin*, *An Historical Treatise of the Journals of the Learned*, publish'd in the several Parts of Europe ; and *Wolfius*, *Burchardus*, *Gottelfius*, and *Sruius*, have done something of the same kind. The *Memoirs of the Academy of Sciences* ; those of the *Academy des Belles Lettres* ; The *Miscellanea Naturæ Curiosorum*, which ended in 1706 ; The Experiments of the *Academy del Cimento* : The *Acta Philo-Exoticorum Naturæ & Artis*, which appear'd from March 1686 to April 1687, and which are a History of the Academy of *Bresse* ; and the *Miscellanea Berolinensia*, or *Memoirs of the Academy of Berlin*, are not properly *Journals*, tho' they are frequently rank'd in the Number.

*Juncker* and *Wolfius* give the Honour of the first Invention of *Journals* to *Photius*. His *Bibliotheca*, however, is not altogether the same with our *Journals* ; nor was his Design the same. It consists of Abridgments and Extracts of Books that he had read during his Embassy in *Persia*.

*M. Salo* first began the *Journal des Sçavans* at *Paris* in 1665, under the Name of the *Sieur Hedouville* ; but his Death soon after interrupted the Work. Upon this the *Abbot Gallois* took it up, and he in the Year 1674. gave way to the *Abbot de la Roque*, who continued it nine Years, and was succeeded by *M. Cousin*, who carried it on till the Year 1702, when the *Abbot Bignon* instituted a new Society, and committed the Care of continuing the *Journal* to them. It was now improved, and published under a new Form. This Society is still continued, and *M. de Voyer* has the Inspection of the *Journal* ; which is no longer the Work of any single Author, but of a great Number. The other French *Journals* are the *Memoirs* and *Conferences* on Arts and Sciences, by *M. Denis*, during the Years 1672, 1673, and 1674. New Discoveries in all the Parts of Physic by *M. de Blegny*. The *Journal* of Physic, begun in 1684, and some others discontinued almost as soon as begun. The *Nouvelles de la Republique des Lettres*, News from the Republic of *Lettres*, were begun by *M. Bayle* in 1684, and carried on by him till the Year 1687, when *M. Bayle* being disabled by Sickness, his Friends *M. Bernard* and *M. de la Roque* took 'em up, and continued 'em till 1699. After an Interruption of nine Years, *M. Bernard* resumed the Work, and continued it to the Year 1710. The *History of the Works of the Learned*, by *M. Basnage*, was begun in 1686, and ended in 1710. The *Universal Historical Dictionary*, by *M. le Clerc*, was continued to the Year 1693, and contained twenty five Volumes. The *Bibliothèque Choisie*, of the same Author, began in 1703. The *Memoirs for a History of Sciences and Arts*, usually called *Memoires de Trevoux*, from the Place where they are published, began in 1701. The *Essays of Literature* reached but to a twelfth Volume in 1702, 1703, and 1704 ; these only take notice of ancient Authors. The *Journal Littéraire*, by *Father Hugo*, begun and ended in 1705. At *Hambourgh* they have made two Attempts for a French *Journal*, but the Design failed : an *Ephemeris Sçavans* has also been undertaken, but that soon disappeared. A *Journal des Sçavans*, by *M. Dartis*, appeared in 1694, and was dropt the Year following. That of *M. Chauvin* begun at *Berlin* in 1696, held out three Years ; and an Essay of the same kind was made at *Genoa*. To these may be added, the *Journal Littéraire*, begun at the *Hague* in 1713, and that of *Verdun*, and the *Histoire Littéraire de la Grande Bretagne*, by *M. de la Roche*, whereof there have already been four Volumes, and which is confined to English Books alone.

The English *Journals* of this kind are the *History of the Works of the Learned*, begun at *London* in 1699. *Censura Temporum* in 1708. About the same time there appeared two new ones ; the one under the Title of *Memoirs of Literature*, containing little else but an English Translation of some Articles in the foreign *Journals*, by *M. de la Roche* ; the other a Collection of those Tracts, entitled *Bibliotheca Curiosa*, or a *Miscellany*.

The Italian *Journals* are that of *Abbot Nazari*, which lasted from 1668 to 1681, and was printed at *Rome*. That of *Venice* began in 1671, and ended at the same time with the other ; the Authors were *Peter Moretti* and *Francis Milcetti*. The *Journal of Parma*, by *Roberti* and *Father Bacchini*,



*clini*, was dropped in 1690, and resumed again in 1692. The *Journal of Ferrara*, by the Abbot de la Torre, begun and ended in 1691. *La Galeria di Minerva* begun in 1696, is the Work of a Society of Men of Letters. Signior *Apollonio Zeno*, Secretary to that Society, begun another *Journal* in 1710, under the Auspice of the Grand Duke; it is printed at *Venice*, and several Persons of Distinction have a hand in it. The *Fatti Eruditi della Biblioteca Volante* were published at *Parma*.

The principal among the *Latin Journals* is that of *Leipsic*, under the Title of *Acta Eruditorum*, begun in 1682. *P. P. Manzani* begun another at *Parma*. The *Nova Literaria Maris Baltici*, lasted from 1698 to 1708. The *Journal of Hambourg* begun in 1703. The *Acta Literaria ex Manuscriptis*, and the *Biblioteca Curiosa*, begun in 1705, and ended in 1707, are the Work of *M. Struvius*. *M. Kuster* and *M. Sike* in 1697, begun a *Biblioteca* of new Books, and continued it for two Years. The *Swiss Journal*, called *Nova Literaria Helvetica* was begun in 1702 by *M. Scheucher*; and the *Acta Medica Hafnensia*, published by *F. Bartholin*, make five Volumes, from the Year 1671, to 1679.

There are two *Low-Dutch Journals*; the one under the Title of *Boeckx alvan Europe*; it was begun at *Rotterdam* in 1692, by *Peter Rabbus*, and continued from 1702 to 1708, by *Messieurs Sewel* and *Gavern*; the other is by a Physician, called *Ruiter*, who began in 1710.

The *German Journals* of best Note are the *Monatlichen Unterredungen*, which held from 1689, to 1698. The *Biblioteca Curiosa*, begun in 1704, and ended in 1707, both by *M. Tenzel*. The *Journal of Hannover*, begun in 1700, and continued for two Years by *M. Eccard*, under the Direction of *M. Leibnitz*, and was afterwards carried on by others. The *Theological Journal*, published by *M. Lefcher*, under the Title of *Altes and Neues*, that is, Old and New. A third at *Leipsic* and *Francfort*, the Authors *Messieurs Wolterck*, *Kranje*, and *Groschuffius*; and a fourth at *Hall*, by *M. Turk*.

**JOURNEY-MAN**, from the *French Journée*, Day or Days-Work, antiently signified a Person who wrought with another by the Day; tho now by the Statute it extends to those likewise who covenant to work with another in their Occupation or Trade by the Year.

**JOY**. See *Pleasure* and *Pain*.

**JOYNDER**, in Law, is the coupling or joining of two Persons in one Action or Suit against another.

**JOYNERY**, the Art of working in Wood, and of fitting or assembling various Parts or Members of it together: The *French* call it *Menuiserie*, from *Minutaria*, small Work, by which it is distinguish'd from *Carpentry*, which is conversant in the larger and less curious Works.

**IPECACUANHA**, a little Root, about the Thickness of a moderate Quill, brought hither from several Places in the *West-Indies*. There are three kinds of it, viz. a brown, a grey, and a white one; the first is most esteemed in Physic; it is firm, twisted, difficult to break, of a sharp bitter Taste, and grows in *Brazil* in the Gold-Mines. The Root of the grey *Ipecacuanha*, in its Virtue and Colour, is inferior to the former; it grows at the feet of Mountains, and in Meadows, and other moist Places. The *Spaniards* call it *Bexugillo*. The white *Ipecacuanha* differs from both the others, not only in Colour, but in Figure too, not being twisted or rugged like them, but rather resembling the Root of white Dittany. The *Ipecacuanha* is purgative and astringent, it is also a gentle Vomitive, and is found one of the best and surest Remedies hitherto discovered for a *Dysentery*.

**IRASCIBLE**, a Term in the old Philosophy, applied to an Appetite, or a Part of the Soul where Anger, and the other Passions that animate us against things difficult or odious, reside. Of the eleven kinds of Passions attributed to the Soul, the Philosophers ascribe five to the *Irascible* Appetite; to wit, Wrath, Boldness, Fear, Hope, and Despair; the six others are charged on the concupiscible Appetite, viz. Pleasure, Pain, Desire, Aversion, Love, and Hatred. *Plato* divided the Soul into three Parts, the reasonable, *irascible*, and concupiscible Parts. The two last, according to that Philosopher, are the corporeal and mortal Parts of the Soul, which give rise to our Passions. *Plato* fixes the Seat of the *Irascible* Appetite in the Heart, of the Concupiscible in the Liver, as the two Sources of Blood and Spirits, which alone affect the Mind.

**IRENARCHA**, the Name of a military Officer in the *Greek Empire*; his Business was to provide for the Peace, Security, and Tranquillity of the Provinces. In *Justinian's Code* 'tis mentioned, that the *Irenarche* are sent into the Provinces to maintain the public Peace, by punishing Crimes, and putting the Laws in execution. Besides this, there was another *Irenarcha* in the Cities, to whom belonged the preserving of Peace, and quelling Sedition among the Citizens. This Officer was sometimes called *Præfectus Urbis*. The Emperors *Theodosius* and *Honorius* suppressed the Office of the *Irenarche*, on account of their

abusing their Trust, and distressing and persecuting the People, instead of maintaining Peace among them. The word is composed of the *Greek* *εἰρήνη*, Peace, and *ἀρχή*, Prince, from *ἀρχή*, Command, Office.

**IRIS**, a Rainbow, occasioned by a Reflection of the Rays of the Sun in a watry Cloud. The word is derived from the *Greek* *ἰστέω*, to speak, to tell; as being a Meteor that is supposed to foretel Rain. See *Rain-bow*.

*Iris* signifies also that fibrous Circle next the Pupil of the Eye: See *Eye*. It also signifies those changeable Colours, which sometimes appear in the Glasses of Telescopes, Microscopes, &c. which are so call'd from their Similitude to a Rain-bow: as is that colour'd Spectrum, which a Triangular Prismatic Glass will project on a Wall, when placed at a due Angle in the Sun-beams.

**IRON**, a hard, fusible and malleable Metal, of vast Use in the Affairs of Life. It consists of an Earth, Salt, and Sulphur, but all impure, ill mix'd and digested, which render it extremely liable to rust. It is the hardest, dryest, and the most difficult to melt of all Metals. It may be soften'd by heating it often in the Fire, hammering it, and letting it cool of itself; and it is harden'd by extinguishing it in Water. It may be render'd white, by cooling it in *Sal Armoniac* and *Quick-lime*. The strongest Temper of *Iron* is said to be that, which it takes in the Juice of strain'd Worms. A red-hot *Iron* applied to a Roll of Sulphur, dissolves and sinks into a fine Dust. *Iron* has a great Conformity with Copper, and they are not easily separated when solder'd together; whence arises that uncommon Friendship which the Poets feign between *Mars* and *Venus*. It has a great Conformity, too, with the Loadstone. *Robault* says, it is itself an imperfect Loadstone, and that if it be a long time exposed in a certain Situation, it becomes a real Loadstone; and mentions the *Iron* in the Steeple of *Notre Dame* at *Chartres* as an Instance.

There are several kinds of *Iron*, that have Properties very different from one other. As, 1. *English*, which is coarse, hard, and brittle, fit for Fire-Bars and such Uses. 2. *Swedish*, which, of all others, is the best used in *England*: It is a fine tough sort, will best endure the Hammer, and is softest to file, and in all respects the best to work upon. 3. *Spanish*, which would be as good as the *Swedish*, were it not subject to red-scar, that is, to crack betwixt hot and cold. 4. *German Iron*. This kind goes by the Name of *Dort Square*, because it is brought hither from thence, and is wrought into Bars of three quarters of an Inch square. This is a coarse *Iron*, and only fit for ordinary Uses. There is another sort used for making of Wire, which is the softest and toughest of all. This is not peculiar to any Country, but is indifferently made wherever *Iron* is made, tho of the worst sort; for 'tis the first *Iron* that runs from the Mine-Stone, when 'tis melting, and is reserved purely for the making of Wire.

Generally speaking, the best *Iron* is the softest and toughest, and that which, when it breaks, is of an even greyish Colour, without any of those glittering Specks, or any Flaws or Divisions like those seen in broken Antimony.

To give *Iron* a blue Colour, with a Grind-stone rub off the black Scurf, then heat it in the Fire, and as it grows hot it will change Colour by degrees; become first of a gold Colour, and then of a beautiful blue. Sometimes the Workmen rub a Mixture of Indigo and Salad-Oil on it, while 'tis heating, and let it cool of itself.

Square and flat Bars of *Iron* are sometimes twisted, for Ornament; and the manner of doing it is this: After the Bar is square or flat forged, they give it a flame Heat, or if the Work be small, but a blood-red Heat; and then 'tis easy to twist it about as much or as little as they please, with the Tongs, Vice, or the like.

The several Heats which Smiths give their *Iron* in working, are, 1. A sparkling or welding Heat, which is used when they double up their *Iron*, or weld two Pieces of *Iron* together, end to end. 2. A flame or white Heat, which is used when the *Iron* has not its Form and Size, but must be forged into both. 3. A blood-red Heat, which is used when the *Iron* has already its Form and Size, but wants a little hammering to smooth and fit it for the File. If the *Iron* be made too hot, it will red-scar, i. e. break or crackle under the Hammer while 'tis working, between hot and cold. For the Manner of making and preparing *Iron*, see *Iron-Works*. To make *Iron* into Steel, see *Steel*.

**IRON-MOULDS** are certain yellow Lumps of Earth or Stone, found in Chalk-pits, about the Chiltern in *Oxfordshire*, which are really a kind of indigested *Iron Ore*.

**IRON-ORES**, and *Iron-Works*: Of these we have a great number in most parts of *England*, but those in the Forest of *Dean* in *Glocestershire* are in the most repute. The Ore is there found in great abundance, differing much in Colour, Weight and Goodness. The best, call'd *Brass Ore*, is of a blueish Colour, very ponderous, and full of little



Shining Specks, like Grains of Silver; this affords the greatest Quantity of *Iron*, but being melted alone, produceth a Metal very short and brittle, and therefore not so fit for common Use. For the remedying whereof, the Workmen make use of another sort of Material, termed *Cinder*, which is nothing but the Refuse of the *Ore*, after the Metal has been extracted; and which being mingled with the other, in a due Quantity, gives it the excellent Temper of Toughness, that causeth this *Iron* to be preferred before any other brought from foreign Parts. After they have provided their *Ore*, their first Work is to calcine it, which is done in Kilns, much after the fashion of our ordinary Lime-Kilns: these they fill up to the top with Coal and *Ore*, *stratum super stratum*; that is, one Layer upon another: and so putting Fire to the bottom, they let it burn till the Coal be wasted, and then renew the Kilns with fresh *Ore* and Coal in the same manner as before. This is done without Fusion of the Metal, and serves to consume the more drossy part of the *Ore*, and to make it malleable, supplying the beating, and washing, that are used in other Metals. From hence they carry it to their Furnaces, which are built of Brick or Stone, about twenty-four Foot square on the outside, and near thirty Foot in Height within, not above eight or ten Foot over where it is widest, which is about the middle; the top and bottom having a narrow Compass, much like the Shape of an Egg. Behind the Furnace are fixed two huge Pair of Bellows, the Noses of which meet at a little hole near the bottom; these are compress'd together by certain Buttons, placed on the Axis of a very large Wheel, which is turned about by Water, in the manner of an Overshot-Mill. As soon as these Buttons are slid off, the Bellows are raised again by the Counterpoise of Weights, whereby they are made to play alternately, the one going its Blast the time the other is rising. At first they fill these Furnaces with *Ore* and *Cinder*, intermix'd with Fuel, which in these Works is always of Charcoal, laying them hollow at the bottom, that they may more easily take fire; but after they are once kindled, the Materials run together into a hard Cake or Lump, which is sustained by the fashion of the Furnace: and through this the Metal, as it meets, trickles down into the Receivers set at the bottom, where there is a Passage open, by which the Men take away the Scum and Dross, and let out the Metal, as they see occasion. Before the Mouth of the Furnace lies a great Bed of Sand, where they make Furrows of the Shape into which they would have their *Iron* cast. As soon as the Receivers are full, they let in the Metal, which is made so very fluid by the Violence of the Fire, that it not only runs to a considerable distance, but stands afterwards boiling for a good while. When the Furnaces are once at work, they keep them constantly employ'd for many Months together, never suffering the Fire to slacken Night or Day, but still supplying the wasting of the Fuel, and other Materials, with fresh, poured in at the top: Charcoal is used altogether in this Work, for Sea-Coal will not do. From these Furnaces the Workmen bring their Sows and Pigs of *Iron*, as they call them, to their Forges, where it is wrought into Bars.

**IRON-SICK:** A Ship or Boat is said to be *Iron-sick*, when her Spikes are so eaten with Rust, or Nails, and so worn away, that they make Hollows in the Planks, whereby the Ship leaks.

**IRONY**, is a Figure in Speech, wherein we plainly intend something very different from what our Words express; as when we seem to praise a Person at a time when we evidently railly and discommend him. Hence *Quintilian* calls it *Diversiloquium*, *Diffimulation*, and *Illusion*. Thus we say, *John's* a very honest Fellow; meaning, he's a rank Knave. The *Irony* discovers itself rather in the Tone of the Speaker than in the Words. It is derived from the Greek, *ειρωνια*, *Diffimulation*.

**IRRADIATION**, signifies an Emanation or shooting out of subtile Effluvia from one Body to another. See *Quality*.

**IRRATIONAL NUMBERS**, are the same as *Surd Numbers*; which see.

*Irrational Quantities:* See *Rational Quantities*.

**IRREGULAR**, something that deviates from the common Forms or Rules. Thus we say an *irregular* Fortification, an *irregular* Building, an *irregular* Figure, &c. In Grammar there are several Declinations and Conjugations that are *irregular*, anomalous, or *Heteroclitics*. Among Casuists the Term *irregular* is applied to a Person who is unqualified for entering into Orders, as being a Bastard, Maimed, &c. or to an Ecclesiastic, who is interdicted, suspended, or censured, and by that means rendered incapable of holding a Benefice, or discharging any of the sacred Functions.

**IRREGULAR BODIES**, are Solids not terminated by equal and like Surfaces.

**IRREGULAR COLUMN**, in Architecture, is such a one as not only deviates from the Proportions of any of the five Orders; but whose Ornaments, whether in the Shaft or Capital, are absurd and ill-chosen.

**IRREPLEVIABLE**, in the Common Law, signifies what may not be replevied, or set at large, upon Sureties.

**IRRORATION**, a kind of Transplantation used for the Cure of certain Diseases. It consists in the sprinkling every Day either Trees, or other proper Plants, with the Urine or Sweat of the Patient; or with the Water wherein his Body, or at least the Part affected, has been washed, till such time as the Disease is removed. As soon as the Sprinkling has been made, they throw fresh Earth on it, in order to prevent the Virtue of the Munia, that is, of the vital Spirit of the Liquid, from evaporating into the Air.

**ISCHIADIC**, an Epithet given by the Physicians to two Veins of the Foot, which terminate in the Crural. The first, called the *Great Ischiadic*, is formed by ten little Branches, proceeding from the Toes, which uniting together, pass by the Muscles of the Calf of the Leg. The lesser *Ischiadic* is formed from several Ramifications, proceeding from the Skin and Muscles, which encompass the Articulation of the Thigh. They are also called *Sciatic*. The Word is derived from the Greek *ισχιας*, or *ισχιον*, *Coxa*, the Hip.

**ISCHIATICA.** See *Sciatica*.

**ISCHIUM**, in Anatomy, is the Name of one of the Bones of the Thigh, wherein is a deep Cavity, called *Cotylo*, or *Acetabulum*, which receives the Head of the Thigh-Bone. This Cavity is encompassed with a cartilaginous Circle, which serves to strengthen the Thigh. The *Ischium* is one of the *Ossa Innominata*, which see. The word is derived from the Greek *ισχος*, *Robur*, *Strength*.

**ISCHURIA**, in Physic, is a Disease that consists in an entire Suppression of Urine. It is occasioned by any thing that may obstruct the Passages of the Reins, Ureters, or the Neck of the Bladder, as Sand, Stone, Phlegm, &c. It may also be occasioned by an Obstruction of the Nerves, which pass to the Reins or Bladder, as we see it is, in a Paralysis of the lower Parts from the Diaphragm. The too great Distension of the Bladder may also produce the same Effect; for the Fibres being much lengthened, and consequently condensed, the Spirits necessary for their Contraction cannot get Admittance; whence it is that Persons, who have retained their Urine a long time, find a great deal of difficulty in discharging it. The word is derived from the Greek *ισχω*, *I stop*, and *ουρα*, *Urine*.

**ISELASTIC**, the Name of a kind of Combat, or Game, celebrated in the Cities of Greece and Asia in the time of the Roman Empire. The Victor at these Games had very considerable Privileges conferred on him, after the Example of *Augustus*, and the *Athenians*, who did the like to the Conquerors at the *Olympic*, *Pythian*, and *Isthmian* Games. They were crowned on the spot, immediately after their Victory, had Pensions allowed them, were furnished with Provisions at the public Cost, and were carried in Triumph into their Country.

**ISIA**, Feasts and Sacrifices antiently solemnized in honour of the Goddess *Isis*. The *Isia* were full of abominable Impurities, and for that reason those who were initiated were obliged to take an Oath of Secrecy. They held for nine Days successively, but were so abominable, that the Senate abolished them at Rome, under the Consulate of *Piso* and *Gabinus*. Two hundred Years after this they were re-established by the Emperor *Commodus*, who himself assisted at them, appearing among the Priests of that Goddess with his Head shaven, and carrying the *Anubis*.

**ISIACI**, Priests of the Goddess *Isis*. *Dioscorides* tells us, they bore a Branch of Marine Absynthium in their hands instead of Olive. They sung the Praises of the Goddess twice a-day, viz. at the rising of the Sun, when they opened her Temple; after which they begged Alms the rest of the Day, and, returning at night, repeated their Orisons, and shut up the Temple. Such was the Life and Office of the *Isiaci*; they never covered their Feet with any thing but the thin Bark of the Tree *Papyrus*, which occasioned *Prudentius* and others to say they went bare-footed. They wore no Garments but Linnen, because *Isis* was the first who taught Mankind the Culture of this Commodity. See *Diodorus Siculus*, and *Plutarch's Isis* and *Osiris*.

**ISING-GLASS:** See *Ithyocolla*.

**ISLAND**, a Tract of Ground encompassed round with the Sea, or with Rivers. This Term is opposed to the Continent or *Terra Firma*. Some conclude from *Gen. x. 5.* and from *Ecc. xliii. 25.* that *Islands* are as antient as the World, and that there were some at the beginning. Whatever be come of this Proof, 'tis by no means probable, that the large *Islands*, far remote from the Continent, are new, or that they either arose out of the Sea, or were torn from the main Land. Nor is it less true, that there have been



new *Islands* formed, by the casting up of vast Heaps of Clay, Mud, Sand, &c. as that for instance of *Tjong-ming*, in the Province of *Tonquin* in *China*: or by the Violence of the Sea, which have torn off large Promontories from the Continent, as the Antients imagined *Sicily*, and even *Great Britain* were formed. It is also certain, that some have emerged above the Waves, as *Santorini* formerly, and three other Isles near it lately; the last in 1707, which rose from the bottom of the Sea after an Earthquake, that was suppos'd to have loosen'd it from its hold.

Several Naturalists are of opinion, that the *Islands* were formed at the Deluge; others think they have been separated from the Continent by violent Storms; Inundations, and Earthquakes. These last have observed, that the *East-Indies*, which abound in *Islands* more than any other part of the World, are likewise more annoyed with Earthquakes, Tempests, Lightning, Vulcano's, &c. than any other Part. *Varenius* thinks most of these Opinions true in some Instances, and believes that there have been *Islands* produced each of these ways. *St. Helena*, *Ascension*, and other steep rocky *Islands*, he supposes to have become so, by the Sea's overflowing their neighbouring Champains. By the heaping up huge Quantities of Sand, and other terrestrial Matters, he thinks the *Islands* of *Zea-land*, *Japan*, &c. were form'd. *Sumatra* and *Ceylon*, and most of the *East-Indian Islands* he thinks wererent off from the main Land; and concludes, that the *Islands* of the *Archipelago* were form'd in the same way; imagining it probable, that *Deucalion's Flood* might contribute towards it. The Antients had a Notion, that *Delos*, and some few other *Islands*, rose from the bottom of the Sea. Which, how fabulous soever it may appear, agrees with later Observations. *Seneca* takes notice that the *Island Therasia* rose thus out of the *Aegean Sea* in his time, of which the Mariners were Eye-witnesses. They had also an opinion, that there are some *Islands* which swim in the Sea. *Thales*, indeed, thought that the whole Earth which we inhabit, floated, thus, in the Sea; but his Opinion is easily refuted, the Channel of the Sea being found continuous to the Shore: But floating *Islands* are no ways improbable, especially if the Earth whereof they consist be light and sulphureous. *Seneca* says, that near the *Carylia* he saw such an *Island*, and mentions several others of the same kind; and it was even a common Opinion among the Antients, that all the *Cyclades* had done the same. *Gryphander* has written a *Latin Treatise* expressly on *Islands*, *de Insulis*.

ISLES, in Architecture, are Sides or Wings of a Building.

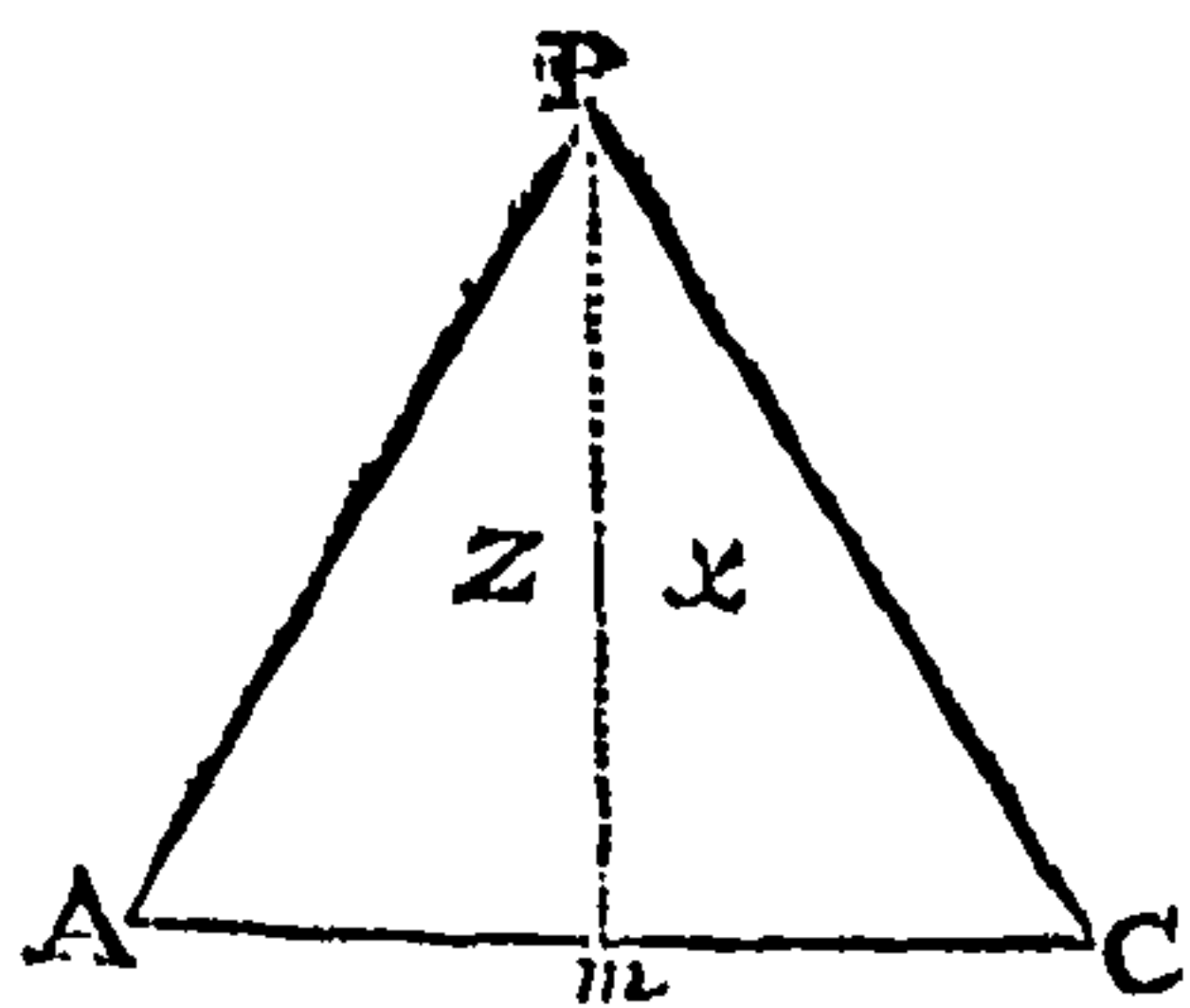
ISOCHRONAL LINE, is that in which a heavy Body is supposed to descend without any Acceleration. *Leibnitz* in the *Act. Erud. Lips.* for February 1689, hath a Discourse on this Subject, in which he shews, That a heavy Body with a degree of Velocity acquired by the Descent from any Height, may descend from the same Point, by an infinite Number of *Isochronal Curves*, which are all of the same Species, differing from one another only in the Magnitude of their Parameters, such as are all the *Quadrato-Cubical Paraboloids*, and consequently similar to one another. He shews also, there, how to find a Line, in which a heavy Body descending shall recede uniformly from a given Point, or approach uniformly to it.

ISOCHRONE; a Term applied to such Vibrations of a Pendulum as are performed in equal Times: of which kind are all the Vibrations or Springs of the same Pendulum, whether the Arcs it describes be longer or shorter; for when it describes a shorter Arc, it moves so much the slower; and when a long one, proportionably faster.

ISOMERIA, in Algebra, is a Method of freeing an Equation from Fractions, which is done by reducing all the Fractions to one common Denominator, and then multiplying each Member of the Equation by that common Denominator. Thus e. g.  $\frac{2}{3}x^3 + axx - \frac{4}{a}bcx = ab^2b$  be-

comes  $ax^3 + 4aaxx - 4bcx = 4ab^2b$ .

ISOPERIMETRAL FIGURES, are such as have equal Perimeters or Circumferences.



ISOSCELES Triangle, is a Triangle which hath two equal sides; to which it may be added, that the Angles opposite to the equal Sides are equal, and a Line drawn from the Top or Vertex, cutting the Base into two equal Parts, is perpendicular to the Base. e. g. Let the *Isoceles Triangle* be *APC*, and let its Base *AC* be supposed to be divided

into two equal Parts in *m*: I say, *Pm* is perpendicular to *AC*, and the Angle *P'CA* is equal to the Angle *P'AC*;

for the Triangle *Z* hath all its Sides equal to those of *X*, and therefore must have all its Angles equal also respectively to those in *X*: And then the Angle *P'mA* = *P'mC* because they are both right; therefore *P'm* is perpendicular to *AC*, and the Angle *P'Am* = *P'cm*.

ISSUANT, a Term in Heraldry, understood of a Lion, or other Animal, in a Coat of Arms, that seems just issuing out from under a Chief, Fesse, a House, a Wood, or the like, and only shews half his Body. It is not easy to distinguish the Lion *Issuant* from the Lion *Naissant*. Some say, the *Issuant* is that which comes out from behind the Field of some ample Ordinary, shewing his Head, Neck, the Tips of his Fore-Legs and his Tail against the chief of the Coat; whereas the *Naissant* has its Rise about the middle of the Field, and shews all his Fore-part, with the Tip of his Tail, as if he were rising out of the Earth.

ISSUE, is a Term in Common Law, having divers Applications; sometimes it is taken for the Children begotten between a Man and his Wife; sometimes for Profits growing from *Amerciements* or *Fines*; and sometimes for Profits of Lands and Tenements; sometimes for that Point of Matter depending in Suit, whereupon the Parties join, and put their Cause to the Tryal of the Jury: And yet in all these it hath but one Signification, which is an Effect of a Cause preceding; as the Children are the Effect of the Marriage between the Parents: The Profits growing to the King or Lord, from the Punishment of any Man's Offence, is the Effect of his Transgression: The Point referred to the Tryal of twelve Men, is the Effect of Pleading or Process. *Issue*, in this last Signification, is either General or Special.

*General Issue* seemeth to be that whereby it is referred to the Jury to bring in their Verdict, whether the Defendant hath done any such thing as the Plaintiff lays to his charge: For example, If it be an Offence against any Statute, and the Defendant plead Not Guilty; this being put to the Jury, is call'd the *General Issue*. And if a Man complain of a private Wrong, which the Defendant denieth, and pleads no Wrong, nor *Disseisin*; and if this be referred to the Jury, it is likewise the *General Issue*.

The *Special Issue* then must be that, when Special Matters being alledged by the Defendant in his Defence, both Parties join thereupon, and so grow rather to a Demurrer, if it be *Quaestio Juris*; or to a Tryal by the Jury, if it be *Quaestio Facti*.

ISSUES, in Physic, are small artificial Apertures in a fleshy part of the Body, to drain off superfluous Moisture, or give vent to any noxious Humour. They are usually made in the Arms, Legs, or Back, either by Caustics or Incision. Caution is used to place them about the middle of a Muscle, that the necessary Motion of the Parts may not incommode them, or pain the Patient. There is an easy way of making an *Issue*, which succeeds best in Children; 'tis done after this manner: Having applied a small piece of blistering Plaister, about the bigness of a small Pea, to the Part where you would have an *Issue*, and letting it lie on for a few Hours, it will cause a Blister; the Skin being rais'd, apply a Pea as usual, and compress it tight with a Bandage, till by degrees it sinks in, and forms an *Issue*. *Issues* are very useful in many Dilemperers, several of which, when obstinate, cannot be cured without them; as an *Hydrocephalus*, *Ophthalmia*, *Old Ulcers*, &c.

ISTHMUS, a narrow Neck or Slip of Ground that joins two Continents, or joins a Chersonesus or Peninsula to the *Terra firma*; and separates two Seas. The most celebrated *Isthmus's* are those of *Panama* or *Darien*, which joins *North* and *South America*; that of *Suez*, which connects *Asia* and *Africa*; that of *Corinth*, or *Peloponnesus*, in the *Morea*; that of *Crim-Tartary*, otherwise called the *Taurica Chersonesus*; that near the Island of *Romania* and *Erizzo*, or the *Isthmus* of the *Thracian Chersonesus*, twelve Furlongs broad; being that which *Xerxes* undertook to cut through. The Antients had several Designs of cutting the *Isthmus* of *Corinth*, which is a rocky Hillock, about ten Miles over; but they were all vain, the Invention of Sluices being not then known. There have been Attempts, too, for cutting the *Isthmus* of *Suez*, to make a Communication between the *Red-Sea* and the *Mediterranean*. The word comes from the Greek *ισμυς*, a Neck. Hence Anatomists use the Term for several Parts of the human Body, particularly that narrow part of the Throat situate betwixt the two Tonsils; and the Ridge that separates the two Nostrils.

ISTHMIAN GAMES were sacred Sports, the third, in order, of those so much celebrated in ancient Greece. *Plutarch*, in the Life of *Theseus*, tells us, they were instituted by that Hero in imitation of *Hercules*, who had before instituted the *Olympian Games*; but *Archias* refers their Institution to *Melicerta* or *Palamon*, whom the *Latins* call *Portunus*. Others say they were instituted by *Nisus*, Son of *Neptune*; and others by *Sisyphus*, Brother of *Atlas*.



*mas*, King of *Corinth*, about 1350 Years before Christ : however this be, 'twas in the *Isthmus* of *Corinth* they were celebrated, and hence arose their Name. *Archias* and others say, the Conqueror's Prize at these Games was a Crown of Parsley. *Plutarch* and *Strabo* say, it was at first a Crown of Pine, that this was afterwards changed for one of Parsley, but that at length the Pine was resumed ; and to this was added a Reward of 100 Silver Drachmæ. These Games were held every three Years, and esteemed so sacred, that after the Destruction of *Corinth*, the *Sicyonians* were charged with the keeping them up. They were so celebrated, and the Concourse at them was so great, that only the Principals of the most remarkable Cities could have place in them. The *Athenians* had only as much room allotted them as the Sail of a Ship, which they sent yearly to *Delos*, could cover.

ITALIAN, the Language spoke in *Italy*. This Tongue is derived principally from the *Latin*, and of all the Languages formed from the *Latin*, there is none that carries with it a more visible Character of its Original than the *Italian*. It is accounted one of the most perfect among the modern Tongues, containing Words and Phrases to represent all Ideas, to express all Sentiments, to deliver one's self on all Subjects, to name all the Instruments and Parts of Arts, &c. 'Tis complained indeed, that it has too many Diminutives and Superlatives, or rather Augmentatives ; but without any great reason : for if those words convey nothing further to the Mind besides the just Ideas of Things, they are no more faulty than our Pleonasm and Hyperbole's. The Character of the *Italian* Tongue it must be owned, however, is very different from that of our own, which is the Reason perhaps why we are so apt to find fault with it : for though the *Italian* be proper for all kinds of Writing, for all Stiles, and for all Subjects ; yet there are many of their celebrated Authors that don't succeed when translated into *English*, and which an *Englishman* cannot read, with pleasure, even in their Original. The Language corresponds to the Genius of the People, they are slow and thoughtful, and accordingly their Language runs heavily, though smoothly, and many of their Words are lengthened out to a great degree. They have a good Taste in Music, and to gratify their Passion this way, have altered abundance of their primitive Words, leaving out Consonants, taking in Vowels, softening and lengthening out their Terminations for the sake of the Cadence. Hence the Language is rendered extremely musical, and succeeds better than any other in Opera's, and some Parts of Poetry, but it fails in Strength and Nerves ; hence also a great part of its Words, borrowed from the *Latin*, become so far disguised, that they are not easily known again. The Multitude of Sovereign States into which *Italy* is divided, has given occasion to a great Number of different Dialects in that Language ; which, however, are all good in the Place where they are used. The *Tuscan* is usually preferred to the other Dialects, and the *Roman* Pronunciation to that of the other Cities ; whence came the *Italian* Proverb, *Lingua Toscana in Bocca Romana*. The *Italian* is generally pretty well understood throughout *Europe*, and is frequently spoken in *Germany*, *Poland*, and *Hungary*. At *Constantinople*, in *Greece*, and in the Ports of the *Levant*, the *Italian* is used as commonly as the Language of the Country ; indeed in those Places it is not spoke so pure as in *Tuscany*, but is corrupted with many of the proper Words and Idioms of the Place, whence it takes a new Name, and is called *Frank Italian*. See *Language*.

ITALIAN HOURS, are the 24 Hours of the natural Day, accounted from the Sun-setting of one Day to the same again the next Day. This way of reckoning was used by the *Jews* of old, and by the *Italians* to this day.

ITALIC, the Name of a Character in Printing. See *Printing*.

Italic, the Name of a Sect of antient Philosophers, founded by *Pythagoras* ; they were so called, because that Philosopher taught in *Italy*, spreading his Doctrine among the People of *Tarentum*, *Metapont*, *Heraclea*, *Naples*, &c. See *Pythagoric*.

ITCH, a Disease of the Skin, wherein it is corrupted by the ouzing out of certain sharp saline Humours, which gather into Pustules, and occasion a Pruritus or Itching. There are two kinds of *Itch*, a humid and a dry kind. The latter has been usually supposed to be owing to an atrabilious Humour, and the former to a saline Pituita : They are both contagious. Dr. *Bononio* has given a much more rational Account of the Cause of this Dilemper than any Author before him. He examined several Globules of the Matter pick'd out of the Pustules of itchy Persons with a Microscope, and found them to be minute living Creatures, in shape resembling a Tortoise, of brisk Motion, with six Feet, a sharp Head, and two little Horns at the end of the Snout. Hence he makes no scruple to impute this contagious Disease to the continual biting of

these Animalcules in the Skin, by means of which some Portion of the Serum ouzing out thro the small Apertures of the *Cutis*, little watry Bladders are made, within which the Insects continuing to gnaw, the Infected are forced to scratch, and by scratching increase the Mischief ; breaking not only the little Pustules, but the Skin too, and some little Blood-Vessels, and so make Scabs, crusty Sores, &c. Hence we may easily perceive how the *Itch* comes to be catching, since these Creatures, by simple Contact, easily pass from one Body to another, their Motion being wonderfully swift, and they crawling on the Surface of the Body, as well as under the *Cuticula*. Hence also we learn the reason of the Cure of this Disease by Lixivial Washes, Baths and Ointments, made of Salts, Sulphurs, Mercury, &c. these being very powerful in killing the Vermine lodged in the Cavities of the Skin, which scratching will never do ; they being too minute to be caught under the Nails. And if in Practice it is found that this Disease, after it seem'd to be cured by Unction, frequently returns again ; this is easily accounted for, since tho' the Ointment may have killed all the living Creatures, yet it may not, possibly, have destroy'd all their Eggs laid, as it were, in the Nests of the Skin ; from which they afterwards breed again, and renew the Dilemper.

ITINERANT JUDGES, or *Justices*, are such as were formerly sent with Commissions into divers Countries, to hear chiefly such Causes as were call'd Pleas of the Crown ; the same with *Justices in Eyre* : which see.

ITINERARY : The Description that a Traveller makes of the Course of his Journey, and of the Curiosities, &c. that he observed. The *Itinerary* of *Antonine* shews all the grand *Roman* Roads in the Empire, and all the Stations of the *Roman* Army. It was made by order of the Emperor *Antoninus Pius*, but is now very defective, having suffer'd extremely under the hands of the Copists and Editors.

JUBILEE, a Church-Solemnity, or Ceremony observed at *Rome*, wherein the Pope grants a Plenary Indulgence to the Universal Church ; as many of them, at least, as visit the Churches of *St. Peter* and *St. Paul* at *Rome*. The *Jubilee* was first establish'd by *Boniface VIII.* in 1300. in favour of those who should go *ad Limina Apostolorum*, and was only to return every hundred Years. The first Celebration brought in such store of Wealth to *Rome*, that the *Germans* call'd this the Golden Year. This occasion'd *Clement VI.* to reduce the Period of the *Jubilee* to 50 Years. *Urban VI.* appointed it to be held every 35 Years, that being the Age of our Saviour ; and *Sixtus IV.* brought it down to every 25, that every Person might have the Benefit of it once in his Life. *Boniface IX.* granted the Privilege of holding *Jubilees* to several Princes and Monasteries : For instance, to the Monks of *Canterbury*, who had a *Jubilee* every 50 Years.

*Jubilees* are now become more frequent, and the Pope grants them as often as the Church or himself have occasion for them. There is usually one at the Inauguration of a new Pope. To be entitled to the Privileges of the *Jubilee*, the Bull enjoins Fasting, Alms, Prayers. It gives the Priests a full Power to absolve, in all cases, even those otherwise reserved to the Pope ; to make Commutations of Vows, &c. in which it differs from a Plenary Indulgence. During the Time of *Jubilee*, all Indulgences are suspended.

One of our Kings, viz. *Edward II.* caused his Birth-Day to be observed in manner of a *Jubilee*, when he became 50 Years of Age ; but not before or after. This he did, by releasing Prisoners, pardoning all Offences but Treason, making good Laws, and granting many Privileges to the People.

There are particular *Jubilees* in certain Cities, when several of their Feasts fall on the same Day : At *Puy* in *France*, for instance, when the Feast of the *Annunciation* happens on *Good Friday* ; and at *Lyons*, when the Feast of *St. John Baptist* concurs with the Feast of *Corpus Christi*. In 1640 the *Jesuits* celebrated a solemn *Jubilee* at *Rome* : that being the Centenary, or hundredth Year from their Institution ; and the same Ceremony was observed in all their Houses throughout the World.

*Jubilee*, among the *Jews*, was understood of every fiftieth Year, being that following the Revolution of seven Weeks of Years ; at which time all the Slaves were made free, and all Inheritances reverted to their antient Owners.

The word *Jubilee*, according to some Authors, comes from the *Hebrew* *Jobel*, which signifies fifty. But this must be a Mistake ; for the *Hebrew* *לבי*, *Jobel*, does not signify fifty ; neither does its Letters, taken as Cyphers, or according to their Numerical Power, make that Number ; being 10, 6, 2, and 30, that is 48. Others say, that *Jobel* signifies a Ram, and that the *Jubilee* was proclaim'd with a Ram's horn, in memory of the Ram that appear'd to *Abraham* in the Thicket. *Mosius* derives the Word from *Jubal*, the first Inventor of Musical Instruments, which for that reason



son were call'd by his Name; whence the words *Jobel* and *Jubilee* came to signify the Year of Deliverance and Remission, because proclaim'd with the Sound of one of those Instruments, which at first was no more than the Horn of a Ram.

*Jubilee*, or *Jubilens*, is also used among the *Romanists* to signify a Religious who has been fifty Years in a Monastery, or an Ecclesiastic who has been in Orders fifty Years. Such veteran Religious are dispensed with in some places from attending Matins, or a strict Observation of any other of their Rules. *Jubilens* also signified a Man a hundred Years old; and a Possession or Prescription for fifty Years. *Si Ager non invenitur in Scriptione, inquiratur de Senioribus; & si sub certo Jubileo non sit, sine Vituperatione maneat in eternum.*

**JUDAICUS LAPIS**, a grey, soft, brittle Stone, in form of an Acorn, having Lines drawn regularly on its Surface, as if they were turn'd: It is used in Physic to dissolve the Stone in the Bladder.

**JUDAISM**: The Religious Doctrines and Rites of the Jews. *Judaism* was warranted by Divine Authority, being deliver'd to that People immediately from Heaven; it was, however, but a temporary Dispensation, and was to give way, at least the Ceremonial Part of it, at the Coming of the *Messias*. For a compleat System of *Judaism*, see the Books of *Moses*. *Judaism* was antiently divided into several Sects; the principal whereof were the *Pharisees*, *Sadduces*, and *Essenians*: which see. At present there are but two, viz. the *Karaites*, who admit of no Rule of Religion, but the Law written by *Moses*; and the *Rabbinists*, who add to the Law, the Traditions of the *Talmud*. It has been observed, that *Judaism*, of all other Religions, is that which is the most rarely abjured. In the 18th of *Edward I.* the Parliament granted the King a Fifteenth for the Expulsion of *Judaism*. See *Cuneus*, *Spencer*, and *Goodwin*.

In *England*, formerly, the Jews and all their Goods belonged to the chief Lord where they lived, and he had such absolute Property in them, that he might sell them, for they had not liberty to remove to another Lord without leave. *Mat. Paris* tells us, that *Henry III.* sold the Jews to *Earl Richard* his Brother for a Term of Years, that *quos Rex excoarverat, Comes evisceraret.*

They were distinguished from the Christians both living and dying, for they had proper Judges and Courts wherein their Causes were tried, and they wore a Badge on their outward Garments upon the Breast, in the shape of a Table, and were fined if they stirred abroad without such Badges. They were never buried in the Country, but brought up to *London*, and buried without the Walls.

**JUDGE**, an Officer appointed by the Powers of any Country, to distribute that Justice to their Subjects which they can't administer in Person. The Character of Judge is a part of the Regal Authority, whereof the Prince divests himself.

The *English Judges* are all chosen out of the Sergeants at Law, and are constituted by Letters Patents. Their Commissions are bounded with this Limitation, *Fassuri quod ad Justitiam pertinet secundum Legem & Consuetudinem Anglie*; and at their Creation they take an Oath, that they will indifferently minister Justice to all them that shall have any Suit or Plea before them; and this they will not forbear to do, tho' the King by his Letters, or by express Word of Mouth, should command the contrary. They have Salaries of 1000 *l.* per annum each from the King, besides very considerable Perquisites, and this Salary is granted them, *quandiu bene se gesserint*, to keep them free and independent of the Court. See *Justices*.

*Judge*, in Scripture, is understood of certain eminent Persons chosen by God himself to govern the Jews, from the time of *Joshua* to the Establishment of the Kings. The Judges were not ordinary Magistrates, being only sent on extraordinary Occasions, as, to head the Armies, to deliver the People from their Enemies, &c. *Salian* has observed, that they not only presided in the Courts of Justice, but were also at the Head of Councils, of Armies, and of every thing that concerned the Government of the State; tho' they never assumed the Title either of Princes, Governors, or the like. The same Author has observed seven Points wherein they differed from Kings: (1.) They were not hereditary. (2.) They had no absolute Power of Life and Death, but only according to the Laws, and dependantly of them. (3.) They never undertook War at their own pleasure, but only when they were appointed by God, or called to it by the People. (4.) They exacted no Tribute. (5.) They did not succeed each other immediately, but after the Death of one there was frequently an Interval of several Years e'er a Successor was appointed. (6.) They did not use the Ensigns of Sovereignty, tho' Scepter or Diadem. (7.) They had no Authority to make any new Laws, but

were only to take care of the Observation of the Laws of *Moses*. In some respects they resembled Kings, viz. 1. Their Authority was given them for Life, and not for a limited Time. 2. They ruled alone, and without any dependence, which occasioned *Josephus* to call their State Monarchical. The Hebrews were governed by fifteen Judges for the Space of 340. Years, viz. from the time of *Othniel* their first, to that of *Heli* their last Judge.

**JUDGES**, or the Book of *Judges*, is a Canonical Book of the Old Testament, containing the History of the Judges, whereof we have been speaking. The Author is not known. 'Tis probable the Work did not come from any single Hand, being rather a Collection of several little Histories, which at first were separate, but were afterwards collected by *Esdra* or *Samuel* into a single Volume; and, in all likelihood, were taken from the ancient Journals, Annals, or Memoirs, composed by the several Judges.

**JUDGMENT**, a Faculty of the Soul, by which she perceives the Relation that is between two or more Ideas. Thus when we judge that the Sun is greater than the Moon, the Understanding first compares the two Ideas of the Sun and the Moon, and finding the Idea of the Sun greater than that of the Moon, the Will perfectly acquiesces in that Perception, nor puts the Mind upon any farther Enquiry. 'Tis not the Understanding then that judges, as is ordinarily thought; *Judgments* and Reasonings, on the part of the Understanding, are but mere Perceptions: 'tis the Will alone that judges in reality, in acquiescing in what is represented to it by the Understanding. The only Difference, then, between Perception, Judgment, and Reasoning, so far as the Understanding is concerned in them, is this, That it perceives a thing simply, without any relation to any other thing in a simple Perception, that it perceives the Relations between two or more things in *Judgments*, and lastly that it perceives the Relations that are between the Relations of things in Reasonings: So that all the Operations of the Understanding are in effect no more than pure Perceptions.

When we perceive, for instance, twice 2, or 4, this is no more than a simple Perception; when we judge that twice 2 are 4, or that twice 2 are not 5, the Understanding does no more than barely perceive the Relation of Equality that is between twice 2 and 4, or of Inequality between twice 2 and 5: Further, Reasoning consists in perceiving the Relation, not between two or more things, for that would be a *Judgment*, but of two or more Relations of two or more things. Thus when I conclude that four being less than six, twice two being four, are by consequence less than six; I perceive not only the Relation of Inequality between two and two and six, (for this were only a *Judgment*) but also the Relation of Inequality between the Relation of twice 2 and 4, and the Relation between 4 and 6: Which constitutes a Reasoning. The Understanding therefore only perceives, and 'tis the Will that judges, and reasons in assenting voluntarily to what the Understanding represents.

Indeed, when the things which we consider, appear clear, and perfectly evident, it seems as if it were not voluntarily that the Mind consents to 'em; whence we are led to think, that 'tis not the Will, but the Understanding, that judges of 'em. But to clear this Point, it must be observed, that the things which we consider, never appear intirely evident till the Understanding has examined them on all sides, and has perceiv'd all the Relations necessary to judge of 'em; whence it happens, that the Will not being able to will any thing without Knowledge, cannot act on the Understanding; that is, cannot desire it to represent any thing new in its Object, as having already view'd it on all the sides that have any relation to the Question in hand. It is obliged, then, to rest in what has been already represented, and to cease to agitate and disturb it any further: in which Cessation it is, that *Judgment* consists. This Rest or *Judgment*, then, not being free, when things are in their last Evidence we are apt to imagine that it is not the Effect of the Will. So long as there is any thing obscure in the Subject that we consider, or that we are not fully satisfied that we have discover'd every thing necessary to resolve the Question, as it happens in most of those things that are difficult, and that contain various Relations; we are then at liberty not to acquiesce, the Will may command the Understanding to pursue its Enquiries further, and to make new Discoveries: whence it is, that we are more ready to allow the *Judgments* formed on these Subjects to be voluntary.

Most Philosophers, however, maintain that even the *Judgments* which we form on obscure things are not voluntary, and will have our consenting to the Truth to be an Action of the Understanding, which they call Assent, to distinguish it from our consenting to Goodness, which they attribute to the Will, and call it Consent. But their



Error is owing to this, that in our present State, we frequently see things to be evidently true without the least reason to doubt of 'em; in which case the Will is not at liberty either to give or refuse her Assent: but it is not so in Matters of Goodness; there being nothing, which we don't know some reason for forbearing to love. So that we here perceive a manifest Indifference, and are fully convinced that when we love any thing, even God for instance, we use our Liberty, and do it voluntarily. But the Use we make of our Liberty is not so apparent, when we consent to the Truth, especially when it appears perfectly evident: And this leads us to think that our Consent to Truth, that is, our *Judgment*, is not voluntary; as if an Action, to be voluntary, must be indifferent: As if the Blessed above did not love God voluntarily, because they cannot be diverted from it by any other thing; nor we consent freely to this evident Proposition, That twice 2 are 4, because we have no appearance of Reason to dissuade us from it. See *Will, Liberty, Truth, Goodness*.

*Judgment*, in a legal Sentence, is a Sentence or Decision pronounced by Authority of the King, or other Power, either by their own Mouth, or by that of their Officers whom they appoint to administer Justice in their stead. Of *Judgments* some are definitive, others only preparatory, provisional, or interlocutory. The antient words of *Judgment* are very significant, *Consideratum est, &c.* because *Judgment* is ever given by the Court upon Consideration had of the Record before them. In every *Judgment* there ought to be three Persons, *Actor, Reus, and Judex*.

**JUDICATURE**, the Profession of those who administer Justice. *Judicature*, is a kind of Priesthood. The word is also used to signify the Extent of the Jurisdiction of a Judge, and the Court wherein he sits to do Justice.

**JUDICIUM DEI**, *Judgment of God*, was a Term antiently understood of any extraordinary Trials of secret Crimes; as those by Arms and single Combat, those by Fire or red-hot Plow-shares, by plunging the Arm in boiling Water, or the whole Body in cold Water, in hopes God would work a Miracle rather than suffer Truth and Innocence to perish: *Si se super defendere non possit, Judicio Dei scil. Aqua vel Ferro fiet de eo Justitia.* These Customs were a long time kept up, even among Christians, and are still in Use in some Nations. See *Ordeal, Water, &c.* These Trials were held in the Churches, in presence of the Bishops, Priests, and Secular Judges, after three Days Fasting, Confession, Communion, and a world of Adjurations and Ceremonies, described at large by *du Cange*.

**JUGULAR**, a Term, among Anatomists, applied to certain Veins of the Neck, which terminate in the Subclavans. There are two on each Side; the one external, receiving the Blood from the Face and the external Parts of the Head; and the other internal, which receives the Blood from the Brain.

*Jugular* is also applied to certain Glands of the Neck, in the Spaces between the Muscles. They are in Number 14, and are found of different Figures, some larger, others less; they are fastened to each other by certain Membranes and Vessels, and their Substance is like that of the Maxillaries. They separate a Lympha, which is conveyed by those Vessels to the adjacent Muscles. 'Tis an Obstruction in those Glands which occasions the King's-Evil. *Dionis.*

**JUICE**, a liquid Substance, which makes part of the Composition of Plants, communicating itself to all the other Parts, and serving to feed and increase them. *Juice* is that to Plants, which Blood is to Animals. There are *Juices* aqueous, vinous, oleaginous, gummous, resinous, and bituminous, of all Tastes and Colours. Dr. *Lifter* observes, that most *Juices* of Plants coagulate, whether they be such as are drawn from the Wounds of a Plant, or such as spontaneously exude; he having made Curds and Cakes of the *Juices* of a great Number of Plants. He adds, that as the *Juices* of Plants seem to be compounded and mixed of Liquors of different kinds; 'tis probable, if the Caseous Part be narcotic, for instance, the Whey may not be so; or the one may be hurtful, and the other a good and useful Medicament. See *Sap, Gum, &c.*

The word *Juice* is also applied to several of the Fluids in an animal Body. The nervous *Juice* is a Liquor which, according to some Physicians, is found in the Nerves, whence it takes its Name. *Glisson, Wharton, and Willis* were the first who made mention of the nervous *Juice*; they take it to be a kind of Vehicle to the animal Spirits, preventing them from dissipating too hastily, and think it also serves to nourish the Parts of the Body; but a great part of our modern Physicians deny the Existence of this *Juice*.

*Pancreatic Juice* is a Liquor separated in the Glands of the Pancreas. See *Pancreas*.

*Juice* is also applied to the Vapours and Humidities inclosed in the Earth. Thus they say Chrysal is formed of a lapidific *Juice*, and Metals are formed of Vapours and *Juices* condensed in the Earth.

**JUJUBE**, the Fruit of a Tree of the same Name, growing very commonly in *Provence*, and some other Parts. The *Jujubes* are about the Size of a Plumb, oval, red without, yellow within, of a sweet, very commonly, vinous Taste; they are pectoral and aperitive, soften the Acrimony of the Humours, and promote a Discharge by the *Sputum*. *Pliny* tells us, that *Sextus Papinius* brought the first *Jujubes* from *Syria*, and Truffles from *Africa*, towards the End of *Augustus's* Reign.

**JULAP**, in Pharmacy, is an easy agreeable Potion prescribed to sick Persons: It usually consists of distilled Waters, or light Decoctions, frequently sweeten'd with Sugar or clarified Juices. It is sometimes used as the ordinary Drink in certain Diseases, but usually as a Vehicle for other Forms of Medicines; serving to correct the peccant Humours, to restore the declining Strength of the Heart, and to promote Sleep. The word, according to *Menage*, is derived from the *Arabic, Gulep*, or rather from the *Greek ζυλάμα*. *Olearius* derives it from *Gulap*, a *Persian* Word, signifying *Rose-Water*.

**IULE**, a kind of antient Hymn sung by the *Greeks*, and after them by the *Romans*, during the time of their Harvest, in honour of *Ceres* and *Bacchus*; in order to render those Deities propitious. The word is derived from the *Greek ἵλος*, or ἱάλω, a Sheaf. This Hymn was sometimes also called *Demetrule*, or *Demetriule*, that is, *Iule* of *Ceres*.

**JULIAN YEAR**, is the old Account of the Year, still in use among us in *England*; it is so called from its Founder *Julius Caesar*, and by that Name is distinguished from the new, or *Gregorian* Account, used in several Parts of *Europe*. It is either Common or Bissextile; the Common consists of 365 Days, and the Bissextile of 366. *Sosigenes*, whom *Caesar* made use of in the Reformation of the Calendar, judged the mean Solar Year to consist of just 365 Days and six Hours; and on this Ground it was that *Caesar* appointed one Year in four to be Bissextile, and the other three Common. See *Year*.

The *Julian* Period is of great Use in Chronology, and was invented by *Scaliger*; it consists of 7980 Years, the Product of the three Cycles multiplied into each other, viz. the Indiction, which is 15; the Golden Number 19; and the Cycle of the Sun 28. It is made to commence before the Creation of the World, and that more or less, according to the Hypothesis that is followed. Its principal Advantage consists in this, that the same Years of the Cycles of the Sun, Moon, and Indiction, belonging to any Year of this Period, will never fall together again till after the Expiration of 7980 Years, which, according to the received Opinions, will scarce happen before the Consummation of all things. The first Year of the Christian *Æra*, in all our Systems of Chronology, is always the 4714th of the *Julian* Period.

To find what Year of the *Julian* Period any given Year of Christ answers to, work thus: To the given Year of Christ add 4713 (because so many Years of the *Julian* Period were expired before *A. D.* 1.) and the Sum gives the Year of the *Julian* Period sought. For instance, I would know what Year of the *Julian* Period *A. D.* 1720 answers to: Now  $1720 + 4713 = 6433$ , the Year sought of the *Julian* Period. On the contrary, having the Year of the *Julian* Period given, to find what Year of Christ answers thereto: From the Year of the *Julian* Period given, subtract 4713 (for the Reason above-mentioned) and the Residue will be the Year sought. For instance, I would know what Year of Christ answers to the *Julian* Period 6433; wherefore  $6433 - 4713 = 1720$  the Year sought. If the Year of the *Julian* Period given be less than 4713, then subtract the same from 4714 (which is the Year of the *Julian* Period that answers to the Year of Christ 1.) and the Residue will shew how long before (the beginning of the common Computation from the Nativity of) Christ, the given Year of the *Julian* Period was. For instance, the City of *Rome* is said to have been built, *J. P.* 3960, I would know therefore how long it was built before Christ. Now  $4714 - 3960 = 754$ , wherefore *Rome* was built 754 Years before Christ. It is called *Julian* as being adapted to the *Julian* Year. See *Period*.

**JULUS**, a Name which the Botanists give to those Wormlike Tufts, or Palms, as they are called, in Willows, which, at the beginning of the Year, grow out, and hang pendulous down from Hazels, Walnut-Trees, &c. Mr. *Ray* thinks them to be a kind of Collection of the Stamina of the Flowers of the Tree, because in fertile Trees and Plants they have abundance of seminal Vessels and Seed-Pods.

**JULY**, the seventh Month in the Year, when the Sun enters the Sign of *Leo*. About the 24th Day of this Month



Month the Dog-Days begin. The French call this the Month of Red-Fruits, and with Reason, says Quintinie, because they are then in their height. On the 17th Day of this Month, according to Hippocrates and Pliny, the Dog-Star rises, the Sea boils, Wine turns, Dogs go mad, the Bile is increased and irritated, and all Animals decline and languish, &c. The word is derived from the Latin *Julius*, the Surname of C. Cæsar the Dictator, who was born in it. Mark Anthony first gave it this Name; before, it was called *Quintilis*, as being the fifth Month of the Year, in the old Roman Calendar established by Romulus, which begun in the Month of March. For the same reason August was called *Sextilis*, and September, October, November, and December still retain the Name of their first Rank.

*Quæ sequitur, Numero turba notata suo. Ovid. Fast.*

**JUNCTURE**, is any kind of Joint, or closing of two Bodies.

**JUNE**, the sixth Month of the Year, when the Sun enters the Sign of Cancer. In this Month is the Summer Solstice. The word comes from the Latin *Junius*, which some derive à *Junone*. Ovid, in the 6th of his *Fasts*, makes the Goddess say,

*Junius à nostro Nomine Nomen habet.*

Others rather derive it à *Junioribus*, this being for young People, as the Month of May was for old ones.

*Junius est Juvenum qui fuit ante Senum.*

**JUNIPER-BERRIES**, the Fruit of a Shrub of the same Name; much used in Medicine. *Etmuller* had a vast Opinion of them, and thought they deserved a whole Treatise to be wrote of them. The Rob (a Form of Medicine now out of use) made of the expressed Juice of the Green Berries, has been called the *Theriaca Germanorum*; so much have they been in esteem amongst them for anti-pestilential Qualities. They are certainly carminative, but their most remarkable Properties are in scouring the Viscera, and particularly the Reins and Urinary Passages, as all of the Turpentine-kind do. The Wood of this Shrub is also of considerable Use in Physic, it strengthens the Stomach, expels Wind, clears the Lungs, provokes the Menfes, and removes Obstructions of the Viscera. It is further said to be Sudorific, Cephalic, and Hysteric. From it they draw a Spirit, a Tincture, an Elixir, Extract, and a Ratifia. 'Tis said it will last an hundred Years without corrupting; and the Chymists add, that a Coal of *Juniper*, covered with Ashes of the same kind, will keep fire an entire Year.

**JUNTA**, an Assembly, Council, or Society, of several Persons meeting for the Dispatch of any Business. This Term is particularly in use in the Spanish and Portuguese Affairs. On the Death of Charles II. King of Spain, the Kingdom was governed, during the Absence of Philip V. by a Junta. In Portugal they have three considerable Juntas, the Junta of Commerce, that of the three Estates, and that of Tobacco. The first was established by King John IV. this is a Council of Marine. The same King assembled the States of his Kingdom to create the Tribunal of the Junta of the three Estates. K. Peter II. created the Junta of Tobacco in 1675, it consists of a President and six Counsellors.

Junta was the Name of a Society of Booksellers or Printers at Venice, who published many beautiful and correct Editions of Books, which still go by the Name of Junta's.

**IVORY**, the Tooth or Tusk of an Elephant growing on each side of his Trunk, in form of an Horn. Ivory is much esteemed for its Colour, its Polish, and the Fineness of its Grain when wrought. *Dioscorides* says, that by boiling it the space of six hours with the Root of Mandragoras, it becomes so soft and tractable, that one may manage it as he pleases. The Ivory of the Isle of Ceylon and that of the Isle of Achem have this Peculiarity, that they never become yellow, as that of the Terra-firma and East-Indies does; on which account 'tis much dearer.

Black Ivory is no more than Ivory burnt, and drawn into a Leaf when it is become black. It is ground with Water, and made up into little Cakes or Troches, used by the Painters.

**JUPITER**, one of the seven Planets: its Character is ♃. Its Orbit is situate between Saturn and Mars. It has a Rotation round its own Axis in 9 Hours, 56 Minutes; and a periodical Revolution round the Sun in 4332 Days, 12 Hours. It is the biggest of all the Planets. Its Diameter to that of the Sun appears, by Astronomical Observations, to be as 1077 is to 10000, to that of Saturn as 1077 to 889, to that of the Earth as 1077 to 104. The Force of Gravity on its Surface is to that on the Surface of the Sun as

797,15 is to 10000, to that of Saturn as 797,15 to 534,337, to that of the Earth as 797,15 to 407,832. The Density of its Matter is to that of the Sun as 7404 to 10000, to that of Saturn as 7404 to 6011, to that of the Earth as 7404 to 3921. The Quantity of Matter contained in its Body is to that of the Sun as 9,248 to 10000, to that of Saturn as 9,248 to 4,223, to that of the Earth as 9,248 to 0,0044. The mean Distance of Jupiter from the Sun is 5201 of those Parts, whereof the mean Distance of the Earth from the Sun is 1000, tho' Kepler makes it 5196 of those Parts. M. Cassini calculates Jupiter's mean Distance from the Earth to be 115,000 Semi-Diameters of the Earth. Gregory computes the Distance of Jupiter from the Sun to be above five times as great as that of the Earth from the Sun; whence he gathers, that the Diameter of the Sun, to an Eye placed in Jupiter, would not be a fifth part of what it appears to us; and therefore his Disk would be twenty-five times less, and his Light and Heat in the same Proportion. The Inclination of Jupiter's Orbit, that is, the Angle formed by the Plane of its Orbit, with the Plane of the Ecliptic, is 1 Deg. 20 Min. His Excentricity is 250; and Huygens computes his Surface to be four hundred times as large as that of our Earth. See *Solar System*.

Jupiter is one of the superior Planets, that is, one of the three above the Sun. Hence it has no Parallax; its Distance from the Earth being too great, to have any sensible Proportion to the Diameter of the Earth. Though it be the greatest of the Planets, yet its Revolution about its Axis is the swiftest. Its Polar Axis is observed to be shorter than its Equatorial Diameter; and Sir I. Newton determines the Difference to be as 8 to 9. So that its Figure is a Spheroid, and the Swiftnefs of its Rotation occasions this Spheroidism to be more sensible than that of any other of the Planets. Jupiter appears almost as large as Venus, but is not altogether so bright. He is eclips'd by the Moon, by the Sun, and even by Mars. Hevelius observed Jupiter's Diameter 7 Inches, having Inequalities like the Moon. He has three Appendages, call'd Zones, or Belts, which Sir I. Newton thinks are form'd in his Atmosphere. In these are several Macule, or Spots; from whose Motion, the Motion of Jupiter round its Axis is said to have been first determined. The Discovery of this is controverted between Eustachio, P. Gottignies, Cassini, and Campani.

The four little Stars, or Moons, which move round Jupiter, were first discover'd by Galileo, who call'd them the *Astra de Medicis*; but we the Satellites of Jupiter. Cassini observed, that the first or innermost of these Satellites was five Semi-diameters of Jupiter distant from Jupiter itself, and made its Revolution in 1 Day, 18 Hours, and 32 Minutes. The second, which is somewhat greater, he found 8 Diameters distant from Jupiter, and its Revolution 3 Days, 13 Hours, and 12 Minutes. The third, which is the greatest of all, is distant from Jupiter 13 Semi-diameters, and finishes its Course in 7 Days, 3 Hours, and 50 Minutes. The last, which is the least of all, is distant from Jupiter 23 Semi-diameters; its Period is 16 Days, 18 Hours, and 9 Minutes. These four Moons must make a very pleasing Spectacle to the Inhabitants of Jupiter, if it be true there are any; for sometimes they rise all together; sometimes they are all together in the Meridian, ranged one under another; and sometimes all appear in the Horizon, and frequently undergo Eclipses: the Observations whereof are found of especial Use in determining the Longitude. Cassini has made Tables for calculating the Immersions and Emerfions of Jupiter's first Satellite.

The Day and Night are of the same Length in Jupiter all over his Surface, viz. five Hours each; the Axis of his Diurnal Rotation being nearly at right Angles to the Plane of his Annual Orbit. Though there are four primary Planets below Jupiter, yet an Eye placed on his Surface would never perceive any of them, except Saturn; unless, perhaps, as Spots passing over the Sun's Disk, when they happen to come between the Eye and the Sun. The Parallax of the Sun, view'd from Jupiter, will scarce be sensible, no more than that of Saturn; neither being much above 20 Seconds; so that the Sun's apparent Diameter in Jupiter will not be above six Minutes. The outermost of Jupiter's Satellites will appear almost as big as the Moon does to us, viz. five times the Diameter, and 25 times the Disk of the Sun. Dr. Gregory adds, that an Astronomer in Jupiter would easily distinguish two kinds of Planets, four nearer him, viz. the Satellites, and two, viz. the Sun and Saturn, more remote. The former, however, will fall vastly short of the Sun in Brightness, notwithstanding the great Disproportion in the Distances and apparent Magnitudes. From those four different Moons, the Inhabitants of Jupiter will have four different kinds of Months, and the Number of Moons in their Year will not be less than 4500. These Moons are eclips'd as often as, being in opposition to the Sun, they fall within the Shadow of Jupiter;



*Jupiter*; and again, as oft as being in conjunction with the Sun, they project their Shadows to *Jupiter*, they make an Eclipse of the Sun to an Eye placed in that part of *Jupiter* where the Shadow falls. But in regard the Orbits of these Satellites are in a Plane which is inclined to, or makes an Angle with the Plane of *Jupiter's* Orbit, their Eclipses become central when the Sun is in one of the Nodes of these Satellites; and when out of this Position, the Eclipses may be total, tho not central, because the Breadth of *Jupiter's* Shadow is nearly decuple to that of the Breadth of any of the Satellites; and the apparent Diameter of any of these Moons is nearly quintuple the apparent Diameter of the Sun. 'Tis owing to this remarkable Inequality of Diameters, and the small Inclination the Plane of the Orbits of these Satellites has to the Plane of *Jupiter's* Orbit, that in each Revolution there happen Eclipses both of the Satellites and of the Sun: tho the Sun be at a considerable distance from the Nodes. Further, the inferior among these Satellites, even when the Sun is at its greatest distance from the Nodes, will occasionally eclipse and be eclipsed by the Sun to an Inhabitant of *Jupiter*; tho the remotest of them, in this case, escapes falling into *Jupiter's* Shadow, and *Jupiter* into his, for two Years together. To this it may be added, that one of these Satellites sometimes eclipses another, where the Phasis must be different, nay frequently opposite to that of the Satellite falling into the Shadow of *Jupiter* just mention'd; for in this, the Eastern Limb immergeth first, and the Western immergeth last: but in the others 'tis just the Reverse.

The Shadow of *Jupiter*, tho it reaches far beyond its Satellites, yet falls short of any other Planet; nor could any other Planet, *Saturn* alone excepted, be immersed in it, even tho it were infinite. Indeed, *Jupiter's* Shadow could not reach *Saturn*, unless *Jupiter's* Diameter were half that of the Sun; whereas, in effect, 'tis not one ninth of it.

The Courses of *Jupiter's* Satellites, and their various Eclipses, would render Navigation very sure and easy on the Globe of *Jupiter*. Even we, at this distance, can make very good use of them; those Eclipses being found one of our best means for determining the Longitude at Sea. For the Manner of calculating them, &c. see *Satellites*.

Among the Alchymists, *Jupiter* signifies the Philosophers Stone. The Gentlemen of this Profession apply every thing to their Art which the Fable mentions of the God *Jupiter*; pretending the Fables are to be understood in a figurative Sense: for instance, *Jupiter* is the Master of the Gods, and Gold, say they, is the most precious of Metals. Mercury is the Ambassador of *Jupiter*; and this shows with how much ease Mercury insinuates into every thing. *Jupiter* holds the Thunderbolt as his Scepter; which evidently points out the external Sulphur used in Projection. *Jupiter* has the Heavens for his ordinary Habitation; this shews the volatile, dry, and hot. The Debauches of *Jupiter*, who sought for Pleasure in the low, but prolific and fruitful Earth, discover, say they, its Fecundity; and that Gold might be formed, were the way of preparing it discover'd. In a word, *Jupiter* is the Son of *Saturn*, which shews some Resemblance between the Qualities of Gold and Lead.

JURATS are in the nature of Aldermen, for government of their several Corporations: as the Mayor and Jurats of *Maidstone*, *Rye*, *Winchelsea*, &c. So *Jersey* hath a Bailiff and twelve Jurats, or sworn Assistants, to govern the Island.

JURIS-CONSULTUS, among the Romans, was a Person learned in the Law, a Master of Juris-prudence, and who was consulted on the Interpretation of Laws and Customs, and on the difficult Points in Law-Suits. The fifteen Books of the *Digest* were compiled wholly from the Answers or Reports of the ancient *Juris-Consulti*. *Tribonianus*, in destroying the two thousand Volumes whence the *Code* and *Digest* were taken, has deprived the Public of a world of things which would have given 'em light into the Office of the ancient *Juris-Consulti*. We should scarce have known any thing beyond their bare Names, had not *Pomponius*, who lived in the second Century, taken care to preserve some Circumstances of their Office. The Roman *Juris-Consulti* seem to have been the same with our Chamber Counsellors, who arrived at the Honour of being consulted, through Age and Experience, but never pleaded at the Bar. Their pleading Advocates or Lawyers never became *Juris-Consulti*. In the Times of the Commonwealth the *Advocati* had by much the more honourable Employment; as being in the ready way to attain to the highest Preferments. They then despised the *Juris-Consulti*, calling them in derision *Formularii* and *Legulei*, as having invented certain Forms, and certain Monosyllables, in order to give their Answers the greater appearance of Gravity and Mystery. But in process of time they became so much esteem'd, that they were call'd *Prudentes* and *Sapientes*, and the Emperors appointed their Judges to follow their

Advice. *Augustus* advanced them to be public Officers of the Empire; so that they were no longer confined to the petty Counsels of private Persons. *Bern. Reffinus* has written the Lives of the most famous *Juris-Consulti*, who have lived within these 2000 Years.

JURISDICTION is a Power or Authority which a Man hath to do justice in cases of Complaint made before him. There are two kinds of *Jurisdiction*, the one Ecclesiastical, the other Secular. Secular belongs to the King and his Delegates: Ecclesiastical to Bishops and their Deputies. Bishops, &c. have two kinds of *Jurisdiction*; the one Internal, which is exercised over the Conscience in things purely Spiritual; and this they are supposed to hold immediately of God: The other is a Privilege which some Princes have given them of terminating Disputes between Ecclesiastics and Laymen.

JURIS-PRUDENCE, the Knowledge of what is just and unjust, or of the Laws, Rights, Customs, Statutes, &c. necessary for the doing of Justice. *Civil Juris-Prudence* is that of the Roman Law, *Canonical* that of the Canon Law, *Feudal* that of Fees.

JUROR, in a legal sense, is one of those twenty-four or twelve Men, who are sworn to deliver Truth upon such Evidence as shall be given them touching any matter in question. The Punishment of Petty Jurors attainted of giving a Verdict contrary to Evidence, willingly, is very severe. See *Attaint*.

JURY, in Common Law signifies either Twenty-four or Twelve Men sworn to enquire of the Matter of Fact, and declare the Truth upon such Evidence, as shall be delivered them touching the Matter in question. The Jury is to be chosen out of the same Class or Rank with the Accused, and if he be a Foreigner, he may demand a Jury half Foreigners and half *Englishmen*. There are ordinarily Thirty-six impanel'd, whereof in Criminal Cases the Person accused has the Liberty to challenge or set aside Twenty-four, and to pick out Twelve at his pleasure. These Twelve are present at the Trial, after which they withdraw into a Chamber by themselves, where they are to be shut up without Fire or Candle, Victuals or Drink, till such time as they agree in their Verdict, and declare unanimously that the Defendant is either Guilty of the Charge laid against him, or Not Guilty. Upon which, the Judge passes the Sentence prescribed by the Law. In *England* there are three sorts of Trials, viz. One by Parliament, another by Battle, and a third by Assize or Jury. The Trial by Assize (be the Action Civil or Criminal, Public or Private, Personal or Real) is referred for the Fact to a Jury, and as they find it, so passeth the Judgment. This Jury is not only used in Circuits of Justices Errant, but also in other Courts and Matters of Office: But tho' it appertains to most Courts of the Common Law, yet is it most remarkable in the Half-Year Courts of the Justices Errant, commonly call'd the Great Assizes, and in the Quarter-Sessions; and in them it is most ordinarily called a Jury, and that in a Civil Cause: whereas in other Courts, it is usually called an Inquest, and in the Court-Baron a Jury of the Homage. In the General Assize there are usually many Juries, because there are a great many Causes, both Civil and Criminal, commonly to be tried; whereof one is called the Grand Jury, and the rest the Petit Juries; of which, it seems, there should be one in every Hundred.

The Grand Jury consists of Twenty-four Grave and Substantial Gentlemen, or some of the better sort of Yeomen, chosen indifferently by the Sheriff out of the whole Shire, to consider of all Bills of Indictment prefer'd to the Court; which they do either approve, by writing upon them *Billa vera*; or else disallow, by indorsing *Ignoramus*. Such as they do approve, if they touch Life and Death, are farther refer'd to another Jury, to be consider'd of, because the Case is of much importance; but others of lighter moment are, upon their allowance, without more work, fined by the Bench: except the Party traverse the Indictment, or challenge it for Insufficiency, or remove the Cause to a higher Court by *Certiorari*; in which two former Cases it is refer'd to another Jury, and in the latter, transmitted to a higher. And presently upon the allowance of this Bill, by the Grand Inquest, a Man is said to be indicted: Such as they disallow, are delivered to the Bench, by whom they are forthwith cancelled or torn.

The Petit Jury consists of Twelve Men at the least, and are impanel'd as well upon Criminal as upon Civil Causes: Those that pass upon Offences of Life and Death, do bring in their Verdict either Guilty or Not Guilty; whereupon the Prisoner, if he be found Guilty, is said to be convicted, and so afterwards receiveth Judgment and Condemnation; or otherwise is acquitted, and set free. Those that pass upon Civil Causes Real, are all, or so many, as can conveniently be had, of the same Hundred, where the Land or Tenement in question doth lie, being four at least; and they, upon due Examination, bring in their Verdict either for the Demandant or Tenant.



**JURY-MAST**: so the Seamen call whatever they set up in the room of a Mast, lost in a Fight or by a Storm, with which they make shift to sail, instead of the Mast which they have lost.

**JUS CORONÆ**, the Rights of the Crown, is part of the Law of England, which differs in many things from the general Law concerning the Subject. *Coke on Litt.*

**JUS PATRONATUS**, in Law, is the Right of presenting a Clerk to a Benefice.

**JUS** and **JURA**, see *Law, Right*.

**JUST**, a Combat on Horseback, Man against Man, arm'd with Lances. Antiently, *Justs* and Tournaments made a part of the Entertainment at all solemn Feasts and Rejoicings. The Spaniards borrow'd these Exercises from the Moors, and call them the *Cane-Play*. This is the same with the *Ludus Trojanus* antiently practised by the Youth of Rome. The Turks use it still, and call it lancing the *Gerid*. The difference between *Justs* and Tournaments consists in this, That the latter is the Genus, of which the former is the Species. Tournaments were all kinds of Military Races and Engagements, made out of Gallantry and Diversion. *Justs* were such particular Combats where Parties were near each other, and engaged with Lance and Sword: The Tournament was frequently performed by a Number of Cavaliers, who fought in a Body. The *Just* was a single Combat of one Man against another: Though the *Justs* were usually made in a Tournament, after the general Rencounter of all the Cavaliers, yet they were sometimes singly, and independent of any Tournament. He who appear'd for the first time at a *Just*, forfeited his Helm or Casque, unless he had forfeited before at a Tournament.

The Word is derived from the *Latin juxta*, because the Combatants fought near one another. *Salmasius* derives it from the modern Greek *zoustra*, or rather *τρυσεα*, which is used in this sense by *Nicephorus Gregorius*. Others derive it from *Justa*, which in the corrupt Age of the *Latin* Tongue was used for this Exercise; this being supposed to be a more just and equal Combat than the Tournament.

**JUSTICE**, is a constant Desire or Inclination to give every one his Due, or a Habit by which the Mind is always disposed and determined to give every Man his own. *Justice* may be divided into Distributive, Commutative, and Legal. *Distributive Justice* is concern'd in Matters of Government, and of Beneficence, and is either remuneratory or punitive; it observes an Equality in dealing Rewards and Punishments, according to each Man's Condition and Merit: for as Actions are either good or evil, for the good, Rewards must be assigned, and for the evil, Punishments; and herein a Geometrical Proportion is observed. *Commutative Justice* is conversant in Matters of Commerce, and in the equal Commutation or Exchanging of things, and proceeds according to an arithmetrical Equality, without any regard to Persons and Circumstances. *Legal Justice* is that which resides in the State or Monarch, by whose Power and Authority the Effects of commutative and distributive *Justice* are frequently superseded or suspended; as in a Dearth of Corn, if a Person that has a Stock by him will not sell it, it shall be taken from him: and the like.

**JUSTICE** is likewise the Name of an Officer appointed by the King or Commonwealth, to do Right by way of Judgment. He is called *Justice*, and not Judge, because he was antiently called *Justicia*, and not *Justiciarius*, and because he has his Authority by Deputation, as Delegate to the King, and not *Jure Magistratus*; and therefore cannot depute any other in his stead, the *Justice* of the Forest only excepted. Of these *Justices* we have various kinds in England.

*Justice*, or Chief *Justice* of the King's-Bench, is the capital *Justice* of Great Britain, and a Lord by his Office. His Business is chiefly to hear and determine all Pleas of the Crown, that is, such as concern Offences against the Crown, Dignity, and Peace of the King, as Treasons, Felonies, &c. See *King's-Bench*.

*Justice*, or Chief *Justice* of the Common-Pleas, is he who, with his Assistants, hears and determines all Causes at the Common Law, that is to say, all Civil Causes between common Persons, as well Personal as Real, and he is a Lord by his Office. This Officer was formerly not only Chief *Justice*, but also Chief Baron of the Exchequer, and Master of the Court of Wards. He usually sat in the King's Palace, and there executed that Office, formerly performed *per Comitum Palatii*; he determined, in that Place, all the Differences happening between the Barons and other Great Men. He had the Prerogative of being Vicegerent of the Kingdom, whenever the King went beyond Sea, and was usually chosen to that Office out of the prime Nobility; but his Power was reduced by King Richard I. and King Henry I. His Office is now divided, and his Title changed from *Capitalis Anglie Justiciarius*, to *Capitalis Justiciarius ad Placita*, &c. See *Common-Pleas*.

*Justice of the Forest* is a Lord by his Office, and hath Power and Authority to determine Offences committed in the King's Forests, &c. which are not to be determined by any other Court or *Justice*, except such as are appointed by special Commission to assist him in his Office. Of these there are two, whereof the one hath Jurisdiction over all the Forests on this side Trent, and the other beyond it. By many antient Records it appears to be a Place of great Honour and Authority, and is never bestowed but on some Person of great Distinction. The Court where this *Justice* sits, is called the *Justice-Seat of the Forest*. This is the only *Justice* who may appoint a Deputy; he is also called *Justice in Eyre of the Forest*.

*Justices in Eyre*, *Justiciarii Itinerantes*, or *Errantes*, are so termed from the old French word *Erre*, i. e. *Iter*. These, in antient time, were sent with Commission into divers Counties to hear such Causes, especially, as were termed Pleas of the Crown; and that for the Ease of the Subject; who must else have been hurried to the Courts of Westminster, if the Cause were too high for the County-Courts. According to some, these *Justices* were sent once in seven Years, but others will have them to be sent oftner. *Camden* says, they were instituted in the Reign of King Henry II. but they appear to be of an older Date. They were much like our *Justices* of Assize at this Day, tho' for Authority and Manner of Proceeding very different.

*Justices of Assize*, are such as were wont, by special Commission, to be sent into this or that County, to take Assizes, for the Ease of the Subjects: for whereas these Actions pass always by Jury, so many Men might not, without great Damage and Charge, be brought up to London; and therefore *Justices*, for this purpose, by Commission particularly authorized, were sent down to them. These continue twice every Year to pass the Circuit, by two and two, thro' all England, dispatching their several Businesses by several Commissions; for they have one Commission to take Assizes, another to deliver Goals, and another of Oyer and Terminer, &c. See *Assize*.

*Justices of Goal-Delivery*, are such as are commissioned to hear and determine Causes appertaining to those, who for any Offence are cast into the Goals. Their Commission is now turned over to the *Justices of Assize*.

*Justices of Nisi Prius* are now all one with *Justices of Assize*, for it is a common Adjournment of a Cause in the Common Pleas to put it off to such a Day; *Nisi Prius Justiciarii venerint ad eas Partes ad capiendas Assisas*: and from the Clause of Adjournment, they are called *Justices of Nisi Prius*, as well as *Justices of Assize*, by reason of the Writ and Actions they have to deal in.

*Justices of Oyer and Terminer*, were *Justices* deputed, on some special Occasions, to hear and determine some particular Causes. The Commission of Oyer and Terminer is directed to certain Persons, upon any Insurrection, heinous Deemeanour, or Trespas committed.

*Justices of the Peace*, are Persons of Interest and Credit, appointed by the King's Commission to attend the Peace of the Country where they live; of whom, some, for special Respect, are made of the *Quorum*, because no Business of Importance may be dispatched without the Presence, or Assent of them, or one of them. See *Quorum*. The Office of a *Justice of the Peace* is to call before him, examine, and commit to Prison all Thieves, Murderers, wandering Rogues, those that hold Conspiracies, Riots, and almost all Delinquencies, that may occasion the Breach of the Peace and Quiet of the Subject; to commit to Prison such as cannot find Bail, and to see them brought forth in due time to Trial. The Original of *Justices of the Peace* is referred to the fourth Year of Edw. III. They were at first called *Wardens of the Peace*.

**JUSTIFICATION**, in Theology, is that Grace which renders a Man just in the Sight of God, and worthy of eternal Happiness. The *Romanists* and *Reformed* are extremely divided about the Doctrine of *Justification*; the latter contending for *Justification* by Faith alone, and the former by good Works. See *Imputation*.

**JUSTNESS**, the Exactness or Regularity of any thing. The word is particularly used in Matters of Language or Thought. The *Justness* of a Thought consists in a certain Preciseness or Accuracy, by which every part of it is perfectly true, and pertinent to the Subject. *Justness* of Language consists in using proper and well-chosen Terms; in not saying either too much or too little. *M. de Mere*, who has written on *Justness* of Mind, distinguishes two kinds of *Justness*; the one arising from Taste and Genius, the other coming from good Sense or right Reason. There are no certain Rules to be laid down for the former, viz. to shew the Beauty and Exactness in the Turn, or Choice of a Thought; the latter consists in the just Relation which things have to one another.

**JUVENALIA**, Games, Exercises of Body, or Combats, instituted by Nero the first time his Beard was shaved. They were celebrated in private Houses, and even the



Women had a share in them ; they were the same with the *Neroniana*.

JUXTA-POSITION, is that Disposition of Parts in

any Body, whereby they are joined and combined together.



## K

**K** A double Consonant, and the 10th Letter of the Alphabet. It is borrowed from the *Greek* *Kappa* ; and was but little used among the *Latins*. *Priscian* looked on it as a superfluous Letter, and says, it was never to be used except in words borrowed from the *Greek*. *Dansquius*, after *Salust*, observes, that it was unknown to the ancient *Romans*. Indeed we seldom find it in any *Latin* Authors, excepting in the word *Kalends*, where it sometimes stands in lieu of a C. *Karibage* is frequently spelt on Medals with a K, SALVIS AUGG. CAES. FEL. KART. and sometimes the Letter K alone stood for *Caribage*. M. *Beger* has observed, that a Capital K, on the Reverse of the Medals of the Emperors of *Constantinople*, signified KONSTANTINUS ; and on the *Greek* Medals he will have it to signify ΚΟΙΑΗ ΣΥΡΙΑ, *Cæle-syria*. *Lipsius* observes, that K was a Stygma antiently marked on the Foreheads of Criminals with a red-hot Iron ; and *Quintilian* tells us, that in his time some People had gotten a mistaken Notion, that wherever the Letters C and A occurred at the beginning of a Word, K ought to be used instead of the C.

The Letter K has various Significations in old Charters and Diploma's ; for Instance, K R stood for *Chorus*, K R. C for *Cara Civitas*, K R M for *Carmen*, K R. A M. N. *Carus Amicus noster*, K S *Chaos*, K T *Capite tonsus*, &c.

The *French* never use the Letter K, excepting in a few Terms of Art, and proper Names borrowed from other Countries. *Abblancourt*, in his Dialogue of the Letters, brings in K complaining, that he has been often in a fair way to be banished out of the *French* Alphabet, and confined to the Countries of the North. In *English* the K is used much more than needs be, particularly at the ends of Words after C, as in *Publick*, *Phyick*, &c. where it is of no manner of Service.

K is also a Numeral Letter, signifying 250, according to the *Verse* ;

*K quoque ducentos & quinquaginta tenebit.*

When it had a Stroke at top, it stood for 150000.

KABIN, or KEBIN, a temporary Marriage, in use among the *Mahometans*. The *Kabin* is contracted before the Cadi, in whose Presence the Man espouses the Woman for a certain time, upon condition that if he quits her at the end of that Term, she shall be allowed a certain Sum of Money. Some Authors say, that the *Kabin* is only permitted among the *Persians*, and in the Sect of *Ali* ; but others maintain that it is also practised among the *Turks*.

KADARE, or KADARITE, the Name of a Sect among the *Mahometans*, who deny the Favourite Tenet of the *Mussulmen*, Predestination ; and maintain the Doctrine of Liberty and Free-Will in all its Latitude.

KALENDAR, See *Calendar*.

KALENDS. See *Calends*.

KALI, a Plant, otherwise called *Glasswort* ; it grows in the Sands on the Sea-shore, where the People sow it in order to burn it green. Of its Ashes they make Soap, Glass, Alkali-Salt, &c. This Plant grows in great abundance in *Egypt* and *Syria* ; its Name *Kali* was given it by the *Arabs*. It is found pretty plentifully, too, in *Languedoc*, where the People turn it to a very good account. Their manner of preparing it is this : When the Tree is grown up to its pitch, they cut it down, and let it dry ; afterwards they burn and calcine it in certain Pits like Lime-Kilns dug in the Ground for that purpose, which are close covered up with Earth, so as no Air may come at the Fire. The Matter by this means is not reduced into Ashes only, but made into a very hard Stone, like Rock-Salt, which they are forced to break with Hammers to get it out, and this Matter they call *Salicor*, or *Soude en Pierre*. They make such Quantities of it here, that they export it into several other Countries, but principally into *Italy*, where the *Venetians* manufacture it into those beautiful Glasses, which they afterwards return into most Countries in *Europe*. However, the *Salicor* made here is inferiour to that brought from *Alicant*. The best is in little dry sonorous Stones, of a blueish grey Colour, and full of little Eyes or Holes.

KAN, the Name of an Officer in *Persia*. The *Kans* are the same things in *Persia* that Governours are in *Europe* : There are *Kans* of Provinces, Countries, and Cities, who have different Additions to distinguish them.

KAPI, a Term in the *Eastern* Countries for Gate. Thus the chief Gate of the Palace of the Emperor of *Persia* is called *Alla Kapi*, the Gate of God. Thus also the Officer who has the Command of the Grand Signior's Palace-Gates, is called *Kapighi Bachi*.

KARATA, a kind of Aloes growing in *America*. Its Leaves, when boiled, are made into a Thread, of good use in making Cloth, Fishing-Nets, &c. Its Root, or Leaves, thrown into the River, stun the Fishes to that degree, that they are easily taken with the Hand. Its Stalk, when dried and burnt, burns like a Match ; and when briskly rubbed on a harder Wood, takes fire, and consumes itself.

KARKRONI, a Building where the Royal Manufactures of *Persia* are carried on. Here are made their Tapestries, Cloth of Gold, Silk, Wool, and Brocades, Velvets, Taffeta's, Coats of Mail, Sabres, Bows, Arrows, and other Arms. There are also Painters in Miniature, Goldsmiths, Lapidaries, &c.

KARLE, a *Saxon* Word, used in our Laws, sometimes for a Man, and sometimes for a Servant, or Clown. Hence the *Saxons* call a Seaman a *Bisgarle*, and a Domestic Servant *Husgarle* : whence, by Corruption, comes our word *Churle*.

KASI, a Term in the *East*, applied to the fourth Pontiff of *Persia*, who, at the same time, is the second Civil Lieutenant, and judges of Temporal as well as Spiritual Affairs. He has two Deputies who determine Matters of less Consequence, particularly Quarrels arising in Coffee-houses, which make a great part of their Business.

KAURYSAOUL, a Body of Soldiers, who form the last of the five Bodies of the King of *Persia*'s Guards. They are in Number 2000, all Horse, commanded by the Constable, and in his Absence by the Captain of the Watch. They keep watch in the Night around the Palace, serve to keep off the Crowd when the King goes on Horseback, keep Silence at the Audience of Ambassadors, seize the *Kans* and other Officers when disgraced, and cut off their Heads when the King commands it.

KAY, a Wharf or Place by the Water-side, in a Sea-Port, for the loading and unloading of Merchandise ; the Number of these in *England* is determined by Act of Parliament. The Verb *cajare*, in old Writers, according to *Scaliger*, signifies to keep in or restrain ; and hence came our Term *Kay* ; the Ground where they are made being bound in with Planks and Posts.

KAYAGE, the Money, or Toll, paid for loading or unloading Wares at Kays.

KEBER, the Name of a Sect among the *Persians*. Those of this Sect are, for the generality, rich Merchants. Tho' they inhabit in the middle of *Persia*, and are found in great Numbers in the Suburbs of *Ispahan*, yet 'tis not known, whether or no they are originally *Persians*, as having nothing in common with the other *Persians* but the Language. They are distinguished by their Beard, which they wear very long, and by their Dress, which is quite different from the rest. They are in effect Heathens, but are in great Reputation for the Regularity of their Life. Some Authors say they adore the Fire, in imitation of the ancient *Persians* ; but this is contradicted by others : They believe the Immortality of the Soul, and have some things like what the Antients taught of Hell and the *Elysian* Fields. When any of them die, they let loose a Cock in his House, and drive it out into a Field ; if a Fox seizes it, and bears it off, they make no doubt but the Soul of the Defunct is saved. If this first Experiment don't satisfy them, they have recourse to a second, which is conclusive ; they carry the Carcass into the Church-yard, and prop it up against the Wall with a Fork : if the Birds peck out the right Eye, they look on him as one of the Predestinated, and bury him with a great deal of Ceremony, letting him down gently into the Grave ; but if the Birds begin with the left Eye, they conclude him a Reprobate, and throw him headlong into a Ditch. The word *Keber* signifies Infidel, from the *Turkish* *Keapber*, a Renegado, or, rather, they both come from כפּר, *Caphar*, which, in the *Chaldee*, *Syriac*, and *Arabic*, signifies to deny.

KEBLEH, or KIBLEH, a Term used among the *Turks*, for that Point or Quarter to which they turn themselves when they make their Prayers. *Mahomet* at first durst not propose any other *Kebleh* to his Followers but the Temple of



of Jerusalem, which was the *Kebleb* of the Jews and Christians. In course of time, however, being willing to bring his own, off from any Communication in Matters of Religion with the Jews and Christians, he appointed them; in the Alcoran, to turn themselves, at Prayer, towards the Temple of Mecca, from which time they called those two Temples the *Kebletan*, or two *Keblebs*. Ricaut adds, that 'tis not the Temple of Mecca, properly speaking, that the Turks call *Kebleb*, but rather the large square Tower in the middle of the Amphitheatre of the Mosque.

*Kebleb* is also used for an Altar, or rather a Niche, as Ricaut calls it, which the Mahometans have in all their Churches, and which is placed very exactly on that Side towards the Temple of Mecca. Hence the word *Kebleb* comes to be used metaphorically for the Object or End proposed, or the Intention a Man has in doing a thing. Thus the *Kebleb* of Kings is their Crown and Authority, that of Men of Business Money, that of Gluttons good Cheer, &c.

KEBLEH-NOMA, the Name which the Turks and Persians give to a little Pocket Compass, which they always carry with them, in order to place themselves the more exactly when they go to Prayers.

KEDGING, a Sea-Term, used when a Vessel is brought up or down a narrow River by the Wind, tho the Tide be contrary to it. To do this the Seamen set their Fore-sail, or Foretop-sail, and the Mizzen, and let her drive with the Tide, that they may flat her about; if she come too near the Shore, they have a little Anchor ready, called the *Kedger*, or *Kedge-Anchor*, with a Hawser fastened to it from the Ship: and this Anchor they drop in the midst of the Current, by which means they wind her Head about, and this done, take up the Anchor again.

KEEL, the Name of the lowest Piece of Timber in a Ship, in the Bottom of her Hull, one End whereof is at the Stern, the other at the Stem; into this are all the Ground-Timbers and Hooks fastened and bolted fore and aft. When a Ship hath a deep Keel, she is said to have a rank Keel, and this serves to keep her from rolling.

KEEPER of the Forest, otherwise called Chief Warden of the Forest, is an Officer that hath the principal Government of all things belonging to a Royal Forest, and the Check of all the other Officers. The Lord Chief Justice in Eyre of the Forest, when he thinks fit to hold his Justice-Seat, sends out his general Summons to the Keeper forty Days before, to warn all Under-Officers to appear before him at a Day assigned in the Summons.

Keeper of the Great Seal is a Lord by his Office, and styled Lord Keeper of the Great Seal. He is one of the King's Privy Council, through whose Hands pass all Charters, Commissions, and Grants of the King under the Great Seal, without which Seal, all such Instruments, by Law, are of no force; for the King is, in the Interpretation of the Law, a Corporation, and passeth nothing firmly but under the said Seal, which is, as the public Faith of the Kingdom, in the highest Esteem and Reputation. The Lord Keeper hath the same Place, Authority, Pre-eminence, Jurisdiction, Execution of Laws, and all other Customs, Commodities, and Advantages as the Lord Chancellor of England hath for the time being. Both these Officers cannot properly subsist at the same time, since the Statute of 5 Eliz.

Keeper of the Privy Seal is a Lord by his Office; thro' whose Hands pass all Charters, signed by the King, before they come to the Great Seal, and some things which do not pass the Great Seal at all. He is of the King's Privy Council, and was antiently called Clerk of the Privy Seal.

KERAMIAN, the Name of a Sect among the Mussulmen, so called from Mohamud Ben Keram its Author. The Keramians maintain, that whatever the Alcoran says of the Arms, Eyes, and Ears of God, is to be understood literally; so that they admit the *Targiaffum*, that is, a kind of Corporeity in God; which however they explain variously.

KERANA, a long Trumpet, in form of a Speaking-Trumpet, used by the Persians: To the Sound of this they add a confused Noise of Hautboys, Timbrels, Drums and other Instruments every Evening at Sunset, and two Hours after Midnight.

KERMES, a kind of Husk or Excreffence, as 'tis generally thought, about the Bigness of a Juniper-Berry, round, smooth, and shining, of a beautiful Red, and full of a mucilaginous Juice of the same Colour. It is found sticking to the Leaves and Bark of a kind of *Ilex* or Holm-Oak, in Spain, Languedoc, and other hot Countries. It has a vinous Smell, a bitter, tho agreeable Taste, and its Liquor contains an infinite Number of little round or oval Eggs. The Origin of the *Kermes* is supposed owing to a little Worm, which pricking the Holm-Oak, to draw its Food from it, raises a little Tumor or Vessel, which fills with Juice, and as it ripens becomes red. When the *Kermes* is dried, there comes out of it an infinite

Number of little Insects and Flies, so small that they are scarce sensible; insomuch that the whole inward Substance seems converted into them: For this reason it is that they sometimes call it *Vermillion*, (unless, perhaps, it be so call'd from its beautiful Vermillion Colour.) To prevent that Inconvenience, they usually steep the *Kermes* in Vinegar before they dry it. They draw the Juice or Pulp from the *Kermes*, and make a Syrup of it, by adding a sufficient Quantity of Sugar. Sometimes they dry the Pulp separate from the Husk, which Pulp, thus dried, they call *Pastel of Kermes*. The Grain of *Kermes* is of great use in Physic. It is Cardiac, Desiccative, Astringent, fortifies the Stomach; and prevents Abortion; of this, is made that celebrated Confection, call'd *Alkermes*. It is, however, of greater use in dying Scarlet.

The manner of preparing it for Dying, is as follows: The Grain being taken when ripe, they spread it on Linnen; and at first, while it abounds most in Moisture, turn it twice or thrice a day, to prevent its heating: till such time as there appears a red Powder among it; then they separate it, passing it thro a Searce, and then again they spread abroad the Grain on the Linnen, till they perceive the same Redness of Powder, when they repeat the sifting: and thus they proceed, till they discover a red Powder on the Surface of the Grain, which is still pass'd thro the Searce till it yield no more. In the beginning, when the small red Grains are seen to move, as they will do, they are sprinkled over with strong Vinegar, and rubb'd between the Hands. Were not this Precaution taken, out of every Grain would be formed a little Fly, which would skip and fly about for a day or two, and at last changing its Colour, fall down dead. The Grain being quite emptied of its Pulp or red Powder, is wash'd in Wine, and then exposed to the Sun; after this, 'tis put up in small Sacks, putting along with it, the Proportion of red Dust that the Grain had afforded.

According to M. Marfili's Experiments made at Montpellier, the Grain of *Kermes* has the Effect of Galls when mix'd with Vitriol, and makes a good Ink. Mix'd with Oil of Tartar or Lime-Water, its Colour turns from a Vermillion to a Crimson Colour. In a Decoction of Tournsoil Flowers it retains its proper Colour. They have not been able to get a fix'd essential Salt from it, but a volatile Salt it yields in abundance; which, in M. Marfili's opinion, would have a better Effect in Medicine, if taken in a Liquid, than when inclosed in Conserves and Confections, which hinder its Action. Those who have observed the Manner of producing the *Kermes* in the hot Countries tell us, that the little Grains gather'd on the *Ilex Coccigera* change into a great number of little Maggots of a red Colour, which run backwards and forwards in the Tree where they were bred; and wherever they stay any time, leave the Semen of those Grains, which break out the Year following. These the Greeks call *Coccus*, the Latins *Vermiculus*, and those of the Country, Grain of Vermillion, because of the Worms, Maggots, or Butterflies, into which the Grain changes.

KERNE, a Term in the antient Irish Militia, signifying a Foot-Soldier. Camden tells us, the Armies of Ireland consisted of Cavalry, call'd *Galloglasses*, and Infantry lightly armed, called *Kernes*. The *Kernes* bore Swords and Darts; to the last were fitted Cords, by which they could recover them after they had been launched out. *Kerne*, in our Laws, signifies idle Persons or Vagabonds.

KEY, a little Iron Instrument for the opening of Locks. Its Use and Figure are too well known to need a particular Description. L. Molinens has written a Treatise of Keys, printed at Upsal. He derives the Latin Name *Clavis* from the Greek *κλάω*, *claudio*, I shut, or from the Adverb *clam*, privately; and adds, that the Use of Keys is not known in some Parts of Sweden. The first Invention of Keys is owing to one Theodore of Samos, according to Pliny and Polydore Virgil; but this must be a Mistake, the Use of Keys having been known before the Siege of Troy, and mention is even made of them in the 19th Chapter of Genesis. Molinens is of Opinion, that Keys, at first, only served for the untying certain Knots, where-with they antiently secured their Doors; but the Laconic Keys, he maintains, were nearly a-kin in use to our own: they consisted of three single Teeth, and made the Figure of an E, of which Form there are some still to be seen in the Cabinets of the Curious. There was another Key, called *παλάμαρα*, made in the manner of a Male-Screw, which had its corresponding Female in a Bolt affixed to the Door. Key, hence, becomes a general Name for several things that shut up, or close other things.

Key of an Arch or Vault is the last Stone placed a-top of a Vault, which being wider and fuller at the Top than Bottom, wedges, as it were, and binds in all the rest. This Key is different in the different Orders; in the Tuscan and Doric 'tis a plain Stone, having a Projection; in the Ionic 'tis cut and waved in Veins, after



ter the manner of *Consoles*; in the *Corinthian* and *Composite*, 'tis a *Console* enriched with Sculpture, Foliages, &c.

*Key* is also used for Ecclesiastical Jurisdiction, and for the Power of Excommunicating and Absolving. Thus the *Romanists* say, the Pope has the power of the *Keys*, and can open and shut Paradise as he pleases, grounding their Opinion on that Expression of Jesus Christ, *I will give thee the Keys of the Kingdom of Heaven*. In *S. Gregory* we read, that 'twas the Custom heretofore for the Popes to send a Golden *Key* to Princes, wherein they inclosed a little of the Filings of *St. Peter's* Chains, kept with a world of Devotion at *Rome*, and that these *Keys* were wore in the Bosom, as being supposed to contain some wonderful Virtues.

*Key* is also a Term in Polygraphy and Steganography, signifying the Alphabet of a Cypher, which is a Secret known only to the Person who writes the Letter, and him who decyphers it. Some Cyphers have a single *Key*, where the same Characters are used throughout, in other Cyphers the Characters are varied, and the *Key* must be double. In this Sense it is that we use the words *Key* of a Book, *Key* of an Author, as being let by it into some Secrets, with regard to Persons, Times, Places, &c. which don't appear without it.

*Key*, in Music, is a certain fundamental Note or Tone, to which the whole Piece, be it Concerta, Sonata, Canrata, &c. is accommodated, and with which it usually begins, but always ends. To get an Idea of the Use of the *Key*, it may be observed, that as in an Oration there is a Subject, viz. some principal Person or Thing to which the Discourse is referred, and which is always to be kept in view, that nothing unnatural and foreign to the Subject may be brought in; so in every regular Piece of Music there is one Note, viz. the *Key*, which regulates all the rest. The Piece begins, and ends in this; and this is, as it were, the musical Subject, to which a regard must be had in all the other Notes of the Piece. Again, as in an Oration there are several distinct Articles, which refer to different Subjects, yet so as that they have all a visible Connection with the principal Subject, which regulates and influences the whole; so in Music there may be various subaltern Subjects, that is, various *Keys*, to which the different Parts of the Piece may belong: but then they must be all under the Influence of the first and principal *Key*, and have a sensible Connection with it. Now to give a more distinct Notion of the *Key*, we must observe, that the Octave contains in it the whole Principles of Music, both with respect to Consonance or Harmony, and Succession or Melody; and that if either Scale be continued to a double Octave, there will, in that Case, be seven different Orders of the Degrees of an Octave, proceeding from the seven different Letters with which the Terms of the Scale are marked. Any given Sound therefore, i.e. a Sound of any determinate Pitch or Tune, may be made the *Key* of the Piece, by applying to it the seven natural Notes arising from the Division of an Octave, and repeating the Octave above or below at pleasure. The given Note is applied as the principal Note or *Key* of the Piece, by making frequent Closes or Cadences upon it; and in the Progress of the Melody no other but those seven natural Notes can be admitted, while the Piece continues in that *Key*, every other Note being foreign to the Fundamental, or *Key*: For Instance, suppose a Song begun in any Note, and carried on upwards or downwards by Degrees and Harmonical Distances, so as never to touch any Notes but what are referable to that first Note as a Fundamental, i.e. are the true Notes of the natural Scale proceeding from the Fundamental; and let the Melody be so conducted thro' those natural Notes, as to close and terminate in the Fundamental, or any of its Octaves above or below, that Note is called the *Key* of the Melody, because it governs all the rest, limiting them so far, as that they must be, to it, in relation of the seven essential Notes of an Octave; and when any other Note is brought in, 'tis called, going out of the *Key*. From which way of speaking, viz. a Song's continuing in, or going out of the *Key*, it may be observed, that the whole Octave, with its natural Notes, come under the Idea of a *Key*, tho' the Fundamental, or principal Note is, in a peculiar Sense, called the *Key*. In which last Sense of the word *Key* (viz. where it is applied to one fundamental Note) another Note is said to be out of the *Key*, when it has not the Relation to that Fundamental of any of the natural Notes belonging to the continuous Division of the Octave. Here too it must be added, with respect to the two different Divisions of the Octave, that a Note may belong to the same *Key*, i.e. have a just musical Relation to the same Fundamental in one kind of Division, and be out of the *Key* with respect to the other.

Now a Piece of Music may be carried through several

*Keys*; i.e. it may begin in one *Key*, and be led out of that into another, by introducing some Note foreign to the first, and so on to another: but a regular Piece must not only return to the first *Key*, but those other *Keys*, too, must have a particular Connection with the first. It may be added, that those other *Keys* must be some of the natural Notes of the principal *Key*, tho' not any of them at pleasure.

As to the Distinctions of *Keys*, we have already observed, that to constitute any given Note or Sound, a *Key*, or fundamental Note, it must have the seven essential or natural Notes added to it, out of which, or their Octaves, all the Notes of the Piece must be taken, while it keeps within the *Key*, i.e. within the Government of that Fundamental. 'Tis evident therefore there are but two different Species of *Keys*, which arise according as we join the greater or less Third, these being always accompanied with the sixth and seventh of the same Species; the third *g*, for instance, with the sixth and seventh *g*; and the third *l* with the sixth and seventh *l*. And this Distinction is expressed under the Names of a *Sharp-Key*, which is that with the third *g*, &c. and the *Flat-Key*, which is that with the third *l*, &c. whence 'tis plain, that how many different Closes soever there be in a Piece, there can be but two *Keys*, if we consider the essential Difference of *Keys*; every *Key* being either flat or sharp, and every *Sharp-Key* being the same, as to Melody, as well as every flat one. It must be observed, however, that in common Practice the *Keys* are said to be different, when nothing is considered but the different Tune, or Pitch of the Note, in which the different Closes are made: In which Sense the same Piece is said to be in different *Keys*, according as it is begun in different Notes, or Degrees of Tune. To prevent any Confusion which might arise from using the same Word in different Senses, *M. Malcolm* proposes the word *Mode* to be substituted instead of the word *Key*, in the former Sense; that is, where it expresses the melodious Constitution of the Octave, as it consists of seven essential, or natural Notes, besides the Fundamental; and in regard there are two Species of it, he proposes, that with a third *g* be called the greater Mode, and that with a third *l* the lesser Mode; appropriating the word *Key* to those Notes of the Piece in which the Cadence is made; all of which may be called different *Keys*, in respect of their different Degrees of Tune. To distinguish then accurately between a Mode and a *Key*, he gives us this Definition, viz. an Octave, with all its natural and essential Degrees, is a Mode, with respect to the Constitution or Manner of dividing it; but with respect to its Place in the Scale of Music, i.e. the Degree or Pitch of Tune, it is a *Key*; tho' that Name is peculiarly applied to the Fundamental: whence it follows, that the same Mode may be with different *Keys*, i.e. an Octave of Sounds may be rais'd in the same Order and Kind of Degrees which makes the same Mode, and yet be begun higher or lower, i.e. be taken at different Degrees of Tune with respect to the whole, which makes different *Keys*; and, *vice versa*, that the same *Key* may be with different Modes, i.e. the Extremes of two Octaves may be in the same Degree of Tune, yet the Division of them be different. See *Modulation*, *Harmony*, *Melody*, *Clef*.

*Keys* also signify those little Pieces in the forepart of an Organ, Spinette, or Virginal, by means whereof the Jacks play, so as to strike the Strings of the Instrument; and Wind given to the Pipes, by raising and sinking the Sucker of the Sound-board. They are in number 28 or 29. In large Organs there are several Sets of these *Keys*, some to play the small secondary Organ, some for the main Organ, some for the Trumpet, and some for the Echoing-Trumpet. In some there are but a part that play, the rest being for Ornament. There are twenty Slits in the large *Keys*, which make the Half-Notes. *M. Baljowski* of *Doulicz* pretends to have invented a new kind of *Keys* vastly preferable to the common ones. With these, he says, he can express Sounds, which follow each other in a continual Geometrical Proportion, and so can furnish all the Sounds in Music, and by consequence all the imaginary Intervals and Accords; whereas the common *Keys* do but furnish some of them.

KHAZINE, the Grand Signior's Treasury. Here are kept Registers of Receipts, Accounts of Provinces, in Drawers mark'd with the Years and the Places Names. Here also is kept part of the Emperor's Wardrobe. Every Day of the Divan this Treasury is opened, either to take out or put something in. And the Principal Officers who have the Charge of it, are all to assist at this Opening. The *Tebanuch-Bachi*, in their Presence, first breaks the Wax wherewith the Key-hole had been seal'd up, and carrying it to the Grand Visier, that Minister first kisses it, and then draws out of his Bosom the Grand Signior's Gold Seal; in the mean time he looks narrowly



ly after the Officer, who, when he has done his Business in the Treasury, locks and seals up the Place, and returns the Seal to the Vizier with the same Ceremony as before. Besides this, there are other Apartments for the Money, where the Officers are never allowed to enter with any Clothes that have Pockets in them.

**KIDNEY**, or Rein, a Part of an Animal, whose Use is to separate the Urine. The Kidneys are situate on each Side, the one between the Liver and *Musculus Lumbaris*, on the right Side; the other between the Spleen and the same Muscle on the left Side. In Man the right is lower than the left, but in Quadrupedes 'tis usually the contrary; they are fastened to the Loins and the Diaphragm by their exterior Membrane, and to the Bladder by the Ureters; the right is also fastened to the Intestine Cæcum, and the left to the Colon: their Figure resembles a Bean, or rather a Crescent, being curve on the side of the *Vena Cava*, and on the outside gibbous. There are ordinarily but two Kidneys, tho' sometimes there are found three, and sometimes four, and sometimes but one. In Men they are commonly about five Inches long and three broad, and one and an half thick: Their Substance is composed of Glands, and very small urinary Pipes, or Canals; the Glands form the Circumference, and serve to separate the Urine; the Papillæ, or urinary Tubes, form the inner part, they come out of the Glands, and carry the Urine into a Cavity, in the concave Part of the Kidney, called the *Pelvis*, whence it passes thro' the Ureters into the Bladder. The Kidneys are covered with two Membranes; they have each of them Arteries and Veins; the Arteries come from the *Aorta*, and the Veins terminate in the *Cava*; these are all called Emulgents. They have Nerves also, which take their Origin from the *Plexus Renalis*, formed by the Ramifications of the intercostal Nerve, and the Nerves of the Loins. The Kidneys secrete the Urine from the Blood, which, by the Motion of the Heart, is driven thro' the Arteries into the emulgent Arteries, and these carry it into the little Glands, where its Serosity being separated, is received in at the Orifices of the urinary Pipes, which go from the Glands to the Pelvis, and thence runs by the Ureters into the Bladder: the Blood, which could not enter the Glands, is brought back by the emulgent Veins. See *Urine*, *Secretion*, &c.

**KILDEKRIN**, is a kind of Liquid Measure, which contains two Firkins, or eighteen Gallons; and two such *Kilderkins* make a Barrel.

**KING**, a Monarch or Potentate, who rules singly and sovereignly over a People. *Cambden* derives the word King from the Saxon *Cuning*, of *Can*, Power, or *Ken*, Knowledge, wherewith every Monarch is supposed to be invested. The Latin *Rex*, the *Scythian Reiks*, the *Punir Reseb*, and the Spanish *Rey* and *Roy*, come all, according to *Postel*, from the Hebrew *מֶלֶךְ*, *Roseb*, Chief, or Head.

*Kings*, both among the antient Greeks and Romans, were Priests as well as Princes. *Virgil* speaking of *Anius*, King of *Delos*, says,

*Rex Anius, Rex idem Hominum Phœbique Sacerdos.*

As to the Romans, *Livy* and *Dionysius* are express; they say, that tho' *Numa* instituted a great Number of Orders of Priesthood, yet some he discharged himself, and in Person. After the Expulsion of Kings, they were obliged to create a *Rex Sacrorum*, a King of the Sacrifices, for the Administration of the Priestly Part of the Royalty.

Among the Greeks, the King of *Persia* had antiently the Appellation of the Great King; the King of *France* now has that of the Most Christian King, and the King of *Spain* that of Catholic King. The King of the Romans is a Prince chosen by the Emperor, as a Coadjutor in the Government of the Empire. The Hungarians formerly gave the Name King to their Queen *Mary*, to avoid the Infamy which the Laws of that Country cast on those who are governed by Women: Accordingly she bore the Title of King *Mary*, till her Marriage with *Sigismund*, at which time she laid aside her Kingship, and took up the Quality of Queen.

The Kings of *England*, by the Lateran Council under Pope *Julian II.* had the Title of *Christianissimus* conferred on them, and that of *Defender of the Faith* was added by Pope *Leo X.* tho' it had been used by them some time before. The Title of *Grace* was first given to our Kings about the time of *Henry IV.* and that of *Highness* and *Majesty* to *Henry VIII.* In all public Instruments and Letters the King styles himself *Nos*, *We*, tho' till the time of King *John* he spoke in the singular Number. Our Lawyers say, the King of *England* is a mixed Person, a Priest as well as a Prince. At his Coronation he is anointed with Oil, as the Priests and Kings of *Israel* were, to intimate, that his Person is sacred. The Laws make it High-Treason barely to imagine or intend the Death of the King; and, because the Destruction of the King may ensue that of his Great Counsellors or Officers, 'tis Felony in any of the King's Servants to conspire even that: tho' in other

capital Cases, 'tis a Rule, that *Voluntas non reputabitur pro Facto*, and an *Englishman* shall not, in any other Case, be put to death, unless the Deed follow the Intent.

His Office (as he promises at his Coronation) is to preserve the Rights and Privileges of the Church, the Prerogative of the Crown, the Laws and Customs of the Realm, &c. or, as *Fortescue* has it, he is *pugnare Bella Populi sui & eos rectissime judicare*. He acknowledges no Precedence in any other Prince but the Emperor. He has the supreme Right of Patronage, called *Patronage Paramount*, over all the Ecclesiastical Benefices in *England*.

He has Power, by his Prerogative, without any Act of Parliament, to make War or Peace, make Leagues and Treaties, give Commissions for impressing Soldiers, dispose of Magazines, Castles, Ships, public Moneys, &c. He convokes, adjourns, prorogues, and dissolves Parliaments, and may refuse his Assent to any Bill passed by both Houses, without giving his Reasons for it. He may increase the Number of Members of either House at pleasure, by creating new Peers, and bestowing Privileges on other Towns for sending Burgeffes to Parliament. He has power to enfranchise an Alien, and make him a Denizen. Debts due to him are always to be satisfied in the first place, in case of Executorship, &c. and till his Debt is discharged, he may protect the Creditor from the Arrests of others. He may distrain for the whole Debt on a Tenant that holds but part of the Land, is not obliged to demand his Rent as others are, may sue in what Court he pleases, and distrain where he lists. In all doubtful Cases, *semper presumitur pro Rege*: no Statute restrains him unless he be particularly named. In all Cases where the King is Plaintiff, his Officers, with an Arrest, may enter; and if Entrance be denied, break open a House, and seize the Party: tho', in other Cases, a Man's House is his Castle, and has a Privilege to protect him against all Arrests. He has the Custody of the Persons and Estates of Idiots and Lunatics; he is *Ultimus Hæres Regni*, to him revert all Estates, when no Heir appears. All Treasure-Trove (*i. e.* Money, Plate, or Bullion found, and the Owners not known) belongs to him; so all Waifs, Strays, Wrecks, Lands recovered from the Sea, Gold and Silver Mines, Royal Fishes, &c. belong to him. He can unite, separate, enlarge, or contract the Limits of Bishoprics or Ecclesiastical Benefices, and by his Letters erect new Bishoprics, Colleges, &c. He can dispense with the Rigour of the Ecclesiastical Laws, except those that have been confirmed by an Act of Parliament, or declared by the Bill of Rights, as for a Bastard to be a Priest, for a Bishop to hold a Benefice *in commendam*, &c. He has Power to dispense with several Acts of Parliament and penal Statutes, by a *Non obstante*, where he himself is alone concerned; to moderate the Rigour of the Law, according to Equity; to pardon a Man condemned by Law, except in Appeals of Murder; to interpret by his Judges in Statutes and Cases not defined by Law.

The Laws esteem him God's Vicegerent on Earth; and ascribe various Perfections to him, not belonging to any other Man. No Flaw or Weakness is found in him, no Injustice or Error, no Negligence, Infamy, Stain, or Corruption of Blood. By his Crown he is *ipso facto* cleared of all Attainder: No Nonage or Minority are allowed in him, and his very Grants of Lands, tho' held in his natural Capacity, cannot be avoided by Nonage. Nay more, the Law ascribes a kind of Perpetuity, or Immortality, to him; *Rex Angliæ non moritur*. His Death is termed his Demise, because the Crown is thereby demised to another. He is said not to be liable to Death, as being a Corporation of himself, that lives for ever. There is no *Interregnum*, but the Minute one King dies, his Heir is King, fully and absolutely, without any Coronation, Ceremony, &c. To these it may be added, that the Law attributes a kind of Ubiquity to the King; he is, in a manner every where, in all his Courts, and therefore cannot be nonsuited.

Some things, however, there are which he cannot do, *viz.* he cannot do Wrong, nor can he divest himself, or Successors, of any part of his Regal Prerogative, Authority, &c. There are several things also which he cannot do, *Salvo Jure, Salvo Juramento, & Salva Conscientia sua*. In particular there are two things which he cannot do without the Consent of Parliament, *viz.* Make new Laws, or raise new Taxes.

*King of the Sacrifices*, was the Title of a Priest or Minister of Religion in antient Rome. He was superior to the *Flamen Dialis*, but inferior to the *Pontifex Maximus*. He was created at the *Comitia*, or Assembly of the Centuries, and was at first chosen out of the Number of the *Patricii*. He could not, during his Office, hold any Magistracy, nor harangue the People. He presided at all the Sacrifices, proclaimed the Feasts, &c. His Wife bore the Title of *Queen of the Sacrifices*, and had herself a part in the Ceremonies of Religion.



**KINGDOM**, among the Chymists, is a Term, which they apply to each of the three Orders, or Classes of natural Bodies; Animal, Vegetable, and Mineral.

**KINGS AT ARMS**, Officers of great Antiquity, and antiently of great Authority; they direct the Heralds, preside at their Chapters, and have the Jurisdiction of Armory. In *England* we have three kinds, *viz.* *Garter*, *Clarencieux*, and *Norroy*.

The first and principal is called *Garter*, instituted by *Henry V.* His Office is to attend the Knights of the *Garter* at their Assemblies, to marshal the Solemnities at the Funerals of the highest Nobility, and to carry the *Garter* to Kings and Princes beyond the Sea; on which occasion he used to be joined in Commission with some principal Peer of the Kingdom.

The next is *Clarencieux*, so called from the Duke of *Clarence*, to whom he first belonged. His Office is to marshal and dispose the Funerals of all the inferior Nobility, as Baronets, Knights, Esquires, and Gentlemen, on the South-side of the *Trent*.

The third is *Norroy*, or *Northern*, whose Business is to do the same on the North-side of the River *Trent*. These two last are called *Provincial Heralds*, in regard they divide the Kingdom between them into two Provinces.

These two last, by Charter, have power to visit Noblemens Families, to set down their Pedigrees, distinguish their Arms, appoint Persons their Arms, and, with *Garter*, to direct the Heralds.

Antiently the *Kings at Arms* were created and solemnly crowned by the Kings of *England* themselves; but of later Days the Earl Marshal has a special Commission, at every Creation, to personate the King.

To the former may be added *Lyon*, *King at Arms* for *Scotland*, who is the second *King at Arms* for *Great Britain*; he is invested and crown'd with great Solemnity. To him belongs the publishing the King's Proclamation, the marshalling Funerals, reversing Arms, &c.

**KING'S-BENCH**, a Court, or Judgment-Seat, so called, in regard the King is supposed to sit in Person as Judge of the Court, and may do so whenever he pleaseth; for which reason all Writs, and other Process in this Court, are made returnable *coram nobis*, that is, before the King himself, and not *coram Justiciariis nostris*, as is the Form in the *Common Pleas*. The Judges of this Court are the Chief Justice, and three other Judges. In this Court are principally determined Matters relating to the Crown, and the Peace. When any Person is aggrieved by any Order of Justices, or Quarter-Sessions, they have recourse hither; the Rights of Elections of Mayors, Bailiffs, Constables, &c. are often, upon *Mandamus's*, brought before this Court to be settled, and Prohibitions are hence issued out to stay Proceedings in the Ecclesiastical, Admiralty, or any inferior Court, where the Matters appear to be tryable at Common Law. The Subject hath also a Right to sue any Person in this Court for any Debt or Contract, as well as in any other Court, and may as advantageously and expeditiously proceed. The Chief Justice is constituted by Writ, and is to hold, *Quamdiu se bene gesserit*, and so cannot be displaced without some great Misdemeanour; tho' formerly the Chief Justice, and other inferior Judges, were made only *durante bene placito*, and accordingly were turned out at the King's pleasure. The Salary of the Lord Chief Justice used to be but 1500 *l. per ann.* but 'tis now 500 *l. per Term*. He presides under his Majesty in this Court; but when the Court divides, in giving Judgment upon any special Argument, he hath but one Voice: so that if the Opinion of the Court should be equally divided, the Matter must rest till one of the Judges shall see just Reason to alter his Opinion. He is to attend the Lords in Parliament, tho' he has no Vote, unless he be a Peer himself, but is to give his Opinion and Advice to the House by virtue of a Writ of Assistance; and is frequently therefore consulted by them, both in making and repealing Laws, and in altering or explaining them. He makes a Return of all Writs of Error in Parliament directed to this Court, and with his own Hand delivers the Writ of Error, and a Transcript of the Proceedings in the Cause into the House of Lords. The three inferior Judges of this Court go the Circuits, and are in Commission of Oyer and Terminer at the *Old-Bailey*, their Salary is 375 *l. per Term*, to which they, as well as the Chief Justice, are entitled, tho' they happen not to sit one Day in Court in the Term, unless they give their Assent so slightly, as, on a *Scire Facias*, to be charged with Negligence; and these also hold by *Quamdiu se bene gesserint*. There are several Officers belonging to this Court, as two chief Clerks or Prothonotaries, who are supposed to enter all the Pleadings and Judgments between Party and Party, altho' this is done by an Entering-Clerk under them; and all Writs of *Latitat*, *non omittas*, Bills of *Middlesex*, *Habeas Corpus*, &c. are subscribed with the Names of these chief Clerks. The

Secondary acts as the Master of the Office on the Pleas Side, and is the Chief Clerk's Deputy; his Office is to examine any Person, who is to be sworn an Entering-Clerk, or Attorney at large, whether he is duly qualified, and to present him to the Chief Justice. He also signs all Judgments, and gives Costs upon them; and the Court, upon any Motion, in relation to the irregular Practice of any Clerk or Attorney, generally refers the Examination thereof to him. He also takes all Affidavits in Court (unless on the Crown-side) and takes the Acknowledgment of all Deeds in Court.

**KING'S-SILVER**, is that Money due to the King in the Court of Common-Pleas, *pro Licentia Concordandi*, in respect of a Licence there granted to any Man for levying a Fine.

**KINTAL**, or *Quintal*, is a Weight of One Hundred Pounds, more or less, according to the different Usage of divers Nations. The *Kintal* of *Smirna* is 123 Pounds, 3 Ounces, 9 Drams; or 120 Pounds, 7 Ounces, 12 Drams; but that of *Aleppo* is 465 Pounds, 11 Ounces, 15 Drams.

**KIPPER-TIME** is a Space of Time between the Festival of the *Finding of the Holy Cross*, May the 3d, and *Twelfth-Day*; during which, Salmon-Fishing in the River *Thames*, from *Gravesend* to *Henley*, is forbidden by *Rot. Parl.* 50 *Edw.* 3.

**KIRKMOTE**, a Synod; sometimes 'tis taken for a Meeting in the Church or Vestry.

**KIRK-SESSIONS**, the Name of a petty Ecclesiastical Judicatory in *Scotland*. Each Parish, according to its Extent, is divided into several particular Districts, every one of which has its own Elder and Deacon to oversee it. A Consistory of the Ministers, Elders, and Deacons of a Parish form a *Kirk-Sessions*. This meets once a Week, the Minister being Moderator, but without a negative Voice. It regulates Matters relating to publick Worship, Elections, Catechizing, Visitations, &c. It judges in Matters of less Scandal; but greater, as Adultery, are left to the Presbytery, and in all Cases an Appeal lies from it to the Presbytery.

**KIZILBACHE**, a *Turkish* word, signifying *Red-Head*. This Term the *Turks* have applied, by way of Obloquy, to the *Persians*, ever since *Ismael Sophi*, Founder of the Family now reigning in *Persia*, ordered his Soldiers to wear a red Cap, round which is a Scarf or Turban with a dozen Plaits in it, in memory of the twelve *Imams*, Successors of *Ali*, from whom he pretended to descend. *Viginere* writes the word *Kezeilbafs*, and adds, that according to the vulgar Interpretation among the *Persians*, the twelve Plaits signify the twelve Sacraments of their Law. But as this does not satisfy him, he looks out for another Original, and tells us there is a Mystery in it, derived from the antient Paganism, when the *Persians* adored the Fire, whose Heat is denoted by the red Colour, which in some measure symbolizes with the Sun, held by them in the highest Veneration. He adds, that the twelve Plaits shew the twelve Months of the Year, and the twelve Signs in which that Luminary performs his Course.

**KNAVE** is an old *Saxon* Word for a Man-Servant, and is so used in 14 *E.* 3. *Stat.* 1. c. 3. *Verslegan* thinks it comes from the *Dutch* *Knapa*, signifying the same. It sometimes also signifies a Male-Child, or Boy, in which sense a *Knave* Child hath been frequently used, formerly, in contradistinction to a Girl; and in this sense *Wickliff* uses the word in his Translation of *Exodus* 1. 16. and other Places of the Bible. In the old *Saxon* Translation of *Mat.* 8. 6. *Puer meus jacet in Domo Paralyticus*, was turned, *Myn Knapa*.

*Knave* was sometimes also used as an additional Title, as *Willielmus Cowper de Denby, Knave, &c.* 'Tis a common Opinion, that *Rom.* 1. 1. was translated, *Paul a Knave of Jesus Christ*. This Mistake has been occasioned by a Bible in the Duke of *Lauderdale's* Library, where the word *Knawe* is inserted in less Characters than the others, and a Rasure may be easily discerned.

**KNIGHT**, in its original *German*, *Knecht*, signifies a lusty Servant. The Word has since been used for a Soldier or Man of War. We have but one Instance among us, where the word *Knight* is used in the first Sense, and that is in *Knight of the Shire*, who properly serves in Parliament for such a County. In the *Latin*, *French*, *Spanish*, *Italian*, and *Dutch* Languages, *Knight* is express'd by a Word which properly signifies a Horseman, as being usually employ'd on horseback. Indeed our Common Law calls them *Milites*, Soldiers, because they commonly held Lands, in *Knight-Service*, to serve the King as Soldiers in his Wars; in which sense the word *Miles* was used *pro Vassallo*. The word *Knecht* now signifies a Person, who for his Virtue and martial Prowess, is, by the King, raised above the Rank of Gentlemen, into an higher Class of Dignity and Honour. *Knighthood* being usually conferred for



for personal Desert, dies with the Person deserving, and does not descend to his Heirs.

*Knight* was the first Degree of Honour, in the antient Militia, and was conferred with a great deal of Ceremony on those who had distinguish'd themselves by some notable Exploit in Arms. They were originally said to be adopted, which we now call dubb'd; as being supposed, in some measure, the Sons of him who knighted them. The Ceremonies at the Creation of a *Knight* have been various. The principal were a Box on the Ear, and a Stroke with a Sword on the Shoulder. Afterwards they put on him a Shoulder-belt and gilt Sword, Spurs, and the other military Accoutrements; after which, being armed as a *Knight*, he was led in great Pomp to the Church. The Manner of making a *Knight* with us, is described by Camden in a few words: *Qui Equestrem Dignitatem suscipit, flexis Genibus, leviter in Humero percutitur, Princeps his Verbis affatur, Sus vel sis Chevalier au Nom de Dieu, Surge vel sis Eques in Nomine Dei.* This is meant of *Knights-Bachelors*, which is the lowest, tho the most antient Order of *Knighthood* among us. *Knights* grew so very numerous, that the Dignity became of much less Repute. Charles V. is said to have made 500 in a single Day: On which account therefore, new Orders of *Knighthood* were instituted, in order to distinguish the more deserving from the Croud. For the several kinds of *Knights* among us, see *Batchelor*, *Banneret*, *Baronet*, *Bath*, &c.

*Knight* is also understood of a Person admitted into any Order, either purely military, or military and religious, instituted by some King or Prince according to a certain Formula, with certain Marks and Tokens of Honour and Distinction: as the Order of the Garter, of the Elephant, of the Holy Ghost, of Malta, &c. All which see under their proper Names.

*Knight*, among the Romans, was the second Degree of Nobility, following immediately that of the Senators. At the time of founding the City of Rome, the whole Militia of Romulus consisted in 3000 Foot and 300 Horse; which three hundred Horse were the Original of the Roman *Equites* or *Knights*. These made the second Order that had Places in the Senate. Manutius and Sigonius are of opinion, that besides the Equestrian Order, and those *Knights* immediately below the Senators, Romulus instituted a Military Order in opposition to the Infantry. But no antient Author takes notice of any Order of *Knighthood*, instituted on purpose for the War, nor any other *Knights* but those 300, which, as we have observed, were the first Foundation of the Equestrian Order. They had a Horse kept then at the public Charge; but when they were taken in among the Senators, they resign'd that Privilege. To be a *Knight*, 'twas necessary they should have a certain Revenue; that their Poverty might not disgrace the Order: And when they fail'd of the prescribed Revenue, they were expunged out of the List of *Knights*, and thrust down among the Plebeians. Ten thousand Crowns is computed to have been the Revenue required. The *Knights* grew so very powerful, that they became a Balance between the Power of the Senate and the People. They neglected the Exercises of War, and betook themselves principally to Civil Employments in Rome; insomuch that Pliny observes, in his time they had no longer a Horse kept at the public Expence. Some say, that the Order of *Knights*, distinct from the People, did not begin before the Time of the Gracchi. Others say, the Privilege was then first granted them, that no Judge should be chosen, but out of their Order: Some time after which, they took 'em into the Senate. This however is certain, 'twas only from that time that a certain Revenue was necessary, and that this intitled them to the *Knighthood*, without being descended from antient *Knights*.

**KNIGHT-ERRANT**, a pretended Order of *Knights*, whereof ample mention is made in old Romances. They were a kind of Heros who travel'd the World in search of Adventures, redressing Wrongs, rescuing Damsels, and taking all occasions of signalizing their Prowess. This Romantic Bravery of the Old *Knights* was heretofore the Chimera of the Spaniards; among whom, there was no Cavalier but had his Mistress, whose Esteem he was to gain by some heroic Action. The Duke of Alva, for all his Age and Gravity, is said to have vow'd the Conquest of Portugal to a young Lady.

**KNIGHTHOOD**, a Military Order or Honour; a Mark or Degree of antient Nobility, or Reward of Personal Virtue and Merit. There are four kinds of *Knighthood*; Military, Regular, Honorary, and Social. Military is that of the antient *Knights*, who acquired it by high Feats of Arms. These are call'd *Milites* in antient Charters and Titles, by which they were distinguish'd from bare *Batchelors*, &c. Several Princes have been installed Military *Knights* with a great deal of Ceremony. These *Knights* were girt with a Sword and a Pair of gilt Spurs,

whence they were call'd *Equites Aurati*. Regular *Knighthood* is understood of such of the Military Orders, which profess to wear some particular Habit, to bear Arms against the Infidels, to succour and assist Pilgrims in their passage to the Holy Land, and to serve in Hospitals where they should be receiv'd; as *Knights Templars*, *Knights of Malta*, &c. which see. Honorary *Knighthood* is that which Princes confer on other Princes; and even on their own Great Ministers and Favourites; as *Knights of the Garter*, of St. Michael, &c. Social *Knighthood* is that which is not fixed, nor confirmed by any formal Institution, nor regulated by any lasting Statutes; of which kind there have many risen on occasion of Factions, of Tilts and Tournaments, Masquerades, &c.

*Knighthood* is not hereditary, but acquired. It does not come into the World with a Man, like Nobility; nor can it be revoked. The Sons of Kings, and Kings themselves, with all other Sovereigns, heretofore had *Knighthood* confer'd on 'em as a Mark of Honour. They were usually knighted at their Baptism or Marriage, at their Coronation, before or after a Battel, &c.

The Abbot Bernardo Justiniani, at the beginning of his History of *Knighthood*, gives us a very compleat Catalogue of the several Orders, according to whose Computation they are in number 92. Favin has given us two Volumes of 'em, under the Title of *Theatre of Honour and Chivalry*. Menenius has publish'd *Deliciae Equestrium Ordinum*, and And. Mende has written *de Ordinibus Militaribus*. Beloi has traced their Original, and Geliot in his *Armorial Index* has given us their Institutions. To these may be added, Father Meneftrier's *Antient and Modern Knighthood*, Michieli's *Tresor Militaire*, Caramuel's *Theologia Regolare*, Miræus's *Origines Equestrium sive Militarium Ordinum*.

**KNIGHT-MARSHAL**, is an Officer in the King's House, having Jurisdiction and Cognizance of any Transgression within the King's House and Verge; as also of Contracts made there, whereof one of the House is Party.

**KNIGHTS OF THE SHIRE**, or *Knights of Parliament*, are two *Knights* or Gentlemen of Worth chosen on the King's Writ in pleno Comitatu, by such of the Freeholders of every County as can expend 40*s.* per annum. These, when every Man who had a *Knights-Fee* were customarily constrain'd to be *Knights*, were of necessity to be *Milites Gladio cincti*, for so the Writ runs to this day; but now Custom admits Esquires to be chosen to this Office. They must have at least 500*l.* per annum; and their Expences are to be defray'd by the County, though this be seldom, now, required.

**KNIGHTS**, in a Ship, are two Pieces of Timber, to each of which go four Shivers, three for the Halliards, and one for the Top-Ropes: they are usually in the figure of some Head. One of 'em stands aft the Main-Mast, and for that reason is call'd the *Main-Knight*; another stands abaft the Fore-Mast, on the second Deck, and is call'd the *Fore-Knight*.

**KNIGHT-SERVICE**, a Tenure whereby several Lands in this Nation were antiently held of the King; which drew after it Homage, Escuage, Wardship, Marriage, &c. But taken away by the Statute 12 Car. 2.

**KNIGHTS-FEE**, an antient Law-Term, signifying so much Inheritance as is sufficient to maintain a Knight with suitable Retinue; which, in Henry the Third's days was reckon'd at Fifteen Pounds. But Sir T. Smith rates it at 40*l.* By a Stat. 1 Edw. 2. such as had 20*l.* per annum in Fee or for Life, might be compelled to be *Knights*; but this Statute is repeal'd 17 Car. 1.

Stow says, that there were found in England, at the time of the Conqueror, 60,211 *Knights-Fees*; according to others, there were 60,215, whereof the Religious Houses, before their suppression, were possess'd of 28,015. According to Coke, a *Knights-Fee* contain'd twelve Plow-Lands.

**KNOT**, part of a Tree whence it shoots out Branches or Roots. The Wood is harder and closer in the *Knots* than in any other part, but it is also more subject to split. Vines and low Fruit-Trees are lopp'd at the second *Knot* of the new Shoot. The Use of the *Knots* of Plants is to strengthen the Stem: They serve also as Searces to filtrate, purify, and refine the Juice rais'd up for the Nourishment of the Plant.

The Divisions of the Log-Line at Sea are also call'd *Knots*. These are usually seven Fathoms or forty-two Feet asunder, but they should be fifty Feet; and then as many *Knots* as the Log Line runs out in half a Minute, so many Miles doth the Ship sail in an Hour, supposing her to keep going at any equal rate, and allowing for Yaws, Lee-way, &c.

*Knot*, in Medicine, is a Tuberosity form'd in the Joints of old Gouty People, consisting of a thick viscous, crude, indigested Pituita, accompanied with a bilious Humour, hot and acrimonious; the grossest and most terrestrial part whereof clogs and converts into a stony Substance like Chalk: whence *Knots* are ingendred, like Stones in



in the Bladder. The Physicians sometimes call 'em *Topbi*.

*Knot*, or *Nodus*, is also used for the Intrigue of a Romance or Dramatic Piece : that is, for that part where the Persons are the most embarrass'd, by a Conjunction of Affairs whose End it is not easy to foresee. *Aristotle*, under this Term, includes all the Incidents of a Tragedy, from its Beginning to the Place where it begins to unravel. The *Knot* holds as long as the Mind is kept suspended on the Event. The *Knot* ought always to last to the middle of the fifth Act, otherwise the rest of the Piece becomes feeble and languishing.

*Order of the Knot*, the Name of a Military Order in the Kingdom of Naples, instituted in the Year 1352, by Queen *Jane I.* on occasion of the Peace establish'd between her and the King of Hungary, by means of her Marriage with *Louis Prince of Tarentum*. The Order consisted of sixty Knights. *Clement VI.* approved this Order, and gave it the Rule of *St. Basil* : It chose *St. Nicholas* for its Protector, but dwindled away after the Death of its Foundress.

KNOWLEDGE, according to Mr. *Locke*, consists in the Perception of the Connection and Agreement, or Disagreement and Repugnancy of our Ideas. Thus we *know* that White is not Black, by perceiving that these two Ideas do not agree. Again, in *knowing* that the three Angles of a Triangle are equal to two right ones ; what do we more than perceive that Equality to two right ones doth necessarily agree to, and is inseparable from the three Angles of a Triangle ? As to the Agreement or Disagreement of Ideas, we may reduce the whole Doctrine, (consequently the whole Stock of our *Knowledge*) to these four Heads ; viz. Identity or Diversity, Relation, Co-existence, and Real Existence.

With regard to the Identity or Diversity of our Ideas, we may observe, That 'tis the first Act of the Mind to perceive its own Ideas, and so far as it perceives them, to know each what it is, and thereby to perceive their difference, that is, the one not to be the other : By this the Mind clearly perceives each Idea to agree with itself, and to be what it is ; and all distinct Ideas to disagree. This it does without any Pains or Deduction, by its natural Power of Perception, and Distinction ; and this Men of Art have reduced to those general Rules, viz. What is, is ; and, It is impossible for the same thing to be, and not to be. But no Maxim can make a Man know it clearer, that Round is not Square, than the bare Perception of those two Ideas which the Mind at first sight perceives to disagree. The next kind of Agreement or Disagreement the Mind perceives in any of its Ideas, may be call'd Relative, and is nothing but the Perception of the Relation between any two Ideas, of what kind soever ; that is, their Agreement or Disagreement one with another, in the several ways or respects the Mind takes of comparing them. The third sort of Agreement or Disagreement to be found in our Ideas, is Co-existence or Non-Co-existence in the same Subject, and this belongs particularly to Substances. Thus when we pronounce concerning Gold that it is fixed, it amounts to no more but this, that Fixedness, or a Power to remain in the Fire unconsumed, is an Idea that always accompanies that particular Sort of Yellowness, Weight, Fusibility, &c. which makes our complex Idea signified by the word *Gold*. The fourth Sort is that of actual and real Existence, agreeing to any Idea. Within these four Sorts of Agreement or Disagreement, seems contained all the *Knowledge* we have, or are capable of ; for all that we know or can affirm concerning any Idea, is, That it is, or is not the same with some other ; as that Blue is not Yellow ; that it does or does not co-exist with another in the same Subject ; as that Iron is susceptible of magnetical Impressions : that it hath that or this Relation to some other Ideas, as That two Triangles, upon equal Bases, between two Parallels, are equal : or that it has a real Existence without the Mind, as, That God is.

The Mind becomes possessed of Truth in several manners, each of which comes under the Term *Knowledge*. Thus when the Mind has a present View of the Agreement or Disagreement of any of its Ideas, or of the Relation they have one with another, it is called actual *Knowledge*. Secondly, A Man is said to *know* any Proposition, when having once evidently perceived the Agreement or Disagreement of the Ideas whereof it consists, and so lodged it in his Memory, that whenever it comes to be reflected on again, the Mind assents to it without Doubt or Hesitation, and is certain of the Truth of it : And this may be called *Habitual Knowledge*. And thus a Man may be said to *know* all those Truths which are lodged in his Memory, by a foregoing, clear, and full Perception. Of *Habitual Knowledge* there are two sorts ; the one consists of such Truths laid up in the Memory, as whenever they occur to the Mind, it actually perceives the Relation that is between their Ideas ; and this is in all those

Truths where the Ideas themselves, by an immediate View, discover their Agreement or Disagreement one with another. The other is of such Truths, whereof the Mind having been convinced, it retains the Memory of the Conviction, without the Proofs. Thus a Man that remembers certainly, that he once perceived the Demonstration, That the three Angles of a Triangle are equal to two right ones, knows it to be true, when that Demonstration is gone out of his Mind, and cannot possibly be recollected : But he knows it in a different way from what he did before, namely, not by the Intervention of those immediate Ideas, whereby the Agreement or Disagreement of those in the Proposition was at first perceived ; but by remembering, that is, knowing, that he was once certain of the Truth of this Proposition, That the three Angles of a Triangle are equal to two right ones. The Immutability of the same Relations between the same immutable things, is now the Idea, that shews him, that if the three Angles of a Triangle were once equal to two right ones, they will always be so. And hence he comes to be certain, that what was once true, is always true ; what Ideas once agreed, will always agree ; and consequently, what he once knew to be true, he will always know to be true, as long as he can remember that he once knew it.

As to the different Degrees, or Clearness of our *Knowledge*, it seems to lie in the different way which the Mind has of perceiving the Agreement or Disagreement of any of its Ideas. When the Mind perceives this Agreement or Disagreement of two Ideas immediately by themselves, without the Intervention of any other, we may call it *Intuitive Knowledge*, in which Cases the Mind perceives the Truth, as the Eye doth Light, only by being directed towards it. Thus the Mind perceives, that White is not Black ; that three are more than two, and equal to one and two. This Part of *Knowledge* is irrefragable, and, like the bright Sun-shine, forces itself immediately to be perceived, as soon as ever the Mind turns its View that way. It is on this Intuition that depends all the Certainty and Evidence of our other *Knowledge*, which Certainty every one finds to be so great, that he cannot imagine, and therefore cannot require a greater. The next Degree of *Knowledge* is, where the Mind perceives not this Agreement or Disagreement immediately, or by the Juxta-Position, as it were, of the Ideas, because those Ideas, concerning whose Agreement or Disagreement the Enquiry is made, cannot by the Mind be so put together as to shew it. In this Case the Mind is obliged to discover the Agreement or Disagreement, which it searches for, by the Intervention of other Ideas : and this is that which we call Reasoning. And thus if we would know the Agreement or Disagreement in Bigness, between the three Angles of a Triangle, and two right Angles, we cannot do it by an immediate View and Comparison of them, because the three Angles of a Triangle cannot be brought together at once, and compared with any other one or two Angles ; and so of this the Mind has no immediate, or intuitive *Knowledge*. But we must find out some other Angles, to which the three Angles of a Triangle have Equality ; and finding those equal to two right ones, we come to know the Equality of these three Angles to two right ones. Those intervening Ideas, which serve to shew the Agreement of any two others, are called *Proofs* ; and where the Agreement or Disagreement is by this means plainly and clearly perceived, it is called *Demonstration*. A Quickness in the Mind to find those *Proofs*, and to apply them right, is that which is called *Sagacity*. This *Knowledge*, tho' it be certain, is not so clear and evident as intuitive *Knowledge* ; it requires Pains and Attention, and steady Application of Mind, to discover the Agreement or Disagreement of the Ideas it considers, and there must be a Progression by Steps and Degrees before the Mind can in this way arrive to any Certainty. Before Demonstration there was a Doubt, which, in intuitive *Knowledge*, cannot happen to the Mind, that has its Faculty of Perception left in a Degree capable of distinct Ideas, no more than it can be a Doubt to the Eye (that can distinctly see White and Black) whether this Ink and Paper be all of a Colour. Now in every Step that Reason makes in Demonstrative *Knowledge*, there is an Intuitive *Knowledge* of that Agreement or Disagreement it seeks with the next intermediate Idea, which it uses as a Proof ; for if it were not so, that yet would need a Proof, since without the Perception of such Agreement or Disagreement there is no *Knowledge* produced. By which it is evident, that every Step in Reasoning, that produceth *Knowledge*, has intuitive Certainty ; which when the Mind perceives, there is no more required but to remember it, to make the Agreement or Disagreement of the Ideas, concerning which we enquire, visible and certain. This intuitive Perception of the Agreement or Disagreement of the intermediate Ideas in each Step, and Progression of



of the Demonstration, must also be exactly carried in the Mind; and a Man must be sure that no part is left out, which, because in long Deductions, the Memory cannot easily retain, this *Knowledge* becomes more imperfect than intuitive, and Men often embrace Falshoods for Demonstrations.

It has been generally taken for granted, that Mathematicks alone are capable of demonstrative Certainty; but to have such an Agreement or Disagreement, as may be intuitively perceived, being, as we imagine, not the Privilege of the Ideas of Number, Extension, and Figure alone; it may possibly be the want of due Method and Application in us, and not of sufficient Evidence in Things, that Demonstration has been thought to have so little to do in other Parts of *Knowledge*. For in whatever Ideas the Mind can perceive the Agreement or Disagreement immediately, there it is capable of intuitive *Knowledge*; and where it can perceive the Agreement or Disagreement of any two Ideas, by the intuitive Perception of the Agreement or Disagreement they have with any intermediate Ideas, there the Mind is capable of Demonstrations, not limited to the Ideas of Figure, Number, Extension, or their Modes. The Reason why it has been generally supposed to belong to these only, is because, in comparing their Equality or Excess, the Modes of Numbers have every, the least Difference, very clear and perceivable: And in Extension, tho' every the least Excess is not so perceptible, yet the Mind has found out ways to discover the just Equality of two Angles, Extensions, or Figures; and both Numbers and Figures can be set down by visible and lasting Marks. But in other simple Ideas, whose Modes and Differences are made, and counted by Degrees, and not Quantity, we have not so nice and accurate a Distinction of their Differences, as to perceive or find ways to measure their just Equality, or their least Differences. For those other simple Ideas being Appearances or Sensations produced in us, by the Size, Figure, Motion, &c. of minute Corpuscles singly insensible, their different Degrees also depend on the Variation of some, or all of those Causes; which since it cannot be observed by us in Particles of Matter, whereof each is too subtile to be perceived, it is impossible for us to have any exact Measures of the different Degrees of these simple Ideas. Thus, for instance, not knowing what Number of Particles, nor what Motion of them is fit to produce any precise Degree of Whiteness, because we have no certain Standard to measure them by, nor means to distinguish every, the least Difference; the only help we have, is from our Senses, which in this Point fail us. But where the Difference is so great as to produce in the Mind Ideas clearly distinct, these Ideas of Colours as we see in different kinds, Blue and Red (for instance) are as capable of Demonstration, as Ideas of Number and Extension. What is here said of Colours, holds true in all secondary Qualities. These two then, Intuition and Demonstration, are the Degrees of our *Knowledge*; whatever comes short of one of these, is but Faith, or Opinion, not *Knowledge*, at least in all general Truths. There is indeed another Perception of the Mind employed about the particular Existence of finite Beings without us, which going beyond Probability, but not reaching to either of the foregoing Degrees of Certainty, passes under the Name of *Knowledge*.

Nothing can be more certain, than that the Idea we receive from an external Object, is in our Minds: This is intuitive *Knowledge*; but whether we can thence certainly infer the Existence of any thing without us, corresponding to that Idea, is that whereof some Men think there may be a Question made, because Men may have such an Idea in their Minds, when no such Thing exists, no such Object affects their Senses. But it is evident, that we are invincibly conscious to ourselves of a different Perception, when we look on the Sun in the Day, and think on it by Night; when we actually taste Wormwood, or smell a Rose, or only think on that Savour, or Odour: so that we may add to the two former sorts of *Knowledge*, this also of the Existence of particular external Objects, by that Perception and Consciousness we have of the actual Entrance of Ideas from them, and allow these three Degrees of *Knowledge*, viz. intuitive, demonstrative, and sensitive. But since our *Knowledge* is founded on and employed about our Ideas only, will it follow thence, that it must be conformable to our Ideas, and that where our Ideas are clear and distinct, obscure and confused, there our *Knowledge* will be so too? We answer, No: For our *Knowledge* consisting in the Perception of the Agreement or Disagreement of any two Ideas, its Clearness or Obscurity consists in the Clearness or Obscurity of that Perception, and not in the Clearness or Obscurity of the Ideas themselves. A Man (for instance) who hath a clear Idea of the Angles of a Tri-

angle, and of Equality to two right ones, may yet have but an obscure Perception of their Agreement, and so have but a very obscure *Knowledge* of it: But obscure and confused Ideas can never produce any clear or distinct *Knowledge*, because as far as any Ideas are obscure or confused, so far the Mind can never perceive clearly, whether they agree or disagree: Or, to express the same thing in a way less apt to be understood, he that hath not determined Ideas to the Words he useth, cannot make Propositions of them, of whose Truth he can be certain.

From all this it follows; (1.) That we can have no *Knowledge* farther than we have Ideas. (2.) That we have no *Knowledge* farther than we can have Perception of the Agreement or Disagreement of our Ideas, either by Intuition, Demonstration, or Sensation. (3.) We cannot have an intuitive *Knowledge*, that shall extend itself to all our Ideas, and all that we would know about them; because we cannot examine and perceive all the Relations they have one to another by Juxta-Position, or an immediate Comparison one with another. Thus we cannot intuitively perceive the Equality of two Extensions, the Difference of whose Figures makes their Parts incapable of an exact immediate Application. (4.) Our rational *Knowledge* cannot reach to the whole Extent of our Ideas, because between two different Ideas, which we would examine, we cannot always find such Proofs as we can connect one to another, with an intuitive *Knowledge* in all the Parts of the Deduction. (5.) Sensitive *Knowledge* reaching no farther than the Existence of Things, actually present to our Senses, is yet much narrower than either of the former. (6.) From all which it is evident, that the Extent of our *Knowledge* comes not only short of the Reality of Things, but even of the Extent of our own Ideas. We have the Ideas of a Square, a Circle, and Equality, and yet perhaps shall never be able to find a Circle equal to a Square.

The Affirmations or Negations we make concerning the Ideas we have, being reduced to the four Sorts abovementioned, viz. Identity, Co-existence, Relation, and Real Existence, let us enquire how far our *Knowledge* extends in each of these. (1.) As to Identity and Diversity, our intuitive *Knowledge* is as far extended as our Ideas themselves; and there can be no Idea in the Mind, which it does not presently, by an intuitive *Knowledge*, perceive to be what it is, and to be different from any other. (2.) As to the Agreement or Disagreement of our Ideas of Co-existence, our *Knowledge* herein is very defective, tho' 'tis in this that the greatest and most material Parts of our *Knowledge* concerning Substances consists: For our Ideas of Substances being nothing but certain Collections of simple Ideas, co-existing in one Subject, (our Idea of Flame, for instance, is a Body hot, luminous, and moving upwards.) When we would know any thing farther concerning this or any other sort of Substance, what do we but enquire what other Qualities or Powers these Substances have or have not? which is nothing else but to know what other simple Ideas do, or do not exist with those that make up that complex Idea. The Reason of this is, because the simple Ideas, which make up our complex Ideas of Substances, have no visible necessary Connection or Inconsistence with other simple Ideas, whose Co-existence with them we would inform ourselves about. These Ideas being likewise for the most part secondary Qualities, which depend upon the primary Qualities of their minute or insensible Parts, or on something yet more remote from our Comprehension; it is impossible we should know which have a necessary Union or Inconsistence one with another, since we know not the Root from whence they spring, or the Size, Figure, and Texture of Parts on which they depend, and from which they result. Besides this, there is no discoverable Connection between any secondary Quality, and those primary Qualities that it depends on. We are so far from knowing what Figure, Size, or Motion produceth, (for instance) a yellow Colour, or sweet Taste, or sharp Sound; that we can by no means conceive how any Size, Figure, or Motion, can possibly produce in us the Idea of any Colour, Taste, or Sound, whatsoever; there being no conceivable Connection between the one and the other. Our *Knowledge* therefore of Co-existence reaches little further than Experience. Some few indeed of the primary Qualities have a necessary Dependence, and visible Connection one with another: As Figure necessarily supposeth Extension; receiving or communicating Motion by Impulse, supposeth Solidity; but Qualities co-existent in any Subject, without this Dependence and Connection, cannot certainly be known to co-exist any farther, than Experience by our Senses informs us. Thus tho', upon Tryal, we find Gold yellow, weighty, malleable, fusible, and fixed; yet because none of these have any evident Dependence or necessary Connection with the



other, we cannot certainly know, that where any four of these are, the fifth will be there also, how highly probable soever it may be. But the highest Degree of Probability amounts not to Certainty, without which there can be no true *Knowledge*: For this Co-existence can be no farther known, than it is perceived; and it cannot be perceived but either in particular Subjects, by the Observation of our Senses, or, in general, by the necessary Connection of the Ideas themselves. As to Incompatibility or Repugnancy to Co-existence, we know that no Subject can have of each sort of primary Qualities, more than one Particular at once, as one Extension, one Figure; and so of sensible Ideas peculiar to each Sense: For whatever of each kind is present in any Subject, excludes all other of that sort; for instance, one Subject cannot have two Smells, or two Colours at the same time. As to Powers of Substances, which makes a great part of our Enquiries about them, and is no inconsiderable Branch of our *Knowledge*; our *Knowledge*, as to these, reaches little farther than Experience, because they consist in a Texture and Motion of Parts, which we cannot by any means come to discover; and, I doubt, whether, with those Faculties we have, we shall ever be able to carry our general *Knowledge* much farther in this Part. Experience is that which in this Part we must depend on, and it were to be wished that it were more improved. We find the Advantages some Mens generous Pains have this way brought to the Stock of natural *Knowledge*; and if others, especially the Philosophers by Fire, had been so wary in their Observations, and sincere in their Reports, as those who call themselves Philosophers ought to have been, our Acquaintance with the Bodies here about us, and our Insight into their Powers and Operations, had been yet much greater. As to the third sort, the Agreement or Disagreement of our Ideas in any other Relation; this is the largest Field of *Knowledge*, and it is hard to determine how far it may extend: this Part depending on our Sagacity in finding intermediate Ideas, that may shew the Habitudes and Relations of Ideas, it is an hard matter to tell when we are at an end of such Discoveries. They, who are ignorant of Algebra, cannot imagine the Wonders of this kind that are to be done by it: and what farther Improvements and Helps, advantageous to other Parts of *Knowledge*, the sagacious Mind of Man may yet find out, it is not easy to determine. This at least we may believe, that the Ideas of Quantity are not those alone that are capable of Demonstration and *Knowledge*; and that other, and perhaps more useful Parts of Contemplation would afford us Certainty, if Vices, Passions, and domineering Interest did not oppose or menace Endeavours of this kind.

The Idea of a supreme Being, infinite in Power, Goodness, and Wisdom, whose Workmanship we are, and on whom we depend; and the Idea of ourselves, as understanding rational Creatures; would, if duly considered, afford such Foundations of our Duty, and Rules of Action, as might place Morality among the Sciences capable of Demonstration; wherein we need not doubt, but that from Principles as incontestable as those of the Mathematicks, by necessary Consequences the Measure of Right and Wrong might be made out to any one, who will apply himself, with the same Indifferency and Attention to the one, as he doth to the other of these Sciences. The Relations of other Modes may certainly be perceived, as well as those of Number and Extension. Where there is no Property, there is no Injustice, is a Proposition as certain as any Demonstration in *Euclid*; for the Idea of Property being a Right to any thing, and the Idea of Injustice being the Invasion or Violation of that Right, it is evident, that these Ideas being thus established, and these Names annexed to them, I can as certainly know this Proposition to be true, as that a Triangle has three Angles equal to two right ones. Again, no Government allows absolute Liberty; the Idea of Government being the Establishment of Society, upon certain Rules or Laws, which require Conformity to them; and the Idea of absolute Liberty being for any one to do whatever he pleases, I am as capable of being certain of the Truth of this Proposition, as of any in Mathematicks.

What has given the Advantage to the Ideas of Quantity, and made them thought to be more capable of Certainty and Demonstration, is, *First*, That they can be represented by sensible Marks, which have a nearer Correspondence with them than any Words or Sounds. Diagrams drawn on Paper are Copies of the Ideas, and not liable to the Uncertainty that Words carry in their Signification; but we have no sensible Marks that resemble our moral Ideas, and nothing but Words to express them by, which tho', when written, they remain the same; yet the Ideas they stand for may change in the same Man, and it is very seldom that they are not different in differ-

ent Persons. *Secondly*, Moral Ideas are commonly more complex than Figures; whence these two Inconveniences follow, (1.) That their Names are of more uncertain Signification: the precise Collection of simple Ideas they stand for, not being so easily agreed on, and so the Sign that is used for them in Communication always, and in Thinking often, does not readily carry with it the same Idea. (2.) The Mind cannot easily retain those precise Combinations so exactly and perfectly, as is necessary in the Examination of the Habitudes and Correspondencies, Agreements or Disagreements of several of them one with another, especially where it is to be judged of by long Deductions, and the Intervention of several other complex Ideas, to shew the Agreement or Disagreement of two remote ones. One part of these Disadvantages in moral Ideas, which has made them be thought not capable of Demonstration, may in a good measure be remedied by Definitions, setting down that Collection of simple Ideas which every Term shall stand for, and then using the Term steadily and constantly for that precise Collection.

As to the fourth sort of *Knowledge*, viz. of the real actual Existence of Things, we have an intuitive *Knowledge* of our own Existence, a demonstrative *Knowledge* of the Existence of God, and a sensitive *Knowledge* of the Objects that present themselves to our Senses. And hitherto we have examined the Extent of our *Knowledge*, in respect of the several Sorts of Beings that are. There is another Extent of it in respect of Universality, which will also deserve to be considered; and this in regard our *Knowledge* follows the Nature of our Ideas. If the Ideas, whose Agreement or Disagreement we perceive, are abstract, our *Knowledge* is universal; for what is known of such general Ideas, will be true of every particular thing in which that Essence, that is, that abstract Idea is found: And what is once known of such Ideas, will be perpetually and for ever true; so that, as to all general *Knowledge*, we must search, and find it only in our own Minds; and it is only the examining our own Ideas that furnishes us with it. Truths belonging to Essences of Things (that is, to abstract Ideas) are eternal, and are to be found out by the Contemplation only of those Essences; as the Existence of Things is to be known only from Experience. As to the Reality of our *Knowledge*, it is evident, that the Mind knows not Things immediately, but by the Intervention of the Ideas it has of them. Our *Knowledge* therefore is real only so far, as there is a Conformity between our Ideas, and the Reality of Things. But how shall we know when our Ideas agree with Things themselves? To which it is answered, There are two Sorts of Ideas, that we may be assured agree with Things; these are, (1.) Simple Ideas, which since the Mind can by no means make to itself, must be the Effect of Things operating upon the Mind in a natural way, and producing therein those Perceptions, which, by the Will of our Maker, they are ordained and adapted to. Hence it follows, that simple Ideas are not Fictions of our Fancies, but the natural and regular Productions of Things without us, really operating upon us; which carry with them all the Conformity our State requires, which is to represent Things under those Appearances they are fittest to produce in us. Thus the Idea of Whiteness, as it is in the Mind, exactly answers that Power which is in any Body to produce it there; and this Conformity between our simple Ideas, and the Existence of Things, is sufficient for real *Knowledge*. (2.) All our complex Ideas, except those of Substances, being Archetypes of the Mind's own making, and not referred to the Existence of Things as to their Originals, cannot want any Conformity necessary to real *Knowledge*; for that which is not designed to represent any thing but itself, can never be capable of a wrong Representation. Here the Ideas themselves are considered as Archetypes, and Things no otherwise regarded than as conformable to them. Thus the Mathematician considers the Truth and Properties belonging to a Rectangle or Circle only, as they are Ideas in his own Mind, which possibly he never found existing mathematically, that is, precisely true; yet his *Knowledge* is not only certain, but real, because real Things are no farther concerned, nor intended to be meant by any such Propositions, than as Things really agree to those Archetypes in the Mind. It is true of the Idea of a Triangle, that its three Angles are equal to two right ones; it is true also of a Triangle, where-ever it exists: What is true of those Figures, that have barely an Ideal Existence in the Mind, will hold true of them also, when they come to have a real Existence in Matter. Hence it follows, that moral *Knowledge* is as capable of real Certainty as Mathematicks: For Certainty being nothing but the Perception of such Agreement, by the Intervention of other Ideas, our moral Ideas, as well as mathematical, being Archetypes themselves, and so adequate



or compleat Ideas, all the Agreement or Disagreement we shall find in them, will produce real *Knowledge*, as well as in mathematical Figures. That which is requisite to make our *Knowledge* certain, is the Clearness of our Ideas; and that which is required to make it real, is that they answer their Archetypes. But it will here be said, That if moral *Knowledge* be placed in the Contemplation of our own moral Ideas, and those are of our own making, what strange Notions will there be of Justice and Temperance? What Confusion of Virtues and Vices, if every Man may make what Ideas of them he pleases? To which it is answered, No Confusion or Disorder at all in the Things themselves, nor the Reasonings about them, no more than there would be a Change in the Properties of Figures, and their Relations one to another, if a Man should make a Triangle with four Corners, or a Trapezium with four right Angles; that is, in plain *English*, change the Names of the Figures, and call that by one Name which is called ordinarily by another. The Change of Name will indeed at first disturb him, who knows not what Idea it stands for; but as soon as the Figure is drawn, the Consequences and Demonstration are plain and clear. Just the same is it in moral *Knowledge*: Let a Man have the Idea of taking from others, without their Consent, what they are justly possessed of, and call this Justice if he pleaseth; he that takes the Name there, without the Idea put to it, will be mistaken, by joining another Idea of his own to that Name; but strip the Idea of that Name, or take it, such as it is, in the Speaker's Mind, and the same things will agree to it, as if you called it Injustice. One thing we are to take notice of, That where God, or any other Law-maker, has defined any moral Names, there they have made the Essence of that Species to which that Name belongs; and there it is not safe to apply or use them otherwise; but in other Cases it is bare Impropriety of Speech to apply them contrary to the common Usage of the Country they are used in. (3.) But the complex Ideas, which we refer to Archetypes without us, may differ from them, and so our *Knowledge* about them may come short of being real; and such are our Ideas of Substances. These must be taken from something, that does, or has existed, and not be made up of Ideas arbitrarily put together, without any real Pattern. Herein therefore is founded the Reality of our *Knowledge* concerning Substances, that all our complex Ideas of them must be such, and such only, as are made up of such simple ones, as have been discovered to co-exist in Nature: And our Ideas being thus true, tho' not perhaps very exact Copies, are the Subjects of real *Knowledge* of them. Whatever Ideas we have, the Agreement we find they have with others, will be *Knowledge*. If those Ideas be abstract, it will be General *Knowledge*; but to make it real concerning Substances, the Ideas must be taken from the real Existence of Things. Where-ever therefore we perceive the Agreement or Disagreement of our Ideas, there is certain *Knowledge*; and where-ever we are sure those Ideas agree with the Reality of Things, there is certain real *Knowledge*.

As to the Improvement of our *Knowledge*, it being the received Opinion amongst Men of Letters, that Maxims are the Foundation of all *Knowledge*, and that Sciences are each of them built upon certain *Precognita*, from whence the Understanding was to take its Rise, and by which it was to conduct itself in its Inquiries in the Matters belonging to that Science; the beaten Road of the Schools has been to lay down, in the beginning, one or more general Propositions, called *Principles*, as Foundations whereon to build the *Knowledge* that was to be had of that Subject. That which gave occasion to this way of Proceeding, was the good Success it seemed to have in Mathematicks, which, of all other Sciences, have the greatest Certainty, Clearness, and Evidence in them. But if we consider it, we shall find that the great Advancement and Certainty of real *Knowledge* Men arrived to in these Sciences, was not owing to the Influence of these Principles, but to the clear, distinct, and compleat Ideas their Thoughts were employed about; and the Relation of Equality and Excess so clear between some of them, that they had an intuitive *Knowledge*, and by that a way to discover it in others, and this without the help of those Maxims. For is it not possible for a Lad to know, that his whole Body is bigger than his little Finger, but by virtue of this Axiom, The whole is bigger than a Part; nor be assured of it, till he has learned that Maxim? Let any one consider from what has been said, which is known first and clearest by most People, the particular Instance, or the general Rule, and which it is that gives Life and Birth to the other. These general Rules are but the comparing our more general and abstract Ideas, which Ideas are made by the Mind, and

have Names given them, for the easier Dispatch in its Reasonings: But *Knowledge* began in the Mind, and was founded on Particulars, tho' afterwards perhaps no Notice be taken thereof; it being natural for the Mind to lay up those general Notions, and make the proper Use of them, which is to disburden the Memory of the cumbersome Load of Particulars. The way to improve in *Knowledge*, is not to swallow Principles with an implicit Faith, and without Examination, which would be apt to mislead Men, instead of guiding them into Truth; but to get and fix in our Minds clear and compleat Ideas, as far as they are to be had, and annex to them proper and constant Names: and thus barely by considering our Ideas, and comparing them together, observing their Agreement or Disagreement, their Habitues and Relations, we shall get more true and clear *Knowledge* by the Conduct of this one Rule, than by taking up Principles, and thereby putting our Minds into the Disposal of others. We must therefore, if we will proceed as Reason advises, adapt our Methods of Inquiry to the Nature of the Ideas we examine, and the Truth we search after. General and certain Truths are only founded in the Habitues and Relations of abstract Ideas; therefore a sagacious methodical Application of our Thoughts for the finding out these Relations, is the only way to discover all, that can with Truth and Certainty be put into general Propositions. By what Steps we are to proceed in these, is to be learned in the Schools of the Mathematicians, who from very plain and easy Beginnings, by gentle Degrees, and a continued Chain of Reasonings, proceed to the Discovery and Demonstration of Truths, that at first sight appear beyond human Capacity. This may reasonably be said, that if other Ideas, that are real as well as nominal Essences of their Species, were pursued in the way familiar to Mathematicians, they would carry our Thoughts farther, and with greater Evidence and Clearness than, possibly, we are apt to imagine. This is Reason sufficient to advance that Conjecture above-mentioned, viz. That Morality is capable of Demonstration as well as Mathematicks; for moral Ideas being real Essences, which have a discoverable Connection and Agreement one with another, so far as we can find their Habitues and Relations, so far we shall be possessed of real and general Truths.

In our *Knowledge* of Substances, we are to proceed after a quite different Method; the bare Contemplation of their abstract Ideas (which are but nominal Essences) will carry us but a very little way in the Search of Truth and Certainty. Here Experience must teach us what Reason cannot, and it is by trying alone, that we can certainly know what other Qualities co-exist with those of our complex Idea; for instance, whether that yellow, heavy, fusible Body, I call Gold, be malleable or no; which Experience (however it prove in that particular Body we examine) makes us not certain that it is so in all, or any other yellow, heavy, fusible Bodies, but that which we have tried: because it is no Consequence one way or the other from our complex Idea. The Necessity or Inconsistence of Malleability hath no visible Connection with the Combination of that Colour, Weight, and Fusibility in any Body. What is here said of the nominal Essence of Gold, supposed to consist of a Body of such a determinate Colour, Weight, and Fusibility, will hold true, if other Qualities be added to it. Our Reasonings from those Ideas will carry us but a little way in the certain Discovery of the other Properties in those Masses of Matter wherein all those are to be found. As far as our Experience reaches we may have certain *Knowledge*, and no farther. It is not denied, but that a Man, accustomed to rational and regular Experiments, shall be able to see farther into the Nature of Bodies, and their unknown Properties, than one that is a Stranger to them: But this is but Judgment and Opinion, not *Knowledge* and Certainty. This would make it suspected, that Natural Philosophy is not capable of being made a Science. From Experiments and Historical Observations we may draw Advantages of Ease and Health, and thereby increase our Stock of Conveniences for this Life; but beyond this, it is to be feared, our Talents reach not, nor are our Faculties able to advance farther. From whence it is obvious to conclude, that since our Faculties are not fitted to penetrate the real Essence of Bodies, but yet plainly to discover to us the Being of a God, and the *Knowledge* of ourselves, enough to give us a clear Discovery of our Duty and great Concernment, it will become us, as rational Creatures, to employ our Faculties about what they are most adapted to, and follow the Direction of Nature where it seems to point us out the way. For it is rational to conclude, that our proper Employment lies in those Enquiries, and that sort of *Knowledge* which is most suited to our natural Capacities, and carries in it our greatest Interest; and therefore it is that Morality is the



the proper Science and Business of Mankind in general (who are both concerned and fitted to search out their *Summum Bonum*) as several Arts, conversant about the several Parts of Nature, are the Lot and private Talent of particular Men, for the common Use of human Life, and their own particular Subsistence in this World.

The Ways to enlarge our *Knowledge*, as far as we are capable, seem to be these two: The first is, to get and settle in our Minds, as far as we can, clear, distinct, and constant Ideas of those Things we would consider and know; for it being evident that our *Knowledge* cannot exceed our Ideas, where they are either imperfect, confused, or obscure, we cannot expect to have certain, perfect, or clear *Knowledge*. The other Art is of finding out the intermediate Ideas, which may shew us the Agreement or Repugnancy of other Ideas, which cannot be immediately compared. That these two, (and not relying on Maxims, and drawing Consequences from some general Propositions) are the right Method of improving our *Knowledge* in the Ideas of other Modes, besides those of Quantity, the Consideration of mathematical *Knowledge* will easily inform us: Where, First, we shall find, that he who has not clear and perfect Ideas of those Angles or Figures, of which he desires to know any thing, is utterly thereby incapable of any *Knowledge* about them. Suppose a Man not to have an exact Idea of a right Angle, Scalenum, or Trapezium, and it is clear that he will in vain seek any Demonstration about them. And farther it is evident, that it was not the Influence of Maxims, or Principles, that had led the Masters of this Science into those wonderful Discoveries they have made. Let a Man of good Parts know all the Maxims of Mathematicks never so well, and contemplate their Extent and Consequences as much as he pleaseth, he will, by their Assistance, scarce ever come to know, that the Square of the Hypothenuse, in a right-angled Triangle, is equal to the Squares of the two other Sides. This, and other mathematical Truths, have been discovered by the Thoughts otherwise applied. The Mind had other Objects, other Views before it, far different from those Maxims; which Men, well enough acquainted with those received Axioms, but ignorant of their Method who first made these Demonstrations, can never sufficiently admire.

Our *Knowledge*, as in other Things, so in this, has so great a Conformity with our Sight, that it is neither wholly necessary, nor wholly voluntary. Men, who have Senses, cannot chuse but receive some Ideas by them; and if they have Memory, they cannot but retain some of them; and if they have any distinguishing Faculty, cannot but perceive the Agreement or Disagreement of some of them one with another. As he that has Eyes, if he will open them by Day, cannot but see some Objects, and perceive a Difference in them; yet he may chuse whether he will turn his Eyes towards an Object, curiously survey it, and observe accurately all that is visible in it. But what he doth see, he cannot see otherwise than he doth; it depends not on his Will to see that Black which appears Yellow. Just thus it is with our Understanding: All that is voluntary in our *Knowledge*, is the employing or with-holding any of our Faculties from this or that sort of Objects, and a more or less accurate Survey of them; but they being employed, our Will hath no power to determine the *Knowledge* of the Mind one way or other; that is done only by the Objects themselves, as far as they are clearly discovered. Thus he that has got the Ideas of Numbers, and has taken the pains to compare one, two, and three, to fix, cannot

chuse but know they are equal. He also that hath the Idea of an intelligent, but weak and frail Being, made by, and depending on another, who is Eternal, Omnipotent, perfectly Wise, and Good, will as certainly know that Man is to honour, fear, and obey God, as that the Sun shines when he sees it. But yet be these Truths never so certain, never so clear, he may be ignorant of either, or both of them, who will not take the pains to employ his Faculties as he should, to inform himself about them.

KUL, or KOUL, a *Turkish* Term, properly signifying a Slave, or Servant. *Meningesky* tells us, the Name is given to all the Soldiers in the *Ottoman* Empire, particularly to those of the Grand Signior's Guard, and the Infantry. The Captains of the Infantry, and those who command the Guards, are called *Kul Zabyslers*, and the Soldiers of the Guard *Kapu Kulleri*, i. e. *Slaves of the Court*. Others say, that all who hold any Places depending on the Crown, or receive Wages from it, in a word, all who are in any measure the Grand Signior's Servants, take the Title of *Kul*, as more creditable than that of Subject; even the Grand Visier and the Bashaws value themselves upon it. A *Kul*, or Slave, of the Grand Signior has Authority to abuse any who are only his Servants; but a Subject that should affront a *Kul*, or Slave, would be severely punished. The *Kuls* are entirely devoted to the Will of the Grand Signior, and look on it as a kind of Martyrdom that merits Heaven, when they die either by his Order, or in the Execution of his Commands.

KURTCHI, the Name of a Militia among the *Persians*. The word, in its Original, signifies Army, and is applied to a Body of Cavalry consisting of the Nobility of the Kingdom of *Persia*, and the Posterity of the conquering *Turks*, who placed *Ismael Suphi* on the Throne. They are in Number about 18000 Men. Their Commander is called *Kurtchi Bafchi*, which was formerly the first Post in the Kingdom.

KYPHONISM, an ancient Punishment, frequently undergone by the Martyrs in the Primitive Times. The Body of the Person who was to suffer was anointed with Honey, and so exposed to the Sun, that the Flies and Wasps might be tempted to torment him. This was performed in three Manners; sometimes they only tied the Patient to a Stake; sometimes they hoisted him up into the Air, and suspended him in a Basket; and sometimes they stretched him out on the Ground, with his Hands tied behind him. *Suidas* gives us the Fragment of an old Law, which punished those, who treated the Laws with Contempt, with *Kyphonism* for the space of twenty Days, after which they were to be precipitated from a Rock, dressed in Womens Habit. The word is originally *Greek*, and comes from *κῶπον*, which signifies the Stake to which the Patient was tied, the Collar fitted to his Neck, or an Instrument wherewith they tormented him. The Scholiast, on *Aristophanes*, says, it was a wooden Lock, or Cage, and that it was called *κῶπον* from the Verb *κυρῆν*, to crook, or bend, because it kept the Tortured in a crooked bowing Posture. Others say, Logs of Wood were laid over their Heads, to prevent their standing upright. *Hesychius* defines the *κῶπον*, a Piece of Wood, whereon Criminals were stretched and tormented; and 'tis probable the word might signify all these several things. It was a Generical Name, whereof these were the Species.

KYSTUS, in Medicine, is the Name of a Bag, or Membrane, in form of a Bladder, full of unnatural Humours. The word comes from the *Greek* *κύστις*, Bladder.





**L** is the Name of the Eleventh Letter of the Alphabet; it has a sweet Sound, and is pronounced by applying the Tongue to the Palate. *Pafferat* observes, that *l* has been frequently used for *b*, as *cillibæ* for *cibillæ*; for *d*, as *alipe* for *adipe*, *rallus*, *rallum*, from *radens*; for *c*, as *mutila* for *mutica*; for *n*, as *arvilla* for *arvina*, *belle* for *bene*, *colligo* for *conligo*; for *r*, as *fratellus* of *frater*, *balatrones* for *baratrones*; for *s*, as *ancile* of *am* and *caſum*, *equilio* for *equisio*; for *t*, as *equifelis* for *equisetis*, *Tbelis* for *Tbetis*. The double *ll* is a modern Contrivance, and was never used among antient Roman Authors. They wrote *alium* not *allium*, *macelum* not *macellum*, *polucere* not *pollucere*. Two *ll* were changed into *li*, *ἀλλομαι* *salio*, *ἄλλος* *alius*, *οὐλλον* *folium*; and *r* into two *ll*, as *bira* *billa*, *saturare* *saturlare*, &c. and *l* into *x* or *xill*, as *ala* *axilla*, *mala* *maxilla*, *velum* *vexillum*. *d* was also used for *l*, *n* for two *ll*, and *r* for one *l*. *l* is frequently used instead of *d*, as in *Ulyſſes* from the Greek *Ὀδυσσεύς*, in the *Æolic* Dialect *Ῥύσσωνος*. Thus also for *Dautia* we say *Lautia*; for *dacrumæ*, *lacrymæ*, &c.

There are several People, for instance, the Chinese in Asia, the Illinois in America, &c. who cannot pronounce the *r* but always change it into *l*. Thus when any of 'em have been baptiz'd by the Name of *Petrus*, *Franciscus*, &c. they always pronounce it *Petlus*, *Flanciscus*, &c. The Spaniards and Welsh usually double the *l* at the beginning of a Word, which sounds nearly the same with our *bl* or *fl*.

The Figure of our *L* we borrow'd from the Latins, they from the Greeks, and they again from the Hebrews, whose *Lamed* is perfectly like ours, excepting that the Angle is somewhat more acute.

*L* was also a numeral Letter among the Antients, and is still so in the Roman Cyphering, signifying fifty; according to the Verse,

*Quinquies L denos numero designat habendos.*

When a Dash was added at top *L*, it stood for fifty thousand. *L* was used for fifty as being half a *C*, which signified a hundred, and was formerly written thus *Ē*, which according to *Pasquier* makes two *LL*, the one upright, the other inverted.

The French Louis d'Ors have a Cross on 'em, consisting of eight *L*'s interwoven and disposed in form of a Cross.

The Epocha's on Greek Medals are usually written with the antient *Lambda* *L*; which, according to the Tradition of the Antiquaries, stands for *Λυκόβαντος*, a Poetical Word, unknown in common Speech, signifying *Anno*, and which 'tis probable was more used in Egypt than Greece.

**LABARUM**, an Ensign or Standard bore before the Roman Emperors in the Wars: It consisted of a long Lance, with a Staff at top, crossing it at right Angles; from which hung a rich Streamer, of a purple Colour, adorn'd with precious Stones. Till the Time of *Constantine* it had an Eagle painted on it, but that Emperor, in lieu thereof, added a Cross with a Cypher expressing the name of Jesus. He chose fifty of the bravest Men in his Guards to bear it on their shoulders, each in his turn. *Eusebius* tells us, that in the Battel against *Maxentius*, the Person who bore it being fatigued gave it to another, and that he had no sooner parted with it but he was kill'd; all the Strokes he receiv'd while the *Labarum* was in his charge, not being able to wound him. The Author adds, he had this Miracle from the Emperor's mouth. This Standard the Romans took from the Germans, *Dace*, *Sarmatae*, *Pannonians*, &c. whom they had overcome.

The Name *Labarum* was not known before the Time of *Constantine*, but the Standard itself, in the form we have described it, abating the Symbols of Christianity, was used by all the preceding Emperors. Some derive the word from *Labor*, as if this finished their Labours; some from *ἰλαβία*, Piety; others from *λαμβάνειν*, to take; and others from *λάφυρον*, Spoils. The *Labarum* has afforded ample matter for Criticism, and has been discours'd of by *Fuller*, *Alciatus*, *Cujas*, *Gyraldus*, *Lipsius*, *Mewsius*, *Vossius*, *Hoffman*, *Valois*, *Du Cange*, &c.

**LABEL**, is a long thin Brass Ruler, with a small Sight at one end, and a Centre Hole at the other; commonly used with a Tangent Line on the Edge of a Circumferenter, to take Altitudes, &c.

*Label* in the Law is a narrow Slip of Paper or Parchment affixed to a Deed or Writing, in order to hold the appending Seal. So any Paper annexed by way of Addition, or Explication, to any Will or Testament, is called a *Label* or *Codicil*.

*Label*, in Heraldry, a kind of Addition to the Arms of a younger Brother, to distinguish him from the elder. It is esteem'd the most honourable of all others, and is formed by a Fillet usually placed in the middle, and along the Chief of the Coat without touching its Extre-

mities. Its Breadth ought to be a ninth part of the Chief. It is adorn'd with Pendants somewhat like the Drops under the Triglyphs in the Doric Freeze. When there are above three Pendants, the Number must be specified in Blazoning: There are sometimes six in the Coats of younger Brothers.

**LABIAL**, a Term in Law used in the same sense with Oral. *Labial* Offers are such as are only made by Word of Mouth, or even by Writing, where there is no valuable Consideration: In Courts of Equity these are not regarded. The Grammarians, and especially the Orientals, apply the Terms *Labial*, *Dental*, *Guttural*, to such Letters as are pronounced with the Lips, the Teeth, or the Throat.

**LABIATE FLOWERS**, from the word *Labium*, a Lip, is a Term applied by Herbalists to such Flowers, as have one or two Lips, some of which represent a kind of Helmet or Monk's Hood. See *Flower*.

**LABORATORY**, or *Elaboratory*, in Chymistry, the Place where the Chymists perform their Operations, where their Furnaces are built, their Vessels kept, &c. In general, the Term *Laboratory* is applied to any Place, where Physical Experiments and Operations in Pharmacy, Chymistry, &c. are performed. The *Laboratory* of an Hospital is the Place where the Remedies are made up.

**LABYRINTH**, among the Antients was a large intricate Edifice cut out into various Isles and Meanders, running into each other, so as to render it difficult to get out of it. There is mention made of four celebrated *Labyrinths* of Antiquity. That of Crete is the most famed; it was built by *Dædalus*, and it was hence that *Theseus* made his Escape by means of *Ariadne's* Clue. That of Egypt, according to *Pliny*, was the oldest of all, and was subsisting in his Time, after having stood 3600 Years. He says it was built by King *Petefucus* or *Tibbès*, but *Herodotus* makes it the Work of several Kings: it stood on the Banks of the Lake *Myris*, and consisted of 12 Palaces and 1500 Apartments: *Mela* says, *ter mille domos*. That of *Lemnos* was supported by Columns of wonderful Beauty, there were some Remains of it at the Time when *Pliny* wrote. That of Italy was built by *Porfenna* King of *Hetruria*, for his Tomb.

*Labyrinth*, in Anatomy, is the Name of the second Cavity of the Internal Ear, which is hollowed out of the *Os Petrosum*, and is so call'd as having several Windings in it. This Cavity is divided into three Parts; the first is that call'd the *Vestibulum* of the *Labyrinth*, because it leads in to the other two. The second comprehends three Canals crooked semicircularly, and thence call'd *Semicircular Canals*, placed on one side of the *Vestibulum*, towards the back of the Head; and the other call'd the *Cocleæ*, situate on the other side. See *Ear*. *Dr. Vieussens* observes, that the Bone out of which the *Labyrinth* is dug, is white, hard, and very compact, that the Ethereal Matter of Sounds laden with Impressions striking against its side, may lose little or nothing of its Motion, but communicate it entire to the Nerves of the Ear.

**LACCA**, a Gum, or rather Wax, hard, red, brittle, clear and transparent, brought from *Malabar*, *Bengall*, and *Pegu*, and used in dying of Scarlet, &c. Authors differ as to the Production of this curious Wax. *F. Tachard*, who was on the spot, tells us that a kind of little Ants fixing themselves to the Branches of several Trees, leave behind them a reddish Moisture, which lying exposed to the Air and Sun, hardens in five or six days time. Some imagine this is not the Production of the Ants, but a Juice which they draw out of the Tree, by making little Incisions in it; and in effect, the Trees where the *Lacca* is found, do yield a Gum: but then 'tis of a very different Nature from the *Lacca*. The Ants are, as it were, a kind of Bees, and the *Lacca* is their Honey. They work at it eight Months in the Year, and the rest of the time lie by, because of the Rains.

To prepare the *Lacca*, they first separate it from the Branches to which it adheres, pound it in a Mortar, and throw it into boiling Water; and when the Water is well dyed, they pour on fresh, till such time as it will tinge no more. Part of the Water thus tinged is evaporated in the Sun; after which, the thicken'd Tincture is strain'd through a Linnen Cloth.

*M. Geoffroy* examining the Gum *Lacca*, found it to be a kind of Comb, such as the Bees and some other Insects are accustomed to make. Upon breaking it into pieces, it appears divided into a great number of *Alveoli* or little Cells of an uniform figure, and which plainly shew that it never ouz'd from Trees. These Cells are not mere Excrements, as some imagine, but are intended for something to be deposited in 'em. And accordingly are found to contain little Bodies, which the first Observers took



for the Wings or other Parts of the Insects that produced the *Lacca*. These little Bodies are of a beautiful Red ; and when broke, make a Powder as fine as Cochineal. 'Tis most probable these Cells are destined to lodge the young Brood, as those of the Bees ; and that these little Carcasses are the Embryo's of Insects, or perhaps their Skins.

There are several sorts of *Lacca* : that mention'd in the last Article is the natural : when it is prepared, as in the former, those kinds of dry Cells are not seen. M. *Geoffroy* reckons six or seven different Kinds ; besides which, there are several Pastes used by the Painters, that go by this name, or that of *Laque*. This Gum boil'd in Water with Acids, makes a beautiful Red Dye. The *English* and *Dutch* use it in Scarlet.

*Lemery* having examined the Gum *Lacca* chymically, judges it to be a mean Mixture between a Gum and a Resin, more abundant in Salt than Oil.

*Artificial Lacca*, or *Laque*, is a coloured Substance, drawn from several Flowers ; as the Yellow from the Flower of the Juniper, the Red from the Poppy, and the Blue from the Iris or Violet. The Tinctures of these Flowers are express'd by distilling them several times in *Aqua Vita*, or by boiling them over a Stove-Fire in a Lixivium of Pot-Ashes and Alumn. Artificial *Lacca* is also made of Brasile boil'd in a Lixivium of the Branches of the Vine, adding a little Cochineal, Terramerita, Alumn calcin'd, and Arsenic incorporated with the Bones of the Cuttle-fish pulveriz'd, made up into little Cakes and dry'd. If it is to be very red, they add Juice of Citron to it ; to make it brown, they add Oil of Tartar. Dove-colour'd or Colombine *Lacca* is made with Brasile of *Fernambouc* steep'd in distill'd Vinegar for the space of a month, mix'd with Alumn incorporated in the Bones of the Cuttle-fish.

LACERNA, the Name of a Garment worn by the Antients. It was a kind of Cloke made of Wool, only used by the Men : they wore it over the *Toga*, and when that was not on, over the *Tunica*. It was at first very short, but growing popular in the Roman Army, was soon lengthen'd. The *Lacerna* was scarce known in Rome till the Time of the Civil Wars and the Triumvirate. Then indeed it came into fashion, for the Soldiers being then frequently in the City, or at the City-Gates, the Sight became familiar to the Citizens, and they fell into the Use of it ; inasmuch that it became the common Dress of the Knights and Senators, till the Time of *Valentinian* and *Theodosius*, when the Senators were prohibited the wearing of it in the City. The *Lacerna* was the same with the *Chlamys* and *Birrus*. *Martial* mentions *Lacerna* of ten thousand Sesterces price. The word comes from the Greek *λακην* or *λακκη*, a Garment.

LACHRYMALIS GLANDULA, in Anatomy, the Name of a small oblong Gland situate above the Eye, near the little Canthus, whence proceed two or three small Ducts, which opening on the inner Surface of the Eye-lid, filtrate a Serosity serving to moisten the Ball of the Eye, and to facilitate its Motion. Near the larger Angle is also a little Eminence, in form of a Caruncle, which some have taken for another *Glandula Lachrymalis*, but by mistake, this being no more than the Duplication of the inner Membrane of the Eye-lids. On the same side, near the lesser Angle, are two little Perforations, call'd *Puncta Lachrymalia* ; which are the Openings of a little membranous Bag at the Entrance of the Excretory Canal, that descends into the Cavity of the Nose, by which means the superfluous Moisture of the Eye is discharged into the Nose. On the same side is a very small Bone, one of those of the upper Jaw, sometimes call'd *Os Lachrymale*, but more usually *Os Unguis*.

*Fistula Lachrymalis* is a Fistula in the larger Angle of the Eye. It usually happens after an Abscess formed in the Bag above mention'd, by means of the Serosity lodg'd there ; which being retain'd too long, becomes acrimonious, and occasions an Ulcer which frequently degenerates into a Fistula.

LACHRYMALIA PUNCTA, in Anatomy, two little Apertures in the extreme Angles of each Eye-lid, into which an aqueo-saline pellucid Humour, secreted from the Blood by the *Glandula Lachrymalis*, is convey'd, and thence carried off by the Lachrymous Canals into a little Bag in the Canal of the Nose ; whence by a Pipe, always open, it is carried into the Cavity of the Nose immediately under the lower *Os Spongiosum*. Hence appears the Reason why People in crying run at the Nose. This Humour separated by the *Glandula Lachrymalis*, serves to moisten and lubricate the Ball of the Eye, and prevent any hurtful Attrition : When it is secreted in any great quantity, so as to overflow the Eye-lids, it is call'd Tears.

LACHRYMATORIES were antiently small Earthen Vessels, wherein the Tears of the weeping Friends that survived were repositd, and buried with the Ashes and Urns of the Dead. Some of these are still seen in the Cabinets of the Curious.

LAC LUNÆ, Milk of the Moon. See Milk.

LACONISM, a short, brisk, sententious Speech, in the manner of the *Lacedemonians*, who were remarkable for the Closeness and Conciseness of their way of delivering themselves.

LACTATION, the giving of Suck, and the Time the Mother doth that Office to her Young.

LACTEAL VEINS, a kind of long slender Tubes for the Conveyance of the Chyle from the Intestines to the common Reservatory : They were first discovered by *A. fellius* an Italian Physician in 1622, and call'd *Lacteal*, from the Liquor they contain, which resembles that of Milk. Their Coats are so thin, as to be invisible, except when distended with Chyle or Lympha. They arise from all the Parts of the small Guts, and as they run from the sides of the Guts to the Glands in the Mesentery, unite and form larger Branches, called *Vene Lactee primi generis*. The Mouths of these *Lacteals*, which are open into the Cavity of the Guts, from whence they receive the Chyle, are so small as not to be seen by the best Microscope. It was necessary they should be smaller than the finest Arteries in the Body, that nothing might enter to stop the Circulation of the Blood. The same Extremity of the *Lacteals* has likewise communication with the Capillary Arteries of the Guts, by which they receive a Lympha that dilutes, and propels the Chyle forwards, and washes the *Lacteals* and Glands, that they might not fur, and be obstructed by the Chyle's staying in them upon fasting. The other Extremity of the *Lacteals* discharges the Chyle into the vesicular Cells of the Glands dispersed up and down the Mesentery : And from these arise other *Lacteals* of a larger size, which carry the Chyle immediately into the *Receptaculum Chyli* ; these are called *Lactee secundi generis*. The *Lacteal* Veins have Valves at several distances, which hinder the Chyle from returning back into the Intestines.

It is still doubted whether or no the *Intestina Crassa* afford any *Lacteals* or not. The Impossibility of human Dissection proper for such an Enquiry, gives no room either to affirm or deny. But the Contents of the *Intestina Crassa* seem not likely to afford much Chyle, and therefore if there be any, 'tis probable they are very few.

In Brutes, if dissected at a reasonable time after feeding, as two or three hours, the *Lacteals* appear very tumid and white ; and if wounded, the Chyle flows plentifully from 'em. But if inspected when the Stomach of the Animals has lain some time empty, they appear like Lymphaticks, visible indeed, but fill'd with a transparent Liquor. That the *Lacteals* have a Communication from the Cavities of the Intestines, is demonstrated by their Contents, the Chyle ; but how their Pores are disposed to receive it, has not yet been discovered : Nor is there any way known whereby to fill the *Lacteals* from the Cavities of the Guts after Death. 'Tis probable then, their Entrance into the Gut is oblique, since neither Wind nor Liquors can pass from thence. As 'tis found these Pores can only receive any thing in the living State, we may be allow'd to imagine that 'tis the Peristaltic Motion of the Guts which disposes them in that State to receive the Chyle. And this may be done by means of the Circular and Longitudinal Fibres of the Intestines still applying the Internal Coats of the Guts to their Contents, by which means its Pores absorb the Chyle from the Excrementitious Part.

LACTEA VIA, the Milky Way. See Galaxy.

LACUNÆ, among Anatomists the Name of certain excretory Canals. Between the fleshy Fibres of the Uter and the Membrane of the Vagina in Women, is found a whitish glandulous Body about a finger thick, running round the Neck of the Bladder, having a great number of excretory Ducts, which *Graef* calls *Lacune*, and which terminate in the lower part of the Orifice of the Womb, conveying thither a slimy Matter, that mixes with the Seed of the Male. See Generation.

LACUNAR, in Architecture, an arched Roof or Ceiling, more especially the flanking or flooring above the Portico's and Piazza's.

LADANUM, or *Labdanum*, in Pharmacy, the Name of a Gummos or Resinous Matter ouzing out of the Leaves of a Shrub call'd *Cistus Ladanifera*, which is very common in the hot Countries, and whereof there are various kinds. They gather the *Ladanum* by means of Goats, which brouzing on the Leaves of this Shrub, return to the Stable with their Beards loaden with a fat Substance, which the Peasants rake off, with a kind of Combs made for that purpose. This Matter they thus collect into Lumps, and, as 'tis mix'd with the Goat's Hair and other Impurities, call it *Ladanum* in the Beard, or natural *Ladanum*. Others draw Cords over the Leaves and other Parts of the Shrub, and scraping off what had stuck to the Cords, make up the *Ladanum* into little Balls. *Ladanum* is used in Physick to soften, digest, attenuate and



and resolve. That which is brittle, of an ash-colour, sweet-scented, &c. is the best. *Pietro della Valle* tells us he was inform'd by the *Indians*, that *Ladanum* is formed like Dew, and falls from Heaven like Manna, that it is gather'd on the Leaves of a Plant, a Palm and an half high; that after gathering they boil it, by which means it becomes soft like Wax.

*Liquid Ladanum* is a Preparation of the natural *Ladanum*, by melting and purifying it from the Hairs, &c. This is sometimes sold for a black Amber.

**LAGAN**, at first was the Right which the chief Lord of the Fee had to take Goods cast on the Shore by the Violence of the Sea, but afterwards signified a Right which any one had to Goods shipwrecked and floating in the Sea, because being remote from the Shore, it could not be determined to whose Fee they properly belonged. The word *Lagan* comes from the *Saxon* *Liggan*, *cubare*, to lie, and not from *ligare*, to bind, as some will have it, because the Goods are frequently tied together to prevent their sinking.

**LAGOPHTHALMIA**, a Disease of the Eye-Lids, when the upper Lid is so contracted that the Eye can't be quite shut, but remains open even in the time of Sleep. The word comes from the *Greek* *λαγος*, Hare, and *ὀφθαλμός*, Eye: this being the Property of the Eyes of Hares.

**LAIR** is a Term in Hunting, for the Place where Deer harbour by day; also a Place where Cattel usually rest under some Shelter, the Ground being enriched by their Dung.

**LAKE**, a large Quantity of Water inclosed in the Cavity of some Inland Place, of a considerable Extent and Depth. Properly speaking, however, those only are called *Lakes*, which receive and emit Rivers. *Lakes* are of four kinds; (1.) Such as neither emit nor receive Rivers. (2.) Such as emit Rivers without receiving any. (3.) Such as receive without emitting any. (4.) Such as both receive and emit Rivers. Of the first kind some are perennial, others temporary; the temporary owe their Origin most of them to Rain, and to the Cavity or Depression of the Place where they are lodged. In the *Indies* they make artificial *Lakes*, which they wall about, to catch the Rain in wet Seasons, and preserve it for their Use in the dry ones. There are several of this kind of *Lakes*, formed by the Inundations of the Sea and Rivers, particularly the *Nile* and *Niger*; which, when they retire within their Banks, leave Floods of Water, which the Inhabitants take care to inclose, to serve as a Magazine for the ensuing Months. The Generation of perennial *Lakes* may be also referred to Rain, where the Cavity is so deep as to receive a Quantity in Winter more than the Heat of the Sun will exhale in Summer; tho' 'tis probable many of these *Lakes* have their Springs at bottom, by which they are continually supplied. To this Class may be referred the *Turloughs*, i. e. *Terrens Lacus*, or Land-Lakes in *Ireland*, which are *Lakes* one part of the Year, and the rest very smooth Fields: At the bottom of these *Turloughs* are found Holes, through which the Water runs in Winter, and sinks towards Summer.

The second Species of *Lakes*, which emit without receiving Rivers, is very numerous; they owe their Origin to Springs, the Cavities where the Spring is found not being able to contain all the Waters it yields.

The third kind, viz. those which receive Rivers without emitting any, apparently owe their Origin to those Rivers, which, in their Progress from their Source, falling into some ample Cavity, are collected together, and form a *Lake* of such Dimensions as may lose as much by Exhalation as it continually receives from its Spring; or sometimes happening on a soft spongy Soil, that imbibes the Water, and transmits it to the neighbouring Grounds. The Number of these is small.

The fourth Species both receives and emits Rivers. Of these we reckon three different kinds, as the Quantity of Water they emit is greater, equal, or less than that they receive. If the Quantity they emit be greater, 'tis plain they must have a Spring at the bottom; if less, there must be some subterraneous Ducts or Canals, or else the Earth must be spongy; if it be equal, we gather that they have neither any hidden Springs nor Canals. Of these *Lakes* we have a great Number, and those very considerable ones.

The Generality of *Lakes* consist of fresh Waters, as most of those which are supplied either from some Spring far from the Sea, or a River, or from the Rain: Some few of Salt-water; as those produced by the Inundation of the Sea, or by its Immission through some Duct of the Earth, or that have Salt Springs at bottom. Dr. *Halley* is of Opinion, that all great perennial *Lakes* are salt, either in a greater or less Degree, and that this Saltness increases with Time, and on this Foundation proposes a Method for determining the Age of the World.

The large *Lakes*, wherewith the Northern Regions a-

bound, serve for very good Purposes; inasmuch as the warm Vapours arising from them serve for a Defensive against the pinching Cold of those Climates. To this it is owing, that *Ireland*, *Scotland*, &c. are less affected with Frosts than much warmer Countries.

**LAMA**, the Title of an Order of Priests among the *Western Tartars*, on the Frontiers of *China*; these *Lama's* are held in great Veneration. They have a Grand *Lama*, who is their High-Priest, and who is the second Person in the Kingdom, being the next in Authority to the King. He receives Homage and Adoration not only from the People, but from the neighbouring Kings; none of whom are ever introned, without sending Ambassadors to him to obtain his Benediction. The *Lama's* are extremely superstitious, and are remarkably given to Magick.

**LAMBATIVES**, a Form of Medicines to be lick'd off the End of a Liquorice-Stick. The same with *Linctus's*, *Lobocks*, and *Ectegmas*, which see.

**LAMBOIDES**, in Anatomy, an Epithet applied to the third proper Suture of the Cranium, in regard it resembles the Form of a *Greek*  $\lambda$  *Lambda*; for the same reason it is sometimes called *Tpsiloides*, as bearing some Resemblance to a *Greek*  $\tau$  *Tpsilon*.

**LAMELLÆ**, a Diminutive of *Lamina*, little thin Plates, whereof the Scales and Shells of Fishes, &c. are composed.

**LAMIÆ**, among the Antients, were esteemed a kind of Demons, or evil Spirits, who, under the Form of beautiful Women, devoured Children. *Horace* makes mention of them in his *Art of Poetry*. Some Authors call them *Lania*, à *laniando*. *Philostratus* says, they are also called *Larvæ*, or *Lemures*, as if they were the same thing. *Bochart* will have the word to be *Phœnician*, and derives it from *𐤋𐤍𐤕*, to devour, alledging the Fable of the *Lamia* came from *Lybia*.

**LAMINÆ**, thin Plates or Tables, whereof any thing consists, particularly the human Skull, which are two, the one laid over the other.

**LAMMAS-DAY**, quasi *Lamb-mas*, is the first of *August*, so called, as some will have it, because Lambs were not then fit to eat, as being grown too big. Others derive it from a *Saxon* word, signifying *Loaf-Mass*, because on that Day our Forefathers made an Offering of Bread made with new Wheat. On this Day the Tenants, who formerly held Lands of the Cathedral Church in *York*, were bound by their Tenure to bring a Lamb alive into the Church at High-Mass. See *Gale*.

**LAMP**, a Preparation of Oil, &c. in a proper Vessel, for burning. The Use of lighted Lamps in Churches and Places of Devotion is very antient. In the City of *Fez* is a Mosque wherein are 900 brazen Lamps burning every Night. In *Turkey* all their Illuminations are with Lamps. *Polydore Virgil* ascribes the first Invention of Lamps to the *Egyptians*, and *Herodotus* describes a Feast of Lamps held annually in *Egypt*.

*Kircher* shews the manner of preparing Lamps which diffuse a Light so disposed, as to make the Faces of those present appear black, blue, red, or any other Colour. There has been a great Dispute among the Learned about the Sepulchral Lamps of the Antients: some maintain they had the Secret of making Lamps that were inextinguishable, alledging several that had been found burning at the opening of Tombs 15 or 16 Hundred Years old. But others treat these Relations as Fables; and others think that the Lamps which before were extinguish'd, take Light a-fresh upon the Admission of fresh Air. Dr. *Plot* however is of Opinion such perpetual Lamps are things practicable, and has himself made some Proposals of this kind. The *Linum Asbestinum* he thinks may do pretty well for the Wick, and that *Naptha*, or Liquid Bitumen, constantly springing into some of the Coal Mines, will answer for the Oil. If the Asbestos won't make a perpetual Wick, he thinks there is no matter in the World that will; and argues that the Tradition of such Lamps must be fabulous, or that they made them without Wicks. Of this Kind he thinks it possible to make one of the Bitumen springing into the Coal Mines at *Pitchford* in *Shropshire*; which, he says, like other liquid Bitumens, will burn without a Wick. He makes a Proposal too, for imitating those Lamps that kindle on the Immission of fresh Air; by inclosing some of the liquid Phosphorus in the Recipient of an Air-Pump; which, under those Circumstances, will not shine at all, but on letting in the Air into the Recipient, there will possibly, says he, appear as good a perpetual Lamp as some that have been found in the Sepulchers of the Antients.

*Cardan's Lamp*, is a Contrivance of that Author which furnishes it self with its own Oil. It consists of a little Column of Brass, Tin, or the like, well closed every where, excepting a small Aperture at Bottom, which opens into the Middle of a little Neck where the Wick is placed. Here the Oil cannot get out, but in proportion as it



it spends, and so clears the Passage of that little Aperture. This Kind of Lamp has become much in Use within these twenty or thirty Years; but it has several Inconveniences, as that the Air gets into it by Starts and Gluts; and that when the Air in the Cavity comes to be much rarefied by Heat, it drives out too much Oil, so as sometimes to extinguish the Lamp. Dr. Hook and Mr. Boyle have invented other Lamps that have all the Conveniences of *Cardon's*, without the Inconveniences. See some Improvements in the Doctrine of Lamps under *Mirror*.

LAMPADARY, an Officer in the antient Church of *Constantinople*. His Business was to see the Church well lighted, and he bore a Taper before the Emperor, the Empress, and the Patriarch, when they went to Church, or in Procession. The Taper born before the Emperor was compassed with various Circles of Gold in manner of Crowns, those held before the Empress and Patriarch had but one. It seems they were of emblematical Use, and were intended to keep those great Persons in mind, that their Light was to illumine those underneath them. See the *Greek Euchology*, *Balsamon*, &c.

There were also *Lampadaries* in the Emperor's Palaces; at first the Privilege was only granted to the Great Officers of the Crown, and the Chief Magistrates, but afterwards the Emperor allowed it to other inferior Officers, as *Questers*, *Treasurers*, &c. Together with the Taper, they bore before the Magistrates the Emperor's Image, &c. On which account, 'tis probable, they were first permitted to have a Lampadary. The word is formed from the *Latin*, *Lampas* a Lamp.

LAMPADIAS is a kind of bearded Comet, resembling a burning Lamp, tho' of several Shapes; for sometimes its Flame or Blaze runs tapering upward like a Sword, and sometimes is double or triple pointed.

LAMPERS, is a kind of Swelling in the Mouth of an Horse, so called because it is cured by burning with a Lamp, or an hot Iron: it proceeds from abundance of Blood resorting to the first Furrow of the Mouth, near the Fore-teeth, that causes the said Furrow to swell as high as his Gathers, which will hinder his feeding, and makes him let his Meat fall half chewed out of his Mouth again. It is a natural Infirmary which every Horse has first or last, and every common Smith can cure.

LAMPETIANS, a Sect of antient Hereticks who fell in with some of the Opinions of the *Arians*. Their Founder *Lampetius* is said to have been one of the Chiefs of the *Marcionites*. They condemn'd all Kind of Vows, particularly that of Obedience, as inconsistent with the Liberty of the Sons of God.

LAMPROPHORUS, a Name antiently given to the *Neophytes* during the seven Days that succeeded their Baptism. In the Ceremony of Baptism the new Christian was cloath'd with a white Robe, which he wore for the Week following, and was thence call'd *Lamprophorus*, which signifies a Person wearing a shining Garment, from *λαμπρός* and *φέρω*, I carry. The *Greeks* also give this Name to the Day of the Resurrection, in regard their Houses were adorned and illumined on this Day with an infinite Number of Torches as a Symbol of the Light which that Mystery diffused in the World.

LANAR. See *Lanner*.

LANCE, an offensive Weapon, bore by the ancient Cavaliers in form of a half Pike. It consisted of three Parts, the Handle, the Wings, and the Dart. *Pliny* attributes the Invention of Lances to the *Etolians*. *Varro* and *Aulus Gellius* say, the Word *Lance* is *Spanish*; whence others conclude the Use of this Weapon was borrow'd by the People of *Italy* from the *Spaniards*. *Diodorus Siculus* derives it from the *Gaulish*, and *Festus* from the *Greek* *λόγχη*; *Pezron* from the *Celtic*, and *Borell* from the *Hebrew*.

LANCETI, a Name given by the antient Laws of *England* to a kind of Vassals who were obliged to work for their Lord one Day in a Week from *Michaelmas* to *Autumn*, either with Fork, Spade, or Flail, at the Option of the Lord.

LANCETTE, is a Chirurgion's little Knife, straight-pointed, two edged, used in opening Veins, &c.

LANDAU, a Tree in the *Molucca's*, whereof the Natives make their Bread. When it is fell'd they cleave it into two in the Middle, and dig out the Pith, which is even eatable when it comes fresh out of the Tree. They chop it very small, till such time as it is reduced into a kind of Powder somewhat like Meal. This done, they put it in a Searce made of the Bark of the same Tree, and place the Searce over a Cistern made of its Leaves, pouring Water upon it, and by this means separating the pure Part of the Powder from the Veins of Wood where-with the Pith abounds. The Flower thus filtrated, they call *Sagu*; they make it into Paste, and bake it in earthen Furnaces; and this they do with so much Expedition, that in three or four hours a Man makes as much Bread

as will feed an hundred Persons a day. From the same Tree they draw a Liquor as agreeable to drink as our Wines. The Leaves, when they are young, are cover'd with a kind of Cotton, whereof they make their Cloth, and as they grow older they serve them to tile their Houses. The larger Veins of these Leaves serve 'em for Stakes in building; and of the smaller they make a kind of Hemp, wherewith they make very good Ropes.

LAND-CHEAP, is an antient customary Fine paid either in Cattle or Money, upon the alienating or selling of Land in some particular Mannor, or within the Liberty of some Borough; as at *Malden* in *Essex*, a Payment is still made of 13 *d.* in every Mark of the Purchase-Money, for certain Lands and Houses sold in that Town.

LAND-FALL, is a Sea-Term, signifying to fall in with the Land. Thus when a Ship out at Sea expects to see Land in a little time, and it so happens that she doth, they say they have made a good *Land-fall*.

LAND-GABLE, an antient Term for a Tax or Rent issuing out of Land.

LAND-LOCKED. A Ship is said to ride *Land-locked*, when she is at Anchor in such a Place where there is no Point open to the Sea, so that she is safe from the Violence of Winds and Tides.

LANDSKIP, or *Landscape*, the View or Prospect of a Country, extended as far as the Eye will carry. *Landships* in Painting, are Pieces representing some Champaign or Rural Subject, as Hills, Vales, Rivers, Country Houses, &c. where human Figures are only introduced as Accidents or Circumstances. This is esteemed one of the lowest Branches of Painting.

LANGREL SHOT, is a sort of Shot used at Sea; it is made of two Bars of Iron, with a Joint in the Middle, by which means it can be shortened, and so put the better into the Gun; and at each End there is an half Bullet either of Lead or Iron. When it is discharged, it flies out at length, and is of use to cut the Enemies Rigging, &c.

LANGUAGE, a Set of Words which any People have agreed upon, in order to communicate their Thoughts to each other. The first Principles of all *Languages*, *F. Buffier* observes, may be reduced to Expressions signifying, 1<sup>st</sup>, The Subject spoke of. 2<sup>dly</sup>, The Thing affirmed of it. 3<sup>dly</sup>, The Circumstances of the one and the other: But as each *Language* has its particular Ways of expressing each of these; *Languages* are only to be looked on as an Assemblage of Expressions, which Chance or Caprice has established among a certain People; just as we look on the Mode of Dressing, &c. 'Tis Use and Custom is the Rule of a *Language*, and these hold their Empire independent of Reason or any other Cause: Nor has Reason any thing to do in *Language*, unless to study or teach it, such as it is: Here then commences Grammar; a just Plan of which, supposes a *Language* already introduced by Use, and without pretending to alter or amend a tittle, only furnishes Reflections, call'd Rules, to which the Manners of speaking used in that *Language* can be reduced; which Assemblage of Reflections is what we call the Grammar of that *Language*. This Remark may obviate an Abuse introduced among Grammarians, who are ever crying out, *Use is in this Point opposite to Grammar*, or the *Language here frees itself from the Rules of Grammar*, &c.

'Tis Chance then to which we owe Usage and Usage that makes the Rules and Measures of a *Language*. Use indeed is somewhat dubious, and may be divided into good and bad: If 'tis ask'd wherein the difference between these lies; 'tis in this, that the one is better established or authorized than the other: And if it be ask'd wherein that Difference of Authority consists, 'tis answer'd, that in dead *Languages*, that which makes the good Use is the Writings of the best Authors in that *Language*: And if it be further questioned, which are the best; those are allow'd such who wrote when that State was in its greatest Glory. Thus the Age of *Augustus* being the most distinguished by great Men who then flourish'd, we call that good *Latin* which is conformable to the Manners of Speaking used by Authors who wrote fifty Years before, and fifty after the Reign of that Emperor. As to the living *Languages*, their good Use, or their Mode, is derived from the Expressions used by the most eminent Persons among that People; whether as to Quality and Authority, or as to Learning and the Reputation of writing well. With this View *M. Vaugelas* defines the Use of a *Language*, The Manner of Speaking used by the best Part of the Court, conformably to the Manner of Writing among the best Part of the Authors of the Time. But this Definition, how judicious soever, may occasion infinite doubt; for which is to be deem'd the best Part of the Court and of the Writers? Each Party doubtless thinks itself the best. *F. Buffier*, therefore, very justly, instead of the best Part substitutes the greatest Part, which brings the Matter to a Certainty; the most numerous



rous Part being something fix'd and palpable, whereas the most sound Part may be insensible or arbitrary. See Grammar.

There is found a constant Resemblance between the Genius or Natural Complexion of each People and the Language they speak. Thus the *Greeks*, a polite but voluptuous People, had a Language perfectly suitable, full of Delicacy and Sweetness. The *Romans*, who seemed only born to command, had a Language noble, nervous, and august; and their Descendants, the *Italians*, are sunk into Softness and Effeminacy, which is as visible in their Language as their Manners. The Language of the *Spaniards* is full of that Gravity and Haughtiness of Air which make the distinguishing Character of the People. The *French*, who have a World of Vivacity, have a Language that runs extremely brisk and lively. And the *English*, who are naturally blunt, thoughtful, and of few Words, have a Language exceedingly short, concise, and sententious.

The Diversity of Languages is generally allowed to have took its Rise from the Confusion of *Babel*, both by *Jews*, *Christians*, and *Mahometans*: But the Manner in which this Diversity was effected, is still in dispute among the Learned. The Question is, Whether God only expunged the Remembrance of the Signification of Terms in those who built the Tower; or whether he immediately inspired them with new Words. *Scaliger* holds that they only forgot the Meaning of the Words, and named one thing instead of another; tho' all indifferently spoke the *Hebrew* Tongue. Nor does *Casaubon* allow that they immediately spoke different Languages: the Confusion of Tongues he thinks might be very well effected, without introducing a Multiplicity of Languages. See *Ziegra de Confusione Linguarum Babylonica ad Genes. XI.*

As to the Point of Antiquity, that too has been extremely controverted. *Herodotus* tells us, that in the Dispute between the *Egyptians* and *Phrygians* about the Antiquity of their Languages, *Psammeticus* King of *Egypt*, ordered two Children to be brought up, with express Prohibition not to have one Word pronounced before them, but to leave Nature to speak of her self; and the first Word they spoke happen'd to be *Beccos*, which in the *Phrygian* Language signifies Bread. The *Egyptians* however were not convinced with this Proof. The *Arabs* dispute the Point of Antiquity with the *Hebrews*: But the *Jews*, jealous even to Excess of the Honour of their Nation, positively insist on it, that the *Hebrew* Tongue, such as it is found in the Holy Scriptures, is the primitive Language, and that spoken by the first Man. Others maintain that the Language spoken by *Adam* is lost, and that the *Hebrew*, *Chaldee*, and *Arabic*, are only Dialects of that original Tongue. So far are they from giving the Priority to the *Hebrew*, that they maintain *Abraham* spoke *Chaldee* before he pass'd the *Euphrates*; and that he first learn'd the *Hebrew* in the Land of *Canaan*: so that this was not a special Language consecrated to the People of God, but was originally the Language of the *Canaanites*.

*M. le Clerc* is of Opinion the *Hebrew* is far inferior to the *Greek*, both in Copiousness, Elegancy and Perspicuity; it is dry and destitute of Ornaments, insomuch that wanting Expressions to vary the Phrase, the same Periods are perpetually returning. The *Rabbins* say 'tis so pure and chaste, that it has no proper Names for the Parts of Generation, nor for those by which the Excrements are discharged. The *Arabic* is held the most copious of all Languages; it has 300 different Words to express a Lion, and no less than 1200 for a Sword.

Languages are divided into matriculate or original Languages, as the *Hebrew* and *Arabic* in the East, the *Teutonic* and *Sclavonic* in the West; and into secondary or derived Languages, which are those formed out of a Mixture of several Tongues, as *Latin*, *French*, &c. *Kircher* will have the *Coptic* a Mother Tongue, independent of all others; and *Du Jobn* maintains the *Gothic* to be primitive, and the Mother of all the *Teutonic* Tongues; that is, of all those spoke in the North. Some add the *Basque* and *Low Briton* to the Number of Mother Tongues, imagining them to have been those of the ancient *Celtic* or *Gauls*.

The learned or dead Languages are those which only subsist in Books, which must be learned by the Rules of Grammar, as the *Greek*, *Hebrew*, *Syriac*, and *Chaldee*. See these under *Hebrew*, *Greek*, &c. *Raimond Lully* solicited the Establishment of the Study of these Languages a long time in the 13th and 14th Centuries. At length, in the Year 1312, *Pope Clement* and the Council of *Vienna*, appointed that in the Court of *Rome*, and in the Universities of *Paris*, *Oxford*, *Boulogne*, and *Salamanca*, there should be instituted Professors of each, who should have Salaries from the respective Courts. The Monks however vigorously opposed the spreading of these Studies, and with so much Success, that *Erasmus* tells us in his Time, *Græce nasse suspectum Hebraice prope Hereticum*.

The living Languages are those still spoke in some Country or other, and which may be learn'd by Conversation. The most popular among these are the *French*, *Italian*, *Spanish*, and *English*; which see under their respective Names.

The *Spaniards* seem to place the Nobleness and Gravity of their Language, in the Number of Syllables; and the Swelling of Words; and speak less to make themselves understood, than to make themselves admired. Their Terms are big and sonorous, their Expressions haughty and boisterous, and Pomp and Ostentation run thro' all they say: their Language cannot paint a Thought to the Life; it always magnifies it, frequently distorts it; and does nothing if it do not exceed Nature. The *Italian* Tongue does not swell up Things to that Degree, but it adorns and embellishes them more; yet these Ornaments and Embellishments are not real Beauties. The *Italian* Expressions, thus rich and brilliant, are like those Faces cover'd with Patch and Paint, which make a fine Show; but that Finery, all Deceit. The *French* Language (as some of their Authors express themselves) is simple without Lowness, bold without Indecency, elegant and florid without Affectation, harmonious without Swelling, majestick without Pride, delicate without Softness, and strong without Roughness. As to the Points of Strength and Majesty, the *French* must give Way to the *English*, which in these, as well as in Copiousness, exceeds most of the living Languages; as far as it comes behind some of them in Smoothness and Delicacy. Of all the modern Languages, the *English* is allowed to be the closest and the most clear, the chastest and the most reserved in its Diction, the most judicious and severe in its Ornaments: Of all others it is the most honest, open, and undesigning; it won't bear double-meanings, nor can it palliate or hide Nonsense: bad Sense and good *English* being Things inconsistent. With all its Sublimity it is gay and pleasant on occasion; but its Gaiety is still moderated and restrained by good Sense; it hates excessive Ornaments, and for the greater Simplicity, would almost chuse to go naked: It never dresses more than Decorum and Necessity requires. The *Spanish* resembles those Rivers whose Waters are always swelling, and always muddy and turbulent; that never keep long within their Channel, but are ever overflowing, and their Overflowings ever noisy and precipitate. The *Italian* is like those pleasing Rivulets that purl agreeably among the Stones, and glide in Meanders through Meadows full of Flowers. The *French* resembles one of those beautiful Streams that always run briskly, but at the same time smoothly and equally; without much Noise or much Depth. The *English*, like the *Nile*, preserves a Majesty even in its Abundance; its Waters roll rapidly, notwithstanding their Depth; it never roars but when its Banks are too narrow, nor overflows without enriching the Soil. The *Latin* is the common Mother of the three former, but the Daughters have very different Genius's and Inclinations. The *Spanish*, a haughty Dame, that piques herself on her Quality, and loves Excess and Extravagancy in every thing. The *Italian*, a Coquette, full of fine Airs; always appearing dress'd, and taking all Occasions of shewing her Finery: to be admired, being all she aims at. The *French*, an easy Prude, that has her Share of Modesty and Discretion, but on occasion can lay them both aside. The *English* is of a more Masculine Temperament. 'Tis not only of a different Family from the others, but appears of a different Sex too: Its Virtues are those of a Man: indeed 'tis the Product of a colder Climate and a rougher People, and its Features may be somewhat coarser than those of its Neighbours; but its Faculties are more extensive, its Conduct more ingenuous, and its Views more noble. See *English*, *French*, &c.

*Ennius* and *Cecrops* are celebrated for their Knowledge of various Languages. *Mithridates* King of *Pontus* understood twenty two Tongues, which was the Number of different People over whom he commanded; and those Languages he knew so well, that he was able to harangue each of his People in their own Language. 'Twas a Saying of *Charles* the Vth, that so many Languages as a Man understands, so many times he is Man. *Sultan Soliman*'s Interpreter spoke perfectly well 17 different Languages. But among the Moderns none have been more remarkable in this Way than *Postellus*, who, besides a perfect Knowledge of all the dead Languages, was so well acquainted with the living, that 'tis said he could have made the Tour of the Globe without the Use of an Interpreter.

*Bibbinder* has written of the Analogy and Proportion of all Languages and Letters, *De ratione Communis Linguarum*, in 1518. *Gesner* of the difference of Languages in 1572. *Lazius* published an Introduction to the Learning of the politest Languages in a common Method, in 1548. *Megillier* a Scheme of 40 different Languages, and different Dia-



lects, Specimens of each whereof he gives in the Lord's Prayer in 1593. *De Reales*, in his Addition to the World of *Davini*, has published the *Pater-noster* in all the Languages spoke among Christians; and M. *Chamberlayne* has lately proposed to do the same in 100 Languages, a Specimen of which has been already published. *Alberia Gentilis* wrote of the Mixture of Languages, in 1603. And Father *Reinier's* Discourse on Etymologies, is a Work of the same Kind. In 1613, *Duret* published a Treasure of the History of Languages; and *Guichart* of the Etymological Harmony of Languages, in 1619. *Brerewood* has made curious Enquiries into the Difference of Languages and Religions.

Among the *Maltese*, the Word *Language* is used for Nation. The Order of Knights is divided into eight Languages, three whereof are for France, viz. the Language of *Provence*, of *Auvergne*, and of France; two for Spain, those of *Castile* and *Arragon*; the other three are the Languages of *Italy*, *England*, and *Germany*. Each of these Languages has its Chief, who presides in Assemblies of the Language to which he belongs.

LANGUED, a Term in Heraldry, applied to such Animals whose Tongue appears out of their Mouths, being of a Colour different from that of the Animal.

LANGUOR signifies a Faintness, which may arise from a Want or Decay of Spirits thro' Indigestion, or too much Exercise; or from an additional Weight of Fluids, from a Diminution of Secretion by the common Discharges.

LANIGEROUS, any thing that bears Wool. Hence *Lanigerous* Trees, among Herbalists, are those Trees that bear a woolly downy Substance, as the black, white, and trembling Poplars, Osiers, and Willows of all Sorts.

LANTHORN, an Utensil of transparent Matter, serving for the Preservation and Conveyance of Light, notwithstanding the Inconveniences of Wind or Weather. *Epistetus's* Lanthorn is said to have been sold for 3000 Drachms. Lanthorns are made of Glass, Horn, Paper, &c. That of *Diogenes* was held in great Veneration among the Antients; and that of *Judas* is still preserved in the Treasury of St. *Denys*, as a very curious Piece of Antiquity. Lanthorns were formerly made of the Horn of a wild Bull call'd *Urus*; which when cut into thin Laminæ, *Pliny* tells us was very transparent. A Dark Lanthorn, is a Lanthorn with only one Opening, or Light, which, too, may be closed up, when the Light is to be intirely hid, and may be presented to the Person one would see, without being perceiv'd one's self. The Antients had their Dark Lanthorns, but they differ'd from ours; they were covered with four Skins, one of each Side or Light, three whereof were black, and only the fourth transparent. *Cassaubon* who gives us the Description, took it from a Manuscript of *Julius Frontinus*. These were principally used in their Armies when they were to march privately off from their Enemies in the Night-time. The Word *Lanthorn* is derived from the Latin *laterna* of *lateo*, I am hidden, *eo quod lucem habeat interius clausam*, in regard the Light is hidden within, says *Isidore* and *Lambin*. But according to *Pezron*, *Laterna* comes from the Celtic *Letern*; and according to *Salmasius*, *Lanthorn* comes from *lato*, in regard it bears a Lamp or a Light.

In China they have a celebrated Feast call'd the Feast of Lanthorns, held on the 15th Day of the first Month: 'Tis so call'd from the infinite Number of Lanthorns hung out in the Houses and Streets; which, 'tis said, is not less than two hundred Millions: insomuch that it rather appears a Fit of Madness than of Feasting. On this Day are exposed Lanthorns of all Prices, whereof some are said to cost 2000 Crowns. Some of their Grandees retrench somewhat every day out of their Table, out of their Dress, Equipage, &c. to appear the more magnificent in Lanthorns. They are adorn'd with Gilding, Sculpture, Painting, Japanning, &c. and as to their Size, 'tis extravagant; some are from 25 to 30 Foot Diameter: they represent Halls and Chambers, and two or three such Machines together would make handsome Houses; so that in China they are able to eat, lodge, receive Visits, have Balls, and act Plays in a Lanthorn. To illumine them, they should have Bonfires; but as that would be inconvenient, they content themselves with lighting up in them an infinite Number of Torches or Lamps, which at a distance have a beautiful Effect. In these they exhibit various Kinds of Shews to divert the People. Besides these monstrous Lanthorns, there is an infinite Number of less: these usually consist of six Faces or Lights, each about 4 Feet high, and one and a half broad, framed in Wood finely gilt and adorned; over these they stretch a fine transparent Silk, curiously painted with Flowers, Trees, and sometimes Human Figures: the Painting is very extraordinary, and the Colours extremely bright; and when the Torches are lighted, they appear very beautiful and surprizing.

*Lanthorn* in Architecture, a kind of little Dome raised over a large one, or over the Roof of a Building, to give Light, and to serve for a Corona, or to finish the Building. The Word is also used for a square Cage of Carpentry, with Glass in it, placed over the Ridge of a Corridor, or a Gallery between two Rows of Shops, to illumine them, as that in the *Royal-Exchange*, London.

Magic Lanthorn, in Opticks, the Name of a Machine, which in the Dark represents various Images and Spectres on a Wall, or other white Surface, so odd and surprizing, that those who are not in the Secret, think them the Effect of Magic. See *Magic*.

LANUGO signifies a Down, or soft woolly Substance, which grows upon some Plants, which therefore are called lanuginous Plants.

LAPIDARY, an Artificer who cuts precious Stones. The Word is also applied to Merchants who trade in 'em, and Vertuoso's well vers'd in their Nature, Kind, &c. in which Sense, the present *Great Mogul* is said to be one of the greatest Lapidaries in the World.

The Art of cutting precious Stones is very antient; but like other Arts, its Original was very imperfect: The French have succeeded in it the best; and the Lapidaries of Paris, who have been a Corporation since the Year 1290, have carried it, especially cutting of Diamonds called Brillants, to its last Perfection. There are various Machines used in the cutting of precious Stones, according to the Quality of the Matter to be cut. The Diamond, which is extremely hard, is cut and form'd on a Wheel of soft Steel, turn'd by a kind of Mill, with Diamond Dust, temper'd in Oil of Olives; and this serves to polish 'em as well as to cut 'em. Oriental Rubies, Sapphires, and Topazes, are cut and form'd on a Copper Wheel, with Oil of Olives, and Diamond Dust: they are polish'd on another Copper Wheel, with Tripoli and Water. Rubies, Emeralds, Hyacinths, Amethysts, Grenats, Agats, and other Stones less hard, are cut on a Leaden Wheel, with Smalt and Water, and polished on a Tin Wheel with Tripoli. Turquois of the old and new Rock, Lapis, Girasol, and Opal, are cut and polish'd on a Wooden Wheel with Tripoli. See *Diamond*, *Ruby*, &c.

Lapidary Stile, is a Stile proper for Inscriptions. This is a kind of Medium between Prose and Verse; the jejune and the brilliant are here equally to be avoided. *Cicero* has prescribed the Rules of it; *Accedat oportet Oratio varia, vebemens, plena Spiritus. Omnium Sententiarum Gravitate, omnium Verborum ponderibus est utendum.* The Lapidary Stile, which was lost with the ancient Monuments, has been retriev'd at the Beginning of this Age, by Count *Emanuel Thesauro*: It is now used various Ways at the beginning of Books; and even Epistles Dedicatory are compos'd in it, whereof we have no Example among the Antients.

LAPIDESCENT, from *Lapis* a Stone, any thing which has a Property of turning Bodies into a stony Nature, as many Spring-Waters will do to Pieces of Wood, and other like Substances. See *Petrification*.

LAPIDIFICATION, in Chymistry; an Action by which any Substance is converted into Stone: This is done by dissolving a Metal, for instance, in a corrosive Spirit or Menstruum, and afterwards boiling that Dissolution into the Consistence of a Stone. Lapidification is practised in Metals, fixed Salts, and Salts of Plants. The Term is also used in making artificial Stones. See *Petrification*.

LAPIS CALAMINARIS. See *Calamine*.

LAPIS DE GOA. See *Goa-Stone*.

LAPIS INFERNALIS, a caustick Stone prepared various Ways; sometimes of strong Soap-Lees evaporated to a Dryness, and the Remainder kept in a Glass well stopp'd from the Air: sometimes it is made of Vitriol and Tartar, calcined Sal Armoniac, and Quick-Lime boil'd in Water to a strong Lixivium, then strain'd and evaporated till it is dry.

LAPIS LAZULI, a Mineral Stone of a blue Colour. *Pliny* and *Dioscorides* make it a Sand, *Agricola* a Mineral found in the Veins of the Earth; but the truth is, 'tis a mere Stone, call'd by way of Excellence *Lapis*, or *Lapis Lazuli*. When perfect, 'tis studded with little Specks or Stars of Gold; for which Reason, *Mefue* calls it *Lapis Stellatus*: and to be good, should be able to resist Fire and Smoak, and to come out of 'em with new Lustre. It is found in Mines of Gold, Silver, and Copper, as also in Pits of Marble; which last is that generally in Use. Naturalists distinguish three Kinds of *Lapis*. The first call'd old Rock, which is pure, smooth, a fine blue, with beautiful yellow Streaks like Veins of Gold, which yet are frequently no more than Veins of Pyrites. The second call'd the new Rock, is studded with common Stones; its Colour is weaker, and its Price lower: these two Kinds are brought from *Persia* and *Siam*; the third Kind is brought from the Mountains of *Auvergne*. This is mix'd with the common Rock whence it is dug, it is of a pale blue, and is sprinkled with greenish Spots, with Veins of



of Pyrites. This when sufficiently charged with Spots of Green, is sold for the *Armenian Stone*. The *Lapis* is of some Use in Medicine; they prepare it by calcining and washing it several times; which done, it makes an Ingredient in the famous Confection of *Alkermes*. Sometimes, in spite of all its Lotions, it continues to be a Purgative, by reason of the Vitriolic Matter it contains.

**LAPIS MEDICAMENTOSUS**, the medicinal Stone, a Composition of green and white Vitriol, Alum, Anatron of *Sandiver*, common Salt, and Salt of Tartar, melted over the Fire, and stirr'd till they thicken; then mix'd with Powder of Venice, Ceruss, and *Armenian Bole*, stirring the whole till it grows hard. This is said to fatten the Teeth, preserve the Gums, heal and dry up Ulcers and Wounds, and is used in Injections, and in Compositions for sore Eyes.

**LAPSE**, a Slip or Omission of a Patron to present a Clerk to a Benefice within six Months of its being void; in which Case the Benefice is said to be in *Lapse*, or lapsed.

**LAQUEARIUS**, the Name of a Kind of Athleta among the Antients: In one Hand he held a kind of Snare, wherewith to embarrass and intangle his Antagonist, and in the other a Poniard to stab him. The Word comes from the Latin *Laqueus*.

**LAQUEUS** in Chirurgery is a Band so tied, that if it be attracted, or pressed with Weight, it shuts up close. Its Use is to extend broken or disjointed Bones, to keep them in their Places, when they are set, and to bind the Parts close together.

**LAR-BOARD** is the Left-hand Side of a Ship when you stand with your Face to the Head.

**LARCENY**, in Law, is a Theft of personal Goods or Chattels in the Owner's absence. In respect of the Thing stolen, it is either great or small; great *Larceny* is when the Things stolen, tho' severally, exceed the Value of 12d. Petty *Larceny* is when the Goods stolen exceed not that Value. The stealing of a Horse or a Cow, was formerly reckoned petty *Larceny*. The Civilians define *Larceny*, a fraudulent Subtraction of another Man's Property, with design to appropriate it without the Owner's Leave. When it is done by Force, it is called a Robbery. By the *Roman Law*, the Penalty of simple and secret *Larceny*, was the returning it twofold; and of manifest *Larceny* fourfold: Manifest *Larceny* was where the Criminal was taken in the Fact; simple, where he was not. The *Lacedemonians* never punished *Larceny*, provided the Person were not caught in the Fact; but on the contrary, it was applauded as a Mark of Dexterity and Address: The *Circassians* are said to honour it at this day; insomuch that at their publick Feasts their Youth are not suffered to drink, if they have not performed something remarkable in that Way. *Solinus* tells us, that in *Sardinia* there was a Fountain that had the Virtue of discovering a Person that had committed *Larceny*. The Word comes from the French *Larcin*, and that from the Latin *Latrocinium*.

**LARENTINALIA**, the Name of a Feast among the Romans. Some take this for a Feast of the *Lares*, but 'tis no wise probable, that the 22d Day of December being consecrated to them under the Name of *Compitales*, the 23d should also be devoted to them under a new Name. *Manutius*, *Goltzius*, *Rosinus*, and others take *Larentinalia* to be the same with *Laurentinalia*, which see.

**LARES**, among the Antients, were a kind of Domestic Genii, or Divinities, worship'd in Houses, and esteem'd the Guardians and Protectors of Families; supposed to reside in the Chimney-Corner. *Plutarch* distinguishes between Good and Evil *Lares*, as he had before done between Good and Evil Genii. There were some public, others private. *Apuleius* tells us the Domestic *Lares* were no more than the Souls of departed Persons, who had lived well, and discharged the Duties of their Station; whereas those who had done otherwise, were Vagabonds, wandering about and frightening People, and call'd *Laræ* and *Lemures*. The first were also call'd *Penates*, and were worship'd under the figures of little Marmosets, or Images of Wax, Silver, or Earthen Ware. The Pantheons, or Images representing several Gods at once, were also call'd *Lares*. *Harpoocrates* had one of these. *Varro* and *Macrobius* say the *Lares* were the Children of *Mania*. *Ovid* makes them the Children of *Mercury* and the Naid *Lava*, whom *Laetantius* and *Ausonius* call *Larunda*. The Temple of the *Lares* was in the eighth Region of Rome. *T. Tatius* King of the *Sabins* was the first who built a Temple to the *Lares*. The Chimney and Fire-place in the House were particularly consecrated to 'em. The *Lares* were also genial Gods, and were supposed to take care of Children from their birth. 'Tis for this reason, that when *Macrobius* tells us the *Egyptians* had four Gods who presided over the Births of Children, viz. the *Genius*, *Fortune*, *Love* and *Necessity*, call'd *Prestites*; some interpret him as if he had said the *Egyptians* had

*Lares*: but there was a world of difference between the *Lares* of the Romans and the *Prestites* of the *Egyptians*.

The public *Lares* were also call'd *Compitales*, from *Compitum* a Cross-Way, and *Viales* from *Via* a Way of public Road; as being placed at the Meetings of Roads and in the High-ways, and esteem'd the Patrons and Protectors of Travellers. Their private *Lares* took care of particular Houses and Families: These they also call'd *Prestites* from *presto*,

*Quod præstant oculis omnia tuta suis.* Ovid. Fast.

They gave the name *Urbani*, i. e. *Lares* of Cities, to those who had Cities under their Care; and *Hostilii*, to those who were to keep their Enemies off. There were also *Lares* of the Country, called *Rurales*, as appears by several Antique Inscriptions.

The Antients differ extremely about the Origin of the *Lares*: *Apuleius* assures us they were the Posterity of the *Lemures*. *Nigidius*, according to *Arnobius*, made 'em sometimes the Guardians and Protectors of Houses, and sometimes the same with the *Curetes* of *Samothracia*, which the *Greeks* call *Idean Daætyles*, and whereof we have made mention under the words *Curetes* and *Daætyle*. Nor was *Varro* more consistent in his Opinion of these Gods; sometimes making them the *Manes* of Heroes, and sometimes Gods of the Air.

*Tertullian* tells us, the Custom of worshipping the *Lares* arose from this, that they antiently interred their Dead in their Houses, whence the credulous People took occasion to imagine their Souls continued there also, and proceeded to pay 'em divine Honours. To this it may be added, that the Custom being afterwards introduced of burying in the Highways, hence they might take occasion to regard 'em as Gods of the Highways. The Victim offered to the *Lares* in the public Sacrifices, was a Hog: In private they offered 'em Wine, Incense, a Crown of Wool, and a little of what was left at the Table. They crown'd them with Flowers, particularly the Violet, Myrtle, and Rosemary. Their Symbol was a Dog, which was usually represented by their side, on account of its Fidelity and the Service it does to Man, in watching his House. They were also represented as clothed in a Dog's Skin. See *Penates*. On the *Lares*, see also *Arnobius*, *Laetantius*, *Augustin de Civit. Natalis Comes*, *Lambin on Plaut. Aulul.* and on *Hor. Casaubon on Sueton. &c.*

**LARGE**, a Sea-Term. See *Veering*.

**LARMIER**, in Architecture, a flat square massive Member of the Cornice, between the Cymatium and Ovalo; so called from its Use, which is to disperse the Water, and to cause it to fall at a distance from the Wall drop by drop, or as it were by Tears, *Larme* in French signifying a Tear. The *Larmier* is also call'd *Corona*: See *Entablature* and *Corona*.

**LARYNGOTOMIA**, a Chirurgical Operation, or an Incision in the *Trachea* or Wind-pipe between two of its *Annulli* or Rings, in order to give passage for the Breath, when there is danger of Suffocation, from an Inflammation of the Larynx, &c. Dr. *Musgrave* observes, that in all Medicine there is not one Method that works so great a Change, for the better, in so short a time. However, it is seldom practis'd, in regard that Gap which appears on the cutting a Throat, (the divided Parts being then drawn towards their more fixed Ends) together with the great Efflux of Blood when the Jugulars and Carotid Arteries are also wounded, create in most Men a Dread of the Operation, and make many believe all Wounds of the *Trachea* mortal. The same Author makes no scruple however to say it ought to be practis'd in Quinzies, and other Dangers of Suffocation from Causes of a like nature with 'em; from an extraordinary Cure which he himself had wrought in this way. The word is derived from the Greek *λαρυγξ* and *τομή*, *seco*. This is the same with *Bronchotomy*. See *Bronchotomy*.

**LARYNX**, in Anatomy, is the upper Part, or Head of the *Trachea*, lying below the Root of the Tongue, and before the Pharynx. It is one of the Organs of Respiration, and the principal Instrument of Voice. Its Body is almost wholly cartilaginous, and it is to be constantly open to give room for the Air to pass and repass. Its Figure is circular, tho' it jets out a little before, and is a little flatted behind, lest it should incommode the Oesophagus whereon it is placed. The *Larynx* is of different Diameters, according to the different Ages; in young People 'tis narrow, whence their Voice comes to be acute; in those more advanced in Years, 'tis more ample, which occasions their Voice to be stronger and deeper. In Men 'tis bigger than in Women, for which reason Mens Voice is more grave than that of Women. It appears the less in Women, in regard the Glands, situate at the bottom of the *Larynx*, are bigger in Women than in Men. The *Larynx* moves at the time of Deglutition; when the Oesophagus is lowered for the Reception



Reception of the Food, the *Larynx* raises itself to compress it, and facilitate its Descent.

There are five different kinds of Parts belonging to the *Larynx*, viz. Cartilages, Muscles, Membranes, Nerves, and Glands. Its Cartilages are the Thyroides, Cricoides, Arytænoides, Glottis, and Epiglottis, by means of which it can easily dilate and contract, shut and open itself. These form the whole Body of the *Larynx*, and grow dry and harden, in proportion as the Person grows old, whence the *Larynx* sometimes appears as if it were bony. The biggest of these is the Thyroides or Scutiformis, this guards the Forepart, and has its Name from some supposed Resemblance it bears to a Shield. It is of a Concavo-convex square figure, the hollow part being inward, and the gibbous outward, having a little Prominence in the middle, called *Pomum Adami*, as if some of the forbidden Fruit had stuck in Adam's Throat, and occasioned that Swelling. The second is called *Cricoides*, or *Annularis*, from its Resemblance to a Ring which the *Turks* put on their Thumb for the drawing of their Bows. The forepart of this is very narrow, coming under the other Cartilage, but behind it is broad, thick, and strong, being as it were the Basis of all the others. The third and fourth are called *Arytænoides*, or *Guttales*, from the Figure of an Ewer, which these two together somewhat resemble. At the Junction of these two there is a little Cleft, or Chink, in form of a little Tongue, and for that reason called *Glottis*, or *Lingula*. Through this Chink the Air descends into the Lungs, and the pituitous Matter ejected by coughing in Catarrhs is let out. It serves also for modulating the Voice, and is imitated in Flutes and the Pipes of Organs. Over the Glottis lies a fifth Cartilage called the Epiglottis, which is very thin and soft, and in Non-adults almost membranous, concave on the under Side, and convex on the upper: It defends the Entrance of the *Larynx*, and hinders the Liquids which in drinking slip over it into the Oesophagus, from falling into the Trachea. The *Larynx* has seven Pair of Muscles, which serve to move its several Cartilages, and to contract or dilate them at pleasure; two Pair of them are common, the other five proper: the proper are those which have both their Origination and Insertion into the *Larynx*, the common have only their Insertion there. Of the former Kind are the Crycothyroides, which moves the scutiform Cartilage; the Crico-arytænoides Posticum, which serves, by its Contraction, to draw the Arytænoides Cartilage, and to open the Rima. The third is the Arytænoides; this serves to bring the two Cartilages of that Name together, and to shut the Rima. The fourth is the Crico-arytænoides Laterale; and the fifth the Thyreo-arytænoides, which shuts the *Larynx*. The common Muscles are the Sternothyroides, which serve to draw down the Thyroide Cartilage, and the Hyothyroides which lift up that Cartilage. The *Larynx* has but two Membranes, the one external, which is a Continuation of that which covers the Trachea; and the other internal, which is the same that lines the whole Mouth: It receives two Branches of Nerves from the Recurrents, and it is moistened by four large Glands, two situate above called Tonsils, and two underneath call'd Thyroides.

The *Larynx* is of very considerable Use, not only in forming and modulating the Voice, by the different Apertures of its Rima or Chink, but also in compressing the Lungs in a greater or less Degree by the Air: For if the internal Diameter of the *Larynx* had been equal to that of the Trachea, the Lungs could have undergone little or no Compression at all; nor, consequently, without the *Larynx* could we have reaped any Advantage from Breathing, in regard the Air would not have resisted that Force wherewith it is driven out in Expiration, nor consequently could the Compression have been made in the Lungs, which is found necessary for the Commixtion of the Globules of the Blood, and the mixing of the two Fluids, Air and Blood, together. For the Action of the *Larynx* in Sound, see *Glottis* and *Sound*; see also *Epiglottis*, *Trachea*, &c.

LASH, the Sea-Word for binding up to the Ship's side Muskets, Butts of Water or Beer, or Pieces of Timber to make spare Top-Masts. When any thing is thus fasten'd to the Ship, it is called *Lashing*. But the *Lashers* are properly those Ropes only, which bind fast the Tackles, and the Breeches of the Ordnance, when they are haled, or made fast within board.

LASKING, a Sea-Term. See *Peering*.

LASSITUDE, among Physicians, expresses that Weakness or Heaviness of Members that proceeds from a distempered State of Body, and not from Exercise; either from an Increase of Bulk, from a Diminution of proper Evacuation, or from too great a Consumption of that Fluid which is necessary to maintain the Force and Spring of the Solids, as in Fevers and Convulsions; or from a vitiated Secretion of that Juice, whereby the Fibres are

not supplied either in due Quantity or Quality. The Remedy in the first Case is Evacuation, in the latter proper Diet, or such Alterative Medicines as influence such a Secretion.

LAST, or *Left*, in general signifies the Burden, or Load of a Ship. It is also used for a certain Weight and Measure, which is various in various Countries; tho in the general, the *Last* is estimated at 4000 *lib.* weight. A *Last* of Cod-Fish, White Herrings, Meal, and Ashes for Soap, is 12 Barrels for each: Of Corn or Rape-Seed 10 Quarters: Of Gunpowder 24 Barrels, or 2400 *lib.* weight: Of Red Herrings 20 Cades: Of Hides 12 Dozen: Of Leather 20 Dickers: Of Pitch or Tar 14 Barrels: Of Wool 12 Sacks: Of Stock-fish 1000: Of Flax or Feathers 1700 *lib.* weight.

LASTAGE, or *Leftage*, according to *Rastal*, is a Duty exacted in some Fairs and Markets to carry things bought where one will. *Lastage*, says another Author, is properly that Custom, which is paid for Wares sold by the *Last*. In a Law of R. I. the second *Lastage* is taken for the Balance or Lading of a Ship. Lastly, *Lastage* is sometimes used for Garbage, Rubbish, or such Filth.

LAST HEIR, is he to whom Lands come by Escheat for want of lawful Heirs; which in many Cases is the Lord whereof they are held, but in others the King.

LATERAL EQUATION, in Algebra, an Equation having only one Root; whereas a Quadratick hath two, and a Cubick 3 Roots, &c. And such Equations can be determined and constructed by the Intersection of two Right Lines, which is a Composition of  $1 + 1 = 2$ . But a Quadratick cannot be determined or constructed, without a Strait Line and a Circle cutting each other.

LATERAN, was originally the proper Name of a Man, whence it descended to an antient Palace in Rome, and to the Buildings since erected in its place: Particularly to a Church called *St. John of the Lateran*, which is the principal See of the Popedom.

Councils of the *Lateran* are those held in the Basilique of the *Lateran*: Of these there have been five, held in 1123, 1139, 1179, 1215, and 1513.

Canon Regular of the Congregation of the *Lateran*, is a Congregation of Regular Canons, whereof that Church is the principal place. 'Tis pretended, there has been an Uninterrupted Succession of Clerks, living in common, from the Time of the Apostles, and that a number of these were establish'd in the *Lateran* in the Time of *Constantine*. But the Canons were not introduced till the Time of *Leo I.* and these held the Church 800 Years, till the Reign of *Boniface*, who took it from 'em, and placed Secular Canons in their room, 150 Years after, the Regulars were reinstated.

A LATERE, a *Latin* Term used for the Qualification of Cardinals whom the Pope sends as Legates into foreign Courts, who are called Cardinals a *latere*, as being his Holiness's Counsellors in ordinary and Assistants. See *Legate*. The Guards of Princes were heretofore called *Laterones*, because always attending at their Sides, a *latere*. *Du Cange*, in his Glossary, says there were antiently Counts a *latere*, and Monitors a *latere*.

LATH, in Building, long, thin, narrow Slips of Wood used in Tyling and Walling. These are divided into three kinds, with regard to the different Woods they are made of, viz. Heart of Oak, Sap-Laths and Deal-Laths: the two last used only for Ceiling and Partitioning, and the first only for Tyling. Again, *Laths* are distinguish'd into three kinds more, with regard to their Length, viz. into 5 foot, 4 foot, and 3 foot *Laths*; tho the Statute allows but of two lengths, viz. those of 5 foot and of 3, each of which are to be an inch and half in breadth, and half an inch in thickness. These are what *Vitruvius* calls *Ambrices*.

LATHE, or *Leathe*, a very useful Engine for the turning of Wood, Ivory, Metals, and other Materials. The Invention of the *Lathe* is very antient. *Diodorus Siculus* says, the first who used it was a Nephew of *Dedalus*, named *Talus*. *Pliny* ascribes it to *Theodore of Samos*, and mentions one *Tbericles*, who render'd himself very famous by his Dexterity in managing the *Lathe*.

With this Instrument the Antients turn'd all kinds of Vases, many whereof they enrich'd with Figures and Ornaments in Basso Relievo. Thus *Virgil*,

*Lenta quibus Torno facili superaddita Vitis.*

The Greek and Latin Authors make frequent mention of the *Lathe*, and *Cicero* calls the Workmen who used it *Lathearii*. 'Twas a Proverb among the Antients, to say a thing was formed in the *Lathe*, to express its Delicacy and Justness.

The *Lathe* is composed of two wooden Cheeks or Sides, parallel to the Horizon, having a Groove or Opening between; perpendicular to these, are two other Pieces called Puppets, made to slide between the Cheeks, and to be fix'd down at any Point at pleasure. These have two Points,



Points, between which the Piece to be turned is sustained; the Piece is turn'd round, backwards and forwards, by means of a String put round it, and fastened above to the End of a pliable Pole, and underneath to a Treadle or Board moved with the Foot. There is also a Rest which bears up the Tool, and keeps it steady.

As 'tis the Use and Application of this Instrument that makes the greatest Part of the Art of Turning, we refer the particular Description thereof, as well as the Manner of applying it in various Works, to that Head. See *Turning*.

LATHE, in our Law. See *Lethe*.

LATIAR, a Feast, or Ceremony instituted by *Tarquinius Superbus*, in honour of *Jupiter Latialis*. The Founder only appointed one Day for this Feast; the first Consuls added another to it upon concluding the Peace with the *Latins*; a third was added after the People who had retired to the *Mons Sacer* were returned to Rome; and a fourth after appeasing the Sedition raised on occasion of the Consulate, in which the People would needs have a Share. These four Days were called the *Latin Ferie*, and every thing done during the Course of these *Ferie*, as Feasts, Sacrifices, Offerings, &c. were called *Latiaries*. *Tarquin* having made a Treaty of Alliance with the *Latins*, proposed, in order for perpetuating it, to erect a common Temple, where all the Allies, the *Romans*, *Latins*, *Hernici*, *Volsci*, &c. should assemble themselves every Year, hold a kind of Fair, exchange Merchandizes, feast, sacrifice, and make merry together. Such was the Institution of the *Latiar*.

LATICLAVUS, a Garment of Distinction and Dignity among the *Romans*. It was a kind of Tunic, or long Coat faced with one or two Slips of Purple applied lengthwise to the two Sides of the Tunic. In the *Laticlavus* these Slips were pretty broad, and in the *Angusticlavus* narrower; though there is nothing about which the Learned differ more, than the Difference between those two Habits. There were Buttons set on the *Laticlavus*, which appear'd like the Heads of large Nails; whence some think it took its Name. The Senators, Prætors, and the chief Magistrates of Colonies and municipal Cities, had a Right to wear it. The Robe called *Prætexta*, was wore over the *Laticlavus*. When the Prætor pronounced Sentence of Death, he put off the *Prætexta*, but retained the *Laticlavus*.

LATINE, a dead Language first spoken in *Latium*; and afterwards at Rome, and still used in the *Romish Church*, and among the Men of Learning. Some Authors rank the *Latin* among the Number of original Languages, but by Mistake: It is formed principally from the *Greek*, and particularly the *Æolic* Dialect of that Tongue; tho' it has a great Number of Words which it borrow'd from the Languages of the *Etruri*, *Osce*, and other antient People of *Italy*; and their foreign Commerce and Wars, in course of Time, added a great many more. The *Latin* is a strong, firm Language, perfectly suitable to the Character of the People who spoke it. We have, still, Works of every kind, admirably well written in *Latin*, tho' there are an infinite Number lost. The *Latin* is more figurative than the *English*, less pliant than the *French*, less copious than the *Greek*, less pompous than the *Spanish*, less delicate than the *Italian*, but closer and more nervous than any of them. For a while, the *Latin* Tongue was confined almost wholly within the Walls of Rome; nor would the *Romans* allow the common Use of it to their Neighbours, or to the Nations they subdued. *Cicero* observed that even in his Time *Greek* was used almost among every People, but the *Latin* only confined to a very narrow Compass; *Græca leguntur in omnibus fere Gentibus, Latina suis finibus exiguis sane continentur*. By degrees they were brought to grant the Use of it as a Favour, and in time became sensible of the Necessity there was of its being generally understood for the Convenience of Commerce; and accordingly used their utmost Endeavours that all the Nations subject to their Empire, should be united by some common Language; so that at length they imposed that as a Law, which they had before granted as a Favour. After the Translation of the Seat of the Empire, from Rome to *Constantinople*, the Emperors of the East, being always desirous of retaining the Titles of *Roman* Emperors, appointed the *Latin* to be still retained in Use both in their Rescripts and Edicts, as appears by the Constitution of the Eastern Emperors collected in the *Theodosian Code*: But at length the Emperors neglecting the Empire of the West, abandon'd all Care of the *Latin* Tongue, and allowed their Judges to pass Sentence in *Greek*; and accordingly we find the Emperor *Justinian's* Novels composed in *Greek*. *Charlemagne* coming to the Empire of the West, appointed the Proceedings in sovereign Courts to be in *Latin*; and the Notaries were to draw their Acts and Instruments in the same Tongue: This Practice continued a long time through a great Part

of Europe, but at length it gave way, and the *French* took place of the *Latin*, not only in France, but in some measure in England too: and the Reason given for it, was, that abundance of Difficulties arose about the understanding of *Latin* Terms. The *Latin* however was prodigiously degenerated and corrupted e'er it came to be laid aside. The Incurfions of the *Goths* and *Vandals* into *Italy*, brought an Inundation of foreign Words and Phrases into it; inasmuch that *Valla* and *Naudæus* call *Boetius* the last *Latin* Author. However, that was not all, but when it once got into the Courts of Justice, it was still worse handled; till at last being introduced amongst the Monks, and become the common Language of Missals and Breviaries, it was debauched to that degree, that it was almost become scandalous to use it. In this Condition it was found at the time of the Reformation; when *Vives*, *Erasmus*, &c. began to open the way for its Recovery: since which time, Monkish Latinity has been declining, and all Endeavours have been used to retrieve the pure Language of the *Augustan* Age. 'Twas said of Cardinal *Bembo*, that he would never read the Breviary, for fear of corrupting his fine *Latin*.

LATIN CHURCH, is a Term used for the *Romish Church*, by way of Opposition to the *Greek Church*.

LATISSIMUS DORSI, in Anatomy, is a Muscle called so from its Shape, covering almost the whole Back. It hath a thin broad tendinous Beginning, which comes from the posterior part of the Spine of the Ilium, from the superior Spines of the *Os Sacrum*, from all the Spines of the Vertebrae of the Loins, and from the seven lower of the Thorax; it passeth by the inferior Angle of the Scapula, from which some of its fleshy Fibres sometimes arise, and is inserted with the *Teres major*, by a strong and broad Tendon, with which it pulls the Arm downwards: It is also called *Ani Scalptor*, because it carries the Arm to the Anus.

LATITAT, a Writ, whereby all Men in personal Actions are called originally to the *King's-Bench*; and it hath this Name, as supposing the Defendant does lurk, and lie hid, and therefore being served with this Writ, he must put in Security for his Appearance at the Day: by this Writ, a Man being brought in, is committed to the Marshal of the *King's-Bench*, in whose Custody when he is, he may be sued upon an Action in that Court.

LATITUDE, in Geography, is the Distance between the Equator and Zenith, or vertical Point of any Place, reckoned on the Degrees of the Meridian, or the Secondaries of the Equator. Latitude of a Place is its Distance from the Equator; and is either Northern or Southern, according as the Place whose Latitude is spoke of, is on this or that Side of the Equator. Thus *London* is said to be in 52 Degrees, thirty Minutes, Northern Latitude.

Circles parallel to the Equator, are called Circles of Latitude, because they shew the Latitudes of Places by their Intersection with the Meridian. If through the Poles of the World we conceive innumerable great Circles drawn, these are called Secondaries of the Equator; and by their help the Position of every Point, either on Earth, or in the Heavens, with regard to the Equinoctial (that is, the Latitude of any Point) is determined. One of these Secondaries passing thro' any Place in the Earth's Surface, is called the Meridian of that Place, and on it the Latitude of that Place is measured.

The Latitude of a Place, and the Elevation of the Pole of that Place above the Horizon, are Terms used indifferently for each other, in regard the Latitude and the Elevation of the Pole are always equal, (as will appear by Fig. 4. *Plate Geography*) where the Circle *H Z Q* represents the Meridian, *HO* the Horizon, *Æ C Q* the Equator, *Z* the Zenith, and *P* the Pole. Here the Latitude of the Place, or its Distance from the Equator, is the Arch *ZÆ*, and the Elevation of the Pole, or its Distance from the Horizon, the Arch *PO*. Now the Arch *PÆ* between the Pole and the Equator, is a Quadrant of a Circle, and the Arch *ZO*, from the Zenith to the Horizon, is likewise a Quadrant. Therefore the two Arches *ZÆ* and *PO* must be equal; and taking away the Arch *ZP*, which is common to both, there will remain the Arch *ZÆ* equal to the Arch *PO*: that is, the Latitude of the Place equal to the Height of the Pole above the Horizon. Thence we have a Method of measuring the Circumference of the Earth, or of determining the Quantity of a Degree on its Surface: For by going directly Northward or Southward, till the Pole be elevated one Degree more or less, and then measuring that Interval accurately, we shall have the Number of Miles in a Degree of a great Circle of the Earth's Globe. See *Degree*.

The Knowledge of the Latitude of the Place, is of the utmost Consequence both in Geography, Navigation, and Astronomy: The Methods of determining it both at Sea and Land, are as follow.



We have already observed that the Altitude of the Pole is always equal to the *Latitude*, for which Reason the *Latitude* might be best found by observing the Pole's Height: But in regard the Pole is only a mathematical Point, and no ways to be observed by our Senses, its Height cannot be determined in the same manner as that of the Sun and Stars, &c. for which Reason another Manner has been contrived. In order to this, a Meridian Line is first drawn; the Method of doing which, see under the Word *Meridian*. Place your Quadrant on this Line, so as its Plane may be in the Plane of the Meridian; then take some Star near the Pole, *v. g.* the Pole Star, which never sets, and observe both its greatest and least Altitude (see *Quadrant*.) Let the greatest, *v. g.* be SO, (Fig. 5. *Plat. Geography*) and the least sO; the Half of which PS or P's, deducted from the greatest Altitude SO, or added to the least sO will give PO, the Altitude of the Pole above the Horizon, which is equal to the *Latitude* of the Place.

The *Latitude* may also be found, by having the Sun's, or a Star's Declination, and Meridian Altitude taken with a Quadrant or Astrolabe. The Method is this: Observe the Meridian Distance of the Sun from the Vertex or Zenith, which is always the Complement of his Meridian Altitude; and add to this the Sun's Declination, when the Sun and the Place are on the same Side the Equator, or subtract the Declination when they are on different Sides: the Sum in the former Case, and the Difference in the latter, will be the *Latitude* required. But when the Declination of the Sun is greater than the *Latitude* of the Place, which is known from the Sun's being nearer to the elevated Pole than the Vertex of the Place is, as it frequently happens in the Torrid Zone; then the Difference between the Sun's Declination, and his Zenith Distance, is the *Latitude* of the Place. If the Sun, or Star, have no Declination, but move in the Equinoctial that Day; then the Elevation of the Equator will be equal to his Meridian Altitude, and consequently his Meridian Altitude is the Complement of the *Latitude* to 90. This latter Method is best accommodated to the Uses of Navigation, as being practicable at Sea: but the former Method preferable at Land.

*Latitude*, in Astronomy, is the Distance of a Star or Planet from the Ecliptic, or from the Sun's Orbit, towards one of the Poles of the Zodiac. Through the Poles of the Ecliptic are supposed to pass an indefinite Number of great Circles, cutting the Ecliptic at Right Angles, called Circles of *Latitude*, or Secondaries of the Ecliptic: By means of which, every Star and Point of the Heavens is reduced to the Ecliptic, and has its Place in regard thereto determined. The *Latitude* of a Star is an Arch of one of these Secondaries, intercepted between that Star and the Point where it intersects the Ecliptic; in which it differs from the Declination, which is the Distance of a Star from the Equator towards one of the Poles of the World: So that the Geographical *Latitude* is the same thing with the Astronomical Declination, and the Astronomical *Latitude* a quite different thing. The Sun never has any *Latitude*, but the Planets have: For which reason, in the common Sphere the Zodiac has some Breadth. The Ancients only allow'd six Degrees on each Side the Ecliptic, but the Moderns have extended it to nine. According to the Observation of some of the modern Astronomers, the greatest *Latitude* of the Planets is not always the same; but *Venus* never exceeds 9 Degrees Northern *Latitude*, *Mercury* 5 Degrees, the *Moon* in her Quadrant with the *Sun* 5 Degrees; *Saturn* 2 Degrees, 50 Minutes; *Jupiter* 1 Degree, 50 Minutes; *Mars* 7 Degrees, 31 Minutes. When they have no *Latitude*, they are said to be in the Nodes of the Ecliptic, or in the Intersection of their Orbit with that of the Sun; and in this Situation it is that they eclipse, or are eclipsed by the Sun.

North Ascending *Latitude* is when the Moon proceeds from the Ascending Node towards her Northern Limit, or greatest Elongation; North Descending *Latitude*, when the Moon returns from her Northern Limit to the Ascending Node: South Descending *Latitude*, is when she proceeds from the Descending Node to her Southern Limit; South Ascending *Latitude*, is when she returns from her Southern Limit to her Ascending Node: And the same holds good of the other Planets. Heliocentric *Latitude* of a Planet, is its Distance from the Ecliptic, such as it is seen from the Sun; and this, when the Planet comes to the same Point of its Orbit, is always the same, and unchangeable. Geocentric *Latitude* of a Planet, is the Distance of the Planet from the Ecliptic, as it is seen from the Earth: And this, though the Planet be in the same Point of its Orbit, yet is not constantly the same, but alters according to the Position of the Earth, in respect to the Planet. See *Heliocentric* and *Geocentric*.

Dr. Halley has some Considerations in the *Philosophical Transactions*, which make it probable the *Latitudes* of some

of the principal fix'd Stars, particularly *Polaricum*, *Sirius*, and *Arcturus*, alter in time; whence it may be argued, the rest likewise alter, tho' the Variation may be less conspicuous in these, by reason they are supposed at a greater Distance from us. See *Star*.

LATITUDINARIAN, among the Divines, signifies a moderate Person, not over-closely tied to any religious Opinions, but thinks there is a Breadth or *Latitude* in the Road to Heaven.

LATOMIA properly signifies a Quarry, or Place whence Stones are dug. These were antiently used as Goals for Criminals. *Dionysius* had a Place of this kind dug in a Rock near *Syracuse*, where an infinite Number of People were shut up. *Cicero* reproaches *Verres* with imprisoning Roman Citizens in *Latomia's*; so that *Latomia* became a general Name for a Prison, and the Prisoners inclosed in 'em, were called *Laotomarii*. The Word comes from the Greek *λας* Stone, and *τέμνω* I cut.

LATRIA, in Theology, is a religious Worship due only to God. The *Romanists* say they honour God with the Worship of *Latria*, and the Saints with the Worship of *Dulia*. But these Terms, however distinct, are usually confounded. This Worship of *Latria*, besides its inner Characters, has its external Marks to distinguish it; the principal whereof is Sacrifice, which cannot be offered to any other but God himself, as being a solemn Acknowledgment or Recognition of the Sovereignty of God, and our Dependance on him. Mr. *Daille* seems to own that some of the Fathers of the fourth Century allowed the Distinction between *Latria* and *Dulia*. The Word comes from the Latin *latere*, to lie hid. See *Idolatry*.

LATUS RECTUM, a Term in Conicks, the same with *Parameter*; which see.

LATUS TRANSVERSUM of the Hyperbola, is a Right Line intercepted between the Vertices of the two opposite Sections; or that part of the common Axis which is between the Vertices of the upper and lower Cone, as the Line ED (in Fig. 5. *Plat. Conicks*) where also Dd and Ee may be the Parameters, or *Latus Rectum*s belonging to the two opposite Sections GLRO, and OEOR. To this *Latus Transversum* answers the longest Diameter in the Ellipsis; which *Apollonius* calls the transverse Axis or Diameter. *Latus Primarium* is a Right Line belonging to a Conick Section drawn thro' the Vertex of the Section of the Cone, and within it; as the Line EE or DD in the Figure above referr'd to.

LAVATORY, or LAVADERO, a Name given to certain Places in *Chili* and *Peru*, where Gold is got out of Earth by washing. M. *Frezer* gives us the following Description of the *Lavatories* of *Chili*: They dig deep into the Earth, in such Places as they have reason to expect Gold in; and in order to facilitate this Digging, turn a Stream of Water upon the Spot, loosening the Earth as much as possible all the time, that the Current may have the greater Effect, and tear up the Earth more strongly. When they are got to the Earth they want, they turn off the Stream, and dig dry. The Earth that they, now, get is carried on Mules, and discharged into a Bason, made somewhat in the manner of a Smith's Bellows, into which a little Rivulet of Water runs with a great deal of Rapidity, dissolving the Parts of the Earth, and carrying every thing away with it excepting the Particles of Gold, which by their great Weight precipitate to the Bottom of the Bason, and mix with a fine black Sand, where the smaller Parts are almost as much hidden as before they were in the Earth. Sometimes they find very considerable Pieces in *Lavatories*, particularly Pieces of twenty-four Ounces each. There are several *Lavatories*, where they find *Pepitas*, or Grains of Virgin Gold, of a prodigious Size. Among others they tell of one that weighed 512 Ounces, bought by the Count de la Moncloa, Viceroy of *Peru*. Nine or ten Leagues to the East of *Coquimbo*, are the *Lavatories* of *Andacoll*, the Gold whereof is twenty-three Carats fine. Their Work, here, always turns to great Profit, excepting when the Water fails them. The Natives maintain that the Earth is *creadice*, that is, it produces Gold continually; because after having been washed sixty or eighty Years, they find it impregnated afresh, and draw almost as much out of it as at first.

LAUDANUM, a Name given by the Chymists to certain Preparations of Opium, by reason of their excellent Qualities, as who should say *laudandum* from *laudare*, to praise. To these several add Coral, Pearls, Treacle, &c. *Laudanum* is esteemed an excellent Medicine, it alluages Pain, stops the spitting of Blood, the Flux of the Menses and Hemorrhoides, &c.

LAUDS, or LAUDES, the second Part of the ordinary Office of the Breviary, said after Matins, though heretofore it ended the Office of the Night. The *Laudes* consist principally of Psalms, Hymns, &c. whence they took their Name. See *Matins* and *Breviary*.



**LAUGHTER**, an Action which Authors attribute to the fifth Pair of Nerves, which by sending Branches to the Eye, Ear, Lips, Tongue, Palate and Muscles of the Cheek, Parts of the Mouth, *Præcordia*, &c. there hence arises a Sympathy between all these Parts, *i. e.* when one of them is acted upon, the other are proportionably affected. Hence a savoury thing seen or smelt, affects the Glands and Parts of the Mouth; a thing seen or heard, that is shameful, affects the Cheeks with Blushes: on the contrary, if it please and tickle the Fancy, it affects the *Præcordia* and Muscles of the Mouth and Face with Laughter; if it cause Sadness and Melancholy, it likewise affects the *Præcordia*, and demonstrates itself, by causing the Glands of the Eyes to emit Tears. And Dr. Willis accounts for the Pleasure of Kissing from the same Causes, the Branches of this fifth Pair being spread to the Lips, the *Præcordia*, and the genital Parts; whence arises a Sympathy between those Parts.

**LAUNCH**, in the Sea-Phrase, is to put out; thus they say, *launch a Ship out of the Dock, or out of the Key, &c.*

**LAURA**, a Place where Monks antiently dwelt. Authors can't agree about the Difference between a *Laura* and a Monastery. Some pretend that a *Laura* was a Monastery, wherein there lived at least a thousand Monks; but this is in no wise credible. The more credible Opinion is, that the antient Monasteries were the same with the Modern, consisting of large Buildings, divided into Halls, Chapels, and Cells, possessed by the Monks, each of whom had his Apartment; but the *Lauræ* were a kind of Villages, whereof, each several House was inhabited by one or two Monks at the most: so that the Houses of the Chartreux seem, in some measure, to represent the antient *Lauræ*, and those of the other Monks proper Monasteries. The Term *Laura* was only understood of the religious Places in *Egypt* and the *East*, where their Houses stood apart from each other, and were not joined by any common Cloister, the Monks that inhabited them only meeting in publick once a Week. The word comes from the Greek *λαύρα*, *Hamlet, Village*.

**LAUREATION**, a Term in the *Scottish* Universities, used for the Action of taking up the Degree of a Master of Arts, to which the Students are admitted after four Years Study in the University.

**ST. LAURENCE**, an Order of Regular Canons, so called from the Monastery of *St. Laurence d'Oulx* in *Dauphiné*. This Congregation is said to have been founded by *St. Benner*. It was destroyed by the *Vandals*, and continued uninhabited till the middle of the XIth Century. In 1057, *Odo* Count of *Savoy* gave it to one *Gerrard* and his Canons. This Donation was confirmed in 1065, by *Cumbert* Bishop of *Turin*, who added to it above forty other Churches. By which means a very considerable Congregation was formed, to whom the succeeding Popes and Counts of *Savoy* granted a great many Privileges. It had thirty Priors. The Chief, who is the Prior of the Congregation, bears the Title of Provost, and exercises a spiritual Jurisdiction throughout his Provostship.

**LAURENTIALIA** were Feasts instituted by the *Roman* People, in Honour of *Acca Laurentia*, kept during the Feasts called *Saturnalia*, which afterwards were solemnized as a part thereof. She was a debauched Woman, and nursed *Romulus* and *Remus*, which occasioned the Fable to say, *That a She-Wolf suckled them*. She afterwards married a very rich Man, who brought her great Wealth, which, at her death, she left to the *Roman* People, in consideration whereof they performed her these Honours.

**LAW**, a Command or Precept coming from some superior Authority, to which an inferior is obliged to obey; or, more properly, a Command or Mandate of some Person, or Power, whose Precept carries with it the Reason of Obedience. Thus the Commands of God with respect to Men, of a City with regard to the Citizens, and universally of all powerful Beings in respect to those who cannot resist, are called their *Laws*. The Nature of a *Law* will be the most clearly discovered, by shewing wherein it differs from Covenant, Counsel, and Right or Equity, with all which it is frequently confounded. The Difference between a Counsel and a *Law* will be best determined from the Difference between Counsel and Command. Now a Counsel is a Precept wherein the Reason of Obedience is taken from the Thing itself prescribed; a Command is a Precept, wherein the Reason of Obedience depends on the Will of the Prescriber; for we cannot properly say, *sic volo, sic jubeo*, unless *stat pro ratione voluntas*. But since in *Laws* we do not obey for the sake of the thing itself, but for the sake of the Person who prescribes it, a *Law* is not properly a Counsel, but a Command. A *Law* comes from a Person who has a power over those whom he commands, a Counsel from him who has no such power. To do what is enjoined by a *Law* is an Act of Duty, what by a Counsel an Act of Choice or Free-will. A Counsel is directed to his Advantage who

receives it, a *Law* to his who gives it. A Counsel only takes effect over those who are willing, a *Law* over those that are unwilling. Lastly, the Authority of the Counsellor is taken away at the Discretion of him to whom the Counsel is given; but the Authority of the Legislator is not taken away at the Discretion of him on whom the *Law* is imposed.

*Law* is always confounded with Covenant, by those who take *Laws* to be nothing else but *δημοκραματα* or Forms of Living determined by the Consent of Mankind: Among whom is *Aristotle*, who defines a *Law*, a Declaration determined by the common Consent of a City, shewing in what manner Things are to be done; which is not so much the Definition of a *Law*, as of a *Civil Law*: nor yet properly of a *Civil Law*; for this common Consent is no more than a mutual Covenant, which does not oblige any Person, and consequently is not any *Law*, till some supreme Power be constituted with a Power to compel, and to make it penal to transgress it. Here then the Covenant is confounded with the *Law*, which leads into Absurdities; for a Covenant is a Promise, a *Law* a Command. In a Covenant 'tis said, *I will do*; in a *Law*, *do*. By a Covenant we are obliged, (that is, we must perform because of our Promise) by a *Law* we are preserved under that Obligation (that is, we are forced to perform for fear of the Punishment awarded by it;) a Covenant obliges by itself, a *Law* preserves the Obligation by force. In a Covenant therefore we consider what is to be done e'er we are obliged to do it; in a *Law* we are obliged to do, in the first place, and what is to be done is determined afterwards.

*Law* is confounded with Right or Equity, by those who persist in doing what is permitted by the *Divine Law*, tho prohibited by the *Laws* of the Country. What is prohibited by the *Divine Law*, cannot be permitted by the *Civil Law*, nor what is commanded by the *Divine Law* be prohibited by the *Civil Law*; but what is permitted by the *Divine Law*, may notwithstanding be prohibited by the *Civil Law*: for the inferior *Laws* have a power of restraining the Liberty left the superior *Laws*, tho' they cannot enlarge it. Now Right or Equity is a natural Liberty, not constituted by *Laws*, but free of them; for take away *Laws*, and Liberty is compleat. This Liberty is first restrained by the *Natural* and the *Divine Law*, the rest restrained by the *Civil Laws*; and what remains unrestrained by the *Civil Law*, may be again restrained by the Constitutions of particular Cities and Societies. There is a great Difference therefore between *Law* and Right, *Lex & Jus*; for *Law* is a Chain, but Right, a Liberty; and they differ as two Contraries.

All *Law* may be divided, with respect to its different Authors, into *Divine* and *Human*. The *Divine*, again, may be considered as twofold, with respect to the two different Manners in which God notifies his Will to Man, *viz.* *Natural* (or *Moral*) and *Positive*. *Natural* is that which he has made known to all Mankind, by that innate Light, called *Natural Reason*; *Positive* is that which He has revealed by his Prophets; as those *Laws* delivered to the *Jews*, relating to the *Divine* Worship and Polity, which may be called *Divine-Civil Laws*, as being peculiarly directed to that People. Again, *Natural Law* may be divided into that natural *Law* of Men, which, in a peculiar Sense, is called *The Law of Nature*, and the natural *Law* of Countries, commonly called *The Law of Nations*. The Precepts are the same in both. But because, when Societies are once instituted, certain personal Properties become vested in Men, that *Law* which, when we speak of the Duties of Men severally, we call *The Natural Law*, when transferred to Cities or Countries, we call *The Law of Nations*.

Again, All *Human Laws* are *Civil*; for, according to *Hobbes*, the State of Man out of Society is a State of War, wherein no one being subject to another, there can be no other *Law* besides the Dictates of *Natural Reason*, which is the *Divine Law*. *Civil Laws* may be divided with regard to the Difference of the subject Matter, into *Sacred* and *Secular*. *Sacred* are those that relate to Religion, that is, to the Ceremonies and Worship of the Deity, and which are not prescribed by any *positive Divine Law*. *Secular* are those that relate to Property, &c. commonly call'd by the name *Civil*.

Further, *Civil Laws* considered with regard to the two Offices of the Legislator, *viz.* to judge, and to compel, may be divided into two Branches; the one *Distributive*, the other *Vindictive* and *Pœnary*. *Distributive* is that Branch by which every Man has his Right; or that which constitutes the Rules and Measures of Things, whereby we know what belongs to us, and what to others, so as we may not disturb or interrupt others in the Enjoyment of their own, nor be interrupted by them, and what each Man may lawfully do or not do. *Vindictive* is that Branch by which the Punishments to be inflicted on those who



who violate the *Laws* are determined. The Distributive and Vindictive are not two Species of *Laws*, but two Parts of the same *Law*. For if a *Law* say no more than *Whatever you catch in your Net in the Sea shall be yours*, 'tis in vain; for tho another take from you what you have caught, 'tis still yours; in regard in the State of Nature, where all things are common, yours and another's are the same thing. So that what the *Law* defines to be yours, was yours before that *Law*, and will be yours after it, tho possess'd by another. A *Law* therefore is but an empty Sound, unless it determine the thing to be yours in such a sense, as to forbid every body else from disturbing you in the possession of it. But such Prohibition will be vain, unless there be a Penalty annex'd to it. A *Law* therefore must contain both those Parts, that which prohibits, and that which punishes. The first whereof, which is call'd Distributive, is prohibitory, and speaks to all. The latter, call'd Vindictive or Pœnary, is Mandatory, and speaks only to the public Officers. Whence it follows, that to all *Civil Laws* there is annex'd a Penalty, either implicitly or explicitly: and where that Punishment is not ascertain'd, either by Writing or by Example, 'tis supposed to be Arbitrary, and to depend on the Pleasure of the Legislator; for that is no *Law*, which may be violated impune.

Moreover, *Civil Laws* considered with regard to the different Manners of promulging them are of two kinds; *Scriptæ* and *Non-Scriptæ*, those written, and those not written. By written, I mean those which require either the Voice or some other Sign of the Legislator's Will to become *Laws*. Those unwritten, are such as need no other Promulgation besides the Voice of Nature, or Natural Reason; of which kind are all Natural *Laws*. Hence it appears, that tho the Natural *Laws* be described in the Writings of Philosophers, they are not therefore to be call'd, *Written Laws*. Nor are the Writings of Lawyers *Laws*, for want of the Supreme Authority: nor the *Responsa Prudentum*, or Opinions of Judges *Laws*, excepting so far as they are allow'd by the Supreme Power to pass into Use; and then they are call'd *Leges scriptæ*, written *Laws*; not because of their Use, but because of the Will of the Supreme Power, which is argued from their passing into Use.

The first Principle, or *Law* of Nature, according to *Hobbes*, is Self-preservation. *Thomassius* will have it to be our own Happiness, which falls in at last with the Sentiment of *Hobbes*. *Puffendorf* maintains it to be Sociality. *Valentine Alberti*, the Belief that we are the Image of God. *Henry* and *Samuel Cocceius*, the Will of God. *Grotius*, Right Reason. *Velitenius*, the intrinsic Decency or Turpitude of Actions. *Strimesius* and *Janus*, that we are to love God, Ourselves, and our Neighbour. *M. Regis* says, that the *Laws* of Nature are the Dictates of Right Reason, which teach every Man how he is to use his natural Right; and the *Laws* of Nations, the Dictates in like manner of Right Reason, which teach every State how to act and behave themselves towards others.

*Law* is also used for the several Policies of States and People, or the Maxims and Rules they have agreed upon or receiv'd from their Magistrates, to live in Peace and mutual Society. The *Laws* of the Twelve Tables were the antient *Laws* of the Romans, for which the *Decemviri* were sent into Greece, and which serv'd them for the Ground-work of all their Jurisprudence. The celebrated *Laws* of the more modern Days are those of the *Angli*, *Verines*, or *Thuringi*, of the *Boii* or *Bavarians*, those of the *Burgundi*, of the *Rymarii*, *Germans*, *Danes*, and *Norwegians*, of the *Franks*, the *Frisons*, the *Lombards*, the *Gothic Laws*, the *Martian* or *Mercian Law*; the *Laws* of the *Saxons*, *Scots*, *Sicilians*, *Visigoths*, the *Laws* of *Oleron*, the *Molmutin Law*, the *Salic Law*, the *Law Gombette*. See *Salic*, *Sumptuary*, &c.

Among the first Romans, the word *Law* properly signified an Ordonnance of the People made at the Request of a Magistrate, particularly a Consul. These Ordonnances differ'd from the *Plebiscita* and *Senatus-Consulta*, and even from other Ordonnances made at the Request of any other Magistrate besides a Consul, tho those too bore the name of *Law*. Thus tho *Aquilius* and *Falcidius* were only Tribunes when they made their Request, yet we still say the *Aquilian Law*, the *Falcidian Law*. The *Laws* of the Romans are distinguished, 1<sup>st</sup>, By the Name of him at whose Request they were pass'd; as the *Cornelian Law*, the *Julian Law*, &c. 2<sup>dly</sup>, By the Matter or Subject of the *Law*; and hence came the Terms *Testamentary Laws*, *Judiciary Laws*, *Agrarian Laws*, &c. 3<sup>dly</sup>, Sometimes by the Crimes against which they were made; for instance, the *Laws* touching Poisonings, Parricides, &c. the *Laws* of Concussion, Peculate, &c. The *Codex* and *Aurbitrice* are the *Laws* and Constitution of the Roman Emperors. The *Digest* a Compilation made by the Emperor *Justinian*'s Order of the several Opinions and Judgments of

the most Learned in the *Roman Law*; to which he gave the Sanction of *Laws*, as appears by the Epistle prefix'd to the Work: And 'tis this that constitutes the *Roman Law*.

The *Lex Talionis*, or *Law of Like for Like*, is the most antient and equitable *Law* in the World. It was observ'd by the *Hebrews*.

The *Law* of *England* consists of three Parts. 1. The Common *Law*, which is the most antient and general *Law* of the Realm. 2. Statutes, or Acts of Parliament. 3. Particular Customs. The Common *Laws* of *England* are derived from the *English*, *Saxons*, and *Danes*, and were antiently divided into three Parts, viz. the *Mercian Laws*, the *West-Saxon Laws*, and the *Danish Laws*. Those call'd *Mercian* were compos'd by *Martia* Queen of the *Britons*, from whom there was a Province call'd *Provincia Merciorum*. Many *Laws* were published by *Ethelred* King of *Kent*, by King *Ina* and *Offa*: But *Alfred*, who subdued the whole Kingdom, having revised all the *Laws* of his Predecessors, retain'd those which he thought proper, and abolish'd the rest; whence he was call'd *Anglicarum Legum Conditor*, and these *Laws* were call'd *Wesifenselagan*. But the Kingdom being afterwards subdued by the *Danes*, they introduced another *Law* call'd *Danialag*, by which their People were governed: And they being afterwards destroy'd, *Edward the Confessor* out of the former *Laws* compos'd that which we now call the Common *Law*; for which reason he is call'd by our Historians, *Anglicarum Legum Restitutor*. These *Laws* were only general Customs observ'd thro the Nation, and for that reason were call'd *Common*: And perhaps also because *Leges omnibus in commune reddidit*, to be observ'd by all with such Amendments as were made by his Father. *William the Conqueror* did not enact many new *Laws*, but confirm'd the old; viz. *St. Edward's Laws*, and abrogated none that any way concern'd Compositions or Mults of Delinquents.

The Common *Law* is also call'd *Lex non scripta*, (not but that we have most of 'em written in the old *Norman* Dialect) but because it cannot be made by Charter or Parliament; for those are always Matters of Record, whereas Customs are only Matters of Fact, and are no where but in the Memory of the People, and of all *Laws* must be the best for the *English*: for the Written *Laws* made by King and Parliament, are impos'd upon the Subjects before any Probation or Trial whether they are beneficial to the Nation, or agreeable to the Nature of the People, except where they are first made temporary, and for their experienc'd Usefulness afterwards made perpetual; but Customs bind not till they have been tried and approved Time out of Mind.

Besides the Common *Law* of *England* in general, there are in several Parts of it certain Customs and Common Usages, which have the force of Common *Law* among those People to whose Property they belong; as *Borough-English*, a Custom so call'd as not being in use out of *England*, where the youngest Son, or for want of Sons the youngest Brother, is to inherit, the eldest being supposed to have learnt the Father's Trade, and the youngest the least able to shift for himself. See *Gavelkind*.

Where the Common *Law* is silent, there we have *Statute Laws* made by the several Kings of *England*, with the Advice and Consent of both Houses of Parliament.

Besides these, we make use of the Civil and Canon *Laws* in Ecclesiastical Courts. See *Civil* and *Canon*. We have also *Military* or *Martial Law*, in use among the Soldiery in time of War; and *Forest Law*, for the Regulation of Forests. See *Military*, *Forests*, &c.

*Law* has also a special Signification, wherein it is taken for that which is lawful with us, and not elsewhere; as *Tenant by the Courtesy* of *England*. Thus we also say, to wage *Law* (*vadiare Legem*) and to make or do *Law* (*facere Legem*). When an Action of Debt is brought against one upon some secret Agreement or Contract, the Defendant may wage his *Law* if he pleases; that is, swear, and certain Persons with him, that he owes the Plaintiff nothing: But this is only allow'd in case of the Plaintiff's want of Evidence, and when he cannot prove his Surmise by any Deed or open Act. When one wages his *Law*, he shall bring with him so many of his Neighbours as the Court shall assign (*Sir Ed. Coke* says, eleven) to swear with him that they believe in their Consciences he hath sworn truly; and these in the Civil *Law* are call'd *Compurgators*. The Offer to make Oath is call'd the *Wager of Law*, and when it is accomplish'd, it is call'd the making or doing of *Law*. This Custom is said to have obtained, formerly, among the *Egyptians*.

The Word *Law* is also used figuratively, in speaking of the Rules or Order according to which any thing is perform'd. Thus we say, the *Laws* of Motion, the *Laws* of Mechanics, the *Laws* of Fluids, the *Laws* of a Game, &c. See *Motion*, &c.



**LAW OF ARMS**, is that which gives Precepts how rightly to proclaim War, to make and observe Leagues, to attack the Enemy, and to punish Offenders in the Camp.

**LAWING OF DOGS**, a Term used in our Law-Writers. Thus Mastiffs must be *Lazwed* every three Years; *Crompton Juris*, fol. 163. that is, three Claws of the Fore-Foot shall be cut off by the Skin, or the Ball of the Fore-Foot cut out.

The Word *Law* is derived from the Saxon, *Lag* or *Laugh*.

**LAWLESS COURT**. On *Kings-hill* at *Rochford* in *Essex* every Wednesday Morning next after *Michaelmas-Day*, at Cock-Crowing, is held a Court vulgarly call'd the *Lawless Court*. They whisper, and have no Candle, nor any Pen and Ink but a Coal; and he that owes Suit or Service there, forfeits double his Rent every hour he is missing. This Court is call'd *Lawless*, because held at an unlawful Hour, or *quia dicta sine lege*. It is mention'd by *Camden*, who says this servile Attendance was imposed on the Tenants for conspiring at the like unseasonable Time to raise a Commotion.

**LAWLESS MAN**, *Exlex*. See *Outlaw*.

**LAW OF MARQUE**, from the German Word *March*, a Bound or Limit, is a Law so call'd, by which those who are driven to make use of it, take the Goods or Shipping of the Party that has done 'em wrong, and of whom they cannot get ordinary Justice whenever they can take them within their own Bounds or Precincts. See *Reprisals*.

**LAW MERCHANT**, is become a Part of the Laws of the Kingdom; it consists in this, that if there be two joint Merchants of Wares, and one of 'em dies, his Executor shall have the Moiety: which is not so in the Case of others, not Merchants.

**LAW OF THE STAPLE**, the same with *Law Merchant*.

**LAWS OF MOLMUTIUS**. See *Molmutian Laws*.

**LAWS OF MOTION**, or of Nature (taken in a physical Sense.) See *Motion*.

**LAWS OF OLERON**. See *Oleron*.

**LAW SPIRITUAL**, is the Ecclesiastical or Canon Law allow'd by the Laws of the Realm; so far as it is not against the Common Law, nor against the Statutes and Customs of the Kingdom. And regularly, according to such Ecclesiastical Laws, the Ordinary and other Ecclesiastical Judges do proceed in Cases within their Cognizance. See *Canon*.

**LAXATIVE**, in Medicine, is used to signify a loose State or Disposition of the Body, so as to go frequently to stool. Hence *laxative* Medicines are such as promote that Disposition, which they do by some smooth softening Quality, taking away the Tensity of the Fibres, and facilitating the Passage of the Contents of the intestinal Tube thro' it; for which Reason all oily Substances come under this Class. See *Purgatives*.

**LAY**, an old French Word, signifying Moan, or Complaint. *Lay* is also the Name of a kind of ancient Poetry, consisting of very short Verses. There were two sorts of *Lays*, the great and the little; the great *Lay* was a Poem, consisting of twelve Couplets of Verses of different Measures; the little *Lay* was a Poem consisting of sixteen or twenty Verses, divided into four Couplets. These *Lays* were the *Lyric* Poetry of the old French Poets, who were imitated by some among the *English*. They were principally used on melancholy Subjects; and are said to have been formed on the Model of the *Trochaic* Verses of the *Greek* and *Latin* Tragedies. *Father Morgues* gives us an extraordinary Instance of one of these ancient *Lays* in his Treatise of *French Poetry*:

*Sur l'Appui du Monde  
Que fait il qu'on fonde  
D'Espoir?  
Cette Mer profonde,  
En Debris seconde  
Fait voir  
Calme au Matin, l'Onde  
Et l'Orage y gronde  
Le Soir.*

**LAY THE LAND**, a Sea-Phrase, used for sailing out of sight of Land, in which Case, they say, *they have laid the Land*; and if another Point of Land exclude the sight of the former, they say, *They have shut the first Land in*. *Lay-Land* in Husbandry is also Fallow Ground which lies untill'd.

**LAY-BROTHER**, among the *Romanists*, is a pious but illiterate Person, who devotes himself, in some Convent, to the Service of the Religious. He wears a Habit different from theirs, nor ever enters into the Choir or the Chapter. He is not in any Orders, nor does he make any Vow, excepting of Constancy and Obedience. A *Lay-Brother* is also used for an illiterate Religious, who takes care of some of the temporal Concerns of the Convent, as the Kitchen, the Gate, &c. There are also *Lay-*

*Brothers*, who make the three Vows of Religion. In the Nunneries are also *Lay-Sisters*, who never enter the Choir, &c. and who are only retained for the Service of the Convent. The Institution of *Lay-Brothers* began in the eleventh Century. The Persons on whom this Title was conferred, were such as were too ignorant to become Clerks, and who therefore applied themselves wholly to bodily Work. It seems to have taken its Rise from hence, that the Laity in those Days had not, for the generality, the least Tincture of Learning; whence also those came to be called Clerks, by way of Distinction, who had studied a little, and were able to read. The word comes from the *Latin* *Laicus*, of the *Greek* *λαϊκός*, *People*.

**LAYERS**, are the low Branches of Trees or Shrubs, which are covered with good Mould when you would raise their Kind from them, leaving out their Ends till they are rooted; when they are to be cut off.

**LAYMAN**, a Person not engaged in any Order of Ecclesiasticks.

*Layman*, among Painters, is a Statue of Wood, whose Joints are so made that it may be put into any Posture. its chief Use is for the casting and adjusting of Draperies for the clothing of Figures.

**LAZARETTO**, or **LAZAR-HOUSE**, a publick Building in form of an Hospital, for the Reception of poor Sick. In some Countries it is appointed for Persons coming from Places suspected of the Plague to quarantain in. This is usually a large Building, at a distance from any City, whose Apartments stand at a distance from each other, &c. where Ships are unladen, and their Equipage is laid up for forty Days, more or less, according to the Time and Place of Departure.

**ST. LAZARUS**, the Name of a military Order instituted at *Jerusalem* by the Christians of the *West*, when they became Masters of the *Holy Land*. They received Pilgrims under their Care, guarded them on the Roads, and defended them from the Insults of the *Mahometans*. Some say it was instituted in 1119. Pope *Alexander IV.* confirmed it by a Bull in 1255, giving it the Rule of *St. Augustine*. The Knights of this Order being driven out of the *Holy Land*, part of them retired into *France*, and were established there under *Louis* the III<sup>d</sup>, who bestowed on them the Country of *Boigny* near *Orleans*. *Innocent VIII.* suppressed the Order of *St. Lazarus* in *Italy* in 1490, or rather united it to that of *Malta*. *Leo X.* re-established it in *Italy* in the beginning of the 16th Century. In 1572, *Gregory XIII.* united it in *Savoy* to that of *St. Maurice*, just instituted by Duke *Emanuel Philibert*. In *France* this Order was united to that of *N. D. of Mount Carmel* in 1608, and had some new Advantages conferred on it by the late King *Louis XIV.* The Knights of *St. Lazarus* are allowed to marry, and yet have Pensions upon Benefices.

*Fathers of St. Lazarus*, or *Lazarites*, a Name given to certain Regular Clerks of a Congregation instituted in *France* in the 17th Century by *M. Vincent*. They take their Name from a House in the *Fauxbourg* of *Paris*. They have a Seminary in *Paris*, called *The Seminary des Bons Enfants*. The Vows they make are simple, and on occasion may be dispensed withal.

**LEAD**, a coarse, heavy, impure Metal, of all others the softest and most fusible, when purified; called by the Chymists *Saturnus*. Those who have made an Analysis of it, find it contains a little Mercury, some Sulphur, and a great deal of bituminous Earth. *Lead* is found in various Countries, but abounds particularly in *England*. 'Tis found, too, in several kinds of Soils and Stones, some whereof, besides, contain Gold, some Silver, others Tin, &c. 'Tis melted on a Furnace provided for the purpose, with a strong Coal-Fire upon it; as it melts, it runs thro' a Canal on one Side of it, leaving the Earth, Stone, and Scoria, with the Ashes of the Coals. 'Tis purified by skimming it e'er cold, and throwing Suet and other fat Bodies into it. Some very able Naturalists observe, that the Weight of *Lead* increases, either in the open Air, or under Ground. Mr. *Boyle* observes this particularly of the *Lead* of Churches, which, he says, frequently grows both in Bulk and Weight, so as to become too ponderous for the Timber that before sustained it; which some account for from the Impurity, Heterogeneity, and loose Texture of its Parts, by means whereof the Particles of the Air getting Admission within its Pores, are attracted, and easily assimilated to it. But others, who rely wholly on Experience, absolutely deny the Effect, as also that it is reproduced in Mines before exhausted, by letting them lie long open to the Air, which others assert. *Lead* is found of a lighter or deeper Colour, according as it is more or less purified, tho' some make a difference in the Colour of the Ore, always esteeming that most which is the whitest.

*Lead* is a Metal of much Use; it easily melts, and mixes with Gold, Silver, and Copper, and communicates, as they talk, its Humidity to them; but not he-



ing able to endure the Violence of the Fire which they undergo, it retires, and carries with it all that was heterogeneous in them ; so as neither Gold nor Silver are refined without *Lead*. To which it may be added, that the coarser kind of precious Stones, boiled in *Lead*, are thereby rendered much more brilliant.

*Lead* is much used in Building, particularly for Covering, Gutters, Pipes, and Glafs. *Lead* is either cast into Sheets in a Mold, or milled ; which last is found by much the least serviceable, not only on account of its Thinness, but also because 'tis so exceedingly stretched in milling ; that when it comes to lie in the hot Sun, it shrinks and cracks, and consequently will not keep out the Water. The *Lead* used by Glaziers is first cast into slender Rods, twelve or fourteen Inches long, called *Canes* ; which being afterwards drawn thro' their Vice, comes to have a Groove on either Side for the Panes of Glafs ; and this they call *Turned Lead*.

The Method of paling or soldering *Lead* for fitting on of Imboss'd Figures, &c. is by placing the Part whereon the Figure is to be paled, horizontal, and strewing on it some pulverized Rosin ; under this place some Coals, till such time as the Rosin becomes reddish, and rises in Pimples ; then apply the Figure, and rub some soft Solder in to the joining : when this is done, the Figure will be paled on, and as firm as if it had been cast on it.

*Borrichius* asserts, that *Lead* reverberated into Minium, melted into Glafs, reduced into Cerufs, and burnt into Litharge, immediately resumes its original Figure, upon the dexterous Application of a lixivial Salt. The Antients, according to *Schindlerus*, used to compose Books of Plates of Leaves of *Lead*.

For the Manufacture of *Lead*, see *Plumbery*.

There are various Preparations of *Lead*, serving for various Purposes :

*Lead-Dust*, a Preparation used by the Potters, made by throwing Charcoal-Dust in melted *Lead*, and stirring them a long time together ; to separate the Coal again, they only wash it in Water, and dry it afresh. Its Use is to give a Varnish and Gloss to their Works.

*Burnt-Lead* is a Chymical Preparation used in Medicine, made of Plates of *Lead* melted in a Pot with Sulphur, and reduced into a brown Powder.

*White Lead*, used by Painters, is only thin Plates of *Lead* dissolved by Fumes of boiling Vinegar. See *Cerufs*.

Masticots of several Colours, and the Sandix, are also Preparations of *Lead*. See *Masticot* and *Sandix*.

Litharge of Gold or Silver, is only the *Lead* used in purifying Copper. See *Litharge*.

*Red Lead*, a Preparation of Mineral *Lead* calcined, used by Painters, Porters, and Physicians. See *Minium*.

By help of Chymistry there are also drawn from *Lead*, Salts, Balsams, Oils, Vinegar, a Magistery, &c. disguised under the Name of *Saturn*, to amuse the Ignorant.

*Salt or Sugar of Lead*, or *Saccharum Saturni*, is an essential Salt of Vinegar, incorporated with the proper Substance of *Lead*, dissolved in the Spirit of Vinegar. *Balm of Lead*, or *Saturn*, is an Oil drawn from the Salt of *Lead* by Distillation, after having dissolved it in Spirit of Turpentine. Magistery of *Lead* is the Calx of *Lead* purified and subtilized, which is made of *Lead* dissolved in *Aqua fortis*, pouring a filtrated Salt water into it ; whence results a Magistery extremely white, which, when softened by several Lotions, is mixed with Pomatums for the Face and Complexion.

*Black Lead*, a kind of Mineral Stone, of a black Colour, but silvered, and shining, found in *Lead* Mines, and appearing to be nothing else but *Lead* not yet arrived at Maturity ; much used for Pencils or Crayons for designing. 'Tis melted like the common *Lead*.

Mr. *Glanvil* observes, that the Smoke of the *Lead*-Works in *Somersetshire* is a prodigious Annoyance, and subjects both the Workmen, and the Cattel that graze about them, to a mortal Disease. The Trees that grow near them have their Tops burnt, and their Leaves and Out-sides discoloured and scorched.

When the *Lead-Ore* is dug out, they beat it small, then wash it clean in a running Stream, and sift it in Iron Rudders. Their Hearth or Furnace is made of Clay or Fire-stone ; this they set in the Ground, and on it build their Fire, which they light with Charcoal, continuing it with young Oaken Cads, blown with Bellows, by Men treading on them. After the Fire is lighted, and the Fire-Place hot, they throw their *Lead-Ore* on the Wood, which melts down into the Furnace, and then with an Iron Ladle they take it out, and upon Sand cast it into what Form they please.

The Mine-Men sometimes find the Vein run up into the Roots of Trees, and yet don't observe any Difference between those and other Trees. When the Mine is near the Surface, the Grass is sometimes found yellow. They make no account of the *Virgula Divinatoria* ; yet say, that

when a Mine is open, they may guess by it how far the Vein will lead. The Ore runs sometimes in a Vein, sometimes dispersed in Banks ; it lies many times between Rocks ; some of it is harder, others milder ; sometimes they have branched Ore in the Spar ; about the Ore is Spar and Chalk, and another Substance, which they call *Crootes*.

LEAF, LEAVES, part of a Plant, ordinarily very thin and flat, growing in the Spring, and falling off in Autumn. There are some Plants without Leaves, as Truffles and Mushrooms. As to the Structure of Leaves, Dr. *Grew* observes, that their Fibres never stand on the Stalk in an even Line, but always in an angular or circular Posture, and their vascular Fibres or Threads are 3, 5, or 7. The Reason of which Position is for their more erect Growth and greater Strength of the Leaf. Another Observable in the Fibres of Leaves, is their orderly Position, so as to take in an eighth part of a Circle, as in Mallows ; in some a tenth, but in most a twelfth. The same Author observes six several Parts intended by Nature for the Preservation of Gems ; viz. Leaves, Sunfoils, Interfoils, Stalks of Leaves, Hoods, and Mantlings that cover them. The Skin or Coat of the Leaves is no more than that of the Branches extended, as Gold, by beating, is reduced into Leaves. In the Gem they are folded, sometimes in two, and sometimes in several Plaits, somewhat after the manner of a Fan. If the Leaves be too thick to plait commodiously in two, and to be ranged against each other ; or if they be in too small a Number, and their Fibres too delicate, instead of being plaited, they are rolled up, and form either a single Roll, as the Leaves of the Mountain Cowslip, which are thick ; or two Rolls, which begin at each Extremity of the Leaf, and meet in the middle. There are some Plants whose Leaves form three Rolls, as Fern ; several Leaves are covered with Hair of several Figures, those of Lavender and Olive-Tree have Hair resembling Stars.

Botanists consider the Leaves of Plants, with regard to their Structure, to their Surface, Figure, Consistence, their Edges, Situation, and Size. With regard to their Structure, Leaves are either single, as those of the Apple-Tree, Pear-Tree, &c. or double, as those of Angelico, Parsley, &c. With regard to their Surface, Leaves are either flat, as the Nummularia, Asarum, Organy, Androsæmum, Brionia Canadensis, &c. or hollow, as those of the Onion and Asphodel ; or in Bunches, as several kinds of Kali, Salicor, and House-Leeks. With regard to their Consistence, Leaves are either thin and fine, as those of St. John's-Wort, and Dog's Grass ; or thick and gross, as those of Porculata ; or fleshy, as those of several kinds of House-Leeks ; or woolly, as those of the Wooll-Blade. With regard to their Edges, Leaves are either cut slightly, as some Species of Geum, and Cannabis Lutea ; or deep, as Trefoil, &c. With regard to their Situation, Leaves are either alternate, that is, ranged alternately, as the Phyllica ; or opposite to each other, as the Phyllyrea, and some Species of the Rubia. With regard to their Size, Leaves are either very big, as those of the Colocasia and Sphondylium ; or moderate, as those of Bistort, the Fig-Tree ; or small, as those of the Apple-Tree, Pear-Tree, Peach-Tree ; or very small, as those of Mille-Pertuis, or St. John's-Wort.

Leaf, or Leaves, is also used to express the most sensible and agreeable Parts of Flowers. 'Tis true, all Flowers have not Leaves, and 'tis sometimes difficult to determine which is to be called the Leaves, and which the Calix of the same Flower. To prevent the confounding of the Leaves of the Flower with those of the rest of the Plant, the former are called *Petala*, from a Greek Word which the Botanists have adopted into their Latin Descriptions, when they speak of the Leaves of Flowers. The Leaves of Plants they call *Folia*, and those of the Flowers *Petala*. See *Petalum*.

Leaves in Architecture, an Ornament in the Corinthian Capital, and thence borrowed into the Composite ; consisting in the Representation of a double Row of Leaves covering the Vase, Tympanum, or Neck of the Column. These Leaves are usually made in imitation of those of the Acanthus, sometimes of those of Olive, and sometimes of Laurel. The Leaves are divided, each making three Ranges of lesser, and are bent, a-top, one third of their Height. See *Capital*, *Acanthus*, &c.

LEAGUE, an Extent of Ground, considered lengthwise, serving to measure the Distances of one Place from another, and containing more or less Geometrical Paces, according to the different Usages and Customs of Countries.

A Sea League is 3000 Geometrical Paces, or three English Miles ; the large Leagues of France, are usually 3000, and in some Places 3500 Paces ; the mean or common League is 2400 Paces, and the little League 2000. *Chorier* observes, that the antient Gaulish Leagues were but 1500 Paces. The Spanish Leagues are larger than the French, 17 Spanish Leagues



*Leagues* make a Degree or 20 *French Leagues*, or 69  $\frac{1}{2}$  *English Statute Miles*. The *Leagues* of *Germany* and *Holland* contain four *Geographical Miles* each. The *Persian Leagues* are nearly the same with the *Spanish*, that is, they are equivalent to four *Italian Miles*; which comes pretty near to what *Herodotus* mentions of the *Parasanga*, an ancient Measure among the *Persians*, containing thirty *Stadia*, eight whereof, according to *Strabo*, make a *Mile*. The *Persians* mark their *Leagues* by *Trees*, as the ancient *Romans* did by *Stones*, *Lapides*; for which reason they call them *Agag*, a *Turkish Word* signifying *Tree*. In *Japan* the *League* consists of 1800 *Fathoms*. These are all distinguished by little *Hillocks*, raised on purpose by the *Road-side*. See the *Leagues* of most *Countries*, reduced to the *Roman Foot*, under the word *Mile*.

The word comes from *Leuca*, or *Leuga*, an ancient *Gaulish Word*, as *Menage* has proved from *Isidore*, *St. Jerom*, *Am. Marcellinus*, &c. Some derive the word *Leuca* from *λευκη* white, in regard the *Gauls*, in imitation of the *Romans*, marked the *Spaces* and *Distances* of their *Roads* by white *Stones*.

**LEAGUE**, an Union or Confederacy between *Princes* and *States* for their mutual Aid, either in attacking some common *Enemy*, or in defending themselves. There have been several holy *Leagues* entered into by the *Christians* against the *Saracens* and *Infidels*, sometimes also called *Crusado's*. The *League* is used by way of *Eminence* for that famous one on foot in *France*, from the Year 1576, to 1595. Its Intent was to prevent the Succession of *Henry IV.* who was of the *Reformed Religion*, to the *Crown*, and it ended with his *Abjuration* of that *Faith*. The *Leaguers*, or *Confederates*, were of three kinds: The zealous *Leaguers* aimed at the utter *Destruction*, not only of the *Hugonots*, but also of the *Ministry*. The *Spanish Leaguers* had principally in view the transferring the *Crown* of *France* to the *King* of *Spain*, or the *Infanta* his *Daughter*. The moderate *Leaguers* aimed only at the *Extirpation* of *Calvinism*, without any *Alteration* of the *Government*. The Word comes from *liga*, which, in the corrupt *Latin*, was used for *Confederation*, *Quæ quis cum alio ligatur*.

**LEAKAGE**, is a *Leaking* or *Leak* in a *Vessel*, through which the *Liquor* runs out: Also an *Allowance* made to a *Merchant* in *Liquid Goods* of 12 *l. per cent*. Also an *Allowance* of *Brewers* of 2 in 22 *Barrels* of *Ale*, and 3 in 23 *Barrels* of *Beer*.

**LEAP-YEAR**, or *Bisextile*, is every fourth Year, so called from its *leaping* a Day more that Year than in a *Common Year*; for in the *Common Year* any fixed Day of the *Month* changeth successively the Day of the *Week*, but in the *Leap-Year* it skips or leaps over one Day. The *Common Year* hath 365 Days in it, but the *Leap-Year* 366 Days, and then *February* hath 29 Days, which, in the *Common Year* hath but 28. To find the *Leap-Year*, this is the Rule;

Divide by 4, what's left shall be,

For *Leap-Year* 0, for *past* 1, 2, or 3.

For Example, what is the Year 1720, a *Leap-Year*, or *Common Year*

4) 1720 (430

There is 0 Remainder, so that it is *Leap-Year*.

**LEASE**, in *Law*, signifies a *Demise*, or letting of *Lands*, *Tenements*, *Right* of *Common*, *Rent*, or any *Hereditament* unto another, for *Term* of *Years*, or for *Life*, for a *Rent* reserved, and is either written, called also *Indenture*, *Deed Poll*, or *Lease* in writing; or by word of *Mouth*, called *Lease Parol*. The Party that letteth this *Lease* is called the *Lessor*, and the Party to whom it is lett the *Lessee*. A *Lease* hath in it six Points; (1.) Words sufficient to import a *Demise*. (2.) A *Lessee* named. (3.) A *Commencement* from a Day certain. (4.) A *Term* of *Years*. (5.) A *Determination*. (6.) A *Reservation* of *Rent*.

**LEASH** is a *Term* used in the *Game* for three *Creatures* of any Kind, as a *Leash* of *Greyhounds*; as a *Brace* expresseth two.

**LEAVEN**, any thing that will make a *Body* swell by means of the most subtle and penetrating of its *Parts*; which being agitated and divided, divide and agitate the more gross, as we may observe in *Paste*, in several *Liquors*, &c. The word comes from *levanum*, a *levando*, because *Leaven* makes the *Past*, &c. rise. See *Ferment*.

**LEAVER**. See *Lever*.

**LECTICARIUS**, an *Officer* in the *Greek Church*, whose *Business* it was to bear off the *Bodies* of those who died, and to bury them. The chief of the *Lecticarii* was the *Deacon*. The *Romans* had two Kinds of *Lecticarii* different from those of the *Greeks*, and who answered nearly to the *Office* of our *Chairmen*.

**LECTISTERNIUM**, a religious *Ceremony* among the ancient *Romans*; it consisted in a *Festival* prepared, and

solemnly given in the *Temple*. And because, according to the *Custom* of those *Times*, they placed *Beds* a-round the *Tables*, and set the *Statues* of the *Gods* on those *Beds*, in the same manner as *Men* sat at *Meals*: They call'd this Practice *Lectisternium*, from *Lectus*, *Bed*, and *sternere* of *sterno* to spread, prepare. In this *Ceremony* the *Epulones* (mentioned under that *Head*) presided. *Cassaubon* has observed from a *Passage* in the *Scholiast* of *Pindar*, that the *Greeks* had also the *Lectisternium* in Use. *Livy* observes that the first *Lectisternium* seen in *Rome*, was that which held for eight Days successively, in honour of *Apollo*, *Latona*, *Diana*, *Hercules*, *Mercury*, and *Neptune*, on occasion of a contagious *Disease* that kill'd all their *Cattle*, in the Year of *Rome* 354, tho' *Valerius Maximus* mentions one before that.

**LEE**, a *Term* variously used at *Sea*, but its general Use is to signify the *Part* opposite to the *Wind*: Thus the *Lee-shore* is that on which the *Wind* blows, and therefore to be under the *Lee* of the *Shore*, is to be close under the *Weather-shore*, or under *Wind*. When they say *A-Lee the Helm*, they mean, put the *Helm* to the *Lee-ward* Side of the *Ship*. They say also, take care of the *Lee-latch*, which is a *Word* of *Command* to the *Man* at the *Helm*, to take care that the *Ship* do not go to the *Lee-ward* of her *Course*; wherefore they call a *Lee-ward Ship* one that is not fast by a *Wind*, or which doth not sail so near the *Wind*, nor make so good way as she should. To lay a *Ship* by the *Lee*, or to come by the *Lee*, is to bring her so, that all her *Sails* may lie flat against her *Masts* and *Shrouds*, and that the *Wind* may come right upon her *Broad-side*. The *Lee-way* of a *Ship*, is the *Angle* made by the *Line* on which the *Ship* should run, according to her *Course*, or the *Point* of the *Compass* steered upon, and the real *Line* of the *Ship's Way*; for all *Ships* are apt to make some *Lee-way*, wherefore in casting up the *Log-board*, something must always be allowed for *Lee-way*. The ordinary *Rules* are these: (1.) If the *Ship* be upon a *Wind*, you must allow one *Point* for *Lee-way*. (2.) If the *Wind* blow hard, so that you are forced to take in one *Top-sail*, allow two *Points* for *Lee-way*. (3.) If it blow so hard, that both *Top-sails* must be taken in, and the *Sea* runs high, allow three *Points* for *Lee-way*. (4.) If her *Fore-sail* being furled, she try under a *Main-sail* or *Mizzen*, she will make her way four *Points* before the *Beam*. (5.) If she try with a *Main-sail* only, she will make her way near three *Points* before the *Beam*. But (6.) If under a *Mizzen* only, she will make her way about two *Points* before the *Beam*.

**LEES**, the grossest and thickest *Parts* of *Wine*, *Oil*, and other *Liquors*; or the *Sediment* found at bottom of the *Vessel*. A kind of gravelly *Sand* is made with the *Lees* of *Wine* burnt and prepared, used by *Dyers*, &c. which ought to stand as a *Caution* to *People* troubled with the *Stone*, &c. The Word comes from the *French Lie*, and that either from *Limus Mud*, or from *Lyeus* one of the *Surnames* of *Bacchus*; or, according to *Du Cange*, from *Lia*, a corrupt *Latin Word* signifying the same thing. The *Vinegar-Makers* make a great *Trade* of the *Lees* of *Wine* dried and made into *Cakes*, after having squeez'd out the *Remains* of the *Liquor* in *Presses*.

**LEET**, an old *Saxon Word* for a *Law-day*; from the *Saxon Lite* little, *quasi* a little *Court*; or from the *German Laet*, i. e. a *Country Judge*. The *Court-Leet* is a *Court* held by the *Lord* of a *Mannor*, tho' in reality 'tis the *King's Court*, in whose *Mannor* soever it is held, in regard the *Authority* thereof belongs originally to the *Crown*, and is derived thence to other *Persons*: It is a *Court* of *Record*, and inquires of all *Offences* under *High-Treason*, tho' it cannot punish many, but must certify them to the *Justices* of *Assize*.

**LEGACY** in *Law*, any particular *Thing* given by a *Last Will* and *Testament*; for if the whole *Estate* be so given, it is said to be *Hereditary*, and he to whom it is so given, is called *Heir* by the *Civilians*; though in common *Law*, the *Distinction* is this, that he to whom all the *Man's Lands* and *Hereditaments* descend by *Right* of *Blood*, is *Heir Natus*; the other to whom 'tis bequeath'd is called *Heir Factus*. In the *Ecclesiastical Sense* *Legacy* was formerly a *Soul-Seat*, a *Bequest* to the *Church*, or accustomed *Mortuary*: and this was to hold good, even tho' the *Testament* it self were declar'd null and invalid.

**LEGALIS HOMO**, in *Law*; a *Person* who stands *rectus in Curia*, not out-law'd, nor excommunicated, nor defamed; and in this *Sense* are those *Words* so often used, *Probi & Legales Homines*. Hence *Legality* is taken for the *Condition* of such a *Man*.

**LEGATE**, a *Prelate* whom the *Pope* sends as *Embassador* to any sovereign *Prince*. There are three Kinds of *Legates*, viz. *Legates à latere*, *Legates de latere*, and *Legates* by *Office*, or *Legati Nati*. Of these the most considerable are the *Legates à latere*; such are those whom the *Pope* commissions to take his *Place* in *Councils*, so called, in regard the



the Pope never gives this Office to any but his greatest Favourites and Confidants, who are always at his Side, à *latere*: that is, to the Cardinals. He may confer Benefices without Mandate, legitimate Bastards to hold Offices, and has a Cross carried before him as the Ensign of his Authority. The *Legates de latere*, are those who are not Cardinals, but are yet intrusted with an Apostolical Legation. *Legates* by Office are those who have not any particular Legation given them, but who by virtue of their Dignity and Place in the Church become *Legates*. Such are the Archbishops of *Rheims* and *Arles*. But the Authority of these *Legates* is much inferior to that of the *Legates à latere*. The Power of a *Legate* is sometimes given without the Title. Some of the Nuntio's are invested with it.

The Term *Legate* comes from that of *Legatus*, which *Varro* derives from *legere* to chuse, and others from *legare*, *delegare*, to send, delegate. See *Wicquefort*.

LEGATORY, a Term used in speaking of the Government of the antient Romans; *Augustus* divided the Provinces of the Empire into Consular, *Legatory*, and Prefidial. *Legatory* Provinces were those whereof the Emperor himself was Governour, but where he did not reside, but administered Affairs by his Lieutenant or *Legatus*.

LEGATUS, or LEGAT, among the Romans, was an Officer of Distinction, who commanded under the first or leading Officer. Of these there were two Kinds, viz. a *Legatus* in the Army under the General, answering to our Lieutenant-General, and a *Legatus* in the Provinces under the Proconsul or Governour. When any considerable Person among the Roman Citizens had occasion to pass thro' any of the Provinces, the Senate gave him the Title of *Legatus*; that is, of Envoy from the Senate, to the end he might be received with the greater Respect, and that the Cities and Towns thro' which he travelled might defray his Expences. This they call'd a free Legation, in regard the Person was not incumber'd with any Trust, and might lay it aside as soon as he pleased.

LEGEND, was originally a Book used in the old *Romish* Churches, containing the Lessons that were to be read in the holy Office: hence the Lives of Saints and Martyrs came to be call'd *Legends*; because Chapters were to be read out of them at Matins, and in the Refectories of the Religious Houses. The *Golden Legend* is a Collection of the Lives of the Saints, compiled by *James de Voragine*, better known by his Latin Name of *J. de Voragine*, Vicar General of the *Dominicans*, and afterwards Archbishop of *Genoa*, who died in 1298. It was received into the Church with a world of Applause, which it maintained for 200 Years; but, in effect, is so full of ridiculous and romantic Accounts, that the *Romanists* themselves are now generally ashamed of it. The Word *Legend* it self is on that account come into disrepute.

*Legend* is also used to signify the Words or Letters engraven about the Edges, &c. of Coins. Thus the *Legend* of a French Crown, is, *Sit nomen Domini Benedictum*; that of a *Moidore*, *In hoc Signo vinces*; and on those of the last Emperors of *Constantinople*, we find, *Iesus Christus Basileus Basileon*, *IHS XPS NIK A*, *Iesus Christus Vincit*.

*Legend*, is also used for the Inscriptions of Medals, which serve to explain the Figures or Device. In strictness, the *Legend* differs from the Inscription; this last properly signifying Words placed on the Reverse of a Medal, in the place of Figures. It seems as if the Antients had intended their Medals should serve both as Images and as Emblems; the one for the common People, and the other for Persons of Quality and Parts: the Images to represent the Faces of Princes, and Emblems to represent their Virtues and great Actions: So that the *Legend* is to be looked on as the Soul of the Medal, and the Figures as the Body. Every Medal has two *Legends*, that on the Front, and that on the Reverse. The first, for the generality, serves only to distinguish the Person by his Name, Titles, Offices, &c. the latter is intended to express his noble and virtuous Sentiments, his good Deeds, and the Advantages the Public has reap'd by him; this however does not hold universally, for we sometimes find the Titles shared between both Sides, and sometime the *Legend*. In the Medals of Cities and Provinces, as the Head is usually the Genius of the Place, or at least some Deity adored there; the *Legend* is the Name of the City, Province, or Deity, or of both together; and the Reverse, some Symbol of the City, &c. frequently without a *Legend*; sometimes with that of one of its Magistrates. The Subjects of *Legends* are the Virtues of Princes, the Honours they have receiv'd, Consecrations, signal Events, public Monuments, Deities, public Vows, Privileges, &c.

*Legends* and Inscriptions of Medals, are either in *Latin* or *Greek*. The *Greek* Character, consisting of Majuscule or Capital Letters, appears uniform on all the Medals, no Change or Alteration appearing in confronting the several Characters, tho' 'tis certain there was in the ordinary Use

and Pronunciation. All we observe on Medals, is sometimes a Mixture of *Greek* and *Latin* Letters. The Character was preserved in all its Beauty till the time of *Gallian*. From the time of *Constantine*, and for the Space of 500 years, the *Latin* Tongue alone was used in the *Legends* of Medals, even in those struck at *Constantinople*. *Michael* begun the first, whose *Legend* was in *Greek*, and from his Time the Language, as well as the Characters, began to alter for the worse.

LEGION, a kind of Regiment or Body of Forces, whereof the Roman Armies were composed. The Number of Soldiers and Officers whereof the *Legion* consisted, was different at different Times: But 'tis impossible to determine the precise Time and Manner of their Alteration. In the Time of *Romulus* each *Legion* contained 3000 Foot, and a Hundred *Equites*, or Knights: These were divided into three Bodies, which made as many Orders of Battel. Each Body consisted of ten Companies, or Manipules, ranged at some distance from each other, tho' in the same Front. Each Body had two General Officers to command it, called *Tribunes*, and each Manipule two Centurions. Under the Consuls the *Legion* consisted of 4000 Men, who made four Bodies, commanded by a Consul or one of his Lieutenants, and each *Legion* had its share of Cavalry, which was from two to three hundred Horse. Afterwards, in the time of *Marius*, these four Divisions of the *Legion* were united into one, and augmented, and Cohorts were appointed from five to six hundred Men, each under the Command of a Tribune. Each Cohort consisted of three Companies or Manipules, each Manipule of two Centuries, and the *Legion* divided into ten Cohorts, who made as many distinct Battalions disposed in three Lines; so that the *Legion*, then, consisted of five or six Thousand Men. *Isidore* tells us, that the *Legion* consisted of six Thousand Men, divided into sixty Centuries, thirty Manipules, twelve Cohorts, and two Hundred Troops. According to the French Academy, the *Legion* consisted of six Thousand Foot, and seven Hundred twenty-five Horse. The *Legions* were by far the most considerable part of the Roman Army; their Number in the time of *Augustus* was thirty-three; they were composed wholly of Roman Citizens. The Allies formed a Body of Auxiliary Forces. The Standard bore by the *Legions* was as various. At first a Wolf, in honour of that which suckled *Romulus*, afterwards a Hog; by reason, says *Romulus*, War is only undertaken with a View to Peace, which was concluded by sacrificing a Hog. Sometimes they bore the Minotaur, to remind their General that their Designs were to be kept secret, and inaccessible as the Minotaur in the Labyrinth. They also bore a Horse, a Boar, &c. *Pliny* tells us, that *Marius* was the first who changed all these Standards into Eagles. The Word *Legion* comes from the Latin *legere*, to chuse; because when the *Legions* were raised, they made choice of such of their Youth as were the most proper to bear Arms.

LEGISLATOR, he who makes the Laws of a Kingdom, or State, which he has founded. The principal antient Legislators are, *Moses*, Legislator of the Hebrews; *Mercurius Trismegistus* and *Bococes* of the Egyptians; *Italus* of the *OEnotrians*; *Thesens*, *Draco*, and *Solon* of the Athenians; *Zoroaster* of the *Bastrians*; *Charondas* of the *Cappadocians*; and *Charondas*, or *Phaleas*, of the *Carthaginians*; *Androdamas* of the *Chalcidians*; *Eudoxus* of the *Cnidians*; *Phido* of the *Corinthians*; *Ephorus* and *Minos* of the *Cretans*; *Pythagoras* of the *Crotoniates*, and most of the Cities of *Greece* Major; *Parmenides* and *Zeno* of *Elea* in *Lucania*; *Arribas*, or *Tharcitas*, of the *Epicures*; *Zamolnis* of the *Geta*; *Phoroneus* of the *Greeks*; *Bacchus* of the *Indians*; *Saturn* of *Italy*; *Macarius* of the *Ile of Lesbos*; *Zaleucus* of the *Locrians*; *Nicodorus Athleta* of the City of *Mutina*; *Hippodone* of *Miletus*; *Charonidas* of *Rheggio*; *Lycurgus* of the *Lacedemonians*; *Archytas* of *Tarentum*; *Philolaus* of the *Thebans*. At Rome the People were, in great measure, their own Legislators, tho' *Solon* may be said, in some sense, to have been their Legislator, in regard the *Decemviri*, who were created for the making of Laws, borrowed a great Number from those of *Solon*.

LEGITIMATION, an Act by which Natural Children are rendered legitimate. The Father and Mother by marrying render their Children begotten before Marriage legitimate, and this is called *Legitimation*, *per subsequens Matrimonium*. The Right of *Legitimation* was a thing unknown to Princes till the time of *Constantine*, but since his Time has been exercised by most of them. The Greek Emperors invented several kinds of *Legitimation*. *Anastasius* put it in the power of the Father to legitimate his natural Children by a bare Adoption, provided he had no legitimate Children. But *Justin* by his Constitution, and *Justinian* by his Novel 74, abolished this *Legitimation*, as fearing the too easy access to *Legitimation* should encourage Concubinage. In lieu of this he established a way



way of *Legitimation* by the Emperor's Letters. This rendered Bastards capable of attaining to Honours, and even of succeeding to Inheritances, provided the Persons were legitimated with the Consent of their Father and Mother; which is agreeable to the Canon Law.

**LEGS**, the lower Parts of the Bodies of Animals, serving them for Support and for Motion. Some Anatomists divide the Foot of Man into three Parts, *viz.* the Thigh, the Leg, and the lesser Foot. In the Leg there are two considerable Bones, the one called *The Great Focile*, or the *Tibia*; the other *The Little Focile*, or the *Fibula*.

The Legs and Feet of the several Animals, Mr. Derham observes, are exactly conformable to the Posture, Make, nay to the Motion and Exercises of those Animals. In some they are made for Strength only, in others for Agility and Swiftneſs; in some for walking and running, in others for swimming, in others for digging, and in others for flying. In some more lax and weak for traversing the plain Land, in others stiff and rigid for Ice and Precipices. In some shod with tough and hard Hoofs, some whole, some cleft. In some the Feet are composed of Toes, some short for only going, others long to supply the Place of Hands; some armed with Talons to catch and tear their Prey, some with short Nails to confirm their Steps in running and walking. In Birds the Legs are curved for their easy Perching, Roofing, and Rest, as also to help them on the Wing in taking their Flight, and to be therein com. modiously tucked up to the Body, so as not to obstruct their Flight. In some long for wading, &c.

*Legs of a Triangle*; when one Side of a Triangle is taken as a Base, the other two are called *Legs*.

**LEGUMEN**, in Botany, is that Species of Plants called *Pulse*; which are so named as being gathered with the Hand, by which they are distinguished from Wheat, Corn, &c. which are mowed or reaped. Of this kind are all that grow in Pods, as Beans, Pease, &c. In the general, all Plants, which have a Papilionaceous, or Butterfly-like Flower, are reckoned by Mr. Ray among the *Legumina*. The word *Legumen*, according to *Varro* and *Servius*, is formed *ex eo quod Manu legatur, & non secatur*; in regard it is gathered with the Hand, and not cut.

**LEMMA**, a Term chiefly used in Geometry. It signifies an Assumption, or preparatory Proposition, laid down to clear the way for some following Demonstration: frequently prefix'd to Theorems, in order to render their Demonstration less perplex'd and intricate, and to Problems in order to make their Resolution more easy and short. Thus to prove a Pyramid one third of a Prism, or Parallelopiped, of the same Base and Height with it; the Demonstration whereof in the ordinary way, is difficult and troublesome, this *Lemma* may be premised, which is proved in the Rules of Progression; That the Sum of the Series of the Squares in Numbers in Arithmetical Progression, beginning from 0, and going on 1, 4, 9, 16, 25, 36, &c. is always subtriple of the Sum of as many Terms equal to the greatest; or is always  $\frac{1}{3}$  of the greatest Term multiplied by the Number of Terms. Thus to find the Inflection of a Curve Line, this *Lemma* is first premised; That a Tangent may be drawn to the given Curve in a given Point. Thus in Physics, to the Demonstration of most Propositions, such *Lemmata* as these are necessary first to be allowed; That there is no Penetration of Dimensions; That all Matter is divisible; and the like. As also in the Theory of Medicine, That where the Blood circulates, there is Life, &c.

**LEMNIAN EARTH**, a Medicinal Astringent, used in the same Cases as Bole, which see. It hath its Name from the Island of *Lemnos*, whence it is chiefly brought: Many form it into round Cakes, and impress a Seal upon it, whence it is call'd *Terra Sigillata*.

**LEMONADE**, a Drink prepared of Water, Sugar, and Citrons or Lemons. This facitious Liqueur is so popular in *Paris*, that it has given its Name to a new establish'd Company, call'd *Lemonadiers*.

**LEMURES**, Sprites, Hobgoblins; Restless Ghosts of departed Persons, who return to torment the Living. These are the same with the *Larvæ*, which the Antients imagined to wander round the World, to frighten good People, and plague the bad. For this reason, at *Rome* they had their *Lemuralia*, or Feasts instituted to appease the *Manes* of the Defunct. *Socrates* explains the *Manes* thus: The Soul of Man released from the Bands of the Body, and freed from performing his bodily Functions, becomes a kind of Demon or Genius, formerly called *Lemures*. Of these *Lemures*, those that were kind to their Families, were called *Lares Familiares*; but those, who for their Crimes were condemned to wander continually without meeting with any Place of Rest, and terrified good Men, and hurt the bad, were vulgarly called *Larvæ*. An ancient Commentator on *Horace* mentions, that the *Romans* used the Term *Lemures* for *Remures*; which last

Word was formed from *Remus*, who was kill'd by his Brother *Romulus*, and who returned to Earth to torment him. But *Apuleius* observes, that in the ancient *Latin* Tongue *Lemures* signified the Soul of a Man separated from the Body by Death.

**LEMURIA**, or *Lemuralia*, the Name of a Feast solemnized at *Rome* on the ninth of May, to pacify the *Manes* of the Dead, or in honour of the *Lemures*. The Institution of this Feast is ascribed to *Romulus*, who to rid himself of the Phantoms of his Brother *Remus* (whom he had ordered to be murdered) appearing always before him, ordained a Feast called after his Name *Remuria*, and *Lemuria*. They offered Sacrifices for three Nights together, during which time all the Temples of the Gods were shut up, nor any Marriage permitted. There were a world of Ceremonies in this Feast, chiefly intended to exorcise the *Lemures*, and to prevent their appearing or giving any disturbance to the Living.

**LENITIVE**, in Physic, is any softening resolutive Remedy, that moistens the Part diseased, and dissipates any sharp Humour collected there. *Lenitive*, in Pharmacy, is a gentle Electuary, composed of *Sena*, *Polypody*, &c. so called in regard it purges easily, and by resolving.

**LENS**, in Dioptricks, is any Glass (not very thick) which either collects the Rays of Light into a Point, in their passage through it, or disperses them further apart, according to the Laws of Refraction. *Lens's* have various Figures; that is, are terminated by various Surfaces, from which they acquire various Names. Some are plane on one side, and convex on the other; others convex on both sides; both which are ordinarily called *Convex Lens's*: tho when we speak accurately, the former is call'd *Plano-Convex*. Again, some are plane on one side and concave on the other, and others are concave on both sides, which are both usually rank'd among the *Concave Lens's*; tho when distinguish'd, the former is call'd a *Plano-Concave*. Others again are concave on both sides; others are concave on one side, and convex on the other, which are call'd *Convexo-Concave* or *Concavo-Convex Lens's*, according as the one or the other Surface is more curve, or a Portion of a less Sphere. It is to be here observ'd, that in every *Lens* terminated in any of the forementioned manners, a right Line perpendicular to the two Surfaces is call'd the *Axis* of the *Lens*. Which *Axis*, when both Surfaces are spherical, passes thro both their Centres; but if one of 'em be plain, it falls perpendicularly upon that, and goes thro the Centre of the other.

For *Convex Lens's*, the Laws of their Refraction, and their Effects depending thereon, are as follow.

A Ray of Light *EG* near the *Axis*, (*Fig. 1. Plate Opticks*) and parallel thereto, striking on the plane Surface of a *Plano-Convex Lens*, directly opposite to the luminous Body, after Refraction concurs with the *Axis* in the Point *F*; and if *C* be the Centre of the Convexity, *CF* will be to *CL*, that is, the Distance of the Centre from the Point of Concourse or Focus, will be to the Distance of the Centre from the Convex Surface, in the Ratio of the Refraction. See *Refraction*.

For the plane Surface being directly opposed to the luminous Body, the Ray *EG* is perpendicular to *AB*, and therefore will pass unrefracted to *H*: Thus it strikes on *AHB* still parallel to the *Axis*; and therefore coming out of a denser Medium into a rarer, will meet the *Axis* of the *Lens* in *F*, and so, as that *CF* will be to *EL* in the Ratio of the Sine of the refracted Angle to the Sine of the Angle of Inclination. As will be demonstrated under the Head *Refraction*.

*Cor.* If then the Refraction be out of a Glass *Lens* into Air *CF:EL::3:2*, and therefore *FL=2CL*. That is, parallel Rays near the *Axis* will concur with it at the distance of the Diameter. Again, if the Refraction were out of a *Water-Lens*, *i.e.* out of a *Plano-Convex Lens* fill'd with Water, *CF:EL=4:3*, and therefore *EL=3CL*. *i.e.* parallel Rays near the *Axis* will concur with it at the distance of half the Diameter. So that if a lighted Candle be placed in the Focus of a *Plano-Convex Lens*, that is, in the Point *F*, distant from the Surface of the *Lens* *ALB*, by the length of the Diameter, and from the Surface of the *Water-Lens*, by half the Diameter, its Rays after Refraction will become parallel. See *Refraction*.

If the Ray *KI* (*Fig. 2. Plate Opticks*) near the *Axis* of a *Plano-Convex Lens*, and parallel thereto, strike on its convex Surface *AHB*, after a double Refraction it will meet the *Axis* in *F*; so as that *HG* will be to *GC*, and *GE* to *FH* in the Ratio of the Refraction.

For the Ray *KI*, parallel to the *Axis* *EG*, by virtue of the first Refraction in *I*, will tend to the Point *G*, so as *GH* will be to *GC* in the Ratio of the Sine of the Angle of Inclination to the Sine of the Refracted Angle: therefore by virtue of the second Refraction in *L*, it will

U u u u

concur



concur with the Axis in F; so as G D will be to E D in the Ratio of the Sine of the refracted Angle, to the Sine of the Angle of Inclination: (See *Refraction*) So that the Semidiameter and Thickness of the *Plano-Convex Lens*, with the Ratio of Refraction being given, hence arises a Method of determining the Focus of parallel Rays striking on the Convex Surface. For

Cor. Hence, if the *Lens* be Glass,  $FD = 2 CH - \frac{1}{2} HD$ . So that if two thirds of the Thickness of the *Lens* be inconsiderable (as in Practice it usually happens) parallel Rays meet with the Axis at the Distance of the Diameter from the *Lens*, even when they strike on the Convex Surface.

So that as to the Place of the Focus, 'tis the same thing whether the plane Surface, or the convex one, be turned to a Luminary of parallel Rays; tho' it appears both from Experience and trigonometrical Calculation, that there are more Rays united in a less Space, if the convex Surface, than if the plane one be turn'd towards the Sun.

If the *Lens* were full of Water  $ED = 3 CH - \frac{1}{2} HD$ . Wherefore if  $\frac{1}{2} HD$  be inconsiderable  $FD = 3 CH$ , or if  $\frac{1}{2} HD$  be inconsiderable  $FH = 3 CH$ . Parallel and near Rays, therefore, are united at the Distance of half the Diameter, if the Refraction be in Water, even when the Convex Surface is opposed to the luminous Body. Hence, also, arises a Method of determining the Focus of parallel Rays striking on a *Lens* Convex on both Sides; the two Semidiameters, and the Thickness of the *Lens*, being given.

On these Principles is founded the Structure of refracting Burning-Glasses; the Sun's Light and Heat being exceedingly augmented in the Focus of a *Lens*, whether Convex or Plano-Convex: since the Rays falling parallel to the Axis of the *Lens*, are reduced into a much narrower Compass; so that 'tis no wonder they burn some Bodies, melt others, and produce other extraordinary Phenomena. See *Burning-Glasses*.

If a luminous Body be placed in the Focus behind a *Lens*, whether Plano-Convex, or Convex on both Sides; or whether equally or unequally, the Rays after Refraction become parallel.

Hence by means of a *Convex-Lens*, or a little Glass Bubble full of Water, a very intense Light may be projected to a vast Distance. See *Mirror*.

And this furnishes us with the Structure of a Lamp or Lanthorn, to project an intense Light to any immense Distance: For a *Lens* convex on both Sides, being placed opposite to a Concave Mirror; if in the common Focus of both be placed a lighted Candle, or Wick, the Rays reflected back from the Mirror to the *Lens*, will be parallel to each other; and after Refraction will converge, till they arrive at the Distance of the Semi-diameter, after which they will again diverge. But the Candle being likewise in the Focus of the *Lens*, the Rays it throws on the *Lens* will be parallel: and therefore a very intense Light meeting with another equally intense, at the Distance of the Diameter from the *Lens*, the Light will be surprising: and tho' it afterwards decrease, yet the parallel and diverging Rays going a long way together, it will be very great at a very great Distance. Lanthorns of this kind are of considerable Service in the Night-time to discover remote Objects, and are used with Success by Fowlers and Fishermen, to gather their Prey together, in order to take them.

If it be required to have the Light at the same time transmitted to several Places, as through several Streets, &c. the Number of *Lens*'s and Mirrors are to be increased. See *Lamp*.

If the luminous Body placed in the Focus, be of a large Extent, the Rays flowing from Points sensibly distant from each other, can't be parallel, but will constitute several Trains or Pencils of Rays parallel to each other.

The Images of Objects opposed in any manner to a Convex-*Lens*, are exhibited, invertedly, in its Focus.

Hence if a Paper be applied to a *Convex-Lens* (especially in a dark Room) at the distance of its Focus, the Images of Objects shining upon it, will be represented distinctly, and in their natural Colours thereon: Nor is the Focus of the Sun's Rays any thing else, in effect, but the Image of the Sun. Hence in Solar Eclipses, the Sun's Image, eclipsed as it is, may be burnt by a large *Lens* on a Board, &c. a very entertaining Phenomenon!

Hence also, if a *Convex-Lens* of any kind, be exposed both to nearer and remoter Objects, and a Paper at the same time be applied, so as to receive the Images of Objects distinctly, the Distance of the Focus from the *Lens*, and thence the Diameter of the Convexity, may be determined.

If a Concave-Mirror be so placed, as that an inverted Image formed by Refraction thro' a *Lens*, be found between the Centre and the Focus, or even beyond the Centre; it will again be inverted by Reflexion, and so appear erect in the first Case beyond the Centre, and in the lat-

ter between the Centre and the Focus. On these Principles is built the *Camera Obscura*; which see.

The Diameter of the Image of an Object delineated beyond a *Convex-Lens*, is to the Object it self in a Ratio of the Distance of the Image, to that of the Object.

Since then the Image of a remoter Object, is less distant from the *Lens*, than that of the nearer, the Image of the more remote, will be less than that of the nearer. And because the Distance of the Image from the *Lens* is greater, if the *Lens* be a Segment of a greater Sphere, than of a less; hence the Image will be greater in the former Case than in the latter. The Image therefore will be of such a Magnitude, as it would be of, were the Object to shine into a dark Room thro' a little Hole upon a Wall, at the same Distance from the Hole, at which the Focus is from the *Lens*. When an Object is less distant from a *Lens* than the Focus of parallel Rays, the Distance of the Image is greater than that of the Object, otherwise the Distance of the Image is less than that of the Object; in the former Case, therefore, the Image is greater than the Object, in the latter, less.

If the Images be made greater than the Objects, they will not appear distinctly; because in that Case there are fewer Rays which meet after Refraction in the same Point; whence it happens that Rays proceeding from different Points of an Object, terminate in the same Point of an Image, which is the cause of Confusion. Hence it appears that the same Aperture of a *Lens* mayn't be admitted in every Case, if we would keep off the Rays which produce Confusion. However, tho' the Image is then most distinct, when no Rays are admitted but those near the Axis, yet for want of Rays the Image is apt to be dim.

If the Eye be placed in the Focus of a *Convex-Lens*, an Object view'd thro' it, appears erect and enlarg'd, in a Ratio of the Distance of the Object from the Eye, to that of the Eye from the *Lens*, if it be near; but infinitely, if remote. See *Microscope*; see also *Prism*.

For *Concave-Lens*'s, their Laws are as follow.

If parallel Rays strike on a *plano-Concave-Lens* K L, and F C be to F B in the Ratio of the Refraction, the Rays will diverge from the Axis, and the Point of Divergency, or Dispersion, call'd the virtual Focus, will be F. (Fig. 3. *Plate Opticks*)

For the Ray H I, parallel to the Axis, is perpendicular to K L, and will therefore pass unrefracted to E. Wherefore F C being to F B in the Ratio of Refraction, F will be the virtual Focus. See *Refraction*.

If then the *Lens* be Glass,  $FB = 2 BC$ ; i. e. the virtual Focus F will be distant from the *Lens* K L by the Space of the Diameter  $2 BC$ .

If the Refraction be in Water  $FB = 3 BC$ ; i. e. the virtual Focus F will be distant from the *Lens* K L a Diameter and an half  $3 BC$ .

If the Ray A E, parallel to the Axis F P, strike on a *Lens* Concave on both sides; and both F C be to F B, and I P to P H in the Ratio of Refraction: and F P: P H:: F B: B G; G will be the Point of Dispersion, or the virtual Focus. (Fig. 4. *Plate Opticks*)

If therefore the Refraction be in a *Glass Lens*, the Sums of the Semi-diameters C B and H I, will be to the Diameter of the Concavity of either  $2 HI$ , as the Semi-diameter of the other C B, to the Distance of the virtual Focus from the *Lens* B G.

Hence the Sun's Rays striking on a *Concave Lens*, their Light after Refraction will be considerably weakened; so that the Effect of *Concave-Lens*'s is opposite to that of convex ones.

Lastly, An Object view'd thro' a *Concave Lens*, appears erect, and diminished in a Ratio compounded of the Ratio's of the Space in the Axis, between the Point of Incidence, and the Point to which an oblique Ray would pass without Refraction, to the Space in the Axis between the Eye and the Middle of the Object; and the Space in the same Axis between the Eye and the Point of Incidence, to the Space between the Middle of the Object and the Point, the oblique Ray would pass to without Refraction.

Tho' the Properties of *Lens*'s have been here considered principally with regard to Rays falling near the Axis, and parallel thereto; yet the Reasoning will be easily transferr'd to Rays remoter from the Axis, and falling in any Direction. Thus we may say universally, that in a *Convex Lens*, all parallel Rays become converging, and concur in a Focus; that diverging Rays either become less diverging, or run parallel, or converge; and that converging Rays converge the more: All which Alterations are more sensible in oblique Rays, than in perpendicular ones, by reason the Angles of Incidence in that Case are greater.

In *Concave Lens*'s all parallel Rays become diverging, diverging Rays diverge more; converging Rays either converge less, or become parallel, or go out diverging: all which things hold of oblique as well as direct Rays, but more sensibly in the first.



A *Lens*, one of whose Surfaces is Convex, and the other Concave, is called a *Meniscus*; the Properties of which see under *Meniscus*. See also the *Theory of Lens's demonstrated under Refraction*, and the Application thereof under *Microscope*, *Telescope*, *Burning-Glass*, *Focus*, &c.

Some confine *Lens's* within the Diameter of five or six Lines, and will have such as exceed that Diameter, call'd *Lenticular Glasses*. *Lens's* are distinguish'd with regard to their Preparation into ground and blown: *blown Lens's* are little Globules of Glass melted in the Flame of a Lamp or Taper: (see *Microscope*) but the Figure of these is seldom exact; besides that the Smoke of the Lamp cleaves to the Surface in melting: on both which accounts they come short of the Clearness of those that are ground, or turned and polish'd in the Lathe, in little Copper Basons or Dishes. The Secret is now found of making these exquisitely small, so as some of 'em don't exceed in Diameter the sixth part of a Line, which are found to magnify Objects several Millions of times.

*The Manner of grinding Lens's*: A little Piece of Copper is cemented to the End of the Arbor of a Lathe, and turned, till it form a Dish or Bason of the Diameter of the *Lens* required. Then a Piece of clear Glass is cemented on one of its flat Sides to the end of a little Mandrel with black *Spanish Wax*, and thus ground, on the Side not cemented, on a Grindstone, with Water, till it have nearly acquired a Convex Figure. 'Tis finished in the Lathe, by turning it in the Bason, with fine wet Sand, or Free-stone. (See *Bason*.) The Free-stone must be often repeated fresh, till the *Lens* appear very round; when it is come to that Point, they cease to take any fresh Stone, but continue to turn it in the Bason, till the Remains of the Sand be become so fine as to have polished it. This, they perceive, when, upon wiping it, the Image of the Window of the Place is seen painted on its Surface; if it don't, 'tis wetted in Water without any Sand, and turned till it have got a Polish. The Bason is then covered, within-side, with two or three Folds of Linnen, and the Polish finished with Putty, or *Tripoly of Venice* steeped in Water. 'Tis known to be perfectly polished, when, viewing it with a Magnifier, there appear no Traces of the Sand. The Cement is then broke off, and the Side polished, cemented; to work and grind the other as before, till the Edges of the *Lens* be become sharp, and it be perfectly polished on either side. When finished, 'tis washed in Spirit of Wine, to take off all Remains of the Wax. See *Microscope*.

LENT, *Quadragesima*, or *Quarantine*, a Time of Mortification, consisting of the Space of forty Days, wherein those especially of the *Romish Church* are enjoined to fast, in Commemoration of our Saviour's miraculous Fasting so long in the Desert, and by way of Preparation for the Feast of *Easter*. In the antient *Latin Church*, *Lent* only consisted of 36 Days. In the IXth Century, to come somewhat nearer the Miracle, some took upon them to add four Days more, which, in time, became a general Practice; tho the Church of *Milan* is said still to take up with the antient 36.

According to *St. Jerom*, *St. Leo*, *St. Augustine*, and others, *Lent* must have been instituted by the Apostles. Their way of Reasoning is thus: Whatever is generally received throughout the whole Church, and whose Institution we don't find in any Council, must be esteemed to have been established by the Apostles. Now such, they say, is the Fast of *Lent*. Its Institution is not spoke of in any Council, but many of the antient Councils, particularly that of *Nice*, that of *Laodicea*, &c. and some of the Fathers, particularly *Tertullian*, speak of it as a thing of some standing. The Reformed generally hold *Lent* to be a superstitious Institution, set on foot by some vain Enthusiasts, who durst undertake to ape the Miracles of Jesus Christ, as in effect it appears to have been from a Passage of *I Clement*, quoted by *Eusebius*. Some will have it to have been first introduced by Pope *Telesphorus*, in the II<sup>d</sup> Century; others, who own that there was a kind of Abstinence observed in the antient Church before *Easter*, yet contend that it was voluntary, and was never enjoined by any Law till the III<sup>d</sup> Century.

There was some Difference between the Practice of the Greek and the *Latin Church* as to the Business of *Lent*; the Greeks beginning it a Week sooner, but at the same time allowing more Days of Intermision than the *Latins*: those who held it seven Weeks, did not fast on Saturdays, as those who observed it but six did.

The antient *Latin Monks* had three *Lents*; the Grand *Lent* before *Easter*; another before *Christmas*, call'd, *The Lent of St. Martin*; and a third after *Whitsunday*, call'd that of *St. John Baptist*: each of which consisted of forty Days. The Greeks, besides that before *Easter*, observed four others; that of the *Apostles*, of the *Assumption*, of *Christmas*, and of the *Transfiguration*; but they reduced each of them to the space of seven Days. The *Jacobites* added a fifth, which they call *The Repentance of Nine-*

veh; and the *Maronites* a sixth, call'd *The Exaltation of the Holy Cross*. By the 8th Canon of the Council, 'tis ordain'd, That if any Persons, without evident Necessity, eat Flesh in *Lent*, they shall be deprived the Use of it all the rest of the Year.

The forty Days in *Lent*, say some, are observed in remembrance of the forty Days wherein the World was drowned; others of the forty Years wherein the *Jews* wandered in the Desert; of the forty Days allowed *Nineveh* for Repentance; the forty Stripes by which Malefactors were to be corrected; the forty Days fasted by *Moses* at the receiving of the Law; the forty Days fasted by *Elias*; or the forty Days fasted by our Saviour.

LENTIGO, a freckly or scurvy Eruption upon the Skin, such especially as is common to Women in the time of Child-bearing. Authors distinguish this Eruption into several kinds.

LENTIL, the Name of a Weight among the old *Romans*. It was the hundred and eighth Part of a Drachm. A *Lentil* and an half made a Grain. The Word is a Diminutive of *Lens*.

LENTISCUS, the Wood of a Tree of the same Name, of some Use in Physic; it is astringent and fortifying, and much used for Tooth-Picks. It contains a kind of Gum, or rather resinous Pitch, much like Mastic, or perhaps the Mastic itself or Incense of *Persia*, so highly commended by *Strabo*. The *Lentiscus* has nearly the same Properties with the *Saunders*, but has more of the Turpentine in it, and sometimes passes by Urine.

LEO, *Lion*, the fifth of the twelve Signs of the Zodiac. This the Astrologers account a hot dry Sign, and the House of the Sun. The Antients gave it 27 Stars, besides 8 *Informes*: *Kepler* gives it 40, and *Baye* 43; two whereof are of the first Magnitude, two of the second, five of the third, &c. See *Star*.

*Cor Leonis*, the *Lion's Heart*, one of the most considerable Stars in the Heavens. See *Star*.

LEONTICA, the Name of a Feast or Sacrifice celebrated among the Antients, in honour of the Sun. They were called *Leontica*, and the Priests who officiated at them *Leoni*, in regard they represented the Sun under the Figure of a Lion radiant, bearing a Tiara, and griping in his two fore Paws the Horns of a Bull, who struggled in vain to disengage himself. The Critics are extremely divided about this Feast, some will have it to be anniversary, and make its Return not in a Solar, but a Lunar Year; but others hold its Return to be more frequent, and give Instances where the Period was not above 220 Days. The Ceremony was sometimes also call'd *Mithraice*, *Mithra* being the Name of the Sun among the antient *Persians*. There was always a Man sacrificed at these Feasts till the time of *Hadrian*, who prohibited it by a Law. *Commodus* introduced the Custom afresh, after whose time it was again exploded.

LEONTINE, in Poetry, a kind of Verses which rhyme at every Hemistich, the middle always chiming to the end; of which kind we find several antient Hymns, Epigrams, Prophecies, &c. For instance, *Muretus* speaking of the Poetry of *Lorenzo Gambara* of *Bressa*, says,

*Brixia, vestrae merdosa Volumina Vatis,  
Non sunt nostrates tergere digna Nates.*

The following one is from the School of *Salerna*;

*Ut Vites Pœnam de potibus incipe Cœnam.*

The Origin of the Word is somewhat obscure, *Pasquier* derives it from one *Leoninus*, or *Leonius*, who excelled in this way, and dedicated several Pieces to Pope *Alexander III*. Others derive it from Pope *Leo*, and others from the Name of *Lion*, as being the loftiest of all Verses. *M. Fanchet* makes the *Leontine* Rhyme the same with what the French call *The Rich*, and we *The Double Rhyme*; i. e. where two Syllables have the same Orthography, Accentuation, and Pronunciation with two others.

LE ROY LE VEUT. By these Words the Royal Assent is signified by the Clerk of the Parliament to public Bills; to private Bills this Assent is expressed by *joit fait comme il est Desiré*.

LE ROY S'ADVISERA. By these Words to a Bill, presented to the King by his Parliament, are understood his absolute Denial of that Bill in a more civil way; and the Bill thereby becomes wholly null and void.

LEPIDOIDES, in Anatomy, the Name of the scaly Suture of the Cranium, from the Greek *λεπίς*, Scale, and *εἶδος*, Form, Figure.

LEPRA, *Leprosy*, a foul contagious Disease, seated in the Cuticle or Surface of the Skin, arising, as most other cutaneous Diseases do, from thin salt Humours, thrown off from the Blood, and arrested by the Density and Closeness of the Cuticula. This Distemper has been much more frequent in former Times than at present, and much more in the hot Countries of the East, particularly among the *Jews*, than among us; for the Salts which,

by



by the Appointment of Nature, are to be eliminated thro' the Pores of the Skin, along with the recrementitious Serum, their proper Vehicle, are, in hot Countries, conveyed in greater plenty to the Surface of the Body, than in these Northern Regions they ordinarily are; and sticking in their Passage in the thin dry Membrane of the Cuticle, the aqueous Parts, which are their Vehicle, slip away from them by insensible Evaporation, and leave them there to corrode and fret it, till at length, thro' the Quantity so gathered, the Membrane becomes dry, brittle, and white, which is the Cause of that Disqualification, or falling away in white Scales: that Whiteness as well as the Brittleness proceeding merely from the Quantity of these Salts, which are themselves white; and when the Moisture is drawn from them, being accumulated, and having insinuated themselves into the Pores of the Cuticle, dissolve the Continuity of it by their Points and Edges, which, so dead and broken, is apt, on the least Friction, to fall off as above-mentioned. This is what they call the *Lepra Græcorum*, from its Frequency among that People.

*Lepra Arabum* was another Species of the Distemper, which tho' different in Appearance, as carrying a dry scabby Crust, yet seems only a different Degree of the same Disease. For as in the former Case the Salts, being left destitute of their Humidity, are not so active, and therefore affect only the Cuticle; in the latter Case these Salts, with their Vehicle, crowding faster than they can be evaporated thro' the Pores of the Skin (being still in *fluore*, and so more caustic) corrode deeper, and eat not only the Cuticle, but the excretory Vessels, and Surface of the Skin itself, which thereby spews out a Liquor somewhat thicker than usual; which, when the thinnest and most aqueous Parts are evaporated, are condensed into that Crust or Scab, which is the distinguishing Character of this Disease.

*Galen* defines the *Lepra* to be an Effusion of thick disorderly Blood, that corrupts the whole Habitude of the Body. *Avicenna* calls it *An Universal Cancer*. The Greeks give it the Name of *ἐλκυσθίασις*, in regard the Patient has his Skin rough, wrinkled, and unequal, like that of an Elephant. The *Lepra* begins within-side, a long time before it appears without-side. It was frequent in Europe in the Xth and XIth Centuries, but seems at present quite extinct, unless we allow the Venereal Disease to be the same with the *Lepra*; as it was the Opinion, among many others, of the Great *Pitcairn*, and as has been lately endeavoured to be proved by Mr. *Becket*, in a Treatise expressly on the Subject in the *Philosophical Transactions*. The Symptoms of the ancient *Lepra*, as laid down by *Galen*, *Aræteus*, *Pontanus*, *Ægineta*, *Cardan*, *Varanda*, *Gordon*, *Paræus*, and others, are as follow: The Patient's Voice is hoarse, and comes rather thro' the Nose than the Mouth; the Blood full of little white shining Bodies, like Grains of Millet, that upon filtration separate themselves from it; the Serum is scabious, and destitute of its natural Humidity, insomuch that Salt applied to it does not dissolve; it is so dry, that Vinegar poured on it boils; and is so strongly bound together by little imperceptible Threads, that calcined Lead thrown into it swims. The Face resembles a Coal half extinct, unctuous, shining, and bloated, with frequent hard Knobs, green at bottom, and white at top. The Hair is short, stiff, and brinded, and not to be torn off without bringing away some of the rotten Flesh to which it adheres; if it grows again, either on the Head or Chin, 'tis always white. Athwart the Forehead run large Wrinkles, or Furrows, from one Temple to the other; the Eyes red and inflamed, and shine like those of a Cat; the Ears swollen and red, eaten with Ulcers towards the bottom, and incompassed with little Glands; the Nose sunk, because of the rotting of the Cartilage; the Tongue dry and black, swollen, ulcerated, divided with Furrows, and spotted with Grains of white; the Skin covered with Ulcers, that die and revive on each other, or with white Spots or Scales like a Fish; it is rough and insensible, and when cut, instead of Blood, yields a fætid Liquor. It arrives in time to such a Degree of Insensibility, that the Wrist, Feet, or even the large Tendon may be pierced with a Needle, without the Patient's feeling any Pain. At last the Nose, Fingers, Toes, and even Privy Members fall off entire, and by a Death peculiar to each of them anticipate that of the Patient. 'Tis added, that the Body is so hot, that a fresh Apple, held on the Hand an Hour, will be dried and wrinkled, as if exposed to the Sun for a Week.

*Matthew Paris* says, that in *Christendom* there were fifteen Thousand Hospitals for Lepers; but the Disease having been discontinued for two Hundred Years, the Revenues of those Hospitals were abused, and Persons feigned themselves leprous, to be entitled to the Provision; which occasioned their Regulation in some Coun-

tries, and their entire Suppression in others. In France they were united to the Order of the Religious of St. Lazarus and Mount Carmel in 1664, and the Administration of them given to the Knights of that Order; in England they have been converted to other Purposes.

Formerly the Causes of Lepers were committed to the Ecclesiastical Tribunals, and it was prohibited to prosecute a Leper before a Lay-Judge, in regard they were under the Protection of the Church, which separated them from the rest of the People by a Ceremony still to be seen in the Rituals.

The *Lepra* appeared differently in different Nations, according to the Climate and the Manner of Living; whence it was distinguished into several kinds, as the *Lepra Arabum*, *Lepra Græcorum*, &c. As to the Cure, that which proved effectual in those Southern Countries, fails among us, where the strongest Medicaments, and the most powerful Mercurials are necessary. Bathing is judged to be of good Use in the *Lepra*. Dogs and Hares are said to be subject to this Disease. Among the Indians a white Man is despised, this passing with them for the Mark of a Leper. The word *Lepra* is derived from the Greek *λεπίς*, Scale, in regard this Disease forms a kind of Scales on the Skin.

LEPUS, the Hare, is a Southern Constellation. See *Star and Constellation*.

LESSOR and LESSEE, are Terms of the Common Law. The Lessor is he that leaseth out Lands or Tenements to another for Term of Life, for Years, or at Will; and the Person to whom such a Lease is made, is called the Lessee.

LETHARGY, in Medicine, a Disease consisting in a profound Drowsiness or Sleepiness, wherein the Patient can scarce be awaked; or, if awaked, remains stupid, without Sense or Memory, and presently sinks again into his former Sleep. The Lethargy is usually accompanied with a Fever and Delirium. The Lethargy, *Boerhaave* makes a gentle Apoplexy, arising from the same Causes, and to be known and cured in the same manner. Some Authors distinguish the Lethargy from the Carus, in that this latter is without a Fever, or at most is preceded with a violent one, whereas the Lethargy is attended with a slow one. *Celsus* ranks the Lethargy in the Number of acute Diseases, the Patient usually dying on the 7th Day. A Lethargy frequently succeeds a Frenzy. The Word comes from the Greek *λήθη*, Oblivion, and *ἀργία*, Numbness, Laziness.

LETHE, or LATHE, a Measure or Portion of Lands, making one of the ancient Divisions in England. King *Elfred* divided England into Counties, as it stands at present, those Counties he divided into Hundreds or Tithings. The Hundred was a Division, wherein were an hundred Officers to secure the Peace; the Leibe or Laibe comprehended three or four of these Hundreds. Leibe was also the Jurisdiction of a Vicount, or a kind of Assize, held once a Year in each Village about Michaelmas. Whether this was instituted by *Elfred*, or no, is a Question.

LETTER, a Sign or Character either in Print or in Writing, by which any People have agreed to express the several Sounds, used in conveying their Thoughts to each other in Speech: Or a Letter may be defined, A simple uncompounded Sound of the Voice, that cannot be subdivided into any more simple, and generally marked with a particular Character. It must be owned however, strictly speaking, a Letter is not the Sound itself, but rather the Sign of a Sound, for the *ὑπομνημα* of the Greeks comes from writing, and the *Litera* of the Latins from *linendo*, or *linendo*, each signifying something marked on Paper. Where a Sign or Character does not express a Sound entirely simple, but one resolvable into several, it is not so properly a Letter as an Abbreviation, containing in itself as many Letters as its Power does simple Sounds. This is evident in the Latin *Ex*, and the Greek *Ξ*, *Ψ*, *Ω*, &c. which are composed of *et*, *es*, *us*, *os*, *os*, *os*, &c. On the contrary, a simple Sound, tho' expressed by several Characters, is yet to be esteemed one Letter, for *th*, *ph*, are single Letters, as much as *p*, *l*, and *j*.

Letters make the first part or Elements of Grammar; an Assemblage of these make Syllables, of those Words, and of these Sentences. The Alphabet of every Language consists of a certain Number of these Letters, which ought each to have a different Sound, Figure, and Signification. As the Difference of articulare Sounds was to express the different Ideas of the Mind, so one Letter was originally intended to signify only one Sound, and not, as at present, to express sometimes one Sound, and sometimes another; which Practice has brought a great deal of Confusion into the Languages, and render'd the learning of the modern Tongues infinitely more difficult than it would otherwise have been. This Consideration, together with the Poverty of all the known Alphabets, and their want of some Letters to express certain Sounds by, has occasioned several Attempts towards an universal Alphabet, to contain an Enumeration of all such single Sounds.



Sounds or Letters as are used in any Language. A thing of very considerable Use ; a Specimen of which is given us by Mr. Lodwick, in the *Philosophical Transactions*.

There are few things on which there has been so much written as on the Original Hebrew Letters ; since Origen, Eusebius Cesariensis, St. Jerom, &c. have made it the Subject of their Enquiry. If they don't always go back to the Beginning of the World, and the Origin of Letters, 'tis at least enquired what were the Characters made use of by Moses to transmit the Law to Posterity, or those used by the other Historians and Prophets of the Old Testament, or even those used by the Hebrews before the Babylonian Captivity. With regard to which, there are three principal Opinions: Some imagine the antient Hebrew Letters the same with those now in Use ; of this Opinion are several Doctors of the Thalmud, Postellus, Buxtorf, &c. The second Opinion is of those who believe the Samaritan Letters the more antient ; which is now the more common Opinion, as without doubt it is the elder : Several Mischnique and Gemarie Doctors, many of the Rabbins and Fathers, Origen, Jerom, Eusebius, Beda, Genebrard, Ramban, Bellarmine, Scaliger, Drusius, Capella, Bibliander, Brerewood, Montanus, Walton, the two Vossius's, Bochart and Bernard are of this Opinion. The third is, that from the beginning there were two Characters, the one sacred, the other profane ; which is the Opinion of Azarias, A. de Bartenora, Postel, Buxtorf, Conringius, &c. But this Distinction of two kinds of Characters seems a mere Chimera. See P. Soucier on the Samaritan Medals, where he proves that the Letters in the Inscriptions of those Medals are the genuine original Hebrew Characters.

As to the first Letters, what they were, who first invented them, and among what People they were first in use, there is still room to doubt ; however, setting aside Conjectures and Prejudice, the Business of Antiquity seems to lie between the Egyptians and Chinese. Philo attributes the first Invention of Letters to Abraham ; Josephus, S. Irenaeus, and others, to Enoch ; Bibliander, to Adam ; Eupolemes, Eusebius, Clemens Alexandrinus, Corn. Agrippa, &c. to Moses ; Pomponius Mela, Herodian, Rufus, Festus, Pliny, Lucan, &c. to the Phœnicians ; S. Cyprian to Saturn ; Tacitus to the Egyptians, and some to the Ethiopians.

The Egyptian Mummies and Obelisks prove a great Antiquity on the Side of the Hieroglyphics ; but if the Chinese Chronology may be credited, their Characters are vastly more antient than those of the Egyptians. The Chinese make Fohi, the first of their Kings, the Inventor of their Letters, and compute him to have lived 2950 Years before Christ. During all which time they pretend to have certain and written Accounts in their Books. If this holds true, their Character must be older than Moses by 1400 Years, and even before Menes the first King of Egypt by 500 Years : So that the Chinese Letters appear to be the most antient of that kind, and the Book Tekim, said to be written by Fohi, the most antient Book.

But as China is so remote, and had so little Communication with these Parts of the World, we may reasonably make another Enquiry into the Original of Letters in the hither Parts of Asia, Egypt, and Europe. Here indeed the Egyptians seem to have the best Title. 'Tis more than probable from the Obelisks, &c. that their Hieroglyphics were the first manner of writing, and the Original Characters in these Parts, as being prior to Moses, and made, at least in great measure, while the Israelites were Slaves among them, and of consequence not well qualified for Inventions so very curious and judicious. Whether Cadmus and the Phœnicians learnt Letters from the Egyptians, or from their nearer Neighbours of Judah and Samaria, is a question ; since some of the Books of the Old Testament being written in Letters, is more likely to have given them the Hint than the Hieroglyphics of Egypt. But when or wheresoever the Phœnicians learnt this Art, it is generally agreed, that Cadmus, the Son of Agenor, first brought Letters into Greece, whence, in the following Ages, they spread over the rest of Europe.

According to Crinitus, Moses invented the Hebrew Letters, Abraham the Syriac and Chaldee ; the Phœnicians that of Attica, brought into Greece by Cadmus, and thence by the Pelasgians into Italy ; Nicostrata the Latin ; Isis the Egyptian ; and Vulsila that of the Goths.

Rudhecks, who in his *Atlantica* claims the Glory of all Inventions from all other Nations for the Swedes, maintains that the Ionians had Letters before Cadmus ; that at the time of the Siege of Troy, the Greeks had but 16 Letters, whereas the Phœnicians had 22 : whence he concludes, that it was not either Cadmus or the Phœnicians who taught this Art to the Greeks. But in regard the antient Northern Nations had just 16 Letters, like the Greeks, he concludes the Greeks must either have taught them to the People of the North, or have learnt 'em of them. But because the Form and Make of the Runic Letters is more coarse than that of the Greek Letters, he concludes that these last

must be derived from the former ; taking it as a Principle, that those who derive any thing from another, polish and perfect it. He even asserts, that by the Golden Apples which Hercules was obliged to steal, must be understood the Letters in use among the Hyperboreans.

The Letters F, G, H, K, Q, X, Y, Z, were unknown to the antient Romans, as is proved by Dajqueius in his *Orthography*, where he traces the Origin of the several Letters.

The Grammarians distinguish Letters into Vowels and Consonants ; into Mutes, Dipthongs, Liquids, and Characteristicks. The Hebrews divide their Letters into Gut-tural, *a, b, ch, gn*, aleph, he, cheth, hain ; Dental, *z, ts, r*, zain, tsade, resch ; Labial, *b, m, u, p*, beth, mem, vau, phe ; Lingual, or those of the Tongue, *d, t, l, n*, da-leth, tau, lamed, nun ; and those of the Palate, *g, i, c, k*, ghimel, jod, caph, coph.

The Art of assembling Letters to form Words, and of combining the one and the other into a number of different Senses, is a Secret unknown to the Chinese. Instead of the Letters of an Alphabet, they at first, like the Egyptians, used Hieroglyphics ; they painted rather than wrote : striving by the Natural Images of Things drawn on Paper, to express and communicate their Ideas to one another. To write a Bird, they were obliged to paint its Figure ; and to signify a Forest, they drew a great number of Trees. A Circle served for the Sun, and a Crescent for the Moon. But this Manner of writing was not only very inconvenient, but also very imperfect. For besides that they could but express their Thoughts by halves, even that little that they could express was but very imperfectly conceiv'd ; and it was scarce possible not to be frequently deceived in it. Further, they were under a necessity of writing large Volumes to say very little Matters, in regard their Pictures took up a great deal of room. To remedy these Inconveniences, they changed by little and little their Manner of Writing, making it more simple, tho less natural. They even invented several Characters, to express things that did not come within the reach of Painting to represent, as Voice, Smell, Thoughts, Passions, and a thousand other Objects that have no Body or Figure. From several simple Strokes, they afterwards framed others more compound, and in this manner multiplied their Letters and Characters to Infinity ; contriving one or more for every Word. This Abundance of Letters seems the Source of that Ignorance which we find among the Chinese. Their whole Lives being spent in learning their Letters, they have no time to apply themselves to the Study of Things, but think themselves very learned when they are able to read. There are scarce any of 'em that know all their Letters : They think 'tis a great progress they have made, when after forty or fifty Years hard Study they are able to understand fifteen or twenty thousand. But the Generality of their learned Men come far short of this : Father Le Compte is of opinion, that the greatest Doctor among 'em never understood half of their Letters well ; for the whole Number he reckons Eighty Thousand. This is a prodigious Inconvenience to Foreigners, of which the Missionaries into that Country make loud Complaints. Among the Chinese Letters, there are some now almost wore out of use, and only preserved out of Respect to Antiquity. There is a second Class much less antient than the former, only used in public Inscriptions. A third much more regular and beautiful, used in Printing, and even in ordinary Writing. However, as the Strokes are to be distinctly formed, they can't be wrote with any expedition. For this reason they have invented a fourth kind, where the Strokes being closer, and less distant from each other, allow them to be writ with more ease and readiness. And this they call the running Letter.

The Americans had no Letters before the Discovery of that Country by the Spaniards. The Acaimbis engrave their Memorable Events and Epochs on Stones and Metals. Their Songs supply the rest. In Peru and Chili, to keep an Account of their Goods and Chattels, and to preserve the Memory of their particular Affairs, the Indians have recourse to certain Knots of Wool, which by the Variety of their Colours and Ties, serve instead of Characters and Writing. The Knowledge of these Knots, which they call *Quipos*, is one of their great Sciences ; but which is always kept as a Secret, and never revealed to the Children till the Fathers think themselves at the end of their days.

The Printers distinguish their Letters into Capital, Majuscule, or Initial Letters, which serve for the Titles of Books, proper Names, &c. And Minuscule or Small Letters, which are again divided according to their Size, into Pearl, Nonpareil, Pica, Great Canon, &c. See *Type and Printing*. They have also their History or Figured Letters engraven on Wood or Metal, which take place of the Illumined Letters of the antient Manuscripts.



**Numeral Letters**, are those used by the antient Romans instead of Cyphers, to express their Numbers by. These *Numeral Letters* are seven in number, C, D, I, L, M, V, X; which are all form'd in describing a Circle, and drawing two Lines thro it, crossing each other at right Angles in the Center.

*Dominical Letter*, see *Dominical*.

*Nundinal Letter*, see *Nundinalia*.

**LETTERED**, *Letrados*, *Litterati*, an Epithet given to such Persons among the *Chinese* as are able to read and write their Language. These alone are capable of being made *Mandarins*.

This is also the Name of a particular Sect either in Religion, Philosophy, or Politicks, consisting principally of the Learned Men of that Country: among whom 'tis called *Jukio*, i. e. Learned. It had its Rise in the Year of Christ 1400; when the Emperor, to awaken the native Affection of the People for Knowledge, which had been quite banished by the preceding Civil Wars among 'em, and to stir up Emulation among the *Mandarins*, chose out forty-two of the ablest among their Doctors, to whom he gave a Commission to compose a Body of Doctrine agreeable to that of the Antients, which was then become the Rule or Standard of the Learned. The Delegates applied themselves to the Business with a world of Attention; but they seem rather to have wrested the Doctrine of the Antients, to make it consist with theirs, than to have built up theirs to the Model of the Antients. They speak of the Deity as if it were no more than mere Nature; or the Natural Power or Virtue that produces, disposes, and preserves the several Parts of the Universe. It is, say they, a pure, perfect Principle without Beginning or End; 'tis the Source of all Things, the Essence of every Being; and that which determines it to be what it is. They make God the Soul of the World, say he is diffused throughout all Matter, and produces all the Changes that happen there. In short, 'tis not easy to determine whether they resolve God into Nature, or lift up Nature into God; for they ascribe to it many of those things which we attribute to God. This Doctrine, in lieu of the Idolatry that prevailed before, introduced a refin'd kind of Atheism. The Work being composed by so many Persons of Learning and Parts, and approved by the Emperor himself, was received with infinite Applause by all the World. Many were pleas'd with it, in regard it seem'd to subvert all Religion: others approved it, because the little Religion that it left 'em could not give 'em much trouble. And thus was form'd the Sect of the *Litterati*; which consists of the Maintainers and Adherents to this Doctrine. The Court, the *Mandarins*, and the Persons of Fortune and Quality, &c. are generally Retainers to it; but a great part of the common People still hold to their Worship of Idols. The *Litterati* freely tolerate the *Mahometans*, because they adore, with them, the King of Heaven and Author of Nature; but they bear a perfect Aversion to all other Sects of Idolaters among 'em, and it was once resolved to extirpate them. But the Disorder this would have occasion'd in the Empire, prevented it: they now content themselves with condemning them in general as Heresies; which they do solemnly every Year at *Pekin*.

**LETTER OF CREDIT**, among Merchants, a Letter which a Merchant or Banker gives a Person he trusts in, to take up Money of his Correspondents in remote places, in case of need. *Letters of Credit*, tho different from those of *Exchange*, yet have the same Privileges, to compel the Payment of Sums received in consequence of 'em.

**LETTER OF EXCHANGE**, see *Bill of Exchange*; see also *Exchange*.

**LETTER OF LICENCE**, in Trade, is an Instrument or Writing granted to a Man who has fail'd or broke, sign'd and seal'd by his Creditors; which Letter usually gives a longer Time for Payment: so that the Debtor having such an Assurance, can go about his Business without fearing an Arrest.

**LETTERS OF ATTORNEY**, are Writings authorizing an Attorney, that is, a Man appointed to do a legal Act in our stead. As a Letter of Attorney to give Seisin of Lands, to receive Debts, to sue a third Person, &c.

**LETTERS OF MART**, are Letters under the Privy-Seal, granted to the King's Subjects; empowering them to take by Force of Arms, what was formerly taken from them contrary to the Law of *Mart*: and regards any Nation with whom Truce is broken. See *Reprisal*.

**LETTERS PATENTS**, are Writings sealed with the Great Seal of *England*, whereby a Man is authorized to do, or enjoy any thing, that otherwise of himself he could not. And they are so call'd by reason of their Form, because they are open, with the Seal affixed, ready to be shewn for the Confirmation of the Authority given by them. Common Persons may grant *Letters Patents*; but they are rather call'd *Patents* than *Letters Patents*, yet for difference those granted by the King are call'd *Letters Pa-*

*ents Royal*. *Letters Patents* conclude with *Teste meipso*, *Charters* with *hinc Testibus*.

**LETTERS OF RESPITE**, Letters issued out by a Prince in favour of honest unfortunate Debtors, against too rigorous Creditors, whereby Payment is delay'd, for a certain Term. The Use of these Letters is very antient: *Cassiodorus* observes, they were in use in the Time of *Theodoric* King of the *Goths*; others will have 'em introduced towards the End of the eleventh Century by Pope *Urban II*. in favour of those who went on the *Cruzados*. They are still in use in *France*, and some other Countries: and take their Name à *respirando*, because they give the Debtor a breathing while.

**LEVANT**, in Geography, signifies any Country situate to the East of us, or the Eastern side of any Continent or Country, or that on which the Sun rises. In Matters of Commerce, &c. the Word is generally restrain'd to the *Mediterranean Sea*, or the Country on the Eastern part of it: Hence our Trade thither is call'd the *Levant Trade*, and a Wind that blows from thence out of the *Streights*-mouth, is call'd a *Levant Wind*.

**LEVANT AND COUCHANT**, in Law, is when Cattel have been so long in another Man's Ground, that they have lain down, and have risen again to feed.

**LEVARI FACIAS**, a Writ directed to the Sheriff for the Levying a Sum of Money on his Land and Tenements who has forfeited a Recognizance.

**LEVATOR**, an Epithet which the Anatomists give to several Muscles, whose Use is to raise or lift up the Parts to which they belong. There are *Levators* of the Eye-Lids, see *Attollens Palpebr.* of the Omoplate, see *Omoplate*; of the Anus, see *Anus*; and of the Scapula, see *Scapula*.

**LEUCOMA**, in Physic, is a little white Spot on the Cornea of the Eye, call'd by the *Latins*, *Albugo*. It is occasioned by an Humour gather'd in this Membrane, or by the Scar following a Wound, or by an Ulcer in this Part, as sometimes happens in the Small-Pox. The Word is *Greek*, and is formed from *λευκος*, *white*.

**LEUCOPHLEGMATIA**, a kind of Dropsy, otherwise call'd *Anasarca*. It consists in a Tumor or Bloating of the whole outer Surface of the Body, or some of its Parts; white and soft, easily giving way to the Touch, and preserving the Impression made by the Finger for some time. It may either be owing to some Disorder of the Blood, which in this Disease is of a pale Colour, viscid, and cold; or to an aqueous Humour extravasated, and gathered together in the Muscles and the Pores of the Skin. The Word is *Greek*, and comes from *λευκος*, *white*, and *φλεγμα*, *Pituita*, *Phlegm*.

**LEVEL**, a Mathematical Instrument, serving to draw a Line parallel to the Horizon, to lay off Floors, the Courses of Masonry, &c. horizontally, to measure the difference of Ascent or Descent between several Places, to convey Waters, drain Fens, &c. The Word comes from the *Latin Libella*, the Cross Beam that forms the Brachia of a Balance, which to be just, must stand horizontally. There are several Instruments of different Contrivance and Matter, that have been invented for the Perfection of Levelling; all of which, for the Practice, may be reduced to these that follow.

*Water Level*, which shews the horizontal Line by means of a Surface of Water, or other Liquid; founded on this Principle, that Water always naturally places itself level. The most simple is made of a long wooden Trough or Canal, whose Sides are parallel to its Base; so that being equally fill'd with Water, the Surface thereof shews the Line of Level: this is the *Chorobates* of the Antients, described by *Vitruvius*, *Lib. 8. Chap. 6*. This *Level* is also made with two Cups fitted to the two Ends of a Pipe, 3 or 4 Foot long, about an Inch in Diameter; by means whereof the Water communicates from the one to the other Cup: and this Pipe being moveable on its Stand, by means of a Ball and Socket, when the two Cups become equally full of Water, their two Surfaces mark the Line of Level. This Instrument, instead of Cups, may be made with two short Cylinders of Glass 3 or 4 Inches long, fasten'd to each Extreme of the Pipe with Wax or Mastic. Into the Pipe is fill'd some common or coloured Water, which shews itself through the Cylinders, by means whereof, the Line of Level is determined; the Height of the Water, with respect to the Center of the Earth, being always the same in both Cylinders. This *Level*, tho' very simple, is yet very commodious for levelling of small Distances.

*Air Level*, that which shews the Line of Level, by means of a Bubble of Air inclosed with some Liquor in a Glass Tube of an indeterminate Length and Thickness, whose two Ends are sealed hermetically; that is, are closed with the Glass itself, by heating it with the Flame of a Lamp, till it become soft and tractable. When the Bubble of Air fixes itself at a certain Mark made exactly in



in the Middle of the Tube, the Plan or Ruler wherein it is fixed is *level*. When it is not *level*, the Bubble will rise to one End. This Glass Tube may be set in another of Brass, having an Aperture in the Middle, whence the Bubble of Air may be observed. The Liquor where-with the Tube is fill'd, is ordinarily either Oil of Tartar, or *Aqua secunda*; those not being liable to freezing as common Water, nor to Rarefaction and Condensation as Spirit of Wine. The Invention of this Instrument is ascribed to Mr. Thevenot.

*Air Level with Sights*, is an Improvement on that last described, which by the Addition of more Apparatus, becomes more commodious and exact: It consists of an *Air Level* 1, (*Plat. Surveying*, Fig. 4.) about eight Inches long, and seven or eight Inches in Diameter, set in a Brass Tube 2, with an Aperture in the Middle. The Tubes are carried in a strong straight Ruler, a Foot long, at whose Ends are fixed two Sights exactly perpendicular to the Tubes, and of an equal Height, having a square Hole, form'd by two Fillets of Brass, crossing each other at right Angles, in the Middle whereof is drilled a very little Hole; through which little Hole, a Point on a *Level* with the Instrument is descried. The Brass Tube is fastened on the Ruler by means of two Screws, one whereof, mark'd 4, serves to raise or depress the Tube at pleasure, for bringing it towards a *Level*. The Top of the Ball and Socket is riveted to a little Rule that springs, one End whereof is fasten'd with Screws to the great Ruler, and the other End has a Screw 5, serving to raise and depress the Instrument when nearly *level*. This Instrument is yet less commodious than the following one, because tho' the Holes be ever so small, yet they will still take in too great a Space to determine the Point of *Level* precisely.

*Air Level with Telescope Sights*. This *Level* (*Plate Surveying*, Fig. 5.) is like the last *Plate Fig.* with this Difference, that instead of plain Sights, it carries a Telescope to determine exactly a Point of *Level* at a good distance. The Telescope is in a little Brass Tube, about 15 Inches long, fastened on the same Rule as the *Level*. At the End of the Tube of the Telescope, mark'd 1, enters the little Tube 1, carrying the Eye-Glass, and a Hair horizontally placed in the Focus of the Object-Glass 2; which little Tube may be drawn out, or push'd into the great one, for adjusting the Telescope to different Sights. At the other End of the Telescope is placed the Object-Glass: The Screw 3, is for raising or lowering the little Fork carrying the Hair, and making it agree with the Bubble of Air when the Instrument is *level*; and the Screw 4, is for making the Bubble of Air agree with the Telescope. The whole is fitted to a Ball and Socket. M. Huygens is said to have been the Inventor of this *Level*; which has this Advantage, that it may be inverted, by turning the Ruler and Telescope half round: And if then the Hair cut the same Point that it did before the Turn, 'tis a Proof the Operation is just. It may be here observed, that one may add a Telescope to any kind of *Level*, by applying it upon, or parallel to the Base or Ruler, when there is occasion to take the *Level* of remote Objects.

*Plumb or Pendulum Level*: That which shews the Horizontal Line by means of another Line perpendicular to that described by its Plumbet or Pendulum. This Instrument (*Plate Surveying*, Fig. 6.) consists of two Legs or Branches, join'd together at Right Angles; whereof that which carries the Thread and Plumbet, is about a Foot and an half long. This Thread is hung towards the Top of the Branch, at the Point 2. The Middle of the Branch where the Thread passes is hollow, that so it may hang free every where but towards the Bottom at the Place 3, where there is a little Blade of Silver, whereon is drawn a Line perpendicular to the Telescope. The said Cavity is cover'd by two Pieces of Brass, making, as it were, a kind of Case, lest the Wind should agitate the Thread; for which reason the Silver Blade is covered with a Glass, to the end that it may be seen when the Thread and Plumbet play upon the Perpendicular. The Telescope 1, is fastened to the other Branch or Leg of the Instrument, and is about two Foot long, having a Hair placed horizontally across the Focus of the Object-Glass; which determines the Point of *Level*, when the String and Plumbet hang against the Line on the Silver Blade. All the Accuracy of this Instrument depends on the Telescope's being fitted at Right Angles to the Perpendicular. It has a Ball and Socket, by which it is fasten'd to its Foot, and is said to have been the Invention of M. Picard.

*Reflecting Level*: That made by means of a pretty long Surface of Water, representing the same Object inverted, which we see erect by the Eye; so that the Point where those two Objects appear to meet, is in a *Level* with the Place where the Surface of Water is found. This is the Invention of M. Mariotte. There is also another *Reflecting Level*, consisting of a Mirror of Steel or the like, well polish'd, and placed a little before the Object-Glass of a

Telescope suspended perpendicularly. This Mirror must make an Angle of 45 Degrees with the Telescope; in which Case the Perpendicular Line of the said Telescope is converted into an Horizontal; which is the same with the Line of *Level*. The Invention of this is owing to Mr. Cassini.

We have another *Level* of Mr. Huygens's Invention, consisting of a Telescope *a*, (*Plate Surveying*, Fig. 7.) in form of a Cylinder, going through a Ferril, in which it is fasten'd by the middle. This Ferril has two flat Branches *b b*, one above, and the other below; at the ends whereof are fasten'd little moving Pieces, which carry two Rings, by one of which the Telescope is suspended to a Hook at the end of the Screw 3, and by the other a pretty heavy Weight is suspended, in order to keep the Telescope in *Equilibrio*. This Weight hangs in the Box 5, which is almost fill'd with Linseed Oil, Oil of Walnuts, or other Matter that will not easily coagulate, for more aptly settling the Ballance of the Weight and Telescope. The Instrument carries two Telescopes close and very parallel to each other, the Eye-Glass of the one being against the Object-Glass of the other, that one may see each way without turning the *Level*. In the Focus of the Object-Glass of each Telescope must a little Hair be strain'd horizontally, to be rais'd and lower'd as occasion requires, by a little Screw. If the Tube of the Telescope be not found level when suspended, a Ferril or Ring 4 is put on it, to be slid along, till it fixes to a *Level*. The Hook on which the Instrument is hung, is fix'd to a flat Wooden Cross, at the Ends of each Arm whereof, there is a Hook serving to keep the Telescope from too much Agitation in using or in carriage. To the said flat Cross is applied another hollow Cross, that serves as a Case for the Instrument; but the two Ends are left open, that the Telescope may be secured from the Weather, and always in a condition to use. The Foot of this Instrument is a round Brass Plate, to which are fasten'd three Brass Ferrils moveable by means of Joints wherein are put Staves: And on this foot is placed the Box. See the Figure.

*Masons Level*, is composed of three Rules, so joined as to form an Isosceles Rectangle, somewhat like a Roman A; at the Vertex whereof is fastened a Thread, from which hangs a Plumbet; which passes over a fiducial Line marked in the Middle of the Base, when the thing to which the *Level* is applied, is horizontal; but declines from the Mark, when the Thing is lower on one Side than the other.

*Carpenters and Paviments Level*, consists of a long Ruler, in the Middle whereof is fitted, at Right Angles, another somewhat bigger, at the Top whereof is fastened a Line with a Plumbet; which, when it hangs over a fiducial Line at Right Angles with the Base, shews that the said Base is horizontal. These two last Levels, tho' very common, are esteemed the best for the Practice of Building, tho' the Operations made by 'em must needs be short.

*Gunnery Level*, for levelling Cannons and Mortars, is an Instrument (*Plate Surveying*, Fig. 8.) consisting of a Triangular Brass Plate about four inches high, at the bottom of which is a Portion of a Circle divided into 450; which Number is sufficient for the highest Elevation of Cannons and Mortars, and for giving Shot the greatest Range. On the Center of this Segment of a Circle is screwed a piece of Brass, by means whereof it may be fix'd or moved at pleasure. The End of this Piece of Brass is made so as to serve for a Plumbet and Index, in order to shew the Degrees of different Elevations of Pieces of Artillery. This Instrument has also a Brass Foot to set upon Cannon or Mortars, so as when those Pieces are horizontal, the whole Instrument will be perpendicular. The Use of the Instrument is obvious; and consists in placing the Foot thereof on the Piece to be elevated, in such manner as that the Point of the Plumbet may fall on the proper Degree: this is what they call *levelling* the Piece.

*Artillery Foot Level*, is in form of a Square, having its two Legs or Branches of equal Length; at the Juncture whereof is a little Hole, whence hangs a Thread and Plumbet playing on a perpendicular Line in the Middle of the Quadrant: it is frequently divided into 90 Degrees, or rather into twice 45 Degrees from the Middle. This Instrument may be used on ordinary Occasions, by placing the Ends of its two Branches on a Plane; for when the Thread plays perpendicularly over the middle Division of the Quadrant, that Plane is assuredly *level*. To use it in Gunnery, place the two Ends on the Piece of Artillery, which you may raise to any proposed Height by means of the Plumbet, whose Thread will give the Degree above the *Level*.

LEVELLING, an Operation with a Level, for finding a Line parallel to the Horizon, at one or more Stations, in order to determine the Height of one Place with respect to another; for the laying off Grounds even, regulating



of Descents, draining of Morasses, conducting of Waters, &c. One Place is said to be higher than another, or out of Level with it, when it is more remote from the Centre of the Earth; and a Line equally distant from the Centre of it in all its Points, is called the Line of true Level: whence, because the Earth is round, that Line must be a Curve, and make a part of the Earth's Circumference, or an Arch concentrical with it, as the Line B C F G; *Plate Surveying, Fig. 9.* all the Points whereof are equally distant from the Centre of the Earth A. But the Line of Sight which the Operations of Levels give, is a Tangent or a Right Line perpendicular to the Semi-diameter: One Extreme of which Tangent, being the Point of Contact, the other will be that of a Secant drawn from the Centre of the Earth; and the Point which determines it, will be above the Surface of the Earth, and of the true Level, as much as that Secant exceeds the Radius or Semi-diameter of the Earth.

This Extremity of the Tangent is said to be in the apparent Level, as being that given by the Sight, but is easily reduced to the true Level, because we know by Trigonometry, how much each Secant exceeds the Radius; and because by measuring we have discovered the precise Length of that Radius. It was for want of the Knowledge of this, the Antients were not able to reduce the apparent Level to the true one; and accordingly, to prevent falling into an Error, never levell'd above 20 Feet at once, where such Reduction was not necessary. By the Tables since made, it appears that at the Distance of 100 Yards, the apparent Level is raised above the true one about  $\frac{2}{3}$  of a Line: So that the Antients, in this respect, were more scrupulous than needed. By means of this Reduction, we are now able to level Distances of one or two Miles, at one Operation, which the Antients could not do in less than 300.

The Operation of *Levelling* is as follows: Suppose the Height of the Point A (*Plate Surveying, Fig. 10.*) on the Top of a Mountain, above that of the Point B, and at the Foot thereof required: Place the Level about the middle Distance, between the two Points, as in D, and Staffs in A and B, and let there be Persons instructed with Signals for raising and lowering on the said Staffs little Marks of Paleboard, or other Matter. The *Level* being placed horizontally by the Bubble, &c. look towards the Staff A E, and cause the Mark to be raised or lowered, till the Middle, upper Edge, or other most conspicuous Part appear in the visual Ray. Then measuring exactly the perpendicular Height of the Point A above the Point E, which suppose 6 Feet 4 Inches, set that down in your Book; then turn the Level horizontally about, that the Eye-Glafs of the Telescope may be still next the Eye when you look the other way (if you have only plain Sights, the Instrument need not be turned) and cause the Person at the Staff B to raise or lower his Mark, till some conspicuous part of it fall in the visual Ray, as at C. then measure the perpendicular Height of C above B, which suppose 16 Feet, 16 Inches; set this also down in the Book above the other Number of the first Observation; subtract the one from the other, the Remainder will be 10 Feet, 4 Inches, which is the Difference of Level between A and B, or the Height of the Point A above the Point B. Where Note, that if the Point D, where the Instrument is fixed, be in the middle between the two Points A and B, there will be no Necessity for reducing the apparent Level to the true Level, the visual Ray in that Case being raised equally above the true Level.

If it be further required to know whether there be a sufficient Descent for conveying Water from the Source A to the Point B, *Plate Surveying, Fig. 11*. Here in regard the Distance from A to B is considerable, 'tis required that several Operations be made. Having then chosen a proper Place for the first Station, as at I, set up a Staff in the Point A near the Source, with a proper Mark to slide up and down the Staff as L, and measure the Distance from A to I, which suppose 2000 Yards. Then the Level being adjusted in the Point I, let the Mark L be raised and lowered till such time as you spy some conspicuous Part of it thro' the Telescope or Sights of the Level, and measure the Height AL, which suppose 13 Foot 5 Inches. But in regard the Distance AI is 2000 Yards, you must have recourse to your Table for a Reduction, subtracting 11 Inches, which will leave the Height AL 12 Foot 6 Inches; and this note down in your Book. Now turn the Level horizontally about, so as the Eye-Glass of the Telescope may be towards the Staff at A; and fixing up another Staff at H, cause the Mark G to be moved up and down, till you spy some conspicuous Part thro' the Telescope or Sights. Measure the Height HG, which suppose 6 Yards, 4 Feet, 2 Inches. Measure likewise the Distance of the Points IH, which suppose 1300 Yards; for which Distance, according

to the Table, 4 Inches, 8 Lines, must be subtracted from the Height H G, which consequently will but leave 6 Yards, 3 Feet, 9 Inches, 4 Lines, to be taken down in your Book.

This done, remove the Level forwards to some other Eminence, as E, whence the Staff H may be view'd, as also another Staff at D, the Place whither the Water is to be convey'd. The Level being again adjusted in the Point E, look back to the Staff H; and managing the Mark as before, the visual Ray will give the Point F. Measure the Height H F, which suppose 11 Feet, 6 Inches. Measure likewise the Distance H E, which suppose 1000 Yards; for which Distance the Table gives 2 Inches, 9 Lines of Abatement; which being taken from the Height H F, there will remain 11 Feet, 3 Inches, 3 Lines, which enter in your Book. *Lastly*, turning the Level to look at the next Staff D, the visual Ray will give the Point D. Measure the Height of D from the Ground, which suppose 8 Feet, 3 Inches. Measure also the Distance from the Station H to B, which suppose 900 Yards; for which Distance the Table gives 2 Inches, 3 Lines of Abatement; which being taken from the Height B D, there will remain 8 Feet, 9 Lines, which enter as before.

For the Manner of entering down Observations in your Book, observe that when a proper Place or Station for the Level, between the two Points, has been pitched upon, you must write down the two Heights observed at that Station, in two different Columns, viz. under the first Column, those observed in looking thro' the Telescope when the Eye was from the Source, or towards the Point, which we may call *Back-Sights*; and under the second Column those observed, when the Eye was next the Source, which we call *Fore-Sights*, in the manner following:

| Back-Sights. |                         | Fore-Sights.  |                        |
|--------------|-------------------------|---------------|------------------------|
|              | <i>Foot. Inc. Line.</i> |               | <i>Foot. Inc. Lin.</i> |
| First Height | } 12 : 6 : 0            | Second Height | 21 : 9 : 4             |
| Corrected    |                         | Fourth Height | 8 : 0 : 9              |
| Third Height | 11 : 3 : 3              |               |                        |
| <hr/>        |                         |               | <hr/>                  |
|              | 23 : 9 : 3              |               | 29 : 10 : 1            |

Having summed up the Heights of each Column separately, subtract the lesser from the greater, the Remainder will be the Difference of Level between the Points A and B ; as in this Example,

| Feet. | Inch. | Lin. |   |
|-------|-------|------|---|
| 29    | : 10  | : 1  |   |
| 23    | : 09  | : 3  |   |
| <hr/> |       |      |   |
| 6     | : 00  | : 10 | The Difference of Height or Level between the Points A and B. |

If the Distance of the two Points be required, add all the Distances measured, together, and dividing the Difference of Height by the Yards of the Distances, for each 200 Yards you will have a Descent of about 2 Inches, 9 Lines.

*Levelling Staffs* are Instruments used in *Levelling*, serving to carry the Marks to be observ'd, and at the same time to measure the Height of those Marks from the Ground. They usually consist each of two long square Wooden Rulers, made to slide over one another, and divided into Feet, Inches, &c.

For the common Occasions of *Levelling* to be perform'd without much Apparatus of Instruments, Time, or Trouble, the following Method is recommended. Set a Pole upright in a Spring, Pond, River, or other Place whence Water is to be brought, and mark how many Feet and Inches of it are above Water. Then set up another Pole, of equal length with the other, in the place to which the Water is to come. Place the Center of a Quadrant on the top of this last Pole, the Plummets hanging free; spy thro' the Sights the Top of the Pole that is in the Water, and if the Thread cuts any Degree of the Quadrant, the Water may be convey'd by a Pipe laid in the Earth. If you can't see from one Extreme to the other, the Operation may be repeated in the manner already directed.

Dr. Halley suggests a new Method of Levelling, which has been put in practice by some of the French Academy. This is performed wholly by means of the Barometer, in which the Mercury is found to be suspended to so much the less Height, as the Place is further remote from the Centre of the Earth. Hence it follows, that the different Heights of the Mercury in two Places give the Difference of Level. Mr. Derham, from some Observations he made at the top and bottom of the Monument, found that the Mercury fell  $\frac{1}{6}$  of an Inch at every 82 Foot of perpen-



perpendicular Ascent, when the Mercury is at 30 Inches. Dr. Halley allows of  $\frac{1}{8}$  of an Inch for every 30 Yards ; which, considering how accurately the Barometers are now made, an Inch in some of 'em being divided into an hundred or more Parts, all very sensible, he thinks this Method sufficiently exact to take the Levels for the Conveyance of Water, and less liable to Errors than the common Levels. The same Author found a Difference of 3 Inches 8 Tenths between the Height of the Mercury at the top and bottom of *Snowdon Hill* in *Wales*.

**LEVER**, in Mechanics, an inflexible Right Line supported by a single Point on a Fulcrum or Prop ; and used for the raising of Weights : being either void of Weight itself, or at least having such a Weight as may be balanced. The *Lever* is the first of those call'd *Mechanical Powers* or *Simple Machines*, as being of all others the most simple, and is chiefly applied for raising Weights to small Heights. It has its Name *Lever* from its Office *levare* or *lever*, to raise.

In a *Lever* there are three things to be principally considered : 1. The Weight to be rais'd or sustain'd, as O, (*Plate Mechanicks*, Fig. 1.) 2. The Power by which it is to be rais'd or sustain'd, as B. 3. The Fulcrum or Prop D, whereon the *Lever* is sustain'd, or rather on which it moves round, the Fulcrum remaining fixed.

The *Lever* is threefold : Sometimes the Fulcrum is placed between the Weight and the Power, as in Fig. 1. *Plate Mechanicks* ; and this we call a *Lever* of the first kind. Sometimes the Weight is between the Fulcrum and the Power, which is the second kind ; as in Fig. 2. And sometimes the Power acts between the Weight and the Fulcrum ; Fig. 3. the third kind.

The Power of the *Lever* is founded on the following Theorem, viz. That the Space or Arch described by each Point of a *Lever*, and consequently the Velocity of each Point of a *Lever* is as its Distance from the Fulcrum or Prop.

From hence it follows, that the Action of a Power and the Resistance of the Weight increase in proportion to their Distance from the Fulcrum. And hence also it follows, that a Power will be able to sustain a Weight, if the Distance of the Point in the *Lever* to which it is applied, be to the Distance of the Weight, as the Weight to the Intensity of the Power ; which if it be ever so little increased, must raise the Weight. See this Doctrine demonstrated under the Word *Mechanic Powers*, and further illustrated under the Word *Balance* : between which and the *Lever* there is a great Analogy ; a *Lever* of the first kind being a sort of Steel-yard to raise Weights.

The Power and Action of the *Lever* will be fully illustrated by the following Propositions.

I. If the Power applied to a *Lever* of any kind sustain a Weight, the Power is to the Weight in a reciprocal Ratio of the Distances from the Fulcrum. This is the Converse of that demonstrated under the Head *Mechanic Powers*.

II. The Weight of a *Lever* of the first and second kind AB, the Distance of the Centre of Gravity from the Fulcrum CV, and the Distances of the Weight and the Power AC and CB, being all given ; to find the Power that will sustain it.

Suppose the *Lever* void of Gravity, but in lieu thereof a Weight hung at V ; if then AC be made to CV as the Gravity of the *Lever* to a fourth Number, we shall have the Weight which the *Lever* is able to sustain, and this subtracted from the given Weight, the Remainder will be the Weight to be sustain'd by the Power. Let CB then be to CA as the remaining Weight to a fourth Weight ; and we shall have the Power to be applied in B, in order to sustain the given Weight with the given *Lever*.

III. The Gravity of a *Lever* of the first or second kind AB, the Distance of its Centre of Gravity from the Fulcrum CV, the Distances of the Power and the Weight BC and CA being all given, to find the Weight to be sustain'd.

Find the Part of the Weight sustain'd by the *Lever* alone, as in the former Problem ; in the same manner find the other Part of the Weight which the Power applied in B is able to sustain : Add the two Numbers together, the Sum is the Weight required.

IV. The Gravity and Centre of Gravity F of a *Lever* of the second kind CB, with the Weight G, its Distance from the Fulcrum CA, and from the Power CB, being given ; to find the Power capable to sustain the Weight.

Suppose the *Lever* void of Gravity, but in lieu thereof a Weight equal thereto hung in F, the Power required to sustain the *Lever* alone. Then find the Power requisite to sustain the given Weight G ; add the Powers together, the Sum will be the Power required.

V. If a Power applied to a *Lever* of any kind lift a Weight, the Space of the first is to that of the last, as this last to a Power able to sustain the same Weight ;

whence it follows, that the Gain of Force is always attended with the Loss of Time, and *vice versa*.

**LEVERET**, a young Hare, so call'd in the first Year of its Age.

**LEVIGATION** signifies the Reduction of any hard ponderous Bodies, as Coral, Tutty, Precious Stones, &c. into a light subtile Powder, by grinding upon Porphyry, a Sea-shell, Marble, Stone, &c. as Painters do their Colours. This is much used in Pharmacy and Chymistry, but unless the grinding Instruments are extremely hard, they will wear away, so as sometimes to double the Weight of the Medicine thus managed.

**LEVITE**, a *Hebrew* Priest, or Sacrificer, so call'd as being of the Tribe of *Levi*, or the Descendant of the Patriarch of that Name. In the Primitive Church they also gave the Name *Levite* to the Deacons, and Ministers of the Altar. The *Levites* of the Old Law had no settled Lands allotted 'em for their Maintenance, but lived chiefly of the Offerings made to God. They were distributed through all the Tribes, each of which gave some of their Cities to the *Levites*, with Grounds in their Neighbourhood for the Subsistence of their Flocks. According to the Numeration made by *Solomon*, from the Age of Twenty there were Thirty-eight Thousand capable of serving : Twenty-four Thousand of these he appointed for the daily Ministry under the Priests ; Six Thousand to be inferior Judges in the Cities, and to decide Matters relating to Religion, and of no great consequence to the State ; Four Thousand to be Door-keepers, and to take care of the Riches of the Temple ; and the rest to do the Office of Chanters or Singers.

The Word comes from the *Latin* *Levita*, which is form'd from the *Greek* *λεωιτης* ; the Root of which is the Name *Levi*, which was given to this Patriarch by his Mother *Leah*, from the *Hebrew* *לאה* *lavah*, to be tied or united ; *Leah* hoping, by the Birth of this Son, to be more closely link'd to her Husband *Jacob*.

**LEVITY**, the Privation or Want of Weight in any Body, when compared with another that is heavier, in which sense it is oppos'd to Gravity. The Schools maintain that there is such a thing as positive and absolute *Levity*, and impute to this the Rise or Emergency of Bodies lighter in Specie than the Fluids wherein they rise. But besides that the common Sense of Mankind discovers that *Levity* is only a Relative Term, we find by Experience that all Bodies tend toward the Earth, some slower, and some faster, in all Fluids or Mediums, whether Water, Air, &c. Thus Cork is said to be lighter than Gold, because under equal Dimensions the Gold will sink in, and the Cork swim upon Water. *Archimedes* hath demonstrated, That a solid Body will float any where in a Fluid of the same specifick Gravity, and that a lighter Body will keep above a heavier. The Reason of this is because of Bodies falling towards the Earth, those which have a like number of equal Parts have equal Gravity ; since the Gravity of the Whole is the Sum of the Gravity of all its Parts. Now two Bodies have an equal number of equal Parts, if under the same Dimensions there are no Intervals destitute of Matter ; whence it follows, that as no Portion of Matter is so small, but that Body wherein it is contained may be wholly divided into Parts equally small, there can be no reason for the Descent of these, which will not equally hold for the Descent of that. Hence it may be concluded, that those Bodies which do not equally gravitate under the same Dimensions, do not contain the same equal Portions of Matter ; and therefore when we see, that a Cube of Gold subsides in Water, at the same time that an equal Bulk of Cork swims upon it, 'tis evident that the Gold must have a greater number of equal Parts of Matter under the same Bulk than the Cork, or the Cork must have a greater number of Vacuities than the Gold ; and that there are also in the Water, a greater number of Vacuities than in Gold. Hence we have a clear Idea both of Density or Gravity, and of *Levity* ; and know, that the latter cannot in a strict sense be accounted any thing positive, but a mere Negation or Absence of Body, which determines that Body to be lighter than another which contains more Matter.

Dr. *Hook*, 'tis true, seems to maintain something like a positive *Levity*. This, if we mistake not, is what he means by the Term *Levitation* ; viz. a Property of Bodies directly contrary to that of Gravitation towards the Sun. This he thinks he has discovered in the Steams of Comets, which tho they had a Descent from the Nucleus of the Comet towards the Sun, yet they quickly return'd, and went opposite to the Sun, and that to a prodigious Extent. In effect, where the Power of Gravitation ceases, it should seem some such contrary Force does begin, whereof we have Instances in the Phenomena of Attraction. This is what Sir *I. Newton* calls the *Vis Repellens*, and appears



pears to be one of the Laws of Nature; without which it would be hard to account for Rarefaction, and some other Appearances. See *Repulsion*.

LEURE, in Falconry, a piece of red Leather, cut in form of a Bird, or a Ball set off with a Beak, Claws, and Wings, hung out on a Crook by the Falconer to reclaim his Birds. They sometimes tie Meat to the *Leure*, wherewith to feed the Bird. The Word comes from the *Latin Lorum*, tho others derive it from *Leora*, Craftiness, Deceit.

LEVY signifies to gather or exact; as to *levy Money*, to *levy Troops*. *Levy* is sometimes also used to erect or set up; as to *levy a Mill*; also to raise or cast up, as to *levy a Ditch*, to *levy a Fine*, &c. from the French *lever*, to raise.

LEX, see *Law*.

LEX AMISSA, or *Legem amittere*, in Law is understood of an infamous perjured Person, who is said to *lose his Law*; or, as *Bracton* has it, *non est ulterius dignus Lege*.

LEX JUDICIALIS, is properly *Purgatio per Judicium Ferri*, sometimes call'd simply *Judicium*.

LEX SACRAMENTALIS; *Purgatio per Sacramentum*.

LEX TERRÆ, is the Law and Custom of the Land, by which Name it is distinguish'd from the Civil Law.

LEXICON, the same with Dictionary. The Word is seldom used, excepting in speaking of certain antient Greek Dictionaries which bear this Name. 'Tis derived from the Greek *λέξις* *Lexion*, of *λέγω* *I speak*.

LIBATION, a Ceremony in the Heathen Sacrifices, wherein the Priest spilt some Wine, Milk, or other Liquor, in honour of the Deity to whom the Sacrifice was offered, after having first tasted it himself. *Alexander* is said to have sacrificed a Bull to *Neptune*; and for an Offering to the Sea-Gods, threw the Golden Vessel, used for the *Libation*, into the Sea. *Libations* were also in use under the Law of *Moses*, being enjoined by God in *Exodus* xxix. and *Numbers* xv. See *Lipsius* on *Libations*.

LIBEL, a Writing containing Injuries, Reproaches, or Accusations against the Honour and Reputation of any Person, particularly of a Superior or Governour. *Platina* is of opinion that a Writing, how injurious soever it is, cannot be call'd a *Libel*, if the Author's Name be to it. *Libellers*, among the antient Romans, were punish'd with Death, but in After-Times they were only whipp'd. *Augustus* rank'd *Famosos Libellos*, Defamatory Libels, among the Crimes *Læse Majestatis*, of High-Treason. *F. Baudouin* has publish'd a Comment on the Imperial Laws against *Libels*. Scandalous Pictures are reckoned amongst *Libels*.

The Lawyers say a *Libel* may be either *in Scriptis*, or *sine Scriptis*. *In Scriptis*, when a Writing is composed or published to another's Disgrace, which may be done *Verbis*, aut *Cantilenis*; as where this is maliciously repeated or sung in the presence of others: Or else *Traditione*, when the *Libel*, or any Copy of it, is delivered out to scandalize the Party. *Famosus Libellus sine Scriptis*, may be two-fold. (1.) *Picturis*, as to paint the Party in a shameful, or ignominious manner: Or, (2.) *Signis*, as to fix a Gallows, or other ignominious Signs, at the Door of the Party, or elsewhere. The Punishment of Libelling in *England*, is putting the Criminal on the Pillory, Whipping, &c.

*Libel* also signifies the Original Declaration of any Action in the Civil Law.

LIBELLATICI. Under the Persecution of *Decius* there were several Christians, who, to prevent their being obliged to renounce the Faith, and sacrifice to Idols in Public, made Application to the Magistrates, and abjured their Faith in private, obtaining Certificates of 'em, either by Intreaty, or by Money; by which they were attested to have complied with the Orders of the Emperor, and were thereby sheltered from any further Molestation on account of their Religion. These Certificates were called *Libelli*, whence the People who obtained them came to be denominated *Libellatici*. Others, particularly the *Centurions* of *Magdeburg*, are of Opinion, that the *Libellatici* were only such as fed the Magistrates with Money, to screen them from Persecution, and from being obliged to renounce Christianity. *M. Tillmont* retains somewhat of each Opinion; he thinks the *Libellatici* applying themselves to the Magistrates, bought off the Sacrificing and Abjuration, and obtained Letters, by which they were declared to have renounced Christ, and sacrificed to Idols, tho' in effect they had done neither.

LIBERAL ARTS, in opposition to Mechanical Arts, are such as depend more on the Labour of the Mind, than on that of the Hand; that consist more in the Speculation than the Operation, and that have a greater Regard to Amusement and Curiosity, than the servile Mechanical Works: Such are Grammar, Rhetoric, Painting, Sculpture, Architecture, Music. The *Liberal Arts* used formerly to be summed up in the following *Latin Verse*.

*Lingua, Tropus, Ratio, Numerus, Tonus, Angulus, Asira.*

And the Mechanical Arts, which however are innumerable, under this;

*Rus, Nemus, Arma, Faber, Vulnera, Lana, Rates.*

The Word comes from the Latin *Liberalis*, which among the Romans signified a Person who was not a Slave, and whose Will, of consequence, was not check'd by the Command of any Master.

LIBERALIA, Feasts celebrated by the antient Romans in honour of *Bacchus*. These were the same with those which the Greeks call'd *Dionysiacs* and *Agonia*; which see.

They took their Name from *Liber*, i. e. Free; a Title conferred on *Bacchus*, in memory of the Liberty or Freedom which he granted to the People of *Bæotia*; or perhaps because Wine, whereof he was the reputed Deity, delivers Men from Care, and sets their Minds at ease and freedom. *Varro* derives the Name of this Feast from *Liber*, considered as a Noun Adjective, and signifying Free; because the Priests were free from their Function, and eas'd of all Care during the Time of the *Liberalia*. For, in effect, it was the old Women who officiated in the Ceremonies and Sacrifices of these Feasts.

LIBERIA, a Feast held among the Romans on the Day wherein their Children laid aside their Juvenile Habits, and assumed the Robe called *Toga libera*. The *Liberia* were kept on the sixteenth of the Calends of April; that is, the 17th of March.

LIBERTIN, among the Romans, was what we call a Freed Man, a Person set free from a Legal Servitude. These still retain'd some Mark of their antient State. He who made a Slave free, had a Right of Patronage and of Patron over the *Libertin*; if the *Libertin* fail'd of shewing due Respects to his Patron, he was restored to his Servitude; and if the *Libertin* died without Children, his Patron was his Heir.

LIBERTINES, the Name of a Sect in Religion, that arose in the Year 1525. Their principal Tenets were, That there is but one only Spirit, which is that of God; who is diffused through all Things, who is and lives in all Creatures; that our Souls are nothing but this Spirit of God: That the Soul dies with the Body; that Sin is a mere Chimæra, and only subsists in Opinion, for that it was God that did all, both Good and Evil; that Paradise is a Dream, and Hell a Phantom, invented by the Divines, and Religion a State-Trick to keep Men in Awe; that spiritual Regeneration consists in nothing but stifling the Remorse of Conscience; Repentance in avowing to have done no Evil; and that it is lawful, and even expedient to dissemble in Matters of Religion. To these they added horrible Blasphemies against Jesus Christ, saying, he was nothing but a mere *Je ne sçai quoi*, composed of the Spirit of God, and of the Opinion of Men. These Maxims occasioned their being called *Libertines*; and the Word has been used in an ill Sense ever since.

They spread principally in *Holland* and *Brabant*. Their Leaders were one *Quintin a Picard*, and another called *Chopin*, who associated with him, and became his Disciple.

LIBERTY, is usually understood of that State wherein a Man acts freely; or that Power by which he determines himself voluntarily either to Good or Evil, to this thing or to that: Or *Liberty* is an active Indifference of the Will, to will, or not will any thing. *F. Malbranch* gives us a still more Philosophical Definition. The Will he defines to be that Impression, or natural Motion, which inclines towards Good in the general; and by *Liberty* he understands, that Power which the Mind has of determining this general Impression towards such Objects as please us; and so of directing our general Inclinations to some particular Things: whence it is easy to perceive, that tho' all natural Inclinations be voluntary, yet they are not all free; not, we mean, with a Freedom of Indifference, which includes a Power of willing, or not willing; or of willing quite the contrary to that which our natural Inclinations lead us to: For tho' 'tis voluntarily and freely that we love Good in general, it being absurd to suppose we should love any thing without the Will, or that the Will can ever be constrain'd; yet we don't love freely, (in the Sense just laid down) because 'tis not in the power of the Will not to desire to be happy. It must be observed, however, that the Mind, considered as determined towards Good in general, cannot divert its Motion to any particular Good, unless the same Mind, considered as capable of Ideas, have some Knowledge of that particular Good. That is, in plainer Terms, the Will is a blind Power, that cannot apply itself to any thing but what the Understanding represents to it: So that the Power which the Will has to determine its Impression towards general Good, or its natural Inclinations, variously, consists in the Power it has to command the Understanding to represent some



some particular Good: Thus, a Person, for instance, represents some Dignity to himself as a Good to be wish'd for, immediately the Will desires this Good; that is, the Impression which the Mind continually receives towards Good in general, determines it to this Dignity. But as that Dignity is not the universal Good, nor is conceived clearly and distinctly as such by the Mind, (for the Mind cannot conceive a thing clearly which is not;) the Impression we have towards Good in general, is not entirely exhausted by that particular Good; the Mind has an Inclination to go further; it does not love that Dignity necessarily or invincibly, and in this respect is free. Now its Liberty consists in this, that not being fully convinced that this Good contains in it all the Good it is capable of loving, it may suspend its Judgment and its Love. The Case is nearly the same with regard to the Knowledge of Truth. We love this as we do the Enjoyment of Good, by a natural Impression; which Impression is not invincible in the latter, excepting Evidence be full, and our Knowledge of the Object compleat: We have the same Liberty in our false Judgments, that we have in our irregular Appetites. See *Judgment, Will, &c.*

Most of the Schoolmen confound Liberty and the Will together, and make one Definition serve for 'em both. They distinguish Liberty into a great many Kinds; as Liberty of Contrariety, *Contrarietatis*; which is a Liberty of doing two things not only different, but contrary to each other. Liberty of Contradiction, is a Power of doing a thing, or letting it alone. Jesus Christ had not the Liberty of Contrariety, with regard to Good and Evil, for he could not do Evil; but he had a Liberty of Contradiction with regard to Good. Next Liberty, *Proxima*, is a full absolute Freedom of doing any thing. Liberty remote, is a Liberty that comprehends a natural Power, tho' embarrass'd with Obstacles, which it is in its power to remove, and to attain to a next Liberty. Thus he who has not actual Grace necessary for the fulfilling of his Duty, but has yet the actual Grace of Prayer, has a next Liberty with regard to Prayer, and a remote Liberty with regard to his Duty.

Cicero defines Liberty the Power of living after a Man's own Desire, without any Cause or Impediment to oblige him to do one thing rather than another. The Doctrine of Pelagius, with regard to Liberty, is built on Philosophy, which does not allow us to have lost our original Liberty of doing good.

LIBERTY OF CONSCIENCE, a Right or Power of making Profession of any Religion that a Man sees fit. This seems to be a natural Right; it is vigorously opposed by the Generality of the Romanists, and even by many of the Reformed, tho' it seems as if the Reformation could scarce subsist without it.

LIBRA, Balance, one of the twelve Signs of the Zodiac, exactly opposite to Aries.

LIBRA, one of the Mechanical Powers. See *Balance*.

LIBRA, the ancient Roman Pound, borrowed from the Sicilians, who called it *Libra*. It was divided into twelve Unciæ, or Ounces; equal to about  $10\frac{1}{2}$  Ounces of our Weight. The Divisions of their *Libra* were the *Uncia*  $\frac{1}{12}$ , the *Sextans*  $\frac{1}{6}$ , the *Quadrans*  $\frac{1}{4}$ , the *Triens*  $\frac{1}{3}$ , the *Quincunx* five Ounces, the *Semis* six, the *Septunx* seven, the *Bes* eight, the *Dodrans* nine, the *Dextrans* ten, the *Deunx* eleven; lastly, the *As* weighed twelve Ounces, or one *Libra*. The Roman *Libra* was used in France for the Measure of their Coin till the time of Charlemagne, or perhaps till that of Philip I. in 1093. their Sols being so proportioned, as that twenty of them were equal to the *Libra*. By degrees it became a Term of Account, and every thing of the Value of twenty Sols was called a *Livre*. See *Livre*. The Romans had also a Coin called *Libra*, equal to twenty *Denarii*. Scalliger will have it, that *Libra* was even among them a Term of Account, not a Coin. See *Pound*.

LIBRA PENZA, in our Law-Books, is a Pound of Money in Weight: it being usual in former Days not only to tell the Money, but to weigh it; in regard many Cities, Lords, and Bishops having their Mints, coin'd Money, and often very bad too: for which reason, tho' the Pound consisted of 20 Shillings, they always weigh'd it.

LIBRARI, among the Antients, were properly those who transcribed in beautiful, or at least legible Characters, what had been wrote by the *Notarii* in Notes and Abbreviations. The Word was also used for Copists, or those who wrote Books for the Booksellers.

LIBRARY, an Apartment or Place destined for the placing of Books; or the Books themselves lodg'd in that Apartment. Some Authors refer the Origin of Libraries to the Hebrews, and observe that the Care they took for the Preservation of their Sacred Books, and the Memory of what concern'd the Actions of their Ancestors, became an Example to many other Nations, and particularly the Egyptians. *Osymandrius* King of Egypt is said

to have taken the hint first, and had a Library built in his Palace, with this Inscription over the door, *Ἐν τῇ βιβλίῳ τῆς βασιλείας*. Nor were the Ptolemys, who reign'd in the same Country, less curious and magnificent in Books. The Scripture speaks of a Library of the Kings of Persia, *Esdas* V. 15. VI. 1. which some imagine to have consisted of the Historians of that Nation, and of Memoirs of the Affairs of the State; but, in effect, it appears rather to have been a Depository of Laws, Charters, and Ordinances of the Kings. The Hebrew Text calls it the Book of Treasures, and afterwards the House of the Books of Treasures. We may with more justice call that a Library, mention'd in the second of *Esdas* to have been built by *Nebemiah*, and in which were preserv'd the Books of the Prophets and of David, and the Letters of their Kings.

The first who erected a Library at Athens, was the Tyrant *Pisistratus*; and yet *Strabo* refers the Honour of it to *Aristotle*. That of *Pisistratus* was transported by *Xerxes* into Persia, and afterwards brought by *Seleucus Nicanor* to Athens. Long after, it was plundered by *Sylla*; and re-established by *Hadrian*. *Plutarch* says, that under *Eumenes* there was a Library at Pergamus containing 200000 Books. *Tarannion*, a celebrated Grammarian, Cotemporary with *Pompey*, had a Library of 3000 Volumes: That of *Ptolemy Philadelphus*, according to *Ammianus Marcellinus*, contain'd 7000, all in Rolls, burnt by *Cæsar's* Soldiers. *Constantine* and his Successors erected a magnificent one at Constantinople, which in the eighth Century contain'd 300000 Volumes, all burnt by order of *Leo Isauricus*; and among the rest, one wherein the *Iliad* and *Odyssey* were written in Letters of Gold on the Guts of a Serpent.

The most celebrated Libraries of antient Rome were the *Ulpian* and the *Palatin*. They also boast much of the Libraries of *Paulus Emilius*, who conquer'd *Perseus*; of *Lucilius Lucullus*, of *Asinius Pollio*, *Atticus*, of *Julius Severus*, *Domitian*, *Seranus*, *Pamphylus*, *Martyr*, and the Emperors *Gordian* and *Trajan*.

Antiently every large Church had its Library; as appears by the Writings of *St. Jerom*, *Anastasius*, and others. Pope *Nicholas* laid the first Foundation of that of the Vatican in 1450. It was destroy'd by the Constable *Bourbon* in the sacking of Rome, and restored by Pope *Sixtus V.* and has been considerably enrich'd with the Ruins of that of *Heidelberg*, plunder'd by Count *Tilly* in 1622.

One of the most compleat Libraries in Europe is said to be that erected at Florence by *Cosmo de Medicis*; over the Gate whereof is wrote, *Labor absque Labore*. Tho' it is now exceeded by that of the French King; begun by *Francis I.* augmented by Cardinal *Richlien*, and compleated by *M. Colbert*. The Emperor's Library, according to *Lambecius*, consists of 80000 Volumes, and 15940 Curious Medals.

The Bodleian Library at Oxford, built on the Foundation of that of Duke *Humphry*, exceeds that of any University in Europe, and even those of all the Sovereigns of Europe, except the Emperor's and French King's, which are each of 'em older by a hundred Years. It was first open'd in 1602, and has since found a great number of Benefactors; particularly *Sir Rob. Cotton*, *Sir H. Savil*, Archbishop *Land*, *Sir Kenelm Digby*, *Mr. Allen*, *Dr. Pocock*, *Mr. Selden*, and others. The Vatican, the Medicæan, that of *Bessarioni* at Venice, and those just mention'd, exceed the Bodleian in Greek Manuscripts; which yet outdoes 'em all in Oriental Manuscripts. As to printed Books, the Ambrosian at Milan, and that of *Wolfenbuttel*, are two of the most famous, and yet both inferior to the Bodleian. The Cotton Library consists wholly of Manuscripts, particularly of such as relate to the History and Antiquities of England; which, as they are now bound, make about 1000 Volumes.

LIBRATA TERRÆ, a Portion of Ground containing 4 Oxfangs, and every Oxfang 13 Acres. With us it is so much Land as is yearly worth 20 s. In Henry the III's time, he that had *quindecim Libratas Terræ*, was to receive the Order of Knighthood.

Some say, that as Money is divided into Pounds, Shillings, Pence, and Farthings, the same Degrees are to be observed in the Division of Lands; and therefore as *Quadrans* signifies a Farthing, so *Quadrantaria* is the fourth part of an Acre, *Oblata* an half, *Denaria* a whole Acre, *Solidaria* 12 Acres, and *Librata* 20 times 12 Acres, i. e. 240 Acres.

*Spelman* compares an Acre to a Mark in Money; and as in one there are 160 Pence in Money, so in the other there are 160 Perches of Land.

LIBRATION, in Astronomy, which some call *Trepidation*, an apparent Irregularity in the Motion of the Moon, by which she seems to librate or shake about her own Axis, sometimes from the East to the West, and sometimes from the West to the East; whence some Parts in her Western Limb or Margin recede from the Centre of the Disk, and sometimes move towards it.

Some



Some of those Parts which were before visible, set and hide themselves in the invisible side of the Moon, and afterwards become again conspicuous. This *Libration* of the Moon is owing to her equable Rotation round her own Axis, and her unequal Motion in the Perimeter of her Orbit. For if the Moon moved in a Circle, whose Centre co-incided with the Centre of the Earth, and turn'd round its Axis in the precise Time of its Period round the Earth; the Plane of the same Lunar Meridian would always pass thro the Earth, and the same Face of the Moon would be constantly and exactly turn'd towards us: But since the real Motion of the Moon is an Ellipsis, in whose Focus is the Earth, and the Motion of the Moon about the Earth is equable; or, which is the same thing, every Meridian of the Moon by the Rotation describes Angles proportional to the Times: the Plane of no one Meridian will constantly pass thro the Earth.

**LIBRATION OF THE EARTH**, that Motion, whereby the Earth is so retain'd in its Orbit, as that its Axis continues constantly parallel to the Axis of the World. This, *Copernicus* calls the *Motion of Libration*; and may be illustrated thus: Suppose a Globe, with its Axis parallel to that of the Earth, painted on the Flag of a Mast, moveable on its Axis, and constantly driven by an East Wind, while it sails round an Island, 'tis evident the painted Globe will be so librated, as that its Axis will be parallel to that of the World in every Situation of the Ship.

**LICENCE**, a Permission or Leave granted by a Superior. *Justinian* appointed four Years to be spent in the Study of the Law; after which, those who had discharged this Obligation, were said to have *Licence*, or Permission, to retire from Study. And hence the Word comes to be used in this sense among us.

*Licence* is also used for the Letters or Certificates taken out in the Universities, whether in Law, Physic. or Divinity. *Licence* in the *Sorbonne* is a Period of two Years, which the Batchelors are obliged to pass in assisting at Acts, and disputing in 'em, to qualify themselves for being admitted Doctors.

**LICENCES**, in Painting, are the Liberties which the Painter takes in dispensing with the Rules of Perspective, and the other Laws of his Art.

*Poetical Licence* is the Liberty which Poets claim of dispensing with the ordinary Rules of Grammar; and antiently the Poets had much greater *Licences* than are now allow'd. The *Greeks*, by having recourse to the several Dialects of their Tongue, could lengthen out a Word if it were too short, or retrench something from it if it were too long. The old Poets did what they pleas'd with their Language, and subjected it not only to all their Necessities, but their Caprices too.

*Et data Romanis venia est indigna Poetis.*

But these became ridiculous in course of Time; and the Poets are now despoil'd of most of their antient Privileges.

**LICENCE TO ARISE**, in Law, is a Liberty or Space of Time given by the Court to a Tenant, to arise out of his Bed, who is effoin'd *de Malo Leſſi* in a real Action.

**LICENTIATE**, he who has obtain'd the Degree of a Licence. Most of the Officers of Judicature in *Spain* are known by no other Name than that of *Licentiate*. To pass *Licentiate* in the Canon Law, Civil Law, or Physic, they must have studied seven Years, in Divinity ten. A *Licentiate* among us is usually understood of a Physician who has a Licence to practise, granted him by the College or Bishop of the Diocese. A Person practising Physic without such Licence, in case his Patient dies under his hands, is guilty of Felony in the eye of the Law.

**LICHEN**, a cutaneous Distemper, in many respects the same with a Leprosy; for which, a Moss of the same name is said to be an extraordinary Remedy: but this the present Practice seldom meets with.

**LIEGE**, properly signifies a Vassal who holds a kind of Fee, that binds him in a closer Obligation to his Lord than other People. The Term seems to be derived from the *French* *lier*, to bind; in regard of a Ceremony used in rendering Faith or Homage, which was by locking the Vassal's Thumb or his Hand in that of the Lord, to shew that he was fast bound by his Oath of Fidelity. *Cujas*, *Viguer*, and *Bignon* chuse rather to derive the Word from the same Source with *Leudis* or *leudi*, *loyal*, *faisful*. But *Du Cange* falls in with the Opinion of those who derive it from *Litu*; a kind of Vassals so firmly attach'd to their Lord on account of Lands or Fees held of him, that they were obliged to do him all manner of Service, as if they were his Domestic. He adds, this was formerly call'd *Lingum Servitium*, and the Person *Litge*. In this sense the Word is used *Leg. Edw. cap. 29. Jur. sub Tutela Reus Litgea debeat esse*; that is, wholly under his Protection.

By *Liege Homage* the Vassal was obliged to serve his Lord towards all, and against all, excepting his Father. In which sense, the Word was used in opposition to *simple Homage*; which last only obliged the Vassal to pay the Rights and accustomed Dues to his Lord, and not to bear Arms against the Emperor, Prince, or other Superior Lord: So that a *Liege Man* was a Person wholly devoted to his Lord, and intirely under his Command.

However, as the Word *Liege* is variously used by Authors, it must be observed that there were formerly two kinds of *Liege Homage*: the one by which the Vassal was obliged to serve his Lord, against all without exception, even his Sovereign; the other, by which he was to serve him against all, except such other Lords as he had formerly owed *Liege Homage* to.

In our old Statutes, *Lieges* and *Liege People* are Terms peculiarly appropriated to the King's Subjects, as being *Liges*, *Ligati*, or obliged to pay Allegiance to him, 8 Hen. 6. 14 Hen. 8. &c. Tho private Persons had their *Lieges* too—*Reinaldus Dei gratia Abbas Ramusla, præposito & hominibus de Brancestre, & omnibus vicinis Francis & Anglis, Salutem. Sciatis me dedisse terram Ulfe, in Depedene (hodie Depedale) huic Boselino & Uxori ejus Alfnia—ea Conditione quod effecti sint homines Liges. Lib. Rames.*

*Omnibus, &c. Reginaldus Rex Insularum, Salutem. Sciatis quod deveni homo Ligeus Domini Regis Angliæ Johannis, contra omnes Mortales quamdiu vixero, & inde ei fidelitatem & sacramentum præstiti, &c. MS penes W. Dugdale.*

**LIENTERY**, in Physic, a kind of Looseness wherein the Food passes so suddenly thro the Stomach and Guts, as to be thrown out by Stool with little or no Alteration. The *Lientery* is owing either to a Defect in the Ferment of the Stomach, or to a Relaxation of the Pylorus, attended with so brisk an Irritation of the Fibres of the Ventricle, that instead of retaining the Aliment it lets it pass. Excess of Drinking sometimes occasions this Disease, by relaxing the Stomach, and especially the Pylorus, too immoderately. The Antients were of opinion the *Lientery* was owing to the too great Smoothness and Slipperiness of the Inside of the Intestines, by which they let the Food slip off before it was digested: and hence they gave it this Name, which is formed from *λεῖον*, polished, and *ἐντέρον*, Intestine.

**LIE UNDER THE SEA**: The Sailors say, a Ship *lies under the Sea*, when her Helm being made fast a-Lee, she lies so a-Hull, that the Sea breaks upon her Bow, or Broad-side.

**LIEUTENANT**, a Deputy or Officer who holds the place of a Superior, and discharges that Function in his absence, which he ought to exercise in person. Of these some are Civil, as *Lords Lieutenants* of Kingdoms, who are the King's Viceroys, and govern in his stead; *Lords Lieutenants* of Counties, see *County*. But the Term is most popular with Military Men, among whom there is a Variety of *Lieutenants*. As,

*Lieutenant-General*, the second Officer in an Army, who commands a Body of Forces, a Detachment, Quarter-Attack, &c. under the General.

In *France* they have also *Lieutenants-General* of their Naval Forces, who command immediately under the Admirals.

In *Holland* they have a *Lieutenant-Admiral*, which is the same with what we call a Vice-Admiral.

*Lieutenant-General of the Ordnance*, is he who has the Charge of the Artillery, Batteries, &c. under the Master-General, or in his absence.

*Lieutenant-Colonel*, in a Body of Horse, is the first Captain of the Regiment; he commands in the absence of the Colonel, taking place of all the other Captains.

*Lieutenant-Colonel of Foot*, is the second Officer in the Regiment; he commands in the absence of the Colonel, and in a Battel takes post at his Colonel's Left. The Dragoons have also a *Lieutenant-Colonel*; but the Horse have not, properly, any.

**LIFE**, the Duration of Animal Being, or the Space of Time that passes between their Birth and Death. *Life* is also used for the Constitution; or the Principle of Heat and Motion that animates Bodies, and makes 'em Perceive, Act, and Grow; in which sense, *Life* is divided into Animal, Sensitive, and Vegetative. *Life*, in a strictly physical sense, is the Circulation of the Blood.

My Lord *Bacon* makes the Prolongation of *Life* one of the three Branches of Medicine; the other two relating to the Preservation of Health, and the Cure of Diseases. And the Theory of this he numbers among the *Desiderata*. Some Means or Indications that seem to lead to it, he lays down as follows.

Things are preserved in two manners; either in their Identity, or by Reparation. In their Identity, as a Fly or Ant in Amber, a Flower or Fruit or Wood in a Conservatory of Snow; a dead Carcass in Balsams. By Reparation, as a Flame, and as Mechanical Engines, &c. To attain



attain to the Prolongation of *Life*, both these Methods must be used, and the Human Body must be preserved both as Inanimates, as Flame, and as Mechanical Instruments are preserved. Hence arise three Intentions for the Prolongation of *Life*: Retardation of Consumption, proper Reparation, and Renovation of what begins to grow old. Consumption is occasion'd by two kinds of Depredation; a Depredation of the Innate Spirit, and a Depredation of the Ambient Air. These may be each prevented two ways; either by rendering those Agents less predatory, or by rendering the passive Parts (*viz.* the Juices of the Body) less liable to be prey'd on. The Spirit will be render'd less predatory, if either its Substance be condensed, as by the Use of Opiates, Grief, &c. or its Quantity diminished, as in spare and monastic Diets; or its Motion calm'd, as in Idleness and Tranquillity. The Ambient Air becomes less predatory, if it be either less heated by the Rays of the Sun, as in cold Climates, in Caves, Mountains, and Anchorites Cells; or be kept off from the Body, as by a dense Skin, the Feathers of Birds, and the Use of Oil and Unguents without Aromatics. The Juices of the Body are rendered less liable to be prey'd on, either by making them harder, or more moist and oily. Harder, as by a coarse sharp Diet, living in the Cold; robust Exercises, and some Mineral Baths. Moister, as in the Use of sweet Foods, &c. in abstaining from Salts and Acids, and especially in such a Mixture of Drink, as consists wholly of fine subtile Particles without any Acrimony or Acidity. Reparation is performed by means of Aliment. Alimentation is promoted four ways: By the Concoction of the *Viscera*, so as to extrude the Aliment; by exciting the exterior Parts to the Attraction of the Aliment, as in proper Exercises and Frictions, and some Unctions and Baths; by the Preparation of the Food it self, so as it may more easily insinuate it self, and in some measure anticipate the Digestion, as in various Ways of dressing Meats, mixing Drinks, fermenting Breads, and reducing the Virtues of these three into one; by promoting the Act of Assimilation it self, as in seasonable Sleep, some external Applications, &c. The Renovation of what begins to grow old, is performed two ways, by the Inteneration of the Habit of the Body, as in the Use of Emollients, Emplasters, Unctions, &c. of such a nature, as do not extract, but impress; or by purging off the old Juices, and substituting fresh ones, as in Seasonable Evacuations, Attenuating Diets, &c.

The same Author adds these three Axioms: That the Prolongation of *Life* is to be expected rather from some stated Diets, than either from any ordinary Regimen, or any extraordinary Medicines; more from operating on the Spirits, and mollifying of the Parts, than from the Manners of feeding: and this mollifying of the Parts without, be performed by Consubstantials, Impri-ments, and Occludents. See *Longevity*.

**LIGAMENT**, a Term in Anatomy. In its general Signification, *Ligament* is any thing that ties or binds one Part to another, in which Sense the Antients used the Word for Membranes, Skin, Flesh, Veins, and Arteries, as being common *Ligaments*. But in its more proper Signification, *Ligament* is a white, tough, solid inflexible Body, inclosing and keeping together the Joints of the Body. It has no conspicuous Cavities, nor has it any Sense; lest it should suffer on the moving of the Bones, and is very different according to the different Parts where it is found. It is harder than a Membrane, yet softer than a Cartilage; its principal Use is to gird and strengthen the Joints, to prevent the Dislocation of the Bones, and even to fasten them together when they have no Articulation. It also serves as a Covering to the Tendons, to separate them from the Muscles, and to hold up the suspended Entrails, lest their Weight should throw them down; such are the *Ligaments* of the Liver, the Bladder, and Matrix. They are of different Substances, some hard, others soft, membranous, nervous, and cartilaginous; as also of different Figures and Situations: Some arise from Bones, others from Cartilages, and others from Membranes. The *Ligament* is the most Terrestrial of all the Parts of the Body after the Bone and Cartilage, being cold, dry, hard, and insensible like them.

In particular, the several *Ligaments* of the Body are the cartilaginous *Ligaments*, which bind the four Bones of the Metacarpus with the Carpus. The *Ligaments* of the Spine are very strong, being fitted to the Articulations of the Vertebrae, to prevent their Luxations in violent Motions. They are of two kinds, the one thick and fibrous, in form of a Crescent, which bind them both at top and bottom; and the others membranous, serving to fasten them the more securely. The *Ligaments* of the Liver are two in Number, the first, which is the chief, called *Ligamentum Suspensorium*, holds it suspended to the

Diaphragm, penetrating into the Substance of the Liver, to hold it the more firmly; the latter is larger, but more lax, it comes from the external Coat of the Liver, and is fastened to the Cartilage Xiphoides. Some add a third, which is formed out of the Umbilical Vessels, which in Adults dry up and become a *Ligament*: There are two *Ligaments* belonging to the Tongue, one that fastens it by its Root to the *Os Hyoides*, and another larger, inserted into the middle and inferior Part; this last is called, *The Bridle of the Tongue*. There are also *Ligaments* belonging to the Spleen. The *Penis* has a strong *Ligament*, call'd *Suspensorium Penis*, from its Office in holding up the *Penis* to the *Os Pubis*; it arises from the Foreparts of those Bones, and is fastened to the upper Part of the *Corpora Cavernosa Penis*; it has another *Ligament*, which fastens the Prepuce to the Glans. The *Uterus* has four *Ligaments*, two of them called broad, and two round from their Figure; the broad *Ligaments* are membranous, and arise from the *Processus* of the *Peritoneum*, and are fastened to the lateral Parts of the *Fundus* or Bottom of the *Uterus*, and serve to prevent the *Fundus* from falling down upon the Neck, as it sometimes happens when these *Ligaments* are too much relaxed. The round *Ligaments* arise from the Sides of the Womb, at the place where the *Tubae Fallopianae* are joined to it. At their first Rise they are broad, but, by degrees, as they recede farther from the Womb, grow round and smooth; and as the spermatic Vessels do in Men, pass betwixt the Duplication of the *Peritoneum*, and so out of the *Abdomen* thro' the *Foramina* of the oblique and transverse Muscles of the *Abdomen*, and running obliquely on the *Os Pubis*, terminate under the Fat near the *Clitoris*. By the Passages of these *Ligaments*, Women, and Girls especially, are exposed to inguinal Ruptures, as Men are by the Passages of the spermatic Vessels. The Substance of the broad *Ligaments* is membranous, loose, and soft, whence some have compared them to the Wings of a Bat, and called them *Alae Vespertilionum*. The round *Ligaments* are of a firmer Texture, and consist of a double Membrane, wrapping up in it Veins, Arteries, Nerves, and Lymphæducts, and both these and the former have been sometimes taken for Muscles. By these *Ligaments* the *Uterus* is kept so tight, that no Violence of internal Flatus or Humours can raise it above its Place.

**LIGAMENTUM ANNULARE**. See *Wrist*.

**LIGAMENTUM CILIARE**. See *Ciliary Ligamentum*.

**LIGAMENTUM LATUM**, and **ROTUNDUM**. See *Generation, Parts of, proper to Women*.

**LIGATURE**, in Chirurgery, a Bandage or Fillet of Cloth or Linnen, serving to bind the Arm, and facilitate the Operation of bleeding. *Ligature* is also the Art and Manner of disposing and applying Bandages for the closing of Wounds, and performing many of the Operations of Chirurgery. There are various kinds of *Ligatures*. Some Authors reckon them upwards of five hundred.

*Ligature*, among the mystic Divines, signifies a total Suspension of the superior Faculties or intellectual Powers of the Soul. They pretend that when the Soul is arrived at a perfect Contemplation, she remains deprived of all her Operations, and ceases to act, in order to be more ready and prepared to receive the Impulse and Communications of Divine Grace. This passive State of these contemplative People they call their *Ligature*.

*Ligature* is also used to signify a kind of Bandage or Fillet, tied round the Neck, Arm, Leg, or other Part of the Bodies of Men or Beasts, to divert or drive off some Disease, Accident, &c.

*Kempfer* tells us of an uncommon kind of *Ligature* in use among the People of *Macaassar*, *Java*, *Malaja*, *Siam*, &c. By this Charm, or Spell, a Man binds up a Woman, and a Woman a Man, so as to put it out of their power to have to do with any other Person; the Man being thereby rendered impotent to any other Woman, and all other Men impotent to the Woman. Some of their Philosophers pretend, that this *Ligature* may be effected by the shutting of a Lock, the drawing of a Knot, the sticking of a Knife in the Wall at the Point of Time wherein the Priest is joining a Couple together, and that a *Ligature* thus effected may be dissolved by the Spouse's urining through a Ring. This Piece of Superstition is said to obtain also amongst the Christians of the *East*. The same Author tells us, that during the Ceremony of Marriage in *Russia*, he observed an old Fellow lurking behind the Church-Door, and mumbling over a Heap of Words, and at the same time cutting a long Rod which he held under his Arm into pieces; which, it seems, is a common Practice at the Marriages of great Persons, and done with Design to elude and counterwork any other Person that might possibly be inducing the *Ligature*.



The Secret of inducing a *Ligature* is delivered by the same Author, as he was taught it on the Spot by one of their Adepts; which being a Curiosity, we shall not scruple to add: *Puella Amasium, vel Coniux matritum Ligaturus, absterget a Concupitus Aflu, Priapum, Indusio—ut Seminis quantum potest excipiet. Hoc probe convolutum sub limine Domus suae in Terram sepeliat. Ibi quamdiu sepultum reliquerit, tandem ejus basta in nullius praeferquam sui (fascinantis) Servitium obediet, & prius ab hoc Nexu non liberabitur quam ex clauetro liminis liberetur ipsum linteum. Vice versa, Vir Ledi Sociam Ligaturus, menstruatam ab eo linteum comburito; ex cineribus cum propria Urina subactis, efformato Figuram Priapi, vel si Cineres leuncula fingenda non sufficiant eosdem subigito cum Parte Terrae quam recens perminxerit. Formata Iconem cautè exsiccat, siccamque asseruato Loco sicco, ne Humorem contrahat. Quamdiu sic serauerit, omnes Arcus dum ad Scopum Sociæ collimaverint, momento contabescunt: Ipse vero Dominus—Abrutum hunc suum prius humectato, quamdiu sic manebit, tamdiu suspensio nexu Priapi ipsi parebit, quin & alios quotquot Famina properantes admitterit.*

M. Marshall mentions another Form of *Ligature* which he received from a Bramine at Indostan: 'If, says he, the little Worm in the Wood *Lukerara Kara* be cut into two, and the one Part stirs, and the other not; if the stirring Part be bruised, and given with half a Beetle to a Man, and the other half to a Woman, the Charm will keep each from ever having to do with any other Person.' *Philosophical Transactions*, Numb. 268.

*Ligatures*, among Printers, are Types consisting of two Letters, or Characters which serve to connect two Letters together, as *ff, st, si*. The old Editions of the Greek Authors are extremely full of *Ligatures*; the *Ligatures* of Stephens are by much the most beautiful. Some Editions have been lately printed without any *Ligatures* at all, and there was Design to explode them quite out of Printing. Had this succeeded, the finest antient Editions would in time have grown useless, and the reading of old Manuscripts have been rendered almost impracticable to the Learned themselves.

**LIGHT**, a Term used in various Senses: Sometimes it signifies that Sensation occasioned in the Mind by the View of luminous Bodies; sometimes that Property in those Bodies, whereby they are fitted to excite those Sensations in us; and, lastly, some mean by it a certain Action of the luminous Body on the Medium, between that and the Eye, by means whereof they suppose the one to act on the other, and this they call *secondary*, or *derived Light*, to distinguish it from that of luminous Bodies, which is called *primary*, or *innate*.

Aristotle explains the Nature of *Light*, by supposing some Bodies to be transparent, as Air, Water, Ice, &c. but since in the Night-time we don't see any thing thro' those Bodies, he says, they are only transparent potentially; whereas in the Day they become really and actually transparent: and since 'tis *Light* alone that can reduce that Power into Act, he defines *Light* to be the Act of the transparent Body considered as such; *φῶς δὲ ἐστὶν ἡ τῶν ἐνεργούντων τὴ διαφανῆς ἢ διαφανῆς*. He adds, that *Light* is not Fire, nor is it any thing bodily radiating from the luminous Body, and transmitted thro' the transparent one; but the mere Presence of Fire, or some other luminous Body at the transparent one. This is Aristotle's Doctrine of *Light*, which his Followers mistaking, have foisted on him another, very different; making *Light* and Colours to be Qualities of the luminous and colour'd Bodies themselves, and in all respects like those Sensations which they occasion in us: adding, that Lucid or Colour'd could not produce any Sensations in us, unless they had something similar in themselves, since *nihil dat quod in se non habet*. But the Sophism is apparent; for we find that a Needle in pricking the Flesh gives us Pain, which no body ever imagined to exist in the Needle. But that 'tis not necessary there should be any Similitude between the Quality of the Object, and the Sensation it produces, appears still more evident from a Glass Prism, which is found to exhibit Blue, Yellow, Red, and other Colours extremely vivid, and yet no body will say there is any thing in the Glass Prism like those Sensations.

The Cartesians have refined considerably on this Notion of *Light*, and own, that *Light*, as it exists in the luminous Body, is nothing else but a Power or Faculty of exciting in us a very clear and vivid Sensation; adding, that what is required to the Perception of *Light*, is, that we be so formed as to be capable of such Sensations, that in the hidden Pores of transparent Bodies there be a certain subtle Matter, which by reason of its exceeding Smallness may penetrate even Glass, and yet be strong enough to shake certain Capillaments at the bottom of the Eye; and, lastly, that this Matter be impelled by the luminous Body, so as to move the Organ of Sight. Primary

*Light* therefore, they say, consists in a certain Motion of the Particles of the luminous Body, whereby they are enabled to propel every way the *Materia Subtilis* lodged in the Pores of transparent Bodies, and secondary or derived *Light* in a *Conatus* to Motion, or an Inclination of that Matter to recede from the Centre of the luminous Body in right Lines.

Father Malebranch explains the Nature of *Light*, from a supposed Analogy between it and Sound; the latter, 'tis allowed, is produced by the shaking or Vibrations of the insensible Parts of the sonorous Body, which Vibrations, if they be greater or less, that is, if they run through greater or less Arches of the same Circle, are still performed in the same time, and the Sounds produced by them only differ in a greater or less Degree of Strength; but if there be a greater Number of Vibrations, in the same time, in one sonorous Body than in another, these being closer, become of a different kind: and thus their Sounds also differ, forming what we call different Tones or Notes; the quick Vibrations forming the acute, and the slower the grave Notes. Thus he supposes it to be with *Light* and Colours. All the Parts of a luminous Body are in a very rapid Motion, which, by very quick Shakes, is constantly compressing the subtle Matter between the luminous Body and the Eye, and excites Vibrations of Pressure. As these Vibrations are more great, the Body appears more luminous; as they are more quick or more slow, the Body is of this or that Colour.

This Hypothesis, how ingenious soever, is now deservedly discarded, since the great Discoveries made by Sir Isaac Newton on this wonderful Phænomenon: The primary *Light* they talk of, we now know consists wholly in a certain Motion of the Particles of the lucid Body, whereby they don't propel any fictitious Matter supposed to be lodged in the hidden Pores of transparent Bodies, but throw off, from the luminous Body, certain very small Particles, which are emitted every way with great force: And the *secondary* or *derived Light* consists, not in a *Conatus*, but a real Motion of these Particles receding every way from the luminous Body in right Lines, and with an incredible Velocity. For if *Light* consisted in a mere Pressure or Pulse, it would be propagated to all Distances in the same Instant of Time; the contrary of which appears from the Phænomena of the Eclipses of Jupiter's Satellites, whose Immersions, as the Earth approaches towards Jupiter, are found to anticipate somewhat on the true time, and to commence sooner; and again as the Earth retires from Jupiter, their Emergences, which alone in that Case can be observed, happen later and later, lose time: deviating thus, very considerably on either side, from the true time marked by the Tables. This was first observed by M. Romer, and since by other Astronomers; the Reason of which is not owing to any Eccentricity, but does apparently follow from this, that the *Light* of the Sun reflected from the Satellites has further to travel, e'er it reaches the Eye, in the one Case than in the other, by a Space equal to the Diameter of the Earth's annual Orbit. *Light* therefore, like other real Bodies, does not move instantaneously, but in Time. Sir Isaac Newton has shewn past contradiction, that the *Light* of the Sun is near seven Minutes in its Passage to the Earth, which is the Space of 50,000,000 Miles; a Velocity 10,000,000 Times greater than that wherewith a Ball flies out of the Mouth of a Cannon.

Further, if *Light* were not a Body, but consisted in a mere Pressure or Pulsion, it would never be propagated in right Lines, but would be continually inflected *ad Umbram*. Thus Sir Isaac Newton, 'A Pressure on a fluid Medium (i. e. a Motion propagated by such a Medium) beyond any Obstacle which impedes any Part of its Motion, cannot be propagated in right Lines, but will be always inflecting and diffusing itself every way to the quiescent Medium beyond that Obstacle. The Power of Gravity tends downwards, but the Pressure of Water rising from it tends every way with an equable Force, and is propagated with equal Ease and equal Strength in Curves as in straight Lines. Waves, on the Surface of the Water, gliding by the Extremes of any very large Obstacle, inflect and dilate themselves, still diffusing gradually into the quiescent Water beyond that Obstacle. The Waves, Pulses, or Vibrations of the Air, wherein Sounds consist, are manifestly inflected, tho' not so considerably as the Waves of Water, and Sounds are propagated with equal Ease thro' crooked Tubes, and thro' straight Lines; but *Light* was never known to move in any Curve, nor to inflect itself *ad Umbram*.' The Rays of *Light* therefore are small Corpuscles, emitted with exceeding Celerity from the luminous Body. As to the Force wherewith these Corpuscles are emitted, so as to enable them to move at the inconceivable Rate of 7,000,000 Miles in a Minute, hear the same great Author: 'Among Bodies of the same Kind



Kind and Virtue, by how much any one is smaller, by so much is its attractive Power greater, in proportion to its Bulk. This Power we find stronger in small Magnets than in large ones, regard being had to the Difference of their Weights; and the Reason is, that the Particles of small Magnets being nearer each other, more easily unite their Forces intimately together, and act conjointly. For the same Reason the Rays of Light, being of all other Bodies the most minute, it may be expected that their attractive Powers should be of all others the strongest. And how strong in effect they are, may be gathered from the following Rules: The Attraction of a Ray of Light, according to the Quantity of its Matter, is to the Gravity which any projected Body has, according likewise to the Quantity of its Matter, in a Ratio compounded of the Velocity of the Ray of Light, to the Velocity of that projected Body, and of the Bending or Curvature of the Line, which the Ray describes in the Place of Refraction, to the Bending or Curvature described by that projected Body; provided, however, the Inclination of the Ray to the refracting Surface be the same with that of the projected Body to the Horizon. From which Proportion I gather, that the Attraction of the Rays of Light is above 1,000,000,000,000,000 times greater than the Gravity of Bodies on the Surface of the Earth, in proportion to the Quantity of Matter in each, if the Light pass from the Sun to the Earth in the Space of seven Minutes. But now as in Algebra, where affirmative Quantities cease, there negative ones begin; so in Mechanics, where Attraction ceases, there the repelling Power must succeed: Therefore a Ray of Light, as soon as it is cast off from the luminous Body by the vibrating Motion of its Parts, and is got out of the Sphere of its Attraction, is propelled with an immense Velocity. See *Attraction and Repulsion*.

The wonderful Divisibility of the Parts of Matter is no where more apparent than in the Minuteness of the Particles of Light. Dr. Nieuwentijt has computed, that an Inch of Candle, when converted to Light, becomes divided into 269617040 Parts. The Expansion or Extension of any Portion of Light is inconceivable; Dr. Hook shews 'tis as unlimited as the Universe; proving it from the immense Distance of some of the fixed Stars, the Light whereof becomes sensible to the Eye by means of a Telescope; nor, adds he, is it only the great Bodies of the Sun or Stars that are thus able to disperse their Light thro' the vast Expanse of the Universe; but the smallest Spark of a lucid Body must do the same, even the smallest Globule struck from a Steel by a Flint.

Dr. *Graauesand* affirms a lucid Body to be that, which emits or gives Fire a Motion in right Lines; and makes the Difference between Light and Heat to consist in this, That to produce the former, the fiery Particles must enter the Eye in a rectilinear Motion, which is not required in the latter: On the contrary, an irregular Motion seems more proper for it, as appears from the Rays coming directly from the Sun to the Top of the Mountain, which have not near that Effect with those in the Valley, agitated with an irregular Motion by several Reflections. Whether or no there be always Light where there is Fire, is disputed among Authors, as also whether or no there be any luminous Body without Heat; Heat being a Motion that may be infinitely diminished, and Light a Matter that may be infinitely rare; to which we may add, that no Heat is sensible to us, unless it be more intense than that of our Organs of Sense.

Sir *Isaac Newton* observes, that Bodies and Light act mutually on one another; Bodies on Light, in emitting, reflecting, refracting, and inflecting it; and Light on Bodies, by heating them, and putting their Parts into a vibrating Motion, wherein Heat principally consists. For all fix'd Bodies, he observes, when heated beyond a certain Degree, do emit Light, and shine; which Shining, &c. appears to be owing to the vibrating Motion of the Parts; and all Bodies abounding in earthy and sulphureous Particles, if sufficiently agitated, emit Light, which way soever that Agitation be effected. Thus Sea-Water shines in a Storm, Quick-silver when shaken *in vacuo*, Cats or Horses when rubb'd in the dark; and Wood, Fish, and Flesh when putrefied.

The late Mr. *Hawkesbee* has furnish'd us with a great Variety of Instances of the artificial Production of Light on the Attrition of Bodies naturally not luminous; as of Amber rubb'd on Woollen Cloth *in vacuo*, of Glass on Woollen, of Glass on Glass, of Oyster-Shells on Woollen, and of Woollen on Woollen, all *in vacuo*. On the several Experiments whereof, he makes the following Reflections: That different sorts of Bodies afford remarkably different kinds of Light, different both in Colour and in Force; That the Effects of an Attrition are various, according to the different Preparations and Managements of

the Bodies that are to endure it; and that Bodies which have yielded a particular Light, may be brought by Friction to yield no more of that Light.

M. *Bernoulli* found by Experiment that Mercury amalgamated with Tin, and rubb'd on Glass, produced a considerable Light in the Air; that Gold rubb'd on Glass did it still in a greater degree: but that of all others the most exquisite Light was that produced by the Attrition of a Diamond; being equally vivid with that of a burning Coal briskly agitated with the Bellows.

Mr. *Boyle* tells us of a piece of shining rotten Wood, which upon exhausting the Air from it was extinguish'd; but upon its Re-admission, seemed to come to life again, and shone as before: being no doubt a real Flame, and like other Flames not to be preserved without Air. See *Phosphorus*.

That the Particles of Light are attracted by those of other Bodies, is evident from innumerable Experiments. This Phenomenon was first observed by Sir *I. Newton*, who found by repeated Tryals, that the Rays of Light in their passage near the Edges of Bodies, whether opaque or transparent, as Pieces of Metals, the Edges of Knives, broken Glasses, &c. are diverted out of the right Lines, and always inflected or bent towards those Bodies. This Action of Bodies on Light is found to exert itself at a sensible Distance, tho it always increases as the Distance is diminish'd; as appears very sensibly in the passage of a Ray between the Edges of two thin Planes at different Apertures, in which there is something very peculiar, the Attraction of one Edge being increased as the other is brought nearer it. The Rays of Light in their passage out of Glass into a Vacuum are not only inflected towards the Glass, but if they fall too obliquely, will revert back again to the Glass, and be totally reflected. The Cause of which Reflection cannot be attributed to any Resistance of the Vacuum, but must be entirely owing to some Force or Power in the Glass, which attracts or draws back the Rays as they were passing into the Vacuum. And this appears farther from hence, that if you wet the posterior Surface of the Glass with Water, Oil, Honey, or a Solution of Quicksilver, then the Rays which would otherwise have been reflected will pass into and through that Liquor: which shews that the Rays are not reflected till they come to that posterior Surface of the Glass, nor even till they begin to go out of it; for if at their going out they fall into any of the foresaid Mediums, they will not then be reflected, but persist in their former Course, the Attraction of the Glass being in this Case counter-balanced by that of the Liquor.

From this mutual Attraction between the Particles of Light and other Bodies, arises two other grand Phenomena, which we call the Reflexion and Refraction of Light.

We know that the Determination of a Body in Motion is chang'd by the Interposition of another Body in its way. Thus Light impinging on the Surface of solid Bodies, should be turn'd out of its course, and beaten back or reflected, so as like other falling Bodies to make the Angle of its Reflexion equal to that of Incidence. This 'tis found by experience Light does, and yet the Cause of this Effect is different from that just now assign'd: the Rays of Light are not reflected by striking on the very Parts of the reflecting Bodies, but by some Power equably diffused throughout the whole Surface of the Body, whereby it acts on the Light, either attracting or repelling it without Contact: by which same Power, in other Circumstances the Rays are refracted; and by which also, the Rays are first emitted from the luminous Body; as is abundantly proved, by great variety of Arguments, by Sir *I. Newton*. See *Reflexion*.

That great Author puts it past doubt, that all those Rays which are reflected, tho they approach the Body infinitely near, yet never touch it; and that those which do really strike on the solid Parts of Bodies, adhere to 'em, and are as it were extinguish'd and lost. If it be ask'd, how it happens, since we ascribe the Reflexion of the Rays to the Action of the whole Surface of the Body without Contact; how, I say, it happens that all the Rays are not reflected from every Surface, but while some are reflected, others pass through and are refracted: The Answer given by Sir *I. Newton* is as follows—Every Ray of Light in its passage thro any refracting Substance, is put into a certain transient Constitution or State, which in the progress of the Ray returns at equal Intervals, and disposes the Ray at every Return to be easily transmitted thro the next refracting Surface, and between the Returns to be easily reflected by it: which Alternation of Reflexion and Transmission appears to be propagated from every Surface and to all Distances. What kind of Action or Disposition this is, and whether it consist in a circulating or vibrating Motion of the Ray or the Medium, or somewhat else, he does not inquire; but allows those who are fond of Hypotheses to suppose that the Rays of



of *Light*, by impinging on any reflecting or refracting Surface, excite Vibrations in the reflecting or refracting Medium, and by that means agitate the solid Parts of the Body. These Vibrations, thus propagated in the Medium, move faster than the Rays, so as to overtake them; and when any Ray is in that part of the Vibration which conspires with its Motion, its Velocity is increased, so that it easily breaks thro a refracting Surface: but when it is in a contrary part of the Vibration, which impedes its Motion, it is easily reflected, and consequently that every Ray is successively disposed to be easily reflected or transmitted by every Vibration which overtakes it. The Return of which Disposition of any Ray to be reflected, he calls *Fits of easy Reflexion*; and those of its Disposition to be transmitted, he calls *Fits of easy Transmission*; and the Space between the Returns, the *Interval of the Fit*. The Reason then why the Surface of all thick transparent Bodies reflect part of the *Light* incident on 'em, and refract the rest, is, that some Rays at their Incidence are in *Fits of easy Reflexion*, and others of *easy Transmission*. For the Properties and Laws of reflected *Light*, see *Reflexion* and *Mirror*.

Further, a Ray of *Light* passing out of one Medium into another of different Density, and in its passage making an oblique Angle with the Surface that separates the Mediums, will be refracted or turn'd out of its right Line; by reason the Rays are more strongly attracted by a denser than a rarer Medium.

That these Rays are not refracted by striking on the solid Parts of Bodies, but without any Contact, by that same force wherewith they are emitted and reflected, exerting itself differently in different Circumstances, is proved in great measure by the same Arguments which demonstrate Reflexion to be perform'd without Contact. For the Properties, &c. of refracted *Light*, see *Refraction*, *Lens*, &c. In Island Chrystal is observed a kind of double Refraction, very different from what we find in any other Body: the Rays that fall obliquely being not only dispersed, with a double Refraction in one and the same Surface, but even the perpendicular Rays themselves are most of 'em divided into two Beams by means of the same double Refraction; which Beams are of the same Colour with the incident Beams, and are equal in degree of *Light*, at least nearly, to each other: Whence the great Philosopher, so often cited, takes occasion to suspect that there are in *Light* some other original Properties besides those hitherto described; and particularly, that the Rays have different Sides endued with several original Properties. For of these Refractions, the one is performed in the usual manner, *i. e.* the Sine of Incidence is to that of Refraction as 5 is to 3; and the other in an unusual manner: and yet the same Ray is refracted sometimes in the one manner, and sometimes in the other, according to the various Positions which its several Sides have, in respect of the Chrystal. These Dispositions, he shews, must have existed originally in the Beams, without having undergone any Alterations in that respect, by the Chrystal. Every Ray of *Light* therefore has two opposite Sides, the one originally endued with a Property whereon its unusual Refraction depends, and the other not endued with that Property.

Sir I. Newton having observed the vividly colour'd Image projected on the Wall of a darken'd Room, by the Sun-Beams transmitted thro a Prism, to be five times as long as broad; setting himself to inquire into the Reason of this Disproportion, was led from other Experiments to the *Experimentum Crucis*; whence he discovered the Cause of the Phenomenon to be, that some of the Rays of *Light* were more refracted than others, and therefore exhibited several Images of the Sun under the appearance of one, extended lengthwise. Thence he proceeded to conclude, that *Light* itself is an heterogeneous Mixture of Rays differently refrangible. Hence he distinguishes *Light* into two kinds, *viz.* that whose Rays are equally refrangible, which he calls Homogeneous, Similar or Uniform *Light*; and that whose Rays are unequally refrangible, which he calls Heterogeneous *Light*.

There are but three Affections of *Light*, wherein he observed its Rays to differ, *viz.* Refrangibility, Reflexibility, and Colour; and those Rays which agree in Refrangibility, agree also in the other two: whence they may be well defined Homogeneous, tho in some other respects they may possibly be Heterogeneous. Again, the Colours exhibited by Homogeneous *Light*, he calls Homogeneous Colours; and those produced by Heterogeneous *Light*, Heterogeneous Colours. These Definitions laid down, he advances several Propositions.

As 1<sup>st</sup>, That the Sun's *Light* consists of Rays differing by indefinite Degrees of Refrangibility. 2<sup>dly</sup>, That Rays which differ in Refrangibility, when parted from one another, do proportionably differ in the Colours which they exhibit. 3<sup>dly</sup>, That there are as many simple and ho-

mogeneous Colours, as Degrees of Refrangibility, for to every Degree of Refrangibility belongs a different Colour. 4<sup>thly</sup>, Whiteness in all respects like that of the Sun's immediate *Light*, and of the usual Objects of our Senses, cannot be compounded of simple Colours, without an indefinite Variety of them; for to such a Composition there are required Rays endued with all the indefinite Degrees of Refrangibility, which infer as many simple Colours. 5<sup>thly</sup>, The Rays of *Light* do not act on one another in passing thro the same Medium. 6<sup>thly</sup>, The Rays of *Light* do not suffer any Alteration of their Qualities from Refraction, nor from the adjacent quiescent Medium. 7<sup>thly</sup>, There can no Homogeneous Colours be produced out of *Light* by Refraction, which are not commix'd in it before; since Refraction, as was before observ'd, changes not the Qualities of the Rays, but only separates those which have divers Qualities by means of their different Refrangibility. 8<sup>thly</sup>, The Sun's *Light* is an Aggregate of Homogeneous Colours; whence Homogeneous Colours may be call'd Primitive or Original.

We have already observed that the Rays of *Light* are composed of dissimilar or heterogeneous Parts; some of them being in all probability greater, others less. Now the smaller the Parts are, by so much the more refrangible they are, *i. e.* they are so much the more easily diverted out of their rectilinear Course; and those Parts which differ in Refrangibility, (*i. e.* in Bulk) we have also observed differ in Colour. Hence arises the whole Theory of Colours. Those Parts, *v. g.* which are the most refrangible, constitute Violet Colour; that is, the most minute Particles of *Light* when separately impelled on the Organ, do there excite the shortest Vibrations in the Retina, which are thence communicated by the solid Parts of the Optic Nerve into the Brain, and excite in us the Sensation of Violet Colour, the dimmest and most languid of all other Colours: And those Particles, on the contrary, which are the least refrangible, constitute a Ray of a Red Colour; *i. e.* the greatest Particles of *Light* excite the longest Vibrations in the Retina, and so convey the Sensation of a Red Colour, as being the most bright and vivid of all others. The other Particles being distinguished into little Rays, according to their respective Magnitudes and Degrees of Refrangibility, excite intermediate Vibrations, and so occasion the Sensations of the intermediate Colours; in like manner as the Vibrations of the Air, according to their different Magnitudes, excite the Sensations of different Sounds. The Colours then of these little Rays not being any adventitious Modifications of them, but connate, primitive, and necessary Properties, resulting, in all probability, from their different Magnitudes, must be perpetual and immutable, not to be altered by any Reflexion, Refraction, or other subsequent Modification. See the *Doctrine of Colours*, laid down under Colour. For the Manner in which *Light* affects our Senses, and how it contributes to Vision, see *Vision*.

LIGHT is also used to signify the Disposition of Objects with regard to the receiving of *Light*; thus we say, a Painting is seen in its proper *Light*, when its Situation, with regard to the *Light*, is the same with that for which it was painted.

LIGHTS ABOARD SHIPS. See *Signals*.

LIGHTS, in Architecture, are understood of the Openings of Gates and Windows, and other Places thro which the Air and *Light* have a Passage. In the Pantheon all the *Light* comes from on high; it has no *Lights* but in the Dome.

LIGHTS, in Painting, are those Parts of a Piece that are illumined, or that lie open to the Luminary, by which the Piece is supposed to be enlightened; and that for this reason are painted in bright vivid Colours; in which sense *Light* is opposed to Shadow. *Light* is also used for the luminous Body that emits it. There are various kinds of *Lights*; general *Lights*, as the Air; particular *Lights*, as a Fire, a Candle, and even the Sun. Different *Lights* have very different Effects on the Piece, and occasion a Difference in the Management of every Part. A great deal therefore depends on the Painters chusing a proper *Light* for his Piece to be illumined by, and a great deal more in the Conduct of the *Lights* and Shadows when the Luminary is pitched upon. The Strength and Relievo of a Figure, as well as its Gracefulness, depends entirely on the Management of the *Lights*, and the joining of those to the Shadows. The *Light* a Figure receives, is either direct or reflected, to each of which special Regard must be had. The Doctrine of *Lights* and Shadows makes that Part of Painting, called *Chiar-obscure*, which see.

LIGHT-HORSE, an ancient Term in our English Customs, signifying an ordinary Cavalier or Horseman lightly armed, and so as to enter a Body or Regiment; in opposition to the others, who were heavily accoutred, and armed at all Points.

LIGHTER,



**LIGHTER**, a small floating Vessel. *Lighters* are of several kinds; as,

A Ballast Gin, A close *Lichter*, A Kiele,  
A Camel, A Huy, An open *Lichter*.

**LIGHTNESS**, see *Levity*.

**LIGNUM ALOES**, or Wood of *Aloes*; see *Aloes*. *Lignum Cassia*, see *Cassia*. *Lignum Balsami*, see *Balsam*.

**LIKE QUANTITIES**, in Algebra, are such as are expressed by the same Letters, equally repeated in each Quantity. Thus 2 *b*, and 3 *b*, and 9 *ff*, and 3 *ff* are like Quantities; but 2 *b*, and 3 *bb*, and 9 *ff*, and 3 *fff* are unlike ones, because the Quantities have not every where the same Dimensions, nor are the Letters equally repeated. Like Signs in Algebra are when both are Affirmative, or both Negative; but if one be Affirmative, and the other Negative, they are unlike Signs. Thus + 64 *d*, and + 5 *d*, have like Signs; but 9 *f*, and - 7 *f* have unlike Signs. Like Figures in Geometry are such as have their Angles equal, and the Sides about these equal Angles proportional. Like Arcs in the Projection of the Sphere in *Plano* are Parts of lesser Circles, containing an equal Number of Degrees with the corresponding Arcs of greater ones. Like solid Figures in Geometry, are such as are contained under like Planes, equal in Number.

**LIMB**, the outermost Border or graduated Edge of a Quadrant, or the like Mathematical Instrument; or the Circumference of the Primitive Circle in any Projection of the Sphere in *Plano*. Astronomers observe the lower and the upper Limb of the Sun, in order to find its true Height, which is that of his Center.

*Limb* also signifies the outermost Border or Edge of the Sun or Moon, when the Middle or Disk is hid in an Eclipse of either Luminary.

*Limb* is also used among Botanists for the outer Edge or Border of Plants, their Leaves, and Flowers.

**LIMB**, or **LIMBUS**, is also a Term in the *Romish* Theology, used for that Place where the Patriarchs are supposed to have waited for the Redemption of Mankind, and where they imagine our Saviour continued from the time of his Death to that of his Resurrection. *Du Cange* says, the Fathers called this Place *Limbus*, eo quod sit *Limbus Inferorum*. The word *Limbus* is also used by the Catholics for the Place destined to receive the Souls of Infants who die without Baptism; who have not deserved Hell, as dying in Innocence, nor yet are worthy of Heaven, because of the Imputation of Original Sin.

**LIME**, Calcined Stone, Marble, Free-stone, Chalk, or other Matter burnt by a large Fire in a Kiln or Furnace built express; to be afterwards used in the Composition of Mortar, for building; the Fire taking away all its Humidity, and opening its Pores, so that it becomes easily reducible to Powder. Quick Lime or Unslack'd Lime is that which comes out of the Furnace; Slack'd Lime is that wash'd or steep'd in Water, and reserv'd for the making of Mortar. The best Lime is that made of the hardest and firmest Stones, and which is slack'd at its coming out of the Furnace. Sir *H. Wotton* looks on it as a great Error in the *English* to make Lime as they do, of Refuse, and Stuff without any Choice; whereas the *Italians*, at this day, and much more the Antients, burnt their firmest Stones, and even Fragments of Marble where it was plentiful; which in time became almost Marble again for its hardness, as appears in their standing Theatres, &c.

We have two kinds of Lime in common use in *England*; the one made of Stone, and the other of Chalk; whereof the former is much the strongest. That made of soft Stone or Chalk is fittest for plaistering of Ceilings and Walls within doors; and that made of hard Stones, for Buildings and for plaistering without doors. Good Lime may also be made of Mill-stone, not coarse and sandy, but fine and greasy; as also of all kinds of Flints; tho' 'tis hard to burn 'em, unless in a Reverberatory Furnace, as being apt to run to Glass.

*Dieussant* recommends Lime made of Sea-shells as the best, but *Goldman* finds fault with it, as being impatient of Moisture, and therefore easily peeling off from the Out-sides of Walls: It is, however, the common Lime used in the *Indies*.

Before the Stones be thrown into the Kiln, they are to be broke in pieces; otherwise the Air contain'd in their Cavities, too much expanded by the Heat, makes 'em fly with so much violence as to damage the Kiln. According to *Alberti* and *Palladio*, Lime will not be sufficiently burnt in less than sixty Hours intense Heat.

The Marks of a well-burnt Lime, according to *Alberti*, are, that its Weight is to that of the Stone in a sesquialterate Proportion; that it is white, light, and sonorous; that when slaked it sticks to the Sides of the Vessel: To which *Boeckler* adds, that when slaked it sends forth a copious thick Smoak; and *Dieussant*, that it needs a great deal of Water to slake it.

To preserve Lime several Years, slake and work it up; dig a Pit under ground, into which let it pass thro' a hole

open at the bottom of the Vessel. As soon as the Pit is full, cover it up with Sand, to prevent its drying; thus keeping it moist till it be used. *Boeckler* gives another Method: Cover a Stratum of Lime two or three foot high with another of Sand of the like height; pour on Water enough to slake the Lime, but not to reduce it to dust after slaking. If the Sand cleave into Chinks, as the Smoak ascends, cover 'em up, so as no Vent may be given thereto. This Lime, he adds, kept ten or twelve Years, will be like Glue; and will, further, be of particular Use in painting Walls, as being no way prejudicial to the Colours. See *Mortar*.

Lime is much used by Tanners, Skinners, &c. in the Preparation of their Leather.

Lime, or Calx, in Chymistry, is a kind of fine Powder, or Ashes remaining of Metals or Minerals, that have been a long time in a violent Fire. See *Calx*.

Lime is of some medicinal Use, being applied externally in Desiccative and Consumptive Medicines. Its Water is said to be an excellent Medicine, taken internally. *M. Burlet* has written an ample Account of its Effects in the *French Memoirs*, in good measure from his own Experience. But he observes it succeeded much better in *Holland*, &c. than in *France*. It is a powerful Alterant, and like a pure Alkaline Water, fitted to blunt and destroy acid Ferments, which are the Principles of all Obstructions, and the Cause of most Chronic Diseases. Its principal Use is in a Cachexy, Green-sickness, Dropsy, Scurvy, Obstructions of the Liver, Spleen, &c. It is made by pouring six Pounds of hot Water on one of Quick-Lime, leaving them to soak and macerate for the space of 24 hours.

**LIME-STONE**, is a Stone of a whitish Colour, which being burnt in a Kiln, enters the Composition of Mortar, Plaister, &c. which see.

**LIMITATION OF ASSIZE**, in Law, is a certain Time set down by the Statute, wherein a Man must alledge himself or his Ancestors to have been seiz'd of Lands sued for by Writ of Assize.

**LIMITED PROBLEM**, signifies a Problem that has but one only Solution, or which can be done only one way; as to make a Circle pass through three Points given, not lying in a Right Line, to describe an equilateral Triangle on a Line given, &c.

**LIMITS** of a Planet, its greatest Excursion or Distance from the Ecliptic.

**LIMNING**, the Art of Painting in Water-Colours; in contradistinction to Painting properly so called, which is done in Oil-Colours.

*Limning* is much the more Antient Kind of Painting: Till a *Flemish* Painter, one *John van Eyck*, better known by the Name of *John of Bruges*, found out the Art of Painting in Oil, the Painters all painted in Water and in Fresco alone, both on their Walls, on Wooden Boards, and elsewhere. When they made use of Boards, they usually glued a fine Linnen Cloth over 'em, to prevent their opening; then laid on a Ground of White; lastly, they mix'd up their Colours with Water and Size, or with Water and Yolks of Eggs, well bearen with the Branches of a Fig-Tree, the Juice whereof thus mix'd with the Eggs; and with this Mixture they painted their Pieces.

In *Limning* all the Colours are proper enough, excepting the White made of Lime, which is only used in Fresco. But the Azure and Ultramarine must always be mix'd up with Size, or with Gum, in regard the Yolks of Eggs give yellow Colours a greenish Tincture. But there are always applied two Lays of hot Size e'er the Colours, mix'd even with Size, are laid on: the Composition made with Eggs, and the Juice of the Fig-tree, being only used for touching up and finishing, and to prevent the Necessity of having a Fire always at hand to keep the Size hot; yet 'tis certain, that the Size-Colours hold the best, and are accordingly always used in Cartoons, &c. This Size is made of Shreds of thin Leather, or of Parchment.

To *limn* on Linnen, they chuse that which is old, half worn, and close. This they stamp with White Lead, or with a fine Plaister beaten up with Size; which once dry, they go over it with a Lay of the same Size.

The Colours are all ground in Water, each by itself; and in proportion as they are required in working, are diluted with Size-Water. If the Yolks of Eggs are desired, they dilute 'em with Water made of equal Quantities of common Water and Vinegar, with the Yolk, White and Shell of an Egg, and the Ends of the little Branches of a Fig-tree cut small, all well beaten together in an Earthen Pan.

If 'tis desired to varnish the Piece when finish'd, they go over it with the White of an Egg well beaten, and then with Varnish. This, however, is only to preserve it from the Wet: for the great Advantage of *Limning* consists in its being free from any Lustre; in regard all its Colours thus void of Lustre may be seen in all kinds of Lights; which Colours in Oil, or cover'd with Varnish, can't.



**LINCTUS**, a Form of Medicine the same as *Lambative*, and probably from the same Derivation; or from *Lingua* the Tongue, as being to be licked up with the Tongue. See *Eclegma*.

**LINE**, a small *French Measure*, consisting of the 12th part of an Inch, or 144th part of a Foot. The Geometricians, notwithstanding its Smallness, conceive it divided into six Points.

**LINE**, in Genealogy, is a Series or Succession of Relations in various Degrees, all descending from the same common Father. *Direct Line* is that which goes from Father to Son, which is the Order of Ascendants and Descendants. *Collateral Line* is the Order of those who descend from some common Father related to the former, but out of the *Line* of Ascendants and Descendants. In this are placed Uncles, Aunts, Cousins, Nephews, &c.

**LINE**, in Geometry, is a Quantity extended in Length only, without either Breadth or Thickness, and is formed by the Motion of a Point. There are two kinds of *Lines*, viz. *Right Lines* and *Curve Lines*. Thus if the Point A move towards B, (Fig. 1. *Plat. Geometry*) by its Motion it describes a *Line*; and this, if the Point go the nearest way towards B, will be a *Right* or *Streight Line*, whose Definition therefore will be the nearest or shortest Distance between any two Points, or a *Line* all whose Points tend the same way. If the Point go any way about, as in any of the *Lines* A C B, A c B, it will trace out either a crooked *Line*, as the upper A c B; or else two or more streight ones, as in the lower A C B.

*Lines* considered as to their Positions, are either *Parallel*, *Perpendicular*, or *Oblique*; the Construction and Properties whereof, see under *Parallel*, *Perpendicular*, &c.

*Euclid* in his second Book treats mostly of *Lines*, and of the Effects of their being divided, and again multiplied into one another; the Substance of his Doctrine may be thus demonstrated Algebraically. (1.) If there be two *Lines*  $z$  and  $x$ ; one of which, as  $z$ , is divided into any number of Parts, as into  $a + e + i + o$ , the Rectangle under the two whole *Lines*  $zx$  is equal to the Sum of all the Rectangles made by  $x$  multiplied into the Parts of  $z$ .

$$\begin{array}{c} Z \\ \times \end{array} \begin{array}{c} a \\ e \\ i \\ o \end{array}$$

that is,  $zx = xa + xe + xi + xo$ . This is so plain, it needs no proof. (2.) If a *Right Line*, as  $z$ , be divided into two Parts  $a + e$ , the Rectangles made by the whole *Line*, and both its Parts, are equal to the Square of the whole *Line*: That is,  $za + ze = zz$ . For  $za = aa + ae$ ; and  $ze = ae + ee$ ; therefore  $zz = aa + za + ee$ . (3.) Let the *Line*  $z$  be cut into  $a + e$ ; then shall the Rectangle under the whole *Line* ( $Z$ ) and the Part ( $a$ ) be equal to the Square of that Part  $a$ , together with the Rectangle made by the two Parts  $a$  and  $e$ ; that is,  $Za = aa + ae$ .  $Z \begin{array}{c} a \\ e \end{array}$  For  $Z = a + e$ . And  $a + ex = aa + ae$ . (4.) The Square of any *Line*, as  $Z$ , divided into any two Parts,  $a$  and  $e$ , is equal to both the Squares of those Parts, together with the Rectangles made out of those Parts, that is,  $Zz = aa + 2ae + ee$ .  $Z \begin{array}{c} a \\ e \end{array}$  Multiply  $a + e$  by itself, and the Thing is plain.

$$\begin{array}{r} a + e \\ a + e \\ \hline aa + ee \\ + ae + ea \\ \hline aa + 2ae + ee \end{array}$$

Hence it is plain, that the Square of any *Line* is equal to four times the Square of its Half. For suppose  $Z$  to be bisected, then each Part will be  $a$ ; and multiplying  $a + a$  by itself, the thing will plainly appear.

$$\begin{array}{c} Z \\ a + a \\ a + a \\ \hline aa + aa + aa + aa = 4aa \end{array}$$

(5.) If a *Line* be divided into two Parts equally, and into two other Parts unequally, the Rectangle under the unequal Parts, together with the Square of the intermediate Part, will be equal to the Square of half that *Line*. Let the whole *Line* be  $2a$ , then each Part will be  $a$ . Let the lesser unequal Part be  $e$ , then the greater unequal Part will be  $2a - e$ ; which multiplied by  $e$ , produces  $2ae - ee$ : To which adding the Square of the Difference or intermediate Part  $a - e$ , which is  $aa - 2ae + ee$ , the Sum will be only  $aa$ , the Square of half the *Line*. (6.) If a *Line* be bisected, and then another *Right Line* be added to it, the Rectangle or Product of the whole augmented *Line* multiplied by the Part added, together with the Square of the half *Line*, will be equal to the Square of the half *Line*, and Part added, as one *Line*.

$$Z \begin{array}{c} a \\ e \end{array}$$

Let the first *Line* be  $2a$ , and the Part added  $e$ , then the whole will be  $2a + e$ , which multiplied by  $e$ , produceth  $2ae + ee$ ; and the Square of half the *Line*  $aa$  being added to it, it will be  $2ae + ee + aa$ , which is equal to the Square of  $a + e$ . (7.) If a Quantity or *Line* be divided any how into two Parts, the Square of the Whole added to the Square of one of the Parts, shall be equal to two Rectangles contained under the whole *Line*, and that part, added to the Square of the other Part.

$$Z \begin{array}{c} a \\ e \end{array}$$

Let  $a$  be one Part, and  $e$  the other; the Square of the Whole, and of the lesser Part  $e$  makes  $aa + 2ae + ee$ , then if the Whole  $a + e$  be multiplied by twice  $e$ , it will produce  $2ae + 2ee$ ; and if to this be added the Square of the other Part  $aa$ , the Sum will be  $aa + 2ae + 2ee$ , equal to the former. (8.) If a *Line* be cut any how into two Parts, the Rectangle under the whole *Line* and one of the Parts taken four times, and added to the Square of the other Part, is equal to the Square of the Whole, and the other Part added to it, as if it were but one *Line*.

$$Z \begin{array}{c} a \\ e \end{array}$$

Let the whole *Line* be  $a + e$ , then four times that multiplied by  $e$  (or the Quadruple Rectangle under that and  $e$ ) will be  $4ae + 4ee$ ; to which adding the Square of the other Part  $aa$ , the Sum will be  $aa + 4ae + 4ee$ . And if you square  $a + 2e$ , which expresseth the whole *Line* with  $e$  added to it, the Product will be the former Sum of  $aa + 4ae + 4ee$ . (9.) If a *Line* be bisected, and also cut into two other unequal Parts, the Sum of the Squares of the unequal Parts will be double the Sum of the Squares of the half *Line*, and of the Difference between the two unequal Parts. Let the whole *Line* be  $2a$ , and the Difference between the equal and unequal Parts  $b$ ; then the greater unequal Part will be  $a + b$ , and the lesser  $a - b$ : The Sum of the Squares of the unequal Parts will be  $2aa + 2bb$ , which is double to the Square of half the *Line* added to the Square of the Difference. (10.) If a *Line* be bisected, and then another *Line* added to it; the Square of the whole increased *Line*, together with the Square of the Part added, is double the Sum of the Squares of the half *Line*, and of the half *Line* and Part added, taken as one *Line*.

$$Z \begin{array}{c} a \\ e \end{array}$$

Let the whole *Line* be  $2a$ , and the Part added  $e$ ; then the whole increased *Line* will be  $2a + e$ , and the half *Line* and Part added will be  $a + e$ ; the Sum of the Squares of  $2a + e$ , and of  $e$ , is  $4aa + 4ae + 2ee$ ; which is plainly double to  $aa$ , and  $aa + 2ae - ee$  added together.

**LINE**, in Geography and Astronomy, is used by way of Eminence for the Equator or Equinoctial *Line*, which, in the Heavens, is a Circle described by the Sun in his Course on the 21st Day of *March*, and the 21st of *September*. On the Earth 'tis an imaginary Circle, answering to that in the Heavens. It divides the Earth from *East* to *West* into two equal Parts, and is at an equal Distance from the two Poles; so that those who live under the *Line*, have the Poles always in their Horizon. The Latitudes commence from the *Line*. The Seamen use to duck their Passengers the first time they cut the *Line*.

**LINE**, in the Art of War, is understood of the Disposition of an Army ranged in Order of Battle. An Army usually consists of three *Lines*; the first is the Front, Van, or Advance Guard; the Main Body forms the second, in which is the General's Post; the third is a Reserved Body or Rear-Guard. 'Tis a Rule to leave 150 Paces distance between the first *Line* and the second, and twice as much between the second and third, to give room for rallying.

*Line* is also understood of the Disposition of a Fleet on the Day of Engagement; on which occasion the Vessels are always drawn up in one *Line*: A Ship of the *Line*, is a Vessel large enough to be drawn up in the *Line*, and to have place in a Sea-Fight.

**LINE** of Demarcation, or *Alexandrian Line*, is a Meridian passing over the Mouth of the River *Maragron*, and by the Capes of *Hoamas* and *Malabrigo*. 'Tis so call'd from Pope *Alexander VI.* who to end the Disputes between the Crowns of *Castile* and *Portugal*, about their Boundaries in 1493, drew an imaginary *Line* on the Globe, which was to terminate the Pretensions of each. By which Partition the *East-Indies* fell to the Lot of the *Portuguese*, and the *West-Indies*, then newly discovered, to the *Castilians*.

**LINE** of Direction, in Mechanics, is that, according to which a Body endeavours to move. The Term is also used to signify the *Line* that passes thro' the Center of Gravity of the heavy Body to the Center of the Earth; which must also pass thro' the *Fulcrum* or Support of the heavy Body; without which it would fall.



**LINE**, in Fencing, is that directly opposite to the Enemy, wherein the Shoulders, the right Arm, and the Sword ought always to be found; and wherein are also to be placed the two Feet at the distance of 18 Inches from each other. In this sense a Man is said to be in his *Line*, to go out of his *Line*, &c.

**LINE**, in Fortification, is sometimes taken for a Ditch bordered with its Parapet, and sometimes for a Row of Gabions, or Sacks of Earth, extended in Length on the Ground, to serve as a Shelter against the Enemies Fire. Thus they say, when the Trenches were carried on within thirty Paces of the Glacis, they drew two *Lines*, one on the Right, and the other on the Left, for a Place of Arms. *Line* fundamental is the first *Line* drawn for the Plan of a Place, and which shews its Area. *Line Capital* is that which is drawn from the Angle of the Gorge to the Angle of the Bastion. *Line Cogritel* is that which is drawn from the Angle of the Center to that of the Bastion. *Line of Defence*, is that which represents the Course of the Bullet of any sort of Fire-Arms, more especially of a Musquet-Ball, according to the Situation which it ought to have to defend the Face of the Bastion. *Line of Defence Fixed*, or *Ficbant*, is that which is drawn from the Angle of the Curtain to the flank'd Angle of the opposite Bastions, but yet without touching the Face of the Bastion. This must never exceed 800 Feet, which they reckon the Distance at which a Musquet-Ball will do Execution. *Line of Defence Razant*, is that which being drawn from a certain Point of its Curtain, razeth the Face of the opposite Bastion; this is also called the *Line of Defence*, *Stringent*, or *Flanking*. *Line of Approach*, or *Attack*, signifies the Work which the Besiegers carry on under Cover, to gain the Moat, and the Body of the Place. *Line of Circumvallation*, is a *Line* or Trench cut by the Besiegers within Cannon-Shot of the Place, which rangeth round their Camp, and secures its Quarters against the Relief of the Besieged. *Line of Contravallation* is a Ditch bordered with a Parapet, which serves to cover the Besiegers on the Side of the Place, and to stop the Sallies of the Garison. *Lines of Communication* are those which run from one Work to another; but the *Line of Communication*, more especially so call'd, is a continued Trench, with which a Circumvallation, or Contravallation, is surrounded, and which maintains a Communication with all its Forts, Redoubts, and Tenailles. *Line of the Base* is a right *Line*, which joins the Points of the two nearest Bastions. To *line* a Work, is to strengthen a Rampart with a firm Wall, or to encompass a Parapet or Moat with good Turf, &c.

**LINE** Geometrical, in Perspective, is a right *Line* drawn in any manner on the Geometrical Plane. *Line Terrestrial*, or *Horizontal*, in Perspective, is a right *Line*, wherein the Geometrical Plane and that of the Picture or Draught intersect one another. *Line of the Front*, in Perspective, is any right *Line* parallel to the *Terrestrial Line*. *Line Vertical* in Perspective, is the common Section of the Vertical and of the Draught. *Line Visual* is the *Line* or Ray imagined to pass from the Object to the Eye. *Line of Station* in Perspective, according to some Writers, is the common Section of the Vertical and Geometrical Planes; others mean by it the perpendicular Height of the Eye above the Geometrical Plane; others a *Line* drawn on that Plane, and perpendicular to the *Line*, expressing the Height of the Eye. *Line Objective*, in Perspective, is the *Line* of an Object, from whence the Appearance is sought for in the Draught or Picture.

**LINE** of Gravitation of an heavy Body, is a *Line* drawn thro' its Centre of Gravity, and according to which it tends downwards.

**LINE**, *Horizontal*, in Dialling, is the common Section of the Horizon, and the Dial-Plane. *Line Horary*, or the *Hour-Lines*, are the common Intersections of the Hour-Circles of the Sphere, with the Plane of the Dial. *Line Substylar*, is that *Line* on which the Style or Cock of the Dial is erected, and is the Representation of such an Hour-Circle as is perpendicular to the Plane of that Dial. *Line Equinoctial*, in Dialling, is the common Intersection of the Equinoctial, and the Plane of the Dial.

**LINE** of Measures; so Mr. Oughtred calls the Diameter of the Primitive Circle in the Projection of the Sphere in *Plano*, or that *Line* in which the Diameter of any Circle to be projected falls. In the Stereographick Projection of the Sphere in *Plano*, it is that *Line* in which the Plane of a great Circle perpendicular to the Plane of the Projection, and that oblique Circle, which is to be projected, intersects the Plane of the Projection; or it is the common Section of a Plane, passing thro' the Eye-Point, and the Centre of the Primitive; and at right Angles to any oblique Circle which is to be projected, and

in which the Centre and Pole of such Circle will be found.

**LINE** of the swiftest Descent of an heavy Body, is that Curve which a Body would describe in its Descent, if it moved the swiftest possible.

**LINE** of the *Apsides*, in Astronomy, is the *Line* which joins the *Apsides*, or the greater Axis of the Orbit of a Planet. See *Apsides*.

**LINE FIDUCIAL**. See *Fiducial Line*.

**HORIZONTAL LINE**, a *Line* Parallel to the Horizon. See *Horizon*.

**MERIDIAN LINE**. See *Meridian*.

**LINE** of the Nodes, in Astronomy, is the *Line* which joins the Nodes of the Orbit of a Planet, or the common Section of the Plane of the Orbit with the Plane of the Ecliptic. See *Nodes*.

**LINE** of a Projectile. See *Projectile*.

**LINE**s on the *Plain Scale*, are the *Line* of Chords, *Line* of Sines, *Line* of Tangents, *Line* of Secants, *Line* of Semi-Tangents, *Line* of Longitude. The Construction and Application whereof, see under the word *Plain Scale*.

**LINE**s on *Gunter's Scale*, are, the *Line* of Numbers, *Line* of Artificial Sines, *Line* of Artificial Tangents, *Line* of Artificial Versed Sines, *Line* of Artificial Sines of Rhumbs, *Line* of Artificial Tangents of the Meridian *Line*, and *Line* of equal Parts. The Construction and Application whereof, see under the Word *Gunter's Scale*.

**LINE**s of the *Sector*, are, the *Line* of equal Parts, or *Line* of Lines, *Line* of Chords, *Line* of Sines, *Line* of Tangents, *Line* of Secants, *Line* of Polygons, *Line* of Numbers, *Line* of Hours, *Line* of Latitudes, *Line* of Meridians, *Line* of Metals, *Line* of Solids, *Line* of Planes. The Construction and Use whereof, see under the word *Sector*.

**LINE**s Converging. See *Converging Lines*.

**LINE**s Diverging. See *Diverging Lines*.

**LINE**s Proportional, the Manner of constructing them; their Properties, &c. See *Proportional Lines*.

**LINE**s Reciprocal. See *Reciprocal*.

**LINEA ALBA**, in Anatomy, is the Concourse of the Tendons of the oblique and transverse Muscles, dividing the Abdomen in two, in the middle. It is called *Linea*, *Line*, as being strait, and *Alba* from its Colour, which is white. It receives a Twig of a Nerve from the Intercostals in each of its Digitations or Indentings, which are visible to the Eye, in lean Persons especially.

**LINEAMENT**, a fine Stroke or *Line* observed in the Face, and forming the Delicacy thereof; being that which preserves the Resemblance, and occasions the Relation of Likeness or Unlikeness to any other Face. 'Tis by these that the Physiognomists pretend to judge of the Temper and Manners of People. The word *Lineament* is used by the Painters for the Out-*Line* of a Face.

**LINEAR PROBLEM**, in Mathematicks, is such an one as may be solved Geometrically by the Intersection of two right *Lines*; as to measure an inaccessible Height by the means of two unequal Sticks, &c. This is also called a *Simple Problem*, and is capable but of one Solution. *Linear Numbers* are such as have Relation to Length only, as such as represent one Side of a Plane Figure; if the Plane Figure be a Square, the *Linear Number* is called a Root.

**LINE-SEED**, a Grain, that has several useful Properties. It enters the Composition of several Medicines, and yields, by Expression, an Oil that has most of the Qualities of Nut-Oil, and is accordingly sometimes used in lieu thereof in Painting, and to burn. That drawn without the Assistance of Fire, is of much Esteem in Medicine, and supposed good in the Cure of several Diseases.

**LINGOT**, or **INGOT**, a Bar or Piece of Gold, Silver, &c. from the Mines, melted down, but not coined or wrought.

*Lingot*, is also a Term in Chymistry, for the Molds they make to cast melted Metals, or the Regulus of Antimony, &c. into.

**LINGUA**, the Tongue, in Anatomy, an oblong Member, whose Form and Situation are sufficiently known, and whose Use is to be the Organ of Taste, and the principal Instrument of Speech and Deglutition. It is fastened to the *Os Hyoides*, the *Larynx*, and to the *Fauces*, by means of a membranous Ligament running along the lower Side of it, about half way, called the *Frenum*. See *Os Hyoides*, &c.

The main Bulk and Body of the Tongue is made up of Muscles, which are covered on the upper Part with a papillar nervous Substance, over which are spread two Membranes. The outer of these Membranes is pretty thick and short, and full of *Papillæ*, of a Pyramidal Figure, especially towards the Tip; which *Papillæ* stand pointing towards the Root of the Tongue in a bending Posture; which makes their Figure to be Concavo-convex. These



These *Apices* or *Papillæ* are so very minute and slender in Men, that they make the Coat appear on the upper Part to be villous; especially as they approach nearer to the Root. The Figure of the *Papillæ*, in human Tongues, is not so plainly discernible to the naked Eye as not to need the Microscope. In Brutes they are generally larger, stiffer, and more conspicuous, and in some almost cartilaginous, as may be felt in the Tongues of Cats, Oxen, but more sensibly in Lions. On the upper side, at a little distance from the Tip, this Membrane becomes thin, smooth, and glabrous, and, as it were, polished by the lower Parts of the Mouth whereon it slides.

Under this lies a thin soft reticular kind of Coat, punched through with innumerable Holes, and always lined with a thick and white yellowish Mucus. This Membrane is so exceeding tender, and full of Mucus, that it is not to be examined by the naked Eye unless boiled; by which it grows tough, and easily separable from the external Membrane, and from the nervous Part of the Tongue which lies immediately under it. After boiling it appears like a kind of Gawse, between whose Threads innumerable Holes appear, through which the *Apices* of the papillary Body underneath it are exerted. This Membrane on the upper Side, next the outward, appears white, with a Cast towards yellow, but black on the Side next the Tongue.

Many Authors don't allow this to be a Membrane, and will only have it to be a Mucus hardened by boiling; but since it has so much of the Resemblance of a Membrane, and that Authors agree in allowing two Membranes to the Tongue, Dr. Drake does not scruple to number it among them; since there does not appear to be any other second Membrane: reckoning, with *Malpighi*, the smooth Part under the Tongue, a Part of the outer Membrane.

Immediately under this appears a nervous papillary Body spreading itself to a pretty Thickness over the whole Surface of the Tongue. This Body, on the under Side, is every where level and smooth, except in some few Places, where it is connected to the subjacent musculous Part by some nervous Twigs which it sends into it. *Malpighi* distinguishes the *Papillæ*, which make the principal Part hereof, into three kinds, from their different Magnitudes and Figures when observed with the Microscope; of which, those seated on the Sides and Tip are very singular, resembling little round Pyramids, with Globes on their Tops like the Horns of Snails. All these *Papillæ*, which are the immediate Organs of Tasting, send their *Apices*, or Extremities, through the mucous Membrane, into the pyramidal *Papillæ* of the outward Membrane, which are hollow to receive them, and seem to be nothing else but a kind of Cases to defend these nervous *Papillæ* from Injuries which the Salts and Asperities of those Bodies, which we take into our Mouths, might do them.

The rest, and much the greatest Part, of the Body of the Tongue is musculous, consisting of Plans of Fibres in different Directions: The first, or external Plan, consists of strait Fibres, which cover the Tongue from one Extreme to the other; when these contract, they shorten it. Under this are several other Plans, running from the under to the upper Side, which serve to make it broad and thin. These two kinds of Fibres lie *stratum super stratum*, a Plate of the one, and then a Plate of the other. Authors are not agreed about the Number of Muscles which compose the Tongue, some confounding those of the *Os Hyoides* with those of the Tongue, reckon eight, others nine, others ten, and more Pair. Some number those proper to the Tongue alone six Pair, others five, others four, and some no more than three. Of this last Opinion is our accurate Mr. Cowper, who allows no more than three genuine Pair of Muscles to the Tongue, viz. the Pair *Genioglossum*, which pull the Tongue forwards, and put it out of the Mouth; the *Ceratoglossum*, which draws it into the Mouth, or pulls it on one side; and the *Styloglossum*, which draws the Tongue up in the Action of Deglutition. See *Genioglossum*, &c. under their proper Heads.

Besides the Muscles, the Tongue is also moved by a Bone situated at its Root, and making as it were its Basis, called *Os Hyoides*, which see.

Down the middle of the Tongue, lengthwise, runs a Seam, call'd *Linea Mediana*, which divides it to the bottom into two equal Parts, but not so effectually, but that the Blood-Vessels of one Side communicate with those of the other. These Vessels are Arteries from the Carotides and Veins called *Ramulae*, and are very conspicuous about the *Frenum* under the Tongue, serving to convey the Blood to the external Jugulars. These Veins are frequently opened in the Angina, and are the last Resort of old Women in this Case. The Nerves of the Tongue

come from the fifth, sixth, and ninth Pairs; the two first of which have been called *Gustatorii*, and the latter *Motarii Linguae*.

Howsoever necessary an Organ the Tongue be in Speech, &c. yet *Jac. Rolandus* has published an Account of a Mouth without a Tongue, which spake perfectly, and perform'd its other natural Functions; the Person he speaks of is *Per. Durand*, who losing his Tongue by a Gangreen, could yet speak perfectly, as also taste, swallow, and chew his Food; which last, however, he could only do on that Side he put it into, being unable to turn it to the other Side of his Mouth.

**LINIMENT**, a Topical Remedy, serving to soften the Asperities of the Skin, and to moisten those Parts that are to be softened, for resolving the Humours that afflict the Patient, and give him Pain. There are various kinds of *Liniments* used according to the various Occasions. The *Liniment* is of a mean Consistence, between an Oil and an Unguent. The word comes from the *Latin linire*, to anoint gently.

**LINSTOCK**, is a short Staff of Wood, about three foot long, having at one end a Piece of Iron divided into two Branches, each of which hath a Notch to hold a Piece of Match, and a Screw to fasten it there; the other end of the Staff is also shod with Iron, and pointed, to stick into the Ground. It is used by the Gunners in firing Cannon.

**LINTEL**, in Architecture, the Piece of Timber that lies horizontally over Door-Posts and Window-Jaums, as well to bear the Thickness of the Wall over it, as bind the Sides of the Walls together.

**LINUM CATHARTICUM**, Mountain-Flax; this is much used by common People. It is a rough harsh Purge, and powerfully deterges, and evacuates viscid and watery Humours from the most remote Lodgments; which makes them fond of it in Rheumatisms: but it is only fit for robust Constitutions.

**LINUM INCOMBUSTIBILE**, a Mineral Substance, of a whitish Silver Colour, and a woolly Texture; consisting of small Threads or Longitudinal Fibres, endued with the wonderful Property of resisting Fire, and remaining unconsumed in the intensest Heat. This lanuginous Mineral is sometimes called *Amiantus* and *Asbestos*, which see; sometimes *Salamandra*, or *Salamander's Wool*, from the Candle-Wicks said to be made antiently of it. From a pungent Quality, which *Agricola* says it has on the Tongue without Astringency, it is call'd *Alumen*, having the Epithet of *Plumeum* added to it, taken from its downy Filaments, to distinguish it from the other Alums. From its light grey Colour it is call'd *Polia* and *Corfoides*; and from its Likeness to the hoary Fibres of some sorts of Mat-Weed, *Spartapolia*. From the Capacity it has of being spun into Thread, it is call'd *Linum*, with some distinguishing Epithet, taken either from its Quality, as *Linum Asbestinum Virum*, or *Incombustibile*; or from the Place where it is found, as *Linum Fossile*, *Linum Indicum*, *Creticum*, *Cyprium*, and *Carpasium*, or *Carystium*. But besides the Places whence it borrows Names, it is also found in Tartary, at Namur in the Low Countries, in Thuringia, among the Mines in the Old Noricum in Egypt, in the Mountains of Arcadia, at Puteoli in the Island of Corsica, in the Island of Anglesey in Wales, and in Aberdeenshire in Scotland.

The Naturalists generally reckon it among the Stones, whence its Appellation of *Lapis Asbestos*, &c. but Dr. Plot rather judges it a *Terra Lapidosa*, or middle Substance, between Stone and Earth. As to its Generation, the same Author takes it to be a Mixture of some Salt, and a pure Earth without Sulphur, coagulated in the Winter, and hardened by the Heats in Summer. The Salt *J. Hefius* says is a liquid Alum, of a milky Substance, inclining to yellow, that sweats out of the Earth, and smells like rotten Cheese.

As to the Art of managing this Mineral, and of spinning and weaving it, &c. the Accounts we have are various. Signior *Castagnata*, Superintendant of some Mines in Italy, gives us the Art of reducing it either into a very white Skin, or a very white Paper, either of which resists the most violent Fire.

Mr. Lloyd took some of that found in Anglesey, and pounding it in a Stone Mortar till it became a downy Substance, sifted it thro a fine Scarce; by which means the earthy Parts were separated from it: the *Linum* remaining. He then brought it to a Paper-Mill, and putting it in Water, in a proper Vessel, stirred it pretty much, ordering the Workmen to proceed on it in their usual manner of making Paper, with their Writing-Paper Mold; only to stir it about constantly before putting their Mold in; considering it as a far more ponderous Substance than what they used, and consequently, if not immediately taken up after it was agitated, it would subside. The



Paper thus made of it proved coarse, and apt to tear, but endured both Ink and Fire very well; the Ink only turning Red with the Violence of the Fire.

M. *Paulus Venetus* gives us the Manufacture of the *Linum* found in the Province of *Chinobinthelas* in *Tartary*, from one *Curficar a Turk*, Superintendent of the Mines of that Country, as follows: The lanuginous Mineral, or Amianthus, being first dried in the Sun, is then pounded in a Brass Mortar, and the earthy part separated from the woolly, which is afterwards well washed from Filth; being thus purged, it is spun into Thread like other Wool, and after, wove into Cloth, which, if foul or spotted, they cleanse, he says, by throwing it into the Fire for an hour's time, whence it comes out unhurt, as white as Snow: Which very Method, according to the Account given us by *Strabo*, seems to have been used in ordering the *Cretan* Amianthus; with this Addition, that after it was pounded, and the earthy Part separated from the woolly, he says it was combed; and so does *Agricola*.

Signior *Campani*, after describing four sorts of the *Linum*, whereof he had Specimens in his *Museum*; the first sent him from *Corfu*, the second from *Sestri di Ponente*, the third coarser and darker than the rest, and the fourth from the *Pyreneans*; and after observing, tho' he kept it three Weeks in a Glass-house Fire, yet found it unaltered, tho' it would not preserve a Stick wrapp'd in it from the Fire: he proceeds to shew the manner of spinning it, and making it into Cloth, which he effected thus: He first laid the Stone in Water, if warm the better, for some time to soak; then opened and divided it with his Hands, that the earthy parts might fall out of it, which are whitish like Chalk, and serve to bind the thready Part together. This makes the Water thick and milky. That Operation he repeated six or seven times with fresh Water, opening and squeezing it again and again, till all the heterogeneous Parts were washed out, and then the Flax-like Parts were collected and laid in a Sieve to dry. As to the spinning, he first shews a Method discovered to him, which is thus: Lay the Amianthus, cleansed as before, between two Cards, such as they card Wooll withall, where let it be gently carded, and then clapp'd in between the Cards, so that some of it may hang out of the sides; then lay the Cards fast on a Table or Bench; take a small Reel made with a little Hook at the end, and a Part to turn it by, so that it may be easily turned round. This Reel must be wound over with fine Thread: then having a small Vessel of Oil ready, with which the Forefinger and Thumb are constantly to be kept wet, both to preserve the Skin from the corrosive Quality of the Stone, and to render the Filaments thereof more soft and pliant; by continuing to twist about the Thread on the Reel in the Arbestos hanging out of the Cases, some of the latter will be worked up together with it; and by little and little the Thread may, with Care, be woven into a coarse sort of Cloth; and by putting it into the Fire, the Thread and Oil will be burnt away, and the incombustible Cloth remain. But finding this way of uniting the Stone with the Thread very tedious, instead of the Thread he put some Flax on a Distaff, and by taking three or four Filaments of the Asbestos, and mixing them with the Flax, he found they might be easily twisted together, and the Thread thus made much more durable and strong; so that there is no need of Carding, which rather breaks the Filaments than does any good: only open and separate the Filaments after washing on a Table, and take them up with the Flax, which is sufficient. As to the making of Paper, he says, in the washing of the Stone there will remain several short Pieces in the bottom of the Water, of which Paper may be made in the common Method. He concludes with the best way of preserving the Cloth, or any thing made of the Linnen, which, by reason of its excessive Dryness, is very apt to break and twist; and it consists in keeping it always well oiled, which is the only Preservative. When the Cloth is put in the Fire, the Oil burns off, and the Cloth comes out white and purified.

This kind of Linnen-Cloth was highly esteemed by the Antients; tho' then better known and more common than among us, being held equally precious with the richest Pearls; nor is it now of mean Value even in the Country where 'tis most generally made, a *China Cover*, (i. e. a Piece of twenty-three Inches and three quarters long) being worth 80 Tale, i. e. 36 l. 13 s. 4 d. *Pliny* says, he himself had seen Napkins thereof, which being taken foul from the Board, after a Feast, were thrown into the Fire, and by that means were better scoured than if they had been washed in Water, &c. But its principal Use, according to *Pliny*, was for the making of Shrowds for Royal Funerals; to wrap up the Corps, so as the Ashes might be preserved distinct from that of the Wood, &c. which made the Funeral

Pile; and the Princes of *Tartary*, according to the Accounts in the *Philosophical Transactions*, still use it at this day in burning their Dead. Some of the Antients are said to have made themselves Clothes of it, particularly the Brachmans among the *Indians*. The Wicks for their perpetual Lamps, according to Dr. *Zister*, were made of it; and we are told that *Septalla Canon* of *Milan* had Thread, Ropes, Nets, and Paper of it. A Handkerchief or Pattern of this Linnen was presented to the Royal Society, a foot long, and half a foot broad. This gave two Proofs of its resisting Fire; tho' in both Experiments it lost above three Drams in its Weight. When taken out red-hot, it did not burn a Piece of white Paper, on which it was laid. Mr. *Villette* pretends, that his large burning Concave usually vitrifies the Asbestos.

LIONCELES, in Heraldry, a Term for Lions, when there are more than two of them born in any Coat of Arms, and no Ordinary between them.

LIPOTHYMIA, or LIPOPSYCHIA, in Medicine, is a sudden Diminution or Failure of animal and vital Actions; otherwise called a Swooning or Deliquium. In the *Lipothymia* the Pulse is very faint, the Senses both internal and external, and the animal Motions, both voluntary and natural, extremely weakened, and the Respiration scarce visible. The ordinary Causes of the *Lipothymia* are great Losses of Blood, excessive Evacuations, immoderate Exercise, gross hot Air, such as that in the midst of Crowds of People. The word *Lipothymia* comes from the Greek *λειπω*, *deficio*, and *δυμος*, *Animus*; and *Lypopsychia* from *λειπω*, and *ψυχη*, the Soul.

LIPPITUDO is a Disorder of the Eyes, otherwise call'd Blear-Eyedness; consisting in the Oozing out of a thick viscous Humour, which hardening, binds the Eye-lids together. Some, after *Celsus*, give the Name *Lippitudo* to the *Ophthalmia*; which see.

LIPS, *Labia*, the Edge or exterior Part of the Mouth, or that musculous Extremity which shuts and covers the Mouth both above and below. The *Lips*, besides the common Integuments, consist of two Parts, the exterior, hard, and musculous; the interior, soft, spongy, and glandulous, covered with a fine Membrane, the fore and protuberant Parts of which are red, and called *Prolabia*. Authors generally content themselves with calling the Substance of this Part spongy, but in reality 'tis glandulous, as appears by the scrophulous and cancrus Humours to which it is subject. The Muscles of which the outer Parts of the *Lips* consist, are either common to them with other Parts, or proper; the common are the third Pair of the Nose, the Subcutaneous, and the Buccinator.

The *Lips* have six Pair of Muscles belonging to them, and an odd one; of these, three are peculiar to the upper and under *Lip*, the other three and the single one are common to both *Lips*: The peculiar are the *Attollens Labiorum Superius*, *Deprimens Labiorum Inferius*, *Attollens Labiorum Inferius*; the three common Pair are, the *Zygomaticus*, the *Depressor Labiorum*, the *Attollens Labiorum*; the odd one, *Orbicularis*, which see.

All these Parts are served with Blood by some Branches of the Carotids, which the Veins carry back to the external Jugulars. Their Nerves come from the 5th, 6th, and 8th Pair of the Head, and some from the *Par Accessorium*. The *Lips* have a great share in the Action of Speech, and are of good Use in taking in the Food, &c.

*Lips* are also used to signify the two Edges of a Wound, and the exterior Parts of a Woman's Privities.

LIQUEFACTION, an Operation, by which a solid Body is reduced into a Liquid; or the Action of Fire or Heat on fat fusible Bodies, which puts their Parts into Motion. The *Liquefaction* of Wax, &c. is performed by a moderate Heat, that of *Sal Tartari* by the mere Moisture of the Air. All Salts liquify. Sand, mix'd with Alkalies, are liquified in the Fire of the Reverberatory to make Glass. In speaking of Metals, instead of *Liquefaction*, we ordinarily use the word *Fusion*, which see.

LIQUID, a Body that has the Property of Fluidity; and besides that, a peculiar Quality of wetting other Bodies immersed in it, arising from some Configurations of Particles, which disposes them to adhere to the Surfaces of Bodies contiguous to them. See *Fluid*.

*Liquid*, among Grammarians, is a Name applied to certain Consonants opposed to Mutes; L, M, N, and R are *Liquid*.

*Liquid* is sometimes also used by the Civilians; thus Goods or Effects, that are clear and out of dispute, are said to be *liquid*.

LIQUIDATION, a Reduction and Ascertainment either of some dubious disputable Sum, or of the respective Pretensions which two Persons may have to the same liquid or clear Sum. *Liquidation* is also used for the Order and Method a Dealer endeavours to establish in his



Affairs. *Liquid Debts and Effects* are such as are not only really existing, but such as there can be no Dispute about.

**LIQUORICE.** See *Glycyrrhiza*.

**LIST, or LISTEL,** in Architecture, called also a *Cin-thure, Filler, and Reglet*; a little square Moulding, dispos'd in certain Parts of Columns, serving to crown or accompany larger Mouldings, and to separate the Flutings of Columns.

*List* is also used to signify the inclosed Field, or Ground wherein the antient Knights held their Jousts and Combats. It was so called, as being hemm'd round with Pales, Barriers, or Stakes: some of these were double, one for each Cavalier; which kept them apart, so that they could not come nearer each other than a Spear's length. *Du Cange* derives the Word from *Licia*, which in the Age of corrupt Latin, was used for the Inclosures of Fields and Cities, as being antiently made with Cords inter-laced; or from *Listæ*, quia *Campum claudabant instar Listarum panni*.

*List*, the Border of a Stuff, or that which bounds its Width on each Side. All Stuffs of Silk, Wool, or Cotton have *Lists*. *Lists* contribute to the Goodness of the Stuff, and further serve to shew their Quality; which has given occasion to several Regulations relating to their Matter, Colour, Work, &c.

**LISTENING,** according to *Robault*, consists in the Extension or Bracing of the Tympanum of the Ear, and putting it into such a Condition, as that it shall be the more affected by any tremulous Motion of the external Air. See *Tympanum*.

**LITANY,** an old Church-Term, signifying the Processions, Prayers, and Supplications, used to appease the Wrath of God, to avert his Judgments, or to procure his Mercies. Ecclesiastic Authors, and the Roman Order, by the Word *Litany* mean the People who compose the Procession, and who assist at it. And *Du Cange* adds, that the Word antiently signified Procession. *Simon of Thessalonica*, mentions, that in the antient *Litanies*, the People went out of the Church, to denote the Fall of Adam, and return'd into it again, to shew the Return of a pious Soul to God by Repentance. On occasion of a Plague that ravaged Rome in the Year 590, Pope Gregory appointed a *Litany*, or Procession, consisting of seven Bands, or Companies, who marching from the several Churches of the City, met at St. Mary Major. The first Company consisted of the Clergy; the second of Abbots, with their Monks; the third of Abbesses, with their Nuns; the fourth, of Children; the fifth, of Laymen; the sixth, of Widows; and the seventh, of married Women. And from this general Procession, that of St. Mark, called the *Grand Litany*, is judged to have taken its Rise.

*Litany*, among us, is a Form of Prayer sung or said in Churches, consisting of several Periods, or Articles; at the End of each whereof, is an Invocation in the same Terms. The Word comes from the Greek *λειτουργία*, Supplication. *Pezron* would go further, and derive the *λειτουργία*, or *λίσσις* of the Greeks, from the Celtic *Lit*, Feast, Solemnity.

**LITHARGE;** there are two Kinds of *Litharge*, the one natural, the other artificial. Natural *Litharge* is a Mineral sometimes found in Lead Mines, reddish, scaly, brittle, and somewhat resembling white Lead. This *Litharge* is so exceeding rare, that the Shops sell none but the artificial.

Artificial *Litharge* is of two Kinds, viz. that of Gold, and that of Silver; or rather 'tis the same, with this difference, that the one having undergone a greater Degree of Fire than the other, has occasioned different Colours, and thence different Names. Indeed Naturalists are not over-well agreed what the Artificial *Litharge* is: Some say 'tis a Metallic Scum rais'd on the Surface of Lead, when melted; after having serv'd to purify Gold, Silver, or Copper. Others say 'tis a Metallic Smoak arising from those Metals mix'd with the Lead, used in purifying them; which sticking to the Top of the Chimneys of Furnaces, is there form'd in a kind of Scales. Lastly, others say 'tis the Lead itself used in the refining of those Metals, and especially Copper; which last Opinion appears the most credible; and the rather, on account of the great Quantities of these *Litharges* brought from Poland, Sweden, and Denmark; where Copper-Mines are much more frequent than those of Gold and Silver.

*Litharges* are desiccative, deterfive, and cooling; they make the Consistence of several Plaisters. The Potters use them to give a beautiful Gloss to their Ware; and they are also used by Painters, Dyers, Skinners, and Glaziers. When mix'd with Wine, they give it a bright sprightly Colour, but render it extremely unwholesome. The Word is composed of the Greek *λίθος* and *ἀργύρος*.

**LITHIASIS,** in Physic, signifies the Formation of the Stone, or the Manner in which it grows in the Body. See *Stone*.

**LITHOCOLLA,** a Cement used by the Lapidaries to fasten their precious Stones, in order for cutting them. It is composed of Rosin and Brick-Dust. For Diamonds they use melted Lead, putting them into it before it be quite cold. For other Cements they mix Marble-Dust with strong Glue; and to fasten their Sparks, add the White of an Egg and Pitch. The Word comes from the Greek *λίθος*, Stone, and *κόλλα*, Glue.

**LITHONTHRIPTICS,** are Medicines proper to dissolve the Stone in the Bladder and Kidneys; of which Kind are the *Lithospermum*, *Saxifrage*, &c. The Word comes from the Greek *λίθος*, Stone, and *τρίβειν*, to break or wear.

**LITHOTOMY,** an Operation in Chirurgery, performed upon a human Body in order to extract the Stone out of the Bladder. This is performed three several Ways, viz. by the small Apparatus, the great Apparatus, and the high Apparatus. The first is by cutting thro' the *Perineum* near the Suture, on the left Side, after the Stone, by the Fingers of the Operator, has been brought to that Part. This is called cutting upon the Gripe; but 'tis almost disused, by reason it subjects the Patient to great Hazard and Inconveniences.

In the great Apparatus, which is that ordinarily practised, after the Patient is conveniently placed and bound, the Operator introduces a proper Instrument thro' the urinary Passage into the Bladder, in order to search for the Stone; which being found, that Instrument is withdrawn, and another grooved one introduced the same way; which bulging in the *Perineum*, serves to direct the Knife to the Neck of the Bladder. After the Incision, a third Instrument is thrust into the Aperture, till it join the former, that was last introduced thro' the urinary Passage, at which time that is withdrawn, whilst this remains to guide the Forceps directly into the Bladder, to bring away the Stone. This way is called cutting upon the Staff.

The third Method, called also the High Operation, has been long since described, and strenuously pleaded for by a Chirurgical Writer, *Rosset*; but the Practice is of a late Date among us, and was first attempted by Mr. Douglas. Whether, upon the whole, this Method is preferable to the larger Apparatus, remains a Question. Tho' the great Success which Mr. Cheselden has found in it, gives Encouragement to hope others may hereafter prove as happy, and at length render the Practice universally advantageous.

The Manner of proceeding herein, is this: After the Bladder is injected with a sufficient Quantity of warm Water, and the Patient conveniently placed, the Operator slowly makes an Incision above the *Os Pubis*, along the *Linea Alba*, till he gets sight of the Bladder, into which he directly plunges his Knife, and afterwards draws out the Stone. The Advantages attending this Method, are, That 'tis perform'd in a very short Time; That the Wound easily heals; That the Dilaceration of Parts, frequent in the other Ways, is prevented; and That there is no danger of the *Incontinentia Urinae*. On the other hand, 'tis thought to be chiefly practicable upon young Persons, and such as are lean; the Wound in old and fat Persons being apt to mortify: moreover, if the Operator be not very cautious, he may easily let out the Intestines.

**LITTER,** a kind of Coach, or Vehicle born upon Shafts, antiently esteemed the most easy and genteel Way of Carriage. *Pliny* calls it the Travellers Chamber. It was much in use among the Romans, among whom it was born by Slaves, kept for that purpose; as it still continues to be in the East. The Roman Litter made to be born by four Men, was called *Tetraphorum*; that born by six, *Hexaphorum*; and that born by eight, *Ostaphorum*. The Invention of Litters, according to *Cicero*, was owing to the Kings of *Bitynia*. In the time of *Tiberius* they were grown very frequent at Rome; as appears from *Seneca*; and even Slaves themselves were born in them, tho' never by more than two Persons, whereas Men of Quality had six or eight. *Du Cange* derives the Word from *Leſeria*, or *Literia*, q. d. a Bed for Beasts. Others will rather have it come from *Lectus*, Bed, there being ordinarily a Quilt and a Pillow to a Litter; in the same manner as to a Bed.

**LITTORAL SHELLS** are, with the Writers of Natural History, such Sea Shells as are always found near the Shores, and never far off in the Deep; such as are found in the bottom of the Sea, remote from the Shore, they call *αυβύθια*, and *Pelagia*.

**LITURGY,** a Term signifying all the Ceremonies belonging in general to the Divine Office and Service. In a more restrained Signification, it is used among the Romanists to signify the Mass, and among us the Common Prayer.



Prayer. All who have written on *Liturgies* agree, that in the Primitive Days, Divine Service was exceedingly simple, only clogged with a very few Ceremonies, and consisting of but a small Number of Prayers; but by degrees they increased the Number of external Ceremonies, and added new Prayers, to make the Office look more awful and venerable to the People. At length things were carried to such a pitch, that a Regulation became necessary; and it was found proper to put the Service, and the Manner of performing it, into Writing, and this was what they call'd a *Liturgy*. The *Liturgies* have been different at different Times, and in different Countries. We have the *Liturgy* of St. Chrysostom, that of St. Peter, of St. James, the *Liturgy* of St. Basil, the *Armenian Liturgy*, the *Liturgy* of the Maronites, of the Coptas, the *Roman Liturgy*, the *Gallican Liturgy*, the *English Liturgy*, the *Ambrosian Liturgy*, the *Spanish* and *African Liturgies*. The word comes from the Greek *λεῖτουργία*, Service, Public Ministry.

LITUS is the same as *Linimentum*, which see.

LITUUS, among Medalists, is a Staff used by the Augurs, made in form of a Crozier. We frequently see it in Medals, along with other Pontifical Instruments. Aulus Gellius says, it was bigger in the place where it was crooked than elsewhere. Some derive the Word from the Greek *λίσσθαι*, something that makes a shrill acute Sound, which was a Property of this Instrument.

LIVER, a large glandulous Viscus, of a red sanguine Colour, situated immediately under the Diaphragm, in the right Hypochondrium, which it almost fills; and thence stretching itself over the right Side of the Stomach towards the left Hypochondrium, reaches behind the *Cartilago Ensiformis*, growing gradually thinner and narrower. Its Use is to purify the Mass of Blood, by making a Secretion of the bilious Humours it contains. Its upper Part is convex, and perfectly smooth or polished, the under concave, and somewhat more uneven, having four large Fissures; one thro' which the Umbilical Ligament passes; a second on the left Side, receiving the *Pylorus* and the beginning of the *Duodenum*; a third on the right Side near the Margin, in which the Gall-Bladder is lodged; and the last in the upper Part, affording a Passage to the *Vena Cava*. Its Figure is somewhat approaching to round, with thin Edges not altogether even, but notched in some Places. Its Magnitude is various in different Subjects, according to the Proportion of the Body, tho' in a Fœtus, or very young Animal, it is always larger, in proportion, than in Adults. In Dogs and other Animals of the Quadruped Kind, it is divided into several distinct Lobes, but in Men it is generally continued; having one small Protuberance, which some account a little Lobe. It is sometimes, however, observed in Men to have been divided into two or three Lobes.

The *Liver* is connected to several Parts, but especially to the Diaphragm, to which it is fastened by a broad, thin, but strong semicircular Ligament, call'd the *suspensory Ligament*, and derived from the common *Capsula* of the *Porta* and Gall Ducts. The Continuity of this Ligament being interrupted by the Perforation of the *Vena Cava*, has given occasion to some Anatomists to divide it into two. It is likewise by another strong Ligament, which has its Origin from the external Coat of the *Liver*, or which is all one, from the *Peritoneum*, tied to the *Cartilago Xyphoides*; and by a third, which is formed out of the Umbilical Vessels, which in Adults dry up and become a Ligament, it is connected to the Tendons of the abdominal Muscles in the *Linea alba* at the Navel. These several Ligaments serve to keep it in its due situation: besides which it has some other Connections by the Blood-Vessels.

The *Liver* has a Motion, though not proper to itself, but depending on that of the Diaphragm, to which being very firmly connected, it must needs obey its Motion, and in Expiration be drawn up, and in Inspiration let down again. It is covered with a thin smooth Membrane, derived from the *Peritoneum*, which may be separated from the Substance of the *Liver*, tho' not without some danger of Laceration. The Substance of the *Liver* is vascular and glandulous; which latter Part is very soft and friable, and pretty easily scraped off from the Vessels, to which the Glands every way adhere, as it were in Bunches; which has made the Anatomists call the considerable ones, *The Internal Lobes of the Liver*.

The Glands adhering thus to the Vessels, and constituting those Lobes, are wrapped up together in proper Membranes; whence this Appearance of distinct Lobes. Every one of these Glands, according to *Malpighi*, is composed of six unequal Sides or Faces. They are all cloth'd with their proper Membranes, and have each an excretory Duct, several of which joining together, form little Trunks, which run all along with the Branches of the *Porta*; and these again uniting, form longer Trunks, which are always found full of Bile, and constitute the *Porus Biliaris*; which being distributed all over the *Li-*

*ver*, receives, in the foregoing manner, the Bile; which is separated by these Glands, and terminating in the *Meatus Hepaticus*, and that in the *Ductus Communis*, at length discharges the Bile into the *Duodenum*.

Besides this Discharge by the *Porus Biliaris*, which is supposed to be the great one, the *Liver* also delivers Part of its Bile into the Gall-Bladder, by a Duct, call'd the *Cyst Hepatic Duct*, first discovered by Dr. Glisson; by means whereof there is an immediate Communication between the *Porus Biliaris* and the Gall-Bladder; a particular Description of which two last Parts, see under the words *Gall* and *Bile*.

Besides these Gall-Vessels, which are peculiar to the *Liver*, it abounds with Blood-Vessels, especially Veins; whereof the *Porta* and *Cava* are disseminated thro' the whole Substance of it. And here it is particularly remarkable of the *Porta*, that after the manner of Arteries it shoots itself from a Trunk into Branches, and being at last lost in Capillaries, delivers the Blood into the *Cava*, by which it is immediately reconveyed to the Heart.

The *Porta* is formed out of the Concurrence of divers Veins, which, meeting together, make one of the most considerable venous Trunks of the Body, as to its Bulk; tho', contrary to the Course of other Veins, it runs not far in a Trunk, but is soon distributed again by Ramifications into the *Liver*. See *Vena Porta*.

The Blood conveyed into the *Liver* by the *Porta*, after the manner of the Arteries, is received again, after having been purged of its Bile in the Glands of the *Liver* into innumerable Veins, which empty themselves into the *Cava*, and are vulgarly, tho' improperly, call'd *Branches of the Cava*; but ought to be esteemed the proper Blood-Vessels of the *Liver*, as the Emulgentes are of the Kidneys; and which, as all the rest do, except the Pulmonary Vein, empty themselves into the *Cava*; the common Channel by which the Blood returns to the Heart.

The Arteries, which are call'd the *Hepatic*, come from the right Branch of the *Celiac*. Dr. Glisson thinks the *Porta* does so much the Office of an Artery, that no more Arteries are necessary than those which furnish Nourishment to the Membranes and Capsula; but Dr. Drake thinks they serve for the Nourishment of the whole Part. These Arteries are much bigger in Men than in other Animals. Mr. Cowper had several Preparations, wherein the Stem of each Hepatic Artery was as large as a Goose-Quill, and the Branches in the *Liver* every where equal in Magnitude to those of the *Porus Biliaris*, which they accompany. Dr. Drake conjectures, that in this Viscus in a human Body, a larger Stream and directer Impetus of arterious Blood is required to drive on the Venous, because of the erect Posture, than in Animals of an horizontal Position of Body. For which reason Horses, &c. though of much larger Size, and having much bigger *Livers*, have these Arteries much smaller than Men; and not only so, but curled like the Tendrils of a Vine, to break the Impetus, which in that Posture is not so necessary as in the Erect. See *Bile*.

The *Liver* has its Nerves from the Hepatic Plexus, found on the right Hypochondrium by the Branches of the Intercoastal, which wrapping themselves about the Arteries, make a sort of Net-work; and after spreading themselves on the Membrane and Surface, disappear. The Lymphæducts are numerous, tho' not easily discernible in human Subjects, for want of live Dissections; but in other Animals, that may be dissected alive, become very conspicuous, by applying a Ligature to the *Porta* and the biliary Duct. For the Use of the *Liver* in the Secretion of *Bile*, see *Bile*.

Plato, and others of the Antients, fix the Principle of Love in the *Liver*; whence the Latin Proverb, *Cognoscere Jecur*: And in this sense Horace frequently uses the word, as when he says, *Si torrevit Jecur queris Idoneum*. The Greeks, from its concave Figure, call'd it *ἥπαρ*, vaulted, suspended; the Latins call'd it *Jecur*, q. d. *juxta Cor*, as being near the Heart. The French call it *Foye* from *Foyer*, Focus, or Fire-place; agreeable to the Doctrine of the Antients, who believed the Blood to be boiled and prepared in it. *Erasistratus* at first call'd it *Parenchyma*, i. e. Effusion, or Mass of Blood; and *Hippocrates*, by way of Eminence, frequently calls it the *Hypochondrium*.

LIVERY, properly signifies a Colour, to which a Person has some particular Fancy, and by which he chuses to distinguish himself from others. *Liveries* are usually taken out of Fancy, or continued in Families by Succession. The ancient Cavaliers, at their Tournaments, distinguished themselves by wearing the *Liveries* of their Mistresses. Thus People of Quality make their Domestic wear their *Livery*. Father Menestrier, in his Treatise of *Carousals*, has given a very ample Account of the Mixtures of Colours in *Liveries*. Dion tells us, that *Oenomaus* was the first who invented green and blue Colours for



for the Troops which in the Circus were to represent Land and Sea-Fights. The *Romish* Church has also her several Colours and *Livgries*, white for Confessors and Virgins, and in times of rejoicing; black for the Dead; red for Apostles and Martyrs, blue or violet for Penitents, and green in times of Hope.

Formerly Great Men gave *Liveries* to several who were not of their Family or Servants, to engage them in their Quarrels for that Year; but this was prohibited by the Statute 1 Hen. 4. and no Man, of whatever Condition, was allow'd to give any *Livery* but to his Domestic Officers and Council learned in either Law.

**LIVERY**, in Law, is the Delivery of Possession to those Tenants which held of the King *in Capite*, or Knights Service. In another Signification, *Livery* is the Writ which lies for the Heir to obtain the Possession or Seizin of his Lands at the King's hands.

*Livery of Seizin* is a Delivery of Possession of Lands or Tenements, or Things Corporeal (for of Things Incorporeal there can be no *Livery of Seizin*) to him who hath Right, or Probability of Right to them. This is a Ceremony used in the Common Law, in Conveyance of Lands, Tenements, &c. where an Estate in Fee-simple, Fee-tail, or Freehold shall pass; and is a Testimonial of the willing departing of him who makes the *Livery*, from the Thing whereof *Livery* is made, as well as of a willing Acceptance by the other Party of all that whereof the first has divested himself. The common Manner of the Delivery of *Seizin* is thus: If it be in the open Field where is no House nor Building, and if the Estate pass by Deed, one openly reads it, or declares the Effect of it; and after that is sealed, the Vendor takes it in his hand with a Clod of Earth on a Twig or Bough, which he delivers to the Vendee in the name of Possession or Seizin, according to the Effect of the Deed. If there be a House or Building on the Land, this is to be done at the Door of it, none being then left within; and the Ring of the Door is delivered to the Vendee, who enters alone, shuts the Door, and presently opens it again. If it be a House without Land or Ground, the *Livery* is made and Possession given by Delivery of the Ring of the Door and Deed only; and where it is without Deed either of Lands or Tenements, there the Party declares by Word of Mouth before Witnesses the Estate he parts with, and then delivers Seizin or Possession as aforesaid, in which Case the Land passes as well as by Deed, by virtue of the *Livery of Seizin*. Antiently, there were a Pair of Gloves, a Ring, Knife, Ear of Wheat, &c. delivered in sign of *Livery* and *Seizin*. See *Investiture*.

**LIVRE**, an Imaginary *French* Coin, consisting of twenty Sols, each Sol again containing twelve Deniers: which way of computing the Coin has been in use in that Country ever since the Time of *Charlemagne*; before whom they used the *Roman Libra*. The *Livre* is of two kinds, the *Livre Tournois* and *Paris*. The *Livre Tournois*, as above, contains 20 Sols *Tournois*, and each Sol 12 Deniers *Tournois*. The *Livre Paris* is 20 Sols *Paris*, each Sol *Paris* worth 12 Deniers *Paris*, and each Sol *Paris* worth 15 Deniers *Tournois*. So that a *Livre Paris* is equivalent to 25 Sols *Tournois*: the word *Paris* being used in opposition to *Tournois*, by reason of the Rate of Money, which was  $\frac{1}{4}$  more at *Paris* than at *Tours*. One Penny Sterling is equal to  $13\frac{1}{2}$  Deniers *Tournois*: so that the *English* Pound Sterling is equal to 13 Livres, 6 Sols, 8 Deniers of *French* Money, supposing the Exchange to be on the foot of 54 Pence Sterling to a *French* Crown of 60 Sols *Tournois*; which is the present *Par* between *England* and *France*.

The Origin of the Word is fetch'd hence, that antiently the *Roman Libra* or Pound was the Standard by which their Money was regulated; twenty Sols being made equal to the *Libra*. By degrees the *Libra* became a Term of Account, so that any Coin just worth 20 Sols was a *Livre* or *Libra*; and since the Time of *Charlemagne* all Contracts have been made on the foot of this Imaginary Coin: Tho the Sols have frequently chang'd their Weight and Alloy. Since, there have been Pieces of Gold struck of 20 Sols, and under *Henry III.* in 1575, Species of Silver of like Value: Both the one and the other were call'd *Francs*, and thus the Imaginary Coin became Real.

It appears that the *Romans* had a kind of Money which they call'd *Libra* or *Libella*; which was the 10th part of their *Denarius*; so call'd because equivalent to an *As*; which, at first, weigh'd a *Libra* or Pound of Copper. *Scaliger* adds, that they used *Libra* as a Term of Account, not as a Coin: *Libra erat Collectio Nummorum, non Nummus*. See *Pound*.

**LIXIVIOUS**, in Chymistry, is understood of Salts extracted by a Lixivium or Lotion. *Lixivious Salts* are the fix'd Salts of Plants, &c. extracted by calcining the Plants or reducing them to Ashes; and afterwards making a Lixivium of those Ashes with Water; whence that Name is derived. Mr. *Boyle* observes, that the difference be-

tween *Lixivious* and Urinous Salts consists in this, That the former change the Dissolution of Sublimate in common Water into a yellow Colour.

**LIXIVIUM**, a Liquor made by the Infusion of Wood-Ashes, or any burnt Substances; which is more or less pungent and penetrating, as it is more or less impregnated with Salts, and fiery Particles abounding therein. What is left after the Evaporation of such a Liquor, is called a *Lixivial* or *Lixiviate Salt*; such as all those are, which are made by Incineration. *Lixiviums* are of notable use not only in Medicine, but also in Bleaching, Sugar-Works, &c. which see.

**LOADSTONE**, see *Magnet*

**LOAM**, Clay used in Grafting; a kind of Mortar made of Clay and Straw; also a sort of Clay or Plaster used by Chymists to stop up their Vessels with.

**LOBBY**, see *Antichamber*.

**LOBE**, among Anatomists, is used for each of the two Parts whereof the Lungs consist. This Separation into Lobes is of use in dilating the Lungs, in causing them to receive more Air, and in preventing their being too much squeez'd, when the Back is bent. For this reason it is, that Beasts, which are always inclining towards the Earth, have more Lobes in their Lungs than Men: Even their Liver is divided into Lobes, whereas that of Man is continued.

*Lobe* is also used for the Tip of the Ear; which is more fat and fleshy than any other part. *Du Laurent* says, that the word *Lobe* in this last sense comes from the *Greek* *λόβειν*, to be ashamed: this part of the Ear being said to blush, when the Person is ashamed.

*Lobe* is used, likewise, in speaking of Fruits and Grains. Thus the Bean consists of two equal parts, call'd Lobes, which compose the Body thereof, and are encompass'd with the outer Skin. And all other Grains, even the smallest, are divided, like the Bean into two Lobes, or equal Parts; as Dr. *Grew* has shewn in his *Anatomy of Plants*.

**LOBULE**, in Anatomy, a little Lobe. Each Lobe of the Lungs is divided into several other Lobes or Lobules, which are fasten'd on each side to the largest Branches of the Trachea. Each Lobule consists of a great number of little round Vesicles, which have, all, a Communication with one another. 'Tis into these Vesicles that the Air enters by the Trachea in Inspiration; still quitting them again in Expiration. The word *Lobule* is derived from *Lobe*, whereof it is a Diminutive.

**LOCAL**, something supposed to be tied or annexed to any particular place. Thus, in Law, a thing is said to be *Local*, i. e. annexed to the Freehold. An Action of Trespass for Battery, &c. is Transitory, not *Local*; that is, it is not necessary, that the Place where Battery was committed, should be set down as material in the Declaration; or if it be set down, the Defendant cannot traverse it, by saying, he did not commit the Battery in the Place mention'd in the Declaration, and so avoid the Action.

*Local Customs* are those peculiar to some Lordship, or other District, and not agreeable to the General Customs of the Country.

*Local Problem*, in Mathematicks, is such an one, as is capable of an infinite number of different Solutions: as where the Point, that is to solve the Problem, may be indifferently taken within a certain Extent; e. g. any where, in such a Line, within such a Plane Figure, &c. which is called a Geometrical *Locus*, and the Problem is said to be a *Local* or indeterminate one. This *Local Problem* may be either Simple, as when the Point sought is in a right Line; Plane, when the Point sought is in the Circumference of a Circle; Solid, when the Point required is in the Circumference of a Conick Section; or Surfolid, when the Point is in the Perimeter of a Line of the second Gender, as the Geometers call it. See *Locus*.

*Local, or Artificial Memory*; see *Memory*.

*Local Colours*, in Painting, are such as are natural and proper for each particular Object in a Picture; and are so called, to distinguish them from the Clair, obscure, which consists wholly of Black and White.

*Local Motion*, see *Motion*.

**LOCATION**, in the Civil Law, an Action by which any thing is lett out, on Rent. The second Title of the 19th Book of the *Digest*, is on the Subject of *Location* and Conduction. *Location* and Conduction are relative Terms, and are used as well for the Action of him that lets, as for that of him who takes on that letting. That *Location* is when the Person who takes, continues on the Premises beyond the Term of his Lease; which by the Civil Law he is allow'd to do, at least for the space of a Year; on the same Terms.

**LOCH**, or *Loboch*, in Pharmacy, is a Composition, of a Confluence between that of a Syrup and that of a salt Electuary, destined for Dissolves of the Lungs. The Word is originally *Arabic*; but continues still in use among



among the Apothecaries. The *Latins* call it *Linthus*, and the *Greeks* *ἐλεγμα*, by reason the manner of taking it is by licking. There are various kinds of *Loches*. See *Ectegma*.

**LOCHIA**, or *Loches*, the Evacuations consequent on the Delivery of a Woman in Child-bed. As soon as the *Uterus* is eased of its Load, its Fibres, as also those of the *Peritonæum*, Muscles of the Abdomen, &c. which had been extremely distended during the last Period of Gestation, begin to contract themselves and their Vessels; particularly the *Uterus*, which by this means expels the Blood amass'd in it. At first, pure Blood is evacuated, and in considerable quantities; afterwards it is diluted, and comes out more sparingly; at length it becomes viscid, pale, &c. These are called the *Loches*.

**LOCK**, a little Instrument used for the shutting of Doors, Chests, &c. The *Lock* is reckon'd the Master-piece in Smithery; a great deal of Art and Delicacy being required in contriving and varying the Wards, Springs, Bolts, &c. and adjusting them to the Places where they are to be used, and the various Occasions of using them.

From the various Structure of *Locks*, accommodated to their different Intentions, they acquire various Names. Those placed on outer Doors are called *Stock-Locks*; those on Chamber-Doors, *Spring-Locks*; those on Trunks, *Trunk-Locks*, *Pad-Locks*, &c. Of these, the *Spring-Lock* is the most considerable, both for its Frequency and the Curiosity of its Structure. Its principal Parts are, the Main-Plate, the Cover-Plate, and the Pin-hole: To the Main-Plate belong the Key-hole, Top-hook, Cross-wards, Bolt, Bolt-toe or Bolt-nab, Drawback Spring, Tumbler, Pin of the Tumbler, and the Staples; to the Cover-Plate belong the Pin, Main-ward, Cross-ward, Step-ward or Dap-ward; to the Pin-hole belong the Hook-ward, Main Cross-ward, Shank, the Pot, or Bread, Bow-ward, and Bit. See *Smithery*.

**LOCULAMENTA**, strictly signifies little Pockets; and thence the Term is made use of in Botany, to express those little distinct Cells, or Partitions, within the common *Capfula Seminalis* of any Plant: as those within the Seeds of Poppies, &c.

**LOCUS**, or the Place of any Body, is rightly distinguished into Absolute and Relative; and so ought Space to be accounted. The *Locus Absolutus*, or *Primarius*, of any Body, is that part of the absolute and immovable Space, or extended Capacity to receive all Bodies, which this individual one takes up. *Locus Relativus*, or *Secundarius*, is that apparent and sensible Place, in which a Body is determined to be placed by ourselves, and with relation to other adjoining or contiguous Bodies. The *Locus Apparens* is a Term in Optics: see *Apparent Place of any Object*. It is also, in Astronomy that Place, in which any Planet or Star appears, when view'd from an Eye at the sensible Horizon.

**LOCUS GEOMETRICUS**, a Line by which an Indeterminate Problem is solved. This, if a right Line suffice for the Construction of the Equation, is called *Locus ad Rectum*; if a Circle, *Locus ad Circulum*; if a Parabola, *Locus ad Parabolam*; if an Ellipsis, *Locus ad Ellipsin*; and so of the rest of the Conic Sections.

The *Loci* of such Equations as are Right Lines or Circles, the Antients call'd *Plain Loci*; and of those that are Parabolas, Hyperbolas, &c. *Solid Loci*. *Wolffius*, and others of the Moderns, divide the *Loci* more commodiously into Orders; according to the Number of Dimensions to which the Indeterminate Quantities rise. Thus it will be a *Locus* of the first Order if the Equation  $x = ay : c$ . A *Locus* of the second or quadrate Order, if  $y^2 = ax$ , or  $y = a^{\frac{1}{2}}x$ , &c. A *Locus* of the third or cubic Order, if  $y^3 = ax^2$ , or  $y^2 = a \times \frac{1}{2}x^2$ , &c.

The better to conceive the Nature of the *Locus*, suppose two unknown and variable right Lines *AP*, *PM*, (*Fig. 3, 4. Plate Analysis*) making any given Angle *APM* with each other; the one whereof, as *AP*, we call  $x$ , having a fixed Origin in the Point *A*, and extending itself indefinitely along a right Line given in Position; the other *PM*, which we call  $y$ , continually changing its Position, but always parallel to itself. An Equation only containing these two unknown Quantities  $x$  and  $y$ , mix'd with known ones, which expresses the Relation of every variable Quantity *AP* ( $x$ ) to its correspondent variable Quantity *PM* ( $y$ ): the Line passing thro' the Extremities of all the Values of  $y$ , i. e. thro' all the Points *M*, is called a *Geometrical Locus*, in general, and the *Locus* of that Equation in particular.

All Equations whose *Loci* are of the first Order, may be reduced to some one of the four following Formula's:

$$1. y = \frac{bx}{a}. \quad 2. y = \frac{bx}{a} + c. \quad 3. y = \frac{bx}{a} - c. \quad 4.$$

$$y = c - \frac{bx}{a}. \quad \text{Where the unknown Quantity } y \text{ is sup-}$$

posed always to be freed from Fractions, and the Fraction that multiplies the other unknown Quantity  $x$ , to be reduced to this Expression  $\frac{b}{a}$ , and all the known Terms to this  $c$ .

The *Locus* of the first Formula being already determined:

To find that of the second,  $y = \frac{bx}{a} + c$ ; in the

Line *AP*, (*Fig. 5.*) take  $AB = a$ , and draw  $BE = b$ ,  $AD = c$ , parallel to *PM*. On the same side *AP* draw the Line *AE* of an indefinite length towards *E*, and the indefinite strait Line *DM* parallel to *AE*. I say, the Line *DM* is the *Locus* of the aforesaid Equation or Formula; for if the Line *MP* be drawn from any Point *M* thereof parallel to *AQ*, the Triangles *ABE*, *APF*, will be similar: and therefore

$$AB(a) : BE(b) :: AP(x) : PF = \frac{bx}{a}; \text{ and conse-}$$

$$\text{quently } PM(y) = PF\left(\frac{bx}{a}\right) + FM(c).$$

To find the *Locus* of the third Form  $y = \frac{bx}{a} - c$  pro-

ceed thus. Assume  $AB = a$ , (*Fig. 6.*) and draw the right Lines  $BE = b$ ,  $AD = c$ , parallel to *PM*, the one on one side *AP*, and the other on the other side; and th on the Points *A*, *E*, draw the right Line *AE* of an indefinor' length towards *E*, and thro' the Point *D* the Line *Dite* parallel to *AE*: I say, the indefinite right Line *GM* shall be the *Locus* sought; for we shall have always

$$PM(y) = PF\left(\frac{bx}{a}\right) - FM(c).$$

Lastly, To find the *Locus* of the fourth Formula

$$y = c - \frac{bx}{a}; \text{ in } AP \text{ (Fig. 7.) take } AB = a, \text{ and draw}$$

$BE = b$ ,  $AD = c$ , parallel to *PM*, the one on one side *AP*, and the other on the other; and thro' the Points *A*, *E*, draw the Line *AE* indefinitely towards *E*, and thro' the Point *D* draw the Line *DM* parallel to *AE*. I say, *DG* shall be the *Locus* sought; for if the Line *MP* be drawn from any Point *M* thereof parallel to *AQ*, then we

$$\text{shall have always } PM(y) = FM(c) - PF\left(\frac{bx}{a}\right).$$

Hence it appears, that all the *Loci* of the first Degree are strait Lines, which may be easily found, because all their Equations may be reduced to some one of the foregoing Formula's.

All *Loci* of the second Degree are Conic Sections, viz. either the Parabola, the Circle, Ellipsis, or Hyperbola; if an Equation therefore be given, whose *Locus* is of the second Degree, and it be required to draw the Conic Section, which is the *Locus* thereof; first draw a Parabola, Ellipsis, and Hyperbola; so, as that the Equations expressing the Natures thereof, may be as compound as possible: In order to get general Equations or Formula's, by examining the peculiar Properties whereof, we may know which of these Formula's the given Equation ought to have regard to; that is, which of the Conic Sections will be the *Locus* of the proposed Equation. This known, compare all the Terms of the proposed Equation with the Terms of the general Formula of that Conic Section which you have found will be the *Locus* of the given Equation; by which means you will find how to draw the Section which is the *Locus* of the Equation given.

For example, let *AP* ( $x$ ), *PM* ( $y$ ), be unknown and variable strait Lines, (*Fig. 8.*) and let  $m$ ,  $n$ ,  $p$ ,  $r$ ,  $s$ , be given right Lines: In the Line *AP* take  $AB = m$ , and draw  $BE = n$ ,  $AD = r$ , parallel to *PM*, and thro' the Point *A* draw  $AE = c$ , and thro' the Point *D* the indefinite right Line *DG* parallel to *AE*. In *DG* take  $DC = s$ , and with *CG* as a Diameter, having its Ordinates parallel to *PM*, and the Line  $CH = p$ , as the Parameter, describe a Parabola *CM*: then the Portion thereof included in the Angle *PAD* will be the *Locus* of the following general Formula.

$$yy - \frac{2n}{m}xy + \frac{nn}{mm}xx - : ry + \frac{2nr}{m}x + rr = 0. \\ - \frac{cp}{m}x + ps.$$

For if from any Point *M* of that Portion there be drawn the right Line *MP*, making any Angle *APM* with *MP*; the Triangles *ABE*, *APF*, shall be similar, therefore

$$AB(m) : AE(c) :: AP(x) : AF \text{ or } DG = \frac{cx}{m}. \text{ And}$$



$AB(m) : BE(n) :: AP(x) : PF = \frac{nx}{m}$ . And consequently  $GM$  or  $PM - PF - FG = y - \frac{nx}{m} - r$ , and  $CG$  or  $DG - DC = \frac{ex}{m} - s$ . But from the Nature of

the Parabola  $GM^2 = CG \times CH$ , which Equation will become that of the general Formula, by putting the Literal Values of those Lines.

Again; if thro' the fixed Point  $A$  you draw the indefinite right Line  $AQ$  (Fig. 9.) parallel to  $PM$ , and you take  $AB = m$ , and draw  $BE = n$  parallel to  $AP$ , and thro' the determinate Points  $A, E$ , the Line  $AE = e$ ; and if in  $AP$  you take  $AD = r$ , and draw the indefinite straight Line  $DG$  parallel to  $AE$ , and take  $DC = s$ : this being done, if with the Diameter  $CG$ , whose Ordinates are parallel to  $AP$ , and Parameter the Line  $CH = p$ , you describe a Parabola  $CM$ ; the Portion of this Parabola contain'd in the Angle  $BAP$ , shall be the Locus of this second Equation or Formula,

$$xx - \frac{2n}{m}yx + \frac{nn}{mm}yy - 2rx + \frac{2nr}{m}y + rr = 0. \\ - \frac{ep}{m}y + ps.$$

For if the Line  $MQ$  be drawn from any Point  $M$ , therein, parallel to  $AP$ ; then will  $AB(m) : AE(e) :: AQ$  or  $PM(y) : AF$  or  $DG = \frac{ey}{m}$ . And  $AB(m) : BE(n) ::$

$AQ(y) : QF = \frac{ny}{m}$ . And therefore  $GM$  or  $QM -$

$QF - FG = x - \frac{ny}{m} - r$ ; and  $CG$  or  $DG - DC$

$= \frac{ey}{m} - s$ . And so by the common Property of the Parabola, you will have the foregoing second Equation or Formula.

So likewise may be found general Equations or Formula's to the other Conic Sections.

Now if it be required to draw the Parabola, which we find to be the Locus of this proposed Equation  $yy - 2ay - bx + cc = 0$ ; compare every Term of the first Formula with the Terms of the Equation, because  $yy$  in both is without Fractions; and then will  $\frac{2n}{m} = 0$ , because the Rectangle  $xy$  not being in the proposed Equation, the said Rectangle may be esteem'd as multiplied by 0; whence  $n = 0$ , and  $m = e$ ; because the Line  $AE$  falling in  $AB$ , that is, in  $AP$  in the Construction of the Formula, the Points  $B, E$ , do coincide. Therefore

destroying all the Terms affected with  $\frac{n}{m}$  in the Formula,

and substituting  $m$  for  $e$ , we shall get  $yy - 2ry - px + rr + ps = 0$ . Again, by comparing the correspondent Terms  $-2ry$  and  $-2ay$ , as also  $-px$  and  $-bx$ , we have  $r = a$ , and  $p = b$ ; and comparing the Terms wherein are neither of the unknown Quantities  $x, y$ , we get  $rr + ps = cc$ , and substituting  $a$  and  $b$  for  $r$  and  $p$ , then will  $s = \frac{cc - aa}{b}$ , which is a negative Expression

when  $a$  is greater than  $c$ , as is here supposed. There is no need of comparing the first Terms  $yy$  and  $yy$ , because they are the very same. Now the Values of  $n, r, p, s$ , being thus found, the sought Locus may be constructed by means of the Construction of the Formula, after the following manner.

Because  $BE(n) = 0$ , (Fig. 10.) the Points  $B, E$ , do coincide, and the Line  $AE$  falls in  $AP$ ; therefore thro' the fixed Point  $A$  draw the Line  $AD(r) = a$  parallel to  $PM$ , and draw  $DG$  parallel to  $AP$ , in which take  $DC = \frac{aa - cc}{b} - s$ ; then with  $CG$ , as a Diameter,

whose Ordinates are right Lines parallel to  $PM$ , and Parameter the Line  $CH(p) = b$ , describe a Parabola: I say the two Portions  $OMM, RMS$ , thereof, contain'd in the Angle  $PAC$ , form'd by the Line  $AP$ , and the Line  $AO$  drawn parallel to  $PM$ , will be the Locus of the given Equation, as is easily proved. If in a given Equation, whose Locus is a Parabola,  $xx$  is without a Fraction, then the Terms of the second Formula must be compared with those of the given Equation.

Thus much for the Method of Constructing the Loci of Equations, which are Conic Sections. If, now, an Equation whose Locus is a Conic Section be given; and the particular Section whereof it is the Locus, be required:

All the Terms of the given Equation being brought over to one side, so that the other be equal to 0, there will be two Cases.

Case 1. When the Rectangle  $xy$  is not in the given Equation. 1. If either  $yy$  or  $xx$  be in the same Equation, the Locus will be a Parabola. 2. If both  $xx$  and  $yy$  are in the Equation with the same Signs, the Locus will be an Ellipsis or a Circle. 3. If  $xx$  and  $yy$  have different Signs, the Locus will be an Hyperbola: or the opposite Sections; regarding their Diameters.

Case 2. When the Rectangle  $xy$  is in the given Equation. 1. If neither of the Squares  $xx$  or  $yy$ , or only one of them, be in the same, the Locus of it will be an Hyperbola between the Asymptotes. 2. If  $yy$  and  $xx$  be therein, having different Signs, the Locus will be an Hyperbola, regarding its Diameters. 3. If both the Squares  $xx$  and  $yy$  are in the Equation, having the same Signs, you must free the Square  $yy$  from Fractions, and then the Locus will be a Parabola, when the Square of  $\frac{x}{2}$  the Fraction multiplying  $xy$ , is equal to the Fraction multiplying  $xx$ ; an Ellipsis or Circle, when the same is less; and an Hyperbola, or the opposite Sections, regarding their Diameters, when greater.

LOCUSTÆ, the Beards and pendulous Seeds of Oats, and of the Gramina Paniculata; to which the Botanists gave this Name, from their Figure, which something resembles that of a Locust.

LODESMAN, or Loc.man, a Pilot establish'd for conducting Vessels in and out of Harbours, up and down navigable Rivers. See Pilot.

LODGMET, in Military Affairs, is sometimes an Incampment made by an Army; but oftener, a Retrenchment dug for a Cover or Shelter, when the Counterscarp, or some other Post is gain'd. It is also taken for the Place where the Soldiers quarter among the Burghers, in Huts, Barracks, or Tents. Lodgment of an Attack, is a Work cast up by the Besiegers, during their Approaches in a dangerous Post, where it is absolutely necessary to secure themselves against the Enemies Fire; as in a Covert-Way, in a Breach, in the Bottom of the Moat, &c. This Lodgment consists of all the Materials that are capable to make resistance, viz. Barrels, and Gabions of Earth, Pallisadoes, Wool-packs, Mantelets, Faggots, &c.

LOG, a Sea-Term signifying a piece of Board or Timber 7 or 8 Inches long, and of a triangular figure, on board a Ship; into one end whereof, a convenient quantity of Lead is cast, to make it swim upright in the Water.

Log-Line is a little Cord or Line fasten'd to one end of the Log, and wound round a Reel fix'd for that purpose in the Gallery of the Ship. This Line, from the distance of about ten Fathom off the Log, has certain Knots or Divisions, which ought to be at least 50 foot from each other: tho'tis the common practice at Sea, not to have them above 42 feet asunder. The Use of the Log and Line is to keep account, and make an estimate of the Ship's Way: which is done by observing the Length of Line unwound in half a Minute's time, told by a Half-Minute Glass; for, so many Knots as run out in that time, so many Miles the Ship sails in an Hour. Thus if there be four Knots veer'd out in half a Minute, the Ship is computed to run four Miles an hour. To heave the Log, as they call it, they let it down into the Water, letting it run till it comes without the Eddy of the Ship's Wake; when one holding the Half-Minute Glass, turns it up just as the first Knot turns off the Reel (tho some turn the Glass as soon as the Log touches the Water) as soon as the Glass is out, the Reel is stop'd, and the Knots run off are told, and their Parts estimated.

The Log is a very precarious Way of computing, and must always be corrected by Experience and Good Sense, there being a great deal of Incertainty both in the Heaving of it, in the Course of the Currents, and in the Strength of the Wind, which seldom keeps the same Tenor for two Hours together, which is the Interval between the Times of using the Log in short Voyages, tho in longer ones they heave it every hour. Yet is this a much more exact Way of Computing than any other in use; much preferable certainly to that of the Spaniards and Portuguese, who guess at the Ship's Way by the running of the Froth or Water by the Ship's side; or to that of the Dutch, who use to heave a Chip over-board, and to number the Paces they walk on the Deck while the Chip swims between any two Marks or Bolt-heads on the side.

Log-Board is a Table divided into four or five Columns, whereon are mark'd the Reckonings of every Day, from whence they are enter'd into the Log-Book, or Traverse-Book, ruled and column'd just as the Log-Board is: Whence it may be transcribed into the Journals, and how much the Ship gains in her Course estimated daily. In the first Column of the Log-Board are shewn the Hours of the Day from 1 to 1. In the second is shewn the Rhumb,



or the Direction of the Vessel with regard to the Points of the Compass. In the third, the Number of Knots run off the Reel each time of heaving the Log. In the fourth, the Wind that blows : and in the fifth, Observations made of the Variation of the Compass, &c.

**LOGARITHMIC, or LOGISTIC CURVE**, a Curve generated by the equable Motion of the Radius of a Circle, thro' equal Arcs of the Circumference ; while at the same time a Point in that Radius is supposed to move from the Arc towards the Centre, with a Retardation of Motion in a Geometrick Proportion. As suppose there be a Quadrant of a Circle,  $BCA$ , (*Plate Analysis, Fig. 11.*) and any equal Divisions in the Arc, as  $AF = Ff = ff$ , &c. with five corresponding Radii, as suppose  $CA, CF, Cf$ , &c. whose Parts or Portions  $C1, Ca, Ca$ , &c. are geometrically Proportional ; then if a Line, as  $1, a, a, b, d, C$ , be drawn thro' those Points, it will be the *Logarithmic or Logistic Spiral*.

**LOGARITHMS** (from  $\lambda\omicron\gamma$  ratio, and  $\lambda\epsilon\iota\sigma\tau\omicron$  numerus) are usually defined *Numerorum Proportionalium equidifferentes Comites* ; but this Definition *Dr. Halley and Stifelius* think deficient, and more accurately define them, *The Indices or Exponents of the Ratio's of Numbers* ; Ratio being consider'd as a Quantity *sui generis*, beginning from the Ratio of Equality, or  $1$  to  $1 = 0$  ; and being affirmative when the Ratio is increasing, and negative when it is decreasing. The Nature and Genius of *Logarithms* will be easily conceiv'd from what follows.

A Series of Quantities increasing or decreasing according to the same Ratio, is call'd a Geometrical Progression ; e.g.  $1. 2. 4. 8. 16. 32.$  &c. A Series of Quantities increasing or decreasing according to the same Difference, is called an Arithmetical Progression ; e.g.  $3. 6. 9. 12. 15. 18. 24.$  Now if underneath the Numbers proceeding in a Geometrical Ratio, be added as many of those proceeding in the Arithmetical one ; these last are call'd the *Logarithms* of the first.

Suppose e.g. two Progressions :

Geomet.  $1. 2. 4. 8. 16. 32. 64. 128. 256. 512$   
Arithmet.  $0. 1. 2. 3. 4. 5. 6. 7. 8. 9$

*Logarithms.*

$0$  will be the *Logarithm* of the first Term, viz.  $1$  ;  $5$  of the 6th,  $32$  ;  $7$  the *Logarithm* of the 8th,  $128$ , &c.

**Theor. I.** If the *Logarithm* of Unity be  $0$ , the *Logarithm* of the Factum or Product will be equal to the Sum of the *Logarithms* of the Factors.

**Dem.** For as Unity is to one of the Factors, so is the other Factor to the Product. So that the *Logarithm* of the Product is a fourth equidifferent Term to the *Logarithm* of Unity and those of the Factors : but the *Logarithm* of Unity being  $0$ , the Sum of the *Logarithms* of the Factors must be the *Logarithm* of the Factum or Product. *q. e. d.*

**Corol. 1.** Since the Factors of a Square are equal to each other, i. e. a Square is the Factum or Product of its Root multiplied into itself ; the *Logarithm* of the Square will be double the *Logarithm* of the Root.

**Corol. 2.** In the same manner it appears that the *Logarithm* of the Cube is triple, of the Biquadrate, quadruple ; of the fifth Power, quintuple ; of the sixth, sextuple, &c. of the *Logarithm* of the Root.

**Corol. 3.** Unity, therefore, is to the Exponent of the Power, as the *Logarithm* of the Root to the *Logarithm* of the Power.

**Corol. 4.** So that the *Logarithm* of the Power is had, if the *Logarithm* of the Root be multiplied by its Exponent ; and the *Logarithm* of the Root is had, if the *Logarithm* of the Power be divided by its Exponent.

**Schol.** Hence we derive one of the great Uses of *Logarithms*, which is to expedite and facilitate the Business of Multiplication and Extraction of Roots ; the former of which is here perform'd by mere Addition, and the latter by Multiplication. Thus  $3$ , the Sum of the *Logarithms*  $1$  and  $2$ , is the *Logarithm* of  $8$ , the Product of  $2$  and  $4$ . In like manner  $7$ , the Sum of the *Logarithms*  $2$  and  $5$ , is the *Logarithm* of  $128$ , the Product of  $4$  and  $32$ . Again,

$3$ , the *Logarithm* of the Square Root  $8$ , is half the *Logarithm* of  $64$ , the Square Root of  $64$  ; and  $2$ , the *Logarithm* of the Cube Root  $4$ , is subtriple the *Logarithm* of the Cube  $64$ .

**Theor. II.** If the *Logarithm* of Unity be  $0$ , the *Logarithm* of the Quotient will be equal to the Difference of the *Logarithms* of the Divisor and Dividend.

**Dem.** For as the Divisor is to the Dividend, so is Unity to the Quotient ; therefore the *Logarithm* of the Quotient is a fourth equidifferent Number to the *Logarithms* of the Divisor, the Dividend, and the *Logarithm* of Unity. The *Logarithm* of Unity therefore being  $0$ , the Difference of the *Logarithm* of the Divisor and that of the Dividend, is the *Logarithm* of the Quotient. *q. e. d.*

**Schol.** Hence appears another great Advantage of *Logarithms*, viz. their expediting the business of Division, and performing it by a bare Subtraction. E.g.  $2$  the Difference between  $7$  and  $5$ , is the *Logarithm* of the Quotient  $4$  out of  $128$  by  $32$ . In like manner,  $5$  the Difference between  $8$  and  $3$ , is the *Logarithm* of the Quotient  $32$ , out of  $256$  by  $8$ .

An Example or two will render the Use of *Logarithms* in Multiplication, Division, &c. obvious.

| Num.        | Log.              | Num.              | Log.    |
|-------------|-------------------|-------------------|---------|
| Multiply 68 | 1.83250           | Divide 816        | 2.91168 |
| by 12       | 1.07918           | by 12             | 1.07918 |
| 816         | 2.91168           | 68                | 1.83250 |
| 9           | 0.95424           | 9                 | 0.95424 |
| 9           | 0.95424           | 9                 | 0.95424 |
| 9           | 0.95424           | 9                 | 0.95424 |
| Sq. 81      | 2)1.90848(0.95424 | Sq. R.            |         |
|             | Cube 729          | 3)2.86272(0.95424 | Cube R. |

The Properties of the *Logarithms* hitherto mention'd, and their various Uses, are taken notice of by *Stifelius* : but come all far short of the Use of *Logarithms* in Trigonometry, first discover'd by the Lord Neper.

To find the *Logarithm* of any Number, and to construct a Canon of *Logarithms* for Natural Numbers.

1. Because  $1. 10. 100. 1000. 10000.$  &c. constitute a Geometrical Progression, their *Logarithms* may be taken at pleasure : To be able, then, to express the *Logarithms* of the intermediate Numbers by Decimal Fractions, take  $0.00000000, 1.00000000, 2.00000000, 3.00000000, 4.00000000,$  &c.

2. 'Tis manifest that for those Numbers which are not contained in the Scale of Geometrical Progression, the just *Logarithms* cannot be had : yet may they be had so near the Truth, that as to Matters of Use they shall be altogether as good as if strictly just. To make this appear, Suppose the *Logarithm* of the Number  $9$  were required : between  $1.00000000$  and  $10.00000000$  find a Mean Proportional, and between their *Logarithms*  $0.00000000$  and  $1.00000000$  an Equidifferent Mean, which will be the *Logarithm* thereof, that is, of a Number exceeding Three by  $\frac{1}{100000000}$ , and therefore far remote from Nine. Between  $3$  and  $10$  therefore find another Mean Proportional, which may come somewhat nearer Nine ; and between  $10$  and this Mean, another still ; and so on between the Numbers next above and next underneath Nine, till at last you arrive at  $9.00000000$ , that is,  $9 \frac{0.00000000}{100000000}$ , which not being one Millionth Part from Nine, its *Logarithm* may, without any sensible Error, be taken for that of Nine itself. Seeking then in each Case for the *Logarithms* of the Mean Proportionals, and you will at last have  $0.954251$ , which is exceedingly near the true *Logarithm* of Nine.

3. If in like manner you find Mean Proportionals between  $1.00000000$  and  $3.1622777$ , and assign convenient *Logarithms* to each, you will at length have the *Logarithm* of the Number  $2$ , and so of the rest.



|   | Mean Proportional Numbers. | Logarithms. |   | Mean Proportional Numbers. | Logarithms. |
|---|----------------------------|-------------|---|----------------------------|-------------|
| A | 1.0000000                  | 0.0000000   | O | 9.0021388                  | 0.95434570  |
| C | 3.1622777                  | 0.5000000   | Q | 9.0008737                  | 0.95428467  |
| B | 10.0000000                 | 1.0000000   | P | 8.9995088                  | 0.95422363  |
| B | 10.0000000                 | 1.0000000   | Q | 9.0008737                  | 0.95434570  |
| D | 5.6234132                  | 0.7500000   | R | 9.0002412                  | 0.95428467  |
| C | 3.1622777                  | 0.5000000   | P | 8.9996088                  | 0.95422363  |
| B | 10.0000000                 | 1.0000000   | R | 9.0002412                  | 0.95428467  |
| E | 7.4989421                  | 0.8750000   | S | 8.9999250                  | 0.95425415  |
| D | 5.6234132                  | 0.7500000   | P | 8.9996088                  | 0.95422363  |
| B | 10.0000000                 | 1.0000000   | R | 9.0002412                  | 0.95425415  |
| F | 8.6596432                  | 0.9375000   | T | 9.0000831                  | 0.95421889  |
| E | 7.4989421                  | 0.8750000   | S | 8.9999250                  | 0.95425889  |
| B | 10.0000000                 | 1.0000000   | T | 9.00002412                 | 0.95424652  |
| G | 9.3057204                  | 0.9687500   | V | 9.0000831                  | 0.95424271  |
| F | 8.6596432                  | 0.9375000   | S | 8.9999250                  | 0.95423889  |
| G | 9.3057204                  | 0.9687500   | V | 9.0000041                  | 0.95424271  |
| H | 8.9768713                  | 0.9531250   | X | 8.9999650                  | 0.95424080  |
| F | 8.6596432                  | 0.9375000   | S | 8.9999250                  | 0.95423889  |
| G | 9.3057204                  | 0.9687500   | V | 9.0000041                  | 0.95424271  |
| I | 9.1398170                  | 0.9609375   | Y | 8.999845                   | 0.95424217  |
| H | 8.9768713                  | 0.9531250   | X | 8.9999650                  | 0.95424080  |
| I | 9.1398170                  | 0.9609375   | V | 9.0000041                  | 0.95424271  |
| K | 9.0579777                  | 0.95703125  | Z | 8.9999943                  | 0.95424223  |
| H | 8.9768713                  | 0.9531250   | Y | 8.9999845                  | 0.95424217  |
| K | 9.0579777                  | 0.95703125  | V | 9.0000041                  | 0.954271    |
| L | 9.0173333                  | 0.95507812  | a | 8.9999992                  | 0.95424247  |
| H | 8.9768713                  | 0.9531250   | Z | 8.9999943                  | 0.95424223  |
| L | 9.0173333                  | 0.95507812  | V | 9.0000041                  | 0.95424271  |
| M | 8.9970796                  | 0.95410156  | b | 9.0000016                  | 0.95424259  |
| H | 8.9768713                  | 0.9531250   | a | 8.9999992                  | 0.95424247  |
| L | 9.0173333                  | 0.95507812  | b | 9.0000016                  | 0.95424259  |
| N | 9.0072008                  | 0.95458914  | c | 9.0000004                  | 0.95424253  |
| M | 8.9970796                  | 0.95410156  | a | 8.9999992                  | 0.95424247  |
| N | 9.0072008                  | 0.95453984  | c | 9.0000004                  | 0.95424295  |
| O | 9.0021388                  | 0.95434570  | d | 8.9999998                  | 0.95424250  |
| M | 8.9970796                  | 0.95410156  | a | 8.9999992                  | 0.95424247  |
| O | 9.0021388                  | 0.95434570  | c | 9.0000004                  | 0.95424253  |
| P | 8.9996088                  | 0.95422363  | e | 9.0000000                  | 0.95424251  |
| M | 8.9970796                  | 0.95410156  | d | 8.9999998                  | 0.95424250  |

4. There needs not, however, be so much Pains taken in investigating the *Logarithms* of all Numbers; since those that consist of aliquot Parts being divided, and others mutually multiplying each other, their *Logarithms* are easily found. Thus if the *Logarithm* of the Number 9 be bisected, we shall have the *Logarithm* 0.47712125 of the Number 3.

*Schol.* The Indices or Characteristics of *Logarithms* correspond to the denominative Part of the natural Numbers, as the other Member of the *Logarithm* does to the denominative Part of the Number: i. e. the Index shews the Denomination or Place of the last (or left Hand) Figure of the Number, and consequently of all the rest. Thus 0, affixed to a *Logarithm*, denotes the last Figure of the Number to which the *Logarithm* answers to be nothing distant (i. e. is in) the Place of Units. The Index 1 shews the last Figure of its Number to be distant 1 Place from the Place of Units, i. e. to be in the Place of Tens, and consequently the Number itself to be either 10, or some Number between that and 100, and so of the other Indices. Hence all Numbers, which have the same denominative, but not the same numerative Parts, as all Numbers from 1 to 10, from 10 to 100, &c. will have *Logarithms* whose Indices are the same, but the other Members different. Again, all Numbers which have the same numerative, but not denominative Part, will have different Indices; but the rest of the *Logarithms* the same. If a Number be purely decimal, to its *Logarithm* is affixed a negative Index, shewing the Distance of its first significative Figure from the Place of Units. Thus the *Logarithm* of the Decimal .256 is 7.40824, of the Decimal .0256 is 7.40824, &c.

*Schol.* The first Canon of *Logarithms* for natural Numbers, from 1 to 20000, and from 90000 to 100000, was constructed by *Hen. Briggs*, with the Approbation of the Inventor the Lord *Neper*, and the Manner of constructing them shewn. The Chasm between 20000 and 90000 was filled up by *Adrian Vlack*. In the common Tables we have only a Canon from 1 to 10000. There are various

other Methods of constructing *Logarithms* by *Dr. Halley*, *Mr. Cotes*, *Dr. Brook*, *Taylor*, &c. which the Reader, who has a Curiosity that way, will find in the *Philosophical Transactions*.

To find the *Logarithm* for a Number greater than any in the Common Canon, but less than 10000000. Cut off four Figures on the left of the given Number, and seek the *Logarithm* in the Table; add as many Units to the Index as there are Figures remaining on the right; subtract the *Logarithm* found from that next following it in the Table: then as the Difference of Numbers in the Canon is to the Tabular Distance of the *Logarithms* answering to them, so are the remaining Figures of the given Number to the *Logarithmic Difference*; which if it be added to the *Logarithm* before found, the Sum will be the *Logarithm* required; w. g. the *Logarithm* of the Number 92375 is required. Cut off the four Figures 9237, and to the Characteristic of the *Logarithm* corresponding to them, add an Unit; then

From the *Logarithm* of the Numb. 9238 = 3.9655780  
Subtract. *Logarithm* Numb. ——— 9237 = 3.9655309

Remains Tabular Difference 471  
10 — 471 — 5

2) 235 1

Now to the *Logarithm* ————— 4.9655309  
Add the Difference found ————— 235

The Sum is the *Logarithm* required — 3.9655544

To find the *Logarithm* of a Fraction: Subtract the *Logarithm* of the Numerator from that of the Denominator, and to the Remainder prefix the Sign of Subtraction. Thus suppose it is required to find the *Logarithm* of the Fraction  $\frac{1}{2}$ ,

*Logarithm* of 7 = 0.8450980  
*Logarithm* of 2 = 0.4771213

*Logarithm* of  $\frac{1}{2}$  = 0.3679767

The Reason of the Rule is, That a Fraction being the Quotient of the Denominator, divided by the Numerator;



tor, its *Logarithm* must be the Difference of the *Logarithms* of those two; so that the Numerator being subtracted from the Denominator, the Difference becomes negative. *Susellius* observed, that the *Logarithms* of a proper Fraction must always be negative, if that of Unity be 0; which is evident, a Fraction being less than one.

For an improper Fraction, *v.g.*  $\frac{2}{1}$ , its Numerator being greater than its Denominator, its *Logarithm* is had, by subtracting the *Logarithm* of the latter from that of the former.

The *Logarithm* of 9 = 0.9542425

*Logarithm* of 5 = 0.6989700

*Logarithm*  $\frac{2}{1}$  = 0.2553725

In the same manner may a *Logarithm* of a mixed Number, as  $3\frac{2}{7}$  be found, it being first reduced into an improper Fraction  $2\frac{2}{7}$ .

To find the Number corresponding to a *Logarithm*, greater than any in the Table: First from the given *Logarithm*, subtract the *Logarithm* of 10, or 100, or 1000, or 10000, till you have a *Logarithm* that will come within the Compass of the Table; find the Number corresponding to this, and multiply it by 10, or 100, or 1000, or 10000, the Product is the Number required.

Suppose, for Instance, the Number corresponding to the *Logarithm* 7.7589982 be required; subtract the *Logarithm* of the Number 10000, which is 4.0000000 from 7.7589982, the Remainder is 3.7589982, the Number corresponding to which is 5741  $\frac{11}{100}$ , this multiplied by 10000, the Product is 5741100, the Number required.

To find the Number corresponding to a negative *Logarithm*. To the given negative *Logarithm*, add the last *Logarithm* of the Table, or that of the Number 10000; *i.e.* subtract the first from the second, and find the Number corresponding to the Remainder; this will be the Numerator of the Fraction, whose Denominator will be 10000; *v.g.* suppose it be required to find the Fraction corresponding to the negative *Logarithm* 0.3579767, subtract this from 4.1000000

The Remainder is—3.6320233, the Number corresponding to which is 4285  $\frac{21}{100}$ , the Fraction sought therefore is  $\frac{428521}{1000000}$ . The Reason of the Rule is, that as a Fraction is the Quotient arising on the Division of the Numerator by the Denominator, Unity will be to the Fraction as the Denominator to the Numerator; but as Unity is to the Fraction corresponding to the given negative *Logarithm*, so is 10000 to the Number corresponding to the Remainder; therefore if 10000 be taken for the Denominator, the Number will be the Numerator of the Fraction required.

To find a fourth Proportional to three given Numbers. Add the *Logarithm* of the second to that of the third, and from the Sum subtract the *Logarithm* of the first, the Remainder is the *Logarithm* of the fourth required. *E.g.* let the given Number be 4. 68. and 3.

*Logarithm* 68 = 1.8325089

*Logarithm* 3 = 0.4771213

Sum = 2.3096302

*Logarithm* 4 = 0.6020600

*Logarithm* required 1.7075702

The Number in the Tables corresponding to which is 51. This Problem is of the utmost Use in Trigonometry. See *Trigonometry*.

LOGIC is the Art of Thinking justly; or of making a right Use of our rational Faculties in defining, dividing, and reasoning. The word is derived from  $\lambda\gamma\omicron$ , *Sermo*, Discourse; Thinking being no more than an inward, mental Discourse, wherein the Mind converses with itself. *Logic* is sometimes also call'd *Dialectics*, from  $\delta\alpha\lambda\epsilon\gamma\iota\kappa\alpha\iota$ , to reason; and sometimes the *Canonical Art*, as being a Canon or Rule for directing us in our Reasonings. As, in order to think aright, 'tis necessary that we apprehend, judge, discourse, and dispose or methodize rightly: hence Apprehension, Judgment, Discourse, and Method become the four fundamental Articles of this Art; and 'tis from our Reflections on those Operations of the Mind, that *Logic* is, or ought to be wholly drawn. My Lord Bacon divides *Logic* into four Branches, according to the Ends proposed in each: for a Man reasons either to find what he seeks, or to judge of what he finds, or to retain what he judges, or to teach what he retains; whence arise so many Arts of Reasoning, *viz.* the Art of Inquisition or Invention, the Art of Examining or Judgment, the Art of Preserving or of Memory, and the Art of Elocution or Deliver-

ing, which see. *Logic* having been extremely abused, is now in a general Disrepute. The Schools have so clogged it with barbarous Terms and Phrases, and have run it out so much into dry useless Subtilties, that it seems rather intended to exercise the Mind in Wrangling and Disputation, than to assist it in thinking justly. 'Tis true, in its Original, it was rather intended as the Art of Cavilling than of Reasoning; the *Greeks*, among whom it had its Rise, being a People who piqued themselves mightily upon their being able to talk *ex tempore*, and to argue by Turns on either Side the Question. Hence their *Dialectici*, to be always furnished with Arms for such Rencounters; invented a Set of Words and Terms, rather than Rules and Reasons, fitted for the Uses of Contention and Dispute. *Logic*, then, was only an Art of Words, which frequently had no Meaning, but served well to hide Ignorance, instead of improving Knowledge, to baffle Reason instead of assisting it, and to confound the Truth instead of clearing it. All that Heap of Words, which we have borrowed from the old *Logic*, is of little Use in Life, and is so far out of the common Usage; that the Mind does not attend to them without Trouble, and finding nothing in them to reward its Attention, soon discharges itself, and loses all Ideas it had conceived of them: But *Logic* disengaged from the Jargon of the Schools, and reduced into a clear and intelligible Method, is the Art of conducting the Reason in the Knowledge of Things, and the Discovery of Truth. From its proper Use we gain several very considerable Advantages; for, (1.) The Consideration of Rules incites the Mind to a closer Attention and Application in Thinking, so that we hereby become assured that we make the best Use of our Faculties. (2.) We hereby more easily and accurately discover and point out the Errors and Defects in our Reasonings; for the common Light of Nature, unassisted by *Logic*, frequently observes an Argumentation faulty, without being able to determine wherein the precise Failure consists. (3.) By these Reflections on the Order and Manner of the Operations of the Mind, we are brought to a more just and compleat Knowledge of the Nature of our own Understanding.

LOGISTA, the Title of a Magistrate at *Athens*, whose Business was to receive and pass the Accounts of Officers upon their laying down their Posts. The *Logiste* were in Number ten.

LOGISTIC, or *Logarithmic Line*, a Curve so called, from its Properties and Uses in constructing and explaining the Nature of *Logarithms*. If the right Line A X, (*Tab. Analysis*, Fig. 12.) be divided into any Number of equal Parts, and to the Points of those Divisions A P, &c. be drawn Lines continually proportional, the Points N M m, &c. form the *Logistic Curve*.

Cor. 1. The Abscisses A P, A p, &c. are the *Logarithms* of the Semiordinates P M, p m, &c.

Hence if A P = x, A p = v, P M = y, p m = z, and their *Logarithms* y and z = l y and l z, x will be = l y, and v = l z, consequently x : v = l y : l z, that is the Denominators of the Ratio's A N, P M, and A N p m, are to one another as the Abscisses A P and A p.

Cor. 2. Hence it follows, that there may be infinite other *Logistic Lines* invented, provided x m : v m :: l y : l z, that any of the Roots or Powers may be the *Logarithms* of the Semiordinates.

Cor. 3. The *Logistic* will never concur with the Axis except at an infinite Distance, so that A X is its Asymptote.

LOGISTIC, or *Logarithmic Spiral*, a Line, whose Construction is as follows: Divide the Quadrant of a Circle into any Number of equal Parts in the Points P, p, &c. (*Tab. Analysis*, Fig. 11.) and from the Radii C P, C p, C p, &c. cutting off C M, C m, C m, &c. continually proportional, the Points M m, m, &c. form the *Logistic Spiral*.

Cor. The Arches therefore A P, A p, &c. are the *Logarithms* of the Ordinates C M, C m, &c. whence also it follows, that there may be infinite *Logistic Spirals*.

LOGISTICAL ARITHMETIC, was formerly the Arithmetic of Sexagesimal Fractions, used by Astronomers in their Calculations. It was so called from a Greek Treatise of one *Barlaamus Monachus*, who wrote about Sexagesimal Multiplication very accurately, and entitled his Book  $\lambda\omicron\gamma\iota\sigma\tau\iota\kappa\eta$ . This Author, *Vossius* places about the Year 1350, but mistakes the Work for a Treatise of Algebra. Thus also *Shakerly*, in *Tabula Britannica*, hath a Table of *Logarithms* adapted to Sexagesimal Fractions, which therefore he calls *Logistical Logarithms*; and the expeditious Arithmetic of them, which is by this means obtained, and by which all the Trouble of Multiplication and Division is saved, he calls *Logistical Arithmetic*, though some by *Logistics* will understand the



first general Rules in Algebra, of Addition, Subtraction, &c.

**LOGOGRIPIE**, a kind of Symbol or Riddle, proposed to Students for their Solution in order to exercise and improve the Mind. It usually consists in some equivocal Allusion or Mutilation of Words, which, literally taken, signify something different from the thing intended by it; so that it is a kind of Medium between a Rebus and proper Ænigma. According to *Kircher*, *Logogriphes* are a kind of speaking Arms. Thus a Person called *Leonard*, who bore in his Arms a Lion, and *Nard* or *Spikenard*, according to that Father, made a *Logogriphe*; *Oedip. Egypt.* In another Place however he defines a *Logogriphe* to be an Ænigma, which under one Name or Word will bear various Meanings, by adding or retrenching some Part of it. These kind of Ænigma's are well known to the *Arabs*, among whom are Authors who treat expressly of them. The Word comes from the Greek *λογος*, Discourse, and *γριπος*, Net.

**LOHOCH**. See *Loch*.

**LOINS**, in Anatomy, are the lower Part of the Spine of the Back, composed of five Vertebrae, larger than those of the Back, and serving them as a Base, having their Articulations pretty loose, that the Motion of the *Loins* may be more free.

**LOLLARDS**, the Name of a Sect that rose in Germany about the beginning of the 14th Century. It took its Name from its Author *Lollard Walter*, who began to dogmatize in 1315. Besides exploding many of the *Romish* Doctrines, he is likewise said to have set aside Baptism as a thing of no effect, and Repentance as not absolutely necessary, &c. *Lollard* was burnt alive at *Cologne* in 1322. In *England* the Followers of *Wickliff* were called, by way of Reproach, *Lollards*, from some Affinity there was between some of their Tenets; others, however, are of Opinion, that the *English Lollards* came from Germany. They were solemnly condemned by the Archbishop of *Canterbury* and the Council of *Oxford*. The Monk of *Canterbury* derives the Use of the Word *Lollard* among us from *Lolium*, a Tare, as if the *Lollards* were the Tares sown in Christ's Vineyard. *Abelly* says, that the Word *Lollard* signifies praising God, from the German *loben*, to praise, and *Herr*, Lord, because the *Lollards* imploy'd themselves in travelling about from Place to Place, singing Psalms and Hymns.

**LONGUS**, *Long*, an Epithet given by the Anatomists to a great Number of Muscles. The second Extensor of the *Carpus* is called the *Longus*, in comparison of the third Extensor, which is called *brevis*, short. The *Longus* has its Origin in the bottom of the *Humerus*, and lying along the *Radius*, passes underneath the *Ligamentum Annulare*, and is inserted into the *Carpus*.

The second Muscle of the Flexors of the Neck is also called the *Longus*, and sometimes the *Rectus*. It has its Origin in the lateral Part of the Body of the four upper Vertebrae of the Back, and is inserted into the Body of the four Vertebrae of the Neck, and sometimes into the *Occiput*; this, in conjunction with the *Scalenum*, bends the Neck.

The third of the six Muscles of the Elbow or Arm, which is the first of its Extensors, is also called the *Longus*, as being the longest of the Extensors. It has its Origin on the upper Side of the *Omoplate*, near the Neck, and descending by the hind Part of the Arm, is inserted into the *Olecranon* by a strong *Aponeurosis*, which is common to it and the second and third Extensor of the Arm.

The second Muscle of the Thumb, which is the first of its Extensors, is also called *Longus*, as being longer than another Extensor of the same Thumb, called *Brevis*. The *Longus* proceeds from the upper and external Part of the Bone of the Elbow, and rising over the *Radius*, is inserted by a forked Tendon into the second Bone of the Thumb, which it extends.

One of the four Muscles of the *Radius* is also called the *Longus*. This is the first of the two Supinators, and has its Origin three or four Fingers breadth above the outer *Apophysis* of the *Humerus*, whence running along the *Radius*, it is inserted into the inner Part of its lower *Apophysis*. It is called *Longus* with regard to the other Supinator, which is called *Brevis*. These two Muscles serve to turn the *Radius*, so as the Palm of the Hand looks upwards; which makes the Supination.

Lastly, the first of the Abductors of the Leg is called the *Longus*, and bears this Title more justly than any of the others, as being the longest Muscle in the whole Body. It is also called *Sartorius*, because it serves to bend the Leg inwards, as the Taylors use to have it when at work. See *Sartorius*.

**LONG ACCENT**, in Grammar, &c. shews that the Voice is to stop upon the Vowel, that hath that Mark, and it is expressed thus (-).

**LONG MEASURE**. See *Measure*.

**LONGÆVITY**, *Length of Life*. From the different Longevities of Men in the beginning of the World, after the Flood, and in these Ages, *Mr. Derham* draws a good Argument for the Interposition of a Divine Providence. Immediately after the Creation, when the World was to be peopled by one Man and one Woman, the ordinary Age was 900 and upwards. Immediately after the Flood, when there were three Persons to stock the World, their Age was cut shorter, and none of those Patriarchs but *Sben* arrived at 500. In the second Century we find none that reach'd 240, in the third none but *Terah* that came to 200 Years: The World, at least a part of it, by that time being so well peopled, that they had built Cities, and were cantoned out into distant Nations. By degrees, as the Number of People increas'd, their Longevity dwindled; till it came down at length to 70 or 80 Years: and there it stood, and has continued to stand ever since the Time of *Moses*. This is found a good Medium, and by means hereof the World is neither overstock'd, nor kept too thin; but Life and Death keep a pretty equal pace. See *Mortality*.

That the common Age of Man has been the same in all Ages since the World was peopled, is plain both from Sacred and Profane History. To pass by others, *Plato* lived to 81, and was accounted an Old Man; and the Instances of Longevity produced by *Pliny*, l. 7. c. 48. as very extraordinary, may most of 'em be match'd in modern Histories; particularly in *Dr. Plot's Nat. Hist. of Oxf. and Staff.* Among others, he tells of twelve Tenants to the same Person, who made up 1000 Years; to say nothing of *Old Parre*, who lived 152 Years 9 Months; or of *H. Jenkins* of *Yorkshire*, who lived 169 Years; or of the Countess of *Desmond*, or *Mr. Eckleston*, both of *Ireland*, who each exceeded 140 Years. See *Life*.

**LONG-BOAT** is the largest and strongest Boat belonging to a Ship, that can be hoisted a-board of her. Its Use is to bring any Goods, Provision, &c. to or from the Ship, or, on Occasion, to land Men any where; and particularly to weigh the Anchor.

**LONGIMETRY**, the Art of measuring Lengths; both accessible, as Roads, &c. and inaccessible, as Arms of the Sea, &c. Longimetry is a Part of Trigonometry, and a Dependant on Geometry, in the same manner as Altimetry, Planimetry, Stereometry, &c. The Art of Longimetry see under the Names of the Instruments used in it, particularly *Theodolite*, *Chain*, &c.

**LONGISSIMUS DORSI** is a Muscle of the Back, that at its beginning is not to be distinguished from the *Sacro-lumbaris*, arising with it from the hinder Part of the *Os Ilium*, and *Os Sacrum*, and the first Vertebra of the Loins; it runs upwards along the whole Tract of the Back, and is connected by Tendons to each transverse Process in its way, and ends sometimes in the first Vertebra of the Back, and sometimes in the first of the Neck; and, as some Authors say, reaches now and then to the *Processus Mamillaris* of the *Os Petrosum*. In conjunction with some others, this helps to keep the Body erect.

**LONGISSIMUS OCULI**, the Name of a Muscle. See *Obliquus Superior*.

**LONGITUDE** of a Place, in Geography, is its Distance from some first Meridian; or an Arc of the Equator intercepted between the Meridian of the Place, and the first Meridian; or the Difference East and West between the Meridians of any two Places, counted on the Equator. To discover an exact Method of finding the Longitude, especially at Sea, is a Problem, that has extremely perplex'd the Mathematicians of these two last Ages; and for the Solution whereof, great Rewards have been publicly offer'd by the *English*, *French*, *Dutch*, and other Nations: this being the only thing wanting to render Navigation perfect. Various are the Attempts that Authors have made for this purpose, and various the Methods they have proposed, but still without Success; all their Schemes being found either false, precarious, impracticable, or in some way or other defective: so that the Palm is still unascertain'd. What they most of 'em aim at, is a Method of determining the Difference of Time between any two Points on the Earth; for every 15 Degrees of the Equator answering to an Hour, i. e. one Degree to 4 Minutes of Time, and one Minute of a Degree to 15 Seconds of Time; the Difference of Time being known and turn'd into Degrees, will give the Longitude, and vice versa. This some have pretended to effect by Clocks, Watches, and other Automata; but always in vain; no Time-keeper, excepting a Pendulum (which cannot be applied at Sea) being sufficiently sure and exact for the purpose.

Others, with more probability, and to better purpose, search for it in the Heavens; for if the exact Times of any Celestial Appearance be known for two Places, the Dis-



Difference of those Times gives that of the *Longitude* of those Places. Now in the *Ephemerides*, we have the Motions of the Planets, and the Times of all the Celestial Phenomena, as the Beginning and Ending of Eclipses, Conjunctions of the Moon with other Planets, its Entrance into the Ecliptic, &c. accurately calculated for some one Place. Therefore if the Hour and Minute be known wherein any of the same Phenomena are observ'd in an unknown Place, the Difference between the Hour and Minute between that Place and that other, to which the Tables are calculated, and consequently the Difference of their Meridians, and their *Longitude* from each other, are known also. Now the Difficulty, here, does not consist in the exact finding of the Time, which is easily had from the Sun's Altitude or Azimuth; but the Defect lies in the Paucity of proper Appearances capable of being thus observ'd: For all slow Motions (v.g. that of *Saturn*) are at once excluded; as shewing but little Difference in a considerable Space of Time; and it being here required that the Phenomenon be sensibly varied in two Minutes Time, an Error of two Minutes in Time producing another of 30 Miles in the *Longitude*. Now there are no Phenomena in the Heavens that have these Requisites, excepting the several Stages of an Eclipse of the Moon; her *Longitude*, or Place in the Zodiac; her Distance from the fix'd Stars, or Appulse to them; her Ingress into the Ecliptic, or the Points of her Orbit where that cuts the Ecliptic; and the Conjunction, Distance and Eclipses of *Jupiter's* Satellites. Of each of these in their Order.

1. The first Method, by the Eclipses of the Moon, is very easy and sufficiently accurate, were there but Eclipses every Night. At the moment wherein we see the beginning or middle of a lunar Eclipse by a Telescope, we have nothing to do but take the Altitude or Azimuth of some fixed Star, from which the Hour and Minute are easily found; or without the Altitude, if the Star be in the Meridian. This Hour and Minute therefore, thus found, and compared with that express'd in the Tables, give the *Longitude*.

2. The Moon's Place in the Zodiac is a Phenomenon more frequent than that of her Eclipses, but then the Observation thereof is difficult, the Calculus intricate and perplex'd, by reason of two Parallaxes; so that it's scarce practicable to any tolerable degree of Accuracy. Indeed by waiting till the Moon comes into the Meridian of the Place, and then taking the Altitude of some remarkable Star (the Latitude being supposed to be first known) from this Altitude and the Latitude, we shall be able to find the Time pretty accurately, tho' twill be better to do it by some Star in the Meridian. Now the Time being found, twill be easy to find what Point of the Ecliptic is then in the Meridian or Mid-heaven. Thus we shall have the Moon's Place in the Zodiac corresponding to the Time of our Place. Then in the *Ephemeris* we find what Hour it is in the Meridian of the *Ephemeris*, when the Moon is in that part of the Zodiac: Thus we shall have the Hour and Minute of the two Places for the same Time; the Difference of which will give the Difference of *Longitude*.

3. In regard there are many times when the Moon cannot be observ'd in the Meridian, there is therefore another still more frequent Phenomenon from which the *Longitude* is sought; viz. the Moon's Appulse and Recess from the fixed Stars: for from thence the Moon's true Place may be investigated for the given Time of Observation. But this Method, by reason of the Parallaxes, and the Solution of oblique spherical Triangles, and the various Cases, is so very difficult and perplex'd, that the Mariners are not able to make use of it; nor is it necessary to trouble the Reader with the Praxis thereof. Those however who are disposed to use it, will find very considerable Help from a starry Zodiac, publish'd under the Direction of Dr. Halley, containing all the Stars to which the Moon's Appulse can be observ'd.

4. To find the *Longitude* by the Moon's Ingress into the Ecliptic; observe the Moment of that Ingress: Then in the *Ephemeris*, see what Hour it is in the Meridian of the *Ephemeris*, when that Ingress happens. The Difference between these Times, gives the Difference of *Longitude*.

5. The Phenomena of *Jupiter's* Satellites are generally preferred to those of the Moon, for finding the *Longitude*; by reason the former are less liable to Parallaxes, and do, further, afford a very commodious Observation in every Situation of that Planet above the Horizon. Their Motion is very swift, and must be calculated for every Hour, and for that reason are not found in the common *Ephemerides*, but are had elsewhere. Now to find the *Longitude* by means of these Satellites, with a good Telescope observe a Conjunction of two of them or of one of them with *Jupiter*, or any other, the like Appa-

rance, and at the same time find the Hour and Minute from the Meridian Altitude of some Star; then consulting Tables of the Satellites, observe the Hour and Minute wherein such Appearance happens in the Meridian of the Place to which the Tables are calculated. The Difference of Time, as before, will give the *Longitude*.

6. All Methods that depend on the Phenomena of the Heavens having this one Defect, that they are not to be observed at all times; and being, besides, very difficult of Application at Sea, by reason of the Motion of the Ship; there are some, who, leaving the Moon and the Satellites, have recourse to Clocks and other Automata: which, could they be made perfectly just and regular, so as to move with the Sun without either gaining or losing, and without being affected with the Change of Air and of Climates; the *Longitude* would be had with all the Ease and Accuracy imaginable, nothing more being required but to set the Machine by the Sun at the time of Departure; and when the *Longitude* of any Place is desired, to find the Hour and Minute from the Heavens, (which is done at Night by the Stars, and in the Day by the Sun) for the Difference between the Time, thus observed, and that of the Machine, gives the *Longitude*: But no such Machine has been yet discover'd. Wherefore Recourse has been still further had to other Methods.

7. Mr. Whiston and Mr. Ditton have proposed a Method of determining the *Longitude* by the Flash and Report of great Guns. Sounds, 'tis known, move pretty equally in all their Stages, whatever the Sonorous Body be that occasions it, or whatever the Medium that conveys it. If then a Mortar or great Gun be exploded at a Place, whose *Longitude* is known, the Difference between the Time wherein the Flash (which moves, as it were, instantaneously) is seen, and the Sound, which moves at the rate of four Seconds in a Mile, is heard, will give the Distance of those Places from each other; whence, if their Latitudes be known, the Difference of *Longitude* will be likewise known. Again, if the Hour and Minute of the Explosion be known, (for the Place where it is made) by observing the Hour and Minute from the Sun or Stars, at the Place whose *Longitude* is required; the Difference between those Times will give the Difference of *Longitude*. Again, if the said Mortar be loaden with an Iron Shell full of combustible Matter, and posited perpendicularly, it will carry the same a Mile high, which will be seen near a hundred Miles; if therefore neither the Sound should be heard, nor the Flash seen, the Distance of any remote Place from the Place of the Mortar may be determin'd from the Altitude of the Shell above the Horizon of the Place unknown: and the Distance and Latitudes known, the *Longitude* is easily found. According to this Scheme 'twas proposed to have such Mortars fix'd at proper Distances, and at known Stations, on all the frequented Coasts, Islands, Capes, &c. and to be exploded at certain Hours for the Observation of Mariners. This Method, tho' good in the Theory, yet is found useless in the Practice; as being extremely troublesome, and yet precarious. It supposes that Sounds may be heard 40, 50, or 60 Miles; of which, 'tis true, we have Instances, but they are very rare; and ordinarily the Report of a Cannon is not heard above half so far; and sometimes much less. It supposes, again, Sound to move always with equal Velocity; whereas, in fact, its Velocity is increased or diminished as it moves with or against the Wind. It supposes, again, the Strength of Powder uniform; and that the same Quantity carries the same Range; the contrary whereof is known to every Gunner. We say nothing of thick cloudy Nights, when no Lights can be seen; nor of stormy Nights, when no Sound can be heard; even at inconsiderable Distances.

8. We have another Method of finding the *Longitude*, proposed by the same ingenious Gentleman Mr. Whiston, viz. by the Inclinator or Dipping-Needle. See *Dipping-Needle*.

*Longitude of the Earth*, is its Extent from West to East, according to the Situation of the Equator; as the Latitude of the Earth is its Extent in Surface from one Pole to the other.

*Longitude in the Heavens*, is an Arc of the Ecliptic, counted from the beginning of Aries, to the Place where a Star's Circle of *Longitude* crosses the Ecliptic: so that it is much the same as the Star's Place in the Ecliptic, reckoned from the beginning of Aries; which to find, see *Place of the Sun or Star*. *Longitude of the Sun or Star* from the next equinoctial Point, is the Number of Degrees and Minutes they are from the beginning of Aries or Libra, either before or after them; which can never be more than 180 Degrees. *Longitude*, in Navigation, is also the Distance of a Ship or Place, East or West, from another.



To find the *Longitude* or Latitude of any Star by the Globe: Bring the Solstitial Colure to the Brass Meridian, and there fix the Globe; then will the Pole of the Ecliptic be just under 23 deg. 30 min: accounted from the Pole above the Horizon, and on the same Meridian: There screw the Quadrant of Altitude, bring its graduated Edge to the Star, and there stay it; thus the Quadrant will cut the Ecliptic in the Star's *Longitude*, as also its Latitude reckoned on the Quadrant, from the Ecliptic. See *Globe*.

*Longitude* of Motion, is a Term used by Dr. Wallis in his *Mechanics*, for the Measure of Motion estimated according to the Line of Direction; so that it is the Distance, or Length, which the Center of any moving Body runs thro', as it moves on in a Right Line. And he calls the Measure of any Motion, estimated according to a Right Line or Line of Direction of the *Vis Motrix*, the Altitude of it.

*Bellini* also useth this Term of *Longitude* and Altitude in the same Sense in many Places of his Writings, and which an ordinary Reader finds hard to understand for want of this Interpretation. By Altitude also, in his 19th Proposition *de Febribus*, he means the Thickness of the viscid Matter in the Blood-Vessels; or the greatest Length a viscid Participle is extended into from the side of the Canal to its Axis.

LONGITUDINAL, according to the Etymology of the Word, signifies something extended length-wise. Thus in Anatomy it is used to signify some Part or Member running in length, or posited length-wise. The Membranes that compose the Vessels are woven out of two kinds of Fibres, the one *Longitudinal*, and the other Circular, cutting the *Longitudinal* at Right Angles. The *Longitudinal* are tendinous and elastic; the Circular, muscular and motrices, like Sphincters.

LONGUS COLLI, a Muscle which arises chiefly fleshy, tho' partly tendinous, from the fore-part of the five upper Vertebrae of the Back, and is inserted into the fore-part of every Vertebra of the Neck. Its Use is to bend the Neck forward.

LONGUS CUBITI, a Muscle, that, in conjunction with others, extends the *Cubitus*: It riseth from the inferior Costa of the Scapula, nigh its Neck, and passeth betwixt the two round Muscles. It descends on the back-side of the Humerus, where it joins with the *Brevis* and *Brachialis externus*.

LONGUS FEMORIS, in Anatomy. See *Sartorius*.

LOOF, or, as they usually pronounce it, *Luff*, is a Term used in Conding of a Ship: Thus, *Loof up*, is to bid the Steers-man keep nearer to the Wind: To *loof into an Harbour*, is to sail into it close by the Wind: To *spring the Luff*, is when a Ship, that before was going large before the Wind, is brought close by the Wind. When a Ship sails on a Wind, that is, on a Quarter-Wind, they say to the Steers-man, *Keep your Luff! Veer no more! Keep her to! Touch the Wind! Have a care of the Lee-Latch!* All which Words signify much the same thing, and bid the Man at Helm to keep the Ship near the Wind.

*Loof of a Ship*, is that part of her aloft, which lies just before the Chests-Trees; and hence the Guns, which lie here, are called her *Loof-Pieces*.

LOOKING-GLASS, a plain Glass, Speculum, or Mirror, which being impervious to the Light, reflects its Rays, and so exhibits the Images of Objects placed before it.

The Theory of *Looking-Glasses*, and the Laws whereby they give the Appearances of Bodies, see under *Mirror*.

The Manner of grinding and preparing the *Looking-Glasses* is as follows: A Plate of Glass is fixed to a horizontal Table, and to another less Table is fixed another Plate, over the hind Part of which is added a Box loaded with Stones and other Weights. Over the first Plate is sprinkled fine Sand and Water in a sufficient Quantity for the Grinding, and the second or less Plate is laid on it, and thus worked this and that way, till each has planed the others Surface. As they begin to grow smoother, finer Sand is used, and at last Powder of Smelt. Being thus fit for polishing, a wooden Parallelopiped, lined with *Tripoli* Earth, or burnt Tin, tempered with Water, is laid on the Plate, and worked to and again, till the Glass have got a perfect Politure.

'Tis found extremely difficult to bring the Glass to a perfect Plainness. *Hewelius* judges more Art required to bring a Glass to an exact Plane than to a Sphere. For polishing large Plates of Glass, they have a Machine for the purpose.

The Plates being thus polished, a thin blotting Paper is spread on a Table, and sprinkled with fine Chalk; and this done, over the Paper is laid a thin Lamina, or Leaf of Tin, on which is poured Mercury, which is to be equally distributed over the Leaf, with a Hare's Foot or Cotton. Over the Leaf is laid a clean Paper, and over that

the Glass-Plate. With the left Hand the Glass-Plate is pressed down, and with the right the Paper is gently drawn out; which done, the Plate is covered with a thicker Paper, and loaden with a greater Weight, that the superfluous Mercury may be driven out, and the Tin adhere more closely to the Glass. When it is dried, the Weight is removed, and the *Looking-Glass* is compleat.

Some add an Ounce of Mercury to half an Ounce of *Marchasite*, melted by the Fire; and lest the Mercury evaporate in Smoke, pour it into cold Water, and, when cold, squeeze it thro' a Cloth or Leather. Some also add a Quarter of an Ounce of Lead and Tin to the *Marchasite*, that the Glass may dry the sooner.

LOOM, the Weaver's Frame; a Machine whereby several distinct Threads are wove into one Piece. *Looms* are of various Structures, accommodated to the various Kinds of Materials to be wove, and the various Manners of weaving them; viz. for Woollens, Silks, Linnens, Cottons, Cloths of Gold; and other Works, as Tapestry, Ribbands, Stockings, &c. Most of which will be found under their proper Heads.

LOOP-HOLES, in the Sea-Language, are Holes made in the Comings of the Hatches of Ships, and in their Bulk-heads to fire Muskets thro' in a close Fight. And the same are they in the Covert Defences of all Fortifications.

LORD, (from a Saxon Original, signifying a Bread-Giver, Bountiful or Hospitable) is a Title of Honour variously applied amongst us; being sometimes attributed to those who are noble by Birth or Creation, otherwise call'd *Lords of Parliament*, and Peers of the Realm; sometimes to those so call'd by the Courtesy of England, as all Sons of a Duke and Marquiss, and the eldest Son of an Earl: sometimes to Persons honourable by Office, as *Lord Chief Justice*, &c. And sometimes to an inferior Person that has Fee, and consequently the Homage of Tenants within his Mannor; for by his Tenants he is call'd *Lord*, and in some Places, for distinction sake, *Land-lord*. 'Tis in this last Signification that the word *Lord* is principally used in our Law-Books; where it is divided into *Lord Paramount* and *Lord Mesn*: *Lord Mesn* is he that is Owner of a Mannor, and by virtue thereof hath Tenants holding of him in Fee, and by Copy of Court-Roll; and yet holds, himself, of a superior *Lord*, call'd *Lord Paramount*, or above him. We also read of *Very Lord* and *Very Tenant*: *Very Lord* is he who is immediate *Lord* to his Tenant; and *Very Tenant*, he who holds immediately of that *Lord*: so that where there is *Lord Paramount*, *Lord Mesn*, and Tenant; the *Lord Paramount* is not *Very Lord* to the Tenant. He is also call'd *Lord in Gros*.

*Lord-High-Admiral* of England, is one of the great Officers of the Crown, whose Trust and Honour is so great, that it has seldom been given, excepting to some of the King's younger Sons or near Kinsmen. To him is, by the King, intrusted the Management of all maritime Affairs, as well in respect of Jurisdiction as Protection. He is that high Officer or Magistrate, to whom is committed the Government of the *British* Navy, with Power to decide all Controversies, and Causes Maritime, as well Civil as Criminal, for which there is a peculiar Court; such as happen either on our own Coasts, or beyond Sea, amongst his Majesty's Subjects: and of such Wrecks and Prizes, as are called *Lagon*, *Jetson*, and *Flotson*; that is, Goods lying in the Sea floating, or cast on shore, excepting in such Royalties as are granted to other Lords of the Mannor, &c. All great Fishes, call'd *Royal Fish*, except Whales and Sturgeon: A Share of Prizes in time of War, and the Goods of Pirates and Felons condemned. The *Lord-High-Admiral* hath under him many Officers of high and low Condition; some at Sea, others at Land; some of a Military, others of a Civil Capacity: some Judicial, others Ministerial. And in his Court all Processes issue in his Name, not the King's, as it does in all other Courts; so that the Dominion and Jurisdiction of the Sea may justly be stiled another Commonwealth, or Kingdom apart, and the *Lord-High-Admiral*, Viceroy of the Maritime Kingdom. He hath under him a Lieutenant, who is Judge of the Admiralty, commonly a Doctor of the Civil Law; the Proceedings in this Court in all Civil Matters, being according to the Civil Law; but in Criminal Matters, they proceed by a Special Commission from the Secretary, according to the Laws of England.

*Lord-Privy-Seal*, hath his Office by Patent: before the 30th of Henry VIII. they were generally Ecclesiasticks; since which, the Office hath been usually confer'd on Temporal Peers, above the Degree of Barons. Under the *Privy-Seal* passeth all Charters and Grants of the Crown, and Pardons sign'd by the Sovereign before they have the Great-Seal; as also several other Matters of less Concern, as the Payment of Money, &c. which have no



no recourse to the Great-Seal. The *Lord-Privy-Seal* receiving his Warrant from the Signet-Office, issues the *Privy-Seal*, which is an Authority to the Lord Chancellor to pass the Great-Seal, where the nature of the Grant requires the Great-Seal. But *Privy-Seals* for Money begin in the Treasury, from whence the first Warrant issues, countersign'd by the Lord-Treasurer. On the *Lord-Privy-Seal* are attendant four Clerks, who have two Deputies, to act for them. The Clerks of the *Privy-Seal* and Signet have no Salaries, but Board-Wages 30*l.* per Annum, and pay Taxes; but they have considerable Fees upon Warrants, for Gift of any Office, Pension, Annuity, Special Livery, Conge d'Elire, Presentations, Pardons, Licences, &c.

*Lord-Steward of the King's Household*, is the principal Officer for the Civil Government of the King's Servants below Stairs; over the Officers of which, he has Jurisdiction. He is constituted by the Delivery of the White Staff, which is esteemed his Commission. By virtue of his Office, without any other Commission, he judges of all Offences committed within the Court, or the Verge thereof, and gives Judgment according to their several Deserts. To him it belongs at the beginning of the Parliament to attend the King, and to administer the Oaths of Allegiance and Supremacy to all the Members of the House of Commons, and at the end of Parliament to adjust Parliamentary Expences. At the Death of the Sovereign he breaks his Staff over the Hearse, in which the Royal Corps are deposited, and thereby dischargeth all the Officers under his Power.

*Lord-Lieutenants of Counties*, are Officers of great Distinction, appointed by the King for managing the standing Militia of the Country, and all Military Matters: They are generally of the principal Nobility, and of the best Interest in the County: They are to form the Militia in case of a Rebellion, &c. and march at the Head of them, as the King shall direct. They have the Power of commissioning Colonels, Majors, Captains, and Subaltern Officers; also to present the King with the Names of the Deputy-Lieutenants; who are to be selected from the best Gentry in the County, and act in the Absence of the *Lords-Lieutenants*. No Subject is to be charged with an Horseman, unless he has 500*l.* per Annum, or 6000*l.* Personal Estate; nor with a Foot-Soldier, unless he hath 50*l.* yearly, or 600*l.* Personal Estate. Subservient to the *Lords-Lieutenants*, and Deputy-Lieutenants, are the Justices of Peace, who, according to the Order they receive from them, are to issue out Warrants to the High and Petty-Constables, &c. for Military Service, &c.

LOT. See *Scot*.

LOTION, in Pharmacy, a Preparation of Medicines, by washing them in some Liquid, either made very light, so as to take away only the Dregs; or made to penetrate them, in order to clear them of some salt or corrosive Spirit; as the *Lotion* of Antimony, Precipitates, Magisteries, &c. Or else intended to take away some ill Quality, or to communicate some good one.

*Lotion* is also the Name of a Remedy, holding a Medium between a Fomentation and a Bath. There are refreshing and somniferous *Lotions* for feverish Persons, made of Leaves, Flowers and Roots boil'd, wherewith the Feet and Hands of the Patient are wash'd, and after washing, wrapp'd up in Linnen steep'd in the same Decoction till dry. There are *Lotions* also for the Head and Hair, made of the Ashes of Vine-Twigs.

*Lotion of the Philosophers*, in Chymistry, is a Cohobation which Nature makes of what is rais'd up, and afterwards falls back to the bottom of the Vessel.

*Lotion*, Wash, a Form of Medicine made up of liquid Matters, used for beautifying the Skin, and cleansing it from those Deformities which a distemper'd Blood sometimes throws on it; or rather, which are occasion'd by a preternatural Secretion; for, generally speaking, those Distempers of the Skin, which are accounted Signs of a foul Blood, proceed from the natural Salts thrown off by the cutaneous Glands, which ought to be wash'd away thro the Kidneys: so that instead of Sweetners, which are usually prescribed on these Occasions, Dr. Quincy thinks the Urinary Discharge should be promoted, or that of the Skin rectified by proper *Lotions*, or Ointments and Frictions.

LOTTERY, a kind of Game at Hazard, wherein several Lots of Merchandize, or Sums of Money, are deposited for the Benefit of the Fortunate. The Design of *Lotteries*, and the Manner of drawing them, are too well known among us to need a Description here. They are very frequent in *England* and *Holland*, where they cannot be set on foot without the Permission of the Magistrate. In *France* too they have had several in favour of their Hospitals. M. le Clerc has composed a Treatise of *Lotteries*, wherein is shewn what is laudable, and what blame-

able in 'em. Gregorio Leti also publish'd a Book on the Subject of *Lotteries*. And Father Menestrier has done the same in a Treatise publish'd in 1700. He there shews their Origin, and their Use among the Romans. He distinguishes several kinds of *Lotteries*, and takes occasion to speak of Chances, and resolves several Cases of Conscience relating thereto.

LOVE and Hatred. See *Pleasure and Pain*.

LOUIS, or LOUIS D'OR, a French Coin, first struck in 1640. under the Reign of Louis XIII. and which has now a considerable Course. *Louis d'Ors* at first were valued at 10 Livres, afterwards at 11, and at length at 12 and 14. In the latter end of Louis XIV. they were risen to 20, and in the beginning of that of Louis XV. to 30 and 36, nay 40 and upwards; with this Difference however, that in the last Coinings, the Weight was augmented in some proportion to the Price, which in the former Reign was never regarded. On one side of the Coin is the King's Head seen, with his Name; and on the other, a Cross composed of 8 L's cantoned with Crowns: The Legend is, *Christus regnat, vincit, imperat*. The Reverse has been frequently changed; at present it bears a Hand of Justice cross'd in a Saltier, with a Scepter.

There are also white *Louis's*, or *Louis d'Argent*; some of 60, of 30, 15, 5, and 4 Sols a-piece, called also *Ecus*, and among us French Crowns, Half-Crowns, &c. See *Crown*. On the one side whereof is the King's Head, and on the other the French Arms, with this Legend, *Sit nomen Domini benedictum*.

ST. LOUIS, the Name of a Military Order instituted by Louis XIV. in 1693. Their Collar is of a Flame-colour, and passes from Left to Right. The King is their Grand Master. There are in it 8 Grands-Croix, and 24 Commanders. The Number of Knights is not limited. At the time of their Institution, the King charged his Revenue with a Fund of 300000 Livres, for the Pensions of the Commanders and Knights.

LOW-BELLERS, in our Statute-Books, are Persons who go with Light and a Bell; whereby Birds sitting on the Ground become stupefied, and so are cover'd with a Net and taken.

LOXODROMY, *Rhumb*, the Course of a Ship, or the Line it describes in sailing from any Point towards another, excepting a Cardinal Point; making equal Angles with every Meridian. The word *Loxodromy* is derived from the Greek λοξο, oblique, and δρομη, Course; because it cuts the Circles of the Sphere obliquely. See *Rhumb*.

LOXODROMIQUES, the Art or Method of oblique Sailing, by the *Loxodromy* or *Rhumb*. Hence *Loxodromic Triangle*, &c. See *Rhumb*.

LOZENGE or LOZANGE, a kind of Parallelogram or quadrilateral Figure, consisting of four equal and parallel Lines or Sides, whose Angles are not right, but whereof two opposite ones are acute, and the other two obtuse; the Distance between the two obtuse ones being always equal to the Length of one Side. Some Geometricians call the *Lozenge* *Hebmauyam*, and the *Trapezium* *Hebmaurepte*. In Geometry it is ordinarily call'd *Rhombus*, and when the Sides are unequal, *Rhomboides*. Scaliger derives the word *Lozenge* from *Laurencia*, this Figure resembling in some Respects that of a Laurel-Leaf.

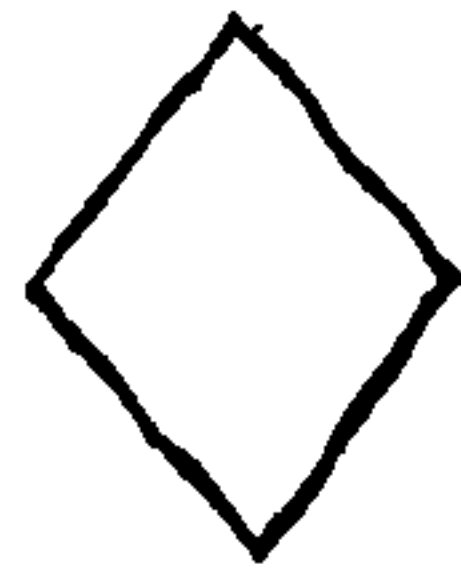
*Lozenge* is also a Term in Heraldry; and 'tis in this Figure that all unmarried Gentlemen and Widows bear their Coats of Arms; because, as some say, it was the Figure of the Amazonian Shield, or, as others, because it is the ancient Figure of the Spindle. The *Lozenge* differs from the Fusil, in that the latter is narrower in the Middle, and not so sharp at the Ends.

*Lozenges*, a Form of Medicine, made into small Pieces, to be held or chewed in the Mouth, till they are melted or wait'd.

LUCARIA, the Name of a Feast in use among the Romans. Sextus Pompeius observes, that the *Lucaria* were celebrated in the Wood, where the Romans, defeated and pursued by the Gauls, retired and concealed themselves. It was held in the Month of July, in memory of the Asylum they found in that Wood, which was between the Tyber and the Road call'd *Via Salaria*.

The Word, according to Festus and Sex. Pompeius, comes from *Lucus*, a Grove or Wood. Varro derives it from *Luce*, the Ablative of the word *Lux*, Light and Liberty. But former Etymology seems the more natural.

LUCIANIST, or LUCANIST: The Name of a Sect so called from *Lucianus* or *Lucanus*, a Heretic of the second Century. He was a Disciple of Marcion, whose Errors he follow'd, and added new ones to 'em. Epiphanius says, he abandon'd Marcion, teaching that People ought not to marry for fear of enriching the Creator: And yet other Authors mention, that he held this Error





in common with *Marcion* and the other *Gnostics*. He denied the Immortality of the Soul; asserting it to be material.

There was another Sect of *Lucianists*, who appear'd some time after the *Arians*. They taught, that the Father had been a Father always, and that he had the Name even before he had begotten the Son; as having in him the Power or Faculty of Generation: And in this manner accounted for the Eternity of the Son.

**LUCID INTERVALS**, the Fits or Paroxysms of *Maniacs*, wherein the Phrenzy leaves them in possession of their Reason. 'Tis said they are capable of making a Will in their *Lucid Intervals*.

**LUCIDA CORONA**, a fix'd Star of the second Magnitude in the Northern Garland. See *Star*.

**LUCIDA LYRA**, a bright Star of the first Magnitude in the Constellation *Lyra*. See *Star*.

**LUCIFERIAN**, the Name of a Sect, who adhered to the Schism of *Lucifer de Cagliari*, in the fourth Century. *St. Augustin* seems to intimate, that they believed the Soul transmitted to the Children by their Fathers. *Theodore* says, that *Lucifer* was the Author of a new Error. The *Luciferians* increased mightily in *Gaul*, *Spain*, *Egypt*, &c. The Occasion of this Schism was, that *Lucifer* would not allow any Acts he had done to be abolished. There were but few *Luciferian* Bishops, but a great Number of Priests and Deacons. The *Luciferians* bore a very strong Aversion to the *Arians*.

**LUES** properly signifies a Plague or Contagion, tho' according to the modern Use of the Word, especially when joined with *Gallica*, or *Venerea*, it is restrained only to the *French Pox*. See *Venercal Disease*.

**LUFF**, a Sea-Term, the same with *Loof*, which see.

**LUMBAGO**, Pains very troublesome about the Loins and the Small of the Back, such as precede Ague-Fits and Fevers. They arise commonly from Fullness and Acrimony; in common with a Disposition to Yawnings, Shuddering, and erratick Pains in other Parts; and go off with Evacuation, generally by Sweat, and other critical Discharges of Fevers.

**LUMBARES**, an Epithet given to those Branches of the *Arteria Aorta*, which carry the Blood to the Muscles of the Loins. The Term is also applied to certain Veins, which bring back the Blood from the Loins into the Trunk of the *Vena Cava*. There is also a Muscle of the Thigh that bears this Name. See *Psoas*.

*Lumbares Glandulae*. See *Laëal Veins*.

*Lumbares Vena & Arteria*, several so called, while in their Passage thro' the Loins; from *Lumbus*, Loins.

**LUMBRICAL**, an Epithet which the Physicians give to four Muscles, that serve to move the Fingers. They are call'd *Lumbricales*, or *Vermiformes*, from the Resemblance they bear to Worms. There is a like Number in the Feet.

*Lumbricales Musculi*, (called also *Vermiculares*, in regard of the resemblance they bear to Worms by their Smallness and Shape) are Muscles of the Hands, commonly supposed to be nothing but Branches of the Tendons of the *Perforans*, which go to the Inside of the first Bone on each Finger, and are supposed to contribute to the Variety of Motions with the Fingers, by giving a Diversion to the direct Actions of the other Muscles; but simply, they only serve to draw the Fingers towards the Thumb. *Mr. Cowper* indeed observes, that some of them have distinct Origins; and suspects that the rest may have so too, and therefore makes them distinct Muscles.

There are also *Lumbricales* of the Foot, which arise as in the Hand, one from each Tendon of the *Perforans* or *Profundus*, and go to the Inside of each of the lesser Toes.

**LUNA**, in the Jargon of the Chymists, signifies Silver; from the supposed Influence of that Planet (the Moon) thereupon. The Medicinal Virtues of this Metal, *Dr. Quincy* says, are none at all, until it hath undergone very elaborate Preparations. See *Silver*.

**LUNAR**, something belonging to the Moon. *Lunar Periodical Months* consist of 27 Days and a few Hours; *Lunar Synodical Months* of 29 Days, 12 Hours, and three quarters of an Hour. See *Month*. *Lunar Years* consist of 354 Days, or 12 Synodical Months. In the first Ages the Year accounted by all Nations was *Lunar*; the Variety in Course being more frequent in this Planet, and of consequence more conspicuous, and better known to Men than those of any others. The *Romans* regulated their Year, in part, by the Moon till the time of *Cæsar*. See *Year*. The *Jews* too had their *Lunar Months*. Some Rabbins pretend that the *Lunar Month* did not commence till the moment the Moon began to appear, and that there was a Law, which obliged the Person who discovered it, first, to go and inform the Senate thereof. Upon which, the President solemnly pronounced the Month began, and Notice was given of it

to the People by Fires lighted on the Tops of Mountains. But this looks somewhat chimerical.

**LUNATIC**, something affected or governed by the Moon. Hence mad People are called *Lunatics*, it having antiently been an Opinion, that such Persons were much influenced by that Planet. A much sounder Philosophy hath taught us, that there is something in it; but not in the manner the Antients imagined; nor otherwise than what it has in common with other heavenly Bodies, occasioning various Alterations in the Gravity of our Atmosphere, and thereby affecting human Bodies. See *Comet*, *Planet*, &c. See also *Tides*.

**LUNATION**, a Revolution of the Moon, or the Time between one New Moon and another; which is called a *Synodical Month*, consisting of 29 Days, 12 Hours, and three quarters of an Hour. At the end of 19 Years the same *Lunations* always return, on the same Day, but not at the same precise Time of the Day; there being a Difference of one Hour, 27 Minutes, and 33 Seconds. Herein the Antients were mistaken, taking the Use of the Golden Number to be more sure and infallible than it is. It has been found since, that in 312 Years and an half the *Lunations* gained a Day on the beginning of the Month; so that when they came to reform the Calendar, the *Lunations* happened in the Heavens four or five Days sooner than was shewn by the Golden Number. To remedy which, we now make use of the perpetual Cycle of Epacts. We take 19 Epacts, which answer to a Cycle of 19 Years; and when at the end of 300 Years the Moon has gain'd a Day, we take 19 other Epacts: which is also done, when by the Omission of an Intercalary Day, which happens three times in 400 Years, the Calendar is adjusted to the Sun. Care is taken that the Index of the Epacts must never be changed, excepting at the Conclusion of a Century, when there is occasion for it, on account of the Metempsychosis or Proempsychosis; that is, of the Lunar or Solar Equation. When the Bissextile or Intercalary Day is suppress'd without a Lunar Equation, the next following or lower Index is taken, as was done in 1700. When there is a Lunar Equation without suppressing the Bissextile, the next preceding or higher Index is taken; as will be done in 2400. When there is both an Equation and a Suppression, as in 1800; or neither the one nor the other, as in 2000; the same Index is retain'd. See *Month*, *Moon*, &c.

**LUNE**, or *Lunula*, in Geometry, a Plane, in figure of a Crescent or Half-Moon, terminated by the Circumference of two Circles that intersect each other within.

Tho the Quadrature of the intire Circle was never yet effected, yet the Geometricians have found out the Squares of many of its Parts. The first partial Quadrature was that of the *Lunula*, given by *Hippocrates* of *Scio*, who of a shipwrecked Merchant commenced Geometrician. Let *A E B* (*Tab. Geometry, Fig. 8.*) be a Semicircle, and *G C = G B*; with the Radius *B C* describe a Quadrant *A F B*; then will *A E B F A* be *Hippocrates's Lune*. And since  $B C^2 = 2 G B^2$ , the Quadrant *A G B C* will be equal to the Semicircle *A E B*; taking away therefore from each the common Segment *A F G A*;  $A E B F A =$  to the Triangle  $A C B = G B^2$ .

**LUNETTES**, in Fortification, are Enveloppes, Counterguards, or Mounts of Earth cast up before the Curtain, about five Fathom in breadth. They are usually made in Ditches full of Water, and serve to the same purpose as False Braies. These *Lunettes* are composed of two Faces, which form a re-entering Angle; and their Platform being only twelve foot wide, is a little raised above the Level of the Water; and hath a Parapet three Fathom thick.

**LUNGS**, a Part in the Human Body, consisting of Vessels and membranous Vesicles; and serving for Respiration. The *Lungs* are connected, above, to the Fauces, by means of the *Trachea*; and below, to the *Vertebrae* of the *Tborax*; and to the *Sternum* and *Diaphragma* by means of the *Pleura*. They are divided into two great Lobes by the *Mediastinum*, and those again into others lesser; the right sometimes into three or four, by means of some Fissures running from the fore to the back Edge. The great Lobes, when inflated, resemble each of them a Horse's Hoof in Figure, but together they are liker an Ox's inverted.

The Substance of the *Lungs* is membranous, consisting chiefly of innumerable Cells or Vesicles; which seem to be nothing but Expansions of the Membranes of the *Bronchia*, to which they hang like Grapes in Clusters; so that by blowing into one of the Branches of the *Bronchia*, those Cells or Vesicles belonging to it are blown up; the rest, which do not, remaining still flaccid and unaltered.

These Clusters of Vesicles or Cells are called the *Internal Lobules*, by which Name they are distinguished from the lesser Lobes spoken of. They are separated from one



one another by Interstices, which receive the Vessels; and are filled up with Membranes propagated from the Lobules, and lying, some parallel, some angular. These Lobules discover and display themselves very exactly, if the larger Trunks of the *Bronchia* be laid open, and the lesser blown into; by which means every Lobule belonging to that Branch will be inflated, and rise very distinctly, and shew its Extent.

The whole Substance of the *Lungs* is covered with a common Membrane, which is divisible into two Coats; the outer thin, smooth, and nervous; the inner somewhat thicker and rougher, consisting mostly of the Extremities of Vessels and Vesicles, through the Impression of which it is pitted, and resembles in some measure a Honey-Comb. Some affirm that in this Coat are abundance of Perforations or Pores, so disposed that they readily imbibe any Humidity from the Cavity of the *Thorax*, but suffer nothing to escape into it: but this seems little more than Fancy.

The Vessels of the *Lungs* are the *Bronchia*, the Pulmonary and Bronchial Arteries and Veins, Nerves and Lymphatics. Of these Vessels some are proper and some common, in respect of the Service they are of to the rest of the Body. The common are the *Bronchia*, the Pulmonary Artery and Vein, the Nerves and Lymphatics; the proper are the Bronchial Artery and Vein. See each in its place.

The *Trachea*, just before it enters the *Lungs*, divides itself into two Branches, sending to each Lobe one; which are again subdivided into innumerable Ramifications, call'd *Bronchia*. The *Bronchia* and their Branches consist of Cartilages like the *Trachea*, only here the Cartilages are perfectly circular, without any membranous hinder Part; of which, having left the *Oesophagus*, they have no need. These circular Cartilages are joined together by the Membranes that invest them, and are capable of being shot out into Length upon Inspiration, and of shrinking up and running into one another in Expiration, when the Cavity of the *Thorax* is lessened. They send their little Ramifications to all the little Vesicles of the *Lungs*. Along with these Air-Vessels run the Branches of the Pulmonary Artery and Vein; sending their Ramifications exactly along with the other; the Artery bringing the Blood from the right Ventricle, and the Vein carrying it back to the left Ventricle of the Heart. Whether the Blood returns by the Vein impregnated with Air in the *Lungs*, is still a Question.

The Bronchial Artery arises from the hind Part of the *Aorta*, a little above the Basis of the Heart, whence, turning off to the right, it embraces the *Trachea*; and after sending off a Branch or two to the *Oesophagus*, pursues the Course of the *Bronchia*, accompanying all their Branches through their whole Progress. This Artery is sometimes single, but oftener there are two of them, and sometimes three, arising at near a Finger's breadth from each other. With these Arteries is a Vein, whose Branches arise from the Ramifications of the capillary Arteries: whether the Blood returns by one or more Trunks, does not appear. These Vessels bring Blood for the Nutriment of the *Bronchia* and Vesicles of the *Lungs*, and carry it back again.

Thro' the *Lungs* are distributed a great Number of Lymphatics, attending generally the Blood-Vessels; and being at length collected, discharge themselves into the *Thoracic Duct*.

Dr. Willis, contrary to the common Opinion, ascribes to the *Lungs* a great Number of Nerves, which come from the Trunk of the *Par Vagus*; and which being distributed thro' the Substance of the *Lungs*, embrace the aërious and sanguiferous Vessels. He also asserts, that the *Vesicle* have musculous Fibres, to enable them to exert a greater contractive Force in Expiration; tho' others deny any such Fibres. *Diemerbroeck* observes, that the *Vesicles* admit not only of Air, but also of other grosser Matters; and instances two Asthmatic Persons which he opened, the one a Stone-Cutter, the *Vesicle* of whose *Lungs* were so stuffed with Dust, that, in cutting, his Knife went as if thro' a Heap of Sand; the other a Feather-Driver, in whom the *Vesicles* were full of the fine Dust or Down of Feathers. For the Use and Action of the *Lungs*, see *Respiration*, *Voice*, &c.

LUNISOLAR, in Astronomy and Chronology, is understood of something composed of the Revolution of the Sun, and of that of the Moon. Thus we say the *Lunisolar Year*; which is a Period of Years made by multiplying the Cycle of the Moon, which is 19, by that of the Sun, which is 28, the Product of which is 532; in which Space of Time those two Luminaries return to the same Points.

LUPERCALIA, Feasts instituted in ancient Rome in Honour of the God *Pan*. The *Lupercalia* were celebrated on the 15th of the Calends of *March*, that is, on the 15th of February, or, as *Ovid* observes, on the third Day after

the Ides. They are supposed to have been established by *Evander*. On the Morning of this Feast the *Luperci*, or Priests of *Pan*, run naked thro' the Streets of Rome, stroaking the Women they met on the Hands and Belly with the Skin of a Goat, and promising them Fecundity and happy Deliveries. The Reason of this indecent Custom in celebrating the *Lupercalia*, took its Rise from *Romulus* and *Remus*; for while they were assisting at this Feast a Body of Robbers, taking hold of the Occasion, plundered them of their Flocks. Upon this the two Brothers, and all the Youth that was with them, throwing off their Clothes, to be the more expedite, pursued the Thieves; and recovered their Prey. This succeeded so well, that thenceforward this Ceremony became a part of the *Lupercalia*. This Feast was abolished in the time of *Augustus*, but afterwards restored, and continued to the Time of the Emperor *Anastasius*. *Baronius* says, it was abolished by the Pope in 496. *Natalis Comes* calls likewise *Lupercalia* the Feasts celebrated in ancient Greece, under the Name of *Lycea*, which see. The Word comes from *Lupercal*, the Name of a Place under the *Palatine Mountain*, where the Sacrifices were performed.

LUPERCI, the Name given to the Priests of the God *Pan*. The *Luperci* were the most ancient Order of Priests in Rome; they were divided into two Colleges or Companies, the one called *Fabius*, and the other *Quintilius*. To these *Cæsar* added a third, which he call'd *Julius*. *Suetonius* mentions the Institution of this new College of *Luperci*, as a thing that render'd *Cæsar* more odious than he was; however, it appears from the same Passage of *Suetonius*, that this new Company was not instituted by *Cæsar*, nor in Honour of *Pan*, but by some Friends of *Cæsar*, and in Honour of himself.

LUPUS, the Wolf, a Southern Constellation, consisting of 19 Stars. See *Star*.

LUSTRAL, an Epithet applied by the Antients to the Water used in their Ceremonies to sprinkle and purify the People. From them the *Romanists* have borrowed the Holy Water used in their Churches. The Antients call'd *Dies Lustricus*, or *Lustral Day*, that whereon the Lustrations were performed for a Child, and its Name given; which was the ninth Day from the Birth of a Boy, and the eighth from that of a Girl. Others performed the Ceremony on the last Day of that Week wherein the Child was born, and others on the fifth Day from its Birth. Over this Feast-Day the Goddess *Nundina* was supposed to preside. The Midwives, Nurses, and Domestic servants handed the Child backwards and forwards around a Fire burning on the Altars of the Gods, after which they sprinkled it with Water. The old Women mixed *Saliva* and Dust with the Water. The whole ended with a sumptuous Entertainment.

LUSTRATION; Expiation, Sacrifices, or Ceremonies, by which the *Romans* purified their Cities, Fields, Armies, or People defiled by any Crime or Impurity. Some of their *Lustrations* were publick, others private. They had a kind of *Lustration*, without Victims, for Children, on the eighth Day for Girls, and on the ninth for Boys. *Lustration* was the same thing with Purification. There were three different Species of it, or it was performed in three different Manners, by Fire and Sulphur, by Water, and by Air; which last was performed by fanning and agitating the Air round the thing to be purified.

LUSTRE, the Brilliant appearing on any thing, particularly Manufactures of Silk, Wooll, and Stuff. *Lustre* is also used for the Composition or Manner of giving that Brilliant. The *Lustre* of Silks, which is their chief Quality, is given them by washing in Soap, then clear Water, and laying them in a cold Alum Bath. The *Lustre* of black Taffeta is given by double-brewed Beer, boiled with Orange or Lemon Juice; that of coloured Taffeta's with Water of Gourds, distilled in an Alembic. Curriers give their *Lustre* several ways, according to the Colour to be illustrated: For Blacks, the first *Lustre* is with Juice of Barberries; the second with Gum Arabic, Ale, Vinegar, and *Flanders Glue* boiled together: For colour'd Leathers, they use the White of an Egg beaten in Water; *Morocco's* have their *Lustre* from Juice of Barberries, and Lemon or Orange: For Hats, the *Lustre* is frequently given with simple Water, sometimes a little black Teint is added. The same *Lustre* serves the Skinners, except that in white Furs they never use any black Dye. For very black Furs they sometimes prepare a *Lustre* of Galls, Copperas, *Roman Alum*, Ox's Marrow, and other Ingredients. The *Lustre* is given to Cloths and Mohairs by pressing them under the Calendar.

LUSTRUM, a Term used by the *Romans* to signify a Space of five Years. *Varro* derives the Word from *lucro*, to pay, because at the beginning of each five Years they paid the Tribute that had been imposed by the Censors; whose Authority, at their first Institution, was continued them for five Years; tho' afterwards it was abridged to



one. This Custom was established by *Servius Tullius* in the Year of Rome 180. Others rather derive the Word from *lustrare*, to make a Review, because once in five Years the Censors reviewed the Army.

*Lustrum* was also a Ceremony or Sacrifice used by the Romans after numbering their People once in five Years.

**LUTE**, in Chymistry, any sort of Cement or Plaster; us'd either in the Construction of Furnaces, or in fitting to them Vessels of Glass or Earth; that are to resist a very violent Fire. It is frequently made of Potter's Earth, River Sand, Horses Dung, Powder of broken Pots, *Caput Mortuum* of Vitriol, Dross of Iron, beaten Glass, Flocks of Wool mix'd with salt Water or Bullock's Blood.

The Lute us'd by *Lemery*, was only two Parts of Sand and one of Clay, tempered together in Water; which does very well for joining the Noses of Retorts and their Receivers in distilling of volatile Spirits, &c. In distilling by the Alembic, or Vesica, or Copper Body, with its Head or Serpentine, a wet Bladder serves very well to lute the Junctures of the Vessels: But for the Distillation of corrosive Spirits, as also to stop the Cracks of Glasses, &c. the following Composition is recommended, viz. Starch boiled, or Fish-Glue dissolved in Spirit of Wine, with Flower of Sulphur, Mastic, and Lime slacked in Milk. *Lutum Sapientie* is the Hermetical Seal, which is made by melting the End of a Glass Matrafs by a Lamp, and twisting it up with the Pliers. See *Hermetical Sealing*. The Word comes from the Latin *Lutum*, Clay.

**LUTE**, a Musical Instrument with Strings. It had anciently but five Rows of Strings; but in course of time four, five, or six more have been added. The Lute consists of four principal Parts, the Table, the Body or Belly, which has nine or ten Sides, the Neck, which has nine or ten Stops or Divisions mark'd with Strings, and the Head or Cross, wherein are Screws for raising or lowering the Strings to the proper Tone. In the middle of the Table is a Rose or Passage for the Sound. There is also a Bridge that the Strings are fastened to, and a Piece of Ivory between the Head and the Neck, to which the other Extremity of the Strings are fitted. In playing, the Strings are struck with the right Hand, and with the left the Stops are pressed. We call Temperament of the Lute the proper Alteration that is to be made in the Intervals, both with regard to Consonances and Dissonances, in order to render them more just on the Instrument. Some derive the word from the German *Laute*, which signifies the same thing, or from *lauten*, sonare. *Scaliger* and *Bockart* derive it from the Arabic, *Allaud*. The Lutes of *Boulogne* are esteem'd the best, on account of the Wood, which is said to have an uncommon Disposition for producing a sweet Sound.

**LUTHERANISM**, the Sentiments of *Dr. Martin Luther*, with regard to Religion. *Lutheranism* had its Rise in the 16th Century. Its Author was born at *Eisleben* in *Thuringia* in 1483. After his Studies he enter'd himself among the *Augustines*. In 1512, took the Cap of a Doctor in Theology in the University of *Wittenburg*. In 1516, he attack'd the School-Divinity in several Theses. In 1517, *Leo X.* having order'd Indulgences to be dispens'd to those who should contribute towards the building of *St. Peter's* at *Rome*, he gave a Commission thereof to the *Dominicans*. The *Augustines* thinking they had a Title to it before any body else, *John Staupitz*, their Commissary-General, appointed *Luther* to preach against those Dispensers of Indulgences. *Luther* acquitted himself in a manner that perhaps the Commissary had not imagin'd. From the Preachers of Indulgences he proceeded to Indulgences themselves, and declaim'd very warmly both against the one and the other. At first he only advanc'd ambiguous Propositions, but being engag'd in dispute about them, he maintain'd them openly and without Reserve, insomuch that in 1520 he was solemnly condemn'd and excommunicated by the Pope. But neither the Pope's Thunder, nor the Condemnation of several Universities, could make any Impression of Terror upon him; but he continued preaching, writing and disputing, not against Indulgences only, but several other Corruptions that then prevail'd in the Church. The Character of the Man, the Strength of his Arguments, and the Weakness of his Adversaries Cause, soon procur'd him a Number of Followers. And thus it was that *Lutheranism* was form'd; the Adherents whereto were call'd *Lutherans*, from *Luther*, a Name that has a Greek Turn, and which he assum'd in lieu of his Family-Name, *Lotter* or *Lauter*; it being the Custom of those Days for Men of Learning to give themselves Greek Names: witness *Erasmus*, *Melancthon*, *Bucer*, &c. In 1523, *Luther* quitted the Habit of a Religious, and in 1524, married; after having been a happy Instrument of reforming a great part of *Germany*, under the Protection of *George Duke of Saxony*. He died at his native Place in 1546.

*Lutheranism* has undergone some Alterations since the time of its Founder. *Luther* rejected the Epistle of *St. James*, as inconsistent with the Doctrine of *St. Paul* in relation to Justification; he also set aside the *Apocalypse*: both which are now receiv'd as Canonical in the *Lutheran Church*. *Luther* first reduc'd the Number of Sacraments to two, viz. Baptism and the Eucharist; but believ'd the Impanation or Consubstantiation: that is, that the Matter of the Bread and Wine remain with the Body and Blood of Christ; and 'tis in this Article that the main Difference between the *Lutheran* and *English* Churches consists. *Luther* maintain'd the Mass to be no Sacrifice; exploded the Adoration of the Host, Auricular Confession, Satisfactory Works, Indulgences, Purgatory, the Worship of Images, &c. which had been introduc'd in the corrupt Times of the *Romish Church*. He also oppos'd the Doctrine of Free Will, maintain'd Predestination, asserted that we are necessitated in all we do, that all our Actions done in a State of Sin, and even the Virtues themselves, of Heathens, are Crimes; that we are only justify'd by the Imputation of the Merits and Satisfaction of Christ. He also oppos'd the Fastings in the *Romish Church*, Monastical Vows, the Celibate of the Clergy, &c.

Some Authors reckon thirty-nine different Sects among the *Lutherans*: viz. the *Confessionists*, call'd also *Miricains*; *Antinomians*, *Samosatenses*, *Inferians*, *Antidiaphorists*, *Antiswenfeldians*, *Antiochians*, *Anticalvinists*, *Layers on of Hands*, *Bissacramentals*, *Trissacramentals*, *Majonites*, *Adiaphorists*, *Quadrissacramentals*, *Luthero-Calvinists*, *Amneistes*, *Mediosandrians*, *Confessionists firm and wavering*, *Sufeldians*, *Onandrians*, *Stuonarians*, *Antisancarians*, *Zuinglians simple*, *Zuinglians significative*, *Carlostadians*, *Evargic Tropists*, *Arrabonarii spiritual*, *Sucefeldians*, *Servetians*, *Davidicks* or *Davidi-Georgians*, *Memnonites*, &c. *Jovet T. 1. p. 475.*

**LUTHERN**, or *Dormer*, a kind of Window over the Cornice, in the Roof of a Building; standing perpendicularly over the Naked of the Wall; and serving to illumine the Upper-Story. The *French* Architects distinguish these into various kinds, according to their various Forms; as Square, Semicircular, Bulls Eyes, flat Arches, *Flemish Lutherens*, &c. The Word comes from the Latin *Lucerna*, Light or Lanthorn.

**LUXATION**, in Chirurgery, a Relaxation of the Tendons or Ligaments, occasioning the Bones to slip out of their Junctures, or at least to remain very loosely in their natural Situation. The proper *Luxation* is when the Bone is entirely out of the Cavity it should move in; which may be done various ways, and there are as many ways of reducing it; according to the particular Formation and Articulation of the Joint: for which, see the Books of Practical Surgery.

**LYCANTHROPY**, a kind of Phrenzy or Disease, that urges People to run thro the Streets and Fields in the Night; arising from the Bite of a mad Wolf. The Symptoms, &c. are in most respects the same with that of the *Hydrophobia*; which see. The Word comes from the Greek *λύκος*, *Lupus*, and *άνθρωπος*, *Homo*; as who should say, *Man-Wolf*.

**LYCEUM**, the Name of a celebrated School at *Athens*, where *Aristotle* explain'd his Philosophy. The Place was compos'd of Portico's, and Trees planted in the Figure of an V. Hence the Philosophy of the *Lyceum* is us'd to signify the Philosophy of *Aristotle*, or the *Peripatetic Philosophy*.

*Suidas* observes, that the Place took its Name from its having been originally a Temple of *Apollo*, or rather a Portico or Gallery built by *Lycus*, Son of *Apollo*; but others mention it to have been built by *Pisistratus* or *Pe-ricles*.

**LYGMOS**. See *Hiccup*.

**LYMPH** or **LYMPHA**, in Anatomy, a thin transparent Humour, something like Water; secreted from the Serum of the Blood in all Parts of the Body, and return'd to the Blood again by proper Ducts of its own; supposed by some to be the immediate Matter of Nutrition. If the *Lymph* be chymically examin'd, it will be found to contain a great deal of volatile, but no fix'd Salt, some Phlegm, some Sulphur, and a little Earth.

The Use of the *Lymph* may be gather'd from the Consideration of the Parts into which it dischargeth itself. That which comes from the Head, Neck, and Arms, is thrown into the Jugular and Subclavian Veins. All the *Lymphatics*, which the Parts in the Cavity in the Thorax send out, empty themselves into the Thoracic Duct; and the *Lymph*, from all the rest of the Body, flows to the common Receptacle; so that there can be no doubt, but that its chief Use is to dilute and perfect the Chyle before it mixes with the Blood.

**LYMPHATICS**, or **LYMPHÆDUCTS**; very small, fine, hollow Vessels, generally arising from the Glands, and conveying back to the Blood a transparent Liquor, call'd *Lymph* or *Lympha*. These, tho not so visible as the



other Vessels, because of their Minuteness and Transparency, are however existent in all Parts of the Body; but the Difficulty of finding them, has prevented their being described in many Parts. The *Lymphatics* are contracted at small and unequal Distances, by two opposite semi-lunar Valves, which permit the *Lymph* to pass through them towards the Heart, but shut, like Flood-Gates, upon its returning. They arise in all Parts of the Body, but after what manner, needs no great Dispute; for, without doubt, all the Liquors in the Body, excepting the Chyle, are separated from the Blood in the fine Capillary Vessels, by a different Pipe from the common Channel in which the rest of the Blood moves: but whether this Pipe be long or short, whether it be visible or invisible, it is still a Gland, whilst it suffers some part of the Blood to pass thro it; denying a Passage to the rest. Now the Glands which separate the *Lymph* must be of the smallest kinds, for they are invisible to the finest Microscope; but their excretory Ducts, the *Lymphatic* Vessels, unite with one another, and grow larger, as they approach the Heart: yet they do not open into one common Channel, as the Veins do; for sometimes we find two, or three, or more *Lymphatics*, running by one another; which only communicate by short intermediate Ducts, and which unite, and immediately divide again. In their Progress, they always touch at one or two conglobate or vesicular Glands, into which they discharge themselves of their *Lympha*. Sometimes the whole *Lymphatic* opens at several Places into the Gland, and sometimes it sends in only two or three Branches, whilst the main Trunk passes over, and joins the *Lymphatics* which arise from the opposite sides of the Glands, exporting again their *Lympha* to their common Receptacles. Now the Glands of the Abdomen, which receive the *Lymphatics* from all its Parts, as likewise from the lower Extremities, are the *Glandula Inguinales*, *Sacrae*, *Iliacae*, *Lumbares*, *Mesentericae*, and *Hepaticae*; all which send out new *Lymphatics*, which pour their Contents into the *Receptaculum Chyli*, as those of the Chest, Head and Arms, do into the *Ductus Thoracicus*, Jugular, and Subclavian Veins. These Glands are round and smooth Bodies, about the Bigness of a Hazle Nut, bigger or lesser, according to the number of *Lymphatics* they receive. Their Substance is membranous, and their whole Bulk divided into little Cells, which receive the *Lymph* from the *Lymphatics*; and are therefore improperly call'd Glands, because they separate no Liquor from the Blood: It is true, that their exporting *Lymphatics*, communicating with their Arteries, do receive a *Lymph* from them; but this is done without the help of conglobate Glands; as the lacteal Veins do with the capillary Arteries of the Guts: the chief Use of their vesicular Bodies seems to be, that the slow-moving *Lympha* may receive a greater Velocity from the elastic Contraction of their membranous Cells, as well as from the new *Lymph* immediately derived from the Arteries. See *Gland*.

LYRA, or LYRE, the same with *Cithara*, a Harp; a stringed Instrument much used among the Antients; said to have been invented by *Mercury*, on occasion of his finding a dead Shell-Fish, call'd by the *Greeks* *Chelone*, and the *Latins* *Testudo*, left, on an Inundation of the Nile; of the Shell whereof he form'd his *Lyre*, mounting it with seven Strings, according to *Lucian*, and adding a kind of *Jugum* to it, to stretch or loosen the Strings. *Boethius* re-

lates the Opinion of some, who say that *Mercury's Lyre* had but four Strings, in imitation of the Mundane Music of the four Elements; *Diodorus Siculus* says it had but three Strings, in imitation of the three Seasons of the Year; which were all the *Greeks* counted, viz. Spring, Summer and Winter. *Nicomachus*, *Horace*, *Lucian*, and others, make it have seven Strings, in imitation of the seven Planets. This three, four, or seven-stringed Instrument *Mercury* gave to *Orpheus*; who being torn to pieces by the *Bacchantes*, the *Lyre* was hung up by the *Lebians* in *Apollo's* Temple. Others say, *Pythagoras* found it in some Temple in *Egypt*, and added an eighth String. *Nicomachus* says, that when *Orpheus* was kill'd, his *Lyre* was cast into the Sea, and thrown up at *Antissa* a City of *Lesbos*; where the Fishers finding it, gave it to *Terpander*; who carried it into *Egypt*, and call'd himself the Inventor. The seven Strings were diatonically disposed by Tones and Semi-Tones, and *Pythagoras's* eighth String made up the Octave.

From the *Lyra*, which all agree to be the first Instrument of the stringed kind in *Greece*, arose an infinite Number of others, differing in Shape and Number of Strings; as the *Psalterium*, *Trigon*, *Sambuca*, *Pellis*, *Magadis*, *Barbiton*, *Testudo*, (the two last used promiscuously by *Horace* with the *Lyra* and *Cithara*) *Epigonium*, *Simmicium* and *Pandura*; which were all struck with the Hand or a *Plectrum*.

The *Lyra* among Painters, Statuaries, &c. is an Attribute of *Apollo* and the Muses.

*Lyra* is also a Constellation in the Northern Hemisphere, consisting of thirteen Stars. See *Star*.

LYRIC; something sung, or play'd on the Lyre or Harp. The Word is particularly applied to the ancient Odes and Stanza's; which answer to our Airs or Tunes, and may be play'd on Instruments. The Antients were great Admirers of *Lyric* Verses, which Name they gave to such Verses as do not come under either of the two ordinary Kinds of Verse, viz. Hexameters and Iambics. These were principally used in Odes, and in the Chorus's of Tragedies. The Characteristic of *Lyric* Poetry, and that which distinguishes it from all others, is Sweetness. As Gravity rules in Heroic Verse; Simplicity in Pastoral, Tenderness and Softness in Elegy, Sharpness and Poignancy in Satire, Mirth in Comedy, the Pathetic in Tragedy, and the Point in Epigram; so in the *Lyric*, the Poet applies himself wholly to sooth the Minds of Men by the Sweetness and Variety of the Verse, and the Delicacy of the Words and Thoughts, the Agreeableness of the Numbers, and the Description of Things most pleasing in their own Nature. See *Ode*, *Song*, &c.

LYSIARCHA, the Name of an ancient Magistrate or Pontiff of *Lycia*. *Strabo* observes, that the *Lysiarcha* was created in a Council, consisting of the Deputies of twenty-three Cities, that is, of all the Cities in the Province; some of which Cities had three Voices, others two, and others but one. *Cardinal Noris* says, that the *Lysiarcha* presided in Matters of Religion; in effect, the *Lysiarcha* was nearly the same with the *Asiarcha* and *Syriarcha*; who, tho they were all the Heads of the Councils or States of those Provinces, yet were they establish'd principally to take care of the Games and Feasts celebrated in honour of the Gods, whose Priests they were inaugurated at the same time that they were created *Lysiarcha*, *Syriarcha*, or *Asiarcha*.





**M**, A Consonant, and the Twelfth Letter in the *English* Alphabet. It is pronounced by striking the upper Lip against the lower; in which the Pronunciation of this Letter agrees with that of *b*: the only Difference between the two consisting in a little Motion made in the Nose in the Pronunciation of *M*, and not in *b*: whence it happens that those who have taken Cold, for *M* ordinarily pronounce *B*; the Nose in that case being disabled from making the necessary Motion. See *B*.

*Quintilian* observes, that the *M* sometimes ends *Latin* Words, but never *Greek*; the *Greeks* always changing it in that Case into *N*, for the sake of the better Sound.

*M* is also a Numeral Letter, and among the Antients was used for a Thousand; according to the Verse,

*M Caput est Numeri quem scimus Mille tenere.*

When a Dash is added a top of it, it signifies a thousand times a thousand; *M̄*.

The Letter *M* in Astronomical Tables, and other things of that kind, is used for Meridional or Southern.

*M*, in Medicinal Prescription, is frequently used to signify a Manipule, or Handful; and is sometimes also put at the end of a *Recipe*, for *Misce*, mingle; or *Mixtura*, a Mixture.

*M*, in Law, was the Brand or Stigma of a Person convicted of Murder, and admitted to the Benefit of his Clergy. It was burnt on the Brawn of his left Thumb.

**MACARONIC**, or **MACARONIAN**; a kind of Burlesque Poetry; consisting of a Jumble of Words of different Languages, with Words of the vulgar Tongue latiniz'd, and *Latin* Words moderniz'd. For Instance, a bold Fellow, in the *Macaronic* Stile, says;

*Enfilavi omnes Scadrones & Regimandos, &c.*

Another Example:

*Archeros Pistoliferos furiamque Manantum,  
Et grandem esmentam que inopinum facta Ruella est:  
Toxinumque alto troublantem Corda Clochero, &c.*

*Macarone*, among the *Italians*, as has been observed by *Cælius Rhodiginus*, signifies a coarse clownish Man; and because this kind of Poetry, being patch'd out of several Languages, and full of extravagant Words, is not so polite and smooth as those of *Virgil*, &c. the *Italians*, among whom it had its Rise, gave it the Name of *Macaronian* and *Macaronic* Poetry. Others rather chuse to derive it à *Macaronibus*, from *Makarons*; a kind of little Cakes made of Meal not bouted, with Eggs and Cheese; accounted a great Dainty among the Country People in *Italy*; which, from their being composed of various Ingredients, occasion'd this kind of Poetry, which consists of *Latin*, *Italian*, *Spanish*, *French*, *English*, &c. to be called by their Name.

*Theoph. Folingius*, a *Benedictin* Monk of *Mantua*, was the first who invented, or at least cultivated, this kind of Verse: For tho we have a *Macaronea Ariminensis* in a very old Letter, beginning, *Est Author Tiphis Leonicus atque Paransus*; yet it seems to have been the Work of *Guarinus Capellus Sarfinas*, who in the Year 1526 printed six Books of *Macaronic* Poetry, in *Cabrinum Gagamoge Regem*: but as both these came out after the first Edition of *Folingius*, which was publish'd under the Name of *Merlin Coccaye*, in 1520; so were they likewise much inferior to him both in the Stile, Invention and Episodes wherewith he has enrich'd the History of *Baldus*; which makes the Subject of his Poem. The famous *D. Rabelais* translated the *Macaronic* Stile out of the *Italian* Verse into *French* Prose, and on the Model thereof form'd some of the best things in his *Pantagruel*. *Merlin Coccaye* met with so much Success in his new Way, that he composed another Book partly in *Macaronic* Stile, call'd *Il Chars del tri per uno*; but with very different Success. After this, appear'd in *Italy*, *Macaronica de Syndicatu, & Condemnatione Doctoris Samsonis Lembi*, a low Performance; and *Macaronis Forza*, an excellent one, by *Stefonio a Jesuit*. In 1620, *Bajani* published a *Carnavale Tabula Macaronea*. The last *Italian* who wrote in this way, was *Cesar Ursinius*, to whom we owe *Capricia Macaronica Magistri Stopini Poete Pouzanensis*, printed in 1636. The first who succeeded in the *Macaronic* Stile among the *French* was *Antonius de Arena Provensalis de Bragardissima Villa de Soleris*, in two Poems, which he has left us; *de Arte Danfandi*, & *de Guerra Neapolitana Romana & Genuensi*. He was follow'd by another Lawyer, who wrote *Historia Bravissima Caroli V. Imperat. a Provincialibus Paysanis triumphanter fugati*. Some time after *Remi Belleau*, among his other *French* Poesies, printed *Distamen Merisicum de Bello Hugonotico, & Rusticorum Pigliamine ad Sodales*; a Piece much valued. This was succeeded by *Cuefangu Reistro Suizzo Lanfquemetorum per M. J. B. Lichiardum Spal-*

*spercinum Poetam*; to which *Stephen Tabouret* return'd an Answer in the same Strain. Lastly, *John Edward du Menin* enter'd the Lists, and left us *inter terismata sua Carmen Arenaicum de quorundam Nugigerulorum Piaffa insupportabili*. The *Recitus Veritabilis super terribili esmentia Paisanorum de Ruellio*, is one of the best Pieces of this kind.

We have but little in *English* in the *Macaronian* Way; nothing scarce, but some little loose Pieces collected in *Cambden's Remains*: which is no Discredit to our Authors; for one may say of such Pieces in general,

*Turpe est Difficiles habere Nugas,  
Et Stultus Labor est Inepriarum;*

The *Germans* and *Neiberlanders* have had their *Macaronic* Poets; witness the *Certamen Catholicum cum Calvinistis*, of one *Martinius Hamcenius Frisius*, which contains above twelve hundred Verses, all the Words whereof begin with the Letter *C*.

**MACE**, a Medicinal Bark, the outermost of the three which covers the Nutmeg. It is of an astringent and drying Nature, and is used as a Corrector in Cardiac and Cathartic Compositions. See *Nutmeg*.

**MACERATION**, in Pharmacy and Chymistry, is understood of a certain Preparation of Medicines, otherwise express'd by the Word *Digestion*. Others however restrain the Word to that particular kind of Digestion, which is performed in a thick Matter; as when, for instance, having mix'd Roses with Fat to make *Unguent. Rosatum*, the Mixture is exposed for some Days to the Sun, that the Virtue of the Roses may be the better communicated to the Fat. See *Digestion*.

**MACHINE**, in the general, signifies any thing that serves to augment or regulate moving Powers; or Machine may be defined any Body destined to produce Motion, so as to save either Time or Force. There are six principal Machines, to which all the others may be reduced; viz. the Balance, Lever, Wheel, Pulley, Wedge, and Screw. These are call'd *Simple Machines*; and of these all other compound ones consist. For the Doctrine of these, see *Balance*, *Lever*, &c. See also *Mechanic Powers*.

The Number of compound Machines is now almost infinite; and yet the Antients seem to have out-done the Moderns in this respect. Their Machines of War, Architecture, &c. being described as vastly superior to ours.

*Machine for Building*, is an Assemblage of Pieces of Wood so disposed, as that by means of Ropes and Pulleys, a small Number of Men may raise vast Loads, and lay 'em in their Places; as Cranes, &c. 'Tis hard to conceive what Machines the Antients must have used to raise those immense Stones found in some of the antique Buildings.

*Hydraulic*, or *Water Machine*, is either used to signify a simple Machine, serving to conduct or raise Water; as a Sluice, Pump, &c. or several of these acting together, to produce some extraordinary Effect; as the Machine of *Marly*; the *Primum Mobile* whereof is an Arm of the River *Seine*, which by its Stream turns several large Wheels, which work the Handles, and these with Pistons raise the Water up into the Pumps, and with other Pistons force it up in Pipes against the Ascent of a Hill to a Reservoir in a Stone Tower, 62 Fathom higher than the River; sufficient to supply *Versailles* with a constant Stream 200 Inches in Diameter.

*Machines of War*: These among the Antients were of three kinds; the first serving to launch Arrows, as the Scorpion; Javelins, as the Catapulta; Stones, as the Balista; or fiery Darts, as the Pyraboli; the second serving to beat down Walls, as the battering Ram and Terebra; and the third to shelter those who approach'd the Enemies Wall; as the Tortoise or Testudo, and the Towers of Wood. The Machines of War now in use, consist in Artillery, Bombs, Petards, &c. Tho it must be observed, that in strictness, a Machine is something that consists more in Art and Invention, than in the Strength and Solidity of the Materials; and for this reason it is that the Inventors of Machines are call'd *Ingenieurs* or *Ingencers*. See *Engine*. The Word comes from the *Greek*, μηχανή, *Machine* Invention, *Art*.

*Machine*, in Dramatic Poetry, a Term used, when the Poet brings some Divinity or supernatural Being upon the Stage; to perform some Exploit, or solve some Difficulty out of the reach of Human Power. The Machines of the Drama are Gods, Angels, Ghouls, &c. which are so called from the Machines or Contrivances by which they are presented upon the Stage, and afterwards removed again. Hence the Use of the Word has also passed into the Epic Poem; tho' the Reason of its Name be there wanting: The Word, however, is used in the same Sense in both, viz. for the Intervention or Ministry of



of some Divinity ; but the Occasion of *Machines*, in the one and the other, being somewhat different, the Rules and Laws of managing them are different likewise. The antient Dramatic Poets never brought any *Machine* on the Stage, but where there was an absolute Necessity for the Presence of a God ; and were generally laughed at for suffering themselves to be reduced to such a Necessity. Accordingly *Aristotle* lays it down as an express Law, that the unravelling of the Piece should arise from the Fable itself ; and not from any foreign *Machine*, as in the *Medea*. *Horace* is something less severe ; and contents himself with saying, that the Gods should never appear, unless the *Nodus*, or Knot, were worthy of their Presence ; *Nec Deus interfit, nisi dignus Vindice Nodus, — incidit*. But 'tis quite otherwise in the *Epopœa* ; there must be *Machines* every where, and in every Part. *Homer* and *Virgil* do nothing without them. *Petronius*, with his usual Fire, maintains, that the Poets should deal more with the Gods than with Men ; that he should every where leave Marks of his prophetic Raptures, and of the Divine Fury that possesses him ; that his Thoughts be all full of Fables, that is, of Allegories and Figures : In fine, he will have a Poem distinguished from an History in all its Parts ; not so much by the Verses, as by that Poetical Fury which expresses itself wholly by Allegories ; and does nothing but by *Machines*, or the Ministry of the Gods. A Poet therefore must leave it to the Historians to say, that a Fleet was dispersed by a Storm, and driven to foreign Shores ; and must himself say with *Virgil*, that *Juno* went to seek *Eolus*, and that this God, at her Request, turned the Winds loose against the *Trojans*. He must leave the Historian to write, that a young Prince behaved himself with a great deal of Prudence and Discretion on all Occasions ; and must say with *Homer*, that *Minerva* led him as it were by the hand in all his Enterprizes. Let an Historian say, that *Agamemnon*, quarrelling with *Achilles*, has a mind to shew him, tho' mistakingly, that he can take *Troy* without his Assistance. The Poet must say that *Thetis*, piqued at the Affront her Son had received, flies up to Heaven to demand Vengeance of *Jupiter* ; and that this God, to satisfy her, sends the God *Somnus*, or Sleep, to *Agamemnon*, to deceive him, and make him believe that he shall take *Troy* that day. 'Tis thus that the Epic Poets used *Machines* in all Parts of their Works ; In the *Iliad*, *Odyssee*, and *Æneid*, the Proposition mentions them ; the Invocation is addressed to them ; and the Narration is full of them : they are the Causes of Actions ; they make the Knots, and at last they unravel them. This last Circumstance is what *Aristotle* forbids in the Drama ; but 'tis what *Homer* and *Virgil* have both practised in the *Epopœa*. Thus *Minerva* fights for *Ulysses* against *Penelope's* Lovers, helps him to destroy them ; and the next Day herself, makes the Peace between *Ulysses* and the *Ithacans*, which closes the *Odyssee*.

Further, the Use of *Machines*, in the Epic Poem, is, on some Accounts, entirely opposite to what *Horace* prescribes for the Theatre. In Tragedy that Critic will never have them us'd without an absolute Necessity ; whereas in the *Epopœa* they should never be used but where they may be well let alone ; and where the Action appears as if it did not necessarily require them. How many Gods and *Machines* does *Virgil* implore to raise the Storm that drives *Æneas* into *Carthage* ? which yet might easily have happened in the ordinary Course of Nature. *Machines*, in the Epic Poem, therefore are not Contrivances of the Poet, to recover himself after he has made a false Step ; nor to solve any Difficulty proper to some Parts of the Poem : but 'tis the Presence of a Divinity, and some supernatural and extraordinary Action which the Poet inserts in most of the Incidents of his Work, to render it more majestick and admirable ; and to train his Readers to Piety and Virtue. This Mixture should be so managed, as that the *Machines* may be retrenched, without retrenching any thing from the Action.

As to the Manner in which the *Machines* are to act ; it may be observed, that in the old Mythology there are Gods both good, bad, and indifferent ; and that our Passions may be converted into so many allegorical Divinities : so that every thing, both good and bad in a Poem, may be attributed to these *Machines*, and may be transacted by them. They don't however always act in the same manner ; sometimes they act without appearing, and by simple Inspirations, which have nothing in them extraordinary or miraculous ; as when we say the Devil suggested such a Thought, &c. The second Manner of their acting is entirely miraculous ; as when a Divinity presents itself visibly before Men, so as to be known by them ; or when they disguise themselves under some human Form without discovering themselves. The third Manner partakes of each of the two, and consists in

Oracles, Dreams, and extraordinary Inspirations ; which *Bossu* calls *Demi-Machines*. All these Manners ought to be so managed, as to carry a Verisimilitude ; and tho' Verisimilitude be of a vast Extent in *Machines*, as being founded on the Divine Power ; yet has it Bounds. *Horace* proposes three kinds of *Machines* for the Stage ; the first is a God visibly present among the Actors, which, he says, should never be introduc'd but on a great Occasion. The second contains more incredible and extraordinary *Machines* ; as the Metamorphosis of *Progne* into a Swallow, of *Cadmus* into a Serpent : and even these *Machines* he does not absolutely condemn or exclude wholly out of the Poem, but only out of the Scene and the Sight of the Spectators : they are not to be represented, but may be recited. The third kind of *Machines* is absolutely absurd ; and he rejects it entirely : the Instance he gives, is that of a Child taken alive out of the Belly of a Monster that had devoured it. The other two Manners are allow'd indifferently in the *Epopœa* ; and without that Distinction of *Horace*, which only suits the Stage ; it being in the Drama alone, that a Difference may be made between what passes in the Scene, or the Sight of the Spectators, and what behind the Curtain. See *Bossu*.

**MACROCEPHALUS**, from *μακρὸν* *magnus*, great, and *κεφαλή*, *Caput*, the Head, is sometimes used to signify an Head larger than of a natural Size.

**MACROCOSM**, a Term seldom used but in opposition to *Microcosm*. By *Macrocosm* we mean the World ; and by *Microcosm*, which signifies little World, we mean Man. The Word *Macrocosm* is form'd from the Greek *μακρὸς*, Great, and *κοσμος*, World.

**MACULÆ**, in Astronomy, dark Spots, of an irregular changeable Figure ; observed in the face of the Sun : first taken notice of by *Scheiner* in 1611, and afterwards accurately observed by *Gallileus*, *Hewelius*, Mr. *Flamsteed*, *Cassini*, *Kirch*, &c. Many of these *Maculæ* appear to consist of heterogeneous Parts ; whereof the darker and more dense are call'd by *Hewelius*, *Nuclei*, and are incompass'd, as it were, with Atmospheres somewhat rarer and less obscure ; but the Figure both of the *Nuclei* and entire *Maculæ* are variable. In 1644, *Hewelius* observ'd a small thin *Macula*, which in two Days time grew to ten times its Bulk ; appearing withal much darker, and with a larger *Nucleus* ; and such sudden Mutations are frequent. The *Nucleus*, he observ'd, began to fail sensibly e'er the Spot disappeared, and that, e'er it quite vanished, broke into four, which in two Days reunited. Some *Maculæ* have lasted 2, 3, 10, 15, 20, 30, seldom 40 Days, tho' *Kirchius* observ'd one in 1681, from April 26 to the 17th of July. The Spots move over the Sun's Disk, with a Motion somewhat smaller near the Limb than near the Centre ; that observ'd by *Kirch* was twelve Days visible in the Sun's Disk ; for fifteen Days more it lay hid behind it ; it being their Rule to return to the Limb whence they departed in 27, sometimes in 28 Days. Lastly, it must be observed, that the *Maculæ* contract themselves near the Limb, and in the middle of the Disk appear much larger ; those often running into one in the Disk, which in the Limb were separate ; that many of them arise in the middle of the Disk, and many disappear in the same ; and that none of them are observed to deviate from their Path near the Horizon : Whereas *Hewelius* observing *Mercury* in the Sun, near the Horizon, found him too low ; being thrust 27 Seconds beneath his former Path. From these Phenomena we collect,

(1.) That since *Mercury's* Depression below his Path arises from his Parallax, the *Maculæ* having no Parallax from the Sun, are nearer him than the Planet ; but since they are hid behind the Sun three Days longer than they are in the Hemisphere visible to us, it follows also, that they don't adhere to the Surface of the Sun, but are at some distance from it.

(2.) That since they arise and disappear in the middle of the Sun's Disk, and undergo various Alterations with regard both to Bulk, Figure, and Density, they must be formed *de novo*, and again dissolved about the Sun ; and are therefore, in all probability, a kind of Solar Clouds formed out of its Exhalations.

(3.) Since then the Solar Exhalations rise over his Body ; and are suspended at a certain Height from it ; it appears, from the Laws of Hydrostatics, that the Sun must be incompass'd with some Fluid to drive those Exhalations upwards ; which Fluid must be denser, as it is lower ; and rarer, as higher, like our Atmosphere : And since the *Maculæ* dissolve and disappear in the very middle of the Sun's Disk, the Matter thereof, i. e. the Solar Exhalations must fall back again to the Sun ; whence there must arise Changes in the Sun's Atmosphere, and consequently in the Sun itself.

(4.) Since



(4.) Since the Revolution of the *Macula* round the Sun is very regular; and since their Distance from the Sun is very small, 'tis not properly the *Macula* that move round the Sun: But 'tis himself, together with his Atmosphere, wherein the *Macula* swim, that in the space of 27 Days moves round its own Axis; and hence it is that the *Macula*, being viewed obliquely near the Limb, appear narrow and oblong.

And, Lastly, since the Sun appears with a circular Disk in every Situation; his Figure, as to Sense, must be spherical. Some Authors likewise take notice of *Faculae*, or bright Spots, in the Disk of the Sun, much more lucid than the rest, much larger than the *Maculae*, and very different from them both, as to Figure, Duration, &c. *Hævelius* mentions his seeing a *Facula* in 1634, which took up a third part of the Sun's Diameter; and adds, that the *Maculae* frequently change into *Faculae*; but the *Faculae* seldom or never into *Maculae*. But *Huygens*, and other great Astronomers, reject the Notion of the *Faculae*; having never seen any thing like them (tho' furnish'd with the best Telescopes) excepting little bright Specks in the dim Clouds which frequently encompass the *Maculae*; and which may be owing to the Refraction of the Sun's Rays in the rarer Parts of his Atmosphere. And as to that little Inequality observed in the Circumference of the Sun's Disk, which is usually ascribed to the Wavings and Eruptions of the Flames; it seems better accounted for from the tremulous Agitation of the Vapours in our own Atmosphere.

**MADDER**, the Root of a Plant, much used by Dyers, to make the most solid and rich red Colour; it has its Uses too in Medicine, being found of Service in Obstructions of the Viscera and Cachectic Constitutions; and is generally made up in forms of Decoctions, Diet-Drinks, and medicated Ales.

**MADNESS**, or **MANIA**, in Medicine, a kind of Delirium without a Fever, attended with Rage, and a total Deprivation of Reason. *Madness* consisting much in a Delirium, to explain the Nature of the former, Dr. *Quincy* premises that of the latter thus: As often as the Species of Things, wherewith we have been acquainted, are hurried together, we may be said to dream, and thence in Sleep they are added with other things, and variously compounded, from the manifold Repercussions of the Animal Spirits, which arise from the Cause producing Sleep, and pressing the Nerves, so as to revert the Fluctuations of their Juice. A Delirium is therefore the Dreams of waking Persons, wherein Ideas are excited without Order or Coherence, and the Animal Spirits are drove into irregular Fluctuations. If therefore the Cause inducing a Delirium be of that nature, that it can excite Ideas or Motions of a considerable Impetus, without any manner of Certainty or Order, such a Delirium will be attended with Boldness or Rage, and violent Motions of the Body; that is, a Madness will be produced. Now it is plain, that all the known Causes of this Distemper give a greater Disposition to the Blood for Motion, and render it fluxile, but not consistent, and uniformly thick enough; and therefore that they dispose Persons likewise to continued Fevers, since they occasion the Blood to be thrown out of the Heart with an increased Force, unless some other Cause intervenes, whereby the Efficacies of these are interrupted in disposing the Blood into Febrile Motions; and the Blood is so disposed, as often as it can be rarefied into its minutest Parts; that is, so uniformly rarefied, that it can easily, with any Force by the Motion received from the Heart, go into Parts divisible at the Occurrences of those Orifices, into which it ought to be distributed: for then the Cohesion of the Parts, which can be but very small, will not be any Obstruction to the Increase and Propagation of the Blood's Velocity. But if it happens that the efficient Cause, or the Heart, throws the Blood with a greater Force, or that the Blood can the more easily be propelled in any given Time, it will occasion, at the same time, that some Parts of the Blood be more nearly united, so as to form *Molecule*, consisting of cohering Particles; which *Molecule* will cohere to one another, and not so easily obey the Direction of the Heart's propelling Force. The Blood hereupon cannot be uniformly rarefied, nor enter so easily into the small Orifices of the Vessels, and so soon travel thro' them, and therefore there will no Fever arise; but a Delirium without a Fever, wherein the Heat of the Blood will be greater, and the Pressure in the Brain uncertain: whence uncertain Recursions of the Spirits, inordinate Undulations, confused Vibrations of the Nerves, and a remarkable Energy of Imagination; whence will proceed Audacity and Passion beyond measure. Some Authors say, that the Brain of a Cat eaten, produces *Madness*. 'Tis a Disease very hard to cure, and is generally found to baffle the Physician.

**MADRIER**, in the Military Art, a thick Plank armed with Iron Plates, having a Concavity sufficient to receive the Mouth of the Petard when charged, with which it is applied against a Gate, or other Body designed to be broke down. *Madrier* is also the Name of a flat Beam fixed at the bottom of a Moat to support a Wall. Besides which, there are also *Madriers* lined with Tin, and covered with Earth, serving as a Defence against artificial Fires.

**MADRIGAL**, a Term in the modern *Italian*, *Spanish*, and *French* Poetry, signifying a little amorous Piece, containing a certain Number of loose unequal Verses, not tied either to the scrupulous Regularity of a Sonnet, or the Subtlety of an Epigram; but consisting of some tender, delicate, yet simple Thought, suitably expressed. The *Madrigal*, according to Mr. *le Brun*, is an Epigram without anything very brisk and sprightly in its Fall or Close: something very tender and gallant is usually the Subject of it; and a certain beautiful, noble, yet chaste, Simplicity, makes its Character.

The *Madrigal* is usually looked on as the shortest of all the little kinds of Poems, and may consist of fewer Verses than either the Sonnet or Rondelay. There is no other Rule regarded in mingling the Rhimes and Verses of different kinds, but the Choice and Convenience of the Author. This Poem, however, really allows of less Licence than any other; whether we regard the Rhyme, the Measures, or the Purity of Expression.

*Menage* derives the Word from *Mandra*, which, in *Latin* and *Greek*, signifies a Company of Cattel; imagining it to have been originally a kind of Pastoral or Shepherd's Song; whence the *Italians* formed their *Madrigale*, and we *Madrigal*. Others rather chuse to derive the Word from *Madrugar*, which, in the *Spanish* signifies to rise in the Morning: the *Madrigals* being formerly sung early in the Morning, by those who had a mind to serenade their Mistresses.

**MAGAS**, or **MAGADE**, the Name of a musical Instrument in Use among the Antients. There were two kinds of *Magades*; the one a string Instrument, the Invention whereof is ascribed by some to *Sappho*, and by others to the *Lydians*, and by others to *Timotheus* of *Miletum*. The other *Magade* was a kind of Flute, which at the same time yielded very high and very low Notes; the former kind was much improved by *Timotheus* of *Miletum*, who is said to have been impeached of a Crime; for that by increasing the Number of Chords, he spoiled and discredited the antient Music.

**MAGAZINE**, or **Arsenal**, is the Place in fortified Towns where all sorts of Stores are kept, and where Carpenters, Wheelwrights, Smiths, &c. are employed in making all things needful to furnish out the Train of Artillery.

**S. MAGDALEN**. There are several kinds of Nuns, or Religious, who bear this Name; consisting generally of penitent Courtezans: sometimes also call'd *Migdalannes*; as those at *Metz* established in 1452, those at *Paris* in 1492; those at *Naples*, first established in 1324, and endowed by Queen *Sancta*, to serve as a Retreat to public Courtezans, who should quit the Trade, and betake themselves to Repentance; and those of *Rouen* and *Bordeaux*, which had their Original among those of *Paris*. In each of these Monasteries there are three kinds of Persons and Congregations, viz. the first is of those who are admitted to make Vows, and these bear the Name of *St. Magdalen*; the Congregation of *St. Marthe* is the second, and is composed of those whom 'tis not judged proper to admit to Vows; the Congregation of *St. Lazarus* is composed of such as are detained there by force. The Religious of *St. Magdalen* at *Rome* were established by Pope *Leo X.* *Clement VIII.* settled a Revenue on them, and further appointed, that the Effects of all public Prostitutes, dying without Testaments, should fall to them; and that the Testaments of the rest should be invalid; unless they bequeathed a Portion of their Effects, which was to be at least a fifth Part, to them.

**MAGI**, the Title the *Eastern Nations*, both antiently and at present, give to their Wise-men or Philosophers. The antient *Magi*, according to *Aristotle* and *Laertius*, were the Authors and Conservators of the *Persian* Philosophy; and the Philosophy principally cultivated among them was Theology and Politics: they being always esteem'd as the Interpreters of all Laws both Divine and Human; on which account they were wonderfully revered by the People. Hence *Cicero* observes, that none were admitted to the Crown of *Persia*, but such as were well instructed in the Discipline of the *Magi*; who taught the *παρασκευα*; and shew'd Princes how to govern. *Plato*, *Apuleius*, *Laertius*, and others, agree, that the Philosophy of the *Magi* related principally to the Worship of the Gods; they were the Persons who were to offer Prayers, Supplications, and Sacrifices, as



if the Gods would be heard by them alone. According to *Lucian*, *Suidas*, &c. the Theology or Worship of the Gods, about which the *Magi* were employ'd, was little more than the Diabolical Art of Divination. Hence *magia*, strictly taken, signifies Divination. *Porphyry* defines the *Magi* well, *Circa Divina Sapientes & in iisdem ministrantes*; adding, that the word *Magus* implied as much in the *Persian* Tongue. These People, says he, are held in such Veneration among the *Persians*, that *Darius*, the Son of *Hystaspes*, among other things, had this engraven on his Monument, that he was the Master of the *Magi*. Their Descendants, the modern *Magi*, are divided into three Classes; whereof the first and most learned neither eat nor kill Animals, but adhere to the old Institution of abstaining from living Creatures. The *Magi* of the second Class refrain only from tame Animals; nor do the last kill all indifferently; it being the firm and distinguishing Dogma of them all, *τὸ μὴ φάγον εἶναι, that there is a Transmigration of Souls*. To intimate the Similitude between Animals and Men; they use to call the latter by the Name of the former; thus their Fellow-Priests they call'd *Lions*, the Priestesses *Lionesses*, the Servants *Crows*, &c. *Philostrophus* describes the *Magi* to be diligent Inquirers into Nature, out of the Love they bear to Truth; and who setting themselves apart for these things, contemplate the Divine Virtues the more clearly, and initiate others in the same Mysteries.

The Origin of Magic and the *Magi* is ascribed to *Zoroaster*. *Salmasius* derives the very Name from *Zoroaster*, who, he says, was surnam'd *Mog*, whence *Magus*. Others, instead of making him the Author of the *Persian* Philosophy, make him only the Restorer and Improver thereof; alledging that many of the *Persian* Rites, in Use among the *Magi*, were borrowed from the *Zabii* of the *Chaldeans*, who agreed in many things with the *Magi* of the *Persians*; whence some make the Name *Magus* common both to the *Chaldeans* and *Persians*. Thus *Plutarch* mentions, that *Zoroaster* instituted *Magi* among the *Chaldeans*; in imitation whereof the *Persians* had theirs too.

The Learned are in great perplexity about the Origin of the Word. *Plato*, *Xenophon*, *Herodotus*, *Strabo*, &c. fetch its Origin from the *Persian* Language; in which it signified a *Priest*, or Person to officiate in Holy Things, as *Druid* among the *Gauls*, *Gymnosophist* among the *Indians*, and *Levite* among the *Hebrews*. Others derive it from the Greek *μάγας*, great, which being borrowed of the *Greeks* by the *Persians*, was returned in the form of *μαγος*; but *Vossius*, with more probability, brings it from the Hebrew *מָגַן*, *baga*, to meditate; whence is formed *מַגִּים*, *Maaghim*, in *Latin* *Meditabundi*, q. d. *People addicted to Meditation*.

MAGIC, a Science that teaches to perform wonderful and surprizing Effects. The Word *Magic* originally carried with it a very innocent, nay laudable, Meaning; being used purely to signify the Study of Wisdom; but in regard the antient *Magi*, or Magicians, engaged themselves in Astrology, Divination, Sorcery, &c. the Term *Magic* in time became odious, and was only used to signify a Science scandalous and unlawful. If any wonder how so vain and deceitful a Science should gain so much Credit and Authority over Mens Minds, *Pliny* gives the Reason of it; 'Tis, says he, because it has possessed itself of three Sciences of the most Esteem among Men; taking from each, all that is great and marvellous in it. Nobody doubts but it had its first Origin in Medicine, and that it insinuated itself into the Minds of the People under pretence of giving extraordinary Remedies. To these fine Promises it added every thing in Religion that is pompous and splendid, and that appears calculated to blind and captivate Mankind. Lastly, it mingled judiciary Astrology with the rest; persuading People, curious of Futurity, that it saw every thing to come in the Heavens.

*Agrippa* divides *Magic* into three kinds; *Natural Magic*, *Celestial Magic*, and *Ceremonial* or *Superstitious Magic*. *Natural Magic* is no more than the Application of natural active Causes to passive Causes; by means whereof many surprizing, but yet natural, Effects are produced.

*Celestial Magic* borders very nearly on Judiciary Astrology. It attributes to Spirits a kind of Rule or Dominion over the Planets; and to the Planets a Dominion over Men; and on these Principles builds a ridiculous kind of System.

*Superstitious Magic* consists in the Invocation of Devils; its Effects are usually evil and wicked; tho' very strange, and surpassing the Powers of Nature; produced, by virtue of some Compact, either tacit or express, with evil Spirits: but the truth is, these have not all the Power that is usually imagined, nor do they produce half those Effects ordinarily ascribed to them.

*Baptista Porta* has written of natural *Magic*, or of Secrets

for performing very extraordinary things by natural Causes. The natural *Magic* of the *Chaldeans* was nothing but the Knowledge of the Powers of Simple and Minerals. The *Magic*, which they called *Theurgia*, consisted wholly in the Knowledge of the Ceremonies, to be observed in the Worship of the Gods, in order to be acceptable. By virtue of these Ceremonies they believed they could converse with spiritual Beings, and cure Diseases. *Naude* has published an Apology for all the Great Men suspected of *Magic*. *Agrippa* says, that the Words used by those in compact with the Devil, to invoke him, and to succeed in what they undertake, are *Diesmies jesquet bendoeset dom foima eritemans*. There are an hundred other superstitious Formula's of Words composed at pleasure; or gathered from several different Languages, or patch'd from the *Hebrew*, or formed in imitation of it.

MAGIC LANTHORN, an Optic Machine, by means whereof little painted Images are represented on an opposite Wall of a dark Room, magnified to any Bigness at pleasure.

Construction of the Magic Lanthorn. A B C D (Tab. Opticks, Fig. 10.) is a common Tin Lanthorn, to which is added a Tube to draw out, F G. In H is fixed a metallic concave Speculum of a Foot diameter at most, or four Inches at least; or, in lieu thereof, near the Extremity of the Tube is placed a convex Lens, consisting of a Segment of a small Sphere, its Diameter not exceeding a few Inches. In the Focus of the concave Speculum, or Lens, is placed a Lamp L; within the Tube, where it is soldered to the Side of the Lanthorn, is placed a small Lens, convex on both Sides, being a Portion of a small Sphere, having its Focus about the Distance of three Inches. The extreme Part of the Tube F M is square, and has an Aperture quite thro'; so as to receive an oblong Frame N O, passed thro' it; in this Frame are round Holes an Inch or two in Diameter. According to the Bigness of those Holes are drawn Circles on a plain thin Glass; and in these Circles are painted any Figures or Images at pleasure, with transparent Water Colours. These Images fitted into the Frame, and placed invertedly, at a little distance from the Focus of the Lens I; will be projected on an opposite white Wall of a dark Room, prodigiously magnified in all their Colours, and an erect Situation.

Theory of the Magic Lanthorn. The Lamp being placed in the Focus of the concave Speculum, or any Convex Glass, the Rays will be propagated parallel to each other, and the Image will be strongly illumined, and will therefore emit a great Number of Rays into the Lens I. But being supposed to be placed near the Lens I, the inverted Image of the Picture inverted must be form'd on the opposite Wall, exceedingly magnified after its Refraction thro' the Lens; and it will be still the more magnified as the Lens is a Segment of a less Sphere, and as the Picture is placed nearer the Focus of the Lens; in a dark Place therefore the Picture will be represented prodigiously large and extremely vivid. See *Lens*.

Another Magic Lanthorn. Every thing being managed as in the former, into the sliding Tube F G, insert another Convex Lens K, the Segment of a Sphere somewhat larger than I; now if the Picture be brought nearer I than to the Distance of the Focus, the diverging Rays will be propagated as if they proceeded from P: wherefore if the Lens K be so placed, as that P is very near its Focus, the Image will be exhibited on the Wall exceedingly magnified.

Schol. 1. To heighten the Light, Specula are preferred to Lens's; the Focus of a Speculum being nearer than that of the Lens.

2. *De Chales* orders the Diameter of the Lens I to be two, four, or five Digits, and in a subduple Proportion to the other K; i. e. if I be five Digits, K must be 10; and the Diameter of the Speculum, according to the same, is to be two Digits. *Zabnius* chuses to have the Diameter of I  $\frac{1}{2}$  of a Foot, and that of K one Foot and  $\frac{1}{2}$ , &c.

3. Little Animals being included in the *Magic Lanthorn*, in the manner observed in speaking of the Microscope; or any little transparent Objects fastened to a Slice of Talk or Glass, and substituted instead of Images; the *Magic Lanthorn* will become a Microscope.

MAGIC SQUARES, the several Numbers that compose any square Number; (for Instance, 1, 2, 3, 4, 5, &c. 1025 inclusive, which compose the square Number 25) being disposed after each other in a square Figure of 25 Cells, each in its Cell: if then you change the Order of these Numbers, and dispose them in the Cells, in such manner, as that the five Numbers, which fill any Horizontal Rank of Cells, being added together, shall make the same Sum, with the five Numbers, in any other Rank of Cells, whether horizontal or vertical; and even the same Number with the five in each of the two



Diagonal Ranks, this Disposition of Numbers is called a *Magic Square*, in opposition to the former Disposition, which is called a *Natural Square*. See the Figures adjoining.

Natural Square.

|    |    |    |    |    |
|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  |
| 6  | 7  | 8  | 9  | 10 |
| 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 |

Magic Square.

|    |    |    |    |    |
|----|----|----|----|----|
| 16 | 14 | 8  | 2  | 25 |
| 3  | 22 | 20 | 11 | 9  |
| 15 | 16 | 4  | 23 | 17 |
| 24 | 18 | 12 | 10 | 1  |
| 7  | 5  | 21 | 19 | 13 |

One would imagine that *Magic Squares* had that Name given them, in regard this Property of all their Ranks, which, taken any way, make always the same Sum, appeared ex-

trremely surprizing, especially in certain ignorant Ages, when Mathematics passed for *Magic*: But there is a great deal of Reason to suspect, that these Squares merited their Name still further by the superstitious Operations they were employed in, as the Construction of *Talismans*, &c. for according to the childish Philosophy of those Days, which attributed Virtues to Numbers, what Virtues might not be expected from Numbers so wonderful?

However, what was at first the vain Practice of Makers of *Talismans*, and Conjurers, has since become the Subject of a serious Research among the Mathematicians; not that they imagine it will lead them to any thing of solid Use or Advantage. *Magic Squares* favour too much of their Original to be of any Use. But only, as 'tis a kind of Play, where the Difficulty makes the Merit; and as it may chance to produce some new Views of Numbers which Mathematicians will not lose the Occasion of.

*Eman. Moschopolus*, a Greek Author of no great Antiquity, is the first that appears to have spoke of *Magic Squares*; and by the Age wherein he lived, there is Reason to imagine he did not look on them merely as a Mathematician. However, he has left us some Rules for their Construction. In the Treatise of *Cor. Agrippa*, so much accused of *Magic*, we find the Squares of seven Numbers, viz. from three to nine inclusive, disposed magically; and it must not be supposed that those seven Numbers were preferred to all the others without a very good Reason. In effect, 'tis because their Squares, according to the System of *Agrippa* and his Followers, are planetary. The Square of 3, for Instance, belongs to *Saturn*, that of 4. to *Jupiter*, that of 5 to *Mars*, that of 6 to the *Sun*, that of 7 to *Venus*, that of 8 to *Mercury*, and that of 9 to the *Moon*. *M. Bachet* applied himself to the Study of *Magic Squares*, on the Hint he had taken from the Planetary Squares of *Agrippa*; as being unacquainted with the Work of *Moschopolus*, which is only in Manuscript in the French King's Library; and, without the Assistance of any other Author, found out a new Method for those Squares whose Root is uneven, for instance 25, 49, &c. but could not make any thing of those whose Root is even.

After him came *Mr. Frenicle*, who took the same Subject in hand. A great Algebraist was of opinion, that whereas the sixteen Numbers, which compose the Square, might be disposed 2092278988000 different Ways in a natural Square (as from the Rules of Combination 'tis certain they may) could not be disposed in a *Magic Square* above sixteen different Ways. But *Mr. Frenicle* shewed, that they might be disposed 878 different Ways; whence it appears how much his Method exceeds the former, which only yielded the 55th Part of *Magic Squares* of that of *Mr. Frenicle*. To this Enquiry he thought fit to add a Difficulty, that had not yet been considered: The *Magic Square* of 7, for instance, being constructed, and its 49 Cells filled, if the two Horizontal Ranks of Cells, and at the same time the two Vertical ones, the most remote from the middle, be retrenched, that is, if the whole Border or Circumference of the Square be taken away; there will remain a Square, whose Root will be 5, and which will only consist of 25 Cells. Now 'tis not at all surprizing that the Square should be no longer *Magic*, in regard the Ranks of the large one were not intended to make the same Sum, excepting when taken entire with all the 7 Numbers that fill their seven Cells; so that being mutilated each of two Cells, and having lost two of their Numbers, it may be well expected that their Remainders will not any longer make the same Sum. But *Mr. Frenicle* would not be satisfied, unless when the Circumference or Border of the *Magic Square* was taken away, and even any Circumference at pleasure, or in fine several Circumferences at once, the remaining Square were still *Magic*: which last Condition, no doubt, made these Squares vastly more magical than ever.

Again, he inverted that Condition, and required that any Circumference taken at pleasure, or even several Cir-

cumferences should be inseparable from the Square; that is, it should cease to be *Magic* when they were removed, and yet continue *Magic* after the Removal of any of the rest. *Mr. Frenicle*, however, gives no general Demonstration of his Methods, and frequently seems to have no other Guide but his groping. 'Tis true, his Book was not published by himself, nor did it appear till after his Death, viz. in 1693.

In 1703, *Mr. Poignard*, Canon of *Brussels*, published a Treatise of *Sublime Magic Squares*. Before him there had been no *Magic Squares* made but for Series's of natural Numbers that formed a Square; but *Mr. Poignard* made two very considerable Improvements: (1.) Instead of taking all the Numbers that fill a Square, for Instance, the 36 successive Numbers, which would fill all the Cells of a natural Square, whose Side is 6, he only takes as many successive Numbers as there are Units in the Side of the Square, which in this Case are 6; and these six Numbers alone he disposes in such manner, in the 36 Cells, that none of them are repeated twice in the same Rank, whether it be horizontal, vertical, or diagonal: whence it follows, that all the Ranks, taken all the Ways possible, must always make the same Sum, which *Mr. Poignard* calls repeated Progression. (2.) Instead of being confined to take these Numbers according to the Series and Succession of the natural Numbers, that is, in an Arithmetical Progression, he takes them likewise in a Geometrical Progression, and even an Harmonical Progression. But with these two last Progressions the *Magic* must necessarily be different from what it was. In the Squares, filled with Numbers in Geometrical Progression, it consists in this, that the Products of all the Ranks are equal, and in the Harmonical Progression, the Numbers of all the Ranks continually follow that Progression: he makes Squares of each of these three Progressions repeated.

This Book of *Mr. Poignard* gave occasion to *M. de la Hire* to turn his Thoughts the same way, which he did with good Success, insomuch that he seems to have well-nigh compleated the Theory of *Magic Squares*. He first considers uneven Squares: all his Predecessors on the Subject having found the Construction of even ones by much the most difficult; for which Reason *M. de la Hire* reserves those for the last. This Excess of Difficulty may arise partly from hence, that the Numbers are taken in an Arithmetical Progression. Now in that Progression, if the Number of Terms be uneven, that in the middle has some Properties, which may be of Service; for instance, being multiplied by the Number of Terms in the Progression, the Product is equal to the Sum of all the Terms.

*M. de la Hire* proposes a general Method for uneven Squares, which has some Similitude with the Theory of compound Motions, so useful and fertile in *Mechanics*. As that consists in decomposing Motions, and resolving them into others more simple, so does *M. de la Hire's* Method consist in resolving the Square, that is to be constructed, into two simple and primitive Squares. It must be owned, however, 'tis not quite so easy to conceive those two simple and primitive Squares in the compound or perfect Square, as in an oblique Motion to imagine a Parallel and a Perpendicular one.

Suppose a Square of Cells, whose Root is uneven; for Instance 7, and that its 49 Cells are to be filled magically with Numbers, for instance, the first 7. *M. de la Hire*, on the one side, takes the first seven Numbers, beginning with Unity, and ending with the Root 7, and on the other 7, and all its Multiples to 49 exclusively; and as these only make six Numbers, he adds 0, which makes this an Arithmetical Progression of seven Terms as well as the other. c. 7. 14. 21. 28. 35. 42.

This done, with the first Progression repeated, he fills the Square of the Root 7 magically. In order to this, he writes in the first seven Cells of the first Horizontal Rank the seven Numbers proposed, in what Order he pleases, for that is absolutely indifferent; and 'tis proper to observe here, that those seven Numbers may be ranged in 5040 different Manners in the same Rank. The Order in which they are placed in the first Horizontal Rank, be it what it will, is that which determines their Order in all the rest. For the second Horizontal Rank, he places in its first Cell, either the third, the fourth, the fifth, or the sixth Number from the first Number of the first Rank, and after that writes the six others in the Order as they follow. For the third Horizontal Rank, he observes the same Method with regard to the second, that he observed in the second with regard to the first, and so of the rest. For instance, suppose the first Horizontal Rank filled with the seven Numbers in their natural Order, 1. 2. 3. 4. 5. 6. 7. the second Horizontal Rank may either commence with 3, with 4, with 5, or with 6; but in this Instance it commences with



|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | 4 | 5 | 6 | 7 | 1 | 2 |
| 5 | 6 | 7 | 1 | 2 | 3 | 4 |
| 7 | 1 | 2 | 3 | 4 | 5 | 6 |
| 2 | 3 | 4 | 5 | 6 | 7 | 1 |
| 4 | 5 | 6 | 7 | 1 | 2 | 3 |
| 6 | 7 | 1 | 2 | 3 | 4 | 5 |

with 3, the third Rank therefore must commence with 5, the fourth with 7, the fifth with 2, the sixth with 4, and the seventh with 5. The Commencement of the Ranks which follow the first being thus determined, the other Numbers, as we have already observed, must be written down in the Order wherein they stand in the first, going on to 5, 6, and

7, and returning to 1, 2, &c. till every Number in the first Rank be found in every Rank underneath, according to the Order arbitrarily pitched upon at first. By this means, 'tis evident, no Number whatever can be repeated twice in the same Rank, and by consequence that the seven Numbers 1. 2. 3. 4. 5. 6. 7. being in each Rank, they must of Necessity make the same Sum.

It appears, from this Example, that the Arrangement of the Numbers in the first Rank being chosen at pleasure, the other Ranks may be continued in four different Manners; and since the first Rank may have 5040 different Arrangements, there are no less than 20160 different Manners of constructing the Magic Square of seven Numbers repeated.

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | 3 | 4 | 5 | 6 | 7 | 1 |
| 3 | 4 | 5 | 6 | 7 | 1 | 2 |
| 4 | 5 | 6 | 7 | 1 | 2 | 3 |
| 5 | 6 | 7 | 1 | 2 | 3 | 4 |
| 6 | 7 | 1 | 2 | 3 | 4 | 5 |
| 7 | 1 | 2 | 3 | 4 | 5 | 6 |

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | 1 | 2 | 3 | 4 | 5 | 6 |
| 6 | 7 | 1 | 2 | 3 | 4 | 5 |
| 5 | 6 | 7 | 1 | 2 | 3 | 4 |
| 4 | 5 | 6 | 7 | 1 | 2 | 3 |
| 3 | 4 | 5 | 6 | 7 | 1 | 2 |
| 2 | 3 | 4 | 5 | 6 | 7 | 1 |

The Order of the Numbers in the first Rank being determined; if in beginning with the second Rank, the second Number 2, or the last Number 7, should be pitched upon; in one of those Cases one of the Diagonal Ranks would have the same Number constantly repeated; and, in the other Case, the other Diagonal would have it repeated; of consequence therefore, either the one or the other Diagonal would be false, unless the Number repeated seven times should happen to be 4, for four times seven is equal to the Sum of 1. 2. 3. 4. 5. 6. 7. and, in general, in every Square consisting of an uneven Number of Terms, in Arithmetical Progression, one of the Diagonals would be false according to those two Constructions, unless the Term, always repeated in that Diagonal, were the middle Term of the Progression.

'Tis not however at all necessary to take the Terms in an Arithmetical Progression; for, according to this Method, one may construct a Magic Square of any Numbers at pleasure, whether they be according to any certain Progression or not. If they be in an Arithmetical Progression, 'twill be proper, out of the general Method, to except those two Constructions, which produce a continual Repetition of the same Term in one of the two Diagonals; and only take in the Case, wherein that Repetition would prevent the Diagonal from being just. Which Case being absolutely disregarded, when we computed that the Square of 7 might have 20160 different Constructions; 'tis evident, that by taking that Case in, it must have vastly more.

To begin the second Rank with any other Number besides the second and the last, must not however be looked on as an universal Rule. It holds good for the Square of 7, but if the Square of 9, for instance, were to be constructed, and the fourth Figure of the first Horizontal Rank were pitched on for the first of the second, the Consequence would be, that the fifth and eighth Horizontal Ranks would likewise commence with the same Number, which would therefore be repeated three times in the same vertical Rank, and occasion other Repetitions in all the rest. The general Rule therefore must be conceived thus: Let the Number in the first Rank pitched on, for the Commencement of the second, have such an Exponent of its Quota, that is, let the Order of its Place be such, as that if an Unit be taken from it, the Remainder will not be any just Quota Part of the Root of the Square; that is, cannot divide it equally. If, for Example, in the Square of 7, the third Number of the first Horizontal Rank be pitched on for the first of the second, such Construction will be just; because the Exponent of the Place of that Number, viz. 3, subtracting 1, that is 2, cannot divide 7. Thus also might the fourth Number of the same first Rank be chosen, because 4 — 1, viz. 3, cannot divide 7, and for the same Reason the fifth or sixth Number might be taken; But in the Square of 9, the fourth Number of

the first Rank must not be taken, because 4 — 1, viz. 3, does divide 9. The Reason of this Rule will appear very evidently, by considering in what manner the Returns of the same Numbers do or do not happen, taking them always in the same manner in any given Series. And hence it follows, that the fewer Divisions the Root of any Square to be constructed has, the more different Manners of constructing it there are, and that the prime Numbers, that is, those which have no Divisions, as 5. 7. 11. 13. &c. are those whose Squares will admit of the most Variations in proportion to their Quantities.

The Squares constructed, according to this Method, have some particular Property not required in the Problem: For the Numbers that compose any Rank parallel to one of the two Diagonals, are ranged in the same Order with the Numbers that compose the Diagonal, to which they are parallel. And as any Rank parallel to a Diagonal must necessarily be shorter, and have fewer Cells than the Diagonal itself, by adding to it the corresponding Parallel which has the Number of Cells, the other falls short of the Diagonal; the Numbers of those two Parallels, placed, as it were, end to end, still follow the same Order with those of the Diagonal; besides that, their Sums are likewise equal; so that they are magical on another account.

Instead of the Squares, which we have hitherto form'd by Horizontal Ranks, one might also form them by Vertical Ones; the Case is the same in both.

All we have hitherto said regards only the first Primitive Square, whose Numbers, in the proposed Example, were 1. 2. 3. 4. 5. 6. 7; there still remains the second Primitive, whose Numbers are 0. 7. 14. 21. 28. 35. 42. M. de la Hire proceeds in the same manner here as in the former; and this may likewise be constructed in 20160 different Manners, as containing the same Number of Terms with the first.

Its Construction being made, and of consequence all its Ranks making the same Sum, 'tis evident, that if we bring the two into one, by adding together the Numbers of the two corresponding Cells of the two Squares, that is, the two Numbers of the first of each, the two Numbers of the second, of the third, &c. and dispose them in the 49 corresponding Cells of a third Square; it will likewise be Magic, in regard its Ranks, formed by the Addition of equal Sums to equal Sums must of necessity be equal among themselves. All that remains in doubt is, whether or no, by the Addition of the corresponding Cells of the two first Squares, all the Cells of the third will be filled in such manner, as that each not only contain one of the Numbers of the Progression from 1 to 49, but also that this Number be different from that of any of the rest, which is the End and Design of the whole Operation.

As to this, it must be observ'd, that if in the Construction of the second Primitive Square, care has been taken in the Commencement of the second Horizontal Rank, to observe an Order with regard to the first, different from what was observ'd in the Construction of the first Square; for instance, if the second Rank of the first Square begun with the third Term of the first Rank, and the second Rank of the second Square commence with the fourth of the first Rank, as in the Example it actually does; each Number of the first Square may be combined once, and only once, by Addition with all the Numbers of the second. And as the Numbers of the first are here 1. 2. 3. 4. 5. 6. 7.

and those of the second 0. 7. 14. 21. 28. 35. 42. by combining them in this manner, we have all the Numbers in the Progression from 1 to 49, without having any of 'em repeated; which is the Perfect Magic Square proposed.

The Necessity of constructing the two Primitive Squares in a different manner, does not at all hinder but that each of the 20160 Constructions of the one may be combined with all the 20160 Constructions of the other; of consequence therefore 20160 multiplied by itself, which makes 406425600, is the Number of different Constructions that may be made of the Perfect Square, which here consists of

First Primitive.

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | 4 | 5 | 6 | 7 | 1 | 2 |
| 5 | 6 | 7 | 1 | 2 | 3 | 4 |
| 7 | 1 | 2 | 3 | 4 | 5 | 6 |
| 2 | 3 | 4 | 5 | 6 | 7 | 1 |
| 4 | 5 | 6 | 7 | 1 | 2 | 3 |
| 6 | 7 | 1 | 2 | 3 | 4 | 5 |

Second Primitive.

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| 0  | 7  | 14 | 21 | 28 | 35 | 42 |
| 21 | 28 | 35 | 42 | 0  | 7  | 14 |
| 42 | 0  | 7  | 14 | 21 | 28 | 35 |
| 14 | 21 | 28 | 35 | 42 | 0  | 7  |
| 35 | 42 | 0  | 7  | 14 | 21 | 28 |
| 7  | 14 | 21 | 28 | 35 | 42 | 0  |
| 28 | 35 | 42 | 0  | 7  | 14 | 21 |

Perfect Square.

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| 1  | 9  | 17 | 25 | 33 | 41 | 49 |
| 24 | 32 | 40 | 48 | 7  | 8  | 16 |
| 47 | 6  | 14 | 15 | 23 | 31 | 39 |
| 21 | 22 | 31 | 38 | 46 | 5  | 13 |
| 37 | 17 | 4  | 12 | 20 | 28 | 29 |
| 11 | 19 | 27 | 35 | 36 | 46 | 3  |
| 7  | 32 | 43 | 2  | 10 | 18 | 5  |



the 49 first Numbers of the Natural Progression. But as we have already observed, that a *Primitive Square* of 7 Numbers repeated may have above 20160 several Constructions, the Number 406425600 must come vastly short of expressing all the possible Constructions of a perfect *Magis Square* of the 49 first Numbers.

As to the *Even Squares*, he constructs them like the *Uneven* ones, by two *Primitive Squares*; but the Construction of *Primitives* is different in the general, and may be so a great number of ways: and those general Differences admit of a great number of particular Variations, which give as many different Constructions for the same even Square. It scarce seems possible to determine exactly, either how many general Differences there may be between the Construction of the primitive Squares of an even Square and an uneven one; nor how many particular Variations each general Difference may admit of; and of consequence we are still far from being able to determine the Number of different Constructions of all those that may be made by the *Primitive Squares*.

**MAGISTER**, *Master*, a Title frequently found in old Writings. It noted, the Person who bore it had attained some Degree of Eminency in *Scientia aliqua præsertim Literaria*; and in old Times those we now call *Doctors*, were called *Magistri*.

**MAGISTERY**, a Term in Chymistry signifying a Precipitate of some Dissolution; made by a Salt, or some other Body, which breaks the Force of the Dissolvent. Thus we say, *Magistry of Bismuth*, which is a very fine Powder made by dissolving the Bismuth in Spirit of Nitre, and pouring on it Salt Water, which precipitates the *Magistry* to the bottom. See *Bismuth*. *Magistry of Lead* is a fine Powder, made by dissolving *Saccharum Saturni* in distill'd Vinegar, and then precipitating it with Oil of Tartar per Deliquium. The word *Magistry* is also used in speaking of Refins, Resinous Extracts of Scammony, Jalap, Turpeth, &c. which are made by dissolving the Matter in Spirit of Wine, and precipitating it with Water. Mr. Boyle takes the proper Notion of a *Magistry* to consist in a Preparation of a Body, whereby it is wholly, or at least in great measure, by means of some extraneous Additament converted into a Body of a different kind; as when Iron or Copper is turned into Chrystals of Mars and Venus.

**MAGMA**, among Chymists, &c. the Dregs or Residuum after Infusion or Distillation.

**MAGNA ARTERIA**, the same with the *Aorta*, which see.

**MAGNA CHARTA**, the Great Charter, granted the ninth Year of Henry the Third, and confirmed by Edward the First. The Reason why it is so term'd, is either because of the Excellency of the Laws and Liberties therein contained, or else because there was another Charter, call'd *Charta de Foresta*, establish'd with it, which was the less of the two; or because it contained more than any other Charters; or more than that of K. Henry the First; or in regard of the Wars and Troubles in the obtaining of it; or of the great and remarkable Solemnity in the denouncing Excommunications against the Infringers of it. *Holinshed* indeed tells us, that King John, to appease the Barons, yielded to Laws or Articles of Government much like to this great Charter; but we have now no antienter Law written than this; which was thought to be so beneficial to the Subject, and a Law of so great Equity, in comparison of those which were formerly in use, that King Henry, for the granting it, had the fifteenth Penny of all the moveable Goods, both of Temporality and Spirituality. Sir Edw. Coke says, it has been above thirty times confirmed. It is recorded, that when Henry III. confirm'd it, he swore on the word and Faith of a King, a Christian, and a Knight, to observe it. See *Charta Magna*.

**MAGNES ARSENICAL**, in Chymistry, a Mixture of equal Parts of Arsenic, Sulphur, and Antimony melted together over the Fire, and condensed in manner of a Stone. It is a very gentle Caustic, and was first invented by *Angelus Sala*. It has its Name *Magnet*, because being wore during Malignant Diseases, it is supposed to preserve the Wearer from Infection by a Magnetical Power.

**MAGNET**, or *Loadstone*, a Mineral Stone, or rather a Metal, or an imperfect Iron; in Weight and Colour resembling Iron Ore, tho somewhat harder and more heavy. It is usually found in Iron Mines, and sometimes in very large pieces, half *Magnet*, half Iron. Its Colour is different, according to the different Countries (it is brought from. *Norman* observes, that the best are those brought from *China* and *Bengal*, which are of an Iron or Sanguine Colour; those of *Arabia* are reddish, those of *Macedonia* blackish; and those of *Hungary*, *Germany*, *England*, &c. the Colour of unwrought Iron. Neither its Figure nor Bulk are determined, but it is found of all Forms and Sizes.

The Antients reckon'd five kinds of *Magnets*, different in Colour and Virtue: the *Ethiopic*, *Magnesian*, *Baotic*,

*Alexandrian*, and *Nasblian*. They also took it to be Male and Female: but the chief Use they made of it was in Medicine; especially for the Cure of Burns, and De-fluxions on the Eyes: the Moderns, more happy, take it to conduct 'em in their Voyages.

The most distinguishing Properties of this wonderful Body, are, That it attracts Iron, and that it points to the Poles of the World; and in other Circumstances also dips or inclines to a Point beneath the Horizon, directly under the Pole; and that it communicates these Properties by Touch, to Iron. On which Foundation are built the Mariners Needles; both Horizontal, and Inclinator, or Dipping Needles. See *Needle*.

The Attractive Power of the Magnet was known to the Antients, and is mention'd even by *Plato* and *Euripides*; who call it the *Herculean Stone*; because it commands Iron, which subdues every thing else: But the Knowledge of its Directive Power, whereby it disposes its Poles along the Meridian of every Place, and occasions Needles, Pieces of Iron, &c. touch'd with it, to point nearly North and South, is of a much later date; tho the exact Time of its Discovery, and the Discoverer himself, are yet in the dark. The first tidings we hear of it, is in 1260, when *Paulus Venetus* is said by some to have first introduced the Mariners Compass; tho not as an Invention of his own, but as derived from the *Chinese*, who are said to have had the Use of it long before: but others, and with good reason, think that the *Chinese* rather borrow'd it from the Europeans. *John de Goia*, a Neapolitan, who lived in the 13th Century, is the Person usually supposed to have the best Title to the Discovery: And yet Sir G. Wheeler mentions, that he had seen a Book of Astronomy much older, which supposed the Use of the Needle; tho not as applied to the Uses of Navigation, but of Astronomy. And in *Guyot de Provins*, an old French Poet, who wrote about the Year 1180, there is express mention made of the Loadstone and the Compass; and their Use in Navigation obliquely hinted at. See *Compass*.

The Variation of the Needle, or its Declination from the Pole, was first discovered by *Seb. Cabot*, a Venesian, in 1500; and the Variation of that Variation by Mr. *Gellibrand*, an Englishman, about the Year 1625. Lastly, The Dip or Inclination of the Needle, when at liberty to play vertically, to a Point beneath the Horizon, was first discover'd by another of our Countrymen, Mr. R. Norman, about the Year 1576. See *Needle*.

Some of the Phenomena of the Magnet are as follow.

(1.) In every Magnet there are two Poles, the one whereof points Northward, the other Southward; and if the Magnet be divided into ever so many pieces, the two Poles will be found in each piece. (2.) These Poles in different parts of the Globe, are differently inclined towards a Point under the Horizon. (3.) These Poles, tho contrary to one another, do help mutually towards the Magnet's Attraction and Suspension of Iron. (4.) If two Magnets are Spherical, one will turn or conform itself to the other, so as either of them would do to the Earth; and after they have so conformed or turned themselves, they endeavour to approach or join each other; but if placed in a contrary Position, they avoid each other. (5.) If a Magnet be cut thro the Axis, the Parts or Segments of the Stone, which before were joined, will now avoid and fly each other. (6.) If the Magnet be cut by a Section perpendicular to its Axis, the two Points, which before were conjoined, will become contrary Poles; one in one, the other in the other Segment. (7.) Iron receives Virtue from the Magnet by application to it, or barely from an approach near it, tho it doth not touch it; and the Iron receives this Virtue variously, according to the Parts of the Stone it is made to touch, or made approach to. (8.) If an oblong Piece of Iron be any how applied to the Stone, it receives Virtue from it, only as to its length. (9.) The Magnet loseth none of its own Virtue by communicating any to the Iron; and this Virtue it can communicate to the Iron very speedily; tho the longer the Iron touches or joins the Stone, the longer will its communicated Virtue hold; and a better Magnet will communicate more of it, and sooner, than one not so good. (10.) Steel receives Virtue from the Magnet, better than Iron. (11.) A Needle touch'd by a Magnet will turn its Ends the same way towards the Poles of the World, as the Magnet will do it. (12.) Neither Loadstone nor Needles touch'd by it do conform their Poles exactly to those of the World, but have usually some Variation from them: And this Variation is different in divers places, and at divers times in the same place. (13.) A Loadstone will take up much more Iron when arm'd or capp'd than it can alone: And tho an Iron Ring or Key be suspended by the Loadstone, yet the Magnetical Particles do not hinder that Ring or Key from turning round any way, either to the right or left. (14.) The Force of a Loadstone may be variously increased or lessend



lessen'd, by the various Application of Iron, or another Loadstone to it. (15.) A strong Magnet at the least distance from a lesser or a weaker, cannot draw to it a piece of Iron adhering actually to such lesser or weaker Stone; but if it come to touch it, it can draw it from the other: But a weaker Magnet, or even a little piece of Iron, can draw away or separate a piece of Iron contiguous to a greater or stronger Loadstone. (16.) In these Northern Parts of the World, the South Pole of a Loadstone will raise up more Iron than the North Pole. (17.) A Plate of Iron only, but no other Body interposed, can impede the Operation of the Loadstone, either as to its Attractive or Directive Quality. Mr Boyle found it true in Glasses sealed hermetically; and Glass is a Body, as impervious as most are, to any Effluvia. (18.) The Power or Virtue of a Loadstone may be impaired by lying long in a wrong Position, as also by Rust, Wet, &c. and may be quite destroy'd by Fire. (19.) A piece of Iron Wire well touch'd, will, upon being bent round in a Ring, or coyl'd round on a Stick, &c. generally, quite lose its Directive Virtue; but always have it much diminish'd: and yet if the whole length of the Wire were not entirely bent, so that the Ends of it, tho but for the length of one tenth of an Inch, were left strait, the Virtue will not be destroy'd in those parts; tho it will in all the rest. This was first observ'd by Grimaldi and de la Hire; and is confirm'd by the Experiments of Mr. Derham; who adds further, that tho coyling or bending the Wire as above, would always destroy its Virtue by Day, yet it would not do it in the Evening. (20.) The Sphere of the Activity of Magnets is greater and less at different times: in particular, that preserv'd in the Repository of the Royal Society will keep a Key or other Body suspended to another, sometimes, at the height of 8 or 10 feet; and at others, not above 4 feet. To which we may add, that the Variation of the Magnetical Needle from the Meridian, varies at various Times of the Day; as appears from some new Experiments of Mr. Graham. See Variation. (21.) By twisting a piece of Wire touch'd with a Magnet, its Virtue is exceedingly diminish'd, and sometimes so disorder'd and confus'd, that in some parts it will attract, and at others repel; and even in some places one side of the Wire seems to be attracted, and the other side repell'd by one and the same Pole of the Stone. (22.) A piece of Wire that has been touch'd, being split or cleft into two; the Poles are sometimes chang'd; as in a cleft Magnet; the North becoming the South, and the South the North: And yet sometimes one half of the Wire will retain its former Poles, and the other half have 'em changed. To which it may be added, that laying one or other side of the half uppermost, causes a great Alteration in its Tendency or Aversion to the Poles of the Magnet. (23.) A Wire being touch'd from End to End with the same Pole of the Magnet, the End whereat you begin will always turn contrary to the Pole which touch'd it: If it be again touch'd the same way with the other Pole of the Magnet, it will then be turn'd the contrary way. (24.) If a piece of Wire be touch'd in the middle with only one Pole of the Magnet, without moving it backwards or forwards, in that place will be the Pole of the Wire; and the two Ends will be the other Pole. (25.) If a Magnet be heated red hot; and again cool'd either with its South Pole towards the North in a horizontal Position, or with its South Pole downwards in a perpendicular Position; its Poles will be changed. (26.) Mr. Boyle (to whom we are indebted for the following Magnetical Phenomena) found he could presently change the Poles of a small Fragment of a Loadstone, by applying them to the opposite vigorous ones of a large Magnet. (27.) Hard Iron Tools well temper'd, when heated by a brisk Attrition, as filing, turning, &c. will, while warm, attract thin Filings or Chips of Iron, Steel, &c. but not when cold; tho there are not wanting some Instances of their retaining the Virtue when quite cold. (28.) The Iron Bars of Windows, &c. which have a long time stood in an erect Position, grow permanently Magnetical; the lower Ends of such Bars being the North Pole, and the upper the Southern. (29.) A Bar of Iron that has not stood long in an erect posture, if it be only held perpendicularly, will become Magnetical; and its lower End the North Pole; as appears from its attracting the South Pole of a Needle: but then this Virtue is transient, and by inverting the Bar, the Poles will shift their places. In order therefore to render the Quality permanent in an Iron Bar, it must continue a long time in a proper Position. But the Fire will produce the Effect in a short time: for as it will immediately deprive a Loadstone of its Attractive Virtue; so, it soon gives a Verticity to a Bar of Iron, if being heated red hot, it be cool'd in an erect posture, or directly North and South. Nay, Tongs and Fire-forks, by being often heated and set to cool again in a posture

nearly erect, have gain'd this Magnetical Property. (30.) Mr. Boyle found, that by heating a piece of English Oker red hot, and placing it to cool in a proper posture, it manifestly acquired a Magnetic Virtue. And an excellent Magnet of the same Ingenious Gentleman's having lain near a Year in an inconvenient posture, had its Virtue surprizingly impair'd; as if it had been by Fire. (31.) A Needle well touch'd, 'tis known, will point North and South: if it have one contrary Touch of the same Stone, it will be deprived of its Faculty; and by another such Touch will have its Poles quite changed. (32.) A Bar of Iron that has gain'd a Verticity by being heated red-hot and cool'd again, North and South, and then hammer'd at the two Ends; its Virtue will be destroy'd by two or three smart Blows on the middle. (33.) By drawing the Back of a Knife, or long piece of Steel, Wire, &c. leisurely over the Pole of a Loadstone; carrying the Motion from the middle of the Stone to the Pole; the Knife or Wire does accordingly attract one End of a Needle: but if the Knife or Wire be pass'd from the said Pole to the middle of the Stone, it will repel that End of the Needle, which in the other Case it attracts. (34.) Either a Magnet or a piece of Iron being laid on a piece of Cork, so as to swim freely in Water; it will be found, that which soever of the two is held in the hand, the other will be drawn to it: so that Iron attracts the Magnet as much as it is attracted by it; Action and Reaction being always equal. In this Experiment, if the Magnet be set afloat, it will direct its two Poles to the Poles of the World. (35.) A Knife, &c. touch'd with a Magnet, acquires a greater or less degree of Virtue, according to the part it is touch'd on. It receives the strongest Touch, when it is drawn leisurely from the Handle towards the Point over one of the Poles: And if the same Knife thus touch'd, and thus in possession of a strong attractive Power, be retouch'd in a contrary Direction, viz. by drawing it from the Point towards the Handle over the same Pole, it immediately loses all its Virtue. Lastly, A Magnet acts with equal force in Vacuo, and in the open Air.

The Doctrine of the Magnet, or the Laws of Magnetism, Mr. Whiston lays down in the following Propositions.

I. The Loadstone has both an attractive and a directive Power united together; whereas Iron touch'd by it has only the former: i. e. the Loadstone not only attracts Needles or Filings of Steel, but directs them to certain different Angles, with respect to its own Surface and Axis: whereas Iron touch'd with it, does little or nothing more than attract them; still suffering them to lie along or stand perpendicular to its Surface and Edges in all places; without any such special Direction.

II. Neither the strongest nor the largest Loadstones give a better directive Touch to Needles, than those of a less Size or Virtue: to which it may be added, that whereas there are two Qualities in all Magnets, an Attractive and a Directive one; neither of 'em depend on, or are any Argument of the Strength of the other.

III. The Attractive Power of Loadstones and of Iron, will greatly increase or diminish the Weight of Needles on the Ballance; nay, will overcome that Weight, and sustain other additional Weights too: while the directive Power has much smaller effect. Gassendus indeed, as well as Merfennius and Dr. Gilbert, maintain it has none at all; but by a Mistake; for Mr. Whiston found from repeated Trials on large Needles, that after the Touch they weigh'd less than before. One of 4584  $\frac{1}{2}$  Grains lost 2  $\frac{1}{2}$  Grains by the Touch; and another of 65726 Grains weight, no less than 14 Grains.

IV. 'Tis probable that Iron consists almost wholly of the Attractive Particles; and the Loadstone of the Attractive and Directive together; mix'd probably with other heterogeneous Matter; as having never been purg'd by the Fire, which Iron has: And hence may arise the reason why Iron, after it has been touch'd, will lift up much greater Weights than the Loadstone that touch'd it.

V. The Quantity and Direction of Magnetic Powers, communicated to Needles, is not properly, after such Communication, owing to the Magnet which gave the Touch; but to the Goodness of the Steel that receives it, and to the Strength and Position of the Terrestrial Loadstone, whose Influence alone those Needles are afterwards subject to, and directed by: so that all such Needles, if good, move with the same Strength and Point to the same Angle; what Loadstone soever (provided it be good) they were excited by. Nor does the Touch seem to do much more in Magnetical, than Attrition in Electrical Cases; i. e. it serves to rub off some obstructing Particles that adhere to the Surface of the Steel, and open the Pores of the Bodies touched, and so make way for the Entrance and Exit of such Effluvia as occasion or assist the Powers we are speaking of. Hence



He takes occasion to observe, that the directive Power of the Loadstone seems to be mechanical; and to be derived from magnetic Effluvia, circulating continually round it.

VI. The absolute attractive Power of different armed Loadstones, is, *ceteris paribus*, according to the Quantity, not of their Diameters or Solidities, but of the Surfaces of the Loadstones; or in a Duplicate Proportion of their Diameters.

VII. The Power of good Magnets unarmed, not sensibly different in Strength, similar in Figure and Position, but unequal in Magnitude, is sometimes a little greater, sometimes a little less than in the Proportion of their similar Diameters.

VIII. The Loadstone attracts Needles that have been touched, and others that have not been touched with equal Force, at Distances unequal, *viz.* where the Distances are to one another as 5 to 2.

IX. Both Poles of a Loadstone equally attract Needles, till they be, tho' roughly, touched; then it is, and then only, that that one Pole begins to attract one End, and repel the other: tho' the repelling Pole will still attract upon Contact, nay at very small Distances notwithstanding.

X. The attractive Power of Loadstones, in their similar Position to, but different Distances from Magnetic Needles, is in the Sesquiduplicate Proportion of the Distances of their Surfaces from those Needles reciprocally; or as the mean Proportionals between the Squares and the Cubes of those Distances reciprocally; or as the Square Roots of the fifth Powers of those Distances reciprocally. Thus the Magnetic Power of Attraction, at twice the Distance from the Surface of the Loadstone, is between a fifth and sixth Part of that Power at the first Distance. At thrice the Distance the Power is between the 15th and 16th Part, at four times the Distance the Power is 32 times as small, and at six times the Distance 88 times as small. Where it is to be noted, that the Distances are not taken, as in the Law of Gravity, from the Center; but the Surface: all Experience assuring us, that the Magnetic Power resides chiefly, if not wholly, in the Surfaces of Loadstones and Iron; without any particular Relation to any Center at all. The Proportion here laid down was determined by Mr. Whiston, from a great Number of Experiments of Mr. Hawksbee, Dr. Brook, Taylor, and himself. The Force they measured by the Chords of those Arcs, by which the Magnet, at several Distances, draws the Needle out of its natural Direction, to which Chords (as he has demonstrated) it is ever proportional. The Numbers in some of their most accurate Trials he gives us in the following Table, setting down half the Chords, or the Sines of half those Arches of Declination, as the true Measures of the Power of Magnetism.

| Distance in Inches. | Degrees of Inclination. | Sines of $\frac{1}{2}$ Arcs. | Rat. Sesquidupl. |
|---------------------|-------------------------|------------------------------|------------------|
| 20                  | 2                       | 175                          | 465              |
| 14                  | 4                       | 349                          | 216              |
| 13                  | 6                       | 523                          | 170              |
| 12                  | 8                       | 697                          | 138              |
| 11                  | 10                      | 871                          | 105              |
| 10                  | 12                      | 1045                         | 87               |
| 9                   | 14                      | 1219                         | 70               |

XI. An Inclinator, or Dipping-Needle, of six Inches Radius, and of a Prismatic or Cylindric Figure, when it oscillates along the Magnetic Meridian, performs, here, every mean Vibration in about 6" or 360"; and every small Oscillation in about 5"  $\frac{1}{2}$ , or 330"; and the same kind of Needle, four Foot long, makes every mean Oscillation in about 24", and every small one in about 22".

XII. The entire Power of Magnetism in this Country, as it affects Needles a Foot long, is to that of Gravity nearly as 1 to 300; and as it affects Needles four Foot long, as 1 to 600.

XIII. The Quantity of Magnetic Power accelerating the same Dipping-Needle, as it oscillates in different vertical Planes, is ever as the Co-sines of the Angles made by those Planes, and the Magnetic Meridian taken on the Horizon.

Coroll. Thus if we would estimate the Quantity of Forces in the horizontal and vertical Situations of Needles at London; we shall find that the latter, in Needles a Foot long, is, to the entire Force along the Magnetic Meridian, as 96 to 100; and in Needles four Foot long, as 9667 to 10000: whereas in the former, the entire Force in Needles a Foot long, is as 28 to 100; and in those four Foot

long, as 2560 to 10000. Whence it follows, that the Power by which horizontal Needles are governed in these Parts of the World, is but one quarter of the Power by which the Dipping-Needle is moved.

Hence also, since the horizontal Needle is moved only by a Part of the Power which moves the Dipping-Needle; and that it only points to a certain Place in the Horizon, because that Place is the nearest its original Tendency, of any, its Situation will allow it to tend to: When ever the Dipping-Needle stands exactly perpendicular to the Horizon, the horizontal Needle will not respect one Point of the Compass more than another, but will wheel about every way uncertainly.

XIV. The Times of Oscillation and Vibration, both in dipping and horizontal Needles equally good, is as that of their Lengths directly; and the actual Velocity of their Points along their Arcs always equal.

Hence Magnetic Needles are, *ceteris paribus*, still better the longer they are; and that in the same Proportion with their Lengths. See Needle.

XV. The Earth, on which we live, includes within it a vast Spherical Magnet, concentric thereto, with its own Poles, Meridians, Equator, and Parallels; and all much of the same general Nature with those of small Terrella, or Spherical Loadstones, in the possession of the Curious among us.

XVI. The Power of a good Terrella, or Spherical Loadstone, as it affects a Needle a Foot long, is equal to the Magnetic Power of that internal Loadstone about two and an half, or three Diameters off such Loadstone. From which Consideration the Quantity of Magnetic Attraction, at all Distances from the internal Loadstone, for Needles a Foot long, may be determined; and from the same Consideration it appears, that the Diameter of this internal Loadstone is about 1150 Miles. To which we may add, that, in regard Sir Isaac Newton has demonstrated, that the Power of Gravity diminishes within the Earth, and is lesser there than at its Surface nearly, in the proportion of its greater Nearness to the Center; the Magnetic Power at 2900 Miles distance from us, and nearly 1060 from the Earth's Center, which is  $\frac{1}{24}$  of the Power of Gravity here, will be somewhat greater than the Power of Gravity there: Which Limit is worth our Attention, Gravity being stronger than Magnetism on the one Side of it, and weaker on the other; we mean as it affects Needles of one foot Diameter. At that Limit, therefore, at least near the Magnetic Poles, Iron, a Foot long, will be twice as heavy, and fall twice as fast as any other natural Body, *viz.* by the Union of those two equal Powers, Gravity and Magnetism; and of consequence, above that Limit, such an Iron will be less than twice as heavy; below it, more than twice as heavy as any other natural Body.

XVII. The Earth's internal Loadstone is not fixed to our upper Parts, but is moveable with respect thereto, and actually revolves on the Earth's Axis from East to West in a certain long Period of Time; as appears, beyond Contradiction, from the constant Variation of the horizontal Needle Westward; as well as the regular Increase of Inclination of the Dipping-Needle.

The only way to render this Motion, *i. e.* the Variation, possible and intelligible (to use Dr. Halley's Words) is to suppose it to turn about the Center of the Globe, having its Center of Gravity fixed and immoveable in the same common Center of the Earth. This moveable internal Surface must likewise be loose, and detached from the external Parts of the Globe; which may be reckoned the Shell, and the other the Nucleus, or inner Globe, included within it, with a fluid Medium between. Now from the Variations moving Westwards, 'tis plain, that the foresaid Nucleus has not precisely attained the same Degree of Velocity with the exterior Parts in their diurnal Revolution; but so nearly equals it, that in 365 Revolves the Difference is scarce sensible; and must probably have arisen from hence, that the Impulse, whereby the diurnal Motion was impressed on the Earth, was given to the external Parts, and thence communicated to the internal.

XVIII. This internal Magnet has one central Pole Northwards, in the nature of the Poles of our common Loadstones; but its Southern Pole appears not to be central, but rather circular; and that at a great Distance from the Southern Pole of the Earth.

XIX. The Northern Magnetic Pole is now situated about the Latitude of 76 Deg.  $\frac{1}{2}$ , *i. e.* 13 Deg.  $\frac{1}{2}$  from the North Pole of the Earth, and about 30 Deg. Eastward from the Meridian of London.

XX. The Southern Magnetic circular Pole has its Center, or central Pole, nearly in the Parallel of 60 Degrees; and in a Meridian passing along the East Coast of Borneo, about 117 Degrees Eastward of London: its Radius



dus is also an Arc of a great Circle of about 44 Degrees.

XXI. The respective Motion of the internal *Magnet*, or the Velocity, *v. g.* of its North-Pole, appears to be 27 Deg. 0 Min. in 144 Degrees, *i. e.* one Degree in five Years; so that it makes an entire Revolution in 1920 Years.

Hence as the Number of Degrees in the upper Earth's diurnal Revolution, is to the Number of Days in the Revolution of the internal *Magnet*, *i. e.* as 1 is to 700000, so is the respective Motion of this *Magnet* from East to West to the real Motion of the upper Earth from West to East; or to speak strictly, so is the Difference of their Motions from West to East, to the entire Motion of the upper Earth the same way. This external fixed Earth has therefore communicated almost all its Motion already to the internal *Magnet*, and can communicate no more than this Difference of their Motion, and that only in an infinite Term of Years; or, in other Words, this real internal Motion can never be the 700000th Part swifter than it is at present. This internal Motion therefore began with the Commencement of the diurnal Motion of the upper Earth; and has gone on still faster and faster by the Communication of that Motion thro' the intermediate Fluid. Since therefore Action and Reaction are equal, and tend to contrary Parts, this internal Loadstone, thus accelerated by the upper Part, must have all along retarded that upper Earth, and made the diurnal Rotation still slower and slower. This Acceleration on one Side, and Retardation on the other, must have been very great at the first beginning of the diurnal Motion, when the Difference of their Motion was equal to the entire Motion itself, and must have been diminishing ever since. To which Cause is probably owing that Acceleration of the Moon's Motion with respect to that of the Earth, since the time of the old Astronomers, first taken notice of by Dr. Halley, and embraced by Sir I. Newton. And the same Consideration seems to suggest a Method for determining the Age of the World; for were the Proportions of the Quantity of Matter in the upper Earth to the internal *Magnet*, with the Tenacity of the intermediate Fluid, &c. known, one might go back from the known Difference of their Velocity now, and find those Differences and Quantities of Motion themselves, *a priori*, in all past Ages; or were the Velocity of the first diurnal Rotation of the upper Earth known, we might geometrically determine, *a priori*, how long ago that Rotation began, or how antient our Earth is.

XXII. The Variation of Magnetic Needles from the Azimuth of the Meridians of the internal *Magnet*; is derived from the Difference of the Strength of the several Parts of the internal *Magnet's* Surface; which as it is only to be known by Experience, that Variation cannot be determined beforehand, unless where there are good Accounts how much it had formerly been; it being probable that it returns round, and will be the same in any Year of the next Revolution of the internal *Magnet*, that it has been in the like Year of any former Revolution, or will itself have a Revolution in about 1920 Years.

XXIII. The two fixed Magnetic Poles, in our upper Earth, first introduced by Dr. Halley, as necessary to solve the Irregularity of the Variation of the Horizontal Needle from the Meridians of the moveable internal *Magnet*, seem not to have any just Foundation in Nature; the like Irregularities being found in the common *Terrelle* or Spherical Loadstones; and being best accounted for from the Composition of the *Magnets*, which are found to have Parts of different Degrees of Purity, Strength, and Perfection; so that where the Parts are weaker than ordinary, the stronger neighbouring Parts prevail, and draw the Needle that way; not but Dr. Gilbert's Notion of prominent and depressed Parts on *Magnets* may have some room, and be allowed to contribute somewhat to such Variations. See *Needle*.

As to the Causes of Magnetism, or the Manner in which these Phenomena of the *Magnet* are produced, we have yet no Hypothesis that will satisfactorily account for them. *Plutarch* tells us, the *Magnet* attracts Iron, by emitting some spiritual Effluvia, whereby the contiguous Air being opened and driven on either Side, does again drive that contiguous to it; and thus the Action being communicated round, the Iron is thereby protruded: but this is contradicted by the equally vigorous Action of the Loadstone in *Vacuo*, and in the open Air. Others of the Antients ascribe the Action of the *Magnet* to a Soul that animates it; and others to I know not what Sympathy between the Effluvia of the Iron and those of the *Magnet*. The Opinion that principally prevailed among the Moderns is that of *Des Cartes*, maintained by *Malebranch*, *Robault*, *Regis*, &c. and even admitted of and confirmed by Mr. Boyle, &c. In this 'tis supposed there is continually flowing, from the Poles of

the World, a subtle, impalpable, and invisible Matter, channel'd or striated; which Matter circulating round the Earth, in the Plains of the Meridians, re-enters at the Pole opposite to that from which it issued, and passes again thro' the Poles parallel to its Axis: That the *Magnet* has two Poles answerable to those of the Earth, and that out of these there issues a Matter like that just mentioned: That this Matter, entering in at one of the Poles, gives the Impulse whereby Iron tends to the *Magnet*, and produces what we call Attraction. Now besides the Magnetical Matter re-entering the Poles of the *Magnet*, there is always a certain Quantity thereof circulating round the *Magnet*; composing a kind of Vortex about it. The Space wherein this Matter moves, is the Sphere of Activity of the *Magnet*, within which its attractive Faculty is confined. As to its directive Faculty, or the Inclination of a Needle touched with it to the Poles of the World, and its Dip to a Point beneath the Horizon, it follows from the same Principle; since were the *Magnet* or Needle to have any other Situation, the Magnetic Matter would strike on its Surface in vain; and not being able to get Admission, would, by degrees, change its Situation, till such time as its Pores corresponded to the Course of the Magnetical Matter; which Situation having once acquired, it would cease to move; the Magnetical Matter then ceasing to disturb it. The Form of a *Magnet* therefore is supposed to consist in its being perforated by an infinite Number of parallel Pores; some whereof are disposed to admit the striated Matter from the North Pole of the World, others that of the South; hence the North and South Poles of the *Magnet*.

As to the directive Power of the *Magnet*, Mr. *Whiston*, from the 1st, 2d, 3d, &c. Laws of Magnetism, inclines to think it mechanical; and ascribes it to magnetic Effluvia circulating continually round the Loadstone; of which Circulation, he thinks, there are evident Indications in magnetic Experiments; as Mr. Boyle thinks there are of the Magnetism or magnetic Effluvia of the Earth; tho' those Effluvia were never yet rendered sensible as Electric Effluvia begin to be; but the attractive Power Mr. *Whiston* thinks entirely immaterial, as the Power of Gravity is; not being able to devise any such Motion of a subtle Fluid belonging to the Loadstone, as will account for the attractive Power in the sesquiduplicate Proportion of the Distances reciprocally; tho' if he could, yet would that be no more than to remove the immediate Power of the Supreme Being one Step further; the last Resort of all mechanical Principles whatever being into the immaterial Power and Efficiency of the Deity.

M. *Hartsoeker* maintains, that the *Magnet* is no more than a common Stone; full of an infinite Number of hollow Prisms, which, by the diurnal Motion of the Earth, are ranged parallel to each other, and nearly parallel to the Axis of the Earth. These Prisms have their Cavities filled with an extremely subtle Matter; which, by the diurnal Motion of the Earth, is passed from Prism to Prism: thus making a Circulation, and returning into the Prisms where it first began: From these Principles he deduces all the Phenomena of the *Magnet*; and M. *Andry* does the same, from the Doctrine of Alkali and Acid.

There are *Magnets* found in most of the Provinces of *China*, but the principal Use the *Chinese* make of them is in Medicine. *Le Compte* describes their manner of cutting them by a Machine, which, he says, is vastly more expeditious than any used among us.

The *Magnet* is also called *Lapis Heraclens*, from *Heraclaea*, a City of *Magnesia*, a Port of the ancient *Lydia*, where it is supposed to have been first found. Others derive the word *Magnet* from a Shepherd of that Name, who first discovered it with the Iron of his Crook on Mount *Ida*. It is also called *Lapis Nauticus*, by reason of its Use in Navigation; and *Siderites*, from its attracting Iron, which the *Greeks* call *σίδηρος*.

MAGNETICAL AMPLITUDE, an Arch of the Horizon, contained between the Sun, at his Rising or Setting, and the East and West Point of the Compass: found by observing the Sun at his Rising and Setting by an Amplitude Compass. See *Amplitude*.

MAGNETICAL AZIMUTH. See *Azimuth*.

MAGNETISM, a Term used by some Chymists, to signify a certain Virtue, whereby one thing becomes affected at the same time with another, either in the same or a different manner. This is what they otherwise call *Sympathy*.

MAGNIFY, a Term chiefly used in reference to Microscopes, which are said to magnify Objects, or to make them appear bigger than they really are; but, in reality, Microscopes do not, nor cannot, magnify any Object, but only shew it nearer and more of its Parts than before were taken notice of. See *Microscope*.



**MAGNIFYING-GLASS**, in Optics, a little Sphere, convex Lens, &c. which, in transmitting the Rays of Light, inflects them so, as that the parallel ones become converging, and those which were diverging become parallel; by means whereof, Objects view'd thro' 'em appear larger than when view'd by the naked Eye. See *Lens, Microscope, &c.*

**MAGNITUDE**, any thing that has Parts external to Parts, connected together by some common Term; i. e. any thing locally extended or continued; or that has several Dimensions. The Origin of all Magnitude is a Point, which tho' void of Parts itself, yet its Flux forms a Line, the Flux of that a Surface, and of that a Body.

M. *Prester* gives the Name *Literal Magnitude* to a Magnitude express'd by Letters; and a *Numerical Magnitude* he calls such a one as is express'd by Numbers; a *Broken Magnitude* is a Fraction; a *Complex Magnitude* is that form'd by Multiplication; an *Incommensurable Magnitude* is a Magnitude that has no proportion to Unity.

Among the Writers of Optics, the *Apparent Magnitude* of a Body is that measured by the Optic or Visual Angle, intercepted between Rays drawn from its Extremes into the Centre of the Pupil of each. And 'tis one of their fundamental Maxims, whatever things are seen under the same or equal Angles, appear equal, and on the contrary.

The *Apparent Magnitudes* of an Object at different Distances, are in a Ratio less than that of their Distances reciprocally.

**MAGOPHONIA**, the Name of a Feast among the antient Persians. The Magus *Smerdis* having usurped the Throne of the Persians upon the death of *Cambyfes*, 521 Years before J. C. seven of the principal Lords of the Court conspired to drive him out of it. Their Design was executed with good success; *Smerdis* and his Brother, another Magus, call'd *Pitizitbez*, they kill'd. Upon which, the People also rose, and put all the Magi to the sword; insomuch that there would not one have escaped, had not the Night come upon 'em. *Darius*, Son of *Hystaspes*, was then elected King. In memory of this Massacre of the Magi, a Feast was instituted, says *Herodotus*, call'd *Magophonia*; from *Máy*®, Magus, and *óv*®, Murder.

**MAHIM**, or *Maybim*, in Law, a Corporal Hurt, whereby a Man loseth the Use of any Member, that is or may be of any defence to him in Battle; as the Eye, Hand, Foot, Scalp of the Head, Fore-tooth, or, as some say, any Finger or Toe. *Glanv. Brañ. &c.* If any one shall of Malice forethought cut out or disable any Limb or Member of any, with Intention in so doing to maim or disfigure him, it is Felony without Benefit of the Clergy; and when the Case is difficult to judge, whether it be a *Mahim* or not, the Judges commonly behold the Party wounded, and sometimes take the Opinion of Chirurgeons. The word comes from the French *Mebaigner*, to mutilate. The Canonists call it *Membri Mutilationem*; and all agree, it consists in the Loss of a Member, or the Use thereof.

**MAHOMETANISM**, the System of Religion broach'd by *Mahomet*, and still adhered to by his Followers. *Mahometanism* is embraced by the Turks, Persians, and several Nations among the Africans, and many among the East-Indians. The first and chief Article of the *Mahometan* Creed, is, that there is no other God but God; which they have from the Alcoran, where these Words are repeated incessantly: *There is no other God but him. Your God is the only God. I am God, and there is no other God but me.* This grand Axiom of their Theology seems to have been taken from the Jews, who were continually rehearsing those Words of Deuteronomy, *Hear, Israel, the Lord our God is One.* For this reason, the *Mahometans* account all such as own any thing of Number in the Divinity, to be Idolaters: And accordingly, one of the first Lessons they teach their Children, is, That God is neither Male nor Female, and consequently can have no Children.

The second Fundamental Article of *Mahometanism* consists in this, That *Mahomet* was sent from God. By which they exclude all other Religions; under pretence that their Prophet was the last and greatest of all the Prophets that God would ever send; and that as the Jewish Religion ceased with the Coming of the *Messiah*, so likewise the Christian Religion was to be abrogated with the Coming of *Mahomet*. Not but that they own *Moses* and *Jesus Christ* to have been great Prophets; but *Mahomet* they hold to be The Prophet, by way of Excellence; and the Paraclete or Comforter spoken of in Scripture.

These are the two Fundamentals of *Mahometanism*; so that when any is to make profession of that Faith, they content themselves with his speaking these words, *There is no other God but God, and Mahomet is his Envoy or Prophet.*

To these Articles the *Mahometans* have added that of Bathing or Purification, in imitation of the Jews. And

such an Opinion have they of these Purifications, that 'tis purely on that account they seem to have retain'd the Practice of Circumcision. For they pretend, with the Jews, that if the least part of the Body remain unwash'd, the Bathing is of no effect. Hence they find themselves under a necessity of being circumcis'd; that the Part cover'd by the Prepuce may also have its share of the Lotion.

Prayer is also one of the Things to which the *Mahometans* are obliged; and they perform it five times a day, to distinguish themselves from the Jews, who only do it thrice. Some of their Returns of Prayer they hold to be necessary and of Divine Obligation; others they esteem convenient and prudential. That at Nine a-clock in the Morning they don't esteem necessary; but those at Noon and in the Afternoon are held to be *Jure Divino*. They are obliged to observe an infinity of things to be heard: If they speak or smile in Praying, their Prayers are vain: and 'tis the same thing if they weep, unless it be with the Thought of Paradise or Hell. In many of their Prayers they use Beads. They believe with the Christians and Jews a Resurrection of the Dead. They hold, that e'er that time an *Anti-Mahomet* will come; and that J. C. will descend from Heaven to kill him, and establish *Mahometanism*. To which they add a great many more Chimeras, relating to *Gog* and *Magog*; and the Beast that is to come out of *Mocca*. The Mountains are to fly in the Air like Birds, and at last the Heavens will melt and run upon the Earth. They add however, that some time after, God will renew and re-establish the Earth; that then the Dead will be rais'd, &c. See *Alcoran*.

**MAIDEN**, an edg'd Instrument used in some Countries, particularly in Scotland, for the beheading of Criminals. The Maiden is a broad Piece of Iron, a foot square, sharp on the lower part, and loaded above with Lead, so as scarce to be lifted. At the time of Execution, it is pull'd up to the top of a narrow wooden Frame ten foot high, with a Groove on each side for the Maiden to slide in. The Prisoner's Neck being fasten'd to a Bar underneath, on a Sign given, the Maiden is let loose, and the Head in an instant separated from the Body.

**MAJESTY**, a Title given to Kings, and which frequently serves as a Name to distinguish them by. The Emperor is call'd, *His Cesarian* or *Imperial Majesty*; the King of Spain, *His Catholic Majesty*; the King of France, *His most Christian Majesty*; the King of Great Britain, *His Britannic Majesty*, &c. Some have also extended this Title to the Popes. *Pasquier* has observed, that our Forefathers used this Quality exceeding sparingly; and that the frequent Use of the Word which now obtains, had not its beginning before the Reign of their Henry II. He instances several Letters of S. Gregory, who writing to King *Theodebert* and *Theodoric*, only compliments them with Excellence. Till the Time of Charles V. the King of Spain had no Title but that of *Highbness*: And before our King Henry VIII. the Kings of England were only address'd under the Titles of *Grace* and *Highbness*. At the Peace of Munster, there was a great Contest between the Ministers of the Emperor and those of France: The first would not allow the Title of *Serenity* to the King of France, and the latter would not give that of *Majesty* to the Emperor. At last 'twas agreed, that whenever the French King should write with his own Hand to the Emperor, he should give him the Title of *Imperial Majesty*; and reciprocally when the Emperor should write to the King, he should give him that of *Royal Majesty*.

Under the Roman Republic, the Title of *Majesty* belonged to the whole Body of the People and to the Principal Magistrates; so that to diminish or wound the *Majesty* of the Commonwealth, was to be wanting in Respect to the State, or its Ministers. But the Power passing into the hands of a single Person, the Appellation of *Majesty* was transfer'd to the Emperor and the Imperial Family. *Pliny* complements *Trajan* on his being contented with the Title of *Greatness*; and speaks very invidiously on those who affected that of *Majesty*. And yet *Majesty* seems to be the modestest and justest Title that can be attributed to Sovereigns, since it signifies no more, at bottom, than the Royalty or Sovereign Power.

The Word seems composed of the two Latin words, *Major*, greater, and *Status*, State.

**MAIL**, a Coat of Mail, so call'd from the French *Maille*, a square Figure, or the square Hole of a Net. *Maille* with a double // signifies a round Ring of Iron, whence the Play of *Pall-Mall*, from *Palla*, a Ball, and *Maille*, the round Ring thro' which it is to pass.

**MAILED** implies something speckled, or full of Specks; as the Feathers of Hawks, Partridges, &c. or as the Fur of some wild Beasts are.

**MAIN MORTE**, a Term in some antient Customs still holding in Burgundy and other Countries, signifying a Right



Right which the Lord has, on the Death of the Chief of a Family *Mainmortal* (i. e. subject to this Right) of taking the best Moveable in the House; or in default of that, they offer'd him the Right Hand of the Deceased, in token that he could serve him no longer. This Right was not uniform; some People were *Main-mortal* in all their Effects Moveable and Hereditary; others in one only.

**MAINOUR**, *Manour*, or *Meinour*, in Law, signifies the thing that a Thief takes away or steals. Thus, to be taken with the *Manour*, is to be taken with the Thing stolen about him. If the Defendant were taken with the *Manour*, and so carried to Court, in antient Times they would arraign him on the *Mainour*, without any Appeal or Indictment. The word comes from the French *Mainier* or *Mainaver*, to hold in the hand.

**MAINPRISE**, in Law, the taking or receiving a Man into friendly Custody, that otherwise is or might be committed to Prison; upon Security given for his forth-coming at a Day assigned. They who thus undertake for any, are call'd *Mainpernors*, because they receive him into their hands; whence also comes the word *Mainpernable*, denoting the Person who may be thus bailed. See *Bail*.

*Manwood* makes a great deal of difference between *Bail* and *Mainprise*: for he that is *mainprised* is already said to be at large after the Day he is set to *Mainprise* till the Day of his Appearance; but 'tis otherwise where a Man is let to *Bail* to four or two Men, by the Lord Justice in Eyre of the Forest, or any other Judge, until a certain Day; for there he is always accounted by the Law to be in their Ward and Custody for the Time; and they may, if they please, keep him in Prison all that time. So that he who is so bail'd, shall not be said to be at large, or at his own liberty.

*Mainprise* is also an Undertaking in a Sum certain: *Bail* answers the Condemnation in Civil Causes, and in Criminals, Body for Body.

The Author of the *Mirror of Justice* says, that Pledges are those which bail or redeem any thing but the Body of a Man, and *Mainpernors* those that free the Body: Pledges therefore belong properly to real and mix'd Actions, and *Mainpernors* to personal. The word *Mainprise* is compounded of the French *Main*, Hand, and *prins*, taken.

**MAINTENANCE**, in Law, is the maintaining or upholding a Cause or Suit between others, either by Word, Writing, Countenance or Deed: Metaphorically taken from the succouring a young Child, that learns to go by one's hand; and used in the evil part in some of our Statutes. When a Man's Act in this kind is esteem'd *Maintenance*, and when not, see *Brooks* and *Kitchin*. There lies a Writ against a Maintainer, call'd a *Writ of Maintenance*.

**MAJOR**, in the Art of War, a Name given to several Officers of different Qualities and Functions.

*Major-General* is he who receives the General's Orders, and delivers them out to the Majors of the Brigades, with whom he consults what Troops are to mount the Guard, what to go on Parties, what to form Detachments, or to be sent on Convoys, &c. It is his business also to view the Ground to incamp on, and he is next subordinate to the General and Lieutenant-General. See *General*.

*Major of a Brigade*, either of Horse or Foot, is he who receives Orders, and the Word, from the Major-General, and gives them to the particular Majors of each Regiment. See *Brigade*.

*Major of a Regiment of Horse*, is the first Captain of the Regiment, and commands in the absence of the *Maitre de Camp*.

*Major of a Regiment*, is an Officer, whose business it is, to convey all Orders to the Regiment, to draw it up, and exercise it; to see it march in good Order, to look to its Quarters, and to rally it, if it happen to be broke in an Engagement, &c. He is the only Officer of a Regiment of Foot, who is allowed to be on horseback in time of Service; but he rides, that he might speedily get from place to place, as occasion serves. See *Regiment*.

There is also in a Garrison an Officer next to the Deputy-Governour, which is call'd the *Town-Major*: He ought to understand Fortification, and hath charge of the Guards, Round, Patrols, and Centinels.

There are also *Aids-Major*, *Drum-Major*, and other Officers; so call'd by reason of some Seniority or Prerogative that they have over the rest.

**MAJOR**, in Law, is a Person who is of Age to manage his own Affairs. By the Civil Law, a Man is not a *Major* till the Age of 25 Years; in England he is *Major* at 21, and in Normandy at 20.

**MAJOR**, in Logic, is understood of the first Proposition of a regular Syllogism. 'Tis call'd *Major*, because it has a more extensive Sense than the *Minor* Proposition, as containing the principal Term. See *Syllogism*.

**MAJOR** and **MINOR**, in Music, are spoken of the *Concords* which differ from each other by a Semi-tone. There are *Major* and *Minor* Thirds, &c. The *Major* Tone is the Difference between the 5th and 4th, and the *Major* Semi-tone is the Difference between the *Major* 4th and the 3d: The *Major* Tone surpasses the *Minor* by a Comma: See *Concord*.

**MAJOR-DOMO**, an Italian Term; frequently used to signify a Steward.

The Title of *Major-Domo* was formerly given in the Courts of Princes to three different kinds of Officers. 1st, To the Officer who took care of what related to the Prince's Table or Eating, otherwise call'd *Eleater*, *Præfessus Mensæ*, *Architriclinus*, *Dapifer*, and *Princeps Coquorum*. 2dly, *Major-Domo* was also applied to the Steward of the Household. 3dly, The Title of *Major-Domo* was also given to the Chief Minister, to whom the Prince deputed the Administration of all his Affairs, foreign and domestick, relating to War as well as Peace. Instances of *Major-Domo's* in the two first Senses are frequent, both in the English, French, and Norman Affairs.

**MAKE**, in Law, signifies to perform and execute. Thus, *to make his Law*, is to perform that Law to which he had formerly bound himself; i. e. to clear himself of an Action commenc'd against him, by his own Oath and the Oath of his Neighbours. *To make Services*, or *Custom*, is nothing else but to perform.

**MALACIA**, a Disease consisting in a depraved Appetite, wherein the Patient covets and longs for some particular kind of Food with extraordinary Earnestness, and eats it to Excess. As when a Woman with Child is vehemently desirous of Herrings, or any other usual Dish: Many Authors confound this Affection with another call'd *Pica*, consisting in a Depravation of Appetite, which leads the Patient to covet things unnatural and absurd, as Lime, Coals, &c. The *Malacia* seems to arise from an ill Disposition of the Menstruum in the Stomach; or from some Defect in the Imagination, which determines it to some one thing rather than another. The word seems derived from the Greek *μαλακός*, soft: too lax a Tone of the Stomach being generally the Occasion of Indigestion and unusual Cravings.

**MALANDERS**, a Disease in Horses so called from the Italian *Malandare*, to go ill. It consists in certain Chops, or Chinks, appearing on the inside of the Fore-Legs, just against the bending of the Knee, which void a red, sharp, and biting Water.

**MALE**, the Sex which has the Parts of Generation without-wards, and which has ordinarily the Preheminence over the other.

**MALEBRANCHISM**, the Doctrine or Sentiments of Father *Malebranch*, a Priest of the Oratory of France. *Malebranchism* is in a great measure the same with *Cartesianism*. It must be own'd however, that tho' F. *Malebranch* thought the same with *Des Cartes*, yet he does not seem to have follow'd him, but to have met with him. *Malebranchism* is contain'd in the *Recherche de la Verité*; and to give a general Notion of it, we need only repeat what M. *Fontenelle* says of that Work. The *Enquiry after Truth*, says he, is full of God. God is the only Agent, and that too, in the strictest sense. All Power of Acting, all Actions belong immediately to him. Second Causes are no Causes. They are only Occasions that determine the Action of God; Occasional Causes. See *Cause*. F. *Malebranch*, however, does not here lay down his System entire with regard to Religion, or rather the Manner in which he would reconcile Religion to his System of Philosophy. That he reserv'd for his *Christian Conversations*, printed in 1677. where he proves the Existence of a God, the Corruption of Human Nature by Original Sin, the Necessity of a Mediator and of Grace. *Malebranchism*, notwithstanding, appears to many Persons not only ill grounded, but even dangerous and destructive to Religion: and has accordingly been vigorously oppos'd by many zealous French Authors. The first was M. *Foucher*. After him came M. *Arnaud*; and in 1715, (the Year F. *Malebranch* died) F. *du Terre*, a Jesuit, publish'd an ample Confutation (as he imagines) of his whole System. That part which relates to our seeing all things in God, has been answer'd by Mr. *Locke*.

**MALEDICTION**, in Law, a Curse usually annex'd to Donations of Lands, &c. to Churches and Religious Houses; imprecating the most direful Punishments to those who should infringe them.

**MALIGNANT**, in Medicine, a Disease greatly aggravated: The word is generally applied to such Fevers as are Epidemical, or Infectious, and are attended with Spots and Eruptions of various kinds. See *Fever*.

**MALLEABLE**, something hard and ductile, and that may be beaten, forg'd and extended under the Hammer without breaking. All Metals are *Malleable*, excepting Quicksilver; but Gold in the greatest degree of all. The Chymists have long sought the Fixation of Mercury, to render it *malleable*. 'Tis a popular Error, that ever



the Art of making Glass *malleable*, was known ; its Nature is incapable of it. For if it were ductile, its Pores would not be opposite to each other, and of consequence it would not be transparent ; so that its principal Quality would be lost. See *Transparency*. This Error is founded on the Credit of antient Historians.

**MALLEOLUS**, a Process in the lower part of the Leg just above the Foot. There is one internal, and another external. The internal is an Eminence of the *Tibia*, the external of the *Fibula* : the two together form the Ankle.

**MALLET**, a kind of large Hammer, made of Wood, much used by Artificers who work with the Chissel, as Sculptors, Masons and Stone-cutters, whose Mallet is ordinarily round ; Carpenters, Joiners, &c. who use it square.

**MALLEUS**, in Anatomy, is understood of one of the Bones of the Ear, from its Resemblance to a Hammer or Mallet ; first discovered by *Jac. Carpenfis*. See *Ear*.

**MALMSEY**, or *Malvasy*, a kind of Wine brought from Greece or *Candia* ; so call'd from *Malvasia*, a City in *Peloponnesus*, which is the antient *Epidaurus*, whence this celebrated Liquor was first brought. That brought from *Candia* is esteem'd the best. See *Wine*.

*Malmsey* is also the Name of a kind of Muscadine Wine brought from *Provence*.

**MALT**, a Preparation of Barley, whose Use is well known. The Process or Manner of making it, Sir R. Murray describes as follows. Take good Barley newly threshed, &c. put about six *English* Quarters in a Stone Trough full of Water, where let it steep till the Water be of a bright reddish colour ; which will be in about three days, more or less, according to the Moistness or Dryness, Smallness or Bigness of the Grain, the Season of the Year, or the Temperature of the Weather. In Summer, *Malt* never makes well ; in Winter it requires longer steeping than in Spring or Autumn. It may be known when it is steep'd enough, by other Marks besides the Colour of the Water ; as by the excessive Swelling of the Grain if it be over-steep'd, and by too much Softness : being, when 'tis in a right Temper, like the Barley prepared to make Broth of. When it is sufficiently steep'd, take it out of the Trough, and lay it on heaps, to let the Water drain from it ; then after two or three hours turn it over with a Scoop, and lay it in a new heap, about 20 or 24 Inches deep.

This Heap is call'd the *Coming Heap*, and in the right Management of this lies the principal Skill. In this Heap it may lie 40 hours, more or less, according to the foremention'd Qualities of the Grain, &c. before it come to the right Temper of *Malt* ; which that it may do equally, is mainly desired. While it lies in this Heap, it must be carefully look'd to, after the first 15 or 16 Hours ; for about that time the Grain begins to put forth the Root : which when they have equally and fully done, the *Malt* must within an hour after be turn'd over with a Scoop ; otherwise the Grains will begin to put forth the Blade or Spire also, which must by all means be prevented. If all the *Malt* don't come equally, but that which lies in the middle, being warmest, come the soonest ; turn it, so as the outmost may lie inmost, and thus manage it till 'tis all alike. As soon as the *Malt* is sufficiently come, turn it over, and spread it to a depth not exceeding five or six Inches ; and by that time it is all spread out, begin and turn it over and over again three or four times. Afterwards turn it over in like manner once in four or five hours, making the Heap deeper by degrees : and continue so to do for the space of 48 hours at least. This frequent turning it over, cools, dries, and deadens the Grain, whereby it becomes mellow, melts easily in Brewing, and separates entirely from the Husk. Then throw up the *Malt* into a Heap, as high as you can ; where let it lie till it grow as hot as your Hand can endure it, which usually comes to pass in about 30 hours space. This perfects the Sweetness and Mellowness of the *Malt*. After it is sufficiently heated, throw it abroad to cool, and turn it over again about 6 or 8 hours after, and then lay it on the Kiln with Hair-Cloth or Wire spread under it ; where after one Fire, which must last for 24 hours, give it another more slow, and afterwards, if need be, a third : for if the *Malt* be not thoroughly dried, it cannot be well ground, neither will it dissolve well in the Brewing ; but the Ale it makes will be red, bitter, and will not keep. The best Fuel is Peat or Turf ; the next, Charcoal. If there be not enough of one kind, burn the best first, for that gives the strongest Impression. Indeed the best and most natural Method of drying it, is in the Sun in the Months of *April* and *May*. This yields the palest, the most wholesome, and the finest Liquor. However this be, take care the *Malt* be not smok'd in the drying. As to the Complexion or Colour of *Malt*, White is accounted the best, because the most natural.

The Manner of preparing Liquors, of *Malt* ; see under the word *Brewing*.

*Malt Liquors* have different Names, as well as different Virtues, Properties and Uses, both from the different Manners of preparing the *Malt*, (whence they are distinguish'd into *Pale* and *Brown* ;) and from the different Manners of preparing or brewing the Liquors themselves ; whence they are divided into *Beer* and *Ale*, *Strong* and *Small*, *New* and *Old*.

As to the first Division, *Malt Drinks* are either *Pale* or *Brown*, as the *Malt* is more or less dried on the Kiln ; that which is the slenderest dried tinging the Liquor least in brewing, and therefore call'd *Pale* ; whereas that higher dried, and as it were roasted, makes it of a higher colour : a Mixture of both these makes an Amber Colour, whence several of these Liquors take their Name. Now 'tis certain the *Pale Malt* has most of the natural Grain in it, and is therefore the most nourishing ; but for the same reason, requires a stronger Constitution to digest it. Those who drink much of it, are usually fat and sleek in their Bloom ; but are usually cut off with sudden Fevers ; or if they avoid this, fall early into a distemper'd Old Age. The *Brown* makes a Drink much less viscid, and fitter to pass the several Strainers of the Body ; but if very strong, may lead on to the same Inconveniences with the *Pale* ; tho a single Debauch wears off much more easily in the *Brown*. Dr. *Quincey* observes, that the best *Pale Liquors* are those brew'd with hard Waters, as those of Springs and Wells : in regard the Mineral Particles wherewith these Waters are impregnated, help to prevent the Cohesions of those drawn from the Grain, and enable them to pass the proper Secretions the better ; as the viscid Particles of the Grain do likewise defend these from doing the mischief they might otherwise occasion. But softer Waters, as Rain and River Waters, seem best suited to draw out the Substance of high-dry'd *Malts*, which retain many fiery Particles in their Contexture, and are therefore best lost in a smooth Vehicle.

As to the Difference in Preparation, it consists chiefly in the Use of Hops, as in *Beer* ; or in their Omission, as in *Ale*. Now the Difference made by Hops, is best discovered from the Nature and Qualities of the Hops themselves. These are known to be a subtle grateful Bitter ; in their Composition therefore with this Liquor, they add somewhat of an Alkaline Nature, i. e. Particles that are subtle, active and rigid. By which means the ropy, viscid Parts of the *Malt* are more divided and subtiliz'd, and are therefore not only render'd more easy of Digestion and Secretion in the Body ; but also, while in the Liquor, prevent it from running into such Cohesions as would make it ropy, vapid and sour. Now for want of this, in unhopp'd Drinks, that clammy Sweetness which they retain after working, soon turns them Acid, and unfit for Use ; which happens sooner or later, in proportion to the Strength they receive from the *Malt*, and the Communion it has undergone by Fermentation. 'Tis a common Opinion, that *Ale* is more Diuretic than *Beer*, that is, unhopp'd Liquors more than that with Hops in it. Which may hold in some particular Constitutions, in regard *Ale* being more smooth, softning, and relaxing, where Urine is to be promoted by enlarging the Passage, as in thin dry Constitutions, this is the most likely to effect it. But where the promoting of Urine is to be done by attenuating and breaking the Juices, and rendering them more fluid, 'tis certainly best answer'd by those Drinks which are well hopp'd. As to the Dispute, whether or no Hops tend to breed the Stone, 'tis too long to enter upon here. Dr. *Quincey* is of opinion, there is but little reason for the Affirmative side of the Question ; and in the general makes no scruple to say, that for one Constitution damaged by *Beer*, there are Numbers spoil'd by *Ale*. For this last manifestly fouls the Glands, stuffs the Vessels with Slime and Viscidity, makes the Body unwieldy and corpulent, and paves the way for Cachexies, Jaundice, Asthma's, and at last incurable Dropsies. The Urinary Passages, also, which it is supposed to clear, it will in time fill with Slough and Matter of as ill consequence as Gravel.

Again, the different Strengths of these Liquors makes their Effects different. The stronger they are, the more viscid Parts they carry into the Blood ; and though the Spirituous Parts make these imperceptible at first, yet when these are evaporated, which will be in a few hours, the other will be sensibly felt by Pains in the Head, Nauseousness at the Stomach, and Lassitude or Listlessness to Motion. This, those are the most sensible of, who have experienced the Extremes of drinking these Liquors and Wines ; for a Debauch of Wine they find much sooner wore off, and they are much more lively and brisk afterwards, than after fuddling *Malt Liquors*, whose viscid Remains will be long e'er they are shook off. These Liquors therefore are more wholesome for being small ; i. e. of such a Strength as is able to carry a small degree of Warmth into the Stomach, but not so great as to prevent



vent their being proper Diluters of the necessary Food. Indeed in robust People, or those who labour hard, the Viscidities of the Drink may be broke into convenient Nourishment; but in Persons of another Habit and Way of Living, they serve rather to promote Obstructions and ill Humours.

The Age of these Liquors is the last thing by which they are render'd more or less wholesome. Age seems to do nearly the same thing as Hops; for those Liquors which are longest kept, are certainly least viscid: Age breaking the viscid Parts, and by degrees rendering them smaller and fitter for Secretion. But this is always determined according to their Strength; in proportion to which they will sooner or later come to their full Perfection as well as Decay. For when Ale or Beer is kept till its Particles are broke and comminuted as far as they are capable, then 'tis they are the best; and beyond this they will be continually on the Decay, till the finer Spirits are entirely escaped, and the Remainder becomes vapid and sour.

We shall only add, that those who mix Wine with their common Drink, are less subject to Coughs, with other Distempers of the Breast, and to Dropsies; yet are they more affected with Gravel and Pains of the Gout. See *Wine*.

**MALTA, Knights of:** An Order of Military Religious, who have bore various Names; as, *Hospitallers of S. John of Jerusalem, Knights of S. John, Knights of Rhodes, Order of Malta, Religion of Malta, &c.* About the Year 1048, some *Neapolitan* Merchants founded a Church after the *Latin Rite* at *Jerusalem*, giving it the Name of *Sta Maria della Latina*. They also founded a Monastery of Religious after the Order of *S. Bennet*, for the Reception of Pilgrims; and afterwards an Hospital near the Monastery, to take care of the Diseased, under the direction of a Master or Rector, to be nominated by the Abbot of *Sta Maria della Latina*. Besides which, they also built a Chappel in honour of *S. John Baptist*. In 1099, *Godfrey of Bullen* having taken *Jerusalem*, endow'd this Hospital with some Demesnes he had in *France*; and others imitating his Liberality, the Revenues of the Hospitals became considerably augmented. Upon this, *Gerard Torn* their Rector, in concert with the Hospitallers, resolved to separate from the Abbot and Religious of *Sta Maria*, and to form a distinct Congregation, under the Name and Protection of *S. John Baptist*: And hence it was, that they had the Name of *Hospitallers*, or *Brothers of S. John of Jerusalem*. Pope *Paschal II.* by a Bull in the Year 1113, confirmed the Donations made to this Hospital, which he settled under the protection of the Holy See; ordering that the Rectors, after *Gerard's* death, should be chosen by the *Hospitallers*. *Raymond de Puy*, *Gerard's* Successor, took the Title of *Master*: He gave a Rule to the *Hospitallers*, which was approved by *Calixtus II.* in 1120.

Such was the first Rise of the Order of Malta. Now their first Grand Master finding the Revenues of the Hospital vastly exceeded what was necessary for the Entertainment of poor Pilgrims and diseased Persons, resolved to employ the Surplus against the Infidels; and with this View offer'd himself to the King of *Jerusalem*. He divided his *Hospitallers* into three Classes. The first consisted of Nobles, whom he destined to the Profession of Arms, for the Defence of the Faith, and the Protection of Pilgrims; the second consisted of Priests or Chaplains, who were to perform the Office; and the third of Servitors, who were not Noble, but were also appointed for the War. He also regulated the Manner of admitting Knights Brothers; and had the whole confirmed by Pope *Innocent*; who gave them for Arms, a White Cross in a Field Argent, which continue still the Standard of this Order.

After the Loss of *Jerusalem*, they retired first to *Margar*, then to *Acre*, which they defended very vigorously in 1290. After the entire Loss of the *Holy Land*, they withdrew to *Cyprus*, where *K. Henry of Lusignan*, whom they had follow'd thither, gave 'em the City of *Limiffon*. Here they continued 18 Years; when taking the Island of *Rhodes* from the *Sarazens* in 1308, they settled there. And now it was that they first took the Name of *Knights*, viz. *Knights of Rhodes*. *Andronicus*, Emperor of *Constantinople*, granted to their Grand Master *Foulque de Villaret*, the Investiture of this Order; and the Donation was confirm'd by Pope *Clement*. The Year following, with the assistance of *Amadeus IV.* Duke of *Savoy*, they defended themselves and their Island against an Army of *Sarazens*. In 1480, their Grand Master *d'Aubusson* made a vigorous Defence against *Mahomet II.* and preserved the Island, in spite of a formidable Army which besieged it for the space of three Months. But in 1522, it was attack'd by *Soliman* with an Army of three hundred thousand Men, and taken by him, after having been in the possession of the Knights 213 Years. After this Loss, the Grand Master

and Knights retired first into the Isle of *Candia*. Some time after Pope *Clement VII.* gave them *Viterbo*. Lastly, *Charles V.* in 1530, gave them the Island of *Malta*, which they still hold; and hence they come by the Appellation of *Knights of Malta*; tho' their proper Name is that of *Knights of the Order of St. John of Jerusalem*; and their Grand Master, among his other Titles, still retains that of *Master of the Hospital of St. John*, and *Guardian of the Poor of our Saviour Jesus Christ*.

The Order of *Malta* have no other Dominions besides that of their Island, and some other little Places in the Neighbourhood, the chief whereof are *Goza* and *Comino*. The Government is both Monarchical and Aristocratical, the Grand Master being the Sovereign, and the Chapter the Senate. It is Monarchical with regard to the Inhabitants of *Malta*, and the Isles adjacent, and even with regard to the Knights in every thing relating to the Statutes and Rule of their Order; and Aristocratical, with regard to the Decision of any important Affairs, which are not to be dispatched but by the Grand Master and the Chapter. There are two Councils, the one ordinary, composed of the Grand Master, as Chief, and the *Grands Croix*; the other compleat, consisting of the Grand Master, the *Grands-Croix*, and the two Senior Knights of each Language.

The Languages of *Malta* are the several Nations whereof the Order is composed. Of these there are eight, viz. *Provence, Auvergne, France, Italy, Arragon, Germany, Castile, and England*. The Pillar (as he is called) of the Language of *Provence* is the Grand Commander, he of *Auvergne* the Grand Marshal, he of *France* the Grand Hospitaller, he of *Italy* Grand Admiral, he of *Arragon* Grand Conservator, or Draper, as he was antiently called; the Pillar of the Language of *Germany* is Grand Bailiff, and he of *Castile* Grand Chancellor; the Language of *England*, which has been extinct since the Time of the Reformation under King *Henry VIII.* had for its Pillar, or Chief, the *Turopolier*, or General of the Infantry. The Language of *Provence* is the first, on account of *Raimond de Puy*, their first Grand Master, who was a *Provenzial*.

In each Language there are several Grand Priories and capital Bailiages. To each Language belongs a Hall, where the Knights eat, and hold their ordinary Assemblies. Each Grand Prior has a Number of Commandries. The Commandries are either magistral, by Right, or by Favour; the magistral are those annexed to the Grand Mastership, whereof there is one in each grand Priory. Commandries by Right are those which come by Right of Seniority; their Seniority is computed from the Time of their Admission, but they must first have lived five Years at *Malta*, and have made four Caravannes, or cruising Voyages on the *Turks* and *Corfairs*. Commandries by Favour, are those which the Grand Master, or the Grand Priors have a Right of conferring; one of these they confer every five Years on whom they please.

The Noble Knights are called *Knights by Right*; excepting whom, none can be Bailiffs, Grand Priors, or Grand Masters. The Knights by Favour are those who, not being noble of themselves, are raised, on account of some great Exploit, or notable Service, into the Rank of Nobles. The Servitors, or Serving-Brothers, are of two kinds; (1.) The Servitors of War, whose Functions are the same with those of the Knights. (2.) Servitors of Religion, whose whole Business is to sing the Praises of God in the Conventual Church, and to officiate each in his Turn as Almoners on board the Vessels and Gallies of the Order. The Brothers of Obedience are Priests, who, without being obliged to go to *Malta*, take the Habit of the Order, make the Vows, and attach themselves to the Service of some of the Churches of the Order, under the Authority of a Grand Prior, or Commander, to whom they pay Obedience. The Knights of Majority are those who, according to the Statutes, are admitted at sixteen Years of Age. The Knights of Minority are those who are admitted from the Time of their Birth; which, however, can't be done without a Dispensation from the Pope. The Chaplains can only be admitted regularly from ten to fifteen Years of Age; after fifteen they must have a Brief from the Pope; till fifteen the Grand Master's Letter is sufficient. These are called *Diacons*, and must give Proof of their being born of creditable Families.

For the Proofs of Nobility to be made, e'er the Admission of Knights, in the Language of *Germany*, they go back six Generations; in the rest 'tis sufficient to go back to the Great Grandfather on the Father's or Mother's side. All the Knights, after their Profession, are obliged to wear a white Cross or Star, with eight Points over the Cloak or Coat on the left Side, which is the proper Habit of the Order, the Golden Cross being only an Ornament.

There



There are also Female Hospitallers of the Order of *St. John of Jerusalem*, sometimes also called *Chevalietesses*, or *She-Knights*, of equal Antiquity with the Knights themselves; whose Business was to take care of the Women-Pilgrims, in an Hospital a-part from that of the Men.

**MALTHA**, a kind of Cement, formerly in great Use, composed of Pitch, Wax, Plaister, and Grease. Besides this, there was another kind of *Maltha* wherewith the Romans plaistered and whitened the Insides of their Aqueducts; this was a very fine Cement, consisting of Lime slaked in Wine, incorporated with melted Pitch and fresh Figs. The natural *Maltha* is a kind of Bitumen, wherewith the *Asiatics* plaister their Walls. When this *Maltha* is once set on fire, Water won't extinguish it, but serves rather to make it burn more fiercely. The first *Maltha* was antiently used in the Dedication of Churches.

**MAMMÆ**. See *Breasts*.

**MAMMELUKE**, the Name of a Dynasty which reigned a considerable Time in *Egypt*. They were originally *Turkish* and *Circassian* Slaves, bought of the *Tartars* by *Melicsaleb*, to the Number of a thousand, whom he bred up to Arms, and raised some to the principal Offices of the Empire. They killed Sultan *Moadam* in 1250, being affronted at his concluding a Treaty with his Prisoner *St. Louis* without their Privity. This *Moadam* was the last Sultan of the *Majoubites*; to whom succeeded the *Mammelukes*, the first of whom was Sultan *Azeddin*, or *Mouz Ibec*, the *Turcoman*.

Others say, that the *Mammelukes* were ordinarily chosen from among the Christian Slaves, and that they were the same thing, in great measure, with the *Janizaries* among the *Turks*. They never married. The first are said to have been brought from *Circassia*, and some add, that they first began to be talked of about the Year 869.

The Word comes from *مَلِك*, *regere, imperare*, the Arabic Participle Passive whereof is *مَمْلُوك*, *Mamluc*, which signifies *Subject*, or one under the Dominion of another. *Scaliger* holds, that the Word is *Arabic*, but that it properly signifies something bought with Money; but others will have it signify any thing acquired, either as Prize or Purchase.

**MAMMIFORMIS**, in Anatomy, a Name given to two Apophyses of the Bone in the back Part of the Skull, so called from their resembling a Breast. See *Mastoides*.

**MAMMILLARIS**, in Anatomy, an Epithet given to two little Protuberances, somewhat resembling the Nipples of the Breast, found under the Fore-Ventricles of the Brain, and supposed to be the Organs of Smelling. They are called *Apophyses Mammillares*. There is also a Muscle called *Mammillaris*, or *Nastoides*, serving to stoop the Head.

**MANAGE**, or *Manege*, a Riding Academy, or Place for riding the Great Horse, and for breaking Horses to the proper Motions and Actions. In a *Manage* is a Place destined for vaulting round a Pillar, a Course or Carrier for running the Ring, and on the Side are Pillars, between which are placed the Horses destined for high Airs. *Manage* is also used for the Exercise itself, either of the Horse or the Rider. The Word is borrowed from the French *Manege*, and that from the Italian *Maneggio*, or, as some will have it, *à Manu agendo*.

**MANCIPLE**, a Caterer; there was antiently an Officer in the Temple called by this Name, now called the Steward; and the Name and Office is retained still in our Colleges in both the Universities.

**MANDAMUS**, a Writ that lieth after the Year and Day, whereas, in the mean time, the Writ called *Diem clausit extremum* hath not been sent out to the Escheator, for the same purpose to which it should have been sent. *Mandamus* is also a Charge to the Sheriff, to take into the King's hands all the Lands and Tenements of the King's Widow, that, against her Oath formerly given, married without the King's Consent.

**MANDARIN**, a Name given by the Portuguese to the Nobility of the Eastern Countries, whom the Chinese call *Quon*, or rather *Coben*, *q. d. to serve, to be a Minister of a Prince*. There are in China nine Orders of *Mandarins*; or nine Degrees of Nobility; which have as many different Animals for their Characteristicks. The first is distinguished by a Crane, the second by a Lion, the third by an Eagle, the fourth by a Peacock, &c. There are in all thirty-two or thirty-three Thousand *Mandarins* in China. There are *Mandarins* of Letters, and *Mandarins* of Arms; both the one and the other of which pass several Examinations. Since the Time that the *Tartars* have rendered themselves Masters of China, most of the Tribunals, or Courts of Justice, &c. instead of one *Mandarin* for a President, have two; the one a *Tartar*, the other a *Chinese*. The *Mandarinate* is not hereditary, nor are any raised to it but Men of Letters.

*Mandarin* is also the Name which the Chinese give to the

learned Language of the Country; for besides the proper and peculiar Language of each Nation and Province, they have one common to all the learned Men in the Empire; and which is that in China which the Latin is in Europe. This Language they call the *Mandarin*, or the Language of the Court. Their public Officers, as Notaries, Lawyers, Judges, and chief Magistrates, write and speak the *Mandarin*.

**MANDATE**, in the Canon Law, is a Rescript or Edict of the Pope, by which he commands some Ordinary, Collator, or Presenter, to put the Person there nominated in possession of the first Benefice vacant in his Collation. An Apostolical Mandate for the Provision of Benefices, is a monitorial and comminatory Letter from the Pope to a Bishop, by which he is enjoined to provide a Subsistence for those who have been ordained by him, or his Predecessors, from the Tonfure to Sacred Orders inclusively; and to allow them this Subsistence till they be provided of a Benefice; which Practice was occasioned by the Bishop's laying Hands on great Numbers, and afterwards abandoning them to Misery and Want. At first the Popes only gave monitory Mandates, which were no more than simple Prayers and Requests, that did not bind the Ordinary; afterwards they gave preceptory Mandates, which did not annul the Provisions of the Ordinary; at last they set up executory Mandates, by which the Provisions made by the Ordinary, in prejudice of the Mandate, were declared null, and the Executor of the Mandate, in default of the Ordinary, conferred the Benefice on the Mandatory: but the Pope's Power in issuing these Mandates is now very much regulated and restrained.

**MANDERIL**, a kind of wooden Pulley, making a Member of the Turner's Leath. Of these there are several kinds, as *Flat Manderils*, which have three or more little Pegs or Points near the Verge, and are used for turning flat Boards on. *Pin Manderils*, which have a long wooden Shank to fit into a round Hole made in the Work to be turned. *Hollow Manderils*, which are hollow of themselves, and used for turning hollow Work. *Screw-Manderils*, for turning Screws, &c. See *Turnery*. See also *Leath*.

**MANDIBULA**, the Jaw. See *Maxilla*. Hence *Mandibulares Musculi*, and *Manducatorii Musculi*. See *Masteters*.

**MANDIL**, the Name of a Cap or Turban wore by the Persians. The *Mandil* is formed, by first wrapping round the Head a Piece of fine white Linen five or six Ells long; over this they wrap, in the same manner, a Piece of Silk of the same Length, and oftentimes of great Value. To make the *Mandil* genteel, Care must be taken, that in wrapping the Silk, it be so managed, as that the several Colours, found in the several Folds, make a kind of Waves, somewhat like what we see in marbled Paper. This Dress is extremely majestic, but at the same time very heavy. It serves either as a Shelter to the Head from Cold, or as a Screen from the excessive Heat of the Sun; 'tis said the Cutlafs won't penetrate it. In rainy Weather they cover it up with a kind of Case or Hood, made of red Cloth. The Mode of the *Mandil* has been altered of late; during the Time of *Cha Abbas II.* it was round at Top: in the time of *Cha-Soliman*, they brought one End of the Silk out of the middle of the *Mandil* over the Head; and, lastly, in the Reign of *Cha-Ussien*, the end of the Silk, in lieu of its being gathered as before, was plaited in manner of a Rose; and this the Persians find extremely graceful, and use it to this day.

**MANDRAGORA**, *Mandrake*, a Medicinal Plant, which makes a principal Ingredient in the Unquent, called *Populeum*. There are two kinds of *Mandrake*, Male and Female, each bearing a kind of Apples; those of the Male, as well as the Leaves, Roots, &c. being twice as large as those of the Female; but the Juice of each is a Poison, equally violent. Naturalists tell strange Stories of this Plant, but setting aside its soporiferous Virtue, the modern Botanists will scarce warrant any of them, not even that human Figure ordinarily ascribed to its Roots, especially since the Discovery of the Artifice of Charletan's in preparing it, to surprize the Credulity of the People. *Chinese Mandragora* is the Plant *Ginseng*, which see.

**MANDUCATION**, the Action of chewing, a Term seldom used but in speaking of the Eucharist. The Catholics maintain a real Manducation of the Body of Christ; the Reformed, on the contrary, take this Manducation to be only figurative and by Faith. *St. Augustine* calls it a *Spiritual Manducation*.

**MANEQUIN**, in Painting, is understood of a little Statue, or Model, ordinarily made of Wax, and sometimes of Wood; the Juncures whereof are so contrived, as that it may be put into any Attitude one pleases, and its Draperies and their Folds be disposed at Discretion. The



The word *Manequin* is a Diminutive of Man, and properly signifies a little Man.

**MANES**; a Poetical Term, signifying the Shades or Souls of the Deceased. The Heathens used a world of Ceremonies and Sacrifices to appease the *Manes* of those who died without Burial.

The *Dii Manes* were the Infernal Gods who tormented Men; and to these the Heathens offer'd Sacrifices to assuage their Indignation. The Heathen Theology is a lit- obscure with regard to these Gods *Manes*. Some hold that they were the Souls of the Dead, others that they were the *Genii* of Men; which last Opinion suits best with the Etymology of the Word. The Heathens, 'tis pretty evident, applied all these Ideas to the *Manes*; so that the Word sometimes signified the Ghosts of the Departed, and sometimes the infernal or subterraneous Deities, and in general all Divinities that presided over Tombs. The Invocation of the *Manes* of the Dead, seems to have been a thing very frequent among the *Thebessians*, but was expressly prohibited by the *Romans*.

**MANGANUM**, an Engine of War. See *Ballista*.

**MANIA**, in Medicine, a Disease popularly call'd Mad- nefs: See *Madness*. The Word is Greek, *μανια*, Fury, Rage.

**MANICHEES**; a Set of antient Heretics, so call'd from their Author *Manes* or *Manichees*, a *Persian* by Na- tion. This Heresy had its first Rise about the Year 277, and spread itself principally in *Arabia*, *Egypt*, and *Africa*. *St. Epiphanius*, who treats of it at length, observes, that the true Name of this Heresiarch was *Cubrius*; and that he chang'd it for *Manes*, which in the *Persian* or *Babylonish* Language signifies *Vessel*. A rich Widow, whose Servant he had been, dying without Issue, left him good store of Wealth; after which, he assumed the Title of Apostle or Envoy of Jesus Christ. He establish'd two Principles, viz. a good one and an evil one. The first, which he cal- led *Light*, did nothing but good; and the second, which he call'd *Darkness*, nothing but evil. This Philosophy is very antient, and *Plutarch* treats of it at large in his *Isis* and *Osiris*. Our Souls, according to *Manes*, were made by the good Principle, and our Bodies by the evil one; those two Principles being co-eternal and independent of each other. He borrow'd many things from the antient *Gnostics*; on which account many Authors consider the *Manicheans* as a Branch of the *Gnostics*. In truth, their Doctrine was a System of Philosophy, rather than of Religion. They made use of Amulets, in imitation of the *Basilidians*; and are said to have made profession of Astronomy and Astro- logy. They denied that Jesus Christ assumed a true hu- man Body, and maintain'd it was only imaginary. They pretended that the Law of *Moses* did not come from God, or the good Principle, but from the evil one; and that for this reason it was abrogated. They abstain'd entirely from eating the Flesh of any Animal; following herein the Doctrine of the antient *Pythagoreans*. The rest of their Errors may be seen in *St. Epiphanius* and *St. Augus- tine*; which last, having been of their Sect, may be pre- sumed to have been thoroughly acquainted with them.

Tho the *Manichees* profess'd to receive the Books of the New Testament; yet, in effect, they only took so much of them as suited with their Opinions: throwing all upon Reason, and quite setting aside all Authority. They formed to themselves a certain Idea of Christia- nism; and to this adjust'd the Writings of the Apo- stles; pretending that whatever was inconsistent with this Idea, had been foisted into the New Testament by later Writers, who were half *Jews*. On the other hand, they made Fables and Apochryphal Books pass for Apostolical Writings; and even are suspected to have forged several others, the better to maintain their Errors. *St. Epipha- nius* gives a Catalogue of several publish'd by *Manes*, and adds Extracts of some of them. He was not contented with the Quality of Apostle of Jesus Christ, but also as- sumed that of the Paraclete, whom he had promised to send. He left several Disciples, and among others, *Ad- das*, *Thomas*, and *Hermes*. These he sent, in his life- time, into several Provinces to preach his Doctrine. *Manes* having undertaken to cure the King of *Persia's* Son, and not succeeding, was clapt into Prison upon the young Prince's Death; whence he made his escape, but was ap- prehended soon after, and burnt alive.

Towards the middle of the twelfth Century, the Sect of *Manichees* took a new face, on occasion of one *Constan- tine*, an *Arminian* and Adherer to it; who took upon him to suppress the reading of all other Books besides the Evangelists and the Epistles of *St. Paul*, which he ex- plain'd in such manner, as to make them contain a new System of *Manicheism*. He entirely discarded all the Writings of his Predecessors, rejected the Chimera's of the *Valentinians* and their thirty *Eons*; the Fable of *Ma- nes*, with regard to the Origin of Rain, which he made to be the Sweat of a young Man in hot Pursuit after a Maid; and other Dreams, but still retain'd the Impurities

of *Basilides*. In this manner he reformed *Manicheism*; in- somuch that his Followers made no scruple of anathema- tizing *Scythian*, *Boudas*, and even *Manes* himself; *Constan- tine* being now their great Apostle. After he had se- duced an infinite number of People, he was at last stoned by order of the Emperor.

The word *Manichee* comes from the Latin *Manicheus*, which antient Authors maintain to have been formed of the two Greek Words, *μαρνα*, *Manna*, and *χε*, *I spread*; intimating that the Doctrine of their Master was a kind of *Manna*, which he spread every where.

**MANICORDION**, a Musical Instrument, in form of a Spinett: See *Spinett*. Its Strings are cover'd with pieces of Scarlet Cloth, to deaden, as well as soften, the Sound; whence it is also call'd the *Dumb Spinett*, and is much used in Nunneries for the Religious to learn to play on; so as not to disturb the Silence of the Dormitory. *Scaliger* makes the *Manicord* more antient than the Spinett and Harpsichord. *Du Cange* derives the word from *Monochord*, from a supposition this Instrument has but one Cord; but he is mistaken, it has fifty, or more.

**MANIFESTO**, an Apology, or public Declaration, in Writing, made by a Prince, shewing his Intentions in any Enterprize, the Motives that induced him to it, and the Reasons on which his Right and Pretensions are founded.

**MANILLE**, or *Menille*, in Commerce, one of the prin- cipal Commodities carried by the *Europeans* to the Coasts of *Africa*, to traffic with the *Negroes* in exchange for Slaves; consisting of a large Brass Ring, in form of a Bracelet, ei- ther flat or round, plain or engraven; which the Natives use to deck themselves withal, putting them on the Small of the Leg, and the Thick of the Arm above the Elbow. The better sort among 'em wear Silver and Gold *Manilles*; but these are of their own manufacture; most of the Money they receive for their other Merchandizes being melted into *Manilles*.

**MANIPULATION**, a Term used in the Mines, to sig- nify the manner of digging the Silver, &c. out of the Earth. See *Silver*.

**MANIPULE**, *Manipulus*, among the *Romans*, was a little Body of Infantry, which, in the Time of *Romulus*, consist- ed of an hundred Men; and, in the Times of the Consuls and first *Cæsars*, of two hundred. Each *Manipule* had two Centurions, or Captains, call'd *Manipularii*, to command it; one whereof was Lieutenant to the other. Each Cohort was divided into three *Manipules*, and each *Manipule* into two Centuries.

'Tis true, *Aulus Gellius* quotes an old Author, one *Cinecius*, who lived in the Time of *Hannibal*, (whose Prisoner he was) and who, writing on the Art of War, observes, that, then, each Legion consisted of sixty Centuries, of thirty *Mani- pules*, and of thirty Cohorts. And again, *Varro* and *Vege- tius* mention it as the least Division in the Army, only con- sisting of the tenth part of a Century; and *Spartian* adds, that it contain'd no more than ten Men, which shews that the *Manipule* was not always the same thing.

The *Romans* call'd this Company by the Name *Manipule*, or *Manipulus*, as signifying the Handful of Hay which they bore at the End of a Pole, to distinguish themselves by, e'er the Custom was introduced of bearing an Eagle for their Ensign; and hence came the Phrase, *an Handful of Men*. *Vegetius*, *Modestus*, and *Varro*, give other Etymologies of the Word. The last derives it from *Manus*, a little Bod- dy of Men following the same Standard. According to the former, they were so call'd, because they fought hand in hand, or all together. *Contubernium autem Manipulus voca- batur ab eo quod conjunctis Manibus pariter dimicabant*, are their Words.

*Manipule* is also an Ecclesiastical Ornament, wore by the Priests, Deacons and Subdeacons in the *Romish* Church. It consists of a little Fillet in form of a Stole, three or four Inches broad, and made of the same Stuff with the Cha- suble; signifying and representing an Handkerchief, which the Priests in the Primitive Church wore on the Arm, to wipe off the Tears they were continually shedding for the Sins of the People. There still remains a Mark of this Usage in a Prayer spoken by those who wear it, *Merear, Do- mine, portare Manipulum Fletus & Doloris*. The *Greeks* and *Maronites* wear two *Manipules*, one on each Arm.

**MANIPULUS**, in Physic, is used for a Measure of Herbs, viz. an Handful; which is a quantity often used in Prescription amongst Physicians, and is generally marked with M.

**MANNA**, in Pharmacy, a medicinal Drug of great use in the modern Practice. *Manna* is a white Juice, or Li- quor, very sweet, Oozing either of it self, or by Incision, from the Branches and Leaves of the *Ashe*, both wild and ordinary, during the Time of the Dog-days. Others will have it to be a Honey of the Air; or a kind of Dew pro- ceeding from a Vapour rais'd from the Earth, and prepared in the Air, condens'd by the Cold, and gathered in the



hot Countries, before Sun-rise, both on Plants and Trees, and even on Rocks, and the Earth itself. But this must be a Mistake; and 'tis much more rational to rank it amongst the Number of Gums, which exuding from the Juice of the Tree, and mixing with it some saline Particles of the Air, is condens'd into those Flakes in which we see it.

The *Italians* gather three kinds of *Manna*. The first *Manna di Corpo*, which oozes spontaneously from the Branches of the Tree in the Month of July. The second *Manna Forzata*, or *Forzatella*, which is not gather'd 'till August, after an Incision of the Tree, when the Flux of the first has ceas'd. The third, *Manna di Fronda*, which issues of itself, in little Drops, like a kind of Sweat from the nervous part of the Leaves of the Ash, and gathers into Grains about the bigness of those of Wheat, which are harden'd by the Sun in August. The Leaves are frequently found so loaden with these Grains, that they seem cover'd with Snow. *Manna* is a gentle and safe Purge; and is also used in Broths. *Altomarus*, a Physician of Naples, has written a Treatise expressly upon it; and *Donzellus* has seconded it. *Manna*, tho' accounted a kind of Honey, purges the Bile; whereas common Honey increases it. Formerly the *Syrian* was in the most Repute, but now it gives way to the *Calabrian*. *Fuchsius* observes, that the Peasants of Mount *Libanus* eat *Manna* ordinarily as others do Honey. At *Mexico* they are said to have a *Manna* which they eat as we do Cheese.

*Manna* is brought from several Countries, and in several Forms. Thus we have *Manna* of *Calabria*, and of *Sicily*; *Manna* in Grains, in Tares, &c. The most esteem'd, is that in Tares; which many take to be factitious, and the Work of the *Jews* of *Leghorn*, but 'tis certainly natural: And what gives it this Figure, is, that they put Straws and Slips of Wood in the Incisions; along which the *Manna* gliding, is condensed as it comes out, and assumes this Form.

MANNA, a Term in Scripture, signifying a miraculous kind of Food falling from Heaven, wherewith the *Israelites* were supported in their Passage thro' the Wilderness. This *Manna* was in form of *Coriander-Seeds*; its Colour was like that of *Bdellium*, and its Taste like Honey. They call'd it *Manna*, either from the Hebrew Word *Mannab*, a Gift, to intimate its being a Gift from Heaven; or from *Minnab*, which signifies to prepare, because the *Manna* came to them ready for eating, and needed no Preparation but gathering; or from the Egyptian word, *Man*, what is it? This last Etymology seems the more probable, in regard the Scripture takes notice of the Surprise they were under, when they first saw this new Food descend. *Salmasius*, however, does not allow of this Derivation. He says, that the *Arabs* and *Chaldeans* used the word *Man* to signify a kind of Dew or Honey that fell on the Trees, and was gathered in great abundance on Mount *Libanus*. So that the *Israelites* did not use the Term *Mannab* out of Surprise, but because they found this Food fall with the Dew, in the same manner as the Honey, so well known to them under the Name of *Man*. *Salmasius* adds, that the *Manna* of the *Israelites* was in reality no other than that Honey or Dew condens'd; and that the one and the other were the same with the wild Honey wherewith *St. John* was fed in the Wilderness. So that the Miracle did not consist in the Formation of any new Substance in favour of the *Israelites*; but in the punctual Manner in which it was dispens'd by Providence; so that so vast a Multitude should have wherewithal to satisfy themselves.

MANNER, in Painting, &c. is used to express that particular Character observable in the Works of Painters, Poets, and other Men of Art, by which their Pencil, Hand, or Style, are distinguish'd. Thus the Curious in Paintings know the Manners of the Painters; and distinguish readily between the Manners of *Rubens*, *Titian*, or *Da Vinci*; between the ancient and the new Manner of the same Painter; the *Flemish* and the *Italian Manner*. The Manner is used with respect both to the Invention, the Design, and the Colouring. The Manner of *Michael Angelo*, or *Raphael*, may also be known in their Scholars. Thus we say, such a Piece is of *Raphael's School*, &c.

MANNERS, in Poetry, a Term particularly used in Tragedy, Comedy, and the Epopeia; signifying the Inclinations, Genius, and Humour, which the Poet gives to his Persons, or that which distinguishes his Characters. *Aristotle* defines the Manners to be that which discovers the Inclination of him who speaks, and shews what he will resolve upon, or what reject, before he has actually determin'd; Whence he concludes, that Manners are not always, and in all kinds of Discourses: *Non quelibet Oratio est Morata*. One Instance will make this Definition clear. In the first Book of *Vergil*, *Aeneas* is represented extremely pious, and determined to execute the Will of the Gods at all adventures. In the fourth Book, he has a difficult Choice propos'd; being engag'd, on the one hand, out

of a Principle of Love, Gratitude, and Honour, not to quit *Dido*; and having, on the other hand, an express Order from the Gods to depart for *Italy*. Now, before it appears on which side he has determin'd, what he has before said should shew his Will and Inclinations, and which Party he will take. Now those preceding Discourses, which discover his future Resolution, make what we call the *Poetical Manners*. Those make it past doubt he will abandon *Dido*, to obey the Gods: This he does in effect; the Manners therefore are good, and well conducted. Had he disobey'd the Orders of *Jupiter*, to stay with *Dido*, the Manners had been ill; in regard they would have foretold a Resolution contrary to what he was really to take. But had there been nothing to make us foresee any Resolution of *Aeneas* at all, neither that which he actually took, nor the contrary, in that Case there had been no Manners at all.

'Tis the Manners, as we have before observed, which distinguish the Characters: And, unless the Manners be well express'd, we shall never be acquainted with the Persons at all; nor, consequently, shall we be either terrified with foreseeing their Dangers, nor melted into Pity by seeing their Sufferings. See *Character*.

The Manners then should have four Qualities; they should be Good, Like, Suitable, and Equal. Good is when they are well mark'd or express'd; that is, when the Discourse of the Persons makes us clearly and distinctly see their Inclinations, and what good or evil Resolutions they will take. Like only relates to known and public Persons, whose Characters are in History, with which the poetic Characters must agree; that is, the Poet must not give a Person any Quality contrary to any of those which History has given him. And here it may be observed, that the evil Qualities given to Princes and great Men, ought to be omitted by the Poets, if they be contrary to the Character of a Prince, &c. but the Virtues opposite to those known Vices ought not to be imposed, by making him generous and liberal in the Poem, who was avaricious in the History. The Manners must likewise be suitable; that is, they must be agreeable to the Age, Sex, Rank, Climate and Condition of the Person that has them. *Horace* observes, *Intererit multum Dapifne loquatur an Heros*. Again, the Manners must be equal; that is, they must be constant, or consistent through the whole Character; or the Variety or Inequality of the Manners, as in Nature, so in the Drama, must be equal. The Fearful must never be brave, nor the Brave timorous; the Avaritious must never be liberal, nor vice versa. In this part, *Shakespeare's Manners* are admirable. Besides these four Qualities above-mentioned, there is a fifth essential to their Beauty; which is, that they be necessary; that is, that no vicious Quality or Inclination be given to any poetic Person, unless it appear to be absolutely necessary, or requisite to the carrying on of the Action.

MANOMETER, or *Manoscope*, an Instrument to shew or measure the Alterations in the Rarity or Density of the Air; from the Greek *μανο*, *varius*, and *μετρον*, *mensura*, &c. The *Manometer* differs from the *Barometer*, in that the former only measures the Weight of the Atmosphere, or of the Column of the Air over it; but the latter the Density of the Air in which 'tis found: which Density depends not only on the Weight of the Atmosphere, but on the Action of Heat and Cold, &c. Authors, however, generally confound the two together; and Mr *Boyle* himself gives us a very good *Manometer* of his Contrivance, under the Title of a *Statical Barometer*; the Structure whereof see under the Word *Barometer*.

MANOR, is derived *à manendo*; because the Lord did usually reside there. For its Original: there was anciently a certain Compass of Ground, granted by the King to some Man of Worth, for him and his Heirs to dwell upon, and to exercise some Jurisdiction more or less within that Circuit, as he thought good to grant; but performing, withal, such Services, and paying such yearly Rent, as by this Grant was required. Now, the Lord afterwards, parcelling the same to other meaner Men, received Rent and Services from them, and by that means, as he became Tenant to the King, the Inferiours became Tenants to him. Indeed the Word is now taken for Jurisdiction, and Royalty incorporeal, rather than for the Land and Suit: For a Man may have a Manor in Gross, i. e. the Right and Interest of a Court Baron, with the Perquisites, and another enjoy every Foot of Land belonging to it. A Manor may be compounded of divers things, as of an House, Arable Land, Pasture, Meadow, Wood, Rent, Advowson, Court-Baron, &c. And this ought to be, by long Continuance of Time, beyond Man's Memory. 'Tis held by some, that a Manor cannot now be made, since a Court-Baron cannot be made; and without a Court-Baron, and at least two Suitors, there can be no Manor.

MANSE, is a Parsonage or Vicaridge-House, for the Incumbent to live in; this was originally, and is now, an essential Part of the Endowment of a Parish-Church, together



ther with the Glebe and Tythes. It is sometimes called the *Presbyterium*. See *Presbytery*.

**MANSION**, from *manendo*, a Dwelling-House, or Country Habitation; commonly used for the Lord's Chief Dwelling-House within his Fee, otherwise called the *Capital Messuage*, or chief *Manor Place*. *Mansio*, or *Manfus*, were sometimes used in the same Sense with *Hide*; that is, as much Land as one Plow could till in a Year.

**MAN-SLAUGHTER**, *Homicide*, or the unlawful killing a Man, without premeditated Malice: As when two, who formerly meant no harm to one another, on some sudden Occasion falling out, the one kills the other. It differs from Murder, as not being done with fore-going Malice; and from Chance-Medley, because it hath a present Intent to kill: It is esteem'd Felony, but admitted to the Benefit of the Clergy, for the first time. By a Law of King *Canutus*, if a Man is kill'd openly and premeditatedly, the Murderer shall be committed to the Relations of the Deceased: But if, on his Tryal, the Fact is proved, but not wilful, the Bishop is to judge him.

**MANSORII MUSCULI**. See *Maffeters*.

**MANTELETS**, in War, are a kind of moveable Pent-houses, or Parapets made of Pieces of Timber, saw'd into Planks, about three Inches thick, and nailed one over another to the height of almost six Foot. They are generally cas'd with Tin, and set upon little Wheels; so that in a Siege, they may be driven before the Pioneers, and serve as Blinds to shelter them from the Enemies small Shot. There are also other sorts of *Mantelets*, covered on the top, whereof the Miners make use, to approach the Walls of a Town or Castle. It appears from *Vegetius*, that these were in use among the Antients, but they were built lighter, and yet larger than ours, being eight or nine Foot high, as many broad, and sixteen long: They were defended by a double Covering, the one of Boards, the other of Faggots, with the Ribs of Osiers, and cas'd without with Skins steep'd in Water, to prevent Fire.

**MANTLE**, or *Mantle-Tree*, in Architecture, is the lower-part of a Chimney, or that part laid a-cross the Jaumbs, and which sustains the Compartment of the Chimney-piece. See *Jaumb*.

**MANTLE**, in Heraldry, is that Appearance of the Folding of Cloth, Flourishing or Drapery, that is in any Achievement, drawn about the Coat of Arms: It is supposed formerly to have been the Representation of a *Mantle* of State in Blazon; it is always said to be doubled, that is, lined throughout with one of the Furs, as Ermin, Pean, Verry, &c. See *Coat*.

*Mantle* is likewise a Term used in Falconry; as they say, the Hawk *mantles*, that is, spreads her Wings after her Legs.

**MANUCAPTIO**, in Law, a Writ that lies for a Man, who, being taken on Suspicion of Felony, and offering sufficient Bail for his Appearance, is refus'd to be admitted thereto by the Sheriff, or other having Power to let to Mainprife.

**MANUDUCTOR**, a Name given to an antient Officer in the Church, who, from the middle of the Choir where he was placed, gave the Signal to the Choristers to sing, mark'd the Measure, beat Time, and regulated the Music. The *Greeks* call'd him *Mefacoros*, because seated in the middle of the Choir. But in the *Latin Church*, he was call'd *Manuductor*, from *Manus*, and *duco*, I lead; because he led and guided the Choir by the Motions and Gesture of the Hand.

**MANUFACTURE**, a Place where several Artists and Workmen are employ'd in the same kind of Work; or make a Commodity of the same kind. The Word is also popularly used for the Work itself; and by Extension for the like Work, carried on independently in different parts of a Country. In this sense, we say the Woollen *Manufacture*, Silk *Manufacture*, Velvet *Manufacture*, Tapestry *Manufacture*, Muslin *Manufacture*, &c. *Manufacture* of Hats, Stockings, &c. See *Wool*, *Silk*, *Velvet*, *Tapistry*, *Muslin*, &c. The Word comes from the *Latin*, *Manufactus*.

**MANUMISSION**, an Action by which a Slave is set at liberty. Some Authors define Manumission to be an Act by which a Lord enfranchises his Tenants, who till that time had been his Vassals, and in a State of Slavery, inconsistent with the Holiness of our Faith.

The *Romans* had several Ceremonies in use in the *Manumission* of their Slaves. Their *Manumission* was perform'd three several Ways. First, When, with his Master's Consent, a Slave had his Name enter'd in the *Census*, or Public Register of the Citizens. Secondly, When the Slave was led before the *Prætor*, and that Magistrate laid his Wand on his Head. Thirdly, When the Master gave the Slave his Freedom by his Testament. *Servius Tullius* is said to have first set on foot the first Manner, and *P. Valerius Publicola* the second. A particular Account is given of the third in the *Institutes of Justinian*. It was not necessary, that the *Prætor* should be on his Tribunal to perform the

Ceremony of *Manumission*. He did it any where indifferently, in his House; in the Street, going to bath, &c. He laid the Rod, call'd *Vindicta*, on the Slave's Head, pronouncing these Words, *Dico eum liberum esse more Quiritum*; I declare him a Freeman after the manner of the Romans. This done, he gave the Rod to the Lictor, who struck the Slave with it on the Head, and afterwards with his Fist on his Face and Back. And the Notary, or Scribe, enter'd the Name of the new-free'd Man in the Register, with the Reasons of his *Manumission*. The Slave had likewise his Head shaved, and a Cup given him by his Master, as a Token of Freedom. *Tertullian* adds, that he had then a third Name given him. If this were so, three Names were not a Token of Nobility, but of Freedom. The Emperor *Constantine* order'd the *Manumissions* at Rome to be perform'd in the Churches. The Word comes from the *Latin* *Manumisso*, quia *Servus mittebatur extra Manum*, seu *potestatem Domini sui*.

Of *Manumission* there have been various Forms in England. In the time of the Conqueror, Servants were *manumitted*, by the Master's delivering them by the Right Hand to the Vicount in full Court, shewing them the Door, giving them a Lance and a Sword, and proclaiming them free. Some were also *manumitted* by Charter. There was also an implicit *Manumission*; as when the Lord made an Obligation for Payment of Money to the Bondman at a certain Day; or sued him, where he might enter without Suit; and the like.

**MANURING** of Ground, consists in the Application of a Matter proper for meliorating the Soil, and rendring it more fertile. The Matters used for *Manure*, are various in various Countries. The most ordinary are Lime and Marl, which see under their proper Articles. In some parts of Ireland, they use Sea-Shells, as those of Cockles, Periwinkles, &c. which are found to agree very well with boggy, heathy, clayey, wet or stiff Land. They seem to give it a kind of Ferment, as Barm does to Bread, opening and loosening the Clods, and by that means making way for the Roots to penetrate, and the Moisture to enter into the Fibres of the Roots: This kind of *Manure* continues a long time e'er its Effects are exhausted, whereas Lime, &c. spend themselves at once. The Shells being hard, melt away very slowly, so that the Operation needs not be repeated for 20 or 30 Years. In the West of England, they *manure* their Land with a brackish Sea-Sand; which Dr. *Bury* observes, quickens Dead-Land: So that what would otherwise be the barrenest part of that Country, is now the richest. The Sea-Salt, he observes, is too lusty and active of itself, and that it does best when mingled with Lime. *Glauber* orders the Mixture to be made up and burnt like Bricks, and then apply'd. In some Countries they burn the Surface of their heathy Ground, instead of *manuring* it; which is but ill Husbandry, inasmuch as it impoverishes it; and by destroying the Sap of the Earth, and Roots of the Grass, and other Vegetables, it renders it useless for several Years after the third, when it is plow'd. Dr. *Jackson* observes, that all the Ground about *Nantwich*, where Salt or Brine is spilt, is, when dug up, an excellent *Manure* for grazing Ground; and even Bricks, thoroughly tinged with it, dissolve and fertilize the Land very considerably. Dr. *Beal* says, 'tis a common Observation of Gardeners and skilful Husbandmen, that Frost and Snow improve and fertilize the Land both more speedily and more effectually than the Influence and Warmth of the Sun. Dr. *Lifter* tells us, that in some parts of the North-Riding of *Yorkshire*, the Soil is sandy, and the People *manure* it with Clay. The Soil, with any other *Manure*, bears nothing but Rye; but with Clay, bears Oats, Barley, &c. This Clay *Manuring*, will, by certain Experience, last 45 Years in the Ground e'er it need be repeated. The Bogs in Ireland are best improv'd by sandy, or other gravelly *Manures*.

**MANUSCRIPT**, a Book, or Paper, written with the Hand; in opposition to a printed Book, or Paper. A *Manuscript* is usually design'd by the two Letters MS, and in the *Plural* by MSS, or MMSS. What makes public Libraries valuable, is the Number of antient MSS deposited in them.

**MANWORTH**, in old Law-Books, is the Price or Value of a Man's Head: every Man, according to his degree, being rated at a certain Price; according to which, Satisfaction, in old time, was made to his Lord, if any one kill'd him.

**MANZEL**. See *Caravanferail*.

**MAP**, a plain Figure, representing the several Parts of the Surface of the Earth, according to the Laws of Perspective: or a Projection of the Surface of the Globe, or a part thereof, in *plano*. See *Projection*.

*Maps* are either universal, or particular. *Universal Maps* are those which exhibit the whole Surface of the Earth, or the two Hemispheres. *Particular Maps* are those which exhibit some particular Region, or part thereof. Each kind



kind are frequently call'd Geographical or *Land-Maps*, in contra-distinction to Hydrographical or *Sea-Maps*, representing only the Seas and Sea-Coasts, properly call'd *Charts*. See *Chart*.

There are three Qualifications required in a *Map*. First, That all Places have their just Situation with regard to the chief Circles of the Earth, as the *Equator*, *Parallel*, *Meridians*, &c. because on these depend many Properties of Regions, as well as Celestial *Phænomena*. Secondly, That the Magnitudes of the several Countries have the same Proportion as on the Surface of the Earth. And, Thirdly, That the several Places have the same Distance and Situation with regard to each other, as on the Earth itself.

For the Foundation of *Maps*, and the Laws of *Projection*, see *Perspective* and *Projection of the Sphere*: The Application thereof, in the Construction of *Maps*, is as follows.

*Projection of a Map, the Eye being plac'd in the Axis*. Suppose, *v. g.* the Northern Hemisphere to be represented with the Eye in a Point of the Axis, *v. g.* the South-Pole; for the Plane, whereon the Representation is to be made, we take the Plane of the Equator, and from all the Points of the Surface of the Northern Hemisphere, conceive Lines passing thro' the Plane to the Eye; which Points connected together, constitute the *Map* required. Here the Equator will be the Limit of the Projection; the Pole, the Centre. The Meridians will be Right Lines passing from the Pole to the Equator; the Parallels of Latitude, &c. Circles concentric with the Equator; and all the other Circles, and Arches of Circles, as the Horizon, Vertical Circles, &c. *Ecliptic*, &c. conceived in that Hemisphere, will be Ellipses, or Arches of Ellipses. The better to apprehend the Projection of the Circles on the Plane, conceive a radiant Cone, whose Vertex is the Eye, its Base the Circle to be represented, and its Sides the Rays passing between the Circle and the Eye. Suppose this Cone cut by the Plane. 'Tis obvious, that, according to the various Position of the Cone, there will be a different Section, and consequently a different Line or Representation.

For the Application of this Doctrine in Practice. In a Plane, *v. g.* a Paper, take the middle Point *P*. (Plate *Geography*, Fig. 2.) for the Pole, and from this, as a Centre, describe a Circle, of the intended Bigness of your *Map*, to represent the Equator. These two may be pitch'd on at pleasure, and from these all the other Points and Circles are to be determined. Divide the Equator into 360°, and drawing Right Lines from the Centre to the beginning of each Degree, these will be Meridians; whereof that drawn to the beginning of the first Degree, we suppose the first Meridian.

Now for the Parallels. There are four Quadrants of the Equator; the first, 0, 90; the second, 90, 180; the third, 180, 270; the fourth, 270, 360; which, for the better distinction, we will note with the Letters *AB*, *BC*, *CD*, *DE*. Taking one of these, *v. g.* *BC*, from the several Degrees thereof, as also from 23°, 30', and 66°, 30'. thereof draw occult Right Lines to the Point *D*, marking where these Lines cut the Semidiameter *BPC*; and from *P*, as a Centre, describe Arches passing thro' the several Points in *PC*. These Arches will be Parallels of Latitude. The Parallel at 23° 30', will be the Tropic of *Cancer*, and that at 66° 30', the *Arctic Circle*. The Meridians and Parallels thus described, from a Table of Longitudes and Latitudes, lay down the Places; reckoning the Longitude of each Place on the Equator, commencing at the first Meridian, and proceeding to the Meridian of the Place; and for the Latitude of the Place, chusing a Parallel of the same Latitude: the Point where this Meridian and Parallel intersect, represents the Place: And in the same manner all the other Places may be determined 'till the *Map* be compleat.

For the *Ecliptic*, half of which comes in this Hemisphere; we have observed, that it makes an Ellipsis; so that the Points thro' which it passes are to be found. The first Point, or that wherein the *Ecliptic* cuts the Equator, is the same with that wherein the first Meridian cuts the Equator, which is therefore distinguish'd by the Sign of *Aries*; the last Point of this half Ellipsis, or the other Intersection of the Equator and *Ecliptic*, *viz.* the End of *Virgo*, will be in the opposite Point of the Equator, *viz.* at 180°. The middle Point of the Ellipsis is that wherein the Meridian 90 cuts the Tropic of *Cancer*. Thus we have three Points of the *Ecliptic* determined; for the rest, *viz.* for 1°, and 15° of *Taurus*, 1° and 15° of *Gemini*, 1° of *Leo*, 1° of *Virgo*, the Declinations of those Points from the Equator must be taken from a Table, and set off in the *Map*. See *Declination*, &c.

'Thus where the Meridian of 13° cuts the Parallel of 5°, that Point will be 15° of *Aries*. Where the Meridian 27° cuts the Parallel, 11° will be the first Degree of *Taurus*, and so of the rest. These Points being all

join'd by a Curve Line, will be a Portion of an Ellipsis representing the *Ecliptic*.

*Maps* of this Projection have the first Qualification required; but are defective in the second: the Surface being stretch'd further, as it approaches nearer the Equator. For the third, they are still further out. By this Method may almost the whole Earth be represented in one *Map*, placing the Eye, *v. g.* in the Antarctic Pole, and assuming for the Plane of Projection that of some Circle near it, *v. g.* the Antarctic Circle. Nothing is here required besides the former Projection; but to continue the Meridian, draw Parallels on the other side of the Equator, and compleat the *Ecliptic*; but this distorts too much for Practice.

This Projection is of all others the easiest; but that, where the Eye is placed in the Plane of the Equator, is prefer'd for use. 'Tis, in effect, of the latter kind that *Maps* are ordinarily made. The former are added to 'em, in small, by way of Supplement, to represent the intermediate Spaces left between the two Hemispheres. Further, as the Situation of the *Ecliptic*, with regard to the Earth, is continually changing, strictly speaking, it has no Place in the Earth's Surface, but is used to be represented according to its Situation some certain Moment; *viz.* so as the beginning of *Aries* and *Libra* may be in the Intersections of the first Meridian and Equator.

*The Projection of Maps, with the Eye in the Plane of the Equator*. This Method of Projection, tho' more difficult, is yet much juster, more natural and commodious, than the former. To conceive it, we suppose the Surface of the Earth cut in two Hemispheres by the entire Periphery of the first Meridian, each of which Hemispheres we represent in a distinct *Map*. The Eye is placed in the Point of the Equator 90° distant from the first Meridian; and for the transparent Plane, wherein the Representation is to be, we take the Plane of the first Meridian. In this Projection, the Equator is a Right Line, and the Meridian 90° distant from the first, is also a right Line; but the other Meridians, and all the Parallels of the Equator, are Arches of Circles, and the *Ecliptic* an Ellipsis.

The Method is thus. From a Point *E*, as a Centre, (Fig. 3.) describe a Circle according to the intended Bigness of the *Map*. This represents the first Meridian, and its opposite; for, drawing the Diameter *BD*, there arise two Semi-circles, the one whereof *BAD* is the first Meridian, the other *BCD* its opposite, or the Meridian of 180°. This Diameter *BD* represents the Meridian of 90 Degrees, whereof the Point *B* is the *Arctic Pole*, and the Point *D* the *Antarctic*. The Diameter *AC*, perpendicular to that *BD*, is the Equator. Divide the Quadrants *AB*, *BC*, *CD*, *DA*, each into 90 Degrees; and to find the Arches of the Meridians and Parallels, proceed thus. Divide the Equator into its Degrees, *viz.* 180. (as being indeed only half the Equator;) thro' these several Divisions, and the two Poles, describe Arches of Circles, representing Meridians, as *B 1 D*, *B 2 D*, &c. How to find Centres for describing those Arches, see under the Word *Circle*. Indeed, the Operation will be both more easy and accurate, if performed by a Canon of Tangents. To describe the Parallels, the Meridian *DB* must be in like manner divided into 180 Degrees; then thro' each of these Divisions, and the corresponding Divisions of the Quadrants *AB*, *CB*, describe Arches of Circles. Thus shall we have Parallels of all Degrees, with Tropics, Polars and Meridians. As for the *Ecliptic*, it may be design'd two ways. For its Situation over the Earth may either be such, as that its Intersection with the Equator may be over the Place *A*; in which Case, the Projection of its Semi-Circles, from the first Degree of *Cancer*, to the first of *Capricorn*, will be a straight Line, to be determined by numbering 23° 30' from *A* towards *B*, and from the Extreme of that Numeration, drawing a Diameter thro' *E*; this Line will be half the *Ecliptic* in this Situation, and may be divided, as before, into Degrees, to which the Numbers, Signs, &c. are to be affix'd. But if the *Ecliptic* be so placed, as that its Intersection with the Equator is over the Place *A*, in the first Meridian, its Projection in that Case will be a Segment of an Ellipsis; whereof two of the Points are *AC*; a third that wherein the Meridian 90 cuts the Tropic of *Cancer*. The other Points must be determin'd in the manner laid down above, *viz.* by taking the Declinations and right Ascensions of 15° of *Aries*, 1° of *Taurus*, 15° of *Gemini*, &c. For where the Parallels, according to their several Degrees of Declination, cut the Meridians, taken according to the several right Ascensions, those Points of Intersection are the Points of the 15° of *Aries*, &c. A curve Line therefore being drawn, these will give the Projection of the *Ecliptic*.

Nothing now remains to compleat the *Map*, but to take the Longitudes and Latitudes of Places from a Table; and to set them off on the *Map*, as was directed under the former Method. In this Projection the whole Surface of the Earth may



may be represented in one Map; if instead of the Plane of the first Meridian, some other Plane parallel to it, but very near the Eye, be taken; for by this means the entire Parallels and Meridians will be described. But as this distorts the Face of the Earth too much, it is seldom used; and we rather make the two Hemispheres in two distinct Tables. One great Advantage in this Projection, is, that it represents the Longitudes and Latitudes of Places, their Distance from the Pole and from the Equator, almost the same as they are on the Earth. Its Inconveniences are, that it makes the Degrees of the Equator unequal, being the greater as they are nearer the first Meridian D A B, or its opposite B C D; and for this Reason equal Tracts of the Earth are represented unequal; which Defect may be in some measure remedy'd by removing the Eye far from the Earth. Lastly, the Distances of Places, and Situation with regard to each other, cannot be well determined in Maps of this Projection.

*Projection of Maps on the Plane of the Horizon*, or wherein any given Place shall be the Centre, or Middle. Suppose, for instance, 'tis desired to have London the Centre of the Map. Its Latitude we'll suppose to be 51°. 32 Min. The Eye is placed in the Nadir. The transparent Table is the Plane of the Horizon, or some other Plane, if 'tis desired to represent more than an Hemisphere. Take then the Point E (Fig. 4.) for London, and from this, as a Centre, describe the Circle A B C D to represent the Horizon, which you are then to divide into four Quadrants, and each of these into 90 Degrees. Let the Diameter B D be the Meridian, B the Northern Quarter, D the Southern; the Line of Equinoctial East and West, shews the first Vertical, A the West, C the East, or a Place 90 deg. from the Zenith in the first Vertical. All the Verticals are represented by right Lines drawn from the Centre E to the several Degrees of the Horizon. Divide B D into 180 deg. as in the former Methods; the Point in E B representing 51 deg. 32 min. of the Arch B C, will be the Projection of the North Pole, which note with the Letter P. The Point in E D representing 51 deg. 30 min. of the Arch D C, (reckoning from C towards D) will be the Projection of the Intersection of the Equator and Meridian of London, which note with the Letter Q, and from this, towards P, write the Numbers of the Degrees, 1, 2, 3, &c. As also from Q towards D, and from B towards P, viz. 51, 52, 53, &c.

Then taking the corresponding Points of equal Degrees, viz. 99 and 99, 88 and 88, &c. about those, as Diameters, describe Circles, which will represent Parallels, or Circles of Latitude, with the Equator, Tropics, and Polar Circles. For the Meridians, first describe a Circle thro' the three Points A, P, C. This will represent the Meridian 90 deg. from London. Let its Centre be M in B D (continued to the Point N, which represents the South Pole) P N being the Diameter, thro' M draw a Parallel to A C, viz. F H, continued each Way to K and L. Divide the Circle P H N F into 360 deg. and from the Point P draw right Lines to the several Degrees, cutting K F H L thro' the several Points of Intersection, and the two Poles P, N, as thro' three given Points, describe Circles representing all the Meridians. The Centres for describing the Arches will be in the same K L, as being the same, that are found by the former Intersection; but are to be taken with this Caution, that for the Meridian next B D N towards A, the most remote Centre towards L be taken for the 2d, the 2d from this, &c. The Circles of Longitude and Latitude thus drawn, insert the Places from a Table as before directed.

*Projection of Maps on the Plane of the Meridian*. This Projection is taught by Ptolemy, and recommended by him as proper for that part of the Earth then known. In the Equator and Parallels are Arches of Circles, and in the Meridians, Arches of Ellipses; the Eye hanging over the Plane of that Meridian which passes over the middle of the inhabited World. But in regard the Description of these Ellipses is somewhat perplexing, and because this Method seems only calculated for a part of the Earth; 'tis not now used.

There is a second Method something a-kin to it, which represents the Circles of Latitude by right Lines, and the Meridians by Arches of Ellipses; as must be the Case, if Lines be conceived to fall from the several Points of each Hemisphere, perpendicularly on the Plane of the first Meridian, and the Eye be supposed at an infinite distance from the Earth; so that all the Rays emitted from the Places of the Earth to it, may be accounted Parallels as well as Perpendiculars to the Plane of the first Meridian.

*Rectilinear Maps*, those wherein both the Meridians and Parallels are represented by right Lines, which by the Laws of Perspective is impossible; in regard there can no such Position be assign'd the Eye and the Plane, as that the Circles both of Longitude and Latitude shall be right

Lines. In the first Method laid down, the Meridians are right Lines, but the Parallels are Circles. In the fifth, the Parallels are right Lines, and the Meridians Ellipses. In all other perspective Methods, both Kinds of Circles are Curve; one Method indeed must be excepted, wherein the Meridians are right Lines, and the Parallels Hyperbolas; as when the Eye is placed in the Centre of the Earth, and the Plane, thro' which it is view'd, is parallel to the first Meridian: but this Method is rather pretty than useful. *Rectilinear Maps* are chiefly used in Navigation, to facilitate the Estimation of the Ship's Way. See CHART.

*Construction of particular or special Maps.*

*Particular Maps of large Tracts*, as Europe, Asia, Africa, and America, are projected after the same Manner as General ones; only let it be observed, that for different Parts, different Methods be chosen. Africa and America, for instance, in regard the Equator passes thro' them, cannot be conveniently projected by the first Method, but much better by the second. Europe and Asia are most conveniently represented by the third; and the polar Parts, or the frigid Zones, by the first.

To begin then, draw a right Line on your Plane or Paper, for the Meridian of the Place over which the Eye is conceiv'd to hang, and divide it into Degrees, as before, which will be Degrees of Latitude. Then from the Tables take the Latitude of the two Parallels, which terminate each Extreme. The Degrees of these Latitudes are to be noted in the Meridian; and thro' them draw Perpendiculars, bounding the Map towards North and South. This done, Meridians and Parallels are to be drawn to the several Degrees, and the Places to be inserted, till the Map is compleat.

*Particular Maps of less Extent*. In Maps of smaller Portions of the Earth, the Geographers take another Method. First, a transverse Line is drawn at the bottom of the Plane, to represent the Latitude, wherein the Southernmost part of the County to be exhibited, terminates. In this Line, so many equal Parts are taken, as that Country is extended in Longitude. On the middle of this same Line erect a Perpendicular, having so many Parts as there are Degrees of Latitude between the Northern and Southern Limits of the Country. How big these Parts are to be, may be determin'd by the Proportion of a Degree of a great Circle to a Degree of the Parallel represented by the transverse Line at bottom. See DEGREE. Thro' the other Extreme of this Perpendicular, draw another Perpendicular, or a Parallel to the Line at bottom, in which are to be as many Degrees of Longitude, as in the lower Line, and these, too, equal to those other, unless the Latitudes happen to be remote from each other, or from the Equator. But if the lowest Parallel be at a considerable distance from the Equinoctial, or if the Latitude of the Northern Limit go much beyond that of the Southern; the Parts or Degrees of the upper Line must not be equal to those of the lower, but less, according to the Proportion which a Degree of the more Northern Parallel, has to a Degree of the more Southern: Which see, as before, under the word DEGREE.

After Parts have been thus determin'd, both on the upper and lower Line, for the Degrees of Longitude; right Lines must be drawn thro' the beginning and end of the same Number, which Lines represent Meridians: then, thro' the several Degrees of the Perpendicular erected on the middle of the first transverse Line, draw Lines parallel to that transverse Line. These will represent Parallels of Latitude. Lastly, at the Points wherein the Meridians of Longitude and the Parallels of Latitude concur, insert the Places from a Table, as before directed.

For Maps of Provinces, or small Tracts, as Parishes, Mannors, &c. we use another Method, more sure and accurate than any of the former. In this, the Angles of Position, or the Bearings of the several Places, with regard to one another, are determin'd by proper Instruments, and transferr'd to Paper. This constitutes an Art a-part, call'd Surveying. See SURVEYING.

*The Use of Maps* is very obvious from their Construction. The Degrees of the Meridians and Parallels shew the Longitudes and Latitudes of Places, and the Scale of Miles annex'd, their Distance; the Situation of Places, with regard to each other, as well as to the Cardinal Points, appears by Inspection, the top of the Map being always the North, the bottom the South, the right-hand the East, and the left the West; unless the Compass usually annex'd, shew the contrary. See MERCATOR'S CHART, where these Cases are exemplify'd.

MAPPARIUS, an Officer among the Romans, who, in the public Games, as those of the Circus and the Gladiators, gave the Signal for their beginning, by throwing an Handkerchief (*Mappa*) which he had before received from the Emperor, Consul, or other supreme Officer then present.



**MARASMUS**, in Medicine; an extreme Macies or Consumption of the whole Body. A Hectic Fever usually produces a *Marasmus*. The word is Greek, being derived from the Verb *μαραινειν*, to waste. See CONSUMPTION.

**MARAVEDIS**, a little Spanish Copper Coin, worth somewhat more than a French Denier. The Spaniards always count by *Maravedis*, both in Commerce, their Finances, &c. tho the Coin itself has but little Course among them. 63 *Maravedis* are equivalent to a Real of Silver: so that the Piaster, or Piece of Eight Real, contains 504, and 4 Pistoles of 4 Pieces of Eight, 2016 *Maravedis*. See COIN and MONEY. This Smallness of the Coin produces vast Numbers in the Spanish Accounts and Calculations; inso-much that a Stranger or Correspondent would think himself indebted several Millions for a Commodity, that costs but a few Pounds. In the Laws of Spain, we meet with several Kinds of *Maravedis*; *Alphonfine Maravedis*, *White Maravedis*, *Maravedis of Good Money*, *Maravedis Combrennos*, *Black Maravedis*, *Old Maravedis*. When we find *Maravedis* alone, and without any Addition, it is to be understood of those mentioned above. The rest were different in Value, Fineness of Metal, Time, &c. *Mariana* asserts, that this Coin is older than the *Moors*, that it came from the *Goths*, and was worth ten *Denarii* in the time of the *Romans*.

The Word is Arabic, and took its Rise from the *Almoravides Moors*, who passing out of Africa into Spain, imposed their own Name on this Coin, which by Corruption was afterwards changed into *Maravedis*. Mention is made of it in the Decretals, as well as other Latin Writers, under the Name of *Marabitini*.

**MARBLE**, a Kind of Stone, extremely hard, firm and solid, dug out of Pits or Quarries: It takes a beautiful Polish, cuts very hardly, and is much used in Ornaments of fine Buildings, as Columns, Altars, Statues, &c. There are an infinite Number of different Kinds of Marble, usually denominated either from their Colour, their Country, or their Defects; some are of one simple Colour, as white or black, others streak'd or variegated with Stains, Clouds, Waves, Veins, &c. All Marbles are opaque, excepting the white, which, when cut into thin Slices, becomes transparent. They are also different in Weight and Hardness, and are to be consider'd with regard to their Colour, their Country, their Grain, and their Defects.

Under the Genus of Marble are comprehended *Porphyry*, which is the hardest, and which was antiently brought from Numidia in Africa; the most beautiful is that, whose Red is the most vivid, and the Stains the whitest and the smallest. See PORPHYRY. The *Serpentine*, which is a greenish brown, so call'd, because figur'd with little Stains. It is form'd of a great Number of Grains of Sand condens'd; it is of various Kinds, viz. *Egyptian*, *Italian*, *Violet*, and *Green*. See GRANATE and SERPENTINE. *Jasper*, of which there are various Kinds, the Antient, the Florid, the Black, White, &c. See JASPER. *Alabaster*, of which there are various Kinds, both White and Variegated. They are all soft when taken out of the Quarry, but harden in the Air. Marbles again may be consider'd either as Antient or Modern. By Antient we mean those, whose Quarries are lost or inaccessible to us, and whereof we have only some Pieces remaining. The Modern are those, whose Quarries are still open, and out of which Blocks continue to be dug.

Marbles denominated from their Countries.

*African Marble* is either of a reddish Brown, streak'd with Veins of White, or of a Carnation, with Veins of Green. *English White Marble* is vein'd with Red. Marble of *Auvergne* in France, is of a pale Red, mingled with Violet, Green, and Yellow. Marble of *Brabant* in *Hainault*, is Black, vein'd with White. Marble of *Bresse* in Italy, is Yellow with Spots of White. Marble *Brocatelle*, is mingled with little Shades of *Isabella*, Yellow, Pale and Gray. It comes from *Tortosa* in Spain, where it is dug out of an antient Quarry: There is also another Kind of antient *Brocatelle* dug near *Adrianople*. Marble of *Carrara*, on the Coasts of *Genoa*, is very white, and the fittest of all others for Works of Sculpture. Marble of *Champagne*, resembles the *Brocatelle*, being mix'd with blue in round Stains like Partridges Eyes. *Cipollino*, or *Cipollin Marble*, is of a Sea-green Colour, mix'd with large Waves or Clouds of white or pale green. *Scamozzi* takes this to be the same with that which the Antients call'd *Augustum & Tiberium Marmor*; because discover'd in Egypt in the Times of the Emperors *Augustus* and *Tiberius*. Marble of *Dinan*, near *Liege*, is of a pure black, very beautiful, and very common. Marble of *Guachenet*, near *Dinan*, is of a reddish Brown, with white Spots and Veins. Marble of *Languedoc*, is of a vivid red, with large white Veins or Stains, and is very common; there is some, whose White borders pretty much on the Blue, but this is of less Value. *Lumachello Marble*, Marble so call'd, because mingled with Spots, gray, black, and white, wreath'd somewhat like Periwinkle-Shells. This is antient, and its Quarry is lost.

Marble of *Margosse*, in the *Milaneze*, has a white Ground with brownish Veins, resembling the Colour of Iron-Rust. This is very common, and extremely hard. Marble of *Lavee*, in *Maine*, has a black Ground, with little narrow Veins of white; there is another Kind of it red, with Veins of a dirty white. Marble of *Namur* is black, like that of *Dinan*, but less beautiful, as inclining a little to the blue, and travers'd with little Streaks of grey. This is very common, and is frequently used in Paving. *Parian Marble* is Antique, and much celebrated in Authors; it is of a beautiful White: The greatest part of the Grecian Statues were made of it. *Varro* calls it *Lychnites*, because the Workmen dug it out of the Quarry by Lamp-Light. Marble of *Porta Santa*, at *Rome* call'd *Serna*, is mingled with large Clouds and Veins of red, yellow, and grey. Marble *Portor* has a black Ground, with Clouds and Veins of yellow. It is dug out of the foot of the Alps towards *Carrara*. Marble of *Ratrice*, in *Hainault*, is of a dirty red, mix'd with blue and white Clouds and Veins: this is pretty common, but is different in Beauty. Marble of *Savoy*, is a deep red mix'd with other Colours; each Piece whereof seems cemented on to the rest. Marble of *Sicily* is a brownish red, stain'd with oblong Squares of White and *Isabella*, like striped Taffeta's. The Antient has very vivid Colours, and the Modern comes pretty near it. Marble of *Signan*, in the *Pyreneans*, is ordinarily of a greenish brown, with red Stains; tho this is somewhat various in its Colours. Marble of *Theu*, near *Namur* in *Liege*, is a pure black, soft and easy to work, and receives a more beautiful Polish than those of *Namur* and *Dinan*.

Marble *Bigio Nero*, or black-grey, is antique. White-vein'd Marble has large Veins, with grey and blue Stains on a white Ground. It comes from *Carrara*. White Marble; that dug out of the *Pyreneans* on the side of *Bayonne*, is inferior to that of *Carrara*, its Grains being larger, and shining, like a kind of Salt. It is something like the antient white Greek Marble, whereof their Statues were made, but is not so hard or beautiful. Antient black and white Marble is now very rare, its Quarries being entirely lost; it is divided between a pure white and a bright black in Plates. Blue *Turquin Marble*, is mix'd with a dirty kind of white, and comes from the Coast of *Genoa*. Marble *Fior di Peisica*, comes from Italy, consists of red and white Stains, somewhat yellowish. Yellow Marble, is a kind of yellow *Isabella* without Veins; it is antique, and now very rare. Black *Attic Marble*, is of a pure black, without Stains, and softer than the modern black. There was some of it brought from Greece, call'd *Marmor Lucileum*; but this was not so much prized as that which the Egyptians brought from *Æthiopia*, approaching to an Iron Colour, and call'd *Basaltis*, or Touch-stone, because it served them for the Tryal of Metals. White and black Marble has a pure black Ground, with some very white Veins. Marble *Occhio di Pavone*, or Peacocks Eye, is mingled with red, white and blueish Clouds, somewhat resembling the Eyes at the end of a Peacock's Tail. Green Marble antique, is a Mixture of Grass-green and Black, in Clouds of unequal Forms and Bignesses, and is very rare, the Quarries being lost. The modern Green, improperly called *Egyptian*, is brought from *Carrara*, on the Coast of *Genoa*; it is a deep Green spotted with Grey.

Marble denominated from its Defects.

Rigid Marble, that which, being too hard, works with difficulty, and is liable to splinter, as the Black of *Namur*. Thready Marble, is that full of Threads or Filaments. Brittle Marble, is that which crumbles under the Instrument, as the white Greek Marble, that of the *Pyreneans*, &c. Terras Marble, that with soft Places in it, which must be filled up with Cement, as that of *Languedoc*.

There are two Defects frequent in Marbles, which augment the Difficulty of cutting and polishing them. The one, what they sometimes call Nails, answering to the Knots in Wood; the other, call'd Emeril, is a Mixture of Copper or other Metals, making black Stains in the Marble. The Knots are common to all Marbles, the Emeril only in the white.

The Stuck whereof they make Statues, Busts, Baso-Relievos, and other Ornaments of Architecture, is only Marble pulveriz'd, mix'd in a certain Proportion with Plaster; the whole well sifted, work'd up with Water, and used like common Plaster. There is also a kind of artificial Marble, made of Gypsum, or a transparent Stone, resembling Marble; which becomes very hard, receives a tolerable Polish, and may deceive the Eye. There is also a kind of artificial Marble form'd by corrosive Tinctures, which penetrating into white Marble, to the depth of a Line, imitates the various Colours of other Marbles. Polish'd Marble is that which, being well rubb'd with Free-stone, and afterwards with Pumice-stone, is at last polish'd with Emery, if the Marble be of several Colours, and with Tin, if it be white. In Italy they polish with a Piece of Lead and Emery.



There are various Ways of polishing *Marble*. Some lay three or four Blocks in a Row, and with another, fix'd to a broad Beetle, and a Handle fix'd at oblique Angles, with Sand and Water between, work the upper Stone backwards and forwards on the lower ones, till the Strokes of the Ax are wore off; after which, they polish them with Emery and Putty. Father Kircher shews the Manner of applying Colours on *Marble*, so as to make them penetrate its whole Substance; insomuch that if the *Marble* be slit into several parallel Tables or Planks, the same Image will be found on each, that was painted on the first: Spots of Oil penetrate white *Marble*, so as they cannot be taken out. The word *Marble* comes from the Latin *Marmor*, and that from the Greek *μαρμαριζειν*, to shine.

To *marble*, is to paint, or dispose Colours in such a manner, as that they may represent *Marble*. Thus we *marble* Paper, Wood, &c.

**MARBLED**, something resembling *Marble*: Thus *marbled* Paper, v. g. is a Paper stain'd with various Clouds and Shades, resembling, in some measure, the various Veins of *Marble*; the Method whereof, see under **PAPER**.

**MARBLING OF BOOKS**, among Binders, the sprinkling over the Cover of a Book with Black, by means of a black Pencil struck gently against the Finger, or on a Stick held for the purpose. *Marbling* is not used, except for Books bound in Calf; after it is finish'd, the Cover is glazed over with beaten Whites of Eggs, then smooth'd with a polishing Iron. They also *marble* Books on the Edges, but in this *Marbling* there is no Black used; in lieu thereof, red, blue, &c. See **BOOK-BINDING**.

**MARC, or MARK**; a Weight used in several States of Europe, and for several Commodities, especially Gold and Silver in France. The *Marc* is divided into 8 Ounces, or 64 Drachms, or 192 Deniers or Penny-weights, or 160 Esterlins, or 300 Mailles, or 640 Felins, or 4608 Grains. In Holland, the *Marc* Weight is also call'd Troy-Weight, and is equal to that of France. When Gold and Silver are sold by the *Marc*, it is divided into 24 Caracts, the Caract into 8 Penny-weights, the Penny-weight into 24 Grains, and the Grain into 24 Primes. See **CARACT**.

**MARK** is also used among us for a Money of Account; and in some other Countries for a Coin: The English *Mark* is two Thirds of a Pound Sterling, or 13s. 4d. and *Mattheu Paris* observes, it was of the same Value in 1194. The antient Saxons call'd the *Mark*, *Mancos*, *Mancuse*, and *Meare*; among them it was equivalent to thirty Pence, i. e. to six Shillings. The *Mark-Lubs*, used at Hambourgh, is also a Money of Account, equal to one Third of the Rixdollar, or to the French *Livre Tournois*. Each *Mark* is divided into sixteen *Sols-Lubs*. *Mark Lubs*, or *Dansch*, is also a Danish Coin, equal to sixteen *Sols Lubs*, or twenty French *Sols*. See **SOL**. Lastly, *Mark* is a Copper-Coin in Sweden, equal to two Pence Farthing Sterling; it is divided into eight *Roustigs*, and each *Roustiq* into two *Alleveures*. The Swedish Silver *Mark* is a Money of Account, equal to three Copper *Marks*, tho some make it a real Coin.

**MARCASSITE**; a Metallic Mineral, making, as it were, the Seed or first Matter of Metals. On this Principle, there should be as many different *Marcaffites* as Metals, which is true in effect; the Name being apply'd to every Mineral Body that has Metallic Particles in its Composition. There are only three Kinds in the Shops, viz. *Marcaffite* of Gold, of Silver, and of Copper; tho some make the Loadstone *Marcaffite* of Iron, Tin of Glafs, *Marcaffite* of Tin, and Zink or Spelter, that of Lead: but this we leave to the Chymists. *Marcaffite* of Gold is in little Balls about the bigness of Nuts, nearly round, heavy, of a brown Colour without. *Marcaffite* of Silver is like that of Gold, only less colour'd: within, the Colour differs much, the one having a Gold Colour, and the other a Colour of Silver, both shining and brilliant. The *Marcaffite* of Copper is about the bigness of a small Apple, round or oblong, brown without, yellow and crystalline within, brilliant and shining. *Marcaffites* are found in Mines of Metal; they contain a great deal of Vitriolic Salt, especially that of Copper. Some only use the word *Marcaffite* for *Bismuth*. The Word is originally Arabic.

**MARCELLIANISM**, the Doctrine and Opinions of the *Marcellians*, a Sect of antient Heretics; so call'd from *Marcellus* of Ancyra, their Leader, who was accused of reviving the Errors of *Sabellius*. Some, however, are of opinion, he was Orthodox, and that it was his Enemies the *Arians*, who father'd their Errors upon him. *St. Epiphanius* observes, that there was a great deal of Dispute with regard to the real Tenets of *Marcellus*; but that as to his Followers, 'tis evident they did not own the three Hypostases: so that *Marcellianism* is no imaginary Heresy.

**MARCGRAVE**, a kind of Dignity in Germany, answering to our Marquiss. The Word is derived from the German *Marche* or *Mark*, which signifies a Frontier; the

*Marcgraves* being originally Governors of Cities lying on the Frontiers of any State.

**MARCH**, the third Month of the Year, according to the common way of computing. Among the *Romans* it was the first, and in some Ecclesiastical Computations, that Order is still preserved; as particularly in reckoning the Number of Years from the Incarnation of our Saviour; that is, from the 25th of *March*. In England however, properly speaking, *March* is the first Month in Order; the new Year commencing from the 25th; tho, in compliance to the Customs of our Neighbours, we usually rank it as the third: but in this respect, we speak one way, and write another. Till the Year 1564, the French reckon'd the beginning of their Year from *Easter*; so that there were two Months of *March* in one Year, one of which they call'd *March* before *Easter*, and the other *March* after *Easter*. When *Easter* fell within the Month of *March*, the beginning of the Month was in one Year, and the end in another.

It was *Romulus* who divided the Year into twelve Months; to the first of which he gave the Name of his supposed Father *Mars*. *Ovid*, however, observes, that the People of Italy had the Month of *March* before *Romulus's* Time; but that they placed it very differently, some making it the 3d, some the 4th, some the 5th, and others the 10th Month in the Year. In this Month it was that the *Romans* sacrificed to *Anna Perenna*, that they begun their *Comitia*, that they adjudg'd their public Farms and Leases; that the Women served the Slaves and Servants at Table, as the Men did in the *Saturnalia*; and that the Vestals renewed the Sacred Fire. The Month of *March* was under the Protection of *Minerva*, and always consisted of 31 Days. The Antients held it an unhappy Month for Marriage, as well as the Month of *May*.

**MARCHET**; a pecuniary Fine antiently paid by the Tenant to his Lord, for the Marriage of one of the Tenant's Daughters. This Custom obtain'd, with some difference, throughout all England and Wales, as also in Scotland, and still continues to obtain in some places. According to the Custom of the Mannor of *Dinover* in *Carmarthenshire*, every Tenant, at the Marriage of his Daughter, pays ten Shillings to the Lord; which, in the British Language, is call'd *Gwabr-Merched*, i. e. *Maid's-Fee*.

In Scotland, and the North Parts of England, the common Custom was, for the Lord to lie the first Night with the Bride of his Tenant: But this Custom was abrogated by King *Malcolm III.* at the Instance of his Queen; and instead thereof, a Mark was paid by the Bridegroom to the Lord. Whence 'tis call'd *Marcheta Mulieris*.

**MARCIONITES**, the Name of a very antient and popular Sect in the Church. In the Time of *St. Epiphanius*, they were spread over Italy, Egypt, Palestine, Syria, Arabia, Persia, and other Countries. *Marcion*, their Author, was of Pontus, the Son of a Bishop, and at first made profession of the Monastical Life; but having had a criminal Affair with a Maid, was excommunicated by his own Father, who would never admit him again into the Communion of the Church, not even on his Repentance. On this he abandon'd his own Country, and retired to Rome, where he began to broach his Doctrines. He laid down two Principles, the one Good, the other Evil. He deny'd the real Birth, Incarnation and Passion of Jesus Christ, and held them to be all apparent only. He taught two Christs: One, who had been sent by an unknown God for the Salvation of all the World; Another, whom the Creator would one day send to re-establish the Jews. He deny'd the Resurrection of the Body, and allow'd none to be baptized, but those who preserved their Continence; but these he granted might be baptized three times. In many things he follow'd the Sentiments of the Heretic *Cerdon*, and rejected the Law and the Prophets. He pretended the Gospel had been corrupted by false Prophets, and allow'd none of the Evangelists but *St. Luke*, whom he altered in many places, as well as the Epistles of *St. Paul*; a great many things in which he threw out. In his own Copy of *St. Luke*, he threw out the two first Chapters entire.

**MARCITES**, a Sect of Heretics in the second Century, who also call'd themselves the *Perfetti*, and made profession of doing every thing with a great deal of Liberty, and without any Fear. This Doctrine they borrow'd from *Simon Magus*, who, however, was not their Chief; for they were call'd *Marcites* from one *Marcus*, who conferred the Priesthood, and the Administration of the Sacraments, on Women.

**MARCOSSIANS**, the Name of an antient Sect in Religion, making a Branch of the *Gnostics*. *St. Irenaeus* speaks at large of the Leader of this Sect, *Marcus*, who, it seems, was reputed a great Magician. He relates several things touching the Prayers and Invocation of the antient *Gnostics*, the antient Jewish *Cabala* on the Letters of the Alphabet, and their



their Properties, as well as on the Mysteries of Numbers, which the Jews and Gnostics had borrow'd from the Philosophy of Plato and Pythagoras. Marcus was an Egyptian, and there it was he became acquainted with Magic. To impose more easily on his Followers, he made use of certain Hebrew, or rather Chaldee Words, much used by the Enchanters of those Times. The Marcossians had a great number of Apocryphal Books, which they held for Canonical, and of the same Authority with ours. Out of these they pick'd several idle Fables, touching the Infancy of Jesus Christ, which they put off for true Histories. Many of these Fables are still in use and credit among the Greek Monks.

MARGARITÆ. See PEARLS.

MARK, in Matters of Commerce and Manufacture; a certain Character struck or impress'd on various Kinds of Commodities, either to shew the Place where they were made, and the Persons who made 'em; or to shew they have been view'd and examin'd by the Officers or Magistrates charged with the Inspection of that Manufacture; or lastly, to shew the Duties imposed thereon have been regularly acquitted. Thus are Cloths, Leathers, Cutlery-Ware, Paper, Plate, Weights, Measures, &c. mark'd.

MARK is also a particular Sign or Character, known only to the Trader who pitches on it; whereby, being fix'd to any Commodity, he recollects the Price it cost him. These Marks, otherwise call'd Numero's, are taken according to the Fancy of those who use them; but, ordinarily, are chosen from among the Letters of the Alphabet, each having a relation to some particular Number of Figures. They are of so much use in Trade, that the Reader will not take it amiss, if we insert a little Table, to serve as a Model for their Construction.

|   |   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|---|----|----|
| A | B | C | D | E | F | G | H | I | K | L  | M  |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 20 |

One Example will give the whole Use of this Table. Suppose, v. g. I would put on a Piece of Stuff, that it cost 37 s. 6 d. per Ell. I put an M for 20 s. an L for 10 s. an H for 7 s. and a G for 6 d. So that the several Letters wrote after each other (observing always to separate Shillings from Pounds and from Pence by Points, will make this Mark M.L.H.G equal to 37 s. 6 d. Note, the Mark may be diversified infinitely, by adding other Figures to the Letters in lieu of these.

ST. MARK, a Congregation of Regular Canons, founded at Mantua by one Albert Spinola, a Priest, towards the end of the 12th Century. Spinola made a Rule for them, which was approved, corrected and confirmed by several succeeding Popes. About the Year 1450, they were reformed, and followed only the Rule of St. Augustin. This Congregation, which at first consisted of 18 or 20 Houses of Men, and of some for Women, situate in Lombardy and the State of Venice; having flourished for the space of 400 Years, declined by little and little, and was at length reduced to two Convents; and in 1584, that of St. Mark at Mantua, which was the chief, was given with the Consent of Pope Gregory XIII. to the Camaldules, and so the Congregation became extinct.

Order of ST. MARK; an Order of Knighthood in the Republic of Venice, under the Protection of St. Mark the Evangelist. The Arms of this Order are, a Lion winged Gules, with this Device, Pax tibi, Marka Evangelista. This Order is never conferred but on those who have done signal Services to the Commonwealth.

MARKET, from the French Marché, i. e. Emporium or Forum Nundinarium; and signifies the same thing with us, as also the Liberty or Privileges whereby a Town is enabled to keep a Market. Bratton observes, that one Market ought to be distant from all others at least six Miles and a half, and a Third of a half. In former times it was customary to have most Fairs and Markets kept on Sundays, and in the Church-yard; so that Matters of Business and Devotion were transacted under one. Which Custom, tho prohibited by several Kings, was yet held up till the Reign of King Henry the Sixth, when it was effectually suppress'd. In many Places they are still kept in the Church-yard.

MARLE, or Marne; a kind of fat, soft, fossil Earth, cast on Land to make it more fruitful: There are several Sorts, of several Colours and Qualities. Too much Marle thrown on the Earth, is found to burn it. Marle is also of use in making of Lime, and is burnt like other Stone. The Word comes from the ancient Celtic Marga, mention'd by Pliny. It was afterwards call'd Margita and Marguretta. Pallius teaches the Use of it.

MARMALADE; a Confection made of the Juice or Pulp of several Fruits, as Plumbs, Apricocks, Quinces, &c. boiled with Sugar into a Consistence: that made of Quinces is sub-astringent, and grateful to the Stomach.

MARMORA ARUNDELLIANA, or the Oxford Marbles, are ancient Stones, whereon appear a Chronicle of the City of Athens, engraven in Capital Letters in the Island of Paros, one of the Cyclades, 263 Years before Jesus Christ. They took their Name from Thomas Earl of Arundel, who procured them out of the East, or from Henry his Grandson, who presented them to the University of Oxford. An Account of all their Inscriptions were publish'd in 1676, by Dr. Prideaux.

MARONITES, a Body of Christians who follow the Syrian Rites, and are subject to the Pope; their principal Habitation being on Mount Libanus. The Learned are divided about their original Father. Morin and Cardinal Bona take Maronite for the Name of a Sect, as well as Nestorian and Jacobite. The Maronites themselves pretend, that they are descended from one Maron, who lived in the beginning of the fifth Century, and whose Life is written by Theodore. The Jesuit Sacchini is of the same Opinion; he thinks, that they never separated from the Catholic Church; and adds, that what has given occasion to their being judg'd in a Schism, is their Re-union with the Romish Church, which some take for a Return to the Catholic Faith. The former Opinion is founded on the Testimonies of Eutychius, James de Vitri, and several others, who expressly assert the Maronites to have been formerly a part of the Monothelite Jacobites: According to their Account, Maron, whom the Maronites qualify for a Saint, was in truth a Heretic. Towards the Year 1182, Aimers, third Latin Patriarch of Constantinople, united the Maronites to that Church. From that time they have used the Mitre, Ring, Crosier, and other of the Latin Episcopalibus; but their Service is still performed in the Chaldee Language.

M. Faustus has publish'd an Apology for Maron and the rest of his Nation. His Opinion is, that they really took their Name from the Maron who lived in the 4th Century, and whereof mention is made in Chrysostom, Theodoret, and the Menology of the Greeks. He adds, that the Disciples of this Maron spread themselves throughout all Syria, that they built several Monasteries, and among others, one that bore the Name of their Leader; That all the Syrians who were not tainted with Heresy, took Refuge among 'em; and that for this reason, the Hereticks of those Times call'd 'em Maronites.

The Maronites have a Patriarch who resides in the Monastery of Cannubia on Mount Libanus, and assumes the Title of Patriarch of Antioch. He is elected by the Clergy and the People, according to the antient Custom; but since their Re-union with the Church of Rome, he is obliged to have a Bull of Confirmation from the Pope. He keeps a perpetual Celibate, as well as the rest of the Bishops his Suffragans. For the rest of the Ecclesiastics, they are allow'd to marry before Ordination; and yet the Monastic Life is in great esteem among 'em. Their Monks are of the Order of St. Anthony, and live in the most obscure Places in Mountains, far from the Commerce of the World.

As to their Faith, they agree in the main with the rest of the Eastern Church. Their Priests don't say Mass alone, but all say it together, standing round the Altar. They consecrate Bread without Leaven; and the Laity have hitherto communicated in both Kinds, tho the Practice of communicating in one is introduced by little and little. In Lent they eat nothing, unless it be two or three hours before Sun-rising: Their other Fastings are very numerous. Their Name may either be derived from Maron above-mention'd, or from μαρῶν, the Name of a Monastery, or from Maronca, a City of Syria.

MAROTIC STILE; a Term in the French Poetry, signifying a peculiarly gay, merry, yet simple and natural Manner of Writing, introduced by Marot, and since imitated by their other Authors, but with most Success by Voiture and Fontaine. The Difference between the Marotic and the Burlesque Stile, is thus assign'd: The Marotic makes a choice, the Burlesque admits of all. The first is the most simple, but its Simplicity has its Nobleness; and where its own Time won't furnish natural Expressions, it borrows them from former Times. The latter is low and groveling, and borrows false and fulsome Ornaments from the Croud, which People of Taste despise. The one resigns itself to Nature, but examines first of all whether the Objects she presents be fit for its Paintings, and takes nothing but what carries with it somewhat of Delicacy and Mirth; the other runs headlong into Buffoonery, and affects every thing that is extravagant and grotesque.

MARQUE, Letters of, are Letters of Reprisal, granted by a King or Parliament, by which Subjects of one Country are licensed to make Reprisals on those of another; provided Application has been made for Redress to the Government, whereto the Aggressor belongs, three times without Effect. They are so call'd, as being *concessum*



*concessum in alterius Principis Marchas seu Limites transeundi, sibi que Jus faciendi.* See REPRISALS.

**MARQUETRY**, *in-laid Work*; a Work composed of several Pieces of hard, fine Wood of different Colours, fasten'd, in thin Slices, on a Ground, and sometimes enlaid with other Matters, as Tortoise-shell, Ivory, Tin, and Brass. There is another kind of *Marquetry* made, instead of Wood, of Glasses of various Colours; and a third, where nothing but precious Stones, and the richest Marbles, are used: but these are more properly called *Mosaic Work*. See MOSAIC.

The Art of Inlaying is very antient, and is supposed to have pass'd from the East to the West, as one of the Spoils brought by the Romans from Asia; indeed it was then but a simple thing: nor did it arrive at any tolerable Perfection, till the fifteenth Century, among the Italians; it seems however to have arrived at its height in the seventeenth Century among the French. Till John of Verona, a Cotemporary with Raphael, the finest Works of this kind were only black and white, which are what we now call *Moresco's*; but that Religious, who had a Genius for Painting, stain'd his Woods with Dyes or boiled Oils, which penetrated them. But he went no further, than the representing Buildings and Perspectives, which require no great Variety of Colours. Those who succeeded him, not only improved on the Invention of dyeing the Woods, by a Secret which they found of burning them without consuming, which served exceedingly well for the Shadows; but had also the Advantage of a number of fine new Woods of naturally bright Colours, by the Discovery of America. With these Assistances the Art is now capable of imitating any thing; whence some call it the *Art of Painting in Wood*.

The Ground whereon the Pieces are to be arranged and glued, is ordinarily of Oak or Fir well dried; and to prevent warping, is composed of several Pieces glued together. The Wood to be used being reduced into Leaves, of the Thickness of a Line, is either stain'd with some Colour, or made black for Shadow; which some effect, by putting it in Sand extremely heated over the fire, others by steeping it in Lime-Water and Sublimate, and others in Oil of Sulphur. Thus colour'd, the Contours of the Pieces are form'd, according to the Parts of the Design they are to represent. This last is the most difficult part of *Marquetry*, and that wherein most Patience and Attention are required. The two chief Instruments used herein, are the Saw and the Vice; the one, to hold the Matters to be form'd; the other, to take off from the Extremes, according to occasion. The Vice is of Wood, having one of its Chaps fix'd, the other moveable, and is open'd and shut by the Foot, by means of a Cord fasten'd to a Treadle. Its Structure is very ingenious, yet simple enough, and will be easily conceived from the Figure (*Tab. Miscellany, fig. 1.*) The Leaves to be form'd (for there are frequently three or four of the same Kind form'd together) are put within the Chaps of the Vice, after being glued on the outermost part of the Design, whose Profile they are to follow; then the Workman pressing the Treadle, and thus holding fast the Piece, with his Saw runs over all the Out-lines of the Design. By thus joining and forming three or four Pieces together, they not only gain time, but the Matter is likewise the better enabled to sustain the Effort of the Saw; which, how delicate soever it may be, and how lightly soever the Workman may conduct it, without such a Precaution, would be apt to raise Splinters, to ruin the Beauty of the Work.

When the *Marquetry* is to consist of one single kind of Wood, or of Tortoise-shell, on a Copper or Tin Ground, or *vice versa*; they only form two Leaves on one another, i. e. a Leaf of Metal, and a Leaf of Wood or Shell: this they call sawing in Counter-parts; for by filling the Vacuities of one of the Leaves by the Pieces coming out of the other, the Metal may serve as a Ground to the Wood, and the Wood to the Metal.

All the Pieces thus formed with the Saw, and marked, to know 'em again, and the Shadow given in the manner already mention'd, they vaneer or fasten each in its Place on the common Ground; using for that purpose the best English Glue. The whole is put in a Press to dry, planed over, and polish'd with the Skin of the Sea-Dog, Wax, and Shave-Grass, as in simple VANEERING, which see. With this Difference, however, that in *Marquetry* the fine Branches, and several of the more delicate Parts of the Figures, are touch'd up and finish'd with a Graver. 'Tis the Cabinet-Makers, Joiners, and Toy-Men, among us, who work in *Marquetry*; 'tis the Enamellers and Stone-Cutters, who deal in *Mosaic Work*: the Instruments used in the former are mostly the same with those used by the Engravers. See ENONY. See also MOSAIC.

**MARQUETTE**; a Right or Due which the Women formerly paid to the King or Lord, to ransom themselves from an infamous Custom, which obliged them to pass

the first Night of their Nuptials with their Lords. This Establishment is attributed to King Malcolm or Malcolumbe; and was suppress'd by Malcolm III. Some derive the Word *Marquette* from Marc, because the Fee of *Marquette* was half a Silver Marc.

**MARQUISS**, properly signifies a Title given to a Person in possession of a considerable Demesne, erected into a *Marquisate* by Letters Patents; holding a middle Place between the Dignity of a Duke, and that of an Earl or Count. *Marquisses* were antiently Governours of Frontier Cities or Provinces, called *Marches*. See NOBILITY, PEER, &c.

According to some Authors, the Word *Marquis* comes from the *Marcomans*, an antient People who inhabited the Marche of Brandenburg. Others derive it from the German *March*, Limit; and others from *Marcisia*, which in the Celtic Language, signify'd a Wing of Cavalry. Nicod derives it from the corrupt Greek *νομάρχα*, Province. Alciat and Fauchet bring it from *Mark*, Horse, taking a *Marquis* to be properly an Officer of Horse. Menage derives it from *Marca*, Frontiere; and Selden, Krantzius and Hottoman do the same. Lastly, Pasquier fetches the Etymology of *Marquis* from the old French *Marche*, Limit, or from *Marchier*, to confine; the Guard of the Frontiers being committed to them.

The word *Marquis* is French; the Romans were unacquainted with it. In the *Notitia Imperii* they are called *Comites Limitanei*. Alciat has started a Question, whether a *Marquis* or Count should have the Precedence. To decide it, he goes back to the antient Function of Counts, and observes, that Counts, who are Governours of Provinces, are above *Marquisses*, who are only Governours of Frontiers; and that *Marquisses*, who are Governours of Frontier-Cities, are above Counts, who are Governours of small Towns. He adds, that in consequence of this Distinction, the Book of Fiefs sometimes places *Marquisses* above Counts, and sometimes Counts above *Marquisses*. Froissart observes, that the *Marquisat* of Juliers was erected into a County. But now-a-days, neither *Marquisses* nor Counts are any longer Governours; and as they are mere Titles of Honour, the Counts make no scruple of resigning the Precedency. King Richard the Second was the first who introduced *Marquisses* in England; till that time, the Frontiers had been governed by Lords *Marches*. See COUNT, DUKE, &c.

**MARRIAGE**, a Civil and Religious Contract, by which a Man is join'd and united to a Woman. The Essence of *Marriage* consists in the mutual Consent of the Parties. *Marriage* is part of the Law of Nations, and is in use among all People. The Romanists account it a Sacrament. The Woman, with all her moveable Goods, immediately upon *Marriage*, passes wholly in *Potestatem Viri*, into the Power and Disposal of the Husband. See WIFE, AFFINITY, DEGREE, &c. Sanchez, Benazina, and Bowyer, have wrote on the Subject of *Marriage*.

In Germany they have a kind of *Marriage* call'd *Marganatic*, wherein, a Man of Quality contracting with a Woman of inferior Rank, he gives her the left Hand in lieu of the right, and stipulates in the Contract, that the Wife shall continue in her former Rank or Condition, and that the Children born of them, be of the same; so that they become Bastards as to Matters of Inheritance, tho' legitimate in effect: They cannot bear the Name or Arms of the Family. None but Princes, and great Lords of Germany, are allow'd this kind of *Marriage*. The Universities of Leipzig and Jena have declared against the Validity of such Contracts, maintaining that they cannot prejudice the Children, especially when the Emperor's Consent intervenes in the *Marriage*.

The Turks have three Kinds of *Marriages*, and three Sorts of Wives; *Legitimate Wives* in *Kebins*, and *Slaves*. They marry the first, hire the second, and buy the third.

**Duty of MARRIAGE**; a Term used in some antient Customs, signifying an Obligation to *Marriage*. To understand this, it must be observed, that old Maids, and Widows above sixty, who held Fees in Body, or were charged with any Personal or Military Services, were antiently obliged to marry, to render those Services to the Lord by their Husbands, or to indemnify the Lord, which they could not do in Person. And this was call'd, *Duty* or *Service of Marriage*.

The Roman Laws speak of second *Marriages* in very hard and odious Terms. *Matre jam secundis Nuptiis funestata*, L. 3. C. de sec. Nuptiis. By these Laws it was enacted, that the Effects of the Husband or Wife deceased should pass over to the Children, if the Survivor should marry a second time. By the Law *Hac Edictali Cod. de sec. Nup.* the Survivor, upon Marrying a second time, could not give the Person they married, a Portion more than equal to that of each of the Children. In the Primitive Church, the Respect to Chastity was carry'd so high, that a second



Marriage was accounted no more than a lawful Debauch, or a Species of Bigamy. There are some antient Canons which forbid the Ecclesiastics from being present at second Marriages.

MARRIAGE, in Law, signifies not only the lawful joining of Man and Wife, but also the Right of bestowing

a Ward or a Widow in Marriage, and the Land given in Marriage.

For the Proportions which Marriages bear to Births, and Births to Burials in several Parts of Europe, Mr. Derham gives us the following Table.

| Names of Places.                      | Marriages to Births, as | Births to Burials, as |
|---------------------------------------|-------------------------|-----------------------|
| England in General                    | 1 to 4.63               | 1.12 to 1             |
| London                                | 1 to 4.                 | 1 to 1.1              |
| Hantsire, from 1569 to 1638           | 1 to 4.                 | 1.2 to 1              |
| Tiverton in Devon. from 1656 to 1664  | 1 to 3.7.               | 1.26. to 1            |
| Cranbrook in Kent, 1560 to 1649       | 1 to 3.9.               | 1.6. to 1             |
| Synbo in Northamp. for 118 Years      | 1 to 6                  | 1.6 to 1              |
| Upminster in Essex, for 100 Years     | 1 to 4.6.               | 1.8 to 1              |
| Frankfort on the Main in 1695         | 1 to 3.7                | 1.2 to 1              |
| Old, Middle, and Lower March, in 1698 | 1 to 3.7                | 1.9 to 1              |
| Dominions of Elect. of Branden. 1698  | 1 to 3.7                | 1.5 to 1              |
| Breslaw in Silesia, from 1687 to 91   |                         | 1.6 to 1              |
| Paris in 1670, 1671, 1672             | 1 to 4.7                | 1.6 to 1              |

From which Table it appears, that Marriages, one with another, do each produce about four Births, both in England and other Parts of Europe. And by Mr. King's Computation, about 1 in 104 Persons marry; the Number of People in England being estimated at five Millions and a half, whereof about 41000 annually marry.

Major Graunt and Mr. King disagree in the Proportions between Males and Females, the latter making 10 Males to 13 Females in London; in other Cities and Towns, and in the Villages and Hamlets, 100 Males to 99 Females. But Major Graunt, both from the London and Country Bills, computes that there are in England 14 Males to 13 Females; whence he justly infers, that the Christian Religion, prohibiting Polygamy, is more agreeable to the Law of Nature than Mahometism, and others that allow it. This Proportion of Males to Females Mr. Derham thinks pretty just, being agreeable to what he had observed himself. In the 100 Years, for instance, of his own Parish Register of Upminster, tho the Burials of Males and Females were nearly equal, being 633 Males, and 623 Females in all that time; yet there were baptized 709, and but 675 Females, which is 13 Females to 13.7 Males. From which Inequality it appears, that one Man ought to have but one Wife, and yet that every Woman, without Polygamy, may have a Husband; this Surplusage of Males above Females being spent in the Supplies of War, the Seas, &c. from which the Women are exempt. That this is a Work of Providence, and not of Chance, is well made out by the very Laws of Chance, by Dr. Arbuthnot: Who supposes Thomas to lay against John, that for eighty-two Years running, more Males shall be born than Females; and giving all Allowances in the Computation to Thomas's Side, he makes the Odds against Thomas, that it does not so happen to be near five Millions of Millions of Millions of Millions to one; but for Ages of Ages, according to this World's Age, to be near an infinite Number to one. See BIRTHS and BURIALS.

MARROQUIN, vulgarly Morocco, the Skin of a Goat, or some other Animal resembling it, and call'd *Mezon*, frequent in the Levant; dress'd in Sumac or Galls, and colour'd of any Colour at pleasure, much used in Tapistry, Book-Binding, &c. The Name is ordinarily derived from the Kingdom of Morocco, whence 'tis supposed the Manner of preparing them was first borrow'd. We have Morocco Skins brought from the Levant, Barbary, Spain, Flanders, and France; red, black, yellow, blue, &c. The various Manners of preparing Morocco's, both Black and in Colours, are so curious and useful, and withal so little known among us, that the Publick will not be displeased to find them here.

Manner of preparing black Morocco. The Skins having been dried in the Hair, are steep'd in clear Water three Days and Nights, stretch'd on a wooden Horse or Leg, like that used by Tanners, beaten with a large Knife for the purpose, and steep'd a-fresh in Water, chang'd daily till they be well come again. In this State they are thrown into a large Vat in the Ground, full of Water, wherein Quick-Lime has been slaked, where they lie 15 Days; whence, however, they are taken, and again return'd every Night and Morning: They are then thrown into a fresh Vat of Lime and Water, and shifted Night and Morning, as before, for 15 Days longer; then rinsed in clear Water, and the Hair taken off, on the Leg, with the Knife; return'd into a third Vat, and shifted as before

for about 18 Days; steep'd 12 Hours in a River, taken out, rinsed, put in Pails, where they are pounded with wooden Pestles, changing the Water twice: then laid on the Horse, and the Flesh taken off, return'd into Pails of new Water, taken out, and the Hair-side scraped; return'd into fresh Pails, taken out, and thrown into a Pail of a particular Form, having Holes at bottom: here they are beaten the space of an hour, and fresh Water pour'd on from time to time; stretch'd on the Leg, and scraped on either Side, return'd into Pails of fresh Water; taken out, stretch'd up all around in manner of Bags, leaving out the hind Legs, which serve as a Mouth for the Conveyance of a Mixture mention'd hereafter. The Skins thus sew'd, are put in luke-warm Water, where Dogs Excrement has been dissolved. Here they are stirred with long Poles half an hour, left at rest a dozen, taken out, rinsed in fresh Water, and fill'd by a Tunnel with a Preparation of Water and Sumac, mix'd and heated over the Fire till ready to boil; and as they are fill'd, the hind Legs are sewed up, to stop the Passage. In this State they are let down into the Vessel of Water and Sumac, and kept stirring four hours successively, taken out, and heap'd on one another; after a little time, their Sides changed: and thus they continue an hour and half, till drain'd. This done, they are loosen'd, and fill'd a second time with the same Preparation, sew'd up again, and kept stirring two hours, piled up and drain'd as before. This is again repeated a third time, with this Difference, that they are now only stirred a quarter of an hour; after which, they are left till the morrow morning, when they are taken out, drain'd on a Rack, unsewed, the Sumac taken out, folded in two from Head to Tail, the Hair-side outwards, laid over each other on the Leg, to perfect their Draining, stretch'd out, and dried; then trampled under foot by two and two, stretch'd on a wooden Table, what Flesh and Sumac remains scraped off, and the Hair-side rubbed over with Oil, and that again with Water. Having thus received their Oil and Water, they are twisted in the Hands, then stretch'd and press'd tight on the Table with an Iron Instrument like that of the Curriers, the Flesh-side uppermost; then turn'd, and the Hair-side rubb'd strongly over with a handful of Rushes, to squeeze out as much of the Oil remaining within as possible. The first Course of Black is now laid on the Hair-Side, by means of a Lock of Hair twisted and steep'd in a kind of black Dye, prepared of four Beer, wherein Pieces of old rusty Iron have been thrown. When half dry by hanging in the Air, they are stretch'd on a Table, and rubb'd over every way with a Paumelle, or wooden Instrument, with Teeth to raise the Grain, over which is pass'd a light Couche of Water, then sleek'd, by rubbing them with Rushes prepared for the purpose. Thus sleek'd, they have a second Couch of Black, then dried, laid on the Table, rubb'd over with a Paumelle of Cork, to raise the Grain again; and after a light Couche of Water, sleek'd over anew, and to raise the Grain a third time, a Paumelle of Wood used. After the Hair-side has thus received all its Preparations, the Flesh-side is pared with a sharp Knife for the purpose; the Hair-side rubb'd strongly over with a woollen Cap, having first given it a Lustre with Barberries, Citron, or Orange. The whole is finish'd, by raising the Grain lightly for the last time with the Paumelle of Cork, which leaves them in a Condition for Sale and Use.



*Manner of preparing red Morocco.* The Skins are steep'd twenty-four hours in a River, taken out, stretch'd on the Leg, beat with the Knife, return'd into the Water for twenty-four hours, re-beaten on the Leg, re-steep'd; thrown into a Fat, and for three Weeks, taken out and return'd every Morning, to dispose them to peel. Being taken out for the last time, they are scraped with the Knife, and when the Hair is quite off, thrown in Pails of fresh Water, where they are rinsed; then the Flesh-side scraped, thrown into the Pails, and thus alternately from the Leg to the Pails, till they leave the Water quite clean: then they are put in lukewarm Water, with the Experiment as before, and after twelve hours, rinsed in clear Water, and scraped on the Leg on both Sides, pounded in Pails, and the Water changed three times; then wrung and stretch'd on the Leg, and pass'd after each other into Water, with Alum dissolved in it. Thus alum'd, they are left to drain till the Morning, then wrung out, pull'd on the Leg, and folded from Head to Tail, the Flesh inwards. In this State they receive their first Dye, by passing them after one another into a red Liquor, prepared with *Lacca*, and some other Ingredients, kept secret among the *Maroquineers*. This they repeat again and again, till the Skins have got their first Colour. They are then rinsed in clear Water, stretch'd on the Leg, and left to drain twelve Hours; thrown into Water, into which white Galls pulveriz'd have been pass'd thro a Sieve, and stirred incessantly for a day with long Poles, taken out, hung on a Bar a-cross the Water all night, White against Red, and Red against White, and in the Morning the Water stirred up, and the Skins return'd into it for twenty-four Hours.

**MARROW**, a delicate Substance contain'd in the Cavities of the Bones. All the Bones of the Body, which have any considerable Thickness, have either a large Cavity, or are spongy, and full of little Cells; in both the one, and the other, is an oleaginous Substance, call'd *Marrow*, contain'd in proper Vesicles or Membranes, which open into one another. In the larger Bones, this fine Oil, by the gentle Heat of the Body, is exhaled thro the Pores of its small Bladders, and enters some narrow Passages, which lead to some fine Canals, excavated in the Substance of the Bone, according to its Length; and from these, other cross Passages (not directly opposite to the former, lest they should weaken the Bone too much in one Place) carry the Marrow still farther into more longitudinal Canals, placed nearer the Surface of the Bone: All this Contrivance is, that the Marrow may supple the Fibres of the Bones, and render them less apt to break. The Antients imagin'd, that Marrow serv'd for Nourishment to the Bones. But later Observations have found Blood-Vessels in the Bones; so that it appears the Bones are nourish'd in the same manner as the other Parts of the Body. Besides, we find many Bones which grow, and yet have no Marrow in them; witness the Horns of Deer, Lobsters Claws, &c. See **MEDULLA**.

**MARS**, among Chymists, signifies Iron, because imagin'd under the Influence of that Planet. See **IRON**. Physical Writers prove Iron preferable for all Medicinal Purposes to Steel, which is only a more harden'd, compact Iron, made so by Art; whereby it is rendred more unfit to yield those Principles or Parts in Preparation, which the Physician requires to be drawn out. For the Operation of its Medicinal Properties, see **CHALYBEAT**.

**MARS**, in Astronomy, one of the five Planets, and of the three superior ones; its Place being between the *Sun* and *Jupiter*: See **PLANET**, and **SYSTEM**. Its Character is ♂. Its mean Distance from the Sun is 1524 of those Parts, whereof the Distance of the Sun from the Earth is 1000. Its Excentricity 141. The Inclination of its Orbit, that is, the Angle form'd by the Plane of its Orbit with the Plane of the Ecliptic, 1 Deg. 52 Min. The periodical Time, in which it makes its Revolution round the Sun, 686 Days 23 Hours. Its Revolution about its own Axis is perform'd in 24 Hours 40 Minutes. For the Diameter of *Mars*, see **DIAMETER**, and **SEMI-DIAMETER**. For its Density, see **DENSITY**. For the Force of Gravity on its Surface, see **GRAVITY**. Its Parallax, according to Dr. *Hook* and Mr. *Flamsteed*, is scarce 30 Seconds.

In the Achronical Rising of this Planet, that is, when it is in opposition to the Sun, it is found twice as near the Earth as the Sun; which is a Phenomenon that has extremely discredited the *Ptolemaic* Hypothesis. Dr. *Hook*, in 1665, observ'd several Spots in *Mars*, which having a Motion, he concluded the Planet to turn round its Centre. In 1666, M. *Cassini* observ'd several Spots in the two Faces or Hemispheres of *Mars*, which, by continuing his different Observations very diligently, he found to move by little from East to West, and to return in the space of 24 Hours 40 Minutes to their former Situation. Whence both the Motion and Period, or natural Day of that Planet, was determin'd. *Mars* always appears with a ruddy,

troubled Light; whence we conclude it is encompass'd with a thick, cloudy Atmosphere, which, by disturbing the Rays of Light in their Passage and Re-passage thro it, occasion that Appearance. *Mars* having his Light from the Sun, and revolving round it, has an Increase and Decrease like the Moon. It may also be observed almost bisected, when in its Quadratures with the Sun, or in his Perigæon, but never cornicated or falcated, as the inferior Planets. See **PHASES**.

This Planet's Distance from the Sun, is to the Distance of the Earth and Sun, as  $1\frac{1}{2}$  to 1. So that a Man placed in *Mars*, would see the Sun's Diameter less by one third than it appears to us, and consequently the Degree of Light and Heat, which *Mars* receives from the Sun, is less by one third than that received by the Earth: This Proportion, however, will admit of a sensible Variation, on account of the great Excentricity of this Planet.

Tho the Period or Year of this Planet, as has been already observed, is nearly twice as long as ours, and his natural Day, or the Time in which the Sun appears above his Horizon (setting aside the Consideration of Twilight) is almost every where equal to his Night; yet it appears, that in one and the same Place on his Surface, there will be but very little Variety of Seasons, scarce any Difference of Summer and Winter. And the reason is, that the Axis of his Diurnal Rotation is nearly at right Angles with the Plane of his Orbit. It will be found, notwithstanding, that Places situate in different Latitudes, that is, at different Distances from his Equator, will have very different Degrees of Heat, on account of the different Inclination of the Sun's Rays to the Horizon; as 'tis with us, when the Sun is in the Equinoxes. From this Consideration, Dr. *Gregory* endeavours to account for the Appearance of the *Fasciae* in *Mars*; which are certain Swathes or Fillers seen in this Planet, and posited parallel to his Equator. For, as among us, the same Climate has at different Seasons very unequal Degrees of Heat; but in *Mars* it is otherwise, the same Parallel having always a pretty equable Degree of Heat: It follows, that these Spots may probably be form'd in *Mars*, or his Atmosphere, as Snow and Clouds are in ours, viz. by the constant different Intensions of Heat and Cold in the different Parallels; and so come to be extended in Circles or Belts parallel to his Equator, or the Circle of his Diurnal Revolution. And this same Principle may, perhaps, solve the Phenomenon of *Jupiter's* Belts; that Planet, like *Mars*, having a perpetual Equinox. See **JUPITER**.

Besides the ruddy Colour of *Mars*, we have another Argument of his being encompass'd with an Atmosphere; and it is this, That when any of the fix'd Stars are seen near his Body; they appear extremely obscured, and almost extinct. If this be the Case, an Eye placed in *Mars* would scarce ever see *Mercury*, unless perhaps in the Sun at the time of Conjunction, when *Mercury* passes over his Disk, as he sometimes appears to us in form of a Spot. A Spectator in *Mars* will see *Venus* about the same Distance from the Sun that *Mercury* appears to us; and the Earth about the same Distance from the Sun, that to us *Venus* appears. And when the Earth is found in Conjunction with, and very near the Sun, he will see in *Mars* what *Cassini* saw on Earth, viz. the Earth appear horned or falcated, and its Attendant the Moon of the same Figure, and at its utmost Distance from the Earth, not above 15 Minutes of a Degree.

**MARS**, among the Astrologers, is held a Malific Planet. They call it the *little Unfortunate*; it is masculine, nocturnal, hot and dry.

Games of **MARS**, were Combats instituted at *Rome* in honour of the God *Mars*. They were held twice in the Year; once in the *Circus*, on the 4th of the Ides of *May*; and a second time on the 1st of *August*. These were establish'd, some time after the first, in memory of the Dedication of the Temple of *Mars* on that Day.

These Games consisted in the Courses of Horses, and Combats with wild Beasts. *Germanicus* is said to have kill'd two hundred Lions in the *Circus* on these Occasions.

**CROCUS MARTIS**, is the Rust of Iron; or Iron in an impalpable Powder. The Alchymists sometimes call their Mercury by the Name of *Mars*.

**MARSHAL**: With us there are several Officers of this Name, the Chief whereof is the *Earl-Marshal* of *England*, who is one of the Great Officers of the Crown. He takes Cognizance of all Matters of War and Arms, determines Contracts touching Deeds of Arms out of the Realm upon Land, and Matters concerning War within the Realm, which cannot be determin'd by Common Law. This Office is Hereditary, having been for many Ages in the House of *Norfolk*.

The *Earl-Marshal* had antiently several Courts under him, but hath now only the *Manfalca*, where he may sit in



in Judgment against Criminals offending within the Verge of the Court:

There are other inferior Officers of this Name; as *Marshal* of the Justices in Eyre; *Marshal* of the King's-Bench, who has Custody of the Prison; call'd the *King's-Bench*, in *Southwark*. *Knight-Marshal*, an Officer in the *Marshalsea*, under whom are the *Marshal's Men*, who are properly the King's Bayliffs, and arrest in the Verge of the Court, when a Warrant is back'd by the Board of Green-Cloth. The Court where Causes of this kind, between Man and Man, are tried, is call'd the *Marshalsea*, and is under the *Knight-Marshal*. In *Fleta* mention is made of a *Marshal* of the King's Hall; a *Marshal* of the Exchequer, to whom the Court commits the Custody of the King's Debtors, &c.

**MARSHAL**, or **MARECHAL**, of *France*; the Name of an Officer of the Crown, who commands the Armies. The Dignity of *Marshal* is now for Life; tho at its first Institution it was otherwise. They were then only the King's first Ecuyers under the Constable; but in Time they became the Constables Lieutenants in the Command of the Army, the Constable himself being then become Captain-General. At first they were but two in number, and their Allowance was but 500 Livres *per Annum* in Time of War, and nothing in Time of Peace. In the Reign of *Francis* the First, their Number was increased to five; since him it has been various: the late King increased it at pleasure; and it is now eleven. Their Office at first was to *marshal* the Army under the Constable, and to command in his Absence. They did then what the *Marshals de Camp* do now; to which last they have given their Title, and the least considerable Part of their Authority. The first *Marshal* does the Office of Constable in an Assembly of the *Marshals*.

*Nicod* derives the Word *Marshal* from *Polemarchus*, Master of the Camp: *Matthew Paris* from *Martis Senescallus*. In the old *Gaulish* Language, *March* signify'd Horse, whence *Marechal* might signify him who commanded the Cavalry. *Menage* derives it from *Mareschalus*, which is composed of *Marok* or *Marak*, Horse, and *Schalk*, powerful; or, according to *Cluverius*, Servant: Which makes some imagine, the Title was first given to Farriers, or those who shoe'd and bled Horses; and that in Succession of Time, it pass'd to those who commanded them. *Pasquier* makes four several Derivations for the four several Kinds of *Marshals*, viz. *Marshals* of *France*, *Marshals de Camp*, *Marshals de Logis*, or Quarter-Masters, and Farriers, who are call'd by the Name of *Marshals*. The third he derives from *Marche* or *Marchir*, to mark, limit; and the last from *Maire*, Master, and *Chal*, Horse.

**MARSHALLING** a Coat of Arms, in Heraldry, signifies the due and proper joining of several Coats of Arms in one and the same Shield or Escutcheon, together with their Ornaments, Parts, and Appurtenances. See ARMS.

**MARTIAL**, is sometimes used to express Preparations of Iron, or such as are impregnated therewith; as the *Martial Regulus* of Antimony, &c. See ANTIMONY.

**MARTIAL LAW**, is the Law of War, depending upon the King's pleasure, or his Lieutenant in Times of War: For the King, in Time of Peace, never makes any Laws, but by common Consent in Parliament; yet in War he useth absolute Power: But even this Power hath been invested of late Years in the King, or his Generals of the Army, by Act of Parliament, and under particular Restrictions too. See LAW.

**MARTINGALE**; a Thong of Leather fasten'd at one end to the Girths under the Belly of a Horse, and at the other end to the Muffroll, to hinder him from rearing.

**MARTLET**; a Term in Heraldry for a Pigeon, with its Feet erased, or torn off: It is used for the Difference or Mark of Distinction in an Escutcheon for the fourth Brother, or Family.

**MARTYR**, a Person who suffers Torments, and even Death, in Defence of the Truth of the Gospel. *St. Stephen* is call'd the *Proto-Martyr*, or first *Martyr*. 19700 Persons are computed to have suffer'd *Martyrdom* with *St. Ignatius* at *Lyon*, under the Empire of *Severus*. 6666 Soldiers of the *Theban Legion* are said to have been martyr'd in *Gaul*. *Father Papebroch* reckons 16000 *Abyssinian Martyrs*, and 150000 others under *Dioclesian* alone. Antiently those who were banish'd for the Faith, were call'd *Martyrs*, as well as those who perish'd in the Holy Wars. In the Time of *St. Augustin*, the Title of *Martyrs* was given to Confessors, or those who were tortured for the Faith without losing their Lives. 'Tis *Tertullian's* Thought, in his *Apologetic*; *Plures effecimur, quoties metimur; Semen est Sanguis Christianus*.

The Word *Martyr* is *Greek*, *μαρτυρ*, and properly signifies a Witness. Thus it is apply'd, by way of Eminence, to those who suffer in witness of the Truth of the Gospel. In the antient Church, the Acts, Sufferings, and Deaths

of the *Martyrs* were preserved with a world of Care; and yet, maugre all this Diligence, we have but very little left of them. *Eusebius* indeed compos'd a *Martyrology*, but it never reach'd down to us; and those since compos'd, are extremely suspected. See **MARTYROLOGY**. *Mr. Dodwell* endeavours to prove, in a Dissertation expressly for that purpose, That the Number of *Martyrs* who suffer'd under the *Roman Emperors*, was very moderate; alledging, That those we have Accounts of in the *Fathers*, come in a very small Compass; and that, excepting *Nero* and *Domitian*, the rest of the *Emperors* made scarce any. *T. Ruinard*, on the contrary, endeavours to prove, That the Catalogue of *Martyrs* is not at all swell'd; That the Carnage was immense under the first *Emperors*, and especially in that of *Dioclesian*. *F. Papebroch*, in his *Acta Sanctorum*, makes the Number of *Martyrs* infinite. Scarce any Faith or Religion, but pretends to its *Martyrs*. *Mahometans*, Heathens, Idolaters, &c. See **SAINTS**.

The *Æra* of **MARTYRS** is an *Æra* follow'd in *Egypt* and *Abyssinia*; and which even the *Mahometans*, since their becoming Masters of *Ægypt*, frequently observe. It is fix'd to the beginning of the Persecution of *Dioclesian*, A. D. 302 or 303. The *Æra* of *Martyrs* is also call'd the *Æra* of *Dioclesian*. See **EPOCHÆ**.

**MARTYROLOGY**, a Catalogue or List of *Martyrs*. A *Martyrology*, properly speaking, should contain no more than the Name, Place, and Day of *Martyrdom* of each Saint; but the Term is frequently apply'd to the Histories of *Martyrs*. The Custom of collecting *Martyrologies*, is borrow'd from the Heathens, who insert'd the Names of their Heroes into their *Fasts*, to preserve to Posterity the Memory and Example of their noble Actions. *Baronius* gives *Pope Clement* the Credit of being the first who introduced the Custom of collecting the Acts of the *Martyrs*. The *Martyrology* of *Eusebius* of *Cæsarea* was the most celebrated in the antient Church. It was translated into *Latin* by *St. Jerom*; but the Learned agree, that it is now extant. That attributed to *Beda* in the 8th Century, is of very doubtful Authority; the Names of several Saints being there found, who did not live till after the Time of *Beda*. The 9th Century was very fertile in *Martyrologies*. Then appear'd that of *Florus*, Sub-Deacon of the Church at *Lions*, who, however, only fill'd up the Chasms in *Beda*. This was publish'd about the Year 830. That of *Wandelbertus*, Monk of the Diocese of *Treves*, written in Verse about the Year 848. That of *Usuard*, a French Monk, who wrote by Command of *Charles the Bald*, in 875; which last is the *Martyrology* now ordinarily used in the *Romish Church*. That of *Raban*, which is an Improvement on *Beda* and *Florus*, written about the Year 845. That of *Natker*, Monk of *St. Gal*, written about the Year 894. That of *Adon*, Monk of *Ferrieres*, in the Diocese of *Treves*, afterwards Archbishop of *Vienna*, is a Descendant of the *Roman*, if we may so call it; for *Du Sollier* gives its Genealogy thus: The *Martyrology* of *St. Jerom* is the great *Roman*, from this was made the little *Roman*, printed by *Rosweyd*. Of this little *Roman*, with that of *Beda* augmented by *Florus*, *Adon* compil'd his in the Year 858. The *Martyrology* of *Nevelon*, Monk of *Corbie*, written about the Year 1089, is little more than an Abridgment of that of *Adon*. *Father Kircher* makes mention of a *Coptic Martyrology*, preserved by the *Maronites* at *Rome*. We have also several Protestant *Martyrologies*, containing the Sufferings of the Reformed under the *Papists*, viz. an *English Martyrology*, by *J. Fox*; with others by *Clark*, *Bray*, &c. The Word comes from the *Greek* *μαρτυρ*, *Witness*, and *λογος*, *I speak*, or *λεγω*, *collego*, *I gather*.

**MARTYROLOGY**, is also used in the *Romish Church* for a Roll or Register kept in the Vestry, containing the Names of all the Saints and *Martyrs*, both of the Universal Church, and of the Particular Ones of that City or Monastery. The Word is also apply'd to the painted or written Catalogues in Churches, containing the Foundations, Obits, Prayers, and Masses, to be said each Day.

**ST. MARY**; a Name by which several Orders of Knighthood, several Orders of Religious, and several Feasts, are distinguish'd. As *St. Mary of the Trinity*, a Military Order. See **TRISTLE**. *St. Mary of the Conception*, a Military Order. See **CONCEPTION**. *St. Mary of the Elephant*, a Military Order. See **ELEPHANT**. *St. Mary and Jesus*, a Military Order. See **JESUS**. *St. Mary of Loretto*, a Military Order. See **LORETTO**. *St. Mary of Mount Carmel*, a Military Order. See **CARMEL**. *St. Mary of the Teutonic*. See **TEUTONIC**, &c.

**MASBOTHEAN**, or **MASBUTHAN**: The Name of a Sect, or rather of two Sects; for *Eusebius*, or rather *Hegesippus*, whom he cites, makes mention of two different Sects of *Masbotheans*. The first are one of the seven Sects that arose out of *Judaism*, and proved very troublesome to the Church. They were so call'd from *Masbothea*, their Author. The others were one of the seven Jewish Sects before the Coming of *Jesus Christ*.  
Jalpa



*Valeſius* won't allow the two to be confounded together: the laſt being a Sect of *Jews* before, or at leaſt coremporary with *Chriſt*; and the former a Sect of *Heretics* deſcended from them: *Rufinus* diſtinguiſhes them by their Names: The *Jewiſh* Sect he calls *Masbutbeans*; and the *Heretics* *Masbutbanians*. The *Masbutbeans* were a Branch of the *Sinioheans*.

The Word is derived from the Hebrew *מַשְׁבֵּת* *Schaber*, to reſt or reſpoſe, and ſignifies idle, eaſy, indolent People. *Eusebius* ſpeaks of them, as if they had been ſo call'd from *Masbutheus*, their Chief; but 'tis much more probable that their Name is Hebrew, or at leaſt *Chaldaic*, ſignifying the ſame thing with a *Sabbatarian* in our Language, that is, one who makes profeſſion of keeping Sabbath.



**MASCLE**, is a Term in Heraldry for a Bearing of this Figure: Gules a Chevron Ermin between three *Mascles* Argent, by the Name of *Bellgrave*. *Guillim* ſaith, that *Mascle* represents the Maſh of a Net, and is an honourable Bearing. A *Mascle* differs from a *Lozenge*, only by being voided.

**MASCULINE**, ſomething belonging to the Male, or the ſtronger of the two Sexes. See **MALE**.

**MASCULINE**, is more ordinarily uſed in Grammar to ſignify the firſt and nobleſt of the Genders of Nouns. The *Masculine* Gender is that which belongs to the Male Kind, or ſomething analogous to it, and which Cuſtom has affix'd to a Word. For Men conſidering themſelves, and obſerving the Difference between the two Sexes, have thought fit to vary the ſame Adjective Names, by giving them different Terminations, as they are differently apply'd to Men or Women. Thus in *Latin* we ſay *bonus Equus*, a good Horſe, in the *Masculine*; but ſpeaking of a Mare, we change the Termination, not of the Adjective only, but alſo of the Subſtantive, and ſay, *bona Equa*. In *Engliſh*, however, we are more ſtrict; for we generally expreſs the Difference of Sex by different Words, not by the varying the Termination of the ſame, or by varying the Adjective: As *Boar* in the *Masculine*, *Sow* in the *Feminine*; *Boy*, *Girl*; *Brother*, *Sister*; *Buck*, *Doe*; *Bull*, *Cow*, &c. Indeed we have about twenty *Feminines* diſtinguiſh'd from their *Masculines*, by the Variation of the Termination of the Male into *es*; for inſtance, *Abbot*, *Abbeſs*; *Actor*, *Actreſs*; *Count*, *Counteſs*; *Heir*, *Heireſs*; *Maſter*, *Miſtreſs*, &c. And this is all that our Language knows of any thing like the Genders, which are only a different way of expreſſing the Male and the Female. But the old Languages, and even ſome of the Moderns, have gone further; for as ſome Adjectives may have Relations to other Things, beſides Men and Women, it has been thought neceſſary to appropriate to them one or other of the Terminations invented for Men and Women. Hence moſt other Subſtantives have been ranged under the Heads of *Masculine* or *Feminine*. This, in ſome Caſes, is done with a ſhew of Reaſon, but in others is merely arbitrary; and for that reaſon is found to vary according to the Languages, and even according to the Words introduced from one Language into another. Thus the Names of Trees are generally *Feminine* in *Latin*, and *Masculine* in the *French*: Farther, the Genders of the ſame Word are ſometimes varied in the ſame Language. Thus *Alnus*, according to *Præſcian*, was antiently *Masculine*, but is now become *Feminine*. And *Navire*, a Ship, in *French*, was antiently *Feminine*, but is now *Masculine*. The modern Tongues have no more than two Genders, viz. the *Masculine* and the *Feminine*; at leaſt, whatever is not *Feminine*, is accounted *Masculine*. See **GENDER**.

The *French*, in their Poetry, have a kind of Rhimes which they call *Masculine*, to diſtinguiſh them from others, which they call *Feminine*. The *Masculine* Rhime is that made with a Word which has a ſtrong, open, and accented Pronunciation; as all Words have, excepting thoſe which have an *e* *Feminine* in their laſt Syllable: for inſtance, *Amour* and *Jour*, *Mort* and *Sort*, are *Masculine* Rhimes; and *Pere* and *Mere*, *Gloire* and *Memoire*, are *Feminine*. Hence Verſes ending with a *Masculine* Rhime, are call'd *Masculine* Verſes: and thoſe ending with a *Feminine* Rhime, *Feminine* Verſes. 'Tis now a Rule eſtabliſh'd among the *French* Poets, never to uſe above two *Masculine*, or two *Feminine* Verſes ſucceſſively, except in the looſer Kinds of Poetry. *Marot* was the firſt who introduced this Mixture of *Masculine* and *Feminine* Verſes, and *Rouſſard* was the firſt who practiſed it with Succeſs. The *Masculine* Verſes ſhould always have a Syllable leſs than the *Feminine* ones. See **RHIME**.

The *Aſtologers* maintain, that the Signs and Planets are really diſtinguiſh'd into *Masculine* and *Feminine*; not on account of any Difference of Sex, in their Bodies, or in their Names: but by reaſon of their Qualities, which are either active, hot, or cold, accounted *Masculine*; or paſſive, dry, and moiſt, which are *Feminine*. On this Principle they call the *Sun*, *Jupiter*, *Saturn*, and *Mars*, *Maf-*

*culine*; and the *Moon* and *Venus*, *Feminine*. *Mercury*, they ſuppoſe, partakes of the two. Among the Signs, *Aries*, *Libra*, *Gemini*, *Leo*, *Sagittarius*, *Aquarius*, are *Masculine*; *Cancer*, *Capricornus*, *Taurus*, *Virgo*, *Scorpio*, and *Piſces*, are *Feminine*. Plants are likewiſe diſtinguiſh'd into *Masculine* and *Feminine*. The *Masculine* are thoſe which have a greater ſhare of Heat and Virtue.

**MASON**, a Perſon employ'd under the Direction of an Architect, in the raiſing of a Stone-Building. The chief Buſineſs of a *Mason*, is to make the Mortar; raiſe the Walls from the Foundation to the Top, with the neceſſary Retreats and Perpendiculars, form the Vaults, and employ the Stones as deliver'd to him. When the Stones are large, the Buſineſs of hewing or cutting them belongs to the Stone-Cutters; thoſe are frequently confounded with the *Masons*. The Ornaments of Sculpture are perform'd by Carvers in Stone, or Sculptors. For the Materials whereon *Masons* work, ſee **STONE**, **MARBLE**, &c. For the Manner of Working, ſee **MASONRY**, **BUILDING**, &c. For their Works themſelves, ſee **WALL**, &c. The Tools or Implements principally uſed by them, are, the Square, Level, Plumb-Line, Bevel, Compaſs, Hammer, Chiffel, Mallet, Saw, Trowel, &c. which ſee. Beſides the common Inſtruments uſed in the Hand, they have likewiſe Machines for the raiſing of great Burdens, the conducting of large Stones, &c. The principal of theſe are the Lever, Wheel, Pulley, &c. which ſee. *Masonry* is ſometimes uſed in a more general and unlimited Senſe; ſo as, beſides proper *Masonry*, to include the hewing or ſawing of larger Stones, to fit them for Building, properly call'd *Stone-Cutting*; and the carving of the Ornaments, on the Members and Mouldings, properly call'd *Sculpture*: which ſee. *Iſidore* derives the Word from *Machio*, a Machiniſt, as being obliged to uſe Machines in Building. Some derive it from *Machino*. *Du Cange* from *Maceria*, becauſe the long Fence-Walls that incloſe Vineyards, &c. in which *Masons* are ſuppoſed to have been firſt employ'd, were call'd *Maceria*. *Mason eſt Maceriarum Conſtruſtor*. *M. Huet* derives it from *Mas*, an old Word, ſignifying Houſe; hence *Mason* is a Perſon who makes *Mas's*, that is, Houſes. In the corrupt *Latin*, a *Mason* was call'd *Magiſter Comacinus*, which *Lindenbroek* derives from *Comacina*, an Iſland in *Romania*, where, in the Time of the *Lombards*, the beſt Architects were found.

**MASONRY**, a Branch of Architecture, conſiſting, as ſome define it, in the Art of hewing or ſquaring Stones, and cutting them level and perpendicular, for the Uſes of Building: Tho in the more limited Senſe of the Word, *Masonry* is the Art of aſſembling and joining Stones together with Mortar. Whence there ariſe as many different Kinds of *Masonry*, as there are different Forms and Manners of laying or joining the Stones. *Vitruvius* makes mention of ſeven Kinds of *Masonry* among the Antients; three of hew'd Stone, viz. that in form of a Net, that in Binding, and that call'd the *Greek Masonry*: And three of unhew'd Stones, viz. that of an equal Courſe, that of an unequal Courſe, and that fill'd up in the middle. The ſeventh was a Compoſition of all the reſt.

*Net Masonry*, call'd *Reticulation*, from its Reſemblance of the Maſhes of a Net, conſiſts of Stones ſquared in their Courſes, and ſo diſpoſed, as that their Joints go obliquely, and the Diagonals are, the one perpendicular, and the other level. This is the moſt agreeable *Masonry* to the Eye, but it is apt to crack. See **PLATE ARCHITECTURE**, Fig. 1.

*Bound Masonry*, is that wherein the Stones were placed one over another, like Tiles; the Joints of the Beds being level, and the Mounters perpendicular. So that the Joint that mounts and ſeparates two Stones, falls directly over the middle of the Stone below. This is leſs beautiful than the Net-Work, but more ſolid and durable. See **PLATE ARCH.** Fig. 2.

*Greek Masonry*, according to *Vitruvius*, is that where, after we have laid two Stones, each of which makes a Courſe, another is laid at the end, which makes two Courſes; and the ſame Order obſerved throughout the Building. This may be call'd *Double Building*, in regard the Binding is not only of Stones of the ſame Courſe with one another, but likewiſe of one Courſe with another Courſe. See **PLATE ARCH.** Fig. 3.

*Masonry by Equal Courſes*, by the Antients call'd *Iſodomum*, differs in nothing from the *bound Masonry*, but only in this, that its Stones are not hewn. See **PLATE ARCH.** Fig. 5.

*Masonry by Unequal Courſes*, call'd *Pſeudiſodomum*, is alſo made of unhew'd Stones, and laid in *bound Work*: But then they are not of the ſame Thickneſs, nor is there any Equality obſerved, excepting in the ſeveral Courſes; the Courſes themſelves being unequal to each other. See **PLATE ARCH.** Fig. 4.

*Masonry fill'd up in the Middle*, call'd by the Antients *Empleſion*, is likewiſe made of unhew'd Stone, and by



Courses; but the Stones are only set in order as to the Courses, the Middle being fill'd up with Stones thrown in at random among the Mortar. See *Plate ARCH. Fig. 5.*

*Compound Masonry*, is of *Vitruvius's* proposing; so call'd, as being form'd of all the rest. In this, the Courses are of hew'd Stone, and the middle Place left void; fill'd up with Mortar and Pebbles thrown in together. After this the Stones of one Course are bound to those of another Course, with Cramp-Irons fasten'd with melted Lead. See *Plate ARCH. Fig. 6.*

All the Kinds of *Masonry* now in use may be reduced to these five, viz. *Bound Masonry*; that of *Brick-Work*, where the Bodies and Projectures of the Stones inclose square Spaces or Pannels, &c. set with Bricks: That of *Moilon*, or small Work, where the Courses are equal, well squared, and their Edges or Beds rusticated: That where the Courses are unequal; and that fill'd up in the middle with little Stones and Mortar.

**FREE, or ACCEPTED MASONS**, a very antient Society, or Body of Men, so call'd either from some extraordinary Knowledge of *Masonry* or Building, which they are supposed to be Masters of, or because the first Founders of the Society were Persons of that Profession. They are now very considerable both for Numbers and Character; being found in every Country in *Europe*, and consisting principally of Persons of Merit and Consideration. As to Antiquity, they lay claim to a Standing of some thousand Years; and, 'tis said, can trace up their Origin as early as the Building of *Solomon's Temple*. What the End of their Institution is, seems still, in some measure, a Secret; tho' so much of it as is known, appears truly good and laudable, as it tends to promote Friendship, Society, mutual Assistance, and Good-Fellowship. The Brothers of this Family are said to be possess'd of a great Number of Secrets, which have been religiously observ'd from Age to Age: Be their other Virtues therefore what they will, 'tis plain they are Masters of one in a very great degree, viz. Secrecy.

**MASQUE**, or **MASK**, a Cover for the Face, contrived with Apertures for the Eyes and Mouth; wore chiefly by Women of Condition, either to preserve their Complexion from the Weather, or out of Modesty, to prevent their being known. *Poppea*, Wife of *Nero*, is said to be the first Inventor of the *Masque*; which she did to guard her Complexion from the Sun and Weather, as being the most delicate Woman, with regard to her Person, that has been known. *Brantome* observes, that the ordinary Use of *Masques* was not introduced till towards the end of the 16th Century. The Word *Masque* is also used to signify any thing used to cover the Eyes, and prevent a Person's being known. Thus the Penitents of *Lyon* and *Avignon* hide their Faces with large white Veils, which serve 'em for *Masques*.

**MASQUE**, in Architecture, is understood of certain Pieces of Sculpture, representing some hideous Form, Grotesque, or Satyr's Faces, &c. used to fill up and adorn some vacant Places, as in Freezes, the Pannels of Doors, Keys of Arches, &c. but particularly in Grotto's.

**MASQUERADE**, or **MASCARADE**; an Assembly of Persons mask'd or disguis'd, meeting to dance and divert themselves. This is a very common Practice abroad, especially in Carnival Time. The Word comes from the *Italian Mascarata*, and that from the *Arabic Mascara*, which signifies Raillery, Buffoonery.

**MASS**, in Mechanics, is defined to be the Matter of any Body cohering with it, i.e. moving and gravitating along with it; and is distinguish'd from its Bulk, or Volume, which is its Expansion in Length, Breadth, and Thickness. The *Mass* of any Body is rightly estimated by its Weight. And the *Masses* of two Bodies of the same Weight are in a reciprocal Ratio of their Volumes. See **MOTION**, **WEIGHT**, **MOMENT**, &c.

**MASSALIANS**, certain Sectaries, so call'd from a Hebrew Word signifying Prayer; it being their distinguishing Tenet, that a Man is to be continually in Prayer. The *Greeks* call'd them *Euchites*, *ευχισται*, which in their Language signified the same thing. *St. Epiphanius* distinguishes two Kinds of *Massalians*, the Antient and the New. The first, according to him, are neither Jews, Christians, nor Samaritans, but pure Gentiles; who owning several Gods, yet adore only one, whom they call Almighty. They had Oratories like our Churches, where they used to meet, to pray and sing Hymns in honour of God; their Oratories being finely illumined with Lamps and Flambeaux. This Description of *St. Epiphanius* comes so near the Practice of the *Esseni*, that *Scaliger* thinks the two Sects ought not by any means to be distinguish'd. The *Massalians* have gone by the Names of *Enthusiasts*, *Euchites*, *Sacrophori*, and some of them *Martyrians*.

As to the other *Massalians*, who were by Profession Christians, their Rise was not till about the Time of *St. Epiphanius*. Their Doctrine was, that Prayer alone was

sufficient to Salvation. Many Monks, who loved a Life of Laziness, and were averse to Labour, join'd the *Massalians*. See **EUCHITES**.

**MASSATER**, from *μασσωμαι*, *manduco*, to chew; the Name of a Muscle, that helps to pull the Jaw upwards in eating: It is thick and short, arising from the *Zygoma*, and from the first Bone of the upper Jaw, and is inserted into the lower Edge of the lower Jaw, from its external Angle to its middle. Its Fibres run in three Directions; those from the *Zygoma* obliquely to the middle of the Jaw, and those from the first Bone of the upper Jaw cross the former, and run to the Angle of the lower Jaw; and the Fibres that are in its middle, run perpendicularly from their Origin to their Insertion.

**MASSES**, in Painting, are the large Parts of a Picture, containing the great Lights and Shadows; and thus, when it is almost dark, we see only the *Masses* of a Picture, i.e. the Places of the greatest Lights and Shadows.

**MASSIVE**, something gross and solid, in opposition to Tenderness and Delicacy. Thus we say, a Wall, or a Building, is too massive, that is, its Walls are too thick, or the Lights and Openings too little in proportion. A massive Column is that, which is too short for the Order, whose Capital it bears.

**MASSORA**, a Term in the Jewish Theology, signifying a Performance on the Bible by several learned Rabbins, to secure it from any Alterations that might otherwise happen; and to serve, according to their Expression, as a Hedge to the Law. *Buxtorf* defines it a Critique on the Hebrew Text, contrived by the antient Jewish Doctors, in which they have number'd the Verses, Words, and Letters of the Text, and mark'd all the Variations of it. For the Text of the Sacred Books was originally written without any Breaks, or Divisions into Chapters, or Verses, or even into Words. So that a whole Book, in the antient Manner, was but one continued Word; of which kind we have still several antient Manuscripts, both Greek and Latin. In regard the Sacred Writings had undergone an infinite Number of Alterations, whence various Readings had arisen, and the Original was become mangled and disguis'd; the Jews had recourse to a Rule, which they judg'd infallible, to fix and ascertain the Reading of the Hebrew Text: and this Rule they call'd *Massora*, Tradition; as if this Critique were nothing but a Tradition, which they had receiv'd from their Fore-Fathers. According to *Elias Levita*, it was the Jews of a famous School at Tiberias who compos'd, or at least begun the *Massora*, whence they are call'd *Massorettes*. *Aben Ezra* makes them the Authors of the Points and Accents in the Hebrew Text, as we now find it, and which serve for Vowels. The Arabs have done the same thing to their *Alcoran*, that the *Massorettes* have done to the Bible: Nor do the Jews deny their having borrow'd this Expedient from the Arabs, who first put it in practice in the 7th Century. There is a great and a little *Massora*, printed at Venice, and at Basil, with the Hebrew Text in a different Character. *Buxtorf* has written a *Massoretic Comment*, which he calls *Tiberias*.

**MASSORETES**, Jewish Doctors, Authors of the *Massora*. See **MASSORA**.

**MAST** of a Forest, the Fruit of a Species of Trees, call'd *Glandiferous*, or Mast-Bearing; as Beech, Oak, Chesnut, &c.

**MAST**, a large Tree, or Pole, rais'd in Vessels, for the Cordage and Sails to be fasten'd to, in order to their receiving the Wind necessary for Navigation. In large Vessels, the Number of Masts is four: Their Names are, the *Main-Mast*, the *Fore-Mast*, the *Mizen-Mast*, and the *Boltsprit*. To which some add a fifth, viz. a *Counter-Mizen*. The *Main-Mast*, or *Master-Mast*, is the chief Mast in the Ship; its Place is in the middle of the Vessel, and it bears the strongest Cordage, and the largest Sails. The *Fore-Mast* is between the *Main-Mast* and the Head. The *Mizen-Mast* is between the *Main-Mast* and the Stern. The *Boltsprit* lies upon the Beak, in the Prow or Head of the Ship. The *Counter-Mizen*, in large Vessels and Gallies, is in the Stern.

We also use the Word *Mast* to signify those Divisions, or additional Pieces in the Masts, placed over one another. The *Main-Mast*, and *Main-Top-Mast*, have each of them two, viz. the *Main-Mast*, *Main-Top-Mast*, *Main-Gallant-Mast*; the *Fore-Mast*, *Fore-Top-Mast*, *Fore-Top-Gallant-Mast*. The *Mizen-Mast* has one, viz. the *Mizen-Top-Mast*. The Word *Mast* signifies the same thing in French, High Dutch, Flemish, and English. The Italians say *Mastr*, and the Spaniards *Mastel*.

For the Proportion of Masts, *Sir H. Manwaring* gives these Rules: Whatever the Breadth of a Ship be in Feet, multiply  $\frac{1}{4}$  of that Breadth by 30, the Product is the Length of her *Main-Mast* in Yards. Thus if a Ship be 30 Foot at the Midship-Beam,  $\frac{1}{4}$  of 30 is 24; therefore that Ship's *Main-Mast* must be 24 Yards, or 72 Feet in Length. Then for its Bigness, he allows an Inch



to every Yard in Length, and therefore this Mast must be 24 Inches thro, or thick. The Fore-Mast of a Ship must be  $\frac{1}{4}$  of the Length of the Main-Mast, that is, in this Case, 12 Yards:  $\frac{1}{4}$  thick, or thro it must be near 20 Inches. The Bolt-sprit is always the same Length and Bigness with the Fore-Mast; and the Mizen-Mast must be just half the Length of the Main-Mast, and half as thick.

**MASTER**; a Title given to several Officers, and Persons of Authority and Command, and particularly to the Chiefs of the Orders of Knighthood, &c. Thus we say, the Grand Master of Maliba, of St. Lazarus, of the Golden Fleece, of the Free Masons, &c.

The Title *Master*, *Magister*, was frequent among the Romans: They had their *Master* of the People, *Magister Populi*, who was the Dictator; *Master* of the Cavalry, *Magister Equitum*, who held the second Post in an Army after the Dictator. Under the later Emperors there were also *Masters* of the Infantry, *Magistri Peditum*. A *Master* of the *Census*, *Magister Censu*, who had nothing of the Charge of a Censor or Sub-Censor, as the Name seems to intimate; but was the same with the Commissioner of the Frumentaries, *Prepositus Frumentariorum*. *Master* of the Militia, *Magister Militie*, an Officer in the lower Empire, created, as 'tis urged, by Dioclesian, who had the Inspection and Government of all the Forces, with power to punish, &c. somewhat like a Constable of France. At first there were two of these Officers instituted, the one for the Infantry, and the other for the Cavalry. But the two were united into one under Constantine. But as their Power was increased, so was their Number too; and there was one appointed for the Court, another for Thrace, another for the East, and another for Illyria. They were afterwards call'd *Comites*, *Counts*, and *Clarissimi*. Their Power was only a Branch of that of the *Præfatus Prætorii*, who by that means became a Civil Officer. *Master* of Arms, *Magister Armorum*, was an Officer or Comptroller under the *Master* of the Militia. *Master* of the Offices, *Magister Officiorum*, had the Superintendence of all the Officers of the Court. He was also call'd *Magister Officii*, *Palatine*, simply *Magister*, and his Post *Magisteria*. This Officer was the same in the Western Empire with the *Curopalati* in the Eastern. In fine, *Master*, in the Roman History and Laws, is used for every Officer, who is the first of his kind, and who has others of the same Species, or that have the same Functions, under him. In Latin, *Magister*, and oftentimes *Proximus*.

**MASTER of the Ceremonies**, is an Officer instituted by King James the First, for the more solemn and honourable Reception of Ambassadors and Strangers of Quality, whom he introduces into the Presence. The Badge of his Office is a Gold Chain and Medal, having on one side an Emblem of Peace, with King James's Motto, and on the Reverse the Emblem of War, with *Dieu & mon droit*: He is always supposed to be a Person of good Address, and Master of Languages: He is constantly attending at Court, and hath under him an Assistant *Master*, or Deputy, who holds his Place during the King's pleasure. There is also a third Officer, call'd *Marshal of the Ceremonies*, whose Business it is to receive and distribute the *Master's* Orders, or the Deputies, for the Service; but without their Order he can do nothing. This is in the King's Gift.

**MASTER of the Household**, is an Officer under the Lord-Steward of the Household, and in the King's Gift: His Business is to survey the Accounts of the Household. Antiently the Lord-Steward himself was call'd *Grand Master of the Household*. See **HOUSEHOLD**.

**MASTER of the Horse**, a great Officer of the Crown, to whom is committed the Charge of ordering and disposing all Matters relating to the King's Stables, Races, and Breed of Horses, as he had antiently, of all the Posts in England. He hath a Power of commanding the Equerries, and all the other Officers and Tradesmen employ'd in the King's Stables; to all which he gives, by his Warrant to the Avener, the Oath of Allegiance, &c. for the true and faithful Discharge of their Duty. He has the peculiar Privilege of making use of any Horses, Pages, or Footmen, belonging to the King's Stables; so that his Coaches, Horses, and Attendants, are the King's, and have the King's Arms and Liveries.

**MASTER of the Mint**: This, in the second Year of Henry the Sixth, was the Title of him, who is now call'd *Warden of the Mint*; whose Office it is to receive the Silver and Bullion, which comes to the Mint to be coined, and to take care thereof. See **MINT**.

**MASTER of the Court of Wards and Liveries**, was the chief Officer, and Judge of that Court, who kept the Seal of it, and was named and assigned by the King. But this Court, and all its Officers, Members, Power, and Appurtenances, is taken away by a Statute made the 12 Car. 2. c. 24.

**MASTER of the Jewel-House**, mention'd in 39 Eliz. c. 7. is an Officer of the King's Household of great Credit, being allowed Diet for himself, and the Clerks of the Office; and a Lodging in the Court. He hath Charge of all the Gold and Silver Plate used at the King's Table, or belonging to any Officer of account attending the Court; and of all Plate remaining in the Tower of London, as also of Chains and loose Jewels, not fixed to any Garment.

**MASTER of the Ordnance**, a great Officer, to whose Care all the King's Ordnance and Artillery is committed. See **ORDNANCE**.

**MASTER of the Faculties**, an Officer under the Archbishop of Canterbury, who grants Licences and Dispensations; he is mention'd in the Statute of laying Impositions at Law, of 22, 23 Car. 2. See **FACULTY**.

**MASTER of the Revels**, an Officer, whose Office it is to order all things relating to the Performance of Tragedies, Comedies, Masks, Balls, &c. at Court: He hath likewise a Jurisdiction of granting Licences to all who travel to act Plays, Puppet-Shews, or other such like Diversions; which is very beneficial to him, and increaseth the Smallness of the Salary, which is but 10 l. per Annum, to a very considerable Income. Neither can any new Play be acted at either of the two Houses, till it has pass'd his Perusal and Licence first; and he hath the liberty to castrate any thing, which shall be offensive to Religion or Virtue, and for the latter has his Fee.

**MASTER of the Armory**, he that has the Care and Oversight of his Majesty's Arms and Armory.

**MASTER of the Temple**. The Founder of the Order of the Templars, and all his Successors, were call'd *Magni Templi Magistri*; and ever since the Dissolution of the Order, the Spiritual Guide and Director of the House is call'd by that Name. See **TEMPLE**.

**MASTER of the Ward-Robe**, an Office in the Lord Chamberlain's District, who has the Power of managing all the Royal Robes; as those of the Coronation, St. George's Feast, the Parliament-Robes: as also of the wearing Apparel, Collar of SS's, George and Garter, &c. He has the Charge and Custody of all former Kings and Queens Robes, remaining in the Tower; all Hangings, Bedding, &c. for the King's House; the Charge and Delivery of Velvet and Scarlet allow'd for Liveries. He has under him a Clerk of the Robes, and Wardrobe-Keeper, a Yeoman, &c. See **WARDROBE**.

**MASTER of Arts**, the first Degree taken up in foreign Universities, but the second in ours; Candidates not being admitted to it till they have studied in the University seven Years. See **DEGREE**.

**MASTER of a Ship**; an Officer, to whom is committed the Direction of a Merchant-Vessel, who commands it in chief, and is charged with the Merchandizes aboard. In the Mediterranean, the *Master* is frequently called *Patron*, and in long Voyages *Captain*. 'Tis the Proprietor of the Vessel that appoints the *Master*; and 'tis the *Master* provides the Equipage, hires the Pilots, Sailors, &c. The *Master* is obliged to keep a Register of the Seamen and Officers, the Terms of their Contract, the Receipts and Payments, and in general, every thing relating to his Commission. See **SHIP**.

**MASTER of the Rolls**, has his Office by Patent, which is for Life. In the Absence of the Lord-Chancellor or Keeper, he sits as Judge in the Court of Chancery, and is, by Sir Edward Coke, call'd his *Assistant*. At other times he hears Causes in the Rolls Chappel; he is also the first of the Matters in Chancery, and hath their Assistance at the Rolls: but all Hearings before him are appealable to the Lord Chancellor. He hath also his Writ of Summons to Parliament, and sits next to the Lord Chief Justice of England, on the second Woolpack. He hath the keeping of the Parliament Rolls, and all the Rolls House for his Habitation; as also the Custody of all Charters, Patents, Commissions, Deeds, Recognizances, which being made of Rolls of Parchment, gave rise to the Name. In his Gift are the six Clerks in Chancery, the Examiners, three Clerks of the Petty-bag, and the six Clerks of the Rolls Chappel, where the Rolls are kept. See **ROLLS**.

**MASTERS in Chancery**, are usually chosen out of the Barristers of the Common Law, and sit in Chancery, or at the Rolls, as Assistants to the Lord Chancellor, and *Master* of the Rolls, during Term-Time: To them is also committed Interlocutory Reports, stating of Accounts, taxing Costs, &c. And sometimes, by way of Reference, they are empower'd to make a final Determination of Causes. They have, time out of mind, had the Honour to sit in the Lords House, tho they have neither Writs, nor Patent to empower them; but as Assistants to the Lord Chancellor, and Master of the Rolls. They had antiently the Care of inspecting all Writs of Summons, which is now performed by the Clerk of the Petty-bag. When any Message is sent from the Lords to the Commons, it is carry'd



carry'd by the *Masters in Chancery*. Before them, Affidavits are made, and Deeds and Recognizances acknowledged. See *CHANCERY*.

**MASTER-PIECE**, an exquisite, or extraordinary Work or Performance, in any Art or Science.

**MASTER-PIECE**, or *Chef d'Oeuvre*, is particularly used among the *French*, for a particular Work, which those who aspire to be admitted Master in any Art or Trade, are to perform in presence of the Masters or Jurands of that Company, by way of Specimen of their Capacity. The *Master-Piece* of a Mason is a Descent bias'd either in the Head or in Talut, corrected by a full Arch. That of a Carpenter, a Rampant Curve of a Stair-Case, the Spiral well adjusted with the Descent. That of a Joiner, a Flat-bottom Chest, or a Door-Case, or a Mantle-Tree. That of a Tiler, a Luthern well conducted in the *Fourchette*, with a Ridge: That of a Plumber, a little Cistern a *Cul de Lampe*. That of a Glazier, a Pair of Compartiments of Glasses of several Colours, hollow'd, incastred, and join'd with Lead of *Chef d'Oeuvre*. That of Paviers, a Rose in a Free-Stone or Flint-Pavement. That of a Cordwainer, a Turn-up Shoe, &c.

**MASTIC**, a clear and sweet resinous Gum, issuing from the Trunk and large Branches of the *Mastic* or *Lentisk* Tree, either without, or with an Incision. It is temperate in Heat, and of a dry, binding Quality; so that it strengthens the Stomach, stays Vomiting, stops Issues of Blood, and tickling Coughs and Catarrhs. It strengthens the Reins, and is a good Cleanser, and is for that reason prescribed in Seminal Weaknesses. The Goldsmiths mix it with Turpentine and black Ivory, and lay it under their Diamonds, to give them a Lustre. The *Mastic* is the Product of *Scio*. The Trees that produce it are cultivated with as much Care as the Vines. It brings in a Revenue of 80000 Ducats *per Annum* to the Grand Signior. There is also a kind of black *Mastic* brought from *Egypt*, which serves to sophisticate Camphor. The best *Mastic* is brought from the Isle of *Chio*; it is in larger Tears, and those more balsamic, than that of the *Levant*. The *Mastic* produced in *Chio* belongs to the Grand Signior, who takes it of this People in lieu of the Tribute he exacts of the other *Grecian* Islands. It has its Name *Mastic*, from its being continually chew'd by the *Turks*, especially the Women.

**MASTICATION**, in Medicine, the Action of *chewing*, or of agitating the solid Parts of our Food between the Teeth, by means of the Motion of the Jaws, the Tongue, and the Lips; whereby it is broke into small Pieces, impregnated with Saliva, and so fitted for Deglutition, and a more easy Digestion in the Stomach. See *DIGESTION*, *CHYLIFICATION*, *DEGLUTITION*, &c.

The Mixture of Saliva with the Food, is of absolute necessity; for the Saliva imbibed within the Parts, dissolves the Salts hid in them; and by so doing, prepares the Food for Fermentation in the Stomach: The Food therefore has the Beginning of its Digestion from the Saliva, and its Conclusion from the Ferment in the Stomach. See *SALIVA*.

**MASTICATORIES**, in Medicine, are such Remedies as are taken in at the Mouth, and chew'd, in order to promote the Evacuation of the salival Humour; as Tobacco, Ginger, Pepper, Sage, Rosemary, Thyme, Mastic, &c.

**MASTOIDES**, in Anatomy, the same with *Mammillares*. The Word is usually apply'd to such Processes in the Body, as have the Appearance of Breasts or Dugs; arising from a broad Basis, and terminating in an obtuse Top. The Word is sometimes also apply'd to those Muscles which slope the Head, proceeding from the Neck-Bone, and Breast-Bone, and terminating in the Process *Mammiformis*. The Word comes from the Greek *μασθ*, Nipple, Dug, and *ειδ*, *Imago*, Figure.

**MATCH**, a kind of Cord slightly twisted, and prepared to receive and preserve Fire, for the Uses of Artillery, Mines, Fire-Works, &c. It is made of hempen Tow, spun on the Wheel like Cord, but very slack, and is composed of three Twines or Threads, which are afterwards again cover'd with Tow; so that the Twines don't appear: lastly, it is boil'd in Lees of old Wines; whence its Colour. Since Fuses have been introduced in lieu of Matches, the Consumption of *Match* has been much less considerable than before.

**MATER TENUIS**, or *PIA MATER*. See *MENINGES*.

**MATER DURA**. See also *MENINGES*.

**MATERIAL**, denotes something composed of Matter. The *Epicureans*, *Spinozists*, &c. own none other but *Material* Substances; see *SUBSTANCE*. Among Causes, some are *material*, others *formal*: See *CAUSE*. *Material* Causes having no Understanding or Liberty, must always act in the same Manner, when under the same Circumstances. The Philosophers and Divines dispute, whether or no there be any *material* Forms really distinct from Matter. See *FORM*.

The *Valentinians* formerly apply'd the Term *Material* to all People, but those of their own Sect; asserting, that their Souls perished with their Bodies. Thus also the *Stoics* maintain'd, that none but the Soul of their Wise Men survived the Body. See *STOICS*.

**MATERIALISTS**, the Name of a Sect in the ancient Church, composed of Persons, who, being prepossess'd with that Maxim in the ancient Philosophy (*ex Nihilo Nihil fit; out of Nothing Nothing can be made*) had recourse to an Eternal Matter, on which they supposed God wrought in the Creation; instead of admitting God alone as the sole Cause of the Existence of all Things. *Tertullian* vigorously opposes the Doctrine of the *Materialists*, in his Treatise against *Hermogenes*, one of their Number. See *MATTER*.

**MATERIA SUBTILIS**, a fine subtile Matter, which the *Cartesians* suppose to pervade and penetrate, freely, the Parts of all Bodies, and to fill up all their Pores, so as not to leave the least Vacuity or Interstice between them. This Machine they have recourse to, to support the Doctrine of an absolute *Plenum*, and to make it consistent with the *Phænomena* of Motion, &c. and accordingly make it act and move just at pleasure, but in vain; for were there any such Matter, in order for it to be able to fill up the Vacuities of other Bodies, it must, itself, be entirely void of any, i.e. be perfectly solid; see *SOLIDITY*: vastly more solid than Gold, and therefore more ponderous, and resist vastly more. See *RESISTANCE*. Which is inconsistent with *Phænomena*. See *VACUUM* and *PLENUM*.

*Sir Is. Newton*, indeed, allows of the Existence of a subtile Matter, or Medium, vastly finer than Air, penetrating the closest Bodies, and contributing to the Production of many of the *Phænomena* of Nature. The Existence of such a Matter he argues from the Experiment of two Thermometers, which being inclosed in Glass Vessels, 'one of them exhausted of its Air, and both carried from a cold to a warm Place, the Thermometer *in vacuo* grows warm, and rises, almost as soon as that in the Air; and if return'd into the cold Place, both cool and fall about the same. Hence, *says he*, is not the Heat of the warm Room convey'd thro the Vacuum by the Vibrations of a much subtiler Medium than Air, which remain'd *in vacuo*, after the Exhaustion of the Air? And is not this Medium the same with that whereby Light is refracted and reflected, and by whose Vibration, Light communicates Heat to Bodies, and is put into Fits of easy Reflection, and easy Transmission? And do not the Vibrations of that Medium in hot Bodies, contribute to the Intenseness and Duration of their Heat? And do not hot Bodies communicate their Heat to contiguous cold ones, by the Vibration of this Medium propagated from them into the cold ones? And is not this Medium more subtile, more elastic and active than Air? Does it not readily pervade all Bodies? And is it not, by its elastic Force, expanded thro all the Heavens? See *HEAT*, *COLD*, &c. Again, 'Does not the Refraction of Light proceed from the different Density of this Matter in different Places; the Light always receding from the denser Parts of the Medium?' See *REFRACTION*.—Again, 'Is not this Matter much rarer within the dense Bodies of the Sun, Stars, Planets, &c. than in the empty, celestial Spaces between them? And in passing from them to great Distances, does it not grow denser and denser, and thereby occasion the Gravitation of those Bodies towards one another, and of the Parts to the Bodies, every Body endeavouring to recede from the denser Parts towards the rarer?' See *GRAVITATION*.—Again, 'Is not Vision performed chiefly by the Vibrations of this Matter, excited in the bottom of the Eye by the Rays of Light, and propagated thro the solid, pellucid, and uniform Capillaments of the Optic Nerves into the Sensory?'—Again, 'Is not animal Motion perform'd by the Vibrations of this Medium, excited in the Brain by the Power of the Will, and propagated thence thro the solid Capillaments of the Nerves into the Muscles, to contract and dilate them?' See *MEDIUM*. *Newt. Optic. lib. 3. in calc.*

**MATHEMATICS**, the Science of Quantity; or a Science that considers Things as computable, or measurable. The Word in its Original, *μαθηματις*, signifies *Discipline* or *Learning* in the general, and seems to have been apply'd to the Doctrine of Quantity, either by way of Eminence, or by reason this having the Start of all other Sciences, the rest took their common Name therefrom. See *SCIENCE*.

For the Origin of *MATHEMATICS*, *Josephus* dates it before the Flood, and makes the Sons of *Seth* Observers of the Course and Order of the Heavenly Bodies; he adds, that to perpetuate their Discoveries, and secure 'em from the Injuries either of a Deluge or a Conflagration, they had them engraven on two Pillars, the one of Stone, the other of Brick; the former of which, he says, was standing in *Syria* in his days.



The first who cultivated MATHEMATICS after the Flood, were the *Affyrians* and *Chaldeans*; from whom, the same *Josephus* adds, they were carried by *Abraham* to the *Egyptians*; who proved such notable Proficients, that *Aristotle* makes no scruple to fix the first Rise of *Mathematics* among them. From *Egypt*, 584 Years before Christ, they pass'd into *Greece* thro' the hands of *Tbales*, who having learnt Geometry of the *Egyptian* Priests, taught it in his own Country. After *Tbales*, comes *Pythagoras*; who, among other Mathematical Arts, paid a peculiar regard to Arithmetic; fetching the greatest part of his Philosophy from Numbers: He was the first, as *Laertius* tells us, who abstracted Geometry from Matter; and to him we owe the Doctrine of incommensurable Magnitudes, and the five regular Bodies, besides the first Principles of Music and Astronomy. *Pythagoras* was succeeded by *Anaxagoras*, *Oenopides*, *Briso*, *Antypho*, and *Hippocrates* of *Scio*; who all applied themselves particularly to the Quadrature of the Circle, the Duplication of the Cube, &c. but the last with most Success: This last is also mention'd by *Proclus*, as the first who compiled *Elements* of *Mathematics*.

*Democritus* excelled in *Mathematics* as well as *Physics*; tho' none of his Works in either kind are extant: the Destruction of which, some Authors lay at *Aristotle's* door. The next in order is *Plato*, who not only improved Geometry, but introduced it into *Physics*, and so laid the Foundation of a solid Philosophy. Out of his School proceeded a Croud of Mathematicians. *Proclus* mentions thirteen of Note; among whom was *Leodamus*, who improved the *Analysis* first invented by *Plato*; *Thaetetus*, who wrote *Elements*; and *Archytas*, who has the Credit of being the first who applied *Mathematics* to Use in Life. These were succeeded by *Neoclidis* and *Theon*, the last of whom contributed to the *Elements*. *Eudoxus* excelled in *Arithmetic* and *Geometry*, and was the first Founder of a System of *Astronomy*. *Menechmus* invented the *Conic* Sections, and *Theodofius* and *Hermotimus* improved the *Elements*.

For *Aristotle*, his Works are so stored with *Mathematics*, that *Blancanus* compiled a whole Book of them: Out of his School came *Eudemus* and *Theophrastus*; the first of which wrote of *Numbers*, *Geometry*, and *indivisible Lines*; the latter a *Mathematical History*. To *Aristeus*, *Isidorus*, and *Hypficles*, we owe the Books of *Solids*; which, with the other Books of *Elements*, were improved, collected and methodized by *Euclid*, who died 284 Years before Christ. An hundred Years after *Euclid*, came *Eratosthenes* and *Archimedes*. Cotemporary with the latter was *Conon*, a Geometrician and Astronomer. Soon after came *Apollonius Pergaus*; whose *Conics* are still extant. To him are likewise ascribed the 14th and 15th Books of *Euclid*, which are said to have been contracted by *Hypficles*. *Hipparchus* and *Menelaus* wrote on the *Subtenses* in a Circle, the latter also on *Spherical Triangles*; on which Subject, we have a Work of *Theodofius*: And these all, *Menelaus* excepted, lived before Christ. A.D. 70, *Ptolemy* of *Alexandria* was born; the Prince of Astronomers, and no mean Geometrician: He was succeeded by the Philosopher *Plutarch*, of whom we have still extant some *Mathematical Problems*. After him came *Eutocius*, who commented on *Archimedes*, and occasionally mentions the Inventions of *Philo*, *Diocles*, *Nicomedes*, *Sponus*, and *Heron*, on the Duplication of the Cube. To *Ctesebius* of *Alexandria*, we owe our *Pumps*; and *Geminus*, who came soon after, is preferred by *Proclus* to *Euclid* himself.

*Diophantus* of *Alexandria* was a great Master of Numbers, and the first Inventer of *Algebra*: For others of the Antients, *Nicomachus* is celebrated for his *Arithmetical*, *Geometrical*, and *Musical Works*; *Serenus* for his Books on the Section of the Cylinder; *Proclus*, for his Comments on *Euclid*; and *Theon* has the Credit among some, of being Author of the Books of *Elements* ascribed to *Euclid* himself. The last to be named among the Antients, is *Pappus* of *Alexandria*, who flourish'd A.D. 400, and is celebrated for his Books of *Mathematical Collections* still extant.

See the Progress of each Branch of *Mathematics*, with the Authors who have wrote on it, under the respective Heads; as *GEOMETRY*, *MECHANICS*, *ALGEBRA*, *ASTRONOMY*, &c.

MATHEMATICS are distinguish'd with regard to their End, into *Speculative*, which rest in the bare Contemplation of the Properties of Things; and *Practical*, which apply the Knowledge of those Properties to some Uses in Life.

With regard to their Object, *Mathematics* are divided into *pure* or *abstract*; and *mix'd*. *Pure Mathematics* consider Quantity, abstractedly; and without any relation to Matter: *Mix'd Mathematics* consider Quantity as subsisting in material Beings, and as continually interwove.

*Pure MATHEMATICS* again, either consider Quantity as discrete, and so compatible, as *Arithmetic*; or as con-

crete, or continued, and so measurable, as *Geometry* and *Trigonometry*. See *ARITHMETIC*, *GEOMETRY*, &c.

*Mix'd MATHEMATICS* are very extensive, and are distinguish'd by various Names, as the Subjects they consider, and the Views wherein they take them, vary: it being sufficient to determine an Art to be a Branch of *mix'd Mathematics*, that pure *Mathematics* are applicable thereto, i. e. that it may be explain'd and demonstrated from the Principles of *Arithmetic* and *Geometry*. Such are,

*Mechanics*, which consider Motion, or the Laws of moving Bodies. See *MOTION*.

*Hydrostatics*, consider the Laws of Fluids, or of Bodies gravitating in Fluids. See *FLUID*.

*Pneumatics*, the Air, with regard to the Laws and Mensuration thereof. See *AIR*.

*Hydraulics*, the Motion of Fluids. See *FLUIDS*.

*Optics*, direct Light or Vision. See *VISION*.

*Catoptrics*, reflected Vision. See *REFLECTION*.

*Dioptrics*, refracted Vision. See *REFRACTION*.

*Perspective*, the Images of Objects, in order to delineate or represent them. See *PERSPECTIVE*.

*Astronomy*, the Universe, and the Phenomena of the Heavens. See *HEAVENLY BODIES*.

*Geography*, the Earth, both as in itself, and in its Affections. See *EARTH*.

*Hydrography*, the Sea, principally as navigable. See *NAVIGATION*.

*Chronology*, Time, with regard to the measuring and distinguishing thereof. See *TIME*, *YEAR*, *EPOCHA*, &c.

*Gnomonics*, or *Dialling*; Shadows, in order for determining the Hour of the Day. See *DIAL* and *SHADOW*.

*Pyrotechny*, Artificial Fires, with regard both to Diversion, and to the Uses of War. See *FIRES*, *ROCKETS*, &c.

*Military Architecture*, the Strength of Places, with regard to their Defence against an Enemy. See *FORTIFICATION*.

*Civil Architecture* (now become a Branch of *Mathematics*) Buildings. See *BUILDING*.

*Music*, Sounds, and their Effects on the Ear. See *SOUND*, *TUNE*, &c.

For the Elements of each, see the respective Heads. For an accurate System of all the Parts above mention'd (*Music* alone excepted) orderly digested, and clearly demonstrated, see the excellent *Wolffius's Elementa Mathematicae Universae*.

MATHURINE, see *TRINITARIAN*.

MATINS, the first part of the daily Service in the *Romanish Church*. *Matins* is sometimes held early in the Morning, sometimes at Midnight, and sometimes the Even before. And infirm People, even in Monasteries, are dispensed from attending *Matins*. The Word comes from the *French* *Matin*, Morning.

MATRASS, or BOLT HEAD, a Vessel of Glass used by the Chymists in Distillation, and other Operations. It is made in form of a Bottle, with a very long narrow Neck. The *Matrass* is luted with Earth, when it is to be placed on a very hot Fire. When 'tis required it should be stopped very close, they seal it hermetically. The Word comes originally from the Language of the ancient *Gauls*. See *BOLT-HEAD*.

MATRICE, see *MATRIX*.

MATRICE, in Dying, is applied to the five simple Colours, whence all the rest are derived or composed. These are the Black, White, Blue, Red, and Fallow or Root Colour. See *COLOURS*.

MATRICES, used by the Letter-Founders, are those little Pieces of Copper or Brass, at one end whereof are engraven, *dent-wise*, or *en creux*, the several Characters used in the Composing of Books. Each Character, *Virgula*, and even Point, in a Discourse, has its several *Matrice*, and of consequence its several Puncheon to strike it. 'Tis the Engravers on Metal that cut or grave the *Matrices*: See *ENGRAVING*. When any Types are to be cast, the *Matrice* is fasten'd to the End of a Mould, so disposed, as that when the Metal is thrown on it, it may fall into the *Creux* or Cavity of the *Matrice*, and take the Figure and Impression thereof. See *LETTER-FOUNDRY*. See also *TYPE*, and *PRINTING*.

The *MATRICES* used in Coining, are Pieces of Steel in form of Dyes; whereon are engraven the several Figures, Arms, Characters, Legends, &c. wherewith the Species are to be stamp'd. The Engraving is perform'd with several Puncheons, which being form'd *in relief*, or prominent; when struck on the Metal, make an indented Impression, which the *French* call *en creux*; and for which, I don't know we have any precise Name at all. See the Manner hereof under *ENGRAVING on Steel*. See also *COINING*.

MATRICULA, a Register kept of the Admission of Officers, and Persons enter'd into any Body or Society, whereof a List is made. Among Ecclesiastical Authors, we find mention made of two Kinds of *Matricula's*; the one



containing a List of the Ecclesiastics; the other of the Poor subsisted at the Expence of the Church. The Word *Matricula* was also applied to a kind of Alms-house, where the Poor were provided for. It had certain Revenues appropriated to it, and was usually built near the Church; whence the Name was also frequently given to the Church itself.

**MATRIX**, or **MATRICE**, any thing serving for the place of Generation of a Body: whether Organical, as the *Matrix* or Womb of Female Animals, for the Production of the Species; or Inorganical, as those of Vegetables, Metals, and Minerals.

**MATRIX**, in *Anatomy*, the *Uterus*, or Womb; or that part of the Female of any Kind, wherein the *Fœtus* is conceived and nourished till the Time of its Delivery. In Women, it is situated in the *Pelvis*, or Capacity of the *Hypogastrium*, between the Urinary Bladder and the *Intestinum Rectum*, and reaches as far as the Flanks. It is surrounded and defended by mighty Bones; before, by the *Os Pubis*; behind, by the *Sacrum*; on each side, by the *Ilium* and *Ischium*. It is in figure somewhat like a flat Flask, or dried Pear. In Women with Child, it expands and receives different Forms, according to the different Times and Circumstances of Gestation. It has several Coats, Arteries, Veins, Nerves, and Ligaments, and is interwoven with several different Kinds of Fibres. Anatomists divide it into the *Fundus* and *Cervix*; a broad Part, and a Neck. It is in Extent, from the Extremity of the one to that of the other, about three Inches in Length; its Breadth at the *Fundus* is about two and a half, and its Thickness two. It has but one Cavity, unless we distinguish between the Cavity of the *Uterus*, and that of its Neck. That of the *Cervix* is very small, scarce sufficient to contain a Garden-Bean. At the Bottom or Neck, towards the *Fundus*, it grows very narrow in Virgins; the Extremity of it is call'd the *Osculum Internum*: In pregnant Women it opens, more especially towards the Time of Delivery. The other and lower Orifice of the Neck, towards the *Vagina*, call'd *Osculum Externum*, is a little prominent, resembling, in some measure, the Glands of the Virile Organ. The Substance of the *Matrix* is membranous and carnosus. It consists of three Tunics; or, according to some, who deny that Name to the middle Substance, of two only. The external Tunic, call'd also the *Communis*, is derived from the *Peritoneum*, and consists of two *Lamellæ*; the exterior of which is pretty smooth, the interior rugged and uneven: This Membrane invests the whole *Matrix*, and connects it to the right Intestine, Bladder, &c. The middle Tunic is very thick, and composed of strong Fibres variously disposed. Some think it contributes to the exclusion of the *Fœtus*; tho' others imagine, it serves only to recover the Tone, after any violent Distension. The inner Tunic is nervous. The *Matrix* is connected by its Neck to the *Vagina*; behind, by its outward common Membrane, and before by the same to the Bladder. Its Sides are tied to other Parts; but the *Fundus* is left loose, that it may expand and dilate more freely. Its Ligaments are four, two of which are called *broad*, and two *round*, from their Figure. The broad Ligaments are membranous, loose, and soft; whence they have been compared by some to the Wings of Bats, and called *Alæ Vespertilionum*. The round Ligaments are of a firmer Texture, and consist of a double Membrane, wrapped up in its Arteries, Veins, Nerves, and Lymphaducts. The Blood-Vessels, both in these and the round Ligaments, make a great part of what is called their Substance: These, as well as the others, serve to keep the Womb in its right Position; and are very liable to be injured by unskilful Midwives. On each Side of the *Fundus* of the Womb, arises a Duct, which opens into the Womb with a small Orifice, but in its Progress enlarges, and towards the End is contracted again: At the End next the *Ovaria*, which is at liberty, it expands again into a kind of Foliage fringed round; which Expansion *Fallopian*, the first Discoverer, imagined like the End of a Trumpet; whence he call'd the whole Duct, *Tuba*. It consists of a double Membrane. Both Veins and Arteries are very numerous here, especially the latter, which, by various Ramifications and Contorsions, make the main Substance of them. Dr. *Wharton* gives them Valves, but the other Anatomists disallow it. See **FALLOPIAN TUBE**, **VERPERTILIONUM ALÆ**, &c. &c.

The ancient *Greeks* call'd the *Matrix* *μήτρα*, from *μήτηρ*, Mother: Whence, Disorders of the Womb are frequently call'd *Fits of the Mother*. They also call'd it *ύστερ*, as being the last of the Entrails, by its Situation. They also call'd it *οὐα*, or *Natura*; and *Πύλα*, from *πύλω*, to fold or envelop, or *Valva*, a Door. *Plato* and *Pythagoras* took it for a distinct Animal within another. *P. Ægineta* observes, that the *Matrix* may be taken away from a Woman, without her Death; and there have been Instances of People, who have lived a long time after the Loss of

the *Matrix*. *Rbasius* and *Paræus* observe, that some Persons have been cured of Diseases, by having the *Matrix* extirpated. In 1669, a Child was produced at the *French Academy*, which had been conceived out of the *Matrix*, and which nevertheless had grown to the Length of six Inches. See **EMBRYO**, **FOETUS**, &c.

**MATRIX**'s are also used to signify Places proper for the Generation of Vegetables, Minerals, and Metals. Thus the Earth is the *Matrix* wherein Seeds sprout; *Marcafites* are the *Matrix*'s of Metals. See **FOSIL**, **MINE-RAL**, &c.

**MATRIX** is also used, tho' figuratively, for several Things, wherein there seems to be effected a kind of Generation; and where certain Things seems to acquire a new Being, or at least a new Manner of Being: of this kind are the Moulds wherein the Printers Types or Letters are cast, and those used in striking Money and Medals, call'd also *Coins*. See **MATRICE**.

**MATRON**, among the *Romans*, signify'd a married Woman, and the Mother of a Family. There was, however, some difference between *Matrona* and *Mater-familias*. *Servius* says, that some imagined the Difference to lie in this, That *Matrona* was a Woman who had one Child, and *Mater-familias* she that had several. But others, particularly *Aulus Gellius*, take the Name *Matrona* to belong to a married Woman, whether she had any Children or no; the Hope and Expectation of having them, being enough to warrant the Title of Mother, *Matrona*: and for which reason it is, that Marriage is called *Matrimony*. This Opinion is supported by *Aulus Gellius* and *Notius*.

**MATRONALIA**, Feasts of the *Roman Ladies*, or rather *Matrons*, celebrated on the Calends of *March*, in honour of the God *Mars*. No Men living in Celibate, were allow'd to assist at the Feast. The Word comes from the *Latin Matrona*.

**MATROSSES**, are Soldiers in the Train of Artillery, next below the Gunners; their Duty is to assist the Gunners in traversing, spunging, loading, and firing of Guns, &c. They carry Fire-Locks, and march along with the Store-Waggons.

**MATTADORE**, see **OMBRE**.

**MATTER**, or **BODY**, an extended, solid, divisible, moveable and passive Substance, the first Principle of all natural Things, from the various Arrangements and Combinations whereof, all natural Things are formed. *Aristotle* makes three Principles, *Matter*, *Form*, and *Privation*: Which last the *Cartesians* throw out of the number; and others, the two last. See **PRINCIPLE**.

The Properties of *Matter* we are pretty well acquainted with, and can reason about its Divisibility, Solidity, &c. see **DIVISIBILITY**, &c. But the Essence thereof, or the Subject wherein these Properties reside, or their *Substratum*, is still a Mystery. *Aristotle* speaks very darkly on the Subject, defining *Matter* to be *neq̄ quid, neq̄ quantum, neq̄ quale*, nor any certain or determinate Thing at all; which many of his Followers interpret so, as to believe, that *Matter* does not at all exist. See **BODY**.

The *Cartesians* make the Essence of *Matter* to consist in its Extension; arguing, that since the Properties above-mention'd are all that are essential to *Matter*, some of them must constitute its Essence: and since Extension is conceived prior to all the rest, and is that, without which none of the rest can be conceived, Extension is that which constitutes the Essence of *Matter*. But the Conclusion, here, is unjust; for on this Principle, the Existence of *Matter*, according to Dr. *Clark*, would have the fairest Title to constitute its Essence, the *ne existeret* being conceived prior to all Properties, and even to Extension. Since then the Word *Extension* appears to go further, and to be more general than *Matter*; that impenetrable Solidity, which is essential to all *Matter*, and to *Matter* alone, and from which all its Properties manifestly flow, may, with more Propriety, be call'd the *Essence of Matter*. See **ESSENCE**.

Again, if Extension were the Essence of *Matter*, and so *Matter* and Space the same thing; it would follow, that *Matter* is infinite and eternal, that it is a necessary Being, and could neither be created nor annihilated; which is absurd. Besides that, it appears both from the Nature of Gravity, the Motions of Comets, the Vibrations of Pendulums, &c. that Space is not *Matter*: and therefore 'tis not Extension; but solid, impenetrable Extension which has a Power of resisting, that constitutes *Matter*. See **VACUUM** and **EXTENSION**.

Many among the old Philosophers maintain'd the Eternity of *Matter*, out of which they supposed all things to be formed by the hands of Nature; as being unable to conceive how any thing should be formed out of nothing. *Plato* maintain'd, that *Matter* had existed eternally, and concurred with God in the Production of all things, as a passive Principle, or a kind of collateral Cause. See **ETERNITY**.



Matter and Form, the two simple and original Principles of all things, according to the Antients, composed some simple Natures, which they called *Elements*; out of the various Combinations whereof, all natural Things were composed. See *ELEMENT*.

Dr. Woodward is of an Opinion, not very unlike it; viz. That Matter is originally and really very different, being at its first Creation divided into several Ranks, Sets, or Kinds of Corpuscles, differing in Substance, Gravity, Hardness, Flexibility, Figure, Size, &c. from the various Composures and Combinations of which, arises all the Varieties in Bodies, as to Colour, Hardness, Gravity, Tastes, &c. But Sir *Is. Newton* takes all those Differences to result from the various Arrangements of the same Matter; which he takes to be homogeneous and uniform in all Bodies. See *CORPUSCLE*.

Besides the Properties of Matter hitherto known, Sir *Is. Newton* has discover'd a new one, viz. 'That of Attraction, or that every Particle of Matter has an attractive Power, or a Tendency towards every other Particle: which Power is strongest in the Point of Contact, and suddenly decreases, insomuch that it acts no more at the least sensible Distance, and at a greater Distance is converted into a repellent Force, whereby the Parts fly from each other. On this Principle of Attraction, he accounts for the Cohesion of the Particles of Bodies, otherwise inexplicable.' See *COHESION*.

For he takes occasion to observe, 'That all Bodies seem to be compounded of hard Particles. Even Light itself, and all other the most volatile of Fluids; insomuch as Hardness may be esteem'd a Property of all uncompounded Matter: at least the Hardness of Matter stands on as good a foot as that of its Impenetrability; all the Bodies we know of, being either hard themselves, or being capable of being harden'd. Now if Compound Bodies be so hard, as we find some of them, and yet are very porous, and consist of Parts which are only laid together; the simple Particles, which are void of Pores, and were never yet divided, must be much harder. Now such hard Particles being heaped together, can scarce touch one another in more than a few Points, and therefore must be separable with much less Force than is requisite to break a solid Particle, whose Parts touch in all the Space, without any Pores or Interstices to weaken their Cohesion: How then should such very hard Particles, only laid together, and touching only in a few Points, stick together, and that so firmly as they do, without the Assistance of something that causes them to be attracted or press'd towards each other?'

The same great Author observes further, 'That the smallest Particles may cohere by the strongest Attractions, and compose bigger Particles of weaker Virtue; and many of these may cohere, and compose bigger Particles, whose Virtue is still weaker, and so on for divers Successions, until the Progression end in the biggest Particles; on which the Operations in Chymistry, and the Colours of natural Bodies, depend; and which, by cohering, compose Bodies of a sensible Magnitude. If the Body is compact, and bends or yields inward to Pressure; without any sliding of its Parts; it is *hard*, and *elastic*: returning to its Figure with a Force arising from the mutual Attraction of its Parts. If the Parts slide upon one another, the Body is *malleable* or *soft*. If they slip easily, and are of a fit Size to be agitated by Heat, and the Heat is big enough to keep them in Agitation, the Body is *fluid*; and if it be apt to stick to things, it is *luminous*. And the Drops of every Fluid affect a round Figure by the mutual Attraction of their Parts, as the Globe of the Earth and Sea affects a round Figure, by the mutual Attraction of its Parts of Gravity.' See *ATTRACTION*.

Again, 'Since Metals dissolved in Acids, attract but a small Quantity of the Acid, their attractive Force reaches but to a small distance. Now, as in Algebra, where affirmative Quantities cease, there negative ones begin; so in Mechanics, where Attraction ceases, there a repellent Virtue must succeed. That there really is such a Virtue, seems to follow, from the Reflections and Inflections of the Rays of Light; the Rays being repelled by Bodies in both these Cases, without the immediate Contact of the reflecting or inflecting Body. The same thing seems also to follow from the Emission of Light; a Ray, as soon as shaken off from a shining Body by the vibrating Motion of the Parts of the Body, and got beyond the reach of Attraction, being driven away with exceeding great Velocity: for that Force, which is sufficient to turn it back in Reflection, may be sufficient to emit it. It seems also to follow from the Production of Air and Vapour. The Particles, when they are shaken off from the Body by Heat or Fermentation, so soon as they are beyond the reach of the Attraction of the Body, receding from it, and also from one another, with

great Strength; and keeping at a distance, so as sometimes to take up above a Million of Times more Space, than they did before in the Form of a dense Body. Which vast Contraction and Expansion seems unintelligible, by feigning the Particles of Air to be springy, and ramous, or rolled up like Hoops, or by any other means than a repulsive Power. The Particles of Fluids, which do not cohere too strongly, and are of such a Smallness, as renders them most susceptible of those Agitations, which keep Liquors in a Fluor, are most easily separated and rarefied into Vapour, and in the Language of the Chymists, they are *volatile*; rarefying with an easy Heat, and condensing with Cold. But those which are grosser, and so less susceptible of Agitation, or cohere by a stronger Attraction, are not separated without a stronger Heat, or perhaps not without Fermentation. And these last are the Bodies, which Chymists call *fixed*, and being rarefied by Fermentation, become true permanent Air; those Particles receding from one another with the greatest Force, and being most difficultly brought together, which upon Contact cohere most strongly. And because the Particles of permanent Air are grosser, and arise from denser Substances, than those of Vapours; thence it is that true Air is more ponderous than Vapour; and that a moist Atmosphere is lighter than a dry one, quantity for quantity. From the same repelling Power it seems to be, that Flies walk upon the Water without wetting their Feet; and that the Object-Glasses of long Telescopes lie upon one another without touching; and that dry Powders are difficultly made to touch one another so as to stick together, unless by melting them, or wetting them with Water, which by exhaling may bring them together; and that two polish'd Marbles, which by immediate Contact stick together, are difficultly brought so close together, as to stick.' See *REPELLING POWER*.

He further observes, 'That all things consider'd, it seems probable God, in the Beginning, formed Matter in solid, massy, hard, impenetrable, moveable Particles, of such Sizes, Figures, and with such other Properties, and in such proportion to Space, as most conduced to the End, for which he formed them; and that these primitive Particles being Solid, are incomparably harder than any porous Bodies compounded of them; even so very hard, as never to wear, and break in pieces: no ordinary Power being able to divide, what God himself made one in the first Creation. While the Particles continue entire, they may compose Bodies of one and the same Nature and Texture in all Ages; but should they wear away, or break in pieces, the Nature of Things depending on them, would be changed. Water and Earth, composed of old worn Particles and Fragments of Particles, would not be of the same Nature and Texture now, with Water and Earth composed of entire Particles in the Beginning. And therefore that Nature may be lasting, the Changes of Corporeal Things are to be placed only in the various Separations, and new Associations and Motions of these permanent Particles; compound Bodies being apt to break, not in the midst of solid Particles, but where those Particles are laid together, and only touch in a few Points.'

It seems farther, 'That these Particles have not only a *Vis Inertia*, accompany'd with such passive Laws of Motion, as naturally result from that Force, but also that they are moved by certain active Principles, such as is that of Gravity, and that which causeth Fermentation, and the Cohesion of Bodies. These Principles are to be consider'd not as occult Qualities, supposed to result from the specific Forms of Things, but as general Laws of Nature, by which the Things themselves are form'd; their Truth appearing to us by Phenomena, tho' their Causes are not yet discover'd.' See *PARTICLE*; see also *FERMENTATION*, *FIRMNESS*, *GRAVITATION*, *ELASTICITY*, *HARDNESS*, *FLUIDITY*, *SALT*, *ACID*, &c.

*Hobbes*, *Spinoza*, &c. maintain all the Beings in the Universe to be *material*, and their Differences to arise from their different Modifications, Motions, &c. Thus Matter extremely subtle, and in a brisk Motion, they conceive, may think; and so exclude all Spirits out of the World. See *SPIRIT*. Mr. *Berkeley*, on the contrary, argues against the Existence of Matter; and endeavours to prove, that it is a mere *Ens Rationis*; and has no Existence out of the Mind: 'Thus, says he, that neither our Thoughts, Passions, nor Ideas, form'd by the Imagination, exist without the Mind, is evident; nor is it less evident, that the various Sensations or Ideas imprinted on the Sense, however blended or combined together (that is, whatever Objects they compose) cannot exist otherwise, than as in a Mind perceiving them. This no Man can doubt of, that attends to what is meant by the Term *exist*, when applied to sensible Things. Thus I say, the Table I write on exists, i. e. I see and feel it, and if I were out of my Study,



dy, I should say it existed; meaning thereby, that if I were in my former Situation, I should see and feel it as before. Again, I say there was Odour, i. e. I smelt it; a Sound, i. e. it was heard; a Colour or Touch, i. e. it was perceived by Sight or Touch. This is the utmost that can be meant by such Expressions; for as to the absolute Existence of any unthinking Being, distinct from its being perceived, 'tis a Chimera. Their *Esse* is *percipi*; nor is it possible they should have any Existence out of the Minds that perceive them. Again, what are Hills and Trees, &c. but Things perceived by Sense; and what do we perceive, but our own Ideas or Sensations: and can any one of these, or any Combination of them exist unperceived? What are Light and Colours, Heat and Cold, Extension and Figure, but so many Sensations, Ideas, or Impressions on the Sense? And is it possible, even in Thought, to separate them from Perception? 'Tis next to self-evident, therefore that all the Choir of Heaven, and Furniture of the Earth; in a word, all the Bodies that compose the System of the World, have not any Subsistence out of a Mind; their *Esse* is nothing more than their being perceived: and therefore as long as they don't exist in me, i. e. are not perceived by me, nor any other created Spirit; they have no shadow of Existence at all, unless perhaps in the Mind of some Eternal Spirit. It appears therefore, with the Light of an Axiom, that there is not any other Substance but Spirit, &c. See *Inquiry into Principles of Human Knowledge*. See *EXTERNAL WORLD*.

**MATTER** in Deed, and *Matter of Record*, in Law, are thus distinguish'd: *Matter in Deed* signifies nothing else but a Truth to be proved, tho not by any Record; and *Matter of Record*, is that which may be proved by some Record: For example, If a Man be sued to an Exigent, during the time he was in the King's Wars, this is *Matter in Deed*, and not *Matter of Record*. And therefore he that will alledge this for himself, must come before the *Scire Facias*, before Execution be awarded against him; for after that, nothing will serve but *Matter of Record*; that is, some Error in the Process appearing upon Record.

**MATURANTIA**, in Medicine, &c. Ripeners, or such Things as promote Maturation. See *RIPENERS*.

**MATURATION**, in Pharmacy, a Preparation of Fruits, or other Remedies, gather'd before their Maturity; to fit them to be eaten, or taken.



**MAUNCH**, is the Figure of an antient Sleeve of a Coat, so called by the Herald; and is borne in many Gentlemen's Escutcheons: as in the Earl of Huntingdon's, in those of Coniers, &c.

**MAUNDAY THURSDAY**, the Thursday before Easter, so called from the French *Mande*, i. e. *Sportula*; it being a Custom on that Day to give larger Bounty to certain poor Men, whose Feet the King wash'd.

**MAUSOLEUM**, a magnificent Tomb, or funeral Monument, consisting of Architecture, and Sculpture, with an Epitaph; erected in honour of some Prince, or other illustrious Person: as the *Mausoleum* of Augustus at Rome. The Word is also used to signify the Decoration of a Tomb, or *Catafalca*, in a funeral Pomp. The Word comes from *Mausolus* King of Caria, to whom *Artemisia*, his Widow, erected a most stately Monument, that has since been number'd among the Wonders of the World, calling it from his Name, *Mausolcum*.

**MAXILLÆ**, in Anatomy, the Jaws, or those Parts of an Animal, wherein the Teeth are set, and which serve for masticating of the Food: See *TEETH*. The *Maxilla* are two in number, denominated from their Situation, *Superior*, and *Inferior*.

The **MAXILLA Superior**, or Upper Jaw, is immoveable in Man, and all other Animals; excepting Parrots and Crocodiles. It consists of eleven Bones, join'd to each other *per Harmoniam*; five disposed on each side, and one in the middle. Their Names are the *Zygoma*, *Os Maxillare*, *Os Unguis*, *Os Nasi*, *Os Palati*, and *Vomer*: See *ZYGOMA*, &c. In this Jaw are *Alveoli* or Sockets for 16 Teeth.

The **MAXILLA Inferior**, or Lower Jaw, only consists of two Bones, which unite in the middle of the Chin, by the Intervention of a Cartilage, which hardens as the Child grows; and at length, about the Age of seven Years, becoming bony, joins the two Bones into a continued one, resembling the *Greek*  $\nu$ . It consists of two Tables, betwixt which is a spongy Substance, in Children medullous. The fore-part is shallow, just sufficient to afford Sockets for 16 Teeth. It has two Processes, the *Corone* and *Condylodes*, which see; four Holes or *Foramina* for the Passage of Vessels, and five Pair of proper Muscles, viz. the *Crotaphyces* or Temporal, the *Masseter*, *Biventer* or *Digastricus*,

*Pterygoideus Internus*, and *Pterygoideus Externus*. See each in its Place. *CROTAPHYTES*, *MASSETER*, &c.

**MAXILLARIS Glandula**, a considerable Gland of the conglomerate Kind, situate on the Inside, under the lower Jaw-Bone, near the *Musculus Digastricus*. It discharges itself by several Branches of Ducts, which form one Trunk that passes under the *Mylohyoideus*, and meets with that of the other Side within the fore Teeth of the lower Jaw, having distinct Orifices, with a *Papilla* on each Side the *Frenum Linguae*. See *GLAND*.

**MAXIMIS ET MINIMIS**, a Method so called, in use among the Mathematicians, whereby they arrive at the greatest or least possible Quantity attainable in any Case: Or thus, If the Semi-ordinates of any Curve continually increase or decrease to some certain Term, which once pass'd, they begin again to increase or decrease, the Method whereby their *Maxima* & *Minima*, i. e. their greatest and least State is determined, is called the Method *de Maximis & Minimis*; which, 'tis true, may be used to determine other Quantities that increase or decrease to any certain degree: but then they must always be represented by the Semi-ordinates of Curves.

The Method *de Maximis & Minimis*, is best managed by the *Calculus Differentialis*, or Fluxions. The Rule is: Having put the Equation into Fluxions, let the Fluxion of that Quantity (whose extreme Value is sought) be supposed  $= 0$ ; by this means all those Members of the Equation, in which it is found, will vanish, and the remaining ones will give the Determination of the *Maximum* or *Minimum* desired. Now the reason of the Rule is, that every *Maximum* or *Minimum* is in its own nature a stable Quantity: To determine therefore any flowing Quantity to a *Maximum* or *Minimum*, is to make it (instead of a flowing) a permanent one; but the Fluxion of a permanent Quantity is equal to nothing. This we shall illustrate by an Example or two.

**Prob. 1.** To determine the greatest or least *Applicate* in an Algebraic Curve. Since in Curves that have a *Maximum* and a *Minimum*, the Tangent *TM* (*Tab. ANALYSIS* fig. 4.) degenerates at length into *DE*, and becomes parallel to the Axis, and so the Perpendicular *MH* coincides with the greatest or least *Applicate* *CG*; in the Case of the *Maximum* and *Minimum*, the Sub-tangent *TP* becomes infinite, and the Sub-perpendicular equal to nothing, but  $PH = y dy : dx$ . If then  $y dy : dx = 0$ ; we shall find  $dy = 0$ , and because of  $PT = y dx : dy = \infty$  (the Note of Infinity)  $dx = \infty$ . 'Tis possible for the Tangent *HG* (*fig. 5.*) to lie directly against the Semi-ordinate *GC*; in which Case the Sub-tangent *PT* is equal to nothing, and the Sub-perpendicular infinite. But  $PT = y dx : dy = 0$ ; therefore if  $y dx : dy = 0$ , we shall have  $dx = 0$ ; or because of  $PH = y dy : dx = \infty$ , we find  $dy = \infty$ . Both  $dx$  and  $y$  being, in respect of  $dy$ , Infinitesimals. From the Equation of the Curve therefore we are to find the Value of  $dy$ , which is to be made equal either to nothing, or to an Infinite, that we may have the Value of the *Abscisse*, to which the greatest *Applicate* is co-ordinate.

**2.** To cut a right Line *AB* (*fig. 6.*) in such a manner in *D*, that the Rectangle *AD* and *DB* shall be greatest that can possibly be thus constructed. Let  $AB = a$ ,  $AD = x$ , then will  $DB = a - x$ ; consequently  $AD \cdot DB = ax - xx$  any *Maximum*, and hence its Differential will be equal to nothing, as being conceived at a Circle, to which

$$ax - xx = y$$

$$\text{Wherefore } a dx - 2x dx = 2y dy = 0$$

$$a - 2x = 0$$

$$\frac{1}{2}a = x.$$

The Line *AB* therefore is to be cut into two equal Parts; and the Square is the greatest of all Rectangles, whose Altitudes and Bases, taken together, are equal to each other. See *FLUXIONS*.

**MAXIMS**, a kind of Propositions, which, under the Name of *Maxims* and *Axioms*, have passed for Principles of Science; and which being self-evident, have been supposed innate. See *AXIOM*.

For the Reason of the Evidence of *Maxims*: It may be observed, That Knowledge being only the Perception of the Agreement or Disagreement of Ideas; where that Agreement or Disagreement is perceived immediately by itself, without the Intervention or Help of any other Ideas, there our Knowledge is self-evident: which being so, not only *Maxims*, but an infinite number of other Propositions, partake equally with them in this Self-Evidence. Thus, that a Circle is a Circle, Blue is not Red, are as self-evident Propositions, as those general ones, What is, is; and, It is impossible for the same thing to be, and not to be. Nor can the Consideration of these Axioms add any thing to the Evidence or Certainty of our Knowledge of them. At



As to the Agreement or Disagreement of Co-existence, the Mind has an immediate Perception of this but in very few. And therefore in this Sort we have very little intuitive Knowledge; tho in some few Propositions we have. Two Bodies cannot be in the same Place, is a self-evident Proposition: the Idea of sitting a Place equal to the Contents of its Superficies, being annexed to our Idea of Body. As to the Relations of Modes, Mathematicians have framed many Axioms concerning that one Relation of Equality; as that Equals being taken from Equals, the Remainder will be equal, &c. which however received for Axioms, yet have not a clearer Self-evidence than these, That One and One are equal to Two; that if from the five Fingers of one Hand you take two, and from the five Fingers of the other Hand two, the remaining Numbers will be equal. As to real Existence, since that has no Connection with any other of our Ideas, but that of ourselves, and of a first Being; we have not so much as a demonstrative, much less a self-evident Knowledge concerning the real Existence of other Beings. See EXISTENCE.

For the Influence of MAXIMS on the other Parts of our Knowledge: The Rules established in the Schools, That all Reasonings are *ex præcognitis* & *præconcessis*, seem to lay the Foundation of all other Knowledge in these Maxims, and to suppose them to be *præcognita*; which implies two Things: viz. That these Axioms are those Truths first known to the Mind; and, That on them the other Parts of our Knowledge depend. But, first; That these Axioms are not the Truths first known to the Mind, is evident from Experience: For who knows not that a Child perceives that a Stranger is not its Mother, long before he knows it impossible for the same Thing to be, and not to be? And how many Truths are there about Numbers, which the Mind is perfectly acquainted with, and fully convinced of, before it ever thought on these general Maxims? Hence it follows, That these magnified Maxims are not the Principles and Foundations of all our other Knowledge; for if there are a great many other Truths, as self-evident as they, and a great many that we know before them, it is impossible that they should be the Principles, from which we deduce all other Truths. Thus, That One and Two are equal to Three, is as evident, and easier known, than that the Whole is equal to all its Parts. Nor, after the Knowledge of this Maxim, do we know that One and Two are equal to Three, better, or more certainly, than we did before. For if there be any odds in these Ideas, the Ideas of Whole and Parts are more obscure, or at least more difficult to be settled in the Mind, than those of One, Two, and Three. Either, therefore, all Knowledge does not depend on *Præcognita*, or general Maxims, called Principles; or else such as these (That One and One are Two, that Two and Two are Four, &c.) and a great part of Numeration, are Maxims. To these, if we add all the self-evident Propositions that may be made about all our distinct Ideas, Principles will be almost infinite; and a great many innate Principles, many Men never come to know all their Lives.

General MAXIMS then may be of use in Disputes, to stop the Mouths of Wranglers; but are of little in the Discovery of unknown Truths. Several general Maxims are no more than bare verbal Propositions, and teach us nothing but the Respect and Import of Names one to another; as, The Whole is equal to all its Parts: What real Truth doth this teach us more, than what the Signification of the word *Totum*, or Whole, does of itself import? If rightly consider'd, we may say, that where our Ideas are clear and distinct, there is little or no use at all of Maxims, to prove the Agreement or Disagreement of any of them. He that needs any Proof to make him certain, and give his Assent to this Proposition, That Two are equal to Two, or that White is not Black; will also have need of a Proof to make him admit, That what is, is; or, That it is impossible for the same Thing to be, and not to be. But as Maxims are of little use, where we have clear and distinct Ideas; so they are of dangerous use, where our Ideas are confused, and where we use Words, that are not annexed to clear and distinct Ideas. LOCUS.

MAY, the fifth Month in the Year, reckoning from the first of January; and the third, in counting the Year to begin with March, as they antiently did. In this Month the Sun enters Gemini, and the Plants of the Earth begin to flower. It was called *Maius* by Romulus, in respect to the Senators and Nobles of his City, which were named *Majores*; as the following Month was called *Junius*, in honour of the Youth of Rome, in *honorem Juniorum*, who served him in the War: Others will have it to have been called thus from *Mai*, the Mother of Mercury, to whom they offer'd Sacrifice on that day; *Papias* derives it from *Maius*, *Ex quo tunc terra madeat*. This Month was under the Protection of Apollo, and therein also they kept the Festi-

val of *Bona Dea*, that of *Goblins*, call'd *Lemuria*; and the Ceremony of *Regifugium*, or the Expulsion of the Kings. The Vulgar have a great opinion of *May-Dew* and *Butter*. See DEW. The Month of May has ever been esteem'd very favourable to Love; and yet the Antients, as well as many of the Moderns, look on it as an unhappy Month for Marriage: The Reason may perhaps be refer'd to the Feast of the *Lemures*, which was held in it. Ovid alludes to this in the 5th of his *Fasti*, when he says,

*Nec Vidue redit eadem, nec Virginis apta  
Tempora; quæ nupsit, non diuturna fuit:  
Hæc quoque de Causâ, si te proverbia tangunt,  
Mense malus Maio Nubere vulgus erit.*

MAYL, in Falconry, is to pinion the Wings of a Hawk.

MAYOR, the Chief Magistrate or Governour in the Cities and most Corporation-Towns of England; chosen annually by his Peers, out of the number of the Aldermen. The Mayor of the Place is the King's Lieutenant, and with the Aldermen and Common-Council, can make Laws, called *By-Laws*, for the Government of the Place. He has the Authority of a kind of Judge, to determine Matters, and to mitigate the Rigour of the Law. The Word comes from the antient *British* *Miret*, *custodire*, to keep. King Richard I. A. D. 1189. first changed the Bayliffs of London into Mayors; by whose Example others were afterwards appointed. See PORTREVE and ALDERMAN.

MAYOR'S Court. To the Lord Mayor and City of London belong several Courts of Judicature. The highest and most antient is that call'd *The Hustings*, from the *Danish* *Hus-ding*, i. e. *Domus Judicii*; destined to secure the Laws, Rights, Franchises, and Customs of the City.

The second is a Court of Request, or of Conscience; so call'd, as meddling with nothing above 40s. Value; or rather, because here the Oath of the Creditor himself is accepted.

The third is the Court of the Lord Mayor and Aldermen, where also the Sheriffs sit; two Courts of Sheriffs; and the Court of the City-Orphans, whereof the Lord Mayor and Aldermen have the Custody.

The Court of Common-Council, consisting of two Houses; the one for the Lord Mayor and Aldermen, and the other for the Commoners: In which Court are made all By-Laws, which bind the Citizens.

Under him is also the *Chamberlain's Court*, where every thing relating to the Rents and Revenues of the City, as also the Affairs of Servants, &c. are transacted. Lastly, To him belongs the Courts of Coroner, and of Escheator; another Court for the Conservation of the River of Thames; another of Goal-Delivery, held usually eight Times a year, at the *Old-Bayley*, for the Tryal of Criminals, whereof the Lord Mayor is himself the chief Judge. There are other Courts call'd *Wardmotes*, or Meetings of the Wards; and Courts of *Helmote*, or Assemblies of the several Guilds and Fraternities.

MEAD, a wholesome, agreeable Liquor, prepared of Honey and Water. One of the best Preparations, is as follows: Into twelve Gallons of Water, slip the Whites of six Eggs; mixing these well together, and to the Mixture adding twenty Pounds of Honey. Let the Liquor boil an hour, and when boiled, add Cinnamon, Ginger, Cloves, Mace, and a little Rosemary. As soon as 'tis cold, put a Spoonful of Yeast to it, and turn it up, keeping the Vessel fill'd as it works; when it has done working, stop it up close, and when fine, bottle it off for Use.

MEAN, the Middle between two Extremes. See MIDDLE and EXTREME.

Thus, we say, *Mean Motion* of a Planet; its *mean Distance*, &c. meaning a Motion or Distance, which as far exceeds the least Distance, or Motion, as it is exceeded by the greatest. See MOTION, DISTANCE, &c.

MEAN, in Logic. See MEDIUM.

MEAN Proportion. See EXTREME PROPORTION.

MEAN Proportional. See PROPORTIONAL.

MEAN Time. See TIME.

MEAN Axis, in Optics. See AXIS.

MEAN Diameter in Gauging. See DIAMETER.

MEAN, in Law, refers either to Time or Dignity. Thus, in the first sense, we say, his Action was *mean* betwixt the Disseisin made to him and his Recovery, i. e. in the Interim: In the second we say, there is Lord Mean, i. e. *Mesne*, or Lord of a Mannor, who has Tenants that hold of him, yet himself holds of the King.

MEASLES, or *MOXILLI*, in Medicine, a cutaneous Disease, consisting in a general Appearance of Eruptions, not tending to Suppuration; with a Fever. This Distemper seems to bear a great Affinity to the Small-Pox, the Symptoms being in many respects the same, the Cause nearly the same, and the Regimen and Cure not much different. The Eruptions usually appear about the fourth

P P P P P

Day,



Day, like Flea-Bites, over the whole Body; but thicker and redder, and with greater Inflammation, than those of the Small-Pox, and vanish in four or six Days after appearance: being, when at the height, not larger than Pins Heads. The *Measles* is more sickly than dangerous; tho' it often inclines to Consumptions, by a Cough which it leaves behind. See *VARIOLÆ*.

**MEASURE**, in Geometry, any certain Quantity assumed as one, or Unity, to which the Ratio of other homogeneous, or similar Quantities is express'd. This Definition is somewhat more agreeable to Practice than that of *Euclid*, who defines *Measure* by a Quantity, which being repeated any number of Times, becomes equal to another: This only answers to the Idea of an Arithmetical *Measure*, or Quota Part. See *QUOTA PART*.

**MEASURE of a Number**, in Arithmetic, is such a Number as divides another, without leaving any Fraction; thus 9 is a *Measure* of 27. See *NUMBER*.

**MEASURE of a Line**, is any right Line taken at pleasure: The modern Geometricians use a *Decempeda*, or Perch, divided into 10 equal Parts, call'd Feet. The Feet they subdivide into 10 Digits, the Digit into 10 Lines, &c. See *MEASURES*.

This Decimal Division of the *Measure* was first introduced by *Stevinus*, probably from the Example of *Regiomontanus*: The Index or Character of *Decempeda* he made c, that of Feet 1, of Digits 2, of Lines 3, &c. which, in regard the *Measure* was subdivided in a decuple Ratio, were the Logarithms of the Division. *Bayer*, in lieu of these, express'd the Logarithms by the Roman Characters; v. g. 5 Perches, 4 Feet, 3 Digits, and 2 Lines, he express'd thus; 5°, 4', 3", 2"". 'Tis, frequently, most commodious to separate the Integers, or Perches, from the Fractions by a Point; thus instead of 5°, 4', 3", 2""; to write 5.432. *F. Noel* observes, that among the *Chinese*, the Decimal Division obtains in their common *Measures*, and even in their Weights. See *DECIMAL, DEGREE, &c.*

**MEASURE of a Figure, or Plane-Surface**, is a Square, whose Side is of any determinate Length; among Geometricians 'tis usually a Perch, call'd a *Square Perch*, divided into ten square Feet, and the square Feet into square Digits: Hence square *Measures*. See *SQUARE*.

**MEASURE of a Solid**, is a Cube, whose Sides are of any Length at pleasure. Among Geometricians, a Perch, call'd a Cubic Perch, divided into Cubic Feet, Digits, &c. Hence Cubic *Measures*, or Measures of Capacity. See *CUBE*.

**MEASURE of an Angle**, is an Arch, described from the Vertex, a (*Tab. Geometry, fig. 10.*) in any Place between its Legs; as at *df*. Hence, Angles are distinguish'd by the Ratio of the Arches, described from the Vertex, between the Legs; to the Peripheries. Angles then are distinguish'd by those Arches; and the Arches are only distinguish'd by their Ratio to the Periphery. Thus the Angle *laa* is said to be of so many Degrees, as is the Arch *fd*. See *ANGLE*.

**MEASURE of Velocity**, in Mechanics, is the Space pass'd over by the moving Body in any given Time. To measure a Velocity, therefore, the Space must be divided into as many equal Parts, as the Time is conceived to be divided into. The Quantity of Space answering to such an Article of Time, is the Measure of the Velocity. See *VELOCITY*.

**MEASURE of the Mass, or Quantity of Matter** in Mechanics, is its Weight; it being apparent, that all the Matter which coheres and moves with a Body, gravitates with it: and it being found by Experiment, that the Gravities of homogeneous Bodies, are in proportion to their Bulks; hence, while the Mass continues the same, the Weight will be the same, whatever Figure it put on: its absolute Weight, we mean; for as to its specific Weight, it varies as the Quantity of Surface varies. See *VELOCITY, WEIGHT, GRAVITY, &c.*

**MEASURES**, therefore, are various, according to the various Kinds and Dimensions of the Things measured. Hence arise *Lineal* or *Longitudinal Measures* for Lines or Lengths; *Square Measures* for Area's or Superficies; and *Solid* or *Cubic Measures* for Bodies, and their Capacities: All these are very different in different Countries, and in different Ages, and even many of 'em for different Commodities. Whence arise other Divisions of *Domestic* and *Foreign Measures*, *Antient* and *Modern* ones; *Dry* and *Liquid Measures*, &c.

The Business of *Measures* has been so confusedly, and withal so imperfectly deliver'd by our *English* Writers, that the Reader will not be displeased with the pains we have here taken to disembroil, and supply it. Under this Head he will find enumerated the various, general, standing *Measures*, *Long*, *Square* and *Cubic*, now or heretofore in use, with their Proportions and Reductions: for Particulars, he must be contented to be refer'd to the particular Heads; as *FOOT, DIGIT, ELL, TUN, GALLON, BUSHEL, PERCH, LEAGUE, FURLONG, &c.*

## LONG MEASURES, or Measures of Application.

The *English Standard LONG MEASURE* for Commerce, or that whereby the Quantities of Things are ordinarily estimated in the way of Trade, is the *Yard*; containing three *English Feet*: equal to three *Paris Feet*, 1 Inch,  $\frac{1}{2}$  of an Inch; or  $\frac{2}{3}$  of a *Paris Ell*. Its Divisions are the *Foot, Span, Palm, Inch, and Barley-Corn*, which see under their respective Heads: *FOOT, INCH, &c.* Its Multiples are the *Pace, Fathom, Pole, Furlong, and Mile*. See *MILE, FURLONG, POLE, &c.* The Proportions these severally bear to each other, will be express'd in a Table for the purpose.

The *French Standard Measure* for Commerce is the *Aune* or *Ell*, containing 3 *Paris Feet*, 7 Inches, 8 Lines; or 1 *Yard*,  $\frac{2}{3}$  *English*; the *Paris Foot Royal* exceeding the *English* by  $\frac{66}{1000}$  Parts, as in one of the following Tables. This *Ell* is divided two ways; viz. into *Halves, Thirds, Sixths, and Twelfths*; and into *Quarters, Half-Quarters, and Sixteenths*.

This *Ell* holds throughout the greatest part of *France*; excepting at *Troyes* in *Campagne*; at *Arc* in the *Barrois*; in some parts of *Picardy* and *Burgundy*, where it only contains two *Foot*, five Inches, one Line; in *Bretagne*, where it contains four *Foot*, two Inches, eleven Lines; and at *St. Genoux* in *Berry*, where it exceeds the *Paris Ell* by eight Lines. See *ELL*.

But in *Languedoc*, particularly at *Marseilles, Montpellier, Toulouse*, in *Provence, Guienne*, they measure by the *Canna*, which at *Toulouse* and in *Guienne* contains five *Paris Feet*, five Inches, and six Lines; or one *Paris Ell* and a half. At *Montpellier*, and throughout the *Lower Languedoc*, as also in *Provence* and *Avignon*, and even *Dauphine*, the *Canna* is six *Foot* and nine Lines; or one *Paris Ell*, two Thirds. See *CANNA*.

*Standard Measure in Holland, Flanders, Sweden*, a good part of *Germany*, many of the *Hans-Towns*, as *Dantzic* and *Hambourg*; and at *Geneva, Francfort, &c.* is likewise the *Ell*: But the *Ell* in all these Places differs from the *Paris Ell*. In *Holland*, it contains one *Paris Foot*, eleven Lines, or four Sevenths of the *Paris Ell*. The *Flanders Ell* contains two *Foot*, one Inch, five Lines, and half a Line, or seven Twelfths of the *Paris Ell*. The *Ell* of *Germany, Brabant, &c.* is equal to that of *Flanders*. See *ELL*.

The *Italian Measure* is the *Braccio, Brace, or Fathom*; which obtains in the States of *Modena, Venice, Florence, Lucca, Milan, Mantua, Bologna, &c.* but of different Lengths. At *Venice* it contains one *Paris Foot*, eleven Inches, three Lines, or eight Fifteenths of the *Paris Ell*. At *Bologna, Modena, and Mantua*, the *Brace* is the same as at *Venice*; At *Lucca* it contains one *Paris Foot*, nine Inches, ten Lines, or half a *Paris Ell*. At *Florence* it contains one *Foot*, nine Inches, four Lines; or forty-nine Hundredths of a *Paris Ell*. At *Milan*, the *Brace* for measuring of Silks is one *Paris Foot*, seven Inches, four Lines, or four Ninths of a *Paris Ell*: That for Woollen Cloths is the same with the *Ell* of *Holland*. Lastly, at *Bergama* the *Brace* is one *Foot*, seven Inches, six Lines, or five Ninths of a *Paris Ell*. See *BRACE*. The *Measure* at *Naples*, however, is the *Canna*, containing six *Foot*, ten Inches, and two Lines, or one *Paris Ell*, and fifteen Seventeenthths.

The *Spanish Measure*, is the *Virga, or Yard*, in some Places call'd the *Barra*; containing seventeen Twenty-fourths of the *Paris Ell*.—But the *Measure* in *Castille* and *Valencia* is the *Pan, Empan, or Palm*; which is used, together with the *Canna*, at *Genoa*.—In *Aragon*, the *Varra* is equal to a *Paris Ell* and a half, or five *Foot*, five Inches, six Lines.

—The *Portuguese Measure* is the *Cavados*, containing two *Foot*, eleven Lines, or four Sevenths of the *Paris Ell*; and the *Veras*, 106 whereof make 100 *Paris Ells*.—The *Piedmontese Measure* is the *Ras*, containing one *Paris Foot*, nine Inches, ten Lines, or half a *Paris Ell*.—In *Sicily*, their *Measure* is the *Canna*; the same with that of *Naples*.

Lastly, the *Muscovite Measures* are the *Cubit*, equal to one *Paris Foot*, four Inches, two Lines; and the *Arcin*, two whereof are equal to three *Cubits*.—The *Turkish, and Levant Measure*, the *Picq*, containing two *Foot*, two Inches, and two Lines; or three Fifths of the *Paris Ell*.—The *Chinese Measure*, the *Cobre*; ten whereof are equal to three *Paris Ells*.—In *Persia*, and some part of the *Indies*, the *Gueze*, whereof there are two Kinds; the *Royal Gueze*, call'd also *Gueze Monksfer*, containing two *Paris Foot*, ten Inches, eleven Lines, or four Fifths of the *Paris Ell*; and the *Shorter Gueze*, call'd simply *Gueze*, only two Thirds of the former.—At *Goa* and *Ormus*, the *Measure* is the *Varra*, the same with that of the *Portuguese*, having been introduced by them.—In *Pegu*, and some other Parts of the *Indies*, the *Cando* or *Candi*, equal to the *Ell* of *Venice*.—At *Goa* and other Parts, they use a larger *Cando*, equal to seventeen *Dutch Ells*; exceeding that of *Babel* and *Belfora* by  $\frac{7}{10}$  per Cent. and the *Varra* by 6 and  $\frac{1}{2}$ .—In *Siam*, they use the *Ken*, short of three *Paris Feet* by one Inch. The



The *Ken* contains two *Soks*, the *Sok* two *Keubi*, the *Keub* twelve *Nious*, or Inches; the *Niou* to be equal to eight Grains of Rice, i. e. to about nine Lines. — At Camboia, the *Coiang*; in Japan, the *Ikiens*; and the *Pan* on some of the Coasts of Guinea.

### English Measures of Length, or Application.

[illegible]

### Scripture Measures of Length.

|       |      |      |       |        |                |              |                         |  |  | Engl. Feet. | Inch.  | Dec. |
|-------|------|------|-------|--------|----------------|--------------|-------------------------|--|--|-------------|--------|------|
| Digit |      |      |       |        |                |              |                         |  |  | 0           | 0,912  |      |
| 4     | Palm |      |       |        |                |              |                         |  |  | 0           | 3,648  |      |
| 12    | 3    | Span |       |        |                |              |                         |  |  | 0           | 10,944 |      |
| 24    | 6    | 2    | Cubit |        |                |              |                         |  |  | 1           | 9,888  |      |
| 96    | 24   | 8    | 4     | Fathom |                |              |                         |  |  | 7           | 3,552  |      |
| 144   | 36   | 12   | 6     | 1½     | Ezekiel's Reed |              |                         |  |  | 1           | 11,328 |      |
| 192   | 48   | 16   | 8     | 2      | 1½             | Arabian Pole |                         |  |  | 1           | 7,104  |      |
| 1920  | 480  | 160  | 80    | 20     | 15½            | 10           | Schœnus, Measuring-Line |  |  | 145         | 11,04  |      |

**Grecian Measures of Length reduced to English.**

|                  |                 |                  |                     |                 |                 |                    |                 |                      |             | Engl. Paces. | Feet.        | Inch. | Dec.                  |                      |                       |                      |        |        |       |        |       |
|------------------|-----------------|------------------|---------------------|-----------------|-----------------|--------------------|-----------------|----------------------|-------------|--------------|--------------|-------|-----------------------|----------------------|-----------------------|----------------------|--------|--------|-------|--------|-------|
| Da stylus, Digit |                 |                  |                     |                 |                 |                    |                 |                      |             | 0            | 0            | 0     | 0,7554 $\frac{1}{16}$ |                      |                       |                      |        |        |       |        |       |
| 4                | Doron           |                  |                     |                 |                 |                    |                 |                      |             | 0            | 0            | 0     | 3,0318 $\frac{1}{4}$  |                      |                       |                      |        |        |       |        |       |
| 10               | Dochme          | Lichas           |                     |                 |                 |                    |                 |                      |             |              | 0            | 0     | 0                     | 7,5546 $\frac{7}{8}$ |                       |                      |        |        |       |        |       |
| 11               | 2 $\frac{1}{2}$ | 1 $\frac{1}{10}$ | Orthodoron          |                 |                 |                    |                 |                      |             |              |              | 0     | 0                     | 0                    | 8,3101 $\frac{1}{16}$ |                      |        |        |       |        |       |
| 12               | 3               | 1 $\frac{1}{5}$  | 1 $\frac{1}{12}$    | Spithame        |                 |                    |                 |                      |             |              |              |       | 0                     | 0                    | 0                     | 9,0656 $\frac{1}{2}$ |        |        |       |        |       |
| 16               | 4               | 1 $\frac{6}{10}$ | 1 $\frac{5}{12}$    | 1 $\frac{1}{2}$ | Pes, Foot       |                    |                 |                      |             |              |              |       |                       | 0                    | 1                     | 0                    | 0,0875 |        |       |        |       |
| 18               | 4 $\frac{1}{2}$ | 1 $\frac{3}{4}$  | 1 $\frac{7}{12}$    | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | Pygme, Cubit       |                 |                      |             |              |              |       |                       |                      | 0                     | 1                    | 1      | 1,5284 |       |        |       |
| 20               | 5               | 2                | 1 $\frac{9}{12}$    | 1 $\frac{2}{3}$ | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$    | Pygon           |                      |             |              |              |       |                       |                      |                       | 0                    | 1      | 5      | 3,109 |        |       |
| 24               | 6               | 2 $\frac{1}{2}$  | 2 $\frac{1}{12}$    | 2               | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$    | 1 $\frac{1}{2}$ | Pechus, Cubit larger |             |              |              |       |                       |                      |                       |                      | 0      | 1      | 6     | 6,1312 |       |
| 96               | 24              | 9 $\frac{1}{2}$  | 8 $\frac{11}{12}$   | 8               | 6               | 5 $\frac{1}{2}$    | 4 $\frac{4}{5}$ | 4                    | Orgya, Pace |              |              |       |                       |                      |                       |                      |        | 0      | 6     | 0      | 0,525 |
| 9600             | 2400            | 960              | 872 $\frac{8}{12}$  | 800             | 600             | 532 $\frac{2}{3}$  | 480             | 400                  | 100         | Stadlus      | Englong      | 120   | 4                     | 4                    | 5                     |                      |        |        |       |        |       |
| 76800            | 19200           | 7680             | 6981 $\frac{9}{12}$ | 6400            | 4800            | 4266 $\frac{1}{2}$ | 3840            | 3200                 | 800         | Aulus        | Milion, Mile | 968   | 0                     | 0                    |                       |                      |        |        |       |        |       |

### *Longer Jewish Measures of Length.*

|       |         |                    |              |                   | Eng. Miles. | Paces. | Feet. | Dec. |
|-------|---------|--------------------|--------------|-------------------|-------------|--------|-------|------|
| Cubit |         |                    |              |                   | 0           | 0      | 1,824 |      |
| 400   | Stadium |                    |              |                   | 0           | 145    | 4,6   |      |
| 2000  | 5       | Sab. Day's Journey |              |                   | 0           | 729    | 3,0   |      |
| 4000  | 10      | 2                  | Eastern Mile |                   | 1           | 403    | 1,0   |      |
| 12000 | 30      | 6                  | 3            | Parasang          | 4           | 153    | 3,0   |      |
| 96000 | 240     | 48                 | 24           | 8 a Day's Journey | 33          | 172    | 4,0   |      |

**Roman Measures of Length reduced to English:**

|                     |       |              |      |          |         |      |        |         |          | Engl. | Paces. | Feet.  | Inch. | Dec. |
|---------------------|-------|--------------|------|----------|---------|------|--------|---------|----------|-------|--------|--------|-------|------|
| Digitus transversus |       |              |      |          |         |      |        |         |          | 0     | 0      | 0,725  | 4     |      |
| 1                   | Uncia |              |      |          |         |      |        |         |          | 0     | 0      | 0,967  |       |      |
| 4                   | 3     | Palmus minor |      |          |         |      |        |         |          | 0     | 0      | 2,901  |       |      |
| 16                  | 12    | 4            | Pes  |          |         |      |        |         |          | 0     | 0      | 11,604 |       |      |
| 20                  | 15    | 5            | 1    | Palmipes |         |      |        |         |          | 0     | 1      | 2,505  |       |      |
| 24                  | 18    | 6            | 1    | 1        | Cubitus |      |        |         |          | 0     | 1      | 5,406  |       |      |
| 40                  | 30    | 10           | 2    | 1        | Gradus  |      |        |         |          | 0     | 2      | 5,01   |       |      |
| 80                  | 60    | 20           | 5    | 4        | 3       | 2    | Passus |         |          | 0     | 4      | 10,02  |       |      |
| 10000               | 7500  | 2500         | 625  | 500      | 416     | 250  | 125    | Stadium |          | 120   | 4      | 4,5    |       |      |
| 80000               | 60000 | 20000        | 5000 | 4000     | 3333    | 2000 | 1000   | 8       | Milliare | 967   | 0      | 0      |       |      |



*The Proportions of the Long Measures of several Nations to the English Foot, by Mr. Greaves.*

The English Standard Foot being divided into 1000 equal Parts, the other Measures will have the Proportions to it, which follow.

|  |                       |
|--|-----------------------|
| The English Foot, from the Standard in Guildhall                     | 1000                  |
| The Paris Royal Foot, in the Châtelet                                | 1068                  |
| The Rhinland Foot, of Snellius.                                      | 1033                  |
| The Greek Foot   | 1007 $\frac{29}{100}$ |
| The Roman Foot, on the Monument of Cossutius                         | 967                   |
| The Roman Foot, on the Monument of Statilius                         | 972                   |
| The Roman Foot, of Villalpandus, taken from the Congius of Vespasian | 986                   |
| The Venetian Foot  | 1162                  |
| The Ell of Antwerp   | 2283                  |
| The Ell of Amsterdam   | 2268                  |
| The Ell of Leyden  | 2260                  |
| The Canna of Naples  | 687                   |

The Vatra or Varc of Almeria, and Gibraltar in Spain

|   |                   |
|---|-------------------|
| The Braccio of Florence   | 2760              |
| The Palm of Genoa   | 1913              |
| The Common Braccio of Sienna  | 815               |
| The Braccio of Sienna, for Linnen   | 1242              |
| The Palm of the Architects at Rome, whereof X make the Canna of the same Architects   | 1974              |
| The Palm of the Braccio of the Merchants and Weavers at Rome; from a Marble in the Capitol, with this Inscription, CVRANTE LV POETO | 732               |
| The Large Pique of the Turks at Constantinople  | 695 $\frac{1}{2}$ |
| The Small Pique of the Turks at Constantinople, is to the Larger, as 31 to 32.  | 2200              |
| The Arish of Persia   | 3197              |
| The Derah or Cubit of the Egyptians   | 1824              |

*The Proportions of several Long Measures to each other, by M. Picard.*

|   |                    |
|---|--------------------|
| The Rhinland or Leyden Foot (12 whereof make the Rhinland Perch) supposed | 696                |
| The English Foot  | 673 $\frac{1}{16}$ |
| The Paris Foot  | 720                |
| The Amsterdam Foot, from that of Leyden, by Snellius                      | 629                |
| The Danish Foot (two whereof make the Danish Ell)                         | 701 $\frac{1}{16}$ |
| The Swedish Foot  | 658 $\frac{1}{2}$  |
| The Brussels Foot   | 609 $\frac{1}{2}$  |
| The Dantzic Foot, from Hevelius's Selenographia                           | 636                |
| The Lyons Foot, by M. Auzout  | 757 $\frac{1}{2}$  |
| The Bologna Foot, by the same.  | 843                |
| The Braccio of Florence, by the same, and Father Merfenne                 | 1290               |
| The Palm of the Architects at Rome, according                             |                    |

|  |                           |
|--|---------------------------|
| to the Observation of Mess. Picard and Auzout                                | 494 $\frac{1}{2}$         |
| The Roman Foot in the Capitol, examin'd by Messieurs Picard and Auzout       | 653 or 653 $\frac{1}{16}$ |
| The same, from the Greek Foot  | 652                       |
| From the Vineyard Mattei   | 657                       |
| From the Palm  | 658                       |
| From the Pavement of the Pantheon, supposed to contain 10 Roman Feet         | 653                       |
| From a Slip of Marble in the same Pavement, supposed to contain 3 Roman Feet | 650                       |
| From the Pyramid of Cestius, supposed to contain 3 Roman Feet                | 650 $\frac{1}{2}$         |
| From the Diameters of the Columns in the Arch of Septimius Severus.          | 653 $\frac{1}{2}$         |
| From a Slip of Porphyry in the Pavement of the Pantheon                      | 653 $\frac{1}{2}$         |

**SQUARE or SUPERFICIAL MEASURES.**

English SQUARE or SUPERFICIAL MEASURES, are raised from the Yard of 36 Inches, multiplied into itself; and this producing 1296 square Inches in the square Yard, the Divisions of this are Square Feet and Inches; and the

Multiples, Poles, Roods, and Acres; as in the Table. French Square Measures, are regulated by 12 square Lines in the Inch square; 12 Inches in the Foot, 22 Feet in the Perch, and 100 Perches in the Arpent, or Acre.

*English Square Measures.*

| Inches  | Feet              | Yards            | Paces  | Poles | Rood | Acres |
|---------|-------------------|------------------|--------|-------|------|-------|
| 144     | 9                 | 2 $\frac{1}{2}$  | 10,89  | 40    | 4    |       |
| 1296    | 25                | 30 $\frac{1}{2}$ | 435,6  | 160   |      |       |
| 3600    | 272 $\frac{1}{2}$ | 1210             | 1743,6 |       |      |       |
| 39204   | 10890             | 4840             |        |       |      |       |
| 1568160 | 43560             |                  |        |       |      |       |
| 6272640 |                   |                  |        |       |      |       |

Grecian Square Measures, were the Plethron, Jugerum or bits: and Aroura, the Half of the Plethron. The Aroura Acre; by some said to contain 1444, by others 10000 Cubits of the Egyptians was the Square of 100 Cubits.

*Roman Square Measures reduced to English.*

The Integer was a Jugerum or Acre, which they divided like the Libra or As: Thus,

|          | Jugerum contain'd Square Feet. Scruples. | Engl. Roods. Sq. Poles. Sq. Feet. |
|----------|--|-----------------------------------|
| As       | 28800 288                                | 2 19 00                           |
| Deunx    | 26400 264                                | 2 10 204                          |
| Dextans  | 24000 240                                | 2 2 136                           |
| Dodrans  | 21600 216                                | 1 34 68                           |
| Bes      | 19200 192                                | 1 26 00                           |
| Septunx  | 16800 168                                | 1 17 204                          |
| Semis    | 14400 144                                | 1 9 136                           |
| Quincunx | 12000 120                                | 1 01 68                           |
| Triens   | 9600 96                                  | 0 33 00                           |
| Quadrans | 7200 72                                  | 0 24 204                          |
| Sextans  | 4800 48                                  | 0 16 136                          |
| Uncia    | 2400 24                                  | 0 08 68                           |



*Cubic Measures, or Measures of Capacity for Things Liquid.*

*English Liquid Measures*, were originally raised from Troy-Weight; it being enacted by several Statutes, That eight Pound Troy of Wheat, gather'd from the middle of the Ear, and well dried, should weigh a Gallon, of *Wine-Measure*; the Divisions and Multiples whereof were to form the other Measures: At the same time it was order'd, That there should be but one *Liquid Measure* in the Kingdom: yet Custom has prevailed, and there having been introduced a new Weight, viz. the Avoirdupois, we have now a second Standard Gallon adjusted thereto, and therefore exceeding the former, in the proportion of the Avoirdupois Weight to Troy Weight. From this latter Standard are raised two several Measures, the one for Ale, the other for Beer. The sealed Gallon at *Guildhall*, which is the Standard for Wines, Spirits, Oils, &c. is supposed to contain 231 Cubic Inches; on which Supposition, the other Measures raised therefrom, will contain as in the following Tables; yet, by actual Experiment made in 1688, before the Lord Mayor and the Commissioners of Excise, it was only found to contain 224 Cubic Inches: It was however agreed to continue the common supposed Contents of 231 Cubic Inches; so that all Computations stand on their old footing. Hence, as 12 is to 231, so is  $14\frac{2}{3}$  to 281, the Cubic Inches in the Ale Gallon: but in effect the Ale Quart contains  $70\frac{2}{3}$  Cubic Inches; on which Principle, the Ale and Beer Gallon will be 282 Cubic Inches. The several Divisions and Multiples of these Measures, and their Proportions, are exhibited in the Tables underneath.

*French Measures.* At *Paris*, and in a great part of the Kingdom, the Measures, to begin with the smallest, are, the Pisson, which contains six Cubic Inches; two Pissons make the Demi-septier; two Demi-septiers, the Septier or Chopine; two Chopines, a Pint; two Pints, the Quart or Pot; four Quarts, the Gallon, or Septier of Estimation; and thirty-six Septiers, the Muid, which is sub-divided into two Demi-Muids, four Quarter-Muids, and eight Half-Quarter-Muids. See MUID, SEPTIER, QUART, CHOPINE, &c. From the Quart are likewise raised the Measures used in other Parts, as the Queue used in *Orleans*, *Blois*, &c. containing a *Paris* Muid and a half, or 420 Pints; the Tun used at *Bayonne* and *Bordeaux*, consisting of four Barriques, and equal to three *Paris* Muids; at *Orleans*, to two: so that the first Tun contains 864 Pints, and the second 576. See TUN. The Demi-Queue, used in *Champagne*, 96 Quarts; the Pipe, used in *Anjou* and *Poitou*, containing two Buffards, equal to two Demi-Queues of *Orleans*, &c. or a Muid and a half of *Paris*, or 432 Pints. See PIPE. The Millerolle used in *Provence*, containing 66 *Paris* Pints; and the Poincon used at *Nantes*, in *Touraine* and the *Bleffois*, equal to half the *Orleans* Tun. The Poincon used at *Paris*, is the same with the Demi-Queue. See QUEUE.

*Dutch Liquid Measures.* At *Amsterdam*, their Measures, to begin with the Diminutions, are, Mingles, Mingeebles, or Bottles, equal to *French* Quarts, and containing two Pounds, four Ounces, Marc, of an ordinary Liquor. The Mingle is divided into two Pints, four half Pints, eight Musties, sixteen half Musties, &c. Seven hundred and seventy Mingles make their Tun. The Viertel, or Verge, consists of five Mingles, and one Sixth of a Mingle. The Wine Viertel is just six Mingles. The Stekan, or Stekamen, contains sixteen Mingles. The Anker contains two Stekans; and four Ankers, the Aem. For Oils they use the Tun, which contains six Aems, or Ams; equal to 1600 *Paris* Pints. See TUN.

*Spanish Liquid Measures*, are the Botte, containing between thirty-six and thirty-seven *Dutch* Stekans, holding about a thousand Weight. The Botte consists of thirty Robes, each weighing twenty-eight Pounds. Each Robe is again divided into eight Sommes, and the Somme into

four Quarts. The Pipe consists of eighteen Robes.

*Portuguese Liquid Measures*, are Bottes, Almudes, Cavadas, Quatas; and for Oil, Alguiers or Cantars. The *Portuguese* Botte, is somewhat smaller than the *Spanish*; the latter being equal to thirty-six or thirty-seven Stekans, and the former only to twenty-five or twenty-six. The Quatas is one Fourth of the Cavadas. The Cavadas, or Cavado, is the same with the *Dutch* Mingle. Six Cavadas make an Alquier, and two Alquieres one Almude, or Almoud; twenty-six Almouds, a Botte.

*Italian Liquid Measures.* At *Rome* are the Boccale, or Bottle, containing a little more than a *Paris* Pint. Seven Boccales and a half make the Rubbia, and thirteen Rubbia and a half, the Brante; so that the Brante contains ninety-six Boccales. At *Florence*, the Staro or Staio, containing three Barrils, and the Barril twenty Fiasco's or Flasks, nearly equal to *Paris* Pints. At *Verona*, they use the Basse, sixteen whereof make a Brante; the Brante contains ninety-six Boccales, or thirteen Rubbias and a half. At *Venice*, the Amphora, containing two Bottes; the Botte, four Bigors; the Bigot, or Bigout, four Quarts; the Quart, four Tischaufferas. The *Venetian* Botte is again divided into Mustaches, seventy-six whereof make the Amphora. At *Ferrara*, the Mastilly, containing eight Sechys. In *Istria*, Sechys; six whereof make the Urna. In *Calabria*, and the *Pouille*, Pignatoli's, equal to *French* Pints; thirty-two Pignatoli's make the Staro, or Staio; and ten Staro's, the Salma.

*German Liquid Measures.* The Feoder is used almost throughout all *Germany*, but with some difference in its Length, as well as its Sub-divisions. The Feoder is supposed the Load of a Waggon with two Horses. Two Feoders and a half make the Reoder; six Ames, the Feoder; twenty Fertels, the Ame; and four Massems, or Masses, the Fertel: so that the Roder contains 1200 Masses, the Feoder 480, the Ame 80, and the Fertel 41. At *Nuremberg*, the Division of the Feoder, is into twelve Heemers, and the Heemer into sixty-four Masses. At *Vienna*, they divide the Feoder into thirty-two Heemers, the Heemer into thirty-two Achtelings, and the Achteling into four Seiltins. The Ame, there, is eighty Masses; the Fertel, call'd also Schreve, four Masses; and the Driolinck twenty-four Heemers. At *Ausbourg*, the Feoder is divided into eight Jez; the Je into two Muids, or twelve Besons; the Beson into eight Masses, which makes 768 Masses in the Feoder, as in that of *Nuremberg*. At *Heidelberg*, the Feoder is divided into ten Ames; the Ame into twelve Vertels; and the Vertel into four Masses. In *Wurtemberg*, the Feoder is divided into six Ames; the Ame into sixteen Yunes; the Yune into ten Masses.

*Liquid Measures on the Coasts of Barbary.* At *Tripoli*, &c. they use the Rotolo, or Rotoli; thirty-two whereof make the Matuli. At *Tunis*, forty-two of the Rotoli of *Tripoli*, make a Matara, or Mataro; and the other Places on the same Coast use nearly the same Measures. It may be here observed, that most, if not all the *Eastern* Nations, with whom the *Europeans* traffic, have not any such thing as Measures of Capacity, whether for Things liquid or dry; but that they sell every thing, even Liquors, by the Weight. We may, however, rank among the Number of *Liquid Measures*, the Cocoa and Canan of *Siam*. The first are the Cocoa-shells cleared of their Kernel. And since these are not all of the same Capacity, they measure them with Cauris, or little Shells found in the *Maldives*; which also serve for Money in some States of the *Indies*. Some Cocoa's hold a thousand Cauris, and some only five hundred. Above the Cocoa's is the Canan, a little Measure used in the same Country, and called by the *Portuguese*, Choup; holding about a *Paris* Quart.



English Measures of Capacity for Liquids.

Wine Measure.

| Solid<br>Inches    |      |  |                  |  |                 |  |                 |  |                 |  |
|--------------------|------|--|------------------|--|-----------------|--|-----------------|--|-----------------|--|
| 28 $\frac{1}{2}$   | Pint |  |                  |  |                 |  |                 |  |                 |  |
| 231                | 8    |  | Gallon           |  |                 |  |                 |  |                 |  |
| 4158               | 144  |  | 18               |  | Rundlet         |  |                 |  |                 |  |
| 7276 $\frac{1}{2}$ | 252  |  | 31 $\frac{1}{2}$ |  | 1 $\frac{1}{4}$ |  | Barrel          |  |                 |  |
| 9702               | 336  |  | 42               |  | 2 $\frac{1}{8}$ |  | 1 $\frac{1}{3}$ |  | Tierce          |  |
| 14553              | 504  |  | 63               |  | 3 $\frac{1}{2}$ |  | 2               |  | 1 $\frac{1}{2}$ |  |
| 19279              | 672  |  | 84               |  | 4 $\frac{2}{3}$ |  | 2 $\frac{2}{3}$ |  | Hogshead        |  |
| 29106              | 1008 |  | 126              |  | 7               |  | 4               |  | 3               |  |
| 58212              | 2016 |  | 252              |  | 14              |  | 8               |  | 6               |  |
|                    |      |  |                  |  |                 |  |                 |  | 4               |  |
|                    |      |  |                  |  |                 |  |                 |  | 3               |  |
|                    |      |  |                  |  |                 |  |                 |  | 2               |  |
|                    |      |  |                  |  |                 |  |                 |  | 1 $\frac{1}{2}$ |  |
|                    |      |  |                  |  |                 |  |                 |  | Butt            |  |
|                    |      |  |                  |  |                 |  |                 |  | 2               |  |
|                    |      |  |                  |  |                 |  |                 |  | Tun             |  |



Cubic Measures of Capacity for Things Dry.

*English Dry or Common Measures*, are raised from the *Winchester Gallon*; which contains 272 $\frac{1}{2}$  Solid Inches, to hold of pure Running or Rain-Water, nine Pound, thirteen Ounces. This seems to stand on the foot of the Old Wine Gallon, of 224 Cubic Inches; 12 being to 14 $\frac{1}{2}$ , as 224 to 272 $\frac{1}{2}$ . Yet by an Act of Parliament, made 1697, it is decreed, That a round Bushel, eighteen Inches and a half wide, and eight deep, is a legal *Winchester Bushel*. But such a Vessel will only hold 250.42 Cubic Inches; consequently the Gallon will only contain 268 $\frac{1}{2}$  Cubic Inches. The Divisions and Multiples are as in the Table following.

*French Dry Measures*, are the Litron, Bushel, Minot, Mine, Seprier, Muid, and Tun. The Litron is divided into two Demi-litrons, and four Quarter-litrons, and contains 36 Cubic Inches of *Paris*. By Ordonnance, the Litron is to be three Inches and a half high; and three Inches, ten Lines broad. The Litron for Salt is larger, and is divided into two Halves, four Quarters, eight Demi-quarters, and sixteen Mesurettes. The Bushel is different in different Jurisdictions. At *Paris*, it is divided into Demi-bushels; each Demi-bushel into two Quarts; the Quart into two Half-quarts; and the Half-quart into two Litrons: so that the Bushel contains sixteen Litrons. By Ordonnance, the *Paris Bushel* is to be eight Inches, two Lines and a half high; and ten Inches broad, or in Diameter, within-side. The Minot consists of three Bushels; the Mine of two Minots, or six Bushels; the Seprier of two Mines, or twelve Bushels; and the Muid of twelve Septiers, or a hundred forty-four Bushels. The Bushel for Oats is estimated double that of any other Grain; so that there go twenty-four Bushels to make the Septier, and two hundred eighty-eight to make the Muid. It is divided into four Picotins; the Picotin containing two Quarts, or four Litrons. The Bushel for Salt is divided into two Half-Bushels, four Quarters, eight Half-Quarters, and sixteen Litrons; four Bushels make a Minot, sixteen a Septier, and a hundred ninety-two a Muid. The Bushel for Wood is divided into Halves, Quarters, and Half-Quarters. Eight Bushels make the Minot, sixteen a Mine; twenty Mines, or three hundred and twenty Bushels, the Muid. For Plaster, twelve Bushels make a Sac, and thirty-six Sacs a Muid. For Lime, three Bushels make a Minot, and forty-eight Minots a Muid. See BUSHEL. The Minot is, by Ordonnance, to be eleven Inches, nine Lines high; and fourteen Inches eight Lines in diameter. The Minot is composed of three Bushels, or sixteen Litrons; four Minots make a Septier, and forty-eight a Muid. The Mine is no real Vessel, but an Estimation of several others. At *Paris*, the Mine contains six Bushels, and twenty-four make the Muid. At *Rouen*, the Mine is four Bushels; and at *Dieppe*, eighteen Mines make a *Paris Muid*. See MUID. The Septier differs in different Places: At *Paris*, it contains two Mines, or eight Bushels; and twelve Septiers the Muid. At *Rouen*, the Septier contains two Mines, or twelve Bushels. Twelve Septiers make a Muid at *Rouen*, as well as *Paris*; but twelve of the latter are equal to fourteen of the former. At *Toulon*, the Septier contains a Mine and half; three of which Mines make the Septier of *Paris*. See SEPTIER. The Muid, or Muid, of *Paris*, consists of

twelve Septiers; and is divided into Mines, Minots, Bushels, &c. That for Oats is double that for other Grain; i.e. contains twice the Number of Bushels. At *Orleans*, the Muid is divided into Mines; but those Mines only contain two *Paris Septiers* and a half. See MUID. In some Places they use the Tun in lieu of the Muid; particularly at *Nantes*, where it contains ten Septiers of sixteen Bushels each, and weighs about three thousand three hundred Pounds. Three of these Tuns make twenty-eight *Paris Septiers*. At *Rochel*, &c. the Tun contains forty-two Bushels, and weighs two per Cent. less than that of *Nantes*. At *Brest*, it contains twenty Bushels, is equal to ten *Paris Septiers*, and weighs about two thousand two hundred and forty Pounds. See TUN.

*Dutch, Swedish, Polish, Prussian, and Muscovite Dry Measures*. In these Places they estimate their Dry Things on the foot of the *Last, Lest, Letb, or Lecht*; so called, according to the various Pronunciations of the People who use it. In *Holland*, the Last is equal to nineteen *Paris Septiers*, or thirty-eight *Bordeaux Bushels*, and weighs about 4560 Pounds; the Last they divide into twenty-seven Mudes, and the Mude into four Schepels. In *Poland*, the Last is forty *Bordeaux Bushels*, and weighs about 4800 *Paris Pounds*. In *Prussia*, the Last is 133 *Paris Septiers*. In *Sweden* and *Muscovy*, they measure by the Great and Little Last; the first containing twelve Barrils, and the second half as many. See LAST. In *Muscovy*, they likewise use the Chefford, which is different in various Places: That of *Archangel* is equal to three *Rouen Bushels*.

*Italian Dry Measures*. At *Venice, Leghorn, and Lucca*, they estimate their dry Things on the foot of the *Staro* or *Stajo*; the *Staro* of *Leghorn* weighs 54 Pounds: 112 *Staro's*, and seven Eighths, are equal to the *Amsterdam Last*. At *Lucca*, 119 *Staro's* make the Last of *Amsterdam*. The *Venetian Staro* weighs 128 *Paris Pounds*; the *Staro* is divided into four Quarters. 35 *Staro's* and  $\frac{1}{2}$ , or 140 Quarters  $\frac{1}{2}$ , make the Last of *Amsterdam*. At *Naples*, and other Parts, they use the *Tomole*, or *Tomalo*, equal to one Third of the *Paris Septier*. 36 *Tomols* and a half, make the Carro; and a Carro and a half, or 54 *Tomols*, make the Last of *Amsterdam*. At *Palermo*, 16 *Tomoli* make the Salma; and four *Mondili*, the *Tomolo*. Ten *Salma's*  $\frac{1}{2}$ , or 171 *Tomoli*  $\frac{1}{2}$ , make the Last of *Amsterdam*.

*Flemish Dry Measures*. At *Antwerp*, &c. they measure by the Vertel; thirty-two and a half whereof, make nineteen *Paris Septiers*. At *Hambourg*, the Schepel; ninety whereof make nineteen *Paris Septiers*.

*Spanish and Portuguese Dry Measures*. At *Cadiz, Bilbao, and St. Sebastian*, they use the *Fanequa*; twenty-three whereof make the *Nantes*, or *Rochel Tun*; or nine *Paris Septiers* and a half: tho the *Bilboa Fanequa* is somewhat larger; infomuch that twenty one *Fanequas* make a *Nantes Tun*. At *Seville*, &c. they use the *Anagros*, containing a little more than the *Paris Mine*; thirty-six *Anagros* make nineteen *Paris Septiers*. At *Bayonne*, &c. the *Conqua*; thirty whereof are equal to nine *Paris Septiers* and a half. At *Lisbon*, the *Alquier*, a very small Measure; 240 whereof make 19 *Paris Septiers*; 60 the *Lisbon Muid*.

English Dry or Corn Measures.

| Solid Inches      | Pint | Gallon | Peck | Bushel | Strike | Carnock or Coom | Scem or Quarte | Way  | Last |
|-------------------|------|--------|------|--------|--------|-----------------|----------------|------|------|
| 34 $\frac{1}{2}$  | 8    | 2      | 4    | 2      | 2      | 2               | 6              | 12   | 12   |
| 272 $\frac{1}{2}$ | 16   | 8      | 8    | 4      | 4      | 4               | 12             | 24   | 24   |
| 544 $\frac{1}{2}$ | 64   | 32     | 32   | 16     | 16     | 16              | 48             | 96   | 96   |
| 2178              | 128  | 64     | 64   | 32     | 32     | 32              | 96             | 192  | 192  |
| 17424             | 256  | 128    | 128  | 64     | 64     | 64              | 192            | 384  | 384  |
|                   | 512  | 256    | 256  | 128    | 128    | 128             | 384            | 768  | 768  |
|                   | 3072 | 1536   | 1536 | 768    | 768    | 768             | 2304           | 4608 | 4608 |
|                   | 5120 | 2560   | 2560 | 1280   | 1280   | 1280            | 3840           | 7680 | 7680 |

Jewish Dry Measures reduced to English.

| Gachal | Cab | Gomor           | Seah | Epha | Letech | Chomer, Coron | Pecks. | Gall. | Pints.           | Sol. | Inc. | Dec. |
|--------|-----|-----------------|------|------|--------|---------------|--------|-------|------------------|------|------|------|
| 20     | 1   | 1               | 1    | 1    | 1      | 1             | 0      | 0     | 17               | 0    | 0033 |      |
| 36     | 14  | 1               | 1    | 1    | 1      | 1             | 0      | 0     | 24               | 0    | 110  |      |
| 120    | 6   | 3 $\frac{1}{2}$ | 1    | 1    | 1      | 1             | 0      | 0     | 51 $\frac{1}{2}$ | 1    | 111  |      |
| 360    | 18  | 10              | 3    | 1    | 1      | 1             | 3      | 0     | 3                | 12   | 11   |      |
| 1800   | 90  | 50              | 15   | 5    | 1      | 1             | 16     | 0     | 0                | 26   | 58   |      |
| 3600   | 180 | 100             | 30   | 10   | 2      | 1             | 32     | 0     | 1                | 19   | 04   |      |



Attick *Dry Measures reduced to English.*

|             |                |           |         |                 |         | Pecks.   | Gall. | Pints.          | Sol. Inch. |      |
|-------------|----------------|-----------|---------|-----------------|---------|----------|-------|-----------------|------------|------|
| Cochliarion |                |           |         |                 |         | 0        | 0     | $\frac{1}{120}$ | 0,004      |      |
| 10          | Cyathus        |           |         |                 |         | 0        | 0     | $\frac{1}{12}$  | 0,04       |      |
| 15          | $1\frac{1}{2}$ | Oxubaphon |         |                 |         | 0        | 0     | $\frac{1}{8}$   | 0,06       |      |
| 16          | 6              | 4         | Cortyle |                 |         | 0        | 0     | $\frac{1}{2}$   | 0,24       |      |
| 120         | 12             | 8         | 2       | Xestes, Sextary |         | 0        | 0     | 1               | 0,48       |      |
| 180         | 18             | 12        | 3       | $1\frac{1}{2}$  | Choinix | 0        | 0     | $1\frac{1}{2}$  | 0,72       |      |
| 8640        | 864            | 576       | 144     | 72              | 48      | Medimnus | 4     | 1               | 1          | 0,53 |

Roman *Dry Measures reduced to English.*

| Ligula |                |            |        |           | Pecks.   | Gall.  | Pints.         | Sol. | Inc. | Dec. |
|--------|----------------|------------|--------|-----------|----------|--------|----------------|------|------|------|
| 4      | Cyathus        |            |        |           | 0        | 0      | $0\frac{1}{4}$ |      | 0,01 |      |
| 6      | $1\frac{1}{2}$ | Acetabulum |        |           | 0        | 0      | $0\frac{1}{2}$ |      | 0,04 |      |
| 24     | 6              | 4          | Hemina |           | 0        | 0      | $0\frac{1}{2}$ |      | 0,06 |      |
| 48     | 12             | 8          | 2      | Sextarius | 0        | 0      | I              |      | 0,24 |      |
| 384    | 96             | 64         | 16     | 8         | Semimod. | 0      | I              | 0    | 0,48 |      |
| 768    | 192            | 128        | 32     | 16        | 2        | Modius | I              | 0    | 0    | 3,48 |
|        |                |            |        |           |          |        |                |      | 7,68 |      |

*Note.* The usual MEASURE of Wood for Firing, is the Cord; four Foot high, as many broad, and eight long; divided into two half Cords, call'd Ways, and by the French, Membrures, from the Pieces, stuck upright, to bound them; or Voyes, as being supposed half a Waggon Load. See CORN.

The MEASURE for Horses, is the Hand or Handful; which, by the Statute, contains four Inches. See HAND, &c.

MEASURE is also used to signify the Cadence, and Time observed in Poetry, Dancing, and Music, to render them regular, and agreeable. The different Measures in Poetry, are the different Manners of ordering and combining the Quantities, or the long and short Syllables. Thus Hexameter, Pentameter, Iambic, Sapphic Verses, &c. consist of different Measures. See QUANTITY, VERSE, &c.

In English Verses, the Measures are extremely various and arbitrary, every Poet being at liberty to introduce any new Form he pleases. The most used are, the Heroic, generally consisting of five long, and five short Syllables; Verses of four Feet; and of three Feet, and a Cefure or single Syllable. The Antients, by variously combining and transposing their Quantities, made a vast Variety of different Measures. Of Words, or rather Feet of two Syllables, they form'd a Spondee, consisting of two long Syllables; a Pirrbic, of two short Syllables; a Trochee, of a long and a short Syllable; an Iambic, of a long and a short Syllable. Of their Feet of three Syllables, they form'd a Moloss, consisting of three long Syllables; a Tribrach, of three short Syllables; a Dactyl, of one long, and two short Syllables; an Anapest, of two short and two long Syllables. The Greek Poets contrived 124 different Combinations or Measures, under as many different Names, from Feet of two Syllables to those of six. See SPONDEE, DACTYL, RHIME, FOOT, &c.

MEASURE, in Music, is the Interval, or Space of Time, which the Person, who regulates the Music, takes between the raising and letting fall of his Hand, in order to conduct the Movement sometimes quicker, and sometimes slower, according to the Kind of Music, or the Subject that is sung or play'd. See TIME. The ordinary or common Measure, is one Second, or sixtieth part of a Minute, which is nearly the Space between the Beats of the Pulse or Heart; the Systole, or Contraction of the Heart, answering to the Elevation of the Hand, and its Diastole, or Dilatation, to the letting it fall. The Measure usually takes up the Space that a Pendulum, of two Foot and a half long, employs in making a Swing or Vibration. See VIBRATION.

The Measure is regulated according to the different Quality or Value of the Notes in the Piece; by which the Time that each Note is to take up, is express'd. The Semi-Breve, for instance, holds one Rise, and one Fall; and this is call'd the whole Measure. the Minim, one Rise, or one Fall; and the Crochet, half a Rise, or half a Fall, there being four Crochets in a full Measure. See NOTE.

Binary, or Double MEASURE, is that wherein the Rise and Fall of the Hand are equal.

Ternary, or Triple MEASURE, is that wherein the Fall is double to the Rise; or where two Minims are play'd during a Fall, and but one in a Rise: To this purpose,

the Number 3 is placed at the beginning of the Lines, when the Measure is intended to be triple; and a C, when the Measure is to be common or double.

This rising and falling of the Hands, was call'd by the Greeks *apoc* and *thos*. St. Augustin calls it *Plausus*, and the Spaniards, *Compas*. See BEATING of Time.

MEASURING. To define Measuring Geometrically, it is the assuming any certain Quantity, and expressing the Proportion of other similar Quantities to the same: To define it popularly, Measuring is the using a certain known Measure, and determining, thereby, the precise Extent, Quantity or Capacity of any thing. See MEASURE.

MEASURING, in the general, makes the practical Part of Geometry; see GEOMETRY: From the various Subjects whereon it is employ'd, it acquires various Names, and constitutes various Arts. Thus

MEASURING of Lines, or Quantities of one Dimension, we call Longimetry; see LONGIMETRY: And when those Lines are not extended parallel to the Horizon, Altimetry; see ALTIMETRY. When the different Altitudes of the two Extremes of the Line are alone regarded, Levelling; see LEVELLING.

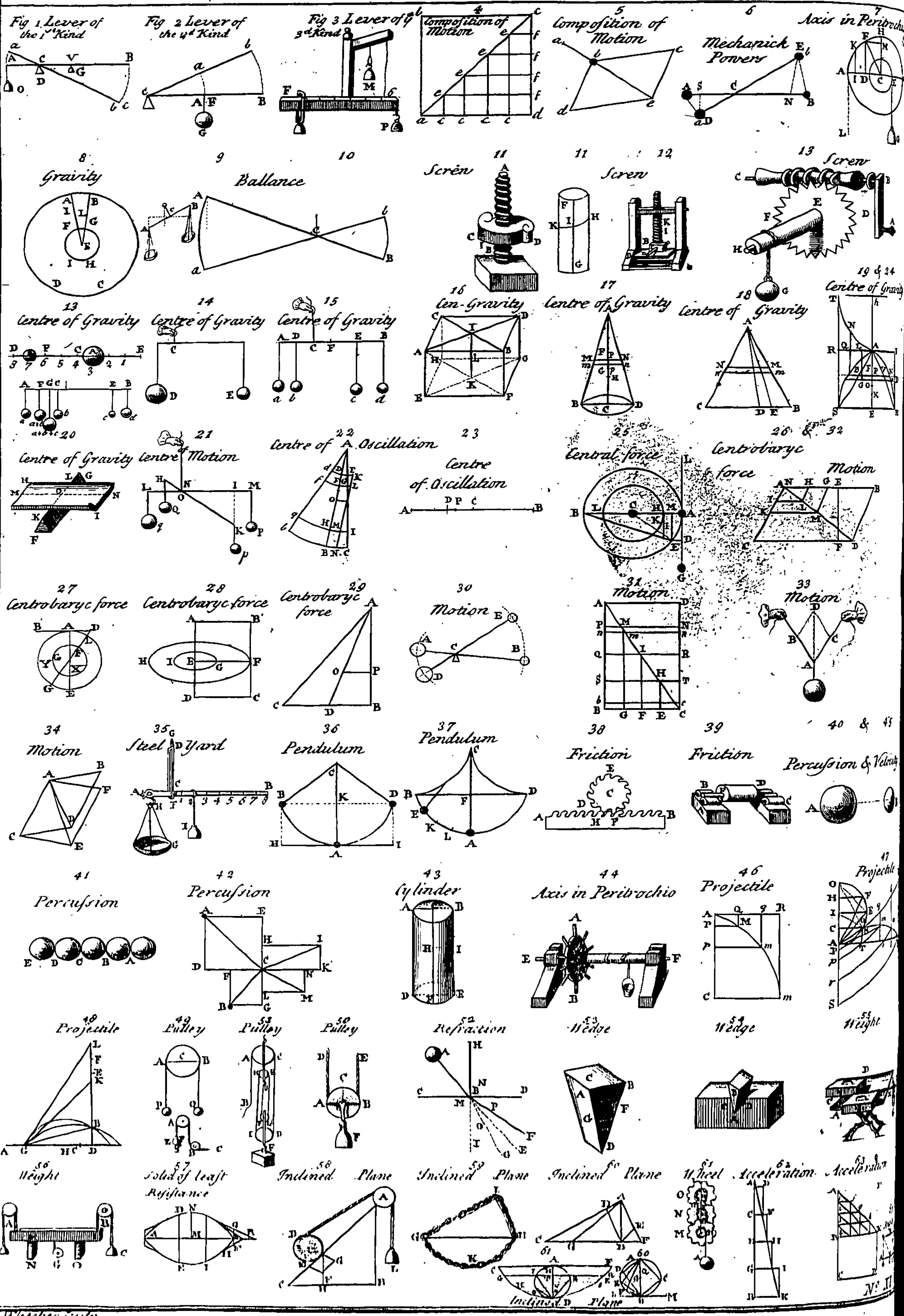
MEASURING of Superficies, or Quantities of two Dimensions, is variously denominated, according to its Subjects; when conversant about Lands, 'tis called Geodesia, or Surveying; in other Cases, simply Measuring. The Instruments used are the Ten-Foot Rod, Chain, Compass, Circumferentor, &c. See SUPERFICIES; see also SURVEYING, &c.

MEASURING of Solids, or Quantities of three Dimensions, we call Stereometry; see STEREOMETRY: where 'tis conversant about the Capacities of Vessels, or the Liquors they contain particularly, Gauging. See GAUGING. The Instruments are the Gauging-Rod, Sliding-Rule, &c. See SOLID; see also GAUGING-ROD, SLIDING-RULE, &c.

From the Definition of Measuring, where the Measure is express'd to be similar or homogeneous, i. e. of the same kind with the Thing measured; 'tis evident that in the first Case, or in Quantities of one Dimension, the Measure must be a Line; in the second, a Superficies; and in the third, a Solid. For a Line, v. g. cannot measure a Surface; to measure, being no more than to apply the known Quantity to the unknown, till the two become equal. Now a Surface has Breadth, and a Line has none; but if one Line hath no Breadth, two or a hundred have none: A Line, therefore, can never be applied so often to a Surface, as to be equal to it, i. e. to measure it. And from the like Reasoning it is evident, a Superficies, which has no Depth, cannot be equal to, i. e. cannot measure a Solid, which has. While a Line continues such, it may be measured by any part of itself; but when the Line begins to flow, and to generate a new Dimension, the Measure must keep pace, and flow too; i. e. as the one commences Superficies, the other must do so too: Thus we come to have Square Measures, and Cubic Measures. See SQUARE and CUBE. Hence we see why the Measure of a Circle is an Arch, or part of the Circle; for a right Line can only touch a Circle in one Point, but the Periphery of a Circle consists of infinite Points: The right Line therefore, to measure the Circle, must be applied infinite Times, which is impossible. Again, the right Line only touches the Circle,



# TAB: MECHANICKS





Circle in a Mathematical Point; which has no Parts or Dimensions, consequently no Magnitude: but a Thing that has no Magnitude or Dimensions, bears no proportion to another that has; and cannot therefore measure it. Hence we see the Reason of the Division of Circles into 360 Parts or Arches, called Degrees. See DEGREE.

MEASURING of Triangles, or from three given Sides or Angles, to determine all the rest, is call'd Trigonometry. See TRIGONOMETRY.

MEASURING of the Air; its Pressure, Spring, &c. is called Aerometry or Pneumatics. See AEROMETRY, &c.

MEATUS Cysticus, a Biliary Duct, about the Bigness of a Goose-Quill, which at about two Inches distance from the Gall-Bladder, is join'd to the Meatus Hepaticus; and these together form the Ductus Communis. See BILE.

MEATUS Urinarius, or Urinary Passage, in Women, is very short, lined internally with a very thin Membrane; next to which is a Coat of a white Substance. Thro this Coat, from some Lacune in it, pass several Ducts, which convey a limpid glutinous Matter, serving to anoint the Extremity of the Urethra. See URINARY.

MEATUS Auditorius, the Entrance of the Ear; a cartilaginous Substance, irregularly divided with fleshy membranous Interpositions in several Parts of it, not unlike the Bronchia in the Lungs, only its fleshy Fibres are here thicker. The inner Part, or that next the Brain, is bony. It is lined throughout with a thin Membrane, derived from the Skin, which is continued on the Membrana Tympani, where it becomes thinner. See EAR.

From the beginning of the Meatus, almost half-way, arise a great number of small Hairs, at whose Roots issue the Ear-Wax, which is intangled in those Hairs, the better to break the Impetus of the external Air, and prevent its too suddenly rushing in on the Membrana Tympani. See CERUMEN.

MECHANICS, from μηχανή, Engine, is a mix'd Mathematical Science, which considers Motion, its Nature and Laws, with the Effects thereof, in Machines, &c. See MOTION.

That part of Mechanics which considers the Motion of Bodies arising from Gravity, is by some call'd Statics. See GRAVITY, STATICS, RESISTENCE, &c. In distinction from that part which considers the Mechanic Powers, and their Application, properly call'd Mechanics. See MECHANIC POWERS, MACHINE, ENGINE, FRICTION, EQUILIBRIUM, &c.

MECHANIC Powers, are the five simple Machines; to which all others, how complex soever, are reducible, and of the Assemblage whereof they are all compounded. See POWER and MACHINE.

These Mechanic Powers (as they are call'd) are six, viz. the Ballance, Lever, Wheel, Pulley, Wedge, and Screw; which see under their proper Heads: BALLANCE, LEVER, &c.

They may, however, be all reduced to one, viz. the Lever. The Principle whereon they depend, is the same in all, and may be conceived from what follows.

The Momentum, Impetus, or Quantity of Motion of any Body, is the Fastum of its Velocity, (or the Space it moves in a given Time, see MOTION) multiplied into its Mass. Hence it follows, that two unequal Bodies will have equal Moments, if the Lines they describe be in a reciprocal Ratio of their Masses. Thus, if two Bodies, fasten'd to the Extremities of a Ballance or Lever, be in a reciprocal Ratio of their Distances from the fixed Point; when they move, the Lines they describe will be in a reciprocal Ratio of their Masses. V. g. If the Body A (Tab. MECHANICS, fig. 6.) be triple the Body B, and each of them be fix'd to the Extremities of a Lever AB, whose Fulcrum, or fix'd Point, is C, as that the Distance of BC be triple the Distance CA; the Lever cannot be inclined on either side: but that the Space BE, pass'd over by the less Body, will be triple the Space AD, pass'd over by the great one. So that their Motions or Moments will be equal, and the two Bodies in Equilibrio. See MOTION. Hence that noble Challenge of Archimedes, datis Viribus, datum Pondus movere; for as the Distance CB may be increased infinitely, the Power or Moment of A may be increased infinitely. So that the whole of Mechanics is reduced to the following Problem.

Any Body, as A, with its Velocity C, and also any other Body, as B, being given; to find the Velocity necessary to make the Moment, or Quantity of Motion in B, equal to the Moment of A, the given Body. Since now the Moment of any Body is equal to the Rectangle under the Velocity, and the Quantity of Matter; as B : A :: C : to a fourth Term, which will be c, the Celerity proper to B, to make its Moment equal to that of A. Wherefore in any Machine or Engine, if the Velocity of the Power be made to the Velocity of the Weight: reciprocally as the Weight is to the Power; then shall the Power always sustain, or if the Power be a little increas'd, move the Weight.

Let, for instance, AB be a Lever, whose Fulcrum is at c, and let it be moved into the Position acb. Here the Velocity of any Point in the Lever, is as the Distance from the Centre. For let the Point A describe the Arch Aa, and the Point B the Arch Bb; then these Arches will be the Spaces described by the two Motions: but since the Motions are both made in the same time, the Spaces will be as the Velocities. But it is plain, the Arches Aa and Bb will be to one another, as their Radii AC and AB, because the Sectors ACa, and Bcb, are similar: wherefore the Velocities of the Points A and B, are as their Distances from the Centre C. Now if any Powers are applied to the Ends of the Lever A and B, in order to raise its Arms up and down; their Force will be expounded by the Perpendiculars Sa, and bN; which being as the right Sines of the former Arches, bB and aA, will be to one another also as the Radii Ac, and cB; wherefore the Velocities of the Powers, are also as their Distances from the Centre. And since the Moment of any Body is as its Weight, or gravitating Force, and its Velocity conjunctly; if different Powers or Weights are applied to the Lever, their Moments will always be as the Weights and their Distances from the Centre conjunctly. Wherefore if to the same Lever, there be two Powers or Weights apply'd reciprocally, proportional to their Distances from the Centre, their Moments will be equal; and if they act contrarily, as in the Case of a Stilliard, the Lever will remain in an horizontal Position, or the Ballance will be in Equilibrio. And thus it is easy to conceive how the Weight of one Pound may be made to equi-ballance a thousand, &c. Hence also it is plain, that the Force of the Power is not at all increased by Engines; only the Velocity of the Weight in either lifting or drawing, is so diminish'd by the Application of the Instrument, as that the Moment of the Weight is not greater than the Force of the Power. Thus, for instance; if any Force can elevate a Pound Weight with a given Velocity, it is impossible by any Engine to effect, that the same Power shall raise two Pound Weight with the same Velocity: But by an Engine it may be made to raise two Pound Weight, with half the Velocity; or 10000 times the Weight with  $\frac{1}{10000}$  of the former Velocity. See PERPETUAL MOTION.

MECHANICAL Curve, a Term used by Des Cartes for those Curves, which cannot be defined by any Equation; in opposition to Algebraic, which they call Geometric Curves. These Curves, Sir Is. Newton, M. Leibnitz, &c. call transcendent Curves; and dissent from Cartes, in excluding them out of Geometry. Leibnitz has even found a new kind of transcendent Equations, whereby these Curves are defined: They are of an indefinite nature; that is, don't continue constantly the same in all Points of the Curve; in opposition to Algebraic Equations, which do. See CURVE.

MECHANICAL Affections, are such Properties in Matter, as result from their Figure, Bulk, and Motion: MECHANICAL Causes are those founded on such Affections; and MECHANICAL Solutions are Accounts of Things on the same Principles.

MECHANICAL Philosophy, is the same with the Corpuscular Philosophy; viz. that which explains the Effects of Nature, and the Operations of Corporeal Things, on the Principles of Mechanics; the Figure, Arrangement, Disposition, Motion, Greatness or Smallness of the Parts which compose natural Bodies. See CORPUSCULAR.

The Term MECHANICAL is also applied to a kind of Reasoning, which of late has got a great deal of ground both in Physics and Medicine; so call'd, as being conformable to what is used in the Contrivance, and accounting for the Properties and Operations of Machines. This seems to have been the Result of rightly studying the Powers of a human Mind, and the Ways by which it is only fitted to get acquaintance with material Beings: For considering an Animal Body as a Composition out of the same Matter, from which all other material Beings are formed, and to have all those Properties, which concern a Physician's Regard only, by virtue of its peculiar Make and Constructure; it naturally leads a Person, who trusts to proper Evidences, to consider the several Parts, according to their Figures, Contexture, and Use; either as Wheels, Pullies, Wedges, Levers, Screws, Chords, Canals, Cisterns, Strainers, and the like; and throughout the whole of such Enquiries, to keep the Mind close in view of the Figures, Magnitudes, and mechanical Powers of every Part or Movement; just in the same manner, as is used, to enquire into the Motions and Properties of any other Machine. For which purpose it is frequently found helpful to decypher, or picture out in Diagrams, whatsoever is under consideration, as it is customary in common Geometrical Demonstrations; and the Knowledge obtained by this Procedure, is called Mechanical Knowledge.



The Term **MECHANICAL** is also used in Mathematics, to signify a Construction or Proof of some Problem, not done in an accurate Geometrical Manner, but coarsely and unartfully, or by the assistance of Instruments, as are most Problems relating to the Duplication of the Cube, and the Quadrature of the Circle.

**MECHOACAN**, **MACADOSSIN**, or **WHITE JALAP**; called also *White Rhubarb*, and *American Scammony*; a medicinal Root, taking its Name from a Province of *New Spain*, from whence it is brought. *Mechoacan* was known and used as a Purgative before *Jalap*, tho the latter is now in more general Use, as being found more efficacious. Yet *Mechoacan* is the sweeter and more gentle of the two, and on that account preferable. The Seat of its Action is chiefly in the extreme Parts, for which reason it is accounted good in arthritic Pains. It has the advantage of needing no Preparation or Corrective; and purging in its own proper Substance, such as it grows. *M. Boulduc* found by analysing it, that it contains twelve times as much Salt as Resin; but neither the saline nor resinous Extract purge so freely as the Substance, even tho taken in larger Doses; nor do they yet purge so gently. In the Choice of *Mechoacan*, prefer those Pieces which are the brownest within; and whose Substance is the closest, and most compact.

**MECONIUM**, in Pharmacy, is the Juice of the Poppy, drawn by Expression, and dried; differing from Opium, in that this last ouzes out, after an Incision made in the Heads of the Poppies. The Word comes from the Greek *μῆκων*, *Poppy*. See **OPIMUM**.

**MECONIUM** is also a black thick Excrement, gather'd in the Intestines of a Child during the time of Gestation. In Colour and Consistence, it resembles Pulp of *Cassia*. It is also found to resemble *Meconium*, or Juice of Poppy, whence it takes its Name.

**MEDAL**, a small Figure, or Piece of Metal, in form of a Coin, destined to preserve to Posterity the Portrait of some great Man, or the Memory of some illustrious Action.

For the Manner of striking **MEDALS**, see **COINING**.

Some Authors imagine, that the antient **MEDALS** were used for Money. *M. Patin* has a Chapter express to prove, that they had all a fix'd regular Price in Payments; not excepting even *Medallions*. *F. Joubert* is of the same Opinion. Others, on the contrary, maintain, that we have no real Money of the Antients; and that the *Medals* we now have, never had any Course as Coins. Between these two Extremes, there is a Medium, which appears by much more reasonable than either of them. See **MONEY**.

**MEDALS** are divided into Antient and Modern: The Antient are such as were struck between the third and the seventh Centuries: The Modern are those struck within these 500 Years. Among the Antient, some are Greek, others Roman. The Greek are the most antient. That People strook *Medals* in all the three Metals with such exquisite Art, as the Romans could never come up to. The Greek *Medals* have a Design, Accuracy, Force, and a Delicacy that expresses even the Muscles and Veins, and it must be own'd, goes infinitely beyond any thing of the Romans. There are also Hebrew *Medals*; Punic, Gothic, and Arabic *Medals*; which make new Classes in the antient and modern ones. The Consular *Medals* are certainly the most antient *Medals* of the Romans: And yet those of Copper and Silver don't go beyond the 484th Year of Rome; nor those of Gold beyond the Year 546. If any are produced of an older Date, they are spurious.

Consular **MEDALS** are so call'd, to distinguish them from the Imperial; not that they were strook by order of the Consuls, but because in those Times the Republic was governed by Consuls. Of these, *Father Joubert* reckons about fifty or sixty of Gold; two hundred and fifty of Copper; and near a thousand of Silver. *Goltzius* has described them in a Chronological Order, according to the *Fasti Consulares*. *Ursinus* has disposed them Genealogically, according to the Order of the Roman Families. *M. Patin* has collected an entire Series of them, in the same Order with *Ursinus*; and only computes 1037 Consulars, which relate to 178 Roman Families. *M. Vaillant*, and *M. Morel*, each promised a new Edition of the *Consular Medals*; *M. Vaillant* kept his word, and his Book was printed e'er he died, in 3 Vol. *Folio*.

Among the Imperial **MEDALS**, we distinguish between the Upper and the Lower Empire: The Upper Empire commenced under *Julius Caesar*, and ended about the Year of Jesus Christ 260: The Lower Empire comprehends near 1200 Years, viz. till the taking of *Constantinople*. 'Tis the Custom, however, to account all the Imperial *Medals*, till the Time of the *Paleologi*, among the Antique; and yet we have no Imperial *Medals*, of any considerable Beauty, later than the Time of *Heraclius*, who died in 641.

After the Time of *Phocas* and *Heraclius*, Italy became a Prey to the Barbarians; so that the Monuments we have remaining of those two Emperors, finish the Set or Series of Imperial *Medals*. To these are added the *Medals* of the Lower Empire, and the Greek Emperors; whereof a Series may be made as low as our time, taking in the Modern ones. *M. Patin* has made an ample Collection of the Imperial *Medals* till the Time of *Heraclius*. The Gothic *Medals* make part of the Imperial ones. They are so call'd, as having been struck in the Times of the Goths, and in the Declension of the Empire; and favouring of the Ignorance and Barbarity of the Age.

As to the Modern, they are such as have been struck in Europe, since the Usurpation of the Goths has been extinct; and Sculpture and Engraving have begun to flourish. The first was that of the famous Reformer *John Hus* in 1415; if any pretend to be more antient, they are spurious. In France, there were none struck with the Prince's Effigy before the Reign of *Charles VII*. The Study of modern *Medals* is so much more useful, as they afford more light than the antient, and mark the Times and Circumstances of Events precisely; whereas the Inscriptions of the antient *Medals* are very short and simple, and generally without any Date. Add to this, that the antient *Medals* are extremely liable to be counterfeited, by reason of the excessive Price they bear. But in the modern, there is not near that Danger of being imposed upon.

For the rest, *Medals* have been struck in three Kinds of Metals, which make three several Sets or Series in the Cabinets of the Curious. That of Gold is the least numerous, as not consisting of above 1000, or 1200 of the Imperial; that of Silver may contain about 3000 Imperial; and that of Copper, of the three several Sizes, viz. the great, the middle, and the small Copper, consists of 6 or 7000, all Imperial. See **SERIES**.

There are no true Hebrew *Medals*; those which we see of the Heads of *Moses*, and *Jesus Christ*, are spurious and modern. We have a few Shekels of Copper and Silver, with Hebrew or Samaritan Legends; but none of Gold; tho there is mention made of one in the King of Denmark's Cabinet. *F. Soucier* has a Dissertation on the Hebrew *Medals*, commonly call'd Samaritan *Medals*; where he distinguishes accurately between the Genuine and Spurious; and shews, that they are true Hebrew Coins struck by the Jews, but on the Model of the Antients; and that they were current before the Babylonish Captivity. See **SAMARITAN**.

The Parts of a *Medal*, are the two Sides; one whereof is call'd the Head, the other the Reverse. On each Side is the Area or Field, which makes the middle of the *Medal*; the Rim or Border; and the Exergue, which is beneath the Ground, whereon the Figures represented are placed. On the two Sides are distinguish'd the Type, and the Inscription or Legend. The Types are the Figures represented; the Legend is the Writing, especially that around the *Medal*; tho in the Greek *Medals*, the Inscription is frequently in the Area. What we find in the Exergue, is frequently no more than some Initial Letters, whose Meaning we are unacquainted withal; tho, sometimes too, they contain Epochas, or Words that may be accounted an Inscription. See **EXERGUE** and **LEGEND**.

'Tis not either the Metal, or the Size, which makes a *Medal* valuable; but the Scarcity of the Head, or of the Reverse, or the Legend. Some *Medals* are common in Gold, which yet are very rare in Copper; and others very rare in Silver, which in Copper and Gold are very common. The Reverse is sometimes common, where the Head is singular; and some Heads are common, whose Reverse is very scarce. There are *Medals* very scarce in some Sets, and yet very common in others. For instance, there is no *Antonina* in the Sets of large Copper, and the middle Copper is forced to supply its place. The *Orto* is very rare in all the Copper Sets, and yet common in the Silver ones. *Orto's*, of the large Copper, are held at an immense Price; and those of the middle Copper, at 40 or 50 Pistoles. And the Gordians are rated full as high. Singular *Medals* are invaluable. Singular *Medals*, in the popular sense, are such as are not found in the Cabinets of the Curious, and are only met with by chance; but in the stricter sense are such, whereof there is not above one of a Kind extant. The *Orto* in large Copper is a singular *Medal*. When a *Medal* exceeds the Value of ten or twelve Pistoles, they are worth what the Owner pleases. The *Pescennius Niger*, and *Pertinax*, are very rare in all Metals. The *Didius Julianus* is hardly found any where, but in large Copper. *Carteren*, a Dutchman, and some others, have made Mills express to strike *Medals* that never were, as those of *Cicero*, *Virgil*, *Priam*, &c. *M. Vaillant* has collected all the *Medals* struck by the Roman Colonies; *F. Hardouin* those of the Greek and Latin Cities. *F. Noris* those



those of Syria. M. Morel has undertaken an Universal History of Medals, and promises Cuts of twenty-five thousand. He has ranged them under four Classes. The first contains the Medals of Kings, Cities, and People; which have neither the Name nor Image of the Roman Emperors. The second contains the Consular Medals; the third the Imperial Medals; and the fourth, the Hebrew, Punic, Pictish, French, Spanish, Gothic, and Arabic. He begins with the Imperial, and brings them down as low as Heraclius. He places the Latin, in order, before the Greek. Ad. Occo, a German Physician, and Count Mezzabarba, have endeavoured to range them in a Chronological Order, but that is impracticable. For in most of the Imperial Medals, there is no Mark either of the Consulate, or of the Year of the Reign; and since Gallio, there is none of them that bear the least Footsteps of Chronology. Greek Medals are such as have either the Heads of Greek Emperors, or Greek Inscriptions.

There are false or spurious Medals, which are those counterfeited, and put off for Antique, when they are not: Mutilated Medals, which are those that are not entire, or are defaced: Redintegrated Medals, which are those where in we find the Letters Rest. which shew that they have been restored by the Emperors: Dipt Medals, which are struck of pure Copper, and afterwards silver'd. This is a Contrivance that the Curious have frequent recourse to, in order to compleat their Silver Sets. Cover'd or Plated Medals, which have only a thin Silver Leaf over the Copper, but which are struck so artfully, that the Cheat does not appear, without cutting them: These are the least suspected. Grain'd or Indented Medals are those, whose Edges are cut like Teeth, which is a sign of Goodness and Antiquity. They are common among the Consulars, but we have none later than Augustus. There are several of them, however, among those of the Kings of Syria. Medals countermark'd, are those that are cut either on the Side of the Head, or of the Reverse: These Countermarks serve to denote the Change of their Value; and this Kind is much enquir'd for by the Curious. There are also Cast Medals, which are not struck, but cast in a Mould; and Medals that have no Reverse.

Scaliger derives the Word from the Arabic *Metbalia*, a Coin wherein is impress'd the Figure of a human Head. Menage and Vossius rather derive it from *Metallum*. Du Cange observes, that the ancient *Oboli* were call'd *Medalia*, quasi *Medietas Nummi*.

The most noted Medalists, or Authors on Medals, are, Antonius Augustinus, Wolffius, Lazius, Ful. Ursinus, a learned Antiquary, Aeneas Vicius, Hubertus, Goltzius, Oiselinus Seguin, Occo, Tritan, Sirmont, Vaillant, Patin, Noris, Spanheim, Hardouin, Morel, Joubert, Mezzabarba, Begher, &c.

MEDALLION, a Medal of an extraordinary Bigness. It was ordinarily a kind of Medal, which Princes used to present, as a Token of their Esteem; for which reason the Romans call'd them *Missilia*. The Medallions were never any current Coin, as the Medals were: They were struck purely to serve as publick Monuments, or to make Presents of. There cannot be any Set made of them, even tho' the Metals and Sizes should be join'd promiscuously. The best Cabinets do not contain above four or five hundred; tho' M. Morel promises us Figures of above a thousand. Authors vary about the Time when they first began to be struck. Some Antiquaries will have it under the Empire of Theodosius: but this must be a Mistake; for there were some struck even in the Upper Empire: witness a Nero, a Trajan, and an Alexander Severus, still extant. Medallions of Gold are very rare, as also those of large Copper. Medallions are distinguish'd from Medals by the Volume; that is, by the Thickness and Compass; and the Largeness and Relievo of the Head. Medallions, in many ancient Latin Titles, are call'd *Metalliones*. The Italians call them *Medaglioni*.

MEDIANA, the Name of a Vein, or little Vessel, made by the Union of the Cephalic and Basilic, in the Bend of the Elbow. 'Tis not a particular Vein, or a third Vein of the Arm, as some Authors imagine; but merely a Branch of the Basilic; which running into the inner Part of the Elbow, unites with the Cephalic, and forms a common Vein, call'd *Mediana*; and by the Arabs, the *Black Vein*. Columnæ *Mediane*, in *Petrusius*, are the two Columns in the middle of a Porch, whose inner Column is larger than those of the rest.

MEDIANA Linea, a Line or Seam running down the middle of the Tongue, and dividing it into two equal Parts; tho' not so effectually, but that the Blood Vessels of the one Side communicate with those of the other. See TONGUE.

MEDIASTINE, or MEDIASTINA, the Name of a Vein of the *Mediastrinum*. See VEIN and MEDIASTRINUM.

MEDIASTINUM, in Anatomy, a double Membrane, form'd by a Duplicature of the *Pleura*; serving to di-

vide the Thorax, longitudinally. It proceeds from the Sternum, and passing strait down thro' the middle of the Thorax to the Vertebrae, divides its Cavity into two. It contains, in its Doublings, the Heart, Vena Cava, the Oesophagus, and the Stomachic Nerves. The Membranes of the *Mediastrinum* are finer and thinner than the *Pleura*, and have a little Fat. It receives Branches of Veins and Arteries from the Mammillary, and Diaphragmatic, particularly, one call'd *Mediastrina*; its Nerves come from the Stomachic: it has also some Lymphatics, which open into the Thoracic Duct. The *Mediastrinum* divides the Thorax into two Parts; to the end that one Lobe of the Lungs may officiate, if the other be hinder'd by a Wound on the other Side. Sometimes there is a Matter contain'd betwixt its Membranes, immediately under the Sternum, which may occasion the trepanning of this Place. The *Mediastrinum* serves to sustain the Viscera, and prevent their falling from one side to the other. See PLEURA, THORAX, &c.

MEDIASTINUM Cerebri, is the same as *Septum Transversum*. See SEPTUM TRANSVERSUM, &c.

MEDIATE, or INTERMEDIATE, a Term of Relation to two Extremes, applied to a third, which is in the middle; as, to a second Cause, which is acted upon by some superior or first Cause, to produce any Effect. Substance is a Genus with regard to Man, but between the two there are other mediate Genus's, as Body and Animal. Mediate is used in opposition to immediate. Thus when we say, that God and Man concur to the Production of Man; God is the mediate Cause, Man the immediate. 'Tis a popular Question in Theology, viz. Whether the Holy Ghost converts a Sinner mediately or immediately.

MEDICINE, an Art, ordinarily call'd *Physic*; defined, by Boerhaave, to consist in the Knowledge of those Things, by whose Application, Life is either preserv'd sound and healthy, or when disorder'd, again restor'd to its pristine Healthiness. See HEALTH and DISEASE.

Galen defines *Medicine*, the Art of preserving present Health, or of retrieving it when past: Hippocrates, the Addition of what is wanting, and the Retrenchment of what is redundant: And lastly, Hierophilus, the Knowledge of Things good, indifferent, and ill, with regard to Health.

Physic must have been nearly coeval with the World. The Injuries and Vicissitudes of the Air, the Nature and Qualities of Foods, the Violence of external Bodies, the Actions of Life, and lastly, the Fabric of the Human Compages; must have render'd Diseases almost as old as Mankind: And the Presence of a Disease, as it brings with it a painful Sensation, the Loss of the Use of a Limb, &c. we find, does, by a necessary mechanical Impulse, both in Brutes and Men, compel the Diseased to seek for Help, and to apply Remedies, either by mere Experiment, or by Instinct, and spontaneous Appetite. Hence arose the Art of *Medicine*; which, in this sense, has been always, every where, among Mankind. Ancient Histories and Fables tell us, that in a little time, from the Flood, it was so well cultivated by the Assyrians, Babylonians, Chaldeans, and Magi, that they were able to remove present Diseases, and prevent future ones. Hence it pass'd into Egypt, Lybia Cyrenaica, and Crotona; and thence into Greece, where it flourish'd, principally in the Islands of Cnidus, Rhodes, Cos, and in Epidaurus.

The first Foundations of the Art were laid by Chance, natural Instinct, and Events unforeseen: These were improved by the Memory of the Success of former Experiments; by writing down the Diseases, their Remedies, and their Event, on Columns, Paintings, and the Walls of their Temples; by exposing the Sick in the Markets and public Ways, that those who pass'd by, might enquire into the Disease, and communicate a Remedy, if they knew any; and lastly, by Analogy, or Reasoning, from a Comparison of Things already observ'd, with Things present and to come. The Art at length receiv'd a much greater degree of Perfection, by the appointing of Physicians; some for the Cure of particular Diseases, and others for Diseases in general; by an accurate Observation of the Disease, and its Symptoms; and by an exact Description of the Remedy, and its Use: immediately, upon which, it got among the Priests, and at length was confined to particular Families; descending, by way of Inheritance, from Father to Son: which, again, proved a great Bar to its Progress.

The *Extispicia*, or inspecting the Entrails of Beasts, used by the Priests; the Custom of Embalming dead Carcases, and even Butchery itself, promoted the Knowledge of the Human Fabric, and of the Causes both of Health, Diseases, and Death. Lastly, the dissecting of live Animals for Philosophical Purposes, distinct Narratives of the Cause, Rise, Increase, Crisis, Declension, End, and Effect of Diseases; and the Knowledge of Medicines, their Choice, Preparation, Application, Powers, and



and Events, seem'd to have almost brought the Art to its Perfection.

*Hippocrates*, who was Cotemporary with *Democritus*, and perfectly acquainted with every thing hitherto laid down, and besides, furnish'd with a great number of Observations of his own, collecting into one all that was valuable and useful; compiled a Body of *Greek Medicine*; and was the first who deserv'd the Title of a true Physician: for being a Master of the *ἐμπειρία*, Experience, as well as of Analogy and Reason, and withal well versed in a pure Philosophy; he, first, made Physic rational; and laid the Foundation of the dogmatical *Medicine*, which has ever since obtain'd. See DOGMATICAL, THEORETICAL, &c.

What *Hippocrates* had done, continu'd a long time sacred and unalter'd, and was the standing Practice of many Ages; at length *Areteus* the *Cappadocian* digested it into a more orderly Body: whence, in various Places, at various Times, and by various Hands, particularly the *Alexandrian School*, it was further alter'd and improv'd; till at length it came to the hands of *Claud. Galen*; who collecting the scatter'd Parts, digesting those that were confus'd, and explaining every thing by the rigid Doctrines of the *Peripatetics*, did both a great deal of service, and a great deal of mischief, to the noble Art; he being the first who introduced the Doctrine of the Elements, the Cardinal Qualities, and their Degrees, the four Humours, &c. into *Medicine*: and on these he made the whole Art to depend. See TEMPERAMENT, HUMOUR, QUALITY, GREEK, &c.

After the sixth Century, the Arts were not only extinguish'd, but almost all Memory of them lost, till the ninth; from which, to the thirteenth, *Medicine* was vigorously cultivated by the *Arabs* in *Asia*, *Africa*, and *Spain*: who applying themselves particularly to the Study of the *Materia Medica*, and its Preparations, and to the Operations of Chirurgery, render'd both more just and more copious at the same time. And yet *Galen's* Errors became now more predominant than ever.

At length, however, they were purged out and exploded by two different Means; principally indeed by the Restoration of the pure Discipline of *Hippocrates* in *France*; and then also by the Experiments and Discoveries of *Chymists* and *Anatomists*: till at length the immortal *Harvey* overturning, by his Demonstrations, the whole Theory of the Antients, laid a new and certain Basis of the Science. Since his Time, *Medicine* is become free from the Tyranny of any Sect, and is improv'd by the sure Discoveries in Anatomy, Chymistry, Physics, Botany, Mechanics, &c.

Hence it appears, that the Art originally consisted solely in the faithful Collection of Observations; and that a long time after, they began to enquire, and dispute, and form Theories: the first part has ever continued the same; but the latter always mutable. For the several Sects that have arose among Physicians, see EMPIRIC, DOGMATIC, &c.

MEDICINE is divided into five principal Branches. The first considers the Human Body, its Parts and Fabric, its Life and Health, and the Effects following from them; and this is call'd *Physiology*, the *Animal Oeconomy*, or *Doctrine of the Use of the Parts*: and its Objects, now enumerated, are call'd *Res Naturales*, or Things according to Nature. See PHYSIOLOGY, NATURAL THINGS, &c.

The second Branch considers the Diseases of the Human Body, their Differences, Causes, and Effects; and is call'd *Pathology*, as it considers the Diseases; *Ætiology*, as it enquires into their Causes; *Nosology*, when it examines their Differences; and lastly, *Symptomatology*, when it explains their Effects. The Objects of this Part are call'd *Res præter Naturales*, or beyond Nature. See PATHOLOGY, &c.

The third Branch considers the Signs or Symptoms, and how to apply them to Use; so as to judge both in a sound, and a diseased Body, what, which, is, will be, the Degree, Order, Effect, of the Health, or the Disease: This is call'd *Semeiotica*. Its Objects are Things both Natural, Non-natural, and Præter-natural. See SEMEOTICA.

The fourth Branch considers the Remedies, and their Use, whereby Life may be preserv'd; whence 'tis call'd *Hygiene*. Its Objects are what we strictly call Non-natural. See HYGIENE and NON-NATURALS.

Lastly, The fifth furnishes the *Materia Medica*, its Preparations, and Manner of Exhibition, so as to restore Health, and remove Diseases; and is call'd *Therapeutica*, comprehending the *Dietetica*, *Pharmaceutica*, *Chirurgica*, and *Jejuna*. See DIETETICA, PHARMACEUTICA, CHIRURGICA, and JEJUNA.

MEDICINES, or *Medicaments*, Preparations of any natural Substances, apply'd to a human Body, in order to answer some Intention of Cure. *Medicines* are distinguish'd, with regard to the Manner of Application, into Internal and External. Internal, are those taken in at the Mouth; External, or Topical, are those apply'd to any particular Part. See TOPICAL, &c.

With regard to the different Manner of their Operation, they are distinguish'd into *Evacuants*, *Astringents*, and *Alterants*, or *Specifics*. See EVACUANTS, SPECIFICS, ALTERANTS.

A general Idea of the Manner wherein *Medicines* operate on a human Body, may be conceiv'd from what follows.

A few different Sorts of Particles, variously combined, will produce great variety of Fluids; some may have one sort, some two, some three or more. If we suppose only five different sorts of Particles in the Blood, and call them *a, b, c, d, e*; their several Combinations, without varying the Proportions in which they are mix'd, will be these following: but whether more or less, need not be determin'd.

$ab : ac : ad : ae :$

$bc : bd : be : cd :$

$ce : de : abc : adc :$

$abd : abe : ace : ade :$

$bdc : bde : bec : dec :$

$abcd : abce : acde : abde : bcde : abcde :$

No Theory of Secretion has hitherto been able to give any tolerable Account of the Operation of such *Medicines*, as promote an Evacuation. For if the Humours are equally mix'd with the Blood, that is, if the Blood is in every part of the Body the same, and its Particles are not more apt to form certain Humours, in some certain Parts of the Body, than in others; or if they are not forced, by the Power of some *Medicine*, to form such Humours: then the Quantities of Humour, separated in equal Times, will always be as the Velocity of the Blood; but the Velocity of the Blood is seldom doubled by any *Medicine*, and never tripled by the most acute Fever. The Quantity of Humour, however, drawn off by evacuating *Medicines*, is often twenty times greater than the natural Quantity; and therefore, upon supposition that the Humours are every where equally mix'd with the Blood, the Operation of evacuating *Medicines* can never be accounted for.

Tho this Argument hath the Strength of a Demonstration, yet there are some who explain the Operation of purgative, and other evacuating *Medicines*, by a stimulating Faculty; whereby the sluggish Juices are not only forc'd out, but the obstructed Canals open'd, and the Motion of the Blood quicken'd. But tho such a Power be allow'd, it would remain to be explain'd, why certain *Medicines* do only stimulate certain Glands? For it is evident, that evacuating *Medicines* have some other Power, besides the squeezing out stagnant Juices; because when they are all squeez'd out, they still evacuate as much, if they are repeated, as they did before: as is plain, by continuing a Salivation for many days. Secondly, we cannot suppose, that all Bodies have every where, and at all times, Juices stagnating; but these *Medicines* constantly produce their Effects, more or less, at all times. Thirdly, if the Vessels be supposed to be obstructed, an evacuating *Medicine* could but double the Quantity that was evacuated, before it was taken. Fourthly, if these *Medicines* operate only these ways, then in a healthful Body, where there were no Obstructions, they would have no effect at all. Fifthly, if the removing Obstructions were the Cause of a greater Quantity evacuated, then the Evacuation should still continue in a greater degree than before the Obstruction was removed; whereas, in fact, we constantly find it less, as the *Medicine* works off. Sixthly, tho a *Medicine*, by stimulating a Vessel, may quicken the Motion of the Fluid in that Vessel; yet it can never increase the Quantity of Fluid running thro' it, in equal Spaces of Time; because it quickens the Motion of the Fluid, only by contracting the Vessel: and therefore the faster the Fluid is made to run thro' the Vessel, the less Fluid the Orifice of the Vessel admits; and consequently after the Vessel is contracted by the stimulating *Medicine*, the Secretion will be less, instead of being greater. That a Stimulus causes the part, on which it acts, to contract, is matter of fact; and that purgative *Medicines* do stimulate the Bowels; but it may perhaps be likewise said, they stimulate the Heart and Arteries, and increase their Force, being they not only quicken, but raise the Pulse: so that a greater Quantity of Blood is sent to the Glands of the Guts. This may be granted; but not that it is the principal Action of purgative *Medicines*; because that, by the same Force, a greater Quantity of Blood is sent to all the other Glands of the Body, whose Fluids are not, however, sensibly increased; and the Glands of the Intestines receive a less Quantity, in proportion, than any others, because they cannot be so much dilated by the greater Force of the Blood, as others, which are not so much stimulated by the *Medicine*. There are others, who will have evacuating *Medicines* endued with an attenuating Quality, by which they dissolve all the Cohesions of the Particles of the Blood, and so set the several Humours at liberty, to pass thro' their proper Glands: but if these *Medicines* have a power universally to dissolve all the Cohesions of the Blood, then every evacuating *Medicine* would equally and indit-



indifferently increase the Quantity of every Secretion. Mercury would as constantly purge as salivate, and Nitre promote Perspiration, as well as Urine; but this is repugnant to Experience. If they have a power to dissolve certain Cohesions, and not others; this is but setting certain Particles at liberty to pass thro' their proper Glands, which were not so before; and is a preparing the Humours, in order to increase the Quantity of Secretion. Evacuating Medicines must therefore have a power to affect some Particles, and not others; that is, to repel some, and attract, retain, and alter others: and this is what may be affirm'd to be in all Medicines, and is what a thousand Chymical Experiments demonstrate. The several Humours then being form'd, by the different Cohesion of the Particles of Blood, the Quantity of Humour secreted by any Gland, must be in a Proportion compounded of the Proportion, that the Number of the Particles, cohering in such a manner as is proper to constitute the Humour which passes thro' the Gland, bears to the Mass of Blood; and of the Proportion of the Quantity of Blood, that arrives at the Gland. And hence it follows, that where there is a determinate Quantity of a certain Humour to be separated, the Number of Particles, that are proper to compose the secreted Liquor, must be reciprocally proportional to the Quantity of the Blood that arrives at the Gland: and therefore, if the Quantity of the Secretion is to be increas'd, the Number of Particles is to be increas'd; if the Secretion is to be lessen'd, the Number of Particles, proper for such a Secretion, is to be lessen'd in the same Proportion. Medicines, therefore, which can alter the Cohesions, and Combinations of the Particles, can either increase or diminish the Quantity of any Secretion. Thus, suppose the Humour, which passes thro' the Glands of the Intestines, to be composed of three or four several sorts of Particles; that Medicine, which will easily cohere to those Particles, and cohering, increase their mutual Attractions, so as they unite in greater Numbers at, or before they arrive at the Intestines, than they would have done, if the Medicine had not been given, must necessarily increase the Quantity of Humour, which passes thro' the Glands of the Intestines, if the Quantity of Blood which arrives at the Glands, is not diminish'd in the same Proportion, as the Number of Particles is increas'd. After the same manner do Diuretics, Sudorifics, and Medicines, which promote all other Secretions, operate.

Why increasing the Quantity of some Secretions, should diminish that of others, is not easy to explain on any other foot: for if the Blood be equally mix'd in every part of the Body, with all the Humours which are separated from it; that is, if the Mixture of the Blood is every where alike, so that every Humour bears the same Proportion to the rest of the Arterial Blood, in one part of the Body, that it does in another; and if every Humour has its own proper Gland, thro' which it is separated: then what is separated by one Gland, is not subtracted from another; and consequently doth not diminish the Quantity of Humour, which flows to this other, but doth indeed rather increase the Quantity of this other Secretion: for the more any one Humour is carry'd off, the greater Proportion any other remaining in the Blood, bears to the remaining Blood: And therefore the more any one Secretion is increased, the more all the rest should be increased likewise. But if all the Humours are composed by a Combination of a few different sorts of Particles, then the more apt these Particles are to run into any one sort of Combination, the less all other Combinations must be: and consequently the increasing any one Secretion, must necessarily diminish the Quantity of all others; but most especially of that, which has the most of the same sort of Particles. See SECRETION, HUMOUR, &c.

MEDICINAL Hours, are those proper to take Medicines in: Of which there are four in the Day, viz. in the Morning fasting, about an Hour before Dinner, about four Hours after Dinner, and going to Bed; but in acute Cases, the Times are to be govern'd by the Symptoms and Aggravation of the Distemper.

MEDICINAL Waters. See WATER.

MEDIETAS Lingue, an Inquest impanel'd, whereof the one half consists of Natives or Denizens, the other Strangers. It is used in Pleas, wherein the one Party is a Stranger, and the other a Denizen. *Solomon de Stanford*, a Jew, in the Time of *Edward I.* had a Cause tried before the Sheriff of *Norwich*, by a Jury of *sex probos & legales Homines*, & *sex legales Judeos de Civitate Norwici*. See JURY.

MEDITATION, an Action by which we consider any thing closely, or wherein the Soul is employ'd in the Search of any Truth. In Religion it is used to signify a Consideration of the Mysteries and grand Truths of Faith. The Mystics make a great difference between Meditation and Contemplation. Meditation consists in discursive Acts of the Soul, considering methodically, and with

attention, the Mysteries of Faith, and the Precepts of Morality: And is perform'd by Reflections and Reasonings, which leave behind them manifest Impressions in the Brain. The pure Contemplative have no need of Meditation, as seeing all things in God at a Glance, and without any Reflection. When a Man therefore has once quitted Meditation, and is arrived at Contemplation, he returns no more; and, according to *Alvarez*, never resumes the Oar of Meditation, except when the Wind of Contemplation is too weak to fill his Sails. See CONTEMPLATION.

MEDITERRANEAN, something inclosed within Land. The Word is particularly used to signify that large Sea, which flows within the Lands of *Europe* and *Africa*, by the Streights of *Gibraltar*, and reaches into *Asia*, as far as the *Euxine* Sea, and the *Palus Meotis*. It was antiently call'd the *Grecian* Sea, and the *Great* Sea. It is now cantoned out into several Divisions, which bear several Names: To the West of *Italy* it is call'd the *Ligustic*, or *Tuscan* Sea; near *Venice*, the *Adriatic*; towards *Greece*, *Ionian* and *Ægean*; between the *Hellspont* and the *Bosphorus*, the *White* Sea, as being very safe; and beyond, the *Black* Sea, its Navigation being dangerous. The *Arabs* call the *Mediterranean* Sea, the *Chamber-Port*, by reason, they say, of its Figure.

MEDITULLIUM, is that spongy Substance between the two Plates of the Cranium, and in the Interstices of all laminated Bodies. See CRANIUM.

MEDIUM, a Latin Term, signifying Middle or Mean. See MEAN.

MEDIUM, in Logic, or MEDIUM of a Syllogism, call'd also the mean or middle Term, and by the *Italians*, *mezzo termino*; is an Argument, Reason, or Consideration, for which we affirm, or deny any thing: Or it is that Cause, why the greater Extreme is attributed to, or deny'd of the less, in the Conclusion. Thus, in the Syllogism, 'E-very good thing is to be desired; but all Virtue is good; therefore all Virtue is to be desired.' The Term *Good* is the Medium; *Virtue* the less Extreme, and to be desir'd the greater. See SYLLOGISM, EXTREME, &c.

'Tis call'd Medium, as being a kind of Mediator between the Subject and Predicate; or, by reason, the Extremes are disposed to affirm, or deny by means hereof. Some call it *Argumentum tertium*, a third Argument, and others simply *Argumentum*, as being the Cause why we assent to the Conclusion. See ARGUMENT.

Mediums, or Media, are the Things principally sought for, in discoursing; so that the Invention of Mediums makes the most essential Part of Logic. But the Rules commonly given by Logicians for that purpose, are mere Impertinencies. In effect, no such Rules can be given: Nor have we any way of coming at such Mediums or Reasons, but by a close Attention to clear Ideas. See DISCOURSE, INVENTION, &c.

MEDIUM, in Arithmetic, or an *Arithmetical Medium* or *Mean*, call'd in the Schools *Medium Rei*, is that which is equally distant from each Extreme; or, which exceeds the lesser Extreme, as much as it is exceeded by the greater; in respect of Quantity, not of Proportion. Thus, Nine is a Medium between Six and Twelve. See ARITHMETICAL PROPORTION.

Geometrical MEDIUM or Mean, call'd in the Schools *Medium Personæ*, is that where the same Ratio is preserv'd between the first and second, and the second and third Terms; or that which exceeds in the same Ratio, or Quota of itself, as it is exceeded. Thus Six is a geometrical Medium between Four and Nine. See GEOMETRICAL PROPORTION.

This is the Medium which Virtue is suppos'd to observe; whence some call it *Medium quoad nos*, as having a View to Circumstances, Times, Places, Persons, &c. Distributive Justice observes a Geometrical Medium; Commutative Justice, an Arithmetical one. See JUSTICE.

The Schoolmen distinguish divers other Kinds of MEDIUMS; as

MEDIUM Participationis, in the Schools, is that said to be compounded of the two Extremes: Thus, Man, who is partly Body, partly Mind, is a Medium by Participation, of the two Extremes; so, is Warmth the Medium of Heat and Cold, &c.

MEDIUM Negationis or Remotionis, is that, whereof both Extremes are deriv'd; or, it is a Subject, capable of receiving both Extremes, and yet not necessarily possess'd of either. In which latter sense, the Will is a Mean with respect to Virtue and Vice; and the Understanding, with respect to Knowledge and Ignorance.

MEDIUM quod, or MEDIUM Suppositi, is somewhat between the Agent and Patient, which receives the Action of the one, e'er it arrive at the other. In this sense, Air is a Medium between the Fire, and the Hand heated thereby.——MEDIUM quo, is the Form, or Faculty, whereby



whereby an Agent produces an Effect; in which sense, Heat is said to be the *Medium* or *Mean*, whereby Fire acts on the Hand.—*MEDIUM sub quo*, is that which renders the Power to act, compleat, in the general; without determining it to any particular Object: In this sense, Light is the *Medium*, under which the Eye perceives any Colour.—*MEDIUM in quo*, is that, by inspection whereof, a Power is produced in any thing, of knowing or perceiving another: Such, is a Speculum, as it shews an Object; an Image, as it represents the Reality, &c.

*MEDIUM*, in Mechanical Philosophy, is that Space or Region, thro' which a Body passes in its Motion towards any Point. Thus *Aether* is supposed to be the *Medium*, wherein the heavenly Bodies move. See *ÆTHER*. Air the *Medium* wherewith the Earth is encompass'd, and Earthy Bodies move. See *AIR*. Water the *Medium* in which Fishes live and move. See *WATER*. Thus, *Glass* is also a *Medium* of Light, as it affords it a free Passage: And that Density or Consistence in the Parts of the *Medium*, whereby the Motion of Bodies in it is retarded, is call'd the *Resistance of the Medium*; which, together with the Force of Gravity, is the Cause of the Cessation of Motion of Projectiles. See *RESISTANCE of the Medium*.

*Subtile MEDIUM*. Sir *Is. Newton* makes it probable, That beside the particular Aerial *Medium*, wherein we live and breath, there is another more universal one, which he calls an *Ætherial Medium*; vastly more rare, subtile, elastic, and active, than Air; and by that means freely permeating the Pores and Interstices of all other *Mediums*, and diffusing itself thro' the whole Creation: And by the Intervention hereof he thinks it is, that most of the great Phenomena of Nature are effected. This he seems to have recourse to, as the first and most remote Physical Spring; and the Ultimate of all natural Causes. By the Vibrations of this *Medium*, he takes Heat to be propagated from lucid Bodies; and the Intenseness of Heat increas'd and preserv'd in hot Bodies, and from them communicated to cold ones. See *HEAT*. By this *Medium* he takes Light to be reflected, inflected, refracted, and put alternately in Fits of easy Reflection and Transmission; which Effects he elsewhere ascribes to the Power of Attraction: so that this *Medium* appears the Source and Cause of Attraction. See *LIGHT*, *REFLECTION*, *REFRACTION*, *INFLECTION*, and *ATTRACTION*.

Again, this *Medium* being much rarer within the heavenly Bodies, than in the heavenly Spaces; and growing denser, as it recedes further from them: he proposes as the Cause of the Gravitation of these Bodies towards each other, and of the Parts towards the Bodies. See *GRAVITATION*.

Again, from the Vibrations of this same *Medium*, excited in the bottom of the Eye by the Rays of Light, and thence propagated thro the Capillaments of the Optic Nerves into the Sensory, he takes Vision to be perform'd; see *VISION*: And so Hearing, from the Vibrations of this or some other *Medium*, excited in the Auditory Nerves, by the Tremors of the Air, and propagated thro the Capillaments of those Nerves into the Sensory: and thus of the other Senses. See *SENSATION*, *HEARING*, &c.

And, again, he conceives Muscular Motion to be perform'd by the Vibrations of the same *Medium*, excited in the Brain at the Command of the Will, and thence propagated thro the Capillaments of the Nerves into the Muscles; and thus contracting and dilating them. See *MUSCLE*.

The Elastic Force of this *Medium*, he shews, must be prodigious: Light moves at the rate of 70,000,000 Miles in about seven Minutes, yet the Vibrations and Pulses of this *Medium*, to cause the Fits of easy Reflection and easy Transmission, must be swifter than Light, which yet is 700,000 times swifter than Sound. The Elastic Force of this *Medium*, therefore, in proportion to its Density, must be above 490,000,000,000 times greater than the Elastic Force of the Air, in proportion to its Density: The Velocities and Pulses of Elastic *Mediums* being in a sub-duplicate Ratio of the Elasticities, and the Rarities of the *Medium*, taken together. And thus may the Vibrations of this *Medium* be conceiv'd as the Cause of Elasticity of Bodies. See *ELASTICITY*.

Further, the Particles of this *Medium* being supposed infinitely small, even smaller than those of Light; if they be likewise supposed, like our Air, to have a repelling Power, whereby they recede from each other, the Smallness of the Particles may exceedingly contribute to the Increase of the repelling Power, and consequently to that of the Elasticity and Rarity of the *Medium*; and so fit it for the free Transmission of Light, and the free Motions of the heavenly Bodies. In this *Medium* may the Planets and Comets roll without any considerable Resistance. If it be 700,000 times more elastic, and as many times rarer, than Air; its Resistance will be above 600,000,000 times less than that of Water: A Resistance that would

make no sensible Alteration in the Motion of the Planets in ten thousand Years. And is not such a *Medium* better disposed for the heavenly Motions, than that of the *Cartesians*, which fills all Space adequately, and without leaving Pores; is vastly denser than Gold; and therefore must resist more? See *PLENUM*, &c. If any ask how a *Medium* can be so rare, let him tell how the Air, in the upper Regions of the Atmosphere, can be above a hundred thousand times rarer than Gold. How an electric Body can, by Friction, emit an Exhalation so rare and subtile, yet so potent, as, tho its Emission occasions no sensible Alteration in the Weight of the Body; yet it shall be diffused thro a Sphere of two Foot in Diameter, and carry up Leaf-Copper, or Leaf-Gold, at the distance of a Foot from the electric Body. Or how the Effluvia of a Magnet can be so subtile, as to pass a Plate of Glass without any Resistance or Diminution of Force; yet so potent, as to turn a Magnetic Needle beyond the Glass. See *ELECTRICITY*.

That the Heavens are not fill'd with any other, but such a subtile ethereal *Medium*, is evident from Phenomena; whence else those lasting and regular Motions of the Planets and Comets, in all manner of Courses and Directions. And how are such Motions consistent with that Resistance, that must result from that dense, fluid *Medium*, wherewith the *Cartesians* fill the Heavens. The Resistance of fluid *Mediums* arises partly from the Cohesion of the Parts of the *Medium*, and partly from the *Vis Inertia*: The first, in a spherical Body, is nearly as the Diameter, or, at most, as the Factum of the Diameter, and the Velocity of the Body. The latter is as the Square of that Factum. Thus are the two Kinds of Resistance distinguish'd in any *Medium*; and being distinguish'd, it will be found that almost all the Resistance of Bodies, moving in ordinary Fluids, arises from the *Vis Inertia*. That Part which arises from the Tenacity of the *Medium*, may be diminish'd, by dividing the Matter into smaller Parts, and making those more smooth and slippery: But the other will still be proportional to the Density of the Matter, and cannot be diminish'd any other way, but by a Diminution of the same. Thus the Resistance of fluid *Mediums*, is nearly proportional to their Densities; and thus the Air we breath, being about 900 times lighter than Water, must resist about 900 times less than Water: As, in effect, the same Author has found it does by Experiments on Pendulums. Bodies moving in Quick-Silver, Water, or Air, don't appear to meet with any other Resistance, but what arises from the Density and Tenacity of those Fluids; which they must, were their Pores fill'd with a dense and subtile Fluid. See *VACUUM*. Heat, 'tis found, diminishes the Tenacity of Bodies very much; yet does it not decrease the Resistance of Water, sensibly. The Resistance of Water, therefore, arises chiefly from its *Vis Inertia*; consequently, if the Heavens were as dense as Water, or as Quick-Silver, they would not resist much less: if absolutely dense, without any Vacuum, be the Particles never so subtile and fluid, they would resist much more than Quick-Silver. A solid Globe, in such a *Medium*, would lose above half its Motion, while it moves thrice the Length of its own Diameter; and a Globe not perfectly solid, such as the Planets, would lose more. To make way therefore for the lasting Motions of the Planets and Comets, the Heavens must be empty of all Matter, except, perhaps, from some very fine Effluvia; from the Atmospheres of the Earth, Planets, and Comets; and some such *Ætherial Medium* as we have described. A dense Fluid can serve for no purpose, in the Heavens, but to disturb the Celestial Motions, and to make the Frame of Nature languish; and in the Pores of Bodies, serves only to check the vibrating Motion of their Parts, wherein their Heat and Activity consists. Such a *Medium*, therefore, unless we had some Evidence of its Existence, must be given up; and that given up, the Hypothesis of Light consisting in a Pressure, falls to the ground. See *LIGHT*, *PRESSION*, *CARTESIANISM*, &c.

*MEDIUS Venter*, in Anatomy, the Breast or Thorax. See *THORAX*; see also *VENTER*.

*MEDULLA*, in natural History, &c. See *MARROW*.

*MEDULLA Cerebri* and *Cerebelli*, is the white soft Part of the Brain; and *Cerebellum*, cover'd on the Outside with the Cortical Substance, which is of a more dark or ashy Colour. See the Origin, Structure and Use thereof, under *BRAIN* and *CEREBELLUM*.

*MEDULLA Oblongata*, is the Medullary Part of the Brain and *Cerebellum* join'd in one; the fore-part of it coming from the Brain, and the hind-part from the *Cerebellum*. It lies on the Basis of the Skull, and is continu'd thro' the great Perforation thereof into the Hollow of the Vertebrae of the Neck, Back, and Loins: tho' only so much of it retains the Name, as is included within the Skull. After its Exit thence, it is distinguish'd by the Name of the *MEDULLA spinalis*.



The Substance of the *Medulla Oblongata* being only an Aggregate of those of the Brain and Cerebellum, must, like them, be purely fibrous or nervous, and only an Assemblage of minute Tubes for the Conveyance of the Animal Spirits. It arises, as it were, from four Roots; whereof the two largest spring from the Brain, and are call'd *Crura*: the two lesser from the Cerebellum, which Dr. Willis calls *Pedunculi*. See BRAIN, CEREBELLUM.

There are several Parts or Members of the *Medulla Oblongata*, particular Descriptions whereof will be found under their proper Heads. In the general it may be observ'd, that, upon inverting it, the first thing that appears upon its Trunk, is a Protuberance somewhat like a Ring, for that reason call'd *Protuberantia Annularis*. Then follow ten Pair of Nerves, which have their Origin here, and are hence sent to the several Parts of the Body. See NERVE. Immediately under the first Pair, or Olfactories, appear two small Arteries, or Branches of the *Carotides*. The second Pair, or Optics, being cut off, appears the *Infundibulum*, which ends in the *Glandula Pituitaria*, and on each Side, the Carotid Arteries enter the Skull. In the Lateral Ventricles of the *Medulla* are two Prominences on each Side, the one Pair call'd *Corpora Striata*, from the appearance of Stripes, or nervous Fibres, within them; their outer Substance being cortical or glandulous, like the rest of the Surface of the Brain, tho' not so deep. Betwixt the *Corpora Striata* is a broad thin Production of the *Medulla*, call'd *Fornix*; and underneath them lie two other Prominences, call'd *Thalami Nervorum Opticorum*. On either side of these is a Plexus of Blood-Vessels, call'd *Plexus Choroideus*. And under the *Fornix* a narrow Aperture, call'd the *Rima*, which lets into the *Infundibulum*; which is a Passage from the third Ventricle to the *Glandula Pituitaria*, thro' the *Medulla* of the Brain; being lined with the *Pia Mater*. Under this, in the *Sinus* call'd *Sella Equina*, or *Turcica*, upon the *Os Cerebrum*, is the *Glandula Pituitaria*; which is surrounded with a Plexus of Vessels, call'd *Rete Mirabile*, only visible in Brutes. On the hind part of the third Ventricle is a small Foramen, call'd *Anus*, leading to the fourth Ventricle of the Cerebellum: At the Orifice of this is seated a small Gland, which, from its fancied Resemblance to a Pine Apple; is call'd *Conarium*, or *Glandula Pinealis*; where Des Cartes and his Followers imagine the Seat of the Soul to be. On the backside of the *Medulla Oblongata*, near the Cerebellum, are four Protuberances, whereof the upper and larger are call'd *Nates*; the under and lesser *Testes*. Between these and the Processes of the Cerebellum, is the fourth Ventricle, from its Figure call'd *Calamus Scriptorius*. On the *Medulla Oblongata*, near its Extremity, are four other Prominences, two on each Side; call'd *Corpora Pyramidalia* and *Olivaria*. See PYRAMIDALIA, OLIVARIA, CALAMUS, CONARIUM, RETE, &c.

*MEDULLA Spinalis*, or the *Spinal Marrow*, is a Continuation of the *Medulla Oblongata*, or *Medullary Part* of the Brain, without the Skull. It consists, as the Brain does, of two Parts, a White or *Medullary*, and a Cineritious or Glandulous; the former without, and the other within. The Substance of the exterior Part is much the same with that of the *Corpus Callosum*, only somewhat tougher, and more fibrous: which Difference becomes the more apparent, as it descends the lower; by reason of the Straightness of the Cavity, which growing gradually more narrow, presses the *Medullary Fibres* closer together, and renders them more compact, and gathers them into more distinct *Fasciculi*, till having descended the whole Tract of the *Spina*, they end in the *Cauda Equina*. It is the Origin of most of the Nerves of the Trunk of the Body: It sends out thirty Pair on each Side to the Limbs, the great Cavities, and other Parts; which are nothing but *Fasciculi* of *Medullary Fibres*, cover'd with their proper Membranes. See NERVE.

The *Spinal Marrow* is generally said to be cover'd with four Coats: The first, or external one, is a strong nervous Ligament, which ties the *Vertebrae* together, to the Inside of which it firmly adheres. The second is a Production of the *Dura Mater*; it is exceedingly strong, and serves to defend the *Spinal Marrow* from any Hurt from the Flexures of the *Vertebrae*. The third is a Production of the *Arachnoides*, and is a thin pellucid Membrane, lying between the *Dura* and *Pia Mater*, or the second and fourth Membranes of the *Medulla*. This Membrane gives a Coat to the Nerves, that go out of the *Spina*, which is the inner Membrane of the Nerves, as the *Dura Mater* gives the outer. The fourth Coat is a Continuation of the *Pia Mater*, and is an extremely thin, fine, transparent Membrane; strictly embracing the whole Substance of the *Medulla*, dividing it in the middle into two Tracts, and making, as it were, two Columns of it. See SPINA, VERTEBRAE, &c.

*MEDULLA Ossium*, or *Marrow of the Bones*, is a soft fatty Substance, placed in the Cavities or Pores of divers Bones; it is inclosed in a Membrane; and is devoid of Sense: it

is red in the greater Cavities, white in the less, and soft and succulent in spongy Bones. See BONE. From this is secreted the *Medullary Oil*. See MEDULLARY OIL.

*MEDULLARY Oil*, is no more than the finer and more subtil Parts of the *Medulla*, or Marrow of the Bones, so call'd. This, Dr. Havers observes, passes not into the Bones thro' Ducts, but by small Pores formed into the Vessels or Glandules, which are conglomerated into distinct Lobules, contained in several Membranes investing the whole Marrow; all which Vesicles or Bags are propagated from the outward Coat of the Arteries; and by these it passes from one to another, till it arrives at the Sides, or extreme Parts of the Bones. That Part of it, which is supply'd to the Interstices of the Joints, goes into them by Passages, penetrating thro' the Bone into those Cavities, and form'd for that end. The Use of this Oil is either common to all the Bones, whose Temper it preserves, and keeps from being too brittle; or more peculiar for the Joints, where it is very serviceable, (1.) To lubricate the Bones at their Extremities, that they may move more easily and free. (2.) To keep the Ends of the articulated Bones from growing hot with Motion. (3.) To preserve the Joints from wearing by Attrition, and rubbing one against another: And, (4.) To preserve the Ligaments of the Joints from Dryness and Rigidity; and lubricate those Parts, which slide upon the Bones, and keep the Cartilages, which are join'd to them, flexible.

MEETER. See METRE.

MEGALESIA, in Antiquity, a solemn Feast celebrated among the Romans on the 12th of April, in honour of the great Mother of the Gods, that is, Cybele or Rhea; wherein, were Games or Combats held before the Temple of that Goddess. They were call'd *Megalesia*, from the Greek *μεγας*, Great; Cybele being accounted the great Goddess.

MELA, a Chirurgeon's Instrument, call'd also *Speculum*, and by the Vulgar, *Tenta*. Its Use is to probe Ulcers, draw a Stone out of the Yard: Its Form is various, according to the Uses it is intended for. See SPECULUM.

MELANAGOGUES, are such Medicines as are suppos'd particularly to purge off black Choler; from *μέλας*, niger, black; and *ἀγω*, duco, to lead: but there is no such Distinction of Choler now regarded, and consequently this Distinction is but little used. See PURGATIVES.

MELANCHOLY, in Medicine, the Name of a Disease, which consists in a Delirium, without a Fever, and is usually attended with Fear, Heaviness and Sorrow, without any apparent Occasion. The Antients attributed this Disease to black and cloudy Spirits, arising as Vapours from a redundant black Bile. Some of the Moderns ascribe it to the irregular Motion of the Spirits, and their acid Constitution; and others, who know it better, to too heavy and viscid a Blood, which permits not a Sufficiency of Spirits to be separated in the Brain, to animate and invigorate the Nerves and Muscles: And others to a Dryness of the *Meninges* of the Brain. This Disease is vary'd an infinite number of Ways, according to the Temperament and Ideas of the Person affected with it. It is a Species of Madness, and only differs from a downright *Mania* in degree. The Word comes from the Greek *μέλας*, niger; and *χολή*, Bile. See MADNESS, DELIRIUM, &c.

MELCHISADECHIANS, antient Sectaries, so call'd, because they rais'd *Melchisadech* above all Creatures, and even above Jesus Christ. The Author of this Sect was one Theodotus; whence the *Melchisadechians* became more commonly known by the Name of *Theodotians*; all the Difference between those, and the strict *Theodotians*, consisting in that particular Article relating to *Melchisadech*; who, according to them, was the great and supreme Virtue. See THEODOTIANS.

MELCHITES, the Name of a Religious Sect in the Levant, who scarce differ from the Greeks in any thing relating either to Faith or Worship; but yet speak a different Language. The Word, in the Syriac, signifies *Royalists*, and was formerly apply'd to the Catholics by the Heretics, who refus'd to submit to the Decisions of the Council of Calcedon: intimating by this Appellation, that they were of the Religion of the Emperor. Those now call'd *Melchites*, are such People, as, inhabiting among the Syrians, Coptae, or Egyptians, and other *Levantine Nations*, follow the Opinions of the Greeks, tho' no Greeks themselves: And 'tis for this reason that *Gabriel Sionita* calls them indifferently by the Name of *Greeks* and *Melchites*. The same Author observes, that they are spread thro' all the Levant; that they deny Purgatory; and are declar'd Enemies to the Pope and his Primacy. For the rest, they fall in with the Greeks, both as to Articles of Faith and Discipline. They have translated the *Greek Euchologue*, and other Books of that kind, into Arabic; and have the Canons of Councils in the same Language. To those of the Council of Nice, they have added new Canons, commonly



monly call'd the *Arabic Canons*; which are likewise receiv'd by the *Jacobites* and *Maronites*: Tho' most of the Learned look on them as spurious.

**MELICERIS**, is a Tumour inclosed in a *Cystis*, consisting of Matter like Honey: it gathers without Pain, and gives way upon Pressure, but returns again: It is to be cured by warm Discutients.

**MELITITES**, a greyish Stone, which, when pulveriz'd, yields a milky Liquor, of a Taste somewhat like Honey; whence it takes its Name. It is found in Mines of Metals, and seems to partake pretty much of the Nature of Lead; having a Sweetness somewhat like the *Sal Saturni*, but much fainter. It only differs from the *Galactites*, in that it is milder to the taste. The Antients used it in Inflammations of the Eyes, and to dry Ulcers.

**MELIUS Inquirendo**, is a Writ that lieth for a second Inquiry of what Lands and Tenements a Man died seized; where Partiality is suspected, upon the Writ, call'd, *Diem clausit extremum*.

**MELODY**, in Music, is the agreeable Effect of different Musical Sounds, ranged or disposed in Succession. So that Melody is the Effect only of one single Part, Voice, or Instrument; by which it is distinguish'd from *Harmony*; tho' in common Speech, these two are frequently confounded. Harmony is the agreeable Result of the Union of two or more concurring musical Sounds heard in Consonance, i. e. at one and the same time; so that Harmony is the Effect of two Parts at least: As therefore a continued Succession of musical Sounds produces Melody, so does a continued Combination of these produce Harmony. See HARMONY and CONCORD; see also Music in PARTS.

Tho' the Term *Melody* be chiefly applicable to the Treble, as the Treble is chiefly distinguish'd by its Air; yet so far as the Bass may be made airy, and to sing well, it may be also properly said to be *Melodious*. See TREBLE and BASS.

Of the twelve harmonical Intervals of Musical Sounds, distinguish'd by the Names of *Second lesser*, *Second greater*; *Third lesser*, *Third greater*; *Fourth*; *false Fifth*; *Fifth*; *Sixth lesser*, *Sixth greater*; *Seventh lesser*, *Seventh greater*; and *Octave*; all Melody, as well as Harmony, are compos'd: For the Octaves of each of these are but Replications of the same Sounds; and whatever is said of any, or all of these Sounds, is to be understood also of their Octaves. See OCTAVE.

For the Rules of *Melody*, see COMPOSITION. The Word comes from the Greek *μελῆ*, *Honey*; and *ωδή*, *Singing*.

**MEMBERS**, in Anatomy, the exterior Parts, arising from the Trunk, or Body of an Animal, like Boughs from the Trunk of a Tree. See BODY. The Physicians divide the Body into three Regions or Venters (the Head, the Breast, and the Lower Ventricle;) and their Extremities, which are the *Members*. In *Latin* they are call'd *Artus*, of *Artare*; because they are Parts attach'd to the Trunk.

Each Member, and Portion of the Body, was antiently devoted to some Divinity. The Head to *Jupiter*, the Breast to *Neptune*, the Navel to *Mars*, the Ear to *Memory*, the Forehead to the *Genius*, the Right-Hand to *Faith* or *Fidelity*, the Knees to *Mercy*; the Eye-brows, again, to *Jupiter*, the Eyes to *Cupid*, or, according to others, to *Minerva*; the hind Part of the right Ear to *Nemesis*, the Back to *Pluto*, the Reins to *Venus*, the Feet to *Mercury*, the Heels and Soal of the Foot to *Thetys*, and the Fingers to *Minerva*.

**MEMBERS**, in Architecture. See MOULDINGS.

**MEMBER**, in Grammar, is understood of the Parts of a Period or Sentence. See PERIOD and SENTENCE.

**MEMBER'D**, or **MEMBRED**, in Heraldry, is where the Leg or Foot of an Eagle, Griffin, or other Bird, is of a different Colour from the rest of the Body.

**MEMBRANA**, in Anatomy.

**MEMBRANA Communis Musculorum.**

**MEMBRANA propria Musculorum.**

**MEMBRANA Communis Vasculorum.**

**MEMBRANA Adiposa.**

**MEMBRANA Carnosa.**

**MEMBRANA Nictitans.**

**MEMBRANA Tympani.**

**MEMBRANA Urinaria.**

**ADIPOSA.**

**CARNOSA.**

**NICTITATING.**

**TYMPANUM.**

**ALLANTOIS.**

**MEMBRANE**, in Anatomy, a similar Part of an Animal Body; being a thin, white, flexible, expanded Skin, form'd of several sorts of Fibres interwoven together, and serving to cover or wrap up some certain Parts of the Body. See BODY and PART.

The *Membranes* of the Body are various; and variously demonstrated: Such are the *Periostrum*, *Pleura*, *Pericardium*, *Peritoneum*, &c. which see under their proper Articles; *PRIOSTRUM*, &c.

Those *Membranes* which serve as Integuments, or Covers of Vessels, are call'd *Coats* or *Tunics*; and those which cover the Brain, are, by a peculiar Name, call'd *Meninges*: See TUNIC and MENINGES.

The Fibres of a *Membrane* give them an Elasticity, whereby they can contract, and closely grasp the Parts they contain; and their nervous Fibres give them an exquisite Sense, which is the cause of their Contraction: they can therefore scarcely suffer the Sharpness of Medicines, and those are difficultly united, when wounded. In their Texture, there is a number of small Glands, which separate an Humour, fit for moistening the Parts they contain. By reason of the Thickness and Transparency of the *Membranes*, the Ramifications of the Blood-Vessels are more apparently seen in them, than in any other Part of the Body: here the innumerable Divisions, Windings, and Turnings, serpentine Progressions, and frequent Inosculation, not only of Veins and Arteries together, but also of Veins with Veins, and Arteries with Arteries, make a most agreeable Embroidery, and delicate Net-work, covering the whole *Membrane*.

The Use of the *Membranes* is to cover and wrap up the Parts, and strengthen them; to save them from external Injuries; to preserve the natural Heat; to join one Part to another; to sustain small Vessels, and the Nerves which run thro' their Duplicatures; to stop the returning of the Humours in their Vessels, as the Valves stop the returning of the Blood in the Veins and Heart; of the Chyle in the Thoracic Duct; and of the Lympha in the Lymphatic Vessels.

Anatomists generally assert, that there is a *Membrana Communis Musculorum*, or *Membrane* common to all the Muscles; being led into that Mistake by the *Aponeurosis* of several Muscles; whereas, upon stricter Observation, there is no such thing to be found. See MUSCLE. The *Membrana propria Musculorum*, is that which immediately covers all and every one of the Fibres of a Muscle, and is closely tack'd to them. There is another common *Membrane*, call'd *Membrana Communis Vasculorum*; which is a thin *Membrane*, accompanying almost all the Vessels of the Body. All these *Membranes* receive Veins, Arteries, and Nerves from the Parts which are nearest to them. The Word comes from the *Latin* *Membranam*, *Parchment*.

**MEMBRANOSUS**, in Anatomy, a Muscle of the Leg, so call'd from its large membranous Expansion inclosing all the Muscles of the Tibia and the Tarsus; whence it is also call'd *Fascia lata*. It hath a sharp fleshy beginning from the fore-part of the Spine of the Os Ilium, but soon becomes membranous, and covers almost all the Muscles of the Thigh and Leg, down to the Foot, where it joins with the *Ligamentum Annulare*; and in its Action turns the Leg outwards.

**MEMBRED**: In Heraldry, those Birds, which are either whole-footed, or which have no Talons, are blazon'd by the Term, *Membred*.

**MEMOIRS**, a Term now much in use for Histories, composed by Persons who had some Share or Concern in the Transactions they relate, or who were Eye-witnesses of them; answering to what the *Latins* call'd *Commentarii*. The *French* are great Dealers in this way of Writing, and have an infinite number of Books of *Memoirs*, containing, for the Generality, the Lives and Actions of the Writers.

**MEMOIRS** are also used for a Journal of the Acts, and Proceedings of a Society; or a Collection of the Matters debated, transacted, &c. therein. Such are the *Memoirs* of the Royal Academy of Sciences, &c. See ACADEMY, &c.

**MEMORY**, a Power, or Faculty of the Mind, whereby it retains or recollects the simple Ideas, or the Images, and Remembrance of Things we have seen, imagin'd, understood, &c. See SOUL; see also POWER, FACULTY, &c.

Of all the Faculties, there is none harder to account for, or that has perplex'd Philosophers more, than the *Memory*. Some will have it a mere Organ, as the Eye, Ear, &c. Dr. Hook, in an *Essay towards a mechanical Account of Memory*, makes it to consist in a stock of Ideas or Images, form'd occasionally by the Mind, out of the fine Parts of the Brain, and disposed, or laid by in order. Des Cartes and his Followers maintain, That the animal Spirits exciting a Motion in the most delicate Fibres of the Brain, leave a kind of Traces or Footsteps, which occasion our Remembrance. Hence it happens, that by passing several times over the same things, the Spirits becoming accustomed to the same Passages, leave them open, and so make their way without any Effort or Labour; and in this consists the Ease wherewith we recollect such Ideas. Thus Wine is found to sharpen the *Memory*, in regard the Spirits of the Wine put the animal Spirits in Motion, and agitate the Fibres of the Brain the more briskly. See IDEA, BRAIN, TRACIL, REMEMBRANCE, &c.

Father Malbranche expresses his Notion of *Memory* thus: 'It being granted, that all our different Perceptions are owing to Changes happening in the Fibres of the principal Part of the Brain, wherein the Soul more immediately



diately resides, the Nature of the Memory is obvious: for as the Leaves of a Tree, that have been folded for some time, in a certain manner, preserve a Facility or Disposition to be folded again in the same manner; so the Fibres of the Brain, having once receiv'd certain Impressions by the Course of the animal Spirits, and by the Action of Objects, preserve, for some time, a Facility to receive the same Disposition. Now 'tis in this Facility that Memory consists; for we think on the same Things, when the Brain receives the same Dispositions. Further, as the animal Spirits act sometimes more briskly, and sometimes more languidly on the Substance of the Brain; and as sensible Objects make much deeper, and more lasting Impressions, than the Imagination alone; 'tis easy, on this Scheme, to conceive why we don't remember all Things alike: Why a Thing, for instance, seen twice, is represented more vividly to the Mind, than another seen but once: Why Things that have been seen, are usually remembered more distinctly, than those that have been only imagin'd, &c. See HABITUDE.

Old Men are defective in Memory, and cannot learn any thing without much difficulty; because they want animal Spirits to make new Traces, and because the Fibres of the Brain are become too hard to receive, or too moist to retain such Impressions. For the same reason, those who learn with the greatest Ease, forget the soonest; in regard when the Fibres are soft and flexible, Objects make a slight Impression, which the continual Course of animal Spirits easily wears off: On the contrary, the Fibres of those who learn slowly, being less flexible, and less subject to be shaken, the Traces are more deeply engraven, and last the longer. From all which Observations it follows, that the Memory is absolutely dependant on the Body; being impair'd or strengthen'd, according to the Changes that befall the Body; a Fall, the Transports of a Fever, &c. being frequently found to erase or blot out all the Traces, to bear away all the Ideas, and to cause an universal Forgetfulness.

The chief Difficulty that clogs this Doctrine of Memory, is to conceive how such an infinite number of Things, as the Head is stored withal, should be ranged in so much order in the Memory; as that the one should not efface the other: and how in such a prodigious Assemblage of Traces impress'd on the Brain, the animal Spirits should awake precisely those which the Mind has occasion for. See SPIRITS.

Seneca says of himself, that by the mere Effort of his natural Memory, he was able to repeat two thousand Words upon once hearing them, each in its order; tho' they had no Dependance or Connection on each other. After which he mentions a Friend of his, Portius Latro, who retain'd in his Memory all the Declamations he had ever spoke, and never had his Memory fail him, even in a single Word. He also mentions Cyneas, Ambassador to the Romans from King Pyrrhus, who in one day had so well learnt the Names of his Spectators, that the next he saluted the whole Senate, and all the Populace assembled, each by his Name. Pliny says, that Cyrus knew every Soldier in his Army by Name; and L. Scipio, all the People of Rome. Charmidas, or rather Carneades, when required, would repeat any Volume found in the Libraries; as readily as if he were reading. Dr. Wallis tells us, that without the assistance of Pen and Ink, or any thing equivalent, he was able in the dark, by mere force of Memory, to perform Arithmetical Operations, as Multiplication, Division, Extraction of Roots, &c. to forty Places. Particularly, that in February 1677, at the request of a Foreigner (by Night, in Bed) he propos'd to himself a Number of fifty-three Places, and found its square Root to twenty-seven Places; and without ever writing down the Number, dictat'd 'em from his Memory, at his next Visit, twenty Days afterwards.

Local or Artificial Memory, is an Art or Invention, by means whereof, the Memory is supposed to be aided, strengthen'd, and enlarg'd. This Art seems to consist in nothing else but a certain Method of coupling or associating Ideas of Things to be remembered; with the Ideas of other Things, already dispos'd orderly in the Mind, or that are before the Eyes. It is of an old standing, having been practis'd by many of the ancient Orators; some whereof are said to have made use of Paintings, Images, and Emblems, on this occasion: Tho' others contented themselves with the Parts, Members, Ornaments, Furniture, and other Circumstances of the Place where they were to speak. Muretus tells us, that a young Man of Corsica pretending to do wonders this way, Muretus put him to the Tryal; and upon dictating to him two or three thousand Words, some Greek, some Latin, some Barbarous; all without any relation to each other, and the greatest part without any Meaning at all: the Artist immediately, and without any hesitation, or the least stumbling

or misplacing, repeated them all, from first to last, in the same order wherein they had been dictat'd; and, this done, beginning where he ended, he repeated them all backwards, from last to first. Adding, that this was but a slight Essay of his Memory; and that he would undertake to repeat thirty-six thousand Words in the same manner.

The truth is, this Art seems better calculated for retaining things without any Coherence or Dependance on one another, as mere Words or Sounds, &c. than for things where Reason or Judgment are any way required.

Raim. Lully took so much pains with it, that it now goes by his Name, being call'd Lully's Art.

MEMPHITES, or Lapis MEMPHITICUS, a sort of Stone mentioned by Dioscorides, Pliny, and other Natural Historians. 'Tis suppos'd to be found in Egypt not far from the City Cairo, the antient Memphis; whence its Name. The Property it is famed for, is, that being pulverized, and smear'd on any part of the Body to be cut off, it deadens it so, as that the Patient shall perceive no pain from the Operation.

MENANDRIANS, the most antient Branch of Gnostics, thus call'd from Menander their Chief, a Disciple of Simon Magus, and himself a Magician. See Gnostics.

He taught, that no Person could be saved unless he were baptized in his Name: He confer'd a peculiar sort of Baptism, which would render those who receiv'd it immortal in the next World. St. Irenaeus represents him, as pretending to be, That first Virtue hitherto unknown to the World, and to have been sent by the Angels for the Salvation of all Mankind. He took upon him, says St. Epiphanius, Har. 2. to be greater than his Master; which contradicts Theodoret, who makes Menander a subordinate Virtue to Simon Magus, the great Virtue of all. See SIMONIANS.

MENDICANTS, *q. d.* Beggars; a Term apply'd to several Orders of Religious, who live on Alms, and go a begging from Door to Door.

There are four antient Orders which pass principally by the Name of the Four Mendicants: The Carmelites, Jacobines, Cordeliers, and Augustins. See CARMELITES, JACOBINES, &c. each under their proper Articles.

Among the Number of Mendicants, are also ranked the Capuchins, Recollects, Minims, and others. See CAPUCHINS, RECOLLECTS, &c.

The Mendicants at the time of their first Establishment, could not have any Revenues. The Multitudes of Mendicants, are now a kind of Tax on the People.

MENINGES in Anatomy, the Coats, or Membranes wherewith the Brain is inclosed. See BRAIN.

The Arabs call them Mothers; whence we also usually call them in Latin the Pia and Dura Mater. See PIA and DURA Mater.

There are two of these Meninges, the External and Internal.

The external one, being the grossest, is call'd the Dura, or Crassa Meninx or Mater. It lies immediately under the Cranium, and covers the whole Substance of the Brain, and the Spinal Marrow, and affords a Coat to the Trunks of the larger Nerves. See NERVE, &c. It is connected on the upper part to the Periostrum by means of Fibres, and on the other side to the Pia Mater by the Branches of the Sinus's, and by the Arteries and Nerves. It consists of two lesser Coats or Membranes, which some have taken for two Dura Maters; the exterior, hard: and the inner, more smooth, soft, and moist. It descends double between the two Hemispheres of the Brain, which it divides as deep as the Corpus Callosum, and by reason of its Curvature, occasion'd by the Convexity of the Brain in that part, is called Falx, from its resemblance to a Sickle. See FATX. It likewise insinuates itself between the Brain and Cerebellum, and so prevents the Brain from lying too hard on the Cerebellum. In the Duplicatures thereof, are several Cavities call'd Sinus's, which are a sort of venous Canals serving for the reconveyance of the Blood. Of these there are four considerable ones, viz. the Longitudinales and Laterales. See SINUS.

Under the Dura Mater, immediately upon the Brain, lies the Meninx tenuis, or Pia Mater, which is a fine thin Membrane adhering so closely, and insinuating itself into all the Folds and anfractuons parts of the Brain, that it is scarce to be separated from it. This Membrane covers the whole Brain, Cerebellum, and Medulla Oblongata, and serves, together with the other, for the Defence of the Brain, and the Support of its Vessels.

Between the two, lies another fine transparent Membrane, call'd Arachnoides; but the best Anatomists take this for no more than the external Lamina of the Pia Mater. See ARACHNOIDES.

MENIPPEAN, or Satyra MENIPPEA, a kind of Satyr compos'd both in Prose and Verse. See SATYR.

It is thus call'd from Menippus, a Cynic Philosopher, who delighted in composing Satyrical Lectures, &c. In imitation of him, Varro first wrote Satyrs under the Title of Satyre Menippea.



Among the Moderns, there is a famous Piece under this Title, first published in 1594, against the Chiefs of the League, call'd also the *Catholicon of Spain*. It is esteem'd a Master-piece for the time. See CATHOLICON.

**MENISCUS**, in Optics, a Glass, or Lens, concave on one side, and convex on the other; sometimes also call'd *Lunula*. See LENS and OPTIC GLASS.

In a *Meniscus*, if the Diameter of the Convexity be equal to that of the Concavity, a Ray falling parallel to the Axis, will continue parallel thereto after refraction.

Such a *Meniscus* therefore, will neither collect, nor disperse the Rays; and is therefore of no use in Dioptricks. See REFRACTION.

To find the Focus of a *Meniscus*, the Rule is, As the difference of the Semi-diameters of the Convexity and Concavity, is to the Semi-diameter of the Convexity: so is the Diameter of the Concavity, to the distance of the Focus from the *Meniscus*. Hence,

If the Semi-diameter of the Concavity, be triple the Semi-diameter of the Convexity, the distance of the Focus from the *Meniscus* will be equal to the Semi-diameter: and therefore the *Meniscus* will be equivalent to a Lens equally convex on either side. See CONVEX-LENS.

Again; If the Semi-diameter of the Concavity be double that of the Convexity; the distance of the Focus will be equal to the Diameter: and therefore the *Meniscus* will be equivalent to a Plano-Convex Lens. See PLANO-CONVEX.

If the Semi-diameter of the Concavity be quintuple that of the Convexity, the *Meniscus* will be equivalent to a Sphere. See SPHERICAL LENS.

The Semi-diameter therefore of the Convexity being given; that of the Concavity required to remove the Focus to any given distance from the *Meniscus*, is easily found. See FOCUS.

**MENNONITES**, a Sect in the United Provinces, in most respects the same with those in other Places called *Anabaptists*. See ANABAPTIST.

They had their Rise in 1496, in a Village in *Friesland*: their Founder was one *Mennon*, who undertook to reform the Religion of the antient *Anabaptists*, and to throw out all Enthusiasm touching the new Kingdom of Christ, &c.

The *Mennonites* hold, that there is no original Sin; that the first Man was not created just; that in speaking of the Father, Son, and Holy Ghost, we must not use the word *Person*, nor that of *Trinity*; that Jesus Christ did not take his Flesh from the Substance of his Mother, but from the Essence of the Father; or that the Word of the Father became Man; that he brought it from Heaven; or that we don't know whence he had it: And that the Union of the Divine and Human Nature was so effected, as that the Divine was rendered visible, and liable to Death.

The *Mennonites* teach farther, that Christians are not allow'd to swear; to exercise any Civil Magistrature; to use the Sword, nor even for the Punishment of Criminals. They add, that Ministers of the Word are not permitted to receive any Wages for their Work: that they must not baptize little Children; and that the Souls of Men after Death rest in an unknown Place till the Day of Judgment.

The *Mennonites* are said to be divided into Sects, whereof there are two Principal. The *Mennonites* of *Friesland*, and those of *Flanders*.

The latter exercise a very strict Church-Discipline, and Excommunicate for the slightest Offence; nor do they hold it lawful to have any Society or Communication with those Excommunicated. Those of *Friesland*, on the contrary, receive into their Communion such as are Excommunicated by the others; whence they are call'd *Stercorarii* and *Barbari*. Their Discipline is very remiss.

They recommend an universal Toleration of Religions very earnestly, and receive all kind of Persons into their Assemblies, provided they be of good Morals, and believe the Scripture to be the Word of God; however divided they may be as to the particular Articles of Faith.

Tho' the *Mennonites* usually pass for a Sect of *Anabaptists*, yet M. Her. Schin, who has published their History and Apology, maintains that they are not *Anabaptists*, either in Principle, or by Origin: He owns they baptize none but Adults; but then, neither do they re-baptize any who had received it in their Childhood. They speak with a great deal of Prudence and Reserve as to the extraordinary Operations of the Holy Spirit; and are far from the Fanaticism of the old *Anabaptists*. No People are more submissive to Magistrates, or carry Passive Obedience farther than they. Far from Rebellion; they condemn even the most just War, &c.

**MENOLOGY** in the Greek Church, is much the same with the *Martyrology*, or *Calendar* in the Latin. See MARTYROLOGY and CALENDAR.

It is divided into the several Months in the Year; and contains an Abridgment of the Lives of the Saints; with a bare Commemoration of the Names of such whose Lives were never written. The *Greeks* have various *Menologies*. The *Romans* tax them with inserting divers Hereticks in their *Menologies* as Saints. *Baillet* treats of them at large.

The Word comes from the Greek *μην* Month, and *λογος*, Discourse.

**MENSALIA**, and **MENSALES**, were such Parsonages, or Livings as were formerly united to the Tables of Religious Houses; and therefore by Canonists call'd *Mensal Benefices*. See PARSONAGE and BENEFICE.

**MENSES**, *Catamenia* in Medicine, &c. The Monthly Evacuations of Women not with Child, nor giving suck; so call'd from *Mensis*, Month, the Period wherein they return. They are also called *Flowers*, *Courses*, &c.

The *Menses* make one of the most curious and difficult Phenomena in the whole human Body; for the Explanation whereof, many Hypotheses have been framed: tho' the Matter is yet scarcely ascertained.

'Tis generally agreed by all, that the Necessity Women are under for some extraordinary Supply to compensate the Expence, and support them during the time of Gestation, was the final Reason why this Redundance at other times was given them. But this is all they agree in. Some not content with this Occasion alone, will have the *Menstruous* Blood offend in Quality more than in Quantity; which they argue from the Pain it gives many Women in the Evacuation. They add, that its Malignity is so great, that it excoriates the Parts of Men by mere contact; that the Breath of a *menstruous* Woman will give a permanent Stain to Ivory, or a Looking-Glass; that a little of the Blood drop'd on any Vegetable, blasts, or renders it steril; that if a pregnant Woman be defiled with the *Menses* of another Woman, she miscarries; that if a Dog taste them, he runs Mad, and grows Epileptic: All which, with many more Fables of the same kind, tho' related by great Authors, Dr. Drake rejects, as too ridiculous to need a Refutation.

Others ascribe this Effect to an imaginary Dominion of the Moon over the Bodies of Women. This was formerly the prevailing Opinion; tho' the smallest Reflection would have shewn them the weakness of it: For had this Purgation been owing to the Influence of the Moon, all Women of the same Age and Temperament, would have found it at the same Periods and Revolutions of the Moon, i. e. at the same time; which all Experience shews to be false.

There are two other Opinions which carry with them a great deal of Probability, and are argued with a great deal of Strength and Reason. In both which, the Quality of the Blood is allow'd to be Innocent; but they still differ about the Reason of its Issue. The former is that of Dr. Bohn and Dr. Friend, who maintain this Flux to be the result of a *Plethora*, or Plenitude; and to be evacuated only for Relief against the Quantity.

Dr. Friend, who has maintain'd the Cause of a *Plethora* with the greatest Strength and Clearness, supposes that this *Plethora* arises from a Coacervation in the Blood-Vessels of a superfluity of Aliment, which he thinks remains over and above what is expended by the ordinary ways; and that Women have this *Plethora*, and not Men, because their Bodies are more humid, and their Vessels, especially the Extremities of them, more tender, and their manner of living generally more unactive than that of Man; and that these things concurring, are the occasion that Women do not perspire sufficiently to carry off the superfluous alimentary Parts, till it be accumulated in such quantity as to distend the Vessels, and force its way thro' the Capillary Arteries of the Uterus. It is supposed to happen to Women more than the Females of other Species, which have the same Parts, because of the erect Posture of the former; and the *Vagina*, and other Canals, being perpendicular to the Horizon; so that the Pressure of the Blood is directed towards their Orifices: Whereas in Brutes, they are parallel to the Horizon, and the Pressure wholly on the Sides of those Vessels. The Discharge, he thinks, happen in this Part rather than in any other, as being more favoured by the Structure of the Vessels; the Arteries being very numerous, and the Veins sinuous and winding, and therefore more apt to retard the Impetus of the Blood, and consequently, in a *Plethoric* Case, to occasion the Rupture of the Extremities of the Vessels, which may last, till by a sufficient discharge the Vessels are eased of their Over-load.

This is the Substance of that great Man's Theory, from whence he very Mechanically, and very Philosophically accounts for the Symptoms.

To his Argument, why Women have *Menses* rather than Men, we may add from Boerhaave, that in the former, the *Os Sacrum* is wider, and stands farther out, and the *Os Coccygis* farther in; the *Ossa Innominata* wider, and farther



farther apart, and the lowest of them, as well as the lower Eminences of the *Os Pubis* farther outwards than in the latter. Hence in Women, the Latitude or Expansion about these Bones, and the Capacity of the *Pelvis*, is vastly great in proportion to those of Men; and yet in a Woman not pregnant, there is not much to fill this Expanse. Again, the fore-side of the *Thorax* is smoother in Women than in Men, and the Blood-Vessels, Lymphatics, adipose and nervous Vessels, Membranes and Fibres, are much laxer in Women than in Men: whence all their Cavities, Cells, Vessels, &c. are more easily repleted, and the Humours aggregated in them; besides that, they are found to perspire less than Men, and to arrive much sooner at their Maturity, or *Ætate* of Increase. To which he adds the Consideration of the soft pulpy Texture of the *Uterus*, and the vast number of Veins and Arteries it is fill'd withall.

Hence, a healthy Maid, being arrived at her Growth, begins to prepare more Nutriment than is required for the support of the Body; which, as there is not to be any farther accretion, must of necessity fill the Vessels, and especially those of the *Uterus*, and Breasts, as being the least compressed. These will be dilated more than the others; whence the lateral *Vasculæ* evacuating their Humour into the Cavity of the *Uterus*, it will be fill'd, and extended: Hence, a Pain, Heat, Heaviness, will be felt about the Loins, *Pubes*, &c. the Vessels of the *Uterus* at the same time will be so dilated, as to emit Blood into the Cavity of the *Uterus*, its Mouth will be lubricated and loosened, and Blood issue out. As the Quantity of Blood is diminished, the Vessels will be less press'd, and will contract themselves closer, so as again to retain the Blood, and let pass the grosser part of the *Serum*; till at length, only the usual *Serum* passes. Again, there are more Humours prepar'd, which are more easily lodged in Vessels once dilated; hence the *Menses* go, and return at various Periods in various Persons.

This Hypothesis, however plausible, is opposed by Dr. Drake, who maintains that there is no such Repletion, or at least that it is not necessary to *Menstruation*. Arguing, That if the *Menses* were owing to a *Plethora* so accumulated, the Symptoms would arise gradually, and the Heaviness, Stiffness, and Inactivity, necessary Symptoms of a *Plethora*, would be felt long before the Period were compleated, and Women would begin to be heavy, and indisposed soon after Evacuation, and the Symptoms increase daily: Which is contrary to all Experience; many Women, who have them regularly and easily, having no warning, nor other Rule to prevent an indecent Surprise, than the measure of the Time; in which, some that have slip'd, have been put to Confusion and Shifts, no ways consistent with the notice a *Plethoric* Body would give. He adds, that even in those who are difficultly purged this way, the Symptoms, tho' very vexatious and tedious, do not make such regular Approaches, as a gradual Accumulation necessarily requires. If we consider what violent Symptoms come on in an Hour, we shall be extremely puzzled to find the mighty Accession of Matter which should in an Hour or a Day's time make such great Alterations. According to the Hypothesis, the last contributes no more than the first, and of Consequence, the Alteration should not be greater in the one than the other; setting aside the bare Eruption.

This is the substance of what is argued against Dr. Friend's Theory; which, it must be own'd, notwithstanding these Objections, is still the most rational and consistent that has yet been advanced.

Those who oppose it, give into the Doctrine of Fermentation, and maintain the Evacuation of Blood, on those parts, to be the Effect of an Effervescence, or Ebullition of the Blood. This Opinion has been maintained by many, particularly Dr. Charleton, Bale, De Graaf, and Drake. The two first of which suppose a Ferment peculiar to the Women which produces this Flux, and affects that part only, or at least principally. Dr. Graaf, less particular in his Notion, only supposes an Effervescence of the Blood raised by some ferment, without assigning how it acts, or what it is. The sudden Turgescence of the Blood, occasion'd them all to think, that it arose from something till then extraneous to the Blood, and led them to the Parts principally affected, to seek for an imaginary Ferment, which no Anatomical Enquiry could ever shew, or find any Receptacle for, nor any Reasoning necessarily infer. Again, that Heat which frequently accompanies this Turgescence, led them to think the Cause more than a *Plethora*, and that there was some extraordinary intestine Motion at that time.

Dr. Drake improves on the Doctrine of a Ferment; and contends not only that it is necessary there should be a Ferment, but a Receptacle also for this Ferment: Concluding from the Suddenness and Violence of the Symptoms, that a great quantity must be convey'd into the Blood

in a short time, and consequently, that it must have been ready gather'd in some Receptacle, where, while it was lodg'd, its Action was restrained. But he goes farther still, and pretends to ascertain the Place, &c. both of the one and the other, making the Gall-Bladder to be the Receptacle, and the Bile the Ferment. This Liquor he thinks well adapted to raise a Fermentation in the Blood, when discharged into it in a Quantity: And as it is contain'd in a Receptacle that does not admit of a continual Issue, may be there reserved, till in a certain Period of Time, the Bladder becoming turgid and full through the Compression of the incumbent *Viscera*, it emits the Gall: which, by the way of the *Lacteals*, insinuating itself into the Blood, may raise that Effervescence which occasions the Aperture of the Uterine Arteries.

To confirm this, he alledges, that Persons of a bilious Constitution, have the *Menses* either more plentifully, or more frequently than others; and that Distempers manifestly bilious, are attended with Symptoms resembling those of Women labouring under difficult *Menstruation*. If it be objected, that on this foot, Men should have *Menses*, as well as Women; he answers, that Men don't abound in Bile so much as Women; the Pores of the former being more open, and carrying off more of the serous part of the Blood, which is the Vehicle of all the other Humours; and, consequently, a greater part of each is discharged thro' them than in Women; wherein the Superfluity must either continue to circulate with the Blood, or be gathered in proper Receptacles, which is the Case in the Bile. The same Reason he gives why *Menstruation* should not be in Brutes; the Pores of these being manifestly more open than those of Women, as appears from the Crop of Hair which they bear; for the Vegetation whereof, a large Cavity, and a wider Aperture of the Glands is necessary, than where no such thing is produced. Yet there is some difference between the Males and Females even among these, the latter having their *Menses*, tho' not so often, nor in the same Form and Quantity, as Women.

He adds, that the several Phenomena of the *Menses*, whether in a natural, a regular, or diseased Case, flow naturally and readily from this Hypothesis; and that whatever may be accounted for from a *Plethora*, or from any particular Ferment, may, without any straining, be apply'd to this.

The Root of black *Hellebore* and Steel, are the principal Remedies for Obstructions of the *Menses*; the former, is almost infallible, and in many Cases where the latter is not only ineffectual, but improper; as in *Plethoric* Habits, for with such, Steel will sometimes raise *Hysteric* Commotions, Convulsions, and a kind of Uterine *Furor*; whereas *Hellebore* thins the Blood, and disposes it for a Discharge without making it more impetuous. So that tho' each provoke the *Menses*, yet they do it by different ways; Steel by increasing the Blood's Velocity, and giving it a greater Moment against the Uterine Arteries; and *Hellebore* by dividing it, and rendering it more fluid. See HELLEBORE and CHALYBEAT.

## MENSIS

MENSIS CHYMICUS

MENSIS VETITUS

MENSTRUAL, or MENSTRUOUS, a Term in Medicine, applied to the Blood which flows from Women in their ordinary monthly Purgations. See MENSES.

The *Menstrual* Blood is the excess, or redundance of the Blood in the Body. It may be defined an Excrement serving for the Generation, as well as Nutriture of the *Fetus* in the Womb, and which at other times is evacuated Monthly.

Of all Animals, there is none besides Women, and perhaps Apes, which have their *Menstrual* Purgations. *Hippocrates* says, that the *Menstrual* Blood gnaws and tears the Earth like Vinegar. *Pliny* and *Columella* add, that it burns Herbs, kills Plants, tarnishes Looking-Glasses, and that Dogs which taste it, run mad. But this is all fabulous; it being certain that this Blood is the same with that in the Veins and Arteries. By the *Jewish* Law, a Woman was unclean while the *Menstrual* Blood flow'd: and the Man who touched her, or the Moveables she had touched, were declared unclean. *Levit. Chap. XV.*

MENSTRUUM, or DISSOLVENT, in Chymistry, any Liquor that will dissolve, i. e. separate the Parts of hard Bodies. See DISSOLVENT and DISSOLUTION.

Thus *Aqua Regalis* is a *Menstruum* for Gold; *Aqua Fortis*, and Spirit of Nitre, for most other Metals; Common Water for Salts, &c. See GOLD, SILVER, SALT, &c.

In Pharmacy, it is chiefly defined a Body that will extract the Virtues of Ingredients by Infusion, Decoction or the like. See INFUSION, DECOCTION, &c.

The Term *Menstruum* takes its rise from this, that some Chymists pretend the compleat Dissolution of a mix'd Body can't be effected in less than 40 Days, which Period they call a *Philosophical Month*.



*Menstruum* is properly defined a Body, which being applied to, or intermixed with another, does so dissolve it, as that all the dissolving Parts float among the Parts dissolved; and so divides it into its minutest Parts, as that the Parts of the Dissolvent are intermixed with those of the Body dissolved. Whence it appears, that every *Menstruum* in dissolving a Body, is likewise dissolved itself; so as with the Body it dissolves, to make up one Body. A Knife therefore divides Bread, but is not on that account a *Menstruum*; as it does not constitute one Body with the Bread: but Water boil'd with the Bread is a *Menstruum*, with regard to the Bread, as it only makes up one Body therewith. See DISSOLUTION.

The antient Chymists were very careful in all their Processes; that neither the Degree of Fire, nor the *Menstruum*, might deceive 'em.

All *Menstruums*, at the time they act as such, that is, at the time they are dissolving, act as Liquids; whether such *Menstruum* be a Liquid or a Solid. Thus, e. gr. Silver is a *Menstruum* with regard to Gold; for if you take an Ounce of Silver, melt it at the Fire, and add a Grain of Gold; all the Parts of the Silver will intermix themselves with the Parts of the Gold: so, as that the Gold and Silver, which before were separate, now make one Mass. But Gold and Silver are only *Menstruums* as they are dissolved by the Fire; i. e. as they are fluid.

All *Menstruums* may be divided into two Classes; the first consists of such as are fluid; the second of such as are solid: that is, they are either actually divided, or they must be so e'er they act.

Fluid *Menstruums* are Water, Dew, Oils, Saline and Acid Spirits, Alkali, Salts, &c. and Solid *Menstruums*, are such as must be made fluid e'er they will dissolve; such are most Salts, Nitre, Vitriol, &c. See WATER, SALT, VITRIOL, &c.

As to the Action of *Menstruums*; Sir Isaac Newton accounts for it from the Acids wherein they are impregnated. The Particles of Acids are found to be endued with a strong attractive Force, wherein their Activity consists, and by virtue whereof they dissolve Bodies. See ATTRACTION. These Acids he supposes of a middle Nature between Water, and hard Bodies, and to attract both. By this Attraction they gather together about the Particles of Bodies, whether metallick, stony, or the like, and adhere to them very close, so as scarce to be separated from 'em by Distillation, or Sublimation. Thus strongly attracted, and gather'd together on all sides, they raise, disjoin, and shake asunder the Particles of Bodies, i. e. they dissolve them; and by the attractive Power whereby they rush against the Particles of the Bodies, they move the Fluid, and so excite Heat, shaking some of the Particles to that degree, as to convert 'em into Air, and so generating Bubbles. See ACID.

Dr. Keil gives us the Theory or Foundation of the Action of *Menstruums*, in the following Propositions.

1°. Two Corpuscles may be placed so near each other, without touching, as that the Force wherewith they attract each other, shall easily exceed that of their Gravity.

2°. If a Corpuscle placed in a Fluid be every way equally attracted by the ambient Particles, the Corpuscle will not be put in any Motion; but if it be attracted more by some of the Particles than by others, it will then tend towards that Quarter where the Attraction is the strongest: and the Motion thus produced will be correspondent to the Inequality of the Attraction: That is, if the Inequality be great, the Motion will be so; and if little, little.

3°. Corpuscles swimming in a Fluid, and attracting each other more than the interposed Particles of the Fluid; those Particles of the Fluid will be driven aside, and the Corpuscles approach each other with a Force equal to the Excess of their mutual Attraction, beyond the Attraction of the Particles of the Fluid.

4°. If a Body be placed in a Fluid whose Parts attract the Particles of the Fluid more strongly than those Particles are attracted by one another; and if in the Body there be several Pores pervious to the Particles of those Fluid, the Fluid will presently diffuse itself through the Pores; and if the Connection of the Parts in that Body be not so strong but that it may be exceeded by the Impetus of the Particles rushing together; the immers'd Body will undergo a Dissolution.

Hence, for a *Menstruum* to be fit to dissolve a given Body, there are three things required. 1st, That the Parts of the Body attract the Particles of the *Menstruum* more strongly than those are attracted by each other. 2dly, That the Body have Pores adequate and pervious to the Particles of the *Menstruum*. 3dly, That the Cohesion of the Parts of the Body be not so strong but that it may be torn asunder by the Impetus of the Particles rushing together. Hence also it follows, that the Par-

ticles which constitute Spirit of Wine, are more strongly attracted by each other, than by those of a saline Body immersed in it.

Hence we see the Reasons of the different Effects of different *Menstruums*; why some Bodies, for instance Metals, dissolve in a saline *Menstruum*: Others again, as Refin, in a sulphureous one, &c. particularly why Silver dissolves in *Aqua fortis*, and Gold only in *Aqua Regalis*; all the Varieties whereof are accountable for, from the different Degrees of Cohesion, i. e. of Attraction in the Parts of the Body to be dissolved; the different Diameters and Figures of its Pores, the different Degrees of Attraction in the *Menstruum*, and the different Diameters and Figures of its Parts. See COHESION.

Suppose, e. g. the Attraction of Gold to that of Silver, to be as A to B; and of Silver to *Aqua fortis* as b to d; but that of *Aqua fortis* to *Aqua Regia*, as d to e; let f signify the Magnitude of Particles in *Aqua fortis*, and r those in *Aqua Regia*; e the Cohesion of Gold, and e the Cohesion of Silver: If the Diameters of the Particles f, are greater than the Diameters of the Pores of Gold, they can never dissolve the Gold, let their attractive Force be ever so strong. But if  $\frac{b}{d} \text{---} \text{extr}$  be greater than g, then the Silver will yield to the *Menstruum* whose Particles are f, and less than the Pores of the Silver; and if  $\frac{b}{d} \text{---} \text{extr}$  be less than g, the Silver will never dissolve in the *Menstruum*, the Particles whereof are r, and the attractive Force e. But if  $\frac{a}{b} \text{---} \text{extr}$  be greater than c, the *Menstruum* made up of the Particles r, and whose attractive Force is e, will be able to penetrate and dissolve the Gold.

How a *Menstruum* may suspend Bodies much heavier than itself, which very often happens, may be conceiv'd by considering, that the Parts of no Fluid can be so easily separated, but they will a little resist, or retard the Descent of any heavy Bodies through them; and that this Resistance is, *ceteris paribus*, still proportionable to the Surface of the descending Bodies: But the Surfaces of Bodies do by no means increase, or decrease, in the same Proportion as their Solidities do; for the Solidity increaseth as the Cube, but the Surface only as the Square of the Diameter. Small Bodies, therefore, will have much larger Surfaces, in proportion to their solid Contents, than larger Bodies will; and consequently when exceedingly diminished, may easily be buoyed up in the Liquor. See DESCENT, RESISTANCE, &c.

*MENSTRUUM Peracutum*, a Name Mr. Boyle gives to a *Menstruum* he extracted from Bread only, that would prey on Bodies more compact than many hard Minerals, nay even on Glass, and do many things that *Aqua fortis* would not do: With this he drew Tinctures not only from Crude Corals, but also from the *Lapis Hematites* and Granates, nay from Diamonds and Rubies. See DIGESTION.

MENSURATION, the Act or Art of Measuring. See MEASURING.

MENTAL, is understood of the Conception, or Operation of the Understanding: Thus a Mental Prayer is such a one as is made merely in the Mind, without pronouncing one word of it. A Mental Reservation, &c. See RESERVATION.

MENTUM, in Anatomy, is the lower Part of the Face, beneath the Mouth; which we otherwise distinguish by the Name of Chin.

MENUET, or MINUET, a kind of Dance, the Steps whereof are extremely quick, and short: It consists of a Coupee, a high Step, and a Balance; it begins with a Beat, and its Measure, or Motion, is Triple.

MEPHITES, and MEPHITICAL Exhalations, any poisonous and noxious Steams issuing out of the Earth, from what Cause soever. See POISON.

The most remarkable Places of this kind is the *Grotta de Cani* near *Puzzoli*, about two Miles from *Naples*, in Italy; the Steams of which kill Dogs, or other Animals, when brought within its reach: A very curious Account of which, and the manner of its Efficacy, is given by Dr. Mead in his Essay on Poisons. See GROTTA.

MERCERS Company. See COMPANY.

MERCERS-Chapel School. See SCHOOL.

MERCHANDISE, or, MERCANTILE Profession, the Function of a Merchant; or the Art, Method, &c. of exercising a Whole-Sale Commerce. See COMMERCE.

The Mercantile Profession is esteemed Noble, and Independent. In France, by two Arrests of Louis XIV. the one of 1669. the other of 1701. the Nobility are allow'd to trade, both by Land and Sea, without derogating from their Nobility: And we have frequent Instances of Merchants ennobled in that Country, in regard of the Utility of their Commerce, and the Manufactures they have set up. In Bretagne, even a Retail Trade does not derogate from the Nobility. When the Nobles of the Province are disposed for Commerce, they let their Nobility sleep, that



is, they don't lose it, but only cease to enjoy the Privileges of their Noblesse while their Commerce continues, and reassume it, by giving over Trade, without any Letters or Instrument of Re-Habilitation: In Republics it is still more valued: but no where more than in *England*; where the younger Sons and Brothers of Peers are frequently bred up to Merchandize: Add to this, that many of the *Italian* Princes are the principal Merchants of their States; and think it no discredit to make their Palaces serve as Warehouses: And that many of the Kings of *Asia*, most of those of the Coast of *Africa* and *Guinea*, traffick with the *Europeans*, sometimes by their Ministers, and sometimes in Person.

The Qualifications requisite for the Profession of a Merchant, are, 1. To keep Books, single or double, *viz.* Journals, Ledgers, and others. 2. To draw Invoices, Contracts, Charter-Parties, Policies of Assurance, Bills of Exchange, Letters Missive, &c. 3. To know the Relation between the Monies, Weights, and Measures of several Countries. 4. The Places where the several Kinds of Merchandizes are manufactured, in what manner made, what the Materials composed of, and whence; the Preparation the Materials require before they are wrought; and the Merchandizes afterwards. 4. The Lengths and Breadths of Stuffs; as Silks, Wools, Hairs, Linens, &c. the Regulations of the Place where they are manufactured, and their different Prices at different Seasons. 5. The Dying, and the Ingredients for the Formation of the different Colours. 6. The Merchandizes that abound, or are more rare in one Country than another; their Kinds and Qualities; and the manner of Trafficking them to the best Advantage, whether by Land, by Sea, or Rivers. 7. The Commodities permitted or prohibited, both for the Import and Export of a State. 8. The Price of Exchange according to the Course of several Places, and what it is that raises or lowers it. 9. The Duties to be paid both at the Import and Export of Wares, according to the Use of the Places, the Tariffs, Regulations, &c. 10. The manner of Packing, Baling, and Tunning Merchandizes, to keep them either in Magazines, or in Voyages, &c. 11. On what Terms a Merchant-Vessel may be Freight, and Assured. 12. The Goodness and Value of every thing requisite for the Construction or Refitting of Vessels, the Prices of Woods, Cordage, Masts, Anchors, Sails, and other Equipage. 13. The Wages ordinarily given Captains, Officers, and Sailors: and the manner of contracting with them. 14. The foreign Languages, which may be reduced to three principal ones, *viz.* the *Spanish*, used almost through all the *East*, particularly on the Coast of *Africa*, from the *Canaries* to the *Cape of Good Hope*; the *Italian*, used throughout the Coasts of the *Mediterranean*, and many Places of the *Levant*; and the *Teutonic* or *German*, used throughout most Countries of the *North*. Lastly, the Consular Jurisprudence, the Laws, Customs, Companies, Colonies, Chambers of Assurances, Consulates in the several Countries; and in the general, all the Ordinances, Regulations, and Policies, relating to Commerce.

**MERCHANT**, a Person who carries on Merchandize, or sustains the Mercantile Profession. See **MERCHANTIZE**.

**MERCHANT-*Man***. See **SHIP**, **VESSEL**, **CAPTAIN**, &c.

**MERCHANT-Tailors Company** } See { **COMPANY**.

**MERCHANT-Tailors School** } See { **SCHOOL**.

**MERCHANTAGE**, see **LAW**.

**MERCATOR's Chart**, or *Projection*, is a Sea-Chart, where in the Parallels are represented by straight Lines; and the Meridians, likewise, by parallel straight Lines, whose Degrees, however, are not equal, but are continually enlarged as they approach nearer the Pole, in the same Proportion as the parallel Circles decrease towards them. See **PROJECTION**.

For the Construction, Use, Advantages, &c. hereof, see **Mercator's Chart**.

**MERCATOR's Sailing**, is that performed by means of **Mercator's Charts**. See **Mercator's SAILING**.

**MERCURY**,  $\phi$ , in Astronomy, the smallest of the inferior Planets, and the nearest the Sun. See **PLANET** and **SYSTEM**.

The mean Distance of this Planet from the Sun is to that of our Earth from the Sun as 387 to 1000; its Excentricity 8 Degrees: The Inclination of its Orbit, that is, the Angle formed by the Plane of its Orbit with the Plane of the Ecliptic, is 6 Degrees 52 Minutes: Its Diameter to that of the Earth as 3 to 4; and therefore the Globe of *Mercury* will be to that of the Earth as 2 to 5. See **EXCENTRICITY**, **INCLINATION**, **DIAMETER**, **DISTANCE**, &c.

According to **Sir I. Newton**, the Heat and Light of the Sun on the Surface of *Mercury* is seven times as intense as on the Surface of our Earth in the middle of Summer: which, as he found by Experiments made for that purpose by a Thermometer, is sufficient to make Water boil. Such a degree of Heat therefore must render *Mercury* un-

inhabitable to Creatures of our Constitution! And if Bodies on its Surface be not inflamed and set on fire, it must be because their Degree of Density is proportionably greater than that of such Bodies with us. See **HEAT**.

The Revolution of *Mercury* round the Sun, or his Year, is performed in 87 Days, 23 Hours; his diurnal Revolution, or the Length of his Day, is not yet determined; nor is it certain whether he has such a Motion round his own Axis, or not. See **PERIOD**, **REVOLUTION**, &c.

What variety of Weather or Seasons it may be liable to, we are still at a loss; as not knowing the Inclination of his Axis to the Plane of his Orbit: The Force of Gravity on the Surface of *Mercury*, is seven times as strong as on the Surface of the Earth. Its Density, and, consequently, the Gravitation of Bodies towards the Centre, cannot be accurately determined; but no doubt it must exceed that of our Earth, by reason of the Excess of Heat there. See **GRAVITY**, **DENSITY**, &c.

*Mercury* changes its Phases, like the Moon, according to its several Positions with regard to the Sun and Earth: See **MOON**.

It appears full, in its superior Conjunctions with the Sun, because we can see the whole illumined Hemisphere: But in its lower Conjunction, we only see the obscure, or unillumined Hemisphere: In his Approach toward the Sun, his Light is falcated or horned. See **PHASES**.

The Situation of this Planet proves evidently, that the Hypothesis of *Ptolemy* is false: For *Mercury* is sometimes observed betwixt the Earth and Sun; and sometimes beyond the Sun. But the Earth is never found between *Mercury* and the Sun; which however must happen, if the Spheres of all the Planets encompass'd the Earth, as a Centre, according to the *Ptolemaic Scheme*. See **PTOLEMAIC System**.

The Diameter of the Sun view'd from *Mercury*, would appear three times as big as it appears on our Earth; that Planet being thrice as near him as we are; and therefore the Sun's Disk would appear seven times as large as it appears to us.

Its greatest Distance from the Sun, with regard to us, never exceeds 28 Degrees, whence 'tis seldom visible; being commonly either lost in the Sun's Light, or, when the most remote from the Sun, in the Crepusculum: The best Observations of this Planet, are those made when it is seen on the Sun's Disk; for in its lower Conjunction, it passes before the Sun like a little Spot, eclipsing a small part of his Body, only observable with a Telescope. The first Observation of this kind, was that of *Gassendi* in 1632. See **TRANSIT**.

To an Inhabitant of *Mercury*, the solar Spots will appear to traverse his Disk sometimes in a right Line from East to West, and sometimes Elliptically. As the other five Planets are above *Mercury*, their Phenomena will be nearly the same there, as with us. *Venus* and the Earth, when in opposition to the Sun, will shine with full Orbs, and afford a noble Light to that Planet.

**MERCURY**, in Natural History, a fluid, mineral Matter; perfectly resembling Silver in fusion. See **MINERAL**.

*Mercury* is known under a great number of Names: The common Name among the Antients was *Hydrargyrum*; *q. d.* Water of Silver. The Moderns commonly call it *Mercury*, from some supposed Relation it bears to the Planet of that Name. In *English* it is popularly call'd *Quick-Silver*, from its Appearance: Many of the Chymists call it *Protus*, from the variety of Forms, Colours, &c. it passes thro' in their Preparations.

Naturalists are divided what Class of Fossils to range *Mercury* under: Some make it a *Metal*; others a *Semi-metal*; and others an imperfect *Metal*. See **Fossil** and **SEMI-METAL**.

*Boerhaave* observes, that it is very improperly call'd a *Metal*, inasmuch as it has not all the Characters of such a Body; nor scarce any thing in common with the other Metals, except Weight and Similarity of Parts: Thus, for Example, it is neither dissolvable by Fire, malleable, nor fix'd: In effect, it seems to constitute a peculiar Class of Fossils: and is rather the Mother, or Basis of all Metals, than a Metal itself. See **METAL**.

Perfect Metals, according to **M. Homberg**, &c. are nothing but pure *Mercury*, whose little Particles are penetrated on all sides, and fill'd with the Matter of Light, which unites and binds them together into a Mass, so that the Parts of fluid *Mercury*, which are supposed to be little solid Globes, in their Metallification are render'd rough and uneven, being pierced on all sides, and having their Pores or Perforations fill'd with the Matter of Light. By such means they lose their first Confirmation, and the Politure or Smoothness of their Surfaces, which is one of the principal Causes of the fluidity of *Mercury*.

The Chymists make *Mercury* one of their Hypostatical Principles: Not, as **M. Homberg** observes, that it answers



the Character of a Principle, which is that whose Substance cannot be Analyzed, or reduced into Matters more simple; but because the Analysis has not yet been discovered: Tho' it is possible it may hereafter, there being little doubt but that *Mercury* is a Compound. This is the more probable, in regard *Mercury* may be destroy'd, which never happens to simple Bodies. The manner of destroying *Mercury*, is, first, by changing it into a perfect Metal, by introducing a sufficient quantity of Light within its Substance; and then exposing this Metal to a Burning-Glass, where, in a little time, it evaporates almost wholly into Smoke, leaving nothing behind but a light earthy Dust.

*The Properties of MERCURY:*

The Characters, or Properties of *Mercury*, are, 1. That of all Bodies it is the heaviest, after Gold; and still the purer it is, the heavier: Nay, some of the Philosophers even hold that *Mercury* well purged of all its Sulphur, would be heavier than Gold itself. The ordinary Proportion is that of 14 to 19. If any *Mercury* be found to weigh more than according to this Ratio, it may be safely concluded to have Gold in it. See WEIGHT.

The 2d Character of *Mercury*, is to be of all Bodies the most fluid; that is, its Parts separate, and recede from each other by the smallest Force. Consequently, of all Bodies it is that whose parts cohere the least, or are the least tenacious; and therefore of all others the least ductile and malleable. The parts of Water do not divide so readily as those of Quick-Silver; and the parts of Oil much less: There is a certain Tenacity even in the parts of Spirit of Wine which resists separation; but there is scarce any Cohesion at all in the parts of *Mercury*. See FLUIDITY and FIRMNESS.

The 3d Property of *Mercury*, which, indeed, depends on the 2d, is, That of all Bodies it is divisible into the minutest parts. Thus, being exposed to the Fire, it resolves into a Fume scarce perceivable to the Eye; but in whatever manner it be divided, it still retains its Nature, and is the same specific Fluid. For the Vapours of distill'd, or volatilized *Mercury* received in Water, or moist Leather, or the like, become pure *Mercury*; and if *Mercury* be mixed with other Bodies, in order to fix it, for it is scarce fixable of itself, it is easily separable from them again by Fire, and reducible into pure *Mercury* as before. See DIVISIBILITY.

The 4th Character is to be extremely Volatile, being convertible into Fume, even by a Sand-heat. In effect, it does not sustain the Fire long enough either to boil, or ignite. Tho' it must be added, if the Fire be at first very gentle, and increase by easy degrees, it may be retained therein a pretty long time, and be fixed so as at length to become ignited in the Crucible, as we learn from some very tedious Experiments made at Paris. See VOLATILITY.

The Gilders are but too well acquainted with the Vapours of *Mercury*, which frequently render 'em Epileptic, and Paralytic, and sometimes salivate them; being of so penetrating a Nature, as to take away scirrhus Tumours, tho' very apt to reach and destroy the nobler Parts.

The 5th Property is, that it easily enters, and intimately adheres to Gold, less easily to the other Metals, with difficulty to Copper, and not at all to Iron. See AMALGAMATION.

Indeed we have heard much among the Adepts about making an Amalgama with *Mercury* and Iron; but the Experiment would never succeed with that Noble Chymist, *Her. Boerhaave*. 'Tis possible there may be some way of binding those two Bodies together; and no doubt an Amalgama might be made, if a large Quantity of Gold were added to the Iron: But then, if the Compound were beaten into a Dust, in Water, the Iron would wash away, and the Gold remain. On this Account it is, that such as have Occasion to handle Quick-Silver, always make choice of Iron-Instruments for that purpose. We have known Women, in a Salivation, to have their Ear-Rings grow white and soft with the Effluvia of the *Mercury*; and hence the Gilders, to lay Gold on any other Body, dissolve it in hot *Mercury*, which done, they apply the Solution on the Body to be gilt, suppose Silver; then setting it over the Coals, the *Mercury* flies away, and leaves the Gold adhering like a Crust to the Silver. Lastly, rubbing the Crust with *Lapis Hematites*, the Silver is gilt. See GILDING.

The 6th Character is, That of all Fluids, it is the coldest, and the hottest: supposing the Circumstances the same.

*Boerhaave* shews, that Fire is equally diffused through all Bodies; and that there is in reality the same degree thereof in *Mercury*, as in Spirit of Wine; and yet if you try with your Finger, *Mercury* in the Cold, is much colder, and, over the same Fire, considerably hotter, than the Spirit. This property depends on the great Weight of *Mercury*: for the Heat and Cold of all Bodies is *æstis*

*paribus* as their Weights. Now, *Mercury* being 14 times heavier than Water; if both of them be exposed in a Winter's Night to the same Cold, the *Mercury* must be so much colder than Water, as it is heavier. So, also, if they be both apply'd to the same degree of Heat, while the Water becomes warm, the *Mercury* will be hot enough to burn the Hands. See HEAT and COLD.

The 7th Property is, that it is dissoluble by almost all Acids, and unites itself with them; at least with all fossil Acids. Thus it is dissolved in Oil of Vitriol, Spirit of Sulphur *per Campanam*, Spirit of Nitre, and *Aqua regia*.

It is prepared with Oil of Vitriol, into *Turbith Mineral*; with Spirit of Sulphur, into *Cinnabar*; with *Aqua regia*, or Spirit of Sea-Salt or *Sal gemma*, into corrosive Sublimate. See TURBITH, CINNABAR, SUBLIMATE, &c.

Only Vinegar does not dissolve it; and hence we are furnished with a Method of detecting the Frauds of Druggists, &c. who make a practice of sophisticating Quick-Silver with Lead. Do but take a Mortar, and pound the *Mercury*, with Vinegar therein; if the Vinegar grow sweetish, it is a Proof there is a Mixture of Lead: If Copper have been mix'd with it, the *Mercury* will turn greenish, or bluish; if there be no Adulteration, the *Mercury* and Vinegar will both remain as before.

The 8th Property is, that it is the most Simple of all Bodies, next after Gold: Accordingly, we find it the same in all its parts, so far as our Observation goes. If a single Grain of *Mercury* be dissolved in Spirit of Nitre, a proportionable part of the Grain will be distributed into every minute Particle thereof; and by diluting the whole with an Ounce of *Aqua Stygia*, the whole Grain of *Mercury* will be revived. Had we the *Mercury* of the Philosophers called also *Vital Mercury*, *Mercury of Metals*, &c. so much talked of; it is asserted it would be still vastly simpler than Gold: For, from Gold, we can sometimes separate *Mercury*, and sometimes Sulphur; but from pure *Mercury* nothing beside itself can be separated.

The 9th Property of *Mercury* is, not to be in any measure Sharp, for it shews no Acrimony in the Taste, nor does it corrode any Body; and if a Carcase were to be buried in Quick-Silver, it would there remain without being any way hurt. The extraordinary Effects, however, it produces in the Body, have given People a Notion of its being Acid. But the Case is, that when received into the Blood, it acts by its Weight and Velocity; whence it tears and destroys the Vessels, and thus occasions those great Alterations, which lead the Chymists into their Mistakes.

In effect, all its medicinal Operations are to be accounted for from the Properties already enumerated.

*Mines of MERCURY.*

The Chief Quick-Silver Mines, are those of Hungary, Spain, Friuli, and Peru. The greatest part of our Quick-Silver is brought us from Friuli, where there are abundance of Mines belonging to the Emperor, tho' now mortgaged to the Dutch. It is found under three several Forms. 1. In ruddy Glebes or Clods, call'd *Cinnabar*. 2. In hard stony Glebes, or a mineral Substance of a saffron, and sometimes a blackish Colour. 3. It is also found pure: For upon opening Holes in the Beds of Stones, &c. there sometimes gushes a Vein or Stream of pure *Mercury*, call'd *Virgin-Mercury*. This last sort is most valued: *Paracelsus* and *Easyl Valentine* prefer it far to any other sort, for Chymical Operations. Dr. Brown assures us in his Travels, that enquiring of one of the Directors of the Quick-Silver Mines, wherein the Difference between this and common *Mercury* consisted; he was answered, That *Virgin-Mercury*, mix'd, and amalgamated with Gold, render'd the Sulphur of the Gold volatile: but this has been several times try'd without success.

*Method of procuring or separating MERCURY from the Ore, or Earth.*

They first grind the mineral Glebe into Powder; this done, they pour a great Quantity of Water upon it, stirring and working the whole briskly about till the Water becomes exceeding thick, and turbid. This Water having stood till it be settled, they pour it off, and supply its place with fresh, which they stir, and work as before. This they repeat, and continue to do, till the Water at length comes away perfectly clear; then, all remaining at the bottom of the Vessel, is *Mercury*, and other metalline Matter.

To this *Mercury*, &c. they add the Scoria of Iron, putting the whole in large Iron Retorts, and so distilling it; by which means all the heterogeneous, metallic and stony Part, is separated therefrom; and the *Mercury* left pure.

As to the *Mercury* in *Cinnabar*, they don't find it worth while to distil, and get it out; *Cinnabar* selling for a better Price than *Mercury* itself. See CINNABAR.

The miserable People condemn'd or hir'd to work in those Mines, all die in a little time. They are first affected with Tremors, and proceed to salivate; then their Teeth drop



drop out, and they are seized with Pains all over, especially in their Bones, which the *Mercury* penetrates, and thus die.

In *Spain*, the melting or exhalation of the Mineral is performed with more Care, and with an Engine contrived for that purpose. As to the earthy Matter wherewith the *Mercury* is mixed, that of *Spain* is red, and speckled with black and white; and so hard, that 'tis not to be broken up with Gun-powder. In *Hungary* 'tis frequently a hard Stone, but ordinarily a reddish Earth. In *Friuli* there is a soft Earth where the Virgin Quick-Silver is found, and a hard Stone which yields the common *Mercury*. The Mine of *Idica*, one of those belonging to *Friuli*, is so rich, that it yields always half Quick-Silver, sometimes two thirds. The Mine of *Juan Cabelaca*, or *Guan Cabilica* in *Peru*, is still more considerable, the Earth is of a whitish red, like Bricks half burnt; 'tis first broke, then exposed to the Fire, by spreading it on a Lay of common Earth, wherewith the Grate of an Earthen-Furnace is cover'd; under which is lighted a little Fire of an Herb call'd by the *Spaniards*, *Ichu*: which is of that necessity in these Works, that the cutting it is prohibited for the space of 20 Leagues round. In proportion as the Mineral heats, the *Mercury* rises volatiliz'd into Smoke; which Smoke finding no vent thro' the Capital of the Furnace, which is exactly luted, escapes thro' a Hole made for the purpose, communicating with several Earthen Cucurbites fitted within one another. The Water at the bottom of each Cucurbite condensing it to Smoke, the Quick-Silver precipitates, and is taken up, when the Operation is over. In this Process, there are three things remarkable. The first, That the further the Cucurbites are from the Furnace, the more they are fill'd with Quick-Silver. The second, That at last they all grow so hot, that they would break, were they not sprinkled from time to time with Water. Thirdly, It is observed that the Workmen employ'd in the Preparation of *Mercury*, never hold it long, but become paralytic, and die hectic. A Precaution they use, is to hold a piece of Gold in the Mouth, to imbibe the Effluvia, and intercept their Passage into the Body. Dr. *Pope* tells us of one he saw in the Mines of *Friuli*, who in half a Year's time was so impregnated with the Metal, that putting a piece of Brass in his Mouth, or even rubbing it in his Fingers, it would turn white as Silver.

The Method of purifying *MERCURY*, is, by washing it several times in Vinegar, wherein common Salt has been dissolved; or by passing, and repassing it frequently over a *Chamois* Skin. *Am. Paræus* tells us, that the best way is to make a Dog swallow a Pound at a time, and afterwards to separate it from the Excrements, and wash it in Vinegar.

The Uses of *MERCURY* are very considerable in Gilding, making Looking-Glasses, in refining Gold, &c. See each under its head, GILDING, REFINING, MIRROR, LOOKING-GLASS, &c.

But especially in Medicine, and particularly for the Cure of the Venereal-Disease, raising Salivations, and on other Occasions. See VENEREAL-DISEASE and SALIVATION. See also MERCURIALS.

The Preparations of *MERCURY* are very various; this Metal making one of the most considerable Articles in the Chymical Pharmacy. The most common Preparations are,

*Sweet Precipitate of MERCURY*, or *MERCURIUS Dulcis*, is compounded of crude *Mercury* drove over from Sea-Salt in a Retort, or revived from common Cinnabar, and dissolved in *Aqua fortis*; then a Brine prepared of Spring-Water and Sea-Salt is filtred thro' a Cap-Paper, and the Solution of *Mercury* drop'd gradually into this Brine, whence there is a white Powder precipitated, which is to be wash'd from all its Acrimony with some simple distill'd Water, or warm Spring-Water, and the whole dried.

This is the common Precipitate of the Shops, usually call'd *White Precipitate*. Its Operation is mostly by Stool, sometimes by Vomit, and will salivate, if ordered accordingly. It is frequently mix'd with Pomatums for the Itch, and other Foulnesses of the Skin; for which purpose, 'tis necessary to keep the Body laxative, and to take something inwardly to take hold of the Mercurial Principles, and prevent their raising a Salivation, which they may otherwise do. See PRECIPITATE.

*Corrosive Sublimate of MERCURY*, is a Composition of Vitriol calcined to a redness, common Salt, and purify'd Nitre, with crude *Mercury*, cleans'd by straining thro' a Leather, all rubb'd together in a Mortar, till the Salts are reduced into Powder, and not the least Globule of *Mercury* appears. The Mixture is then put into a Matrafs, and that set in a Furnace with a Sand-heat, under which a Fire being kept to its greatest height for 12 or 15 Hours, the *Mercury* will be sublimed, and stick to the Top of the Vessel.

This Sublimate is a violent Escharotic, and eats away

proud Flesh; half a Dram of it dissolved in a Pound of Lime-Water, turns it yellow, which is then call'd *Phagademic Water*; it is used to wash Ulcers, and terretous Eruptions. See SUBLIMATE.

*Sweet Sublimate of MERCURY*, is a Composition of the preceding corrosive Sublimate with crude *Mercury*, ground together till no *Mercury* appear, and then put into a Bolt-head, well stop'd, and set in a Sand-heat, with a gentle Fire, for the Space of two Hours; which Heat is to be then increas'd for three Hours longer, and, lastly, made very strong, for as much more. When this is cold, the Glass is broke, and the Sublimate separated from the light Flowers at top, and the Dull at bottom. This is then powder'd a-fresh, and the Operation repeated in the same manner three times. If it be further repeated a sixth time, it is call'd *Calomel*. See CALOMEL.

*Fixing of MERCURY*. See FIXATION and PHILOSOPHER'S Stone.

*MERCURY in Chymistry*, or *MERCURY of Bodies*, is the third of the Principles, or Elements of natural Bodies; call'd also *Spirit*. See PRINCIPLE.

In this Sense, *Mercury* is defined the most subtle, light, volatile, penetrating, and active part of all Bodies. See SPIRIT.

*MERCURY of Metals*, or of the *Philosophers*, is a pure, fluid Substance in form of common running *Mercury*, said to be found in all Metals, and capable of being extracted from the same. See METAL.

The Notion of *Mercury of Metals*, is founded on the common System of the Chymists, That *Mercury*, or Quick-Silver, is the Basis, or Matter of all Metals; and that Metals are only *Mercury* fix'd by a certain Sulphur. See SULPHUR, &c.

Mr. *Boyle* assures us, he had a way of drawing a true, running *Mercury*, or Quick-Silver from Antimony. See ANTIMONY.

*MERCURY* also serves as a general Title for Books, and Papers of News; so call'd from the Heathen Deity *Mercury*, supposed the Messenger of the Gods. See JOURNAL.

Thus we have *Mercuries Galant*, *Monthly Mercuries*, &c. See GALANT, &c.

In this Sense, *Mercury* is also figuratively apply'd to Persons who make it their Business to collect News, or to run about and distribute it.

*MERCURY*, in Heraldry, is sometimes the Term, or Blazon for the Purple Colour in the Coats of Sovereign Princes. See PURPLE.

*MERCURY* is sometimes used for the *Torriceilian Experiment*, or *Barometer*. See BAROMETER.

Tho' *Mercury* is not ordinarily sustain'd in a Tube above the distance of 28 or 29 Inches, yet M. *Huygens* has found, that *Mercury* well purged, and in a close still Place, will be sustain'd to the height of 72 Inches; which is a Phenomenon the Philosophers are all at a loss to account for. See TORRICELLIAN Experiment.

*MERCURIAL*, something that consists of, or bears relation to *Mercury*, of one kind or another. See MERCURY.

Thus we say a *Mercurial Person*, to denote a Person of a brisk, volatile Complexion; such Persons being supposed by the Astrologers to be under the more immediate Dominion of the Planet *Mercury*.

So, also, we say *Mercurial Fumes*, *Mercurial Spirits*, &c. with reference to the Mineral *Mercury*.

*MERCURIAL Phosphorus*, see PHOSPHORUS.

*MERCURIAL Unguents*, *Frictions*, &c. see SALIVATION.

*MERCURIAL Medicines*, see MERCURIALS.

*MERCURIALS*, Medicines composed, or prepared of *Mercury* or Quick-Silver. See MERCURY.

The principal of the Class of *Mercurials*, are *Mercurius dulcis*, or white Precipitate of *Mercury*; sweet and corrosive Sublimate of *Mercury*; *Calomel*; Artificial Cinnabar; Turbith Mineral; Prince's Powder; *Æthiops Mineral*, &c. See each under its proper Article, Sublimate of MERCURY, Precipitate of MERCURY, CINNABAR, TURBITH, CALOMEL, &c.

The Medicinal Efficacy of *Mercury* depends on its extreme Divisibility, and Fineness of its Particles, and on their Gravity or Weight: by means of the first, it finds a Passage into the inmost Recesses of the Animal Structure, and, when properly guarded, does not exert itself till it comes in the remotest Scenes of Action; where most other Medicines either don't arrive, or at least not till their Force is rebated. This Property it has in common with Camphor. See CAMPHOR. By the latter, it is enabled to make still more considerable Alterations in the Animal Economy, by rendering the Fluids thinner, and breaking open the secretory Passages: But this Effect it has in common with *Chalybeats*. See CHALYBEATS. It may be here added, that the same Property whereby it becomes so powerful a Deobstruent, indicates, that 'tis to be avoided in Hectics, and all Cases where the Constitution is drawn low



low by too profuse Evacuations; in regard *Mercurials* tend to keep up or increase the Excess of Impetus in the Fluids, and that Over-Capacity in the secretory Orifices, wherein the Defect of such a Constitution seems to consist. See **HECTIC**.

**MERIDIAN**, in Astronomy, a great Circle of the Sphere, passing thro' the Zenith, Nadir, and Poles of the World; and dividing the Sphere into two Hemispheres, the one Eastern, and the other Western. See **CIRCLE**, and **SPHERE**.

Or, the *Meridian* is a Vertical Circle, as A Z B N, (Tab. *Astronomy*. Fig. 6.) passing thro' the Poles of the World, P and Q. See **VERTICAL Circle**.

It is call'd *Meridian*, from the *Latin*, *Meridies*, Noon, or Mid-day; by reason when the Sun is in this Circle, it is Noon in that Place.

**MERIDIAN**, in Geography, is a great Circle, as P A Q D, (Tab. *Geography*, Fig. 7.) passing thro' the Poles of the Earth P and Q; and any given Place, as Z. So that the Plane of the *Terrestrial Meridian*, is in the Plane of the Celestial one.

Hence, 1. As the *Meridian* invests the whole Earth, there are several Places situated under the same *Meridian*. And, 2. As it is Noon-Tide whenever the Centre of the Sun is in the *Meridian* of the Heavens; and as the *Meridian* of the Earth in the Plane of the former: it follows, that it is Noon, at the same time, in all Places situate under the same *Meridian*. 3. There are so many *Meridians* on the Earth, as there are Points conceived in the *Æquator*. In effect, the *Meridians* always change, as you change the Longitude of the Place; and may be said to be infinite: Each several Place from East to West having its several *Meridian*. See **LONGITUDE**.

*First MERIDIAN*, is that from which the rest are accounted, reckoning from West to East. The first *Meridian* is the beginning of Longitude. See **LONGITUDE**.

The fixing of a first *Meridian* is a matter merely arbitrary; and hence different Persons, Nations, and Ages, have fix'd it differently; whence some confusion has arose in Geography. The Rule among the Antients was to make it pass thro' the Place furthest to the West that was known. But the Moderns knowing, that there is no such Place in the Earth as can be esteemed the most Westerly; the way of computing the Longitudes of Places from one fix'd Point is much laid aside.

*Ptolemy* assumed the *Meridian* that passes thro' the furthest of the *Canary Islands* as his first *Meridian*; that being the most Western Place of the World then known. After him, as more Countries were discovered in that Quarter, the first *Meridian* was removed further off. Some fix'd it to the Island of St. Nicholas; *Hondius* to the Isle of St. James; others to the Island *Del Corvo* one of the *Azores*. The latest Geographers, particularly the *Dutch*, have pitch'd on the *Pike of Teneriff*; others to the Isle of *Palm*, another of the *Canaries*; and, lastly, the *French*, by Command of their King, to the Island of *Fero*, another of the *Canaries*.

But, without much regard to any of these Rules, our Geographers, and Map-Makers, frequently assume the *Meridian* of the Place where they live, or the Capital of their Country for a first *Meridian*, and thence reckon the Longitudes of their Places.

The Astronomers in their Calculations usually chuse the *Meridians* of the Place where their Observations were made, for their first *Meridian*, as *Ptolemy* at *Alexandria*; *Tycho Brahe* at *Uranibourg*; *Riccioli* at *Boulogne*; Mr. *Flamsteed* at the Royal Observatory at *Greenwich*; the *French* at the Observatory at *Paris*.

In the *Philosophical Transactions*, there is a Suggestion, that *Meridians* vary, in Time. This seems very probable from the old *Meridian-Line* in the Church of St. *Petronio* in *Bononia*, which is found to vary no less than 8 Degrees from the true *Meridian* of the Place at this time; and from that of *Tycho* at *Uranibourg*, which M. *Picart* observes, varies 18' from the modern *Meridian*. If there be any thing of Truth in this Hint, Dr. *Wallis* says, the Change must arise from a change of the *Terrestrial Poles* (here on Earth, of the Earth's diurnal Motion) not of their pointing to this or that of the fixed Stars: For if the Poles of the diurnal Motion remain fixed to the same Place on the Earth, the *Meridians* which pass through these Poles must remain the same.

But the Notion of the Changes of the *Meridian* is overthrown by an Observation of M. *Chazelles* of the *French Academy of Sciences*, who, when in *Egypt*, found that the four sides of a Pyramid built 3000 Years ago, still look'd very exactly to the four Cardinal Points. A Position which can never be look'd on as fortuitous.

**MERIDIAN** of a Globe, or Sphere, is the Brazen Circle, in which the Globe hangs and turns. See **GLOBE**.

It is divided into four 90's, or 360 Degrees, beginning at the Equinoctial: On it, each way, from the Equinoc-

tial, on the Celestial Globes, is counted the South and North Declination of the Sun or Stars: And on the Terrestrial Globe, the Latitude of Places North or South. There are two Points on this Circle, call'd the Poles; and a Diameter continued from thence through the Centre of either Globe, is call'd the *Axis*, of the Earth or Heavens on which they are supposed to turn round. See **POLE** and **AXIS**.

On the Terrestrial Globes there are usually 36 *Meridians* drawn; one through every tenth Degree of the Equator, or through every tenth Degree of Longitude.

The Uses of this Circle are, to set the Globes to any particular Latitude; to shew the Sun's or a Star's Declination, Right Ascension, greatest Altitude, &c. See **GLOBE**.

**MERIDIAN Line**, an Arch, or part of the *Meridian* of a Place; terminated, each way, by the Horizon: Or a *Meridian* is the Intersection of the Plane of the *Meridian* of the Place, with the Plane of the Horizon; vulgarly call'd a North and South Line; because its Direction is from one Pole towards the other. See **MERIDIAN**.

The Use of *Meridian Lines* in Astronomy, Geography, Dialling, &c. is very great; and on its Exactness all depends: Whence infinite Pains have been taken by divers Astronomers to have it to the last Precision. M. *Cassini* has distinguish'd himself by a *Meridian Line* drawn on the Pavement in the Church of St. *Petronia* at *Boulogne*, the largest and most accurate in the World. In the Roof of the Church, 1000 Inches above the Pavement, is a little Hole through which the Sun's Image, when in the *Meridian*, falling upon the Line, marks his Progress all the Year. When finished, M. *Cassini*, by a public Writing, inform'd the Mathematicians of Europe, of a new Oracle of *Apollo* or the Sun established in a Temple, which might be consulted with entire Confidence as to all Difficulties in Astronomy. See **SOLSTICE**.

To draw a *Meridian Line*.

Knowing the South Quarter pretty nearly, observe the Altitude F E (Tab. *Astronomy*, Fig. 8.) of some Star on the Eastern side thereof not far from the *Meridian*, H Z R N. Then, keeping the Quadrant firm on its Axis, so as the Plummets may still cut the same Degree, only directing it to the Western-side of the *Meridian*, wait till you find the Star has the same Altitude as before, *f. e.* Lastly, Bisect the Angle E C e form'd by the Intersection of the two Planes wherein the Quadrant is placed at the time of the two Observations, by the right Line H R. This H R is a *Meridian Line*.

Or thus;

On a Horizontal Plane, from the same Centre C, (Fig. 9.) describe several Arches of Circles BA, *b a*, &c. And on the same Centre C, erect a Style or Gnomon perpendicular to the Plane ACB, a foot, or half a foot long. About the 21st of June, between the Hours of 9 and 11 in the Morning, and between 1 and 3 after Noon, observe the Points B *b*, &c. A *a*, &c. wherein the Shadow of the Style terminates. Bisect the Arches AB, *ab*, &c. in D, *d*, &c. If then the same right Line D E bisect all the Arches AB, *a b*, &c. it will be the *Meridian Line* sought. In regard the Extremity of the Shadow is somewhat hard to determine, 'tis best to have the Style flat a-top, and to drill a little Hole, noting the lucid Spot projected by it on the Arches A B and *a b*, instead of the Extremity of the Shadow. Otherwise the Circles may be made with yellow, instead of black, &c.

Several Authors have invented particular Instruments and Methods for the describing of *Meridian Lines*, or rather for the determining equal Altitudes of the Sun in the Eastern and Western Parts of the Heavens; as Mr. *Grey*, Mr. *Derham*, &c. in the *Philos. Transf.* But as the former of the Methods above delivered, suffices for Astronomical Observations, and the latter for more ordinary Occasions, we shall forbear to give any Descriptions thereof.

From what has been shewn, it is evident that whenever the Shadow of the Style covers the *Meridian Line*, the Centre of the Sun is in the *Meridian*; and therefore it is then Noon. And hence the Use of a *Meridian Line* in adjusting the Motion of Clocks, &c. to the Sun. Hence, also, if the *Meridian Line* be bisected by a right Line O V, drawn perpendicularly through the Point C; O V will be the Intersection of the *Meridian*, and first Vertical; and, consequently, O will shew the East Point, and V the West. Lastly, if a Style be erected perpendicularly in any other horizontal Plane, and a Signal be given when the Shadow of the Style covers the *Meridian Line* drawn in another Plane, noting the Apex or Extremity of the Shadow projected by the Style, a Line drawn from that Point thro' that wherein the Style is rais'd will be a *Meridian Line*. See **MERIDIAN Altitude**.

**MERIDIAN Line** on a Dial, is a right Line arising from an Intersection of the *Meridian* of the Place with the Plane of the Dial. See **DIAL**.



This is the Line of twelve a-clock ; and from hence the Division of the Hour-Lines begins.

**MERIDIAN** *Magnetical*, is a great Circle passing thro' or by the *Magnetical-Poles* ; to which *Meridian* the Compass (if not otherwise hindred) hath respect. See **MAGNET** and **COMPASS**.

**MERIDIAN** *Altitude* of the Sun or Stars, is, their Altitude when in the *Meridian* of the Place where they are observed. See **ALTITUDE**.

The *Meridian* Altitude may be defined an Arch of a great Circle perpendicular to the Horizon, and terminated between the Horizon and the Star then in the *Meridian* of the place. See **SUN**, **STAR**, **PLANET**, &c.

To take the *Meridian* Altitude of the Stars.

Astronomers make two principal kinds of Observations of Stars ; the one when they are in the *Meridian*, and the other when in *Vertical Circles*. See **OBSERVATION**.

For *Meridian* Observations ; there are two Instruments principally used, the *Quadrant* and *Gnomon*. See **QUADRANT** and **GNOMON**.

To take the *Meridian* Altitude with a *Quadrant* ; if the Position of the *Meridian* be known, and the Plane of an Astronomical *Quadrant* be placed in the *Meridian* Line by means of the *Plumb-Line* suspended at the Centre : The *Meridian* Altitudes of the Stars, which are the principal Observations whereon the whole Art of Astronomy is founded, may easily be determined.

The *Meridian* Altitude of a Star may likewise be had by means of a *Pendulum-Clock*, if the exact time of the Star's Passage by the *Meridian* be known. Now it must be observed, that Stars have the same Altitude for a Minute before and after their Passages by the *Meridian*, if they be not in or near the Zenith : But if they be, their Altitudes must be taken every Minute when they are near the *Meridian* ; and then their greatest or least Altitudes will be the *Meridian* Altitudes sought.

As to the manner of Observing, it is found very difficult to place the Vane of the *Quadrant* in the *Meridian* exactly enough to take the *Meridian* Altitude of a Star ; for unless there be a convenient Place, and a Wall where the *Quadrant* may be firmly fastned in the Plane of the *Meridian*, which is not easily had, we shall not have the true Position of the *Meridian* proper to observe the Stars.

'Twill be much easier therefore on several Accounts, to use the portable *Quadrant*, by which the Altitude of the Star may be observed a little before its Passage over the *Meridian* every Minute till its greatest or least Altitude be found. Here tho' we have not the true Position of the *Meridian* by this means, yet we have the apparent *Meridian* Altitude of the Star.

Tho' this Method, in the general, be very good, and free of any sensible Error, yet in case a Star passes by the *Meridian* near the Zenith, it proves somewhat defective : For in these kind of Observations, the inconvenient Situation of the Observer ; the Variation of the Star's Azimuth several Degrees in a little time ; the Alteration of the Instrument, and the difficulty of replacing it vertically, will prevent the Observations from being oftner than in every four Minutes. But in each Minute, the Altitude varies about fifteen Minutes of a Degree, so that there will be the difference of a Degree in the Star's Altitude between each Observation. In such Cases, therefore, it will be better to have the true Position of the *Meridian*, or the exact time wherein the Star passes the *Meridian*, in order either to place the Instrument in the *Meridian*, or to observe the Altitude of the Star the Moment it passes the *Meridian*. See **ALTITUDE** and **QUADRANT**.

To find the *Meridian* Altitude of the Sun, &c. by a *Gnomon*. See **GNOMON**.

**MERIDIONAL** Distance in Navigation, is the same with the Departure ; Easting or Westing ; or the Difference of Longitude between the *Meridian*, under which the Ship now is, and any other *Meridian* she was under before. See **DEPARTURE**.

**MERIDIONAL** Parts, Miles, or Minutes, in Navigation, are the Parts, by which the *Meridians* in *Mercator's* Chart do increase, as the *Parallels* of Latitude decrease. See **CHART**.

The Co-sine of the Latitude of any Place being equal to the Radius, or Semi-diameter of that Parallel, therefore in the true Sea-Chart, or Nautical Planisphere, this Radius being the Radius of the Equinoctial, or whole Sine of 90 Degrees, the *Meridian* Parts at each Degree of Latitude must increase, as the Secants of the Ark contain'd between that Latitude and the Equinoctial do decrease.

The Tables therefore of *Meridional* Parts in Books of Navigation, are made by a continual addition of Secants, calculated in some Books (as in *Sir Jonas Moor's* Tables) for every Degree and Minute of Latitude ; and

these will serve, either to make or graduate a *Mercator's* Chart, or to work the *Mercator's* Sailing.

To use them, you must enter the Table, with the Degree of Latitude at the head, and with the Minute on the first Column towards the Left-hand ; and in the Angle of meeting, you will have the *Meridional* Parts.

Having the Latitudes of two Places, to find the *Meridional* Miles, or Minutes between them : consider whether the Places be, one under the Equinoctial, and the other wide thereof ; or the one on the one side the Equinoctial, and the other on the other ; or whether they both lie on the same side.

If one Place lie under the Equator, the *Meridional* Minutes next under the Degree of Latitude of the other Place, is the *Meridional* difference of Latitude, or Latitude enlarged.

If one be in North, and the other in South Latitude ; the *Meridional* Minutes corresponding to the two Latitudes added together, give the *Meridional* Minutes between them.

Both Places lying towards the same Pole ; subtract the *Meridional* Parts answering to the less Latitude from those of the greater ; the remainder gives the *Meridional* Minutes.

**MERIDIANS**, or **MERIDIANT**, a Name which the ancient Romans gave to a kind of Gladiators, who enter'd the Arena about Noon ; after the *Bestiarii*, who fought in the Morning against Beasts, had finish'd. See **GLADIATOR**.

The *Meridians* fought Man with Man, Sword in hand : Hence *Seneca* takes occasion to observe, that the Combats of the Morning were full of Humanity, compared with those which follow'd.

The *Meridians* took their Name from *Meridies*, i. e. Noon, the time when they exhibited their Shews.

**MERIT**, in Theology, is used to signify the Moral Goodness of the Actions of Men, and the Reward due to them.

The Romish Schoolmen distinguish two kinds of *Merit* towards God : The one of *Congruity*, and the other of *Condignity*.

The *Merit* of *Congruity*, is, when there is no just Proportion between the Action, and the Reward ; but he who bestows the Reward supplies by his Goodness or Liberality, what was wanting in the Action : Such is the *Merit* of a Son towards his Father ; but this is only *Merit* in an improper sense.

The *Merit* of *Condignity*, is, when there is an absolute Equality, and a just Estimation between the Action and the Reward, as in the Wages of a Workman.

Those of the Reformed Religion disclaim all *Merit* towards God. Even their best Works don't *Merit* any thing at his hands. The Doctrine of *Merits* makes one of the great Articles of Controversy between the Romish and Reformed Churches.

**MERLON**, in Fortification, that part of the Parapet which lies betwixt two Embrasures. See **PARAPET** and **EMBRASURE**.

It is from 8 to 9 Foot long on the side of the Cannon, and 6 on the side of the Field ; about 6 Foot high, and 18 thick.

The Word comes from *Merula*, or *Merla*, which in the corrupt *Latin* was used for a Battlement.

**MERMAID**, or **MERMAN**, a Sea-Creature frequently talk'd of, as being supposed half human, and half a Fish. See **MONSTER**.

However Naturalists may doubt of the Reality of *Mer-men*, or *Mermaids*, yet we have Testimony enough to establish it beyond all contradiction. In the Year 1187, as *Larrey* informs us, such a Monster was fish'd up in the County of *Suffolk*, and kept by the Governour for six Months. It bore so near a Conformity with Man, that nothing seem'd wanting to it besides Speech. One day it took the Opportunity of making its Escape, and plunging into the Sea, was never more heard of. *Hist. d'Angleterre*, P. I. p. 403.

In the Year 1430, after a huge Tempest, which broke down the Dykes in *Holland*, and made way for the Sea into the Meadows, &c. some Girls of the Town of *Edam* in *West-Friesland*, going in a Boat to milk their Cows, perceiv'd a *Mermaid* embarrass'd in the Mud, with a very little Water. They took it into their Boat, and brought it with them to *Edam*, dress'd it in Women's Apparel, and taught it to spin. It fed like one of them, but could never be brought to speak. Some time afterwards it was brought to *Hacrlen*, where it liv'd for some Years, tho' still shewing an Inclination to the Water. *Parival* relates, that they had given it some Notion of a Deity, and that it made its Reverences very devoutly when ever it pass'd by a Crucifix. *Delices d'Hollande*.

In the Year 1560, near the Island of *Manar*, on the Western Coast of the Island of *Ceylon*, some Fishers brought up at one Draught of a Net, seven *Mer-men* and *-Maids* ; of which, several *Jesuits*, and among the rest,

X x x x x

F. Hen.



F. Hen. Henriques, and Dimas Bosquez, Physician to the Vice-Roy of Goa, were Witnesses. The Physician, who examined them with a great deal of Care, and made Dissections thereof, asserts, that all the Parts, both internal and external, were found perfectly conformable to those of Men. See the *Hist. de la Compagne de Jesus*, P. II. T. IV. N<sup>o</sup>. 276. where the Relation is given at length.

We have another Relation well attested of a *Merman*, near the great Rock call'd *Diamond*, on the Coast of *Marinico*. The Persons who saw it, gave, in a precise Description of it before a Notary. They affirmed that they saw it wipe its Hand over its Face, and even heard it blow its Nose.

Another Creature of the same Species was caught in the *Baltic* in the Year 1531, and sent as a Present to *Sigismund King of Poland*, with whom it liv'd three Days, and was seen by all the Court. Another very young one was taken near *Rocca de Sintra*, as related by *Damian Gaes*.

The King of Portugal and the Grand Master of the Order of St. James, had antiently a Suit at Law to determine which Party these Monsters belonged to.

MESARÆUM in Anatomy, the same with *Mesenterium*. See MESENTERY.

MESARÆUM is also used in a more restrained Sense for a Part, or Division of the *Mesentery*; being that fastned to the thick Guts. See MESENTERY.

MESARAIC Vessels, in the general Sense, are the same with *Mesenteric*. See MESENTERIC.

In common use, *Mesaraic* is more frequently applied to the Veins; and *Mesenteric* to the Arteries of the *Mesentery*.

MESENTERY, or MESARÆUM, in Anatomy a fat membranous Body; thus call'd, because placed in the middle of the Intestines, which it connects to one another. See INTESTINES.

The *Mesentery* is almost of a circular Figure, with a narrow Production, to which the end of the *Colon*, and beginning of the *Rectum*, are tied.

'Tis about four fingers and a half in Diameter: Its Circumference, being full of Plaits and Foldings, is about three Ells in length. The Intestines are tied like a Border on this Circumference of the *Mesentery*: There are three Inches of the Intestines fastned. See INTESTINES.

The *Mesentery* itself is strongly tied to the three first Vertebrae of the Loins. It is composed of three *Lamine*; the inner, upon which the Glands and Fat lie, and the Veins and Arteries run, is its own proper Membrane; and the other two which cover each side of the proper Membrane come from the *Peritonæum*. Between the two external *Lamine* of the *Mesentery*, run the Branches of *Arteria Mesenterica*, superior and inferior, which bring the Blood to the Intestines; and the *Vena Mesaraica*, which being Branches of the *Porta*, carry the Blood back to the Liver. Here the large Branches of both Arteries and Veins communicating with one another, march directly to the Guts; where, with the Nerves from the *Plexus Mesentericus*, they divide into an infinite Number of small Branches, which spread themselves extremely finely upon the Coats of the Intestines. The *Vena Lactea*, and Lymphatic Vessels, run likewise upon the *Mesentery*, in which there are also several Vesicular Glands; the biggest of which in the middle of the *Mesentery*, is call'd *Pancreas Asellii*; these Glands receive the Lympha and Chyle from the Lactéal Veins. See PANCREAS ASELLII.

The *Mesentery* has been ordinarily divided into two Parts, the *Mesaraeum* and *Mesocolon*. The first appended to the *Intestina Tenuia*; and the latter to the *Cassa*: But this is a Division of no great moment.

The Use of the *Mesentery*, is, first, to gather the Intestines into a narrow Compass, that the Course of the Chyliferous Vessels towards their common Receptacle may be but short; to cover and protect them and the Blood-Vessels; and to connect and dispose the Intestines, so as to secure them from any Entanglement that might hinder their peristaltic Motion.

The Word comes from the Greek μέσος, middle, and έντερον, Intestine, Gut; as being in the middle of the Intestines.

MESENTERIC, or MESARAIC, an Epithet given to two Arteries arising from the descending *Aorta*, and proceeding to the *Mesentery*.

There is an Upper, or Superior *Mesenteric*, which goes to the upper part of the *Mesentery*; and a Lower, or Inferior *Mesenteric*, which distributes itself through the lower part. See ARTERY.

We have also a *Mesenteric Vein*, composed of an infinity of Veins proceeding from the *Mesentery*; which, with the *Vena Splenica* arising from the Spleen, form the *Vena Porta*.

Anatomists also reckon a *Mesenteric Nerve* which arises from the Intercostal, and sends several Branches to the *Mesentery*. See NERVE.

MESENTERIC Plexus, a Plexus, or piece of Net-Work form'd by the Branches or Ramifications of the *Par Vagum*.

The *Plexus Mesentericus Magnus*, or great *Mesenteric Plexus*, is form'd out of the concurrent Branches of several other Plexus's, and sends its nervous Fibres through the whole *Mesentery* along with the *Meseraic Vessels*, which, with various Circumligations, they accompany to the Intestines. See PLEXUS.

MESN, or MEASNE, a Term in Law signifying him who is Lord of a Manor, and so hath Tenants holding of him; yet he himself holds of a superior Lord. See LORD.

MESN is also a Writ, which lieth where there is Lord *Mesn* and Tenant; and the Tenant is distrained for Services due from the *Mesn* to the superior Lord. The Word is properly derived from *Maisn*, minor natus, because his Tenure is derived from another, from whom he holds.

MESOCOLON, in Anatomy, that part of the *Mesentery* continued in the great Guts. See MESENTERY.

The *Mesocolon* lies in the midst of the *Colon*, to which it is join'd. Its lower part sticks to a part of the *Rectum*.

MESOLABE, MESOLABIUM, a Mathematical Instrument invented by the Antients for finding two mean Proportionals Mechanically, which they could not come at Geometrically. See PROPORTIONAL.

It consists of three Parallelograms moving in a Groove to certain Intersections. Its Figure is described by *Eutocius* in his Commentary on *Archimedes*.

MESO-LOGARITHM, a Term used by *Kepler* to signify the Logarithms of the Co-Sines, and Co-Tangents; The former of which my Lord *Neper* calls *Anti-Logarithms*, and the latter *Differentiales*.

These are also call'd Artificial Sines and Tangents. See LOGARITHM, CO-SINE, CO-TANGENT, ANTI-LOGARITHM, &c.

MESO-PLEURII in Anatomy, the Intercostal Muscles. See INTERCOSTAL.

The Word is derived from μέσος *Medium*, Middle; and πλευρα *Latus*, the Side.

MESO-PLEURII is sometimes also used for the intermediate Spaces between the *Costæ*, or Ribs. See RIBS.

MESSE, or MASSE, or MISSA, the Office, or public Prayers made in the *Romish Church*, at the Celebration of the Eucharist. See EUCHARIST.

The *Romish Divines* define the *Mafs*, an Oblation made to God, wherein, by the change of a sensible Object by virtue of a divine Institution, the sovereign Dominion of God over all Things is acknowledged. This they esteem the greatest and most august Ceremony in use in the Church, as being the Sacrifice of the new Law, wherein the Body and Blood of *Jesus Christ* are offered up to God.

They are divided about the Question, Whether or no it be proper or allowable for the same Person to celebrate *Mafs* several times in one day; having the Authority of *Pope Leo* in his Letter to *Dioscurus* for the Affirmative Side of the Question, and that of several of the Councils for the Negative.

*Nicod*, after *Baronius*, observes that the Word *Mafs* comes from the Hebrew, *Miffach*, Oblatum; or from *Missa*, *Mifforum*; because in the former Times, the Catechumens and Excommunicated were sent out of the Church when the Deacon said *Ite, missa est*, after Sermon; and the reading of the Epistle and Gospel; they not being allow'd to assist at the Consecration. See CATECHUMEN.

*Menage* derives it from *Misso*, dismissing. Others again, derive it from the Latin, *Missa*, Envoy; because in the *Mafs*, the Prayers of Men on Earth are sent up to Heaven.

There are a vast Variety of *Masses* in the *Romish Church*; the thing acquiring new Titles and Appellations according to the different Rites, Intentions, and Manners in which it is performed, as well as other Circumstances.

Thus they have an *Ambrosian Mafs*, celebrated according to the Rite of St. *Ambrose*, particularly used in *Milan*.

The *English Mafs* was the Form which antiently obtain'd in *England*.

*Gallican Mafs* is the Rite that formerly obtain'd in the Churches of *France*.

*Greek Mafs* is that rehearsed according to the *Greek Rites* in the *Greek Language*, and by *Greek Priests*. *Latin Mafs* is that used in the *Latin Church* in the *Latin Tongue*, and according to the Rites of the *Latin Church*.

*High Mafs*, called also *Grand Mafs*, is that sung by the Choristers, and celebrated with the Assistance of a Deacon and Subdeacon.

*Low-Mafs* is that wherein the Prayers are all barely rehearsed without any Singing, and performed without much Ceremony, or the Assistance of any Deacon or Subdeacon.

The *Mafs of the Beate*, or our Lady, is that offer'd to God by the Means and thro' the Intercession of the Virgin.

The *Beau-Mafs* is a *Mafs* rehearsed every day, at which the



the Ladies and *Beau-Monde* of the Place attend. This is also call'd the perfumed *Mafs*.

*Common Mafs*, or *Mafs* of the Community in a Monastery, is that celebrated at certain Hours, whereat the whole Body assists.

*Mafs of the Holy Ghost*, is that celebrated at the beginning of any Solemnity or Church-Assembly, commencing with an Invocation of the Holy Ghost.

*Holy-day-Mafs*, is that wherein certain Prayers or Lectures are read suitable to the Day.

*Mafs of Judgment*, was that wherein a Person clear'd himself of any Calumny by some Proof agreed upon.

*Mafs* for the Death of our Enemies, was a Form of *Mafs* that obtained a long time in Spain, but was at length abolished as inconsistent with Christian Charity.

*Mafs of the Dead*, or *Requiem*, is that performed at the Request of the Deceased: The Introit whereof begins with *Requiem*. In the 13th Century, it was the Custom e'er Criminals were carried out to Execution, to make them attend at a *Mafs* of the Dead, rehearsed for the Repose of their Souls.

*Parish Mafs*, or *Great Mafs*, is that which the Parson is obliged to rehearse to his Parishioners on Sundays and Holy-days. *Little Mafs* is that said at private Altars with less Ceremony. The first *Mafs* is that said at Break of Day.

*Mafs of a Saint*, is that wherein God is invoked by the Intercession of some Saint. Thus there are also *Masses* of Apostles, Martyrs, Pontiffs, Virgins, &c.

*Mafs of Scrutiny*, was formerly rehearsed at the Examination of Catechumens, when Enquiry was made as to their Disposition for Baptism.

*Dry Mafs*, is that where there is no Consecration; as those, according to *Durandus*, where the Priest cannot consecrate, by reason of his having said *Mafs* before on the same day; or that used by the Candidates of the Priesthood, in order to their becoming acquainted with the Ceremonies; as *Eckius* will have it.

*Votive Mafs*, is an extraordinary *Mafs* besides that of the Day, rehearsed on some extraordinary Occasion.

**MESSENGERS**, in the *English* Polity, are Officers chiefly under the Direction of the Secretaries of State; being always ready to be sent with all manner of Dispatches, Foreign and Domestic.

They are also employ'd, with the Secretaries Warrants, to take up Persons for High Treason, or other Offences against the State, which do not so properly fall under the Cognizance of the Common Law, and, perhaps, are not proper to be divulged in the ordinary Course of Justice.

The Prisoners they apprehend are usually kept at their own Houses, for which they are allow'd by the Government 5 s. 8 d. per day. When they are dispatch'd abroad, they have an Allowance for their Journey, as stated, viz. to Paris, 30 l. to Holland, 25 l. to Edinburgh, 30 l. to Ireland, 30 l. and so to other Places in proportion. Part of which Money is advanced to them for their Journey.

They wait twenty at a time, monthly, distributed as follows, viz. four at Court, five at one Secretary's Office, five at the other, and two at the third Office for North Britain, three at the Council-Office, and one at the Lord Chamberlain's of the Household. Their Posts, if purchased, are esteemed worth 300 l. Their Salary is 45 l. per Annum each.

**MESSENGERS of the Exchequer**: The four Pursuivants in that Court are called by this Name. Their Duty and Office is to attend the Lord Treasurer, and to carry his Letters, Precepts, &c. See PURSUIVANT.

**MESSENGER of the Press**, a Person who by order of the Court searches Printing-Houses, Booksellers Shops, &c. in order to find out, or discover seditious Books, &c.

**MESSIAH**, a Term signifying *Anointed*, or *Sacred*; and in that Sense applied to Kings and Priests: But, by way of Eminence to Jesus Christ, the Saviour promis'd by the Prophets of the Old Law. See CHRIST.

The Jews still wait for the coming of the *Messiah*; being insatuated with the Notion of a temporal *Messiah* that is to be a mighty Conqueror, and to subdue all the World. See PROPHECY, &c.

Jesus Christ asserts himself the *Messiah*. In St. John iv. 25. the Samaritan Woman says to Jesus, *I know that when the Messiah comes (who is called the Christ) he will tell us all things.* Jesus answered her, *I that speak to thee, am he.*

There are several Impostors that have endeavour'd to pass for *Messiahs*. J. I. cm, a Dutchman, has written a History of false *Messiahs*, *De Pseudomessias*. The first he mentions was one *Barcochab*, who appeared under the Empire of *Adrian*. The last is Rabbi *Mardocheai*, who began to be talk'd of in 1682. A little before him, viz. in 1666, appear'd *Sabbethai Sebi*, who was taken by the Turks, and turned *Mahometan*.

The Word comes from the Hebrew, *Maschuach*, Anointed, of the Verb *Maschach*, to anoint: whence Jesus Christ claims the Title on a manifold Account; 1st, as having been

anointed King of Kings from all Ages. 2dly, As Chief of the Prophets. 3dly, As High-Priest of the Law of Grace, or Priest for ever according to the Order of *Melchisedech*.

The Son of God is variously denominated according to his various Qualities and Attributes. He is call'd the Word, as being the Eternal Son of the Father, and Consubstantial with him. *Christ*, *Xristos*, a Greek Term, signifying *Anointed*, of the same import with the Hebrew *Messiah*; Jesus, i. e. Saviour, of the Hebrew, *Jehosua*, by reason he saves his People from their Sins. He is called Word, as being the Son of God; Jesus, as Man; *Christ*, as being Anointed; and *Messiah*, as being both God and Man.

**MESSIEURS**, a French Title of Honour or Civility, lately introduced into our Language. The Word is the Plural of *Monsieur*, and is equivalent to the English, *Sirs*. See MONSIEUR and SIR.

The Lawyers always begin their Pleadings and Harangues with *Messieurs*; which Word is also frequently repeated in the Course of the Speech; on which occasion it answers to our English Word *Gentlemen*.

The French say, *Messieurs du Parlement*; *du Conseil*; *des Comptes*, &c.

**MESSUAGE** in Law, a Dwelling-House with some Land assigned for its use, &c.

By this Name may a Garden, Shop, Mill, Chamber, or Cellar be called.

In Scotland, *Messuage* is what we call the *Manor-House*, viz. Principal Dwelling-House within any Barony. See MANOR.

**MESYMNICUM**, a Name the Antients gave to a certain part of their Tragedy; or to certain Verses in their Tragedies. See TRAGEDY.

The *Mesymericum* was a kind of Burden, as *Io Pean*; *O Dithyrambe*; *Hymen*, *O Hymenæe*, or the like; which when placed at the end of a *Strophe*, was called *Ephymnium*; and when inserted in the middle of a *Strophe*, *Mesymericum*. See STROPHE and CHORUS.

**METACARPUS**, or **METACARPUM**, in Anatomy, that part of the Hand between the Wrist and the Fingers. See HAND.

The *Metacarpus* consists of four Bones, which answer to the four Fingers; whereof that which sustains the Fore-finger is the biggest and longest. They are all round and long, a little convex towards the back of the Hand, and concave and plain towards the Palm: They are hollow in the middle, and full of Marrow; they touch one another only at their Extremities, leaving Spaces in their middle, in which lie the *Musculi Interossei*. See INTEROSSEI.

In their upper end there is a Sinus, which receives the Bones of the Wrist; their lower Extremity is round, and is received into the Sinus of the first Bones of the Fingers. See FINGER.

The inner part of the *Metacarpus* is called the *Palm*, and the outer the back of the Hand. See PALM, &c.

The Word comes from the Greek *meta*, *post*; and *καρπος*, *Manus*. See CARPUS.

**METACISM**, in Grammar, a Defect in the Pronunciation of the Letter M.

*Isidore* says it's a final m, followed by a Vowel, as *bonum aurum*, &c.

**METACHRONISM**, in Chronology, an Error in Computation of Time, either on the side of Defect, or Excess. See CHRONOLOGY and TIME.

**METACONDYLI**, is used by some Authors for the out-most Bones of the Fingers. See FINGER and CONDYLI.

**METAL**, in Natural History, a simple, fossil Body, that fuses, and becomes fluid, by Fire, and by Cold coagulates and hardens into a solid Mass, capable of distending under the Hammer. See FOSSIL.

*Metal* is said to be *Simple*, as it may be affirm'd of every the minutest Particle of a *Metal*, e. gr. a Grain of Gold, that it is Gold, or has all the Properties of Gold. See GOLD.

*Fusible* by Fire, that is, when exposed to a great Fire, it dissolves into parts which are easily moveable among themselves, or are in actual motion. See FUSION.

*Fixed*, i. e. bearing the Fire without flying off in Vapours. Tho' it is only to a certain degree that *Metals* are fixed; for by the large Burning-Glasses of Mess. *Tschirnhausen* and *Villette*, all *Metals* readily evaporate. See FIXITY.

Such is the proper Idea of *Metals*, which is no ways applicable to any other Body in Nature: For a Diamond, or other Stone, tho' a simple Body, is not fusible in the Fire, nor capable of being stretched under the Hammer. See DIAMOND. And Salt, tho' dissolvable by Fire, is not malleable, but breaks under the Hammer. See SALT, &c.

There are indeed certain Woods which yield in some measure



measure to the Hammer; but then they fall to Dust in the Fire: And so of the rest. See MALLEABILITY, &c.

We find but six *Metals* in all Nature, viz. Gold, Lead, Silver, Copper, Iron, and Tin. See the Nature, Characters, Production, Uses, &c. of each thereof, under its proper Article; GOLD, LEAD, SILVER, COPPER, IRON, and TIN.

To these, a seventh *Metal* is usually added, viz. Mercury, or Quick-Silver; but improperly, as it has not all the Characters of a *Metal*, nor scarce any thing in common with the other *Metals*, except Weight and Similarity of parts. See MERCURY, &c.

Thus, for Example, it is neither dissolvable by Fire, malleable, nor fix'd: In effect, it seems to constitute a peculiar Class of Fossils, and is rather the Mother, or Basis of all *Metals*, than a *Metal* itself. However, as it is usually reckoned among them, and as it wants nothing to render it a *Metal*, but an additional Sulphur to fix and connect its parts together, it may without any great harm be consider'd under that Class.

The common radical Character of *Metals* is, that of all known Bodies, they are the heaviest. By Dr. Halley's Experiments, the Weight of Gold to that of Glass is determined to be as 7 to 1; and the Weight of Tin, the lightest of all *Metals*, to that of Gold, as 7 to 19; which considerably surpasses the Weight of all Stones, Marbles, Gems, and other the most solid Bodies, as appears from the Tables of Specific Gravities. Nor is there any Body in Nature but a *Metal*, that is one third of the Weight of Gold. See SPECIFIC Gravity.

The Royal Society furnish us with various Experiments of this kind. The Weights of the several *Metals*, and other Solids, they have examined Hydrostatically, by weighing them in Air and in Water; and the Weights of the Fluids by weighing an equal Portion of each. By such Experiments they find, that taking the same Weights of Water and Gold, the Bulk or Magnitude of the former is to the latter as 19636 to 1000; consequently that the Weight of Gold is to Water nearly as 19 to 1.

The Specific Weight of the several *Metals* by this Means determined, stand thus:

|              |        |       |                |
|--------------|--------|-------|----------------|
| Gold         | 19635  | Iron  | 7852           |
| Quick-Silver | 14019  | Tin   | 7321           |
| Lead         | 11341  | Stone | 2000           |
| Silver       | 105135 | Water | 1000           |
| Copper       | 8843   | Air   | $\frac{1}{17}$ |

| The Cubic Inch of |         | Ounces. | Drams. | Grains. |
|-------------------|---------|---------|--------|---------|
| Gold              | Weights | 12      | 2      | 52      |
| Quick-Silver      |         | 8       | 6      | 8       |
| Lead              |         | 7       | 3      | 30      |
| Silver            |         | 6       | 5      | 28      |
| Copper            |         | 5       | 6      | 36      |
| Iron              |         | 5       | 1      | 24      |
| Tin               |         | 4       | 6      | 17      |

As to the Origin and Formation of *Metals*, various are the Sentiments of Philosophers Antient and Modern.

Plato will have the Cause of *Metals* to be a humid Vapour, inclosed in the Bowels of the Earth, which being variously intermix'd with Parts of the Earth, produce various *Metals*. Plotin will have Sulphur to be the Father of *Metals*; and an oleaginous viscous Humour the Mother. Lidyat endeavours to prove all *Metals* generated by a subterranean Fire; urging, among other Reasons, that many *Metals*, when taken out of the Earth, are exceedingly hot. Du Hamel shews, that *Metals* don't take their Rise either from any vaporous Exhalation, or from Water, or from Earth; but are generated of Mercury, Sulphur and Salt. He adds, that *Metals* take their Matter and Weight from the Mercury, and their Tincture and Form from Sulphur.

The same Author owns the first Rudiment of a *Metal* to be a saline Substance swimming in Water, which is by little and little carry'd off. By how much the Terrestrial Parts are more exquisitely mix'd with the aqueous or humid, by so much is the *Metal* more heavy and firm, as having fewer and smaller Pores. Hence its Ductility; for its Parts being extremely small, dense, and complicated, may be drawn out into a very spacious Surface. On which account it is, that Gold exceeds all other *Metals* both in Weight and Ductility; hence also its Fixity, its Parts being too close and dense to be exhaled. The Water defends the Earth from being burnt, and the Earth the Water from flying off; neither forsakes the other, but each is bound in an undissolvable Knot. The Moisture gives Ductility, the Earth Solidity. Where the Mixture is less perfect, whether the Earth or the Water prevail, the *Metal* will neither have so much Weight, as having larger Pores; nor will it bear the Fire so well. For if the Earth prevail, as in Iron, or the Water, as in Lead; Heat will set

the one at liberty from the other; the Moisture evaporates, and the Earth is reduc'd into Scoria's, &c.

Dr. Woodward accounts for the Production of *Metals* found in the Earth, in the following manner.

All *Metals* now found in the *Strata* owe their present Condition to the Deluge; when, also he imagines the *Strata* of Stone, Earth, Marble, &c. were form'd. See DELUGE.

The *Metallic* and Mineral Matter now found in the perpendicular Intervals or Fissures of the several *Strata*, whereof the Body of the Earth is compos'd, was, according to him, at the time of the Deluge lodg'd in the Bodies of those *Strata*, and brought thence, and transmitted into these Intervals since that time; the Intervals themselves not existing, till the *Strata* were form'd and broke again, to let the Water from the Earth.

Now the Water which, he imagines, is constantly ascending from the Abyss (see ABYSS) towards the Surface of the Earth, continually pervading the *Strata*, detaches out of their Pores and Interstices such *Metallic* and Mineral Corpuscles as it finds loose in its way, carrying them along with it to the perpendicular Intervals, where having a freer Passage than before, it deserts them, and leaves them in those Intervals. And this he takes to be the way in which all *Metals*, now found in those Places, were brought thither, and still grow.

Those in the *Strata*, however, he observes do not, nor cannot grow; but, on the contrary, are continually lessen'd and diminish'd, by so much as has been convey'd into the perpendicular Intervals, and brought forth of the Surface of the Earth by Springs and Exhalations from the Abyss, &c. See FOSSIL.

The same ingenious Author complains of the great Uncertainty and Inconstancy in the Mineral and *Metallic* Kingdom; neither Colour, Figure, nor Situation in the Earth, being to be depended on, so as to make any positive Judgment from them. A Pyrites or Marchasite, for instance, shall have the Colour and Brightness of Gold and Silver, and yet afford nothing but a little Vitriol and Sulphur; while a Pebble in appearance shall have a Mixture of a valuable *Metal* in it. 'Tis common too to find the same *Metal* shot into a great number of different Forms, as well as to find different Kinds of *Metal* of the same Form. And as to their Place in the Earth, there is the same Uncertainty, being sometimes found in the perpendicular Fissures or Intervals of the *Strata*, sometimes interspersed in the Bodies of the *Strata*, and sometimes in both. The same *Metals* are also placed indifferently in all kind of terrestrial *Metal*, or in *Strata* of very different natures. They are frequently intermix'd with each other, so that 'tis a rare thing to find any of them pure and simple; but Copper and Iron shall be in the same Mass, Gold and Copper, Silver and Lead, Tin and Lead; nay, sometimes all six together in the same Lump. See MINERAL.

M. Tournefort is of opinion, that all *Metals* have their Origin from Seeds, like Plants; that they have Vessels, with Juices circulating in them, &c.

The French Chymists have been very curious in their Inquiries into the Nature and Production of *Metals*.

M. Geoffroy, from a Mixture of Sulphur with a vitriolic Salt, and an argillous Earth, brought an Iron, which he maintain'd to be a new Production, or a Composition resulting from the Assemblage of certain Principles, which existed separately in the Ingredients that formed the *Metal*; in a word, that it was an artificial Iron. And observing that there were Parcels of this *Metal* in the colour'd Ashes of Plants, and of most other inflammable Substances, he concluded that it might be form'd there also by the Union of the same three Principles.

This was oppos'd by M. Lemery the younger, who maintain'd that the Iron contain'd in the Ashes of Plants, was not form'd there by Calcination, but was really existent in the Plants themselves, being rais'd in their Vessels along with the Juices of the Earth; and further, that all the Ingredients whereof M. Geoffroy's artificial Iron were form'd, do really contain Iron in themselves, either in smaller or larger Quantities: Not the Argilla only, where the Iron is easily discover'd by an animated Knife; nor the Oil of Vitriol, which is drawn from a Mineral, the Ground whereof is Iron; but also Linseed Oil, whereof M. Geoffroy's Sulphur was made; and even that of Turpentine, sweet Almonds, &c. relating withal the Operations whereby each of those Oils might be reduc'd to an Earth wherein was Iron.

To this it is answer'd, that in what manner soever Iron be drawn from the several Ingredients separately, there will be still found infinitely less in 'em, than when mix'd, and that of consequence the Mixture produces Iron. That as for Oils, 'tis evident they are not simple Substances, but are compos'd of an Earth, an acid and a sulphurous or inflammable Part; which are the three pre-



the Principles requir'd for the Formation of Iron: so that, according to all Appearances, 'tis an Assemblage of those Sulphurs, Salts and Earth in the Oil, that the Iron is form'd by Calcination; and therefore that the Means used to the Iron in the Ingredients, are the very same with those by which it is compos'd.

Hence it appears, that vegetable Matters contain the Principles of Minerals. But M. Geoffroy goes further: and to support his Doctrine of the Production of Metals, undertakes to prove, that the Principles of Vegetables, and those of Minerals, are essentially the same; and that one may readily, and with ease, decompound Minerals, by separating their Principles, and compound 'em again, by substituting Principles taken from Vegetables in lieu of those taken away.

To clear this Point, he examines and compares the Principles of Mineral and Vegetable Salts. The Principal in the Mineral Class, are Nitre, Sea-Salt, and Vitriol: All which Salts we find in Plants. On the other hand, the essential Salt of the *Parietaria* is wholly nitrous, and melts on the Coals like Salt-Petre. The fix'd Salts of the *Cardus Benedictus*, *Abfintium*, *Kali*, &c. contain a great deal of Sea-Salt, which crystallizes in Cubes, and precipitates on the Coals. Add, that the greatest part of the fix'd Salts of Plants calcin'd to a certain degree, yield a strong Smell of Sulphur, which can proceed from nothing but a vitriolic Salt, rarify'd and volatiliz'd by the Oil of the Plant. By these Salts we may be able to judge of all the other Salts of Plants; for the volatile Salts are nothing else but fix'd Salts disengag'd from the grossest part of their Earth, and join'd with parts of Oil. See SALT.

Further, there is scarce any reason to doubt, that the acid Juices drawn from Vegetables, are of the same nature with the mineral Acids; with this only difference, that the Acids of Plants have been extremely rarify'd by Fermentation, and united so closely with Sulphurs, that 'tis not without a great deal of difficulty that they are separated.

Thus, distill'd Vinegar, which we make no scruple of ranking among the vitriolic Acids; does only differ from Spirit of Sulphur, Spirit of Vitriol, or even the Caustic Oil of Vitriol, in that the Acids in the Vinegar are diffused among a great deal of Phlegm, and strongly united to a great deal of Oil, which yet may be separated. By dissolving Copper in the Acid of Vinegar, separated, as much as possible from its Oil, there are form'd Crystals, like in figure to those of blue Vitriol. From all which it appears, that the Salts of Plants do not differ essentially from those of Minerals.

For Sulphurs, the inflammable or sulphureous Principle is the same in Vegetables as in Minerals. And M. Geoffroy even shews, that the Principle of Inflammability in common Sulphur, is the same with that which renders the Fat of Animals, the Oils and Resins of Plants, and the Bitumens of the Earth, inflammable. To which he adds, that this same sulphureous Principle is not only likewise found in metallic Substances, but that 'tis this which gives them their Fusibility, Ductility, and metallic Forms. Thus Antimony, which is a Substance approaching the nearest of any to a Metal, is little else but a burning Sulphur. By exhaling this, it loses its metallick Form, and becomes a kind of grey Ashes, which being melted, instead of Metal becomes Glass. By melting this over again, and adding to it some inflammable Matter, as Tartar, it returns into a Regulus.

As to the Species of METALS, there are four which the Chymists call *imperfect*, because their Principles are not bound so fast together, but that the Force of a common Fire destroys them; these are, Iron, Copper, Lead and Tin: the others, which are Proof against common Fire, are Gold and Silver. In the four first 'tis easy to see the Principle of Inflammability. They become all fusible by the Addition of Salt-Petre, either in a greater or less degree. Iron is that wherein this is the most visible; next, Tin; then Copper and Lead. But the Principle is more conspicuous in the Dust or small Filings of the Metals, let fall in the Flame of a Candle, than in the Lump. For Gold and Silver, the sulphureous Principle is not so obvious. No Heat but that of the Sun collected into a Focus, is capable to decompound them. But no doubt they have the same Principles with the other Metals, tho' not so easily seen. In Gold, as well as in the imperfect Metals, the Ground is an Earth capable of Vitrification, as appears by the Glass remaining after the Calcination of Gold in a Burning-Glass; and there is reason to believe, that the greatest part of what is exhaled in Smoak during the Operation, is the sulphureous Principle mix'd with Salts. As to Silver, there is something in it extremely various. When purify'd with Antimony, it vitrifies in the Sun; but if purify'd with Lead, it leaves nothing behind it but grey Ashes. The Ground of this Metal is doubtless an Earth capable of Vitrification; and what exhales in

Smoak, is apparently a Mixture of Sulphur, Salts, and a little Earth volatilized by the Fire. See SULPHUR.

From all which, and many more Observations of the same kind, M. Geoffroy ventures to draw the following Conclusions. That the Substances whereof Metals are composed, don't differ essentially from those which compose Vegetables. That the imperfect Metals are composed of a Sulphur, vitriolic Salt, and a vitrifiable Earth. That this sulphurous Principle is more or less strongly join'd with the other Principles; very strongly in Gold and in Silver, less in Antimony, and very little in mineral Sulphur. That the Principle of Inflammability may be separated from metallick Substances, either by culinary Fire, or by the Sun. That the Metal thus despoiled of its Principle, is converted into Ashes. That these Ashes, pursued farther with a violent Fire, vitrify; and that these Ashes, or rather Glasses, by the Application of some inflammable Matter, resume the metallic Form they had lost. That 'tis by this means Linseed-Oil turns Argilla into Iron. That if we knew all the other metallic Earths, they might likewise be immediately converted into Metals, by the Projection of some inflammable Matter. That 'tis the saline and earthy Parts, found in Oil of Vitriol, that furnish the Earth capable of Vitrification, which makes the Base or Ground of Iron, and receives the metallic Form from the sulphurous Principle of the Oil. That the Iron found in the Ashes of Plants, was produced there in the same manner: And, That 'tis a Composition of the vitrifiable Earth of the Plants, the Acid of those Plants, and their oily or inflammable Principle.

The same Author, the better to ascertain the constituent Parts of Metals, made a great number of Experiments on them with the Duke of Orleans's large Burning-Glass; the Result whereof falls in with, and confirms the Doctrine laid down above.

From those Experiments, he says, it appears, That the four Metals which we call *imperfect*, viz. Iron, Copper, Tin and Lead, are composed of a Sulphur or oily Substance, capable of Inflammation, and a metallic Earth, capable of Vitrification. That from this Sulphur proceed the Opacity, Brightness and Malleability of a Metal. That this metallic Sulphur does not appear at all different from the Oil or Sulphur of Vegetables, or even Animals; and that it is the same in Mercury as in the four imperfect Metals. That these four Metals have for their Basis an Earth susceptible of Vitrification; that this Earth is different in each of the four Metals, in that it vitrifies differently in each; and that on this Difference in vitrifying, depends the Difference of Metals. See VITRIFICATION.

The excellent Boerhaave, after an accurate Survey of the several Metals, their Characters, Properties, Preparations, Uses, &c. draws the following Corollaries concerning the general Nature of Metals.

1. That which distinguishes Metals from all other Bodies, as well as from each other, is their Heaviness: Tho, every Metal has its peculiar Weight; which no Art is able to imitate, and which depends, as *Helmunt* and the Chymists express it, on the Atomic Homogeneity of the Parts. Now, the later Philosophers have proved, that all corporeal Magnitude has just so much reality in it, as Weight; and therefore if you have found the Heaviness of any Metal, you have at the same time found its Corporeity. Sir *I. Newton* treating of Gravity, and *Huygens* of the Pendulum, shew that Weight and Reality are correspondent. See WEIGHT and GRAVITY.

2. The Metals appear to be Simple, yet are really Compounds. Their component Principles, according to the Antients, are Sulphur and Mercury; to which some of the Moderns have added Salt: but 'tis certain Salt is no constituent Part, or Ingredient of Metals, but rather something external adhering to them. All Metals consist of two Parts, or Principles; Mercury as the Basis or Matter; and Sulphur as the Binder or Cement: the first, the Substratum, or metallic Matter; and the second, that which renders it fix'd and malleable. The Mercury, it is to be noted, is the same with our Quicksilver, only defecate, and clear of any heterogeneous Matter; whereas the common Quicksilver is always mix'd. As to the Sulphur, it is not the vulgar fossil Sulphur, but a peculiar sort of Matter specifically denominated *Sulphur of Metals*, concluded by some of our latest, and best Chymists, particularly *Monf. Homberg*, to be Fire; which being mix'd with the Mercury, fixes it, and according to the different degrees of its Union and Cohesion therewith, produces different Metals. See MERCURY, SULPHUR, FIRE, &c.

This Doctrine of the Composition of Metals is confirm'd by an Experiment of Mr. *Boyle*, who after having retain'd Mercury a long time in a moderate Fire, took a piece of Gold out of it, which 'twas apparent was not in the Mercury before it was exposed to the Fire. *Monf. Homberg's* Experiment is to the same effect; from which he concludes,



cludes, that Gold consists of a sulphurous igneous Part, and a heavy mercurial Part fixed thereby; and that upon taking away the sulphurous or fiery Part, the Gold is converted into fluid Mercury. See MERCURY.

3. All Metals must first be Mercury, e'er they be Gold; and the thing superadded to common Mercury, whereby it is prevented from becoming Gold, is a sharp volatile Body, which, when heated, becomes corrosive, and emits Fumes; which are the Properties of the fossil Sulphur.

4. If any Metal, or other Body, could be found that only differ'd from Gold in its wanting Weight, it were impossible ever to make Gold of it; and, on the contrary, if a Body could be had that is as heavy as Gold, all the other Properties, as Colour, Fixity, Ductility, &c. might easily be added. And hence the more knowing among the Alchymists hold the primary Matter of Gold to be Quicksilver; which, say they, is Gold, at heart, as coming nearest to Gold in the point of specific Gravity. Only there is a corrosive Body, i. e. Sulphur, adhering to it, which, if it were separated, you would have Gold; or if it were only inverted, Silver.

And accordingly on such Principles whoever would make Gold out of any other foreign Matter, must remember, that the more his Matter differs from Mercury in Weight, &c. the less Gold it will make. See PHILOSOPHER'S Stone.

5. Therefore Metals are transmutable into one another: for if Mercury be the common Matter of all Metals, and if all the difference lie in the fixing Spirit or Sulphur, which, as it is less or more subtle and pure, constitutes this or that Metal; it is no way improbable they should be transmuted by a purer fixing Sulphur, taking place of a corrosive one, and fixing the Matter into a more perfect Metal.

6. The purest Metals result of the purest and most de-facate Mercury, and the smallest quantity of the subtlest Sulphur. Hence, Mercury of Gold is heavier than common Mercury, and has always some impure part that is lighter than Gold; and could that be taken away, and the fixing Spirit be added, it would become heavier than Gold.

7. The imperfect Metals consist of impure Mercury and imperfect Sulphur, with some other variable heterogeneous Matter in it: Thus, fused by the Fire, it emits a Fume which whitens Copper, after which the Sulphur exhales yet further. The reality of such a third Matter is evinced hence, that all these baser Metals are resolvable not only into Mercury and Sulphur, but also into Scoria or Sordes, which are lighter and more earthy than either of the other, and accordingly swim therein.

8. Upon the whole it appears, that in the three nobler Metals, Gold, Mercury, and Silver, it is principally the greater or less proportion of the Sulphur to the Mercury, that determines them to be Gold, Mercury, or Silver: That it is by this Proportion those several Metals are defined and denominated; and that from this difference of Proportion, flow all the specific differences of Colour, Weight, Fixity, Ductility, Volatility, Fusibility, Solubility, Salubrity, &c.

9. That in the other baser Metals, besides this different Proportion of the two Principals, there intervenes another Cause of Diversity, viz: a third Principle, or Matter of an earthy kind, and very distant from either of the rest; which adhering to the pure elemental Sulphur, corrupts and adulterates, and variously modifies it: And from the different Circumstances of this third Principle, consider'd along with those of the Sulphur itself, result the specific differences of the more imperfect Metals as to Weight, Colour, &c.

*Bath METAL*, call'd also *Princes METAL*, is a kind of factitious Metal, composed of the finest and purest Brasses mix'd with Tin, or rather with some Mineral; whereby it becomes more disposed to receive a Polish, Lustre, &c. as also fitter to be gilt. See GILDING.

'Tis said to have been invented by Prince Rupert, whence its Name.

*Bell METAL*, is a Composition of Copper and Tin melted together. See BELL.

The ordinary Proportion is 22 or 23 Pounds of Tin to an hundred Weight of the former. See BRASS.

*Line of METALS*. On Gunter's Sector, are sometimes two Lines thus call'd, and noted with the Characters of the seven Metals, ☉, ☿, ♀, ♀, ♀, ♀, and ♀; and their Use is to give the proportions between the several Metals as to their Magnitudes and Weights. See their Use under the Word SECTOR.

*To be laid under METAL*, in Gunnery, is when the Mouth of a Gun lies lower than her Breech.

*METALS in Heraldry*. There are two Metals used in Heraldry, by way of Colours, viz. Gold and Silver; the first called Or, and the second Argent. See OR and ARGENT.

In the common painting of Arms, these Metals are represented by White and Yellow, which are the natural Colours of those Metals. See COLOUR.

In Engraving, Gold is expressed by dotting the Coat, &c. all over; Silver, by leaving it quite blank.

It is a general Rule in Heraldry never to place Metal upon Metal, nor Colour on Colour: So that if the Field be of one of the Metals, the Bearing must be of some Colour, and vice versa; otherwise the Arms are false: This Rule admits of some Exceptions.

METALLIC, or METALLINE, an Adjective applied to something bearing a relation to Metals.

Thus we say, painting in Enamel is only to be performed with metallic Colours, that is, with such as come from Metals, or are made with Metals; no other being able to endure the Fire. See ENAMEL.

F. Romani has published a *Metallic History* of the Popes. *La France Metallique*, is a Book of Medals mostly imaginary, pretended to be taken from the Cabinets of the Curious, where they never were, by Jaques de Bie. M. Bize has published the *Metallic History* of Holland.

METALLURGIA, the Art of Metals, that is of preparing and working Metals, from the Glebe or Mineral, to the Utensil. See METAL.

The *Metallurgia* includes what relates to the finding of the Metallic Glebe, or Ore in the Mine; the judging of its Kind, Richness, &c. the Proportion of Metal therein; the digging and separating it from the Earth, and other matters; and the purifying and disposing it into a complete, pure, malleable Metal. See MINE and MINERAL.

*Boerhaave* divides the *Metallurgia* into four parts. The first teaches how Metals grow in the Mine, how they are discovered, and how procured out of the same. The second how to separate the Metallic from the other Matter of the Ore. The third, how to reduce the separated Matter to its simplicity and ductility. The fourth, to work, gild, polish, and imitate the finer Metals in the coarser.

METAMORPHOSIS, the Transformation of a Person; or a Change into another Form. See TRANSFORMATION.

The Antients held two kinds of *Metamorphoses*: The one real, the other apparent. The *Metamorphosis* of Jupiter into a Bull, and of Minerva into an old Woman, were only apparent. That of *Lycaon* into a Wolf, and of *Arachne* into a Spider, were of the number of the real.

Most of the antient *Metamorphoses* include some Allegorical meaning, relating either to Physics or Morality.

*Ovid's Metamorphoses* is a Collection of such Transformations.

Some Authors are of Opinion, that a great part of the antient Philosophy is couched under them; and Dr. Hooke has made an attempt to unriddle, and lay open several of them.

The Word comes from the Greek μετα, Change, or Removal from one place or state to another; and μορφη, Form, Figure.

METAMORPHISTS, a Sect of Heretics in the XVth Century, whose distinguishing Tenet was, That the Body of Jesus Christ was, upon his Ascension into Heaven, changed, and *Metamorphosed* into God.

The *Metamorphists* were a Branch of the *Sacramentarians*. See SACRAMENTARIAN.

METAPHORA, or METAPHOR, in Rhetoric, a Figure of Speech whereby a Word is transfer'd from its proper Signification, to another: or, whereby the proper Name of one thing is translated and applied to some other thing; which other thing is more elegantly explained by this tralatitious or foreign Name, than by that which properly belongs to it. As when we say, the Light of the Understanding; to burn with Zeal; to float between Hope and Despair, &c. See TROPE.

The *Metaphor* is the most common of all the Figures of Speech; and is that usually meant when we say a thing is spoken *Figuratively*. See FIGURE.

The *Metaphor* is a short Simile; an Image being thereby call'd from its proper Subject to give the resemblance of another. See SIMILE.

An Allegory is no more than a continued *Metaphor*. See ALLEGORY.

The Sources or Places whence *Metaphors* are drawn, are innumerable: They may be fetch'd from Divine Matters; thus Cicero calls Plato our God, *Deus ille noster Plato*. From the Elements; as a Torrent of Eloquence. From Plants; as where Virtue has taken Root. From Artificial things; as where Appian is call'd the Cymbal of the World; Longinus, a living Library; Pertinax, Fortune's Jester-Ball, &c.

*Quintilian* distinguishes *Metaphors* into four kinds: The first, when the Word is transfer'd from one Animal to another; as when Livy says that Cato used to bark at Scipio; or, when our Saviour calls Herod, Fox. The second, when the Word is transfer'd from one Inanimate to another; as Bridle, for Laws. The third, when Inanimates are apply'd to Animates; as the Flower of Youth. And the last, when Animates are apply'd to Inanimates; as the River disdain'd its Bounds.



As the *Metaphor* is intended to set things before the Eyes ; it becomes so much the more perfect, as it shews them the more vividly, by representing them in Motion and Action. A *Metaphor* should have nothing in it coarse or shocking ; nothing that may raise it above the Simplicity of Nature : Nor should it appear a *Metaphor* to any but those who view it very closely. A *Metaphor* should never be carried too far ; for in that Case, it degenerates into Puerility. *Metaphors* should always be follow'd in the same kind ; they become unnatural, when different Images are introduced. In all *Metaphorical* Dictions, there should be a kind of Unity, so that the different Words used, may have a kind of Suitableness to each other. Different Ideas are always absurd : As in this Instance ; The Church was besieged with a Deluge of Troubles : Where the two Images, *Siege* and *Deluge*, have no relation.

There is nothing young Writers are more faulty in, than the indiscrete use of *Metaphors*. Those who affect the *Merveilleux*, are eternally on the *Metaphorical* strain ; nor know any bounds or restraint. They who understand them best, use them with the greatest reserve. Mr. Addison proposes it as a Rule for Writers, to imagine their *Metaphors* actually painted before them, and to view and examine the Justness of their Application and Assemblages : under those Circumstances ; throwing every thing out of the Writing, but what might be retained in the Picture. Card. Perron prescribes this general Rule for *Metaphors* ; that they must always descend from the Genus to the Species ; and never go backwards from the Species to the Genus : Thus we say figuratively, the Bonds of Society ; and not the human Cords which tie us together : Bond being a Genus, and Cord a Species.

The Word comes from the Greek *μεταφορα*, Translation, or displacing ; of *μετα*, trans, and *φερειν*, I bear, or carry.

**METAPHRASTES**, or **METAPHRAST**, a literal Translator ; or a Person who renders an Author into some other Language Word for Word. See TRANSLATION.

A *Metaphrasis* usually signifies something more than a Paraphrase, or a Translation ; in which sense, *Metaphrast* implies a Translator, Glossographer, and Interpolator, all at once. See PARAPHRASE, &c.

**METAPHYSICS**, a Branch of Science, about whose Nature and Idea, there is some difference among Authors. See SCIENCE.

Some define it that part of Science which considers Spirits and immaterial Beings ; which others chuse to distinguish by the Name of *Pneumatics*. See SPIRIT and PNEUMATICS.

Others, keeping closer to the Etymology of the Word, explain *Metaphysics* by *trans-natural*, or *praeternatural*, or even *post-natural Philosophy*. In this sense the Word is form'd of the Preposition *μετα*, trans, beyond, or above ; and *φυσικη*, Natural.

Others, with more Propriety, conceive *Metaphysics* to be what some others call *Ontology*, or *Ontosophy*, i. e. the Doctrine of *Ente*, or of Being, in the general, i. e. of Being *quatenus* Being, or Being in the Abstract. See ONTOLOGY and ABSTRACTION.

In the same view, some Philosophers call this Science by the Name *Philosophia* or *Scientia generalis*, as being the Foundation, or, as it were, the Stamen or Root from whence all the other parts of Philosophy arise, and wherein they all meet ; its Object being Being in the Abstract, or general, not restrain'd to this or that Denomination of them ; not to Spirit any more than Body : So that the Doctrines of *Metaphysics*, are applicable to all Beings whatever. See ENS.

The Philosophers again, are divided as to the Notion of a Science *de Ente*, in general. Some hold it real, precise, and solid enough to be demonstrated ; others judge it too obscure, faint, and confused to be admitted into Philosophy.

Being, abstracted from every Sort or Species of Being, is certainly a very vague Term ; and does not seem to give footing enough for a Science : We do not see how it comes to affect the Mind as an Object. Add, that the common *Metaphysics* cannot demonstrate any part of its Subject, but assumes the whole : There are no Principles, or Axioms whereon to demonstrate *Metaphysics* which contain the Principles of all other Sciences. See MATHEMATICS.

The first who wrote professedly on the Subject of *Metaphysics* is Aristotle. Indeed he is the first who uses the Word : *μετα φυσικη*, is the Title of one of his Books, which some of his Commentators will have to signify no more than after the Books of *Physics*. M. du Hamel, taking the Preposition *μετα* in the sense of *post*, is even of Opinion that the Word was coin'd by Aristotle's Followers ; and that it was utterly unknown to Aristotle.

Aristotle's *Metaphysics* seem to have been intended for a kind of Natural Theology. F. Malbranche and Mr. Locke have wrote much more clearly and consistently of *Metaphysics*,

than any of the Antients. See UNITY, MODE, TRUTH, DURATION, &c.

**METAPHYSICAL**, something belonging to *Metaphysics*. See METAPHYSICS.

The Word is also used to denote something too subtle, abstract, and refined. In this sense we say, such a Reasoning, such a Proof, is too *Metaphysical*, &c.

A *Metaphysical Case*, is an imaginary or chimerical Case, which can scarce ever happen, or not without much difficulty ; and which ought not to be laid down as a Rule for common Occasions.

**METAPLASM**, **METAPLASMUS**, in Grammar, a Transmutation, or Change made in a Word, by adding, retrenching, or changing a Letter or Syllable thereof.

The Word comes from the Greek *μεταπλασμος*.

**METASTASIS**, in Medicine, from *μετασταναι*, *transfere*, I change, or remove ; signifies the Removal of a Humour from one part, to another, which is most commonly known in nervous Cases : sometimes also in the grosser Humours ; the reflux Blood taking up digested Matter from one part, and disposing it upon another. See FLUXION.

**METATARSUS**, in Anatomy, that part of the human Sceleton, containing the middle of the Foot. See FOOT.

The *Metatarsus* consists of five Bones, reaching from the Heel to the Toes ; whereof that which sustains the great Toe, is the thickest ; and that which sustains the next Toe, the longest. The rest grow, each shorter than other. They are longer than the Bones of the *Metacarpus* ; in other things they are like them, and are articulated to the Toes, as these are to the Fingers. See METACARPUS.

The Word comes from *μετα*, trans, and *ταρσος*, *pes*, foot.

**METATHESIS**, *Transposition*, a Grammatical Figure, whereby the Letters of a Word, or the Words of a Sentence, are transposed, or shifted out of their natural Situation. See TRANSPOSITION.

The Word comes from the Greek *μετα-θεσις*, *trans-positio*.

**METEMPSYCHI**, ancient Heretics, who, in imitation of *Pythagoras*, held the *Metempsychosis* or Transmigration of Souls. See METEMPSYCHOSIS.

**METEMPSYCHOSIS**, in the ancient Philosophy, the Passage, or Transmigration of the Soul of a Man, after Death, into the Body of some other Animal. See TRANS-MIGRATION.

*Pythagoras* and his Followers held, That after Death Men's Souls pass'd into other Bodies, of this or that kind, according to the manner of Life they had led. If they had been vicious, they were imprison'd in the Bodies of *Hachan*, miserable Beasts, there to do Penance for several Ages ; at the Expiration whereof, they returned afresh to animate Men : If they had lived virtuously, some happier Brute, or even a human Creature, was to be their Lot. See PYTHAGOREANS.

What led *Pythagoras* into this Opinion, was, the Persuasion he had, that the Soul was not of a perishable nature : whence he concluded, that it must remove into some other Body, upon its abandoning this. *Lucan* treats this Doctrine as a kind of officious Lye, contrived to mitigate the Apprehension of Death, by persuading Men that they only changed their Lodging ; and ceased to live, to begin a new Life.

*Reuchlin* denies this Doctrine ; and maintains, that the *Metempsychosis* of *Pythagoras* imply'd nothing more than a Similitude of Manners, Desires, and Studies formerly existing in some Person deceased, and now revived in another alive. Thus, when it was said that *Euphorbus* was revived in *Pythagoras*, no more was meant than that the martial Virtue, which had shone in *Euphorbus* at the time of the Trojan War, was now in some measure revived in *Pythagoras*, by reason of the great respect he bore to the *Athletæ*. For those People wondring how a Philosopher should be so much taken with Men of the Sword, he palliated the Matter, by saying that the Soul of *Euphorbus*, i. e. his Genius, Disposition and Inclination, were revived in him. And this gave occasion to the Report that *Euphorbus's* Soul, who perished in the Trojan War, had transmigrated into *Pythagoras*.

*Ficinus* asserts, That what *Plato* speaks of the Migration of a human Soul into a Brute, is intended allegorically ; and relates merely to the Manners, Affections, and Habits of its degenerating into a beastly Nature by the Impurities of Vice. *Serranus*, tho' he allows some force to this Interpretation, yet inclines rather to refer the *Metempsychosis* to the Resurrection. See RESURRECTION.

*Pythagoras* is said to have borrowed the Notion of a *Metempsychosis* from the Egyptians, others say from the ancient *Brachmans*. It is still retained among the *Banians* and other Idolaters of India and China ; and makes the principal Foundation of their Religion. So extremely are they bigotted to it, that they not only forbear eating any thing that has Life, but many of them even refuse to defend



send themselves from wild Beasts. They burn no Wood, lest some little Animalcule should be in it; and are so very charitable, that they will redeem from the hands of Strangers, any Animals that they find ready to be killed. See BRACHMANS, BANIANs, &c.

The Word is *Greek*, form'd of *μετά*, *en*, and *Ψυχή*, *Soul*.

**METEMPTOSIS**, a Term in Mathematics, particularly used in Chronology, expressing the solar Equation, necessary to prevent the new Moon from happening a Day too late; as, on the contrary, *Proemptosis* signifies the lunar Equation, necessary to prevent the new Moon from happening a Day too soon. See **PROEMPTOSIS**.

The new Moons running a little backwards, that is, coming a Day too soon at the end of 312 Years and a half; by the *Proemptosis*, a Day is added every 300 Years, and another every 2400 Years: On the other hand, by the *Metemptosis*, a Bissextile is suppressed each 134 Years, that is, three times in 400 Years. These Alterations are never made, but at the end of each Century; that Period being very remarkable, and rendering the Practice of the Calendar easy.

There are three Rules for making this Addition, or Suppression of the Bissextile-Day, and by consequence for changing the Index of the Epacts. 1. When there is a *Metemptosis* without a *Proemptosis*, the next following, or lower Index, must be taken. 2. When there is a *Proemptosis* without a *Metemptosis*, the next preceding, or superior Index, is to be taken. 3. When there is both a *Metemptosis* and a *Proemptosis*, or when there is neither the one nor the other, the same Index is preserved. Thus in 1600 we had D; in 1700, by reason of the *Metemptosis*, C was taken; in 1800 there will be both a *Proemptosis* and a *Metemptosis*; so the same Index will be retained. In 1900 there will be a *Metemptosis* again, when B will be taken, which will be preserved in 2000; because there will then be neither the one nor the other. This is as far as we shall need it. *Clavius* has calculated a Cycle of 301800 Years; at the end of which Period, the same Indices return in the same Order. See **EPACT**.

The Word comes from the *Greek* *μετα*, *post*, and *πίπτω*, *cado*, I fall.

**METEOR**, in Physiology, a mixed, moveable, crude, inconstant, imperfect Body, or Semblance of a Body, appearing in the Atmosphere, and formed out of the Matter of the common Elements, altered a little, but not transformed.

**METEORS** are of three Kinds: Ignious, or fiery *Meteors*, consist of a fat sulphurous Smoke set on Fire; such are *Lightning*, *Thunder*, *Ignis Fatuus*, *Draco Volans*, *Falling Stars*, and other fiery Phenomena appearing in the Air. See **THUNDER**, **LIGHTNING**, **IGNIS FATUUS**, &c.

*Aerial* or *Airy* **METEORS**, consist of flatulent and spirituous Exhalations; such are *Winds*, *Whirlwinds*, and *Hurricanes*. See **WIND**, **HURRICANE**, &c.

*Aqueous* or *Watery* **METEORS**, are composed of Vapours, or watery Particles variously separated and condensed by Heat and Cold; such are *Clouds*, *Rainbows*, *Hail*, *Snow*, *Rain*, *Dew*, and the like. See **CLOUD**, **RAINBOW**, **HAIL**, **SNOW**, **RAIN**, **DEW**, &c.

The Formation of **METEORS** is explained pretty largely by *Des Cartes*, in a Treatise express. *Aristotle* and *Gassendus* have also handled the same Subject. Dr. *Woodward's* Opinion is, That the Matter of *Meteors* is in great measure of a mineral nature; That the mineral Particles contained in the Strata of the Earth, are raised by the subterraneous Heat, together with the Vapours ascending from the Abyss, and pervading those Strata; especially at such times as the Sun's Heat is sufficient to penetrate the exterior Parts of the Earth, and to make room for their Escape into the Atmosphere. Thus sulphurous, nitrous, and other active and volatile mineral Particles, form various *Meteors*, according to the various Fate they meet with in the Air. See **VAPOUR**, **EXHALATION**, **MINERAL**, **AIR**, &c.

The *Greeks* call them *μετεωρα*, q. d. *Sublimes*, or high-raised; the *Latins*, *Impressiones*, as making Signs or Impressions in the Air.

**METEOROLOG**, the Doctrine of *Meteors*; explaining their Origin, Formation, Kinds, Phenomena, &c. See **METEOR**.

**METEOROSCOPE**, a Name the ancient Mathematicians gave to such Instruments as they used for observing, and determining the Distances, Magnitudes and Places of the heavenly Bodies.

From the *Greek* *μετῶρα*, *high*; and *σκοπῶμαι*, *I view*, *observe*.

**METHEGLIN**, a Liquor, or Drink prepared of Honey; one of the most pleasant and general Drinks the Northern part of *Europe* affords; and much used among the ancient Inhabitants. See **DRINK**.

There are divers ways of making it: One of the best whereof follows. Put as much live Honey naturally

running from the Comb, into Spring-Water, as that when the Honey is thoroughly dissolved, an Egg will not sink to the bottom, but be just suspended in it: This Liquor boil for an Hour, or more, till such time as the Egg swims above the Liquor about the breadth of a Groat; when very cool, next Morning, it may be barrel'd up; adding to each fifteen Gallons an Ounce of Ginger, as much of Mace and of Cloves, and half as much Cinnamon, all grossly pounded: a Spoonful of Yest may be also added at the Bung-Hole, to promote the working. When it has done working, it may be closely stop'd up, and after it has stood a Month, may be drawn off into Bottles. The Word is *Welsh*, *Meddyglyn*.

**METHOD**, the Art, or Rule of disposing things in such a manner, as they may be easily comprehended; either in order to discover the Truth, which we ourselves are ignorant of; or to prove and demonstrate it to others when known. See **TRUTH** and **ERROR**.

**METHOD** is twofold. The one of *Resolution*, which is that we generally use in our Enquiry after Truth. See **RESOLUTION**. The other of *Composition*, by which the Truth once found, is taught or imparted to others. See **COMPOSITION**.

In the **METHOD** of Resolution, call'd also by Geometers the *Analytic Method*, we proceed from some general, known Truth, to others which belong to some particular or singular Thing. See **ANALYSIS**.

In the **METHOD** of Composition, called also the *Synthetic Method*, we propose some certain, general Truths, from which we deduce particular Truths. See **SYNTHESIS**.

If in the *Method* of Resolution we propose any Maxims; 'tis not immediately in the beginning, and all together; but as they are found necessary in the Disquisition: On the contrary, in the *Method* of Composition, they are proposed all together in the beginning, before there is any absolute need of them.

These two *Methods* differ from each other, as the *Methods* of searching out a Genealogy, either by descending from the Ancestors to their Posterity, or by ascending from the Posterity to the Ancestors: both of them have this in common, That their Progression is from a Thing known, to another unknown. Those Things that are known, in each, are set in the front, or first place; that by them we may be able to arrive at those which are not known. The following Things are required in both, that Error may be avoided.

1. That no Proposition be admitted as true, to which a Man can, with a good Conscience, deny his Assent; or which is not evident.
2. That the Connection of the following Proposition, with the foregoing in every step of the Progression, be likewise evident or necessary. To these may be added two other prudential Maxims, that hold good in each *Method*: As, that we ought to reason on those Things only, of which we have clear and perspicuous Ideas; or of obscure Things only, so far as we know them; and that we should always begin from the simple and easy, and dwell on them a-while, before we proceed to Things compounded, and more difficult.

- As to the Laws peculiar to *Resolution*, they are, 1. That we must clearly and perfectly understand the State of the Question proposed. 2. That with some Energy or Effort of the Mind, one or more intermediate Ideas be discovered; which are to be a common Measure or Standard, by whose help the relations between the Ideas to be compared are to be found out. 3. That we cut off all that has no necessary relation to the Truth sought after from the thing which is to be the Subject of our Consideration. 4. That the compounded Question be divided into parts, and those separately consider'd in such Order, as that we begin with those which consist of the more simple Ideas, and never proceed to the more compounded, till we distinctly know the more simple, and by reflection have render'd them obvious to the Understanding. 5. That certain Signs of our Ideas comprehended in obvious and establish'd Figures, or in the fewest Words possible, be imprinted in the Memory, or mark'd on Paper, lest the Mind have any further trouble about them. 6. These things done, that the Ideas (according to the second Law) be then compared with each other, either by reflection alone, or by express Words. 7. If after we have compared all the Ideas, we cannot find out what we seek, we are then, by the third Law, to cut off all the Propositions, which, after a full Examination, we find of no use to the Solution of the Question, and begin a-fresh. If, after this Method has been repeated as often as is necessary, nothing of what we have observed seems to conduce to the Solution of the Question, we ought to give it over as out of our reach.

The *Synthetic Method*, or *Method* of Composition, is only practicable in things, whose Principles we perfectly know; as in Geometry, which is wholly employ'd in the Consideration



deration of abstract Modes; of which our Mind has clear and adequate Ideas: But when the Enquiry is into Substances, as in Physics, we cannot make use of the *Method of Composition*, their Kinds, and intimate Essences being unknown to us.

This *Method* has not been by any so justly and accurately observed, as by the Mathematicians, whose Principles are perfectly known: Its Laws therefore will be best drawn from their Practice. Now, as they designed to propose nothing that could be contradicted; they pitch'd on these three Rules: 1. To offer nothing but what was couch'd in Words or Terms perfectly understood; for which reason they always define the Words they make use of. 2. To build only on evident and clear Principles, such as could not be contradicted by any who understood them; for which reason they first of all propound their Maxims or Axioms, which they demand to be granted them, as being self-evident, and needing no Proof. 3. To prove demonstratively all their Consequences; for which reason they use nothing in their Arguments or Proofs, but Definitions that have been laid down, Axioms that have been granted, and Propositions that have been already proved; which become Principles to things that follow them.

The Word *Method* comes from the Greek *μῆθοδος*, which signifies the same thing. The Schools have a long time disputed, whether Logic be an Art, a Science, or a *Method*. See LOGIC.

*Gassendus* distributes *Method* into three Kinds or Branches, viz. *Methodus Inventionis*, *Methodus Inventionis*, or discovering a Truth unknown. See INVENTION.

*Methodus Judicii*, of Judging, or determining of a Truth, or Proposition proposed. See JUDGMENT.

And *Methodus Demonstrationis*, or of *Demonstration*; that is, of exhibiting it to another. See DEMONSTRATION.

METHOD, *Methodus*, is peculiarly used in Mathematics for divers particular Processes. In this sense we say

METHOD of Fluxions. } FLUXIONS.  
METHOD de Maximis & Minimis, &c. } MAXIMIS,

METHOD of Tangents. } TANGENTS.  
DIFFERENTIAL Method, &c. } DIFFERENTIAL  
EXPONENTIAL Method, &c. } EXPONENTIAL.

METHODICA Medicina. See MEDICINE and PHYSIC.

METHODISTS, METHODICI, an Appellation given to those Physicians who adhere to the Doctrine of *Galen*, and the Schools; and who cure with Bleedings, Purges, &c. duly apply'd according to Symptoms, Circumstances, &c. in opposition to *Emperics* and *Chymists*, who use violent Medicines, and pretended Secrets or Nostrums. See EMPE-  
RIC, CHYMI, &c.

METOCHE, in the ancient Architecture, a Term used by *Vitruvius* to signify the Space or Interval between the Dentils. See DENTICLE.

*Baldus* observes, that in an ancient MS. Copy of that Author, the Word *Metatome* is found for *Metoche*. Hence *Daviler* takes occasion to suspect that the common Text of *Vitruvius* is corrupted; and concludes, that it should not be *Metoche*, but *Metatome*, q. d. Section.

METONIC Cycle, in Chronology, the Lunar Cycle, or Period of 19 Years; thus call'd from its Inventor *Meton*, an ancient Athenian. See CYCLE and PERIOD.

When the *Metonic* Cycle is compleated, the Lunations, or the New and Full Moons return on the same Day of the Month; so that on whatever days the New and Full Moons happens this Year, 19 Years hence they will fall precisely on the very same Day of the Month, as *Meton* and the Primitive Fathers thought. See LUNATION.

For this reason, at the Time of the Council of Nice, when the manner of settling the Time for observing *Easter* was established, the Numbers of the *Metonic* Cycle were inserted in the Calendar in Letters of Gold, on account of their great Use; and the Year of the Cycle for that Year was call'd the *Golden Number* of that Year. See GOLDEN NUMBER.

This is sometimes also call'd the *Lunar Cycle*, or Period. See LUNAR Cycle.

METONYMY, a Figure in Rhetoric, call'd also *Hypallage* and *Transnominatio*. It consists in a transmutation or change of Names, or putting of one Name for another. See FIGURE.

The *Metonymy* is the most extensive of all the Tropes. See TROP.

There are four principal Kinds of *Metonymies*: The first, when we put the Inventor for the thing invented; as *Bacchus* for Wine, *Ceres* for Bread. The second, when we put the Containing for the thing contained; as a Glass for the Wine within it. The third, when the Effect is put for the Cause; as the Captain for his Soldiers, *Greece* for the Greeks, the Author for his Works. The fourth, when the Sign is put for the thing signified; as the Gown for the Priesthood, &c.

The Word comes from the Greek *μετα*, trans, and *ὄνομα*, Nomen.

METOPE, or METOPA, in Architecture, the Interval, or square Space between the Triglyphs, in the Frieze of the *Doric* Order. See TRIGLYPH and FRIEZE.

The Antients used to adorn these Parts with carved Works, or Paintings, representing the Heads of Oxen, Vessels, Basons, and other Utensils of the Heathen Sacrifices.

As there is found some difficulty in disposing the Triglyphs and *Metopes* in that just Symmetry which the *Doric* Order requires; some Architects make it a Rule, never to use this Order but in Temples.

Semi METOPE is a Space somewhat less than half a *Metope*, in the Corner of the *Doric* Frieze.

The Word *Metope*, in the original Greek, signifies the distance between one Aperture or Hole and another, or between one Triglyph and another; the Triglyphs being supposed to be Solives or Joists that fill the Apertures: from *μετα* inter, between, and *πύλον* foramen.

METOPOSCOPY, the Art of discovering the Temperament, Inclinations, and Manners of Persons by Inspecting the Lines in their Faces.

*Metoposcopy* is no more than a Branch of Physiognomy; the latter taking its Conjectures from all parts of the Body: But both the Body, and the Branch are extremely precarious, not to say vain. See PHYSIOGNOMY.

*Ciro Spontoni*, who has wrote on the Subject of *Metoposcopy*, observes, that there are seven principal Laws consider'd in the Forehead; each of which has its peculiar Planet. The first is the Law of Saturn. The second of Jupiter, &c.

The Word comes from the Greek *μετωπον*, Vultus, Face, and *σκέπτομαι*, inspicio, I view.

METRE, or MEETER, a Term in Poetry; form'd of the Greek *μέτρον*, Mensura, and signifying Verse, or Measure. See VERSE and MEASURE.

*Metrical Verses* are those consisting of a determinate Number of long and short Syllables; as those of the Greek and Latin. See QUANTITY.

*Capellus* observes, that the Genius of the Hebrew Language is incompatible with *Metrical* Poetry. See HEBREW.

METRICE, among the Antients, was that part of their Music employ'd about the Quantities of Syllables; or which consider'd them as long, or short. See QUANTITY and MUSIC.

METROCOMIA, a Term in the ancient Church History, signifying a Town that had other Towns under its Jurisdiction.

What a Metropolis was among Cities, that a *Metrocomia* was among Country-Towns. The ancient *Metrocomies* had each its *Chorepiscopus*, or Rural-Dean, and here was his See or Residence. See METROPOLIS and CHOREPISCOPUS.

The Word comes from the Greek *μητηρ*, Mother, and *κῆρον*, Town, Village.

METROPOLIS, the Capital of a Country, or Province; or the principal City, and, as it were, the Mother of all the rest. See CITY.

The Name is also apply'd to Archiepiscopal Churches; and sometimes to the principal Church of a City. See CHURCH.

Father *Monet* gives a compleat List of all the *Metropoles*. See METROPOLITAN.

The Word comes from the Greek *μητηρ*, Mater, Mother; and *πολις*, Urbis, City; as who should say, the Mother-City, &c.

METROPOLITAN, is indifferently applied to an Archbishop, and to his Cathedral Church. See ARCHBISHOP and CATHEDRAL.

The Roman Empire having been divided into thirteen Dioceses, and 120 Provinces; each Diocese and each Province had its *Metropolis*, or Capital City, where the Proconsul, or the Vicar of the Empire had his Residence. See DIOCESE and PROCONSUL.

By this Civil Division, the Ecclesiastical was afterwards adjusted; and the Bishop of the Capital City, had the direction of Affairs, and the Pre-eminence over all the Bishops of the Province. His Residence in the Metropolis, gave him the Title of *Metropolitan*. This erection of *Metropolitans* is refer'd to the end of the third Century, and was confirmed by the Council of Nice.

Archbishop *Usher* and *de Marca*, however, maintain it to be an Establishment of the Apostles; but in vain: For 'tis next to certain, that the Ecclesiastical Government was regulated on the foot of the Civil, and that it was hence the Name and Authority of *Metropolitans* was given to the Bishops of the Capital Cities of the Empire, or the Provinces that composed it. This is so true, that in the Contett between the Bishop of *Arles*, and the Bishop of *Vienne*, each of whom laid claim to the *Metropolitanship* of the Province of *Vienne*; the Council of *Turin* appointed, that which e'er of them could prove his City to be the Civil Metropolis, should enjoy the Title, and Rights of Ecclesiastical *Metropolitan*.



'Tho the Ecclesiastical Government was modell'd on the foot of the Political; yet in Gaul, and some other Countries, the distinctions of *Metropolitan* and *Primate* were not observed till very late. As the *Præfatus Gallie* resided by turns at *Treves*, *Vienne*, *Arles*, and *Lyons*, he communicated the Rank and Dignity of *Metropolitan* and *Primate* to each of them in their turn; and yet none of the *Gallican* Bishops assumed to themselves the Rights, nor even the Precedence of *Metropolitans*. The *Episcopate* level'd them all; and as to Order, they had no regard, but to the Privileges of Seniority. This Equality lasted till the fifth Century, when the Contest between the Bishops of *Vienne* and *Arles* was set on foot.

M. du Pin observes, that in the Provinces of *Africa*, excepting those whereof *Carthage* was the Metropolis, the place where the most aged Bishop resided became the Metropolis. The Reason of which without doubt was this, that neither the Proconsul, nor *Præfatus* ever fix'd their Residence.

The same Author observes, that in *Asia* there were Metropolis's merely nominal, that is, which had no Suffragan, nor any Rights of *Metropolitans*. The Bishops of *Nice*, *Chalcedon*, and *Berytus*, had the Precedence of the other Bishops, and the Title of *Metropolitans*, without any other Right or Prerogative besides the Honour of the Appellation; they themselves being subject to their *Metropolitans*.

A *Metropolitan* has the Privilege of Ordaining his Suffragans; and Appeals from Sentences pass'd by the Suffragans, are prefer'd to the *Metropolitan*. See BISHOP and PRIMATE.

The Jesuit *Canet* had began a History of *Metropoles*; but dy'd e'er the second Volume was finished.

MEZZANINE, a Term used by some Architects to signify an Entresole. See ENTRESOLE.

The Word is borrowed from the *Italians*, who call *Mezzanini* those little Windows, less in height than breadth, which serve to illuminate an Attic, or Entresole.

MEZZO-TINTO, in Sculpture, a particular manner of Engraving Figures on Copper. See ENGRAVING.

*Mezzo-Tinto* is said to have been first invented by Prince *Rupert*; and Mr. *Evelyn*, in his History of *Chalco-graphy*, gives us a Head perform'd by that Prince in this way.

'Tis pretty different from the common way of Engraving. To perform it, they rake, hatch, or punch the Surface of the Plate all over with a Knife, or Instrument for the purpose; first one way, then a-cross, &c. till the face of the Plate be thus entirely furrow'd with Lines or Furrows close and as it were contiguous to each other; so that if an Impression were then taken from it, it would be one uniform blot or smut.

This done, the Design is drawn, or marked on the same Face: after which, they proceed with Burnishers, Scrapers, &c. to expunge and take out the Dents or Furrows in all the parts where the Lights of the Piece are to be; and that more or less, as the Lights are to be stronger or fainter: leaving those parts black which are to represent the Shadows or Deepnings of the Draught.

MIASMA, from *malva*, *inquino*, I infect; is made use of to signify such Particles, or Atoms, as are supposed to arise from dissemper'd, putrifying, or poisonous Bodies, and to affect People at a distance. See CONTAGION.

MICHAELMAS, the Feast of St. Michael the Archangel, held on the 29th of September. See QUARTER-DAY.

MICROCOSM, a Greek Term literally signifying Little World; chiefly understood of Man, who is so called by way of Eminency, as being an Epitome of all that is wonderful in the great World, or Macrocosm. See MACROCOSM.

The Word is formed from the Greek *μικρος*, *parvus*, little; and *κοσμος*, *Mundus*, World.

MICROGRAPHIA, MICROGRAPHY, a Description of the Parts, and Proportions of Objects, that are too small to be viewed without the Assistance of a Microscope. See MICROSCOPE. Dr. *Hook's Micrographia* is in much esteem among the Curious.

The Word is compounded of *μικρος*, *parvus*, and *γραφειν*, *scriptio*, *descriptio*.

MICROMETER, an Astronomical Machine, which by means of a very fine Skrew, serves to measure extremely small Distances in the Heavens; as the apparent Diameters of the Planets, &c. to a great degree of Accuracy. See DISTANCE.

The Word comes from the Greek *μικρος*, *parvus*, and *μετρον*, *Menfura*; in regard a small Length, e.g. an Inch, is hereby divided into a vast number of Parts, e.g. in some, 2800; and in others more.

There is some Controversy about the Invention of the Micrometer. Mess. *Auzout* and *Picard* have the Credit of it in common Fame; as being the first who published it, in the Year 1663. But Mr. *Townley*, in the *Philosophical Transactions*, reclaims it for one of our own Countrymen,

Mr. *Gascoyne*. He relates, that from some scatter'd Papers and Letters of this Gentleman, he had learnt, that before our Civil Wars he had invented a *Micrometer*, of as much effect as that since made by M. *Auzout*, and had made use of it for some Years, not only in taking the Diameters of the Planets, and Distances upon Land, but in determining other Matters of nice Importance in the Heavens; as the Moon's Distance, &c.

Mons. *de la Hire*, in a Discourse on the Era of the Inventions of the *Micrometer*, *Pendulum Clock*, and *Telescope*, read before the Royal Academy of Sciences, in 1717, makes M. *Huygens* the Inventor of the *Micrometer*. That Author, he observes, in his *Observations on Saturn's Ring*, &c. published in 1659, gives a Method of finding the Diameters of the Planets by means of a *Telescope*, viz. by putting an Object, which he calls *Virgula*, of a proper Bigness to take in the Distance to be measured, in the Focus of the Convex Object-Glass: In this Case, says he, the smallest Object will be seen very distinctly, in that place of the Glass. By such means, he adds, he measured the Diameters of the Planets, as he there delivers them.

This *Micrometer*, M. *de la Hire* observes, is so very little different from that published by the Marquis *de Malvasia*, in his *Ephemerides*, three Years after, that they ought to be esteemed the same; and the *Micrometer* of the Marquis differ'd yet less from that published four years after his by *Auzout* and *Picard*. Hence M. *de la Hire* concludes, that 'tis to M. *Huygens* the World is indebted for the Invention of the *Micrometer*: without taking any notice of the Claim of our Countryman, Mr. *Gascoyne*, which is prior by many Years to any of them.

#### Construction and Use of the MICROMETER.

1. *Wolfius* describes a *Micrometer* of a very easy and simple Structure; first contrived by *Kirchius*.

In the Focus of a *Telescope* fit a Brass or Iron Ring A B, (Tab. ASTRONOMY, fig. 11.) with Female Screws diametrically opposite to each other. Into these insert Male Screws C E and F B, of such Length, as that they may be turned in the Tube, so as to touch each other. And with this Instrument very small Spaces in the Heavens may be accurately measured.

For when any Objects, viewed thro' a Tube, appear contiguous to the Screws; if these be turned till they just touch two opposite Points, whose Distance is to be measured, it will be evident how many Threads of the Screw they are apart. To determine how many Seconds answer to each Thread; applying the Tube towards the Heavens, turn the Screws, till they touch two Points, whose Distance is already accurately known; and observe the Number of Threads corresponding to that Interval. Thus, by the Rule of Three, a Table may be made of the Seconds corresponding to the several Threads; by means whereof, without more ado, the Distances of any Points may be determined.

2. The Structure of the *Micrometer* now chiefly in Use, with the Manner of fitting it to a *Telescope*, and applying it, is as follows:

A B C G (Plate ASTRONOMY, fig. 12.) is a Rectangular Brass Frame; the Side A B being about three Inches long, and the Side B C, as likewise the opposite Side A G, about six Inches; and each of the three Sides about  $\frac{1}{10}$  of an Inch deep. The two opposite Sides of this Frame are screwed to the Circular Plate, to be mentioned hereafter.

The Screw P, which has exactly forty Threads in an Inch, being turned round, moves the Plate G D E F along two Grooves made near the Tops of the two opposite Sides of the Frame; and the Screw Q having the same number of Threads in an Inch as P, moves the Plate R N M Y along two Grooves, made near the bottom of the said Frame, in the same Direction as the former Plate moves, but with only half the Velocity of that other. These Screws are turned both at once, and so the Plates are moved along the same way, by means of a Handle turning the endless Screw S, whose Threads fall in between the Teeth of the Pinions on the Screws P and Q. And note, that two half Revolutions of the endless Screw S, carry the Screw P exactly once round.

The Screw P turns the Hand a fasten'd thereto, over a hundred equal Divisions, made round the Limb of a circular Plate, to which the above named two opposite Sides of the Frame are screw'd at right Angles. The Teeth of the Pinion on the Screw P, whose Number is 5, take into the Teeth of a Wheel on the back-side of the circular Plate, whose Number is 25. Again, on the Axis of this Wheel is a Pinion of two, which takes into the Teeth of another Wheel, moving about the Center of the circular Plate, on the out-side thereof; having 50 Teeth. This last Wheel moves the lesser Hand b once round the above mentioned circular Plate, in the  $\frac{1}{100}$  part of the Time the Hand a is moving round: For because the Number of Teeth in the Pinion on the Screw P, are 5, and the Number of Teeth of the Wheel this Pinion moves, are 25; therefore the



Screw P moves four times round, in the time that Wheel is moving once round. Further, since there is a Pinion of two which takes into the Teeth of a Wheel, whose Number is 50; therefore this Wheel with 50 Teeth, will move once round in the time that the Wheel of 20 Teeth moves 25 times round; and consequently the Screw P, or Hand A, must move a hundred times round, in the same time as the Wheel of fifty Teeth on the Hand b, has moved once round.

Hence it follows, that if the circular Plate W, which is fasten'd at right Angles to the other circular Plate, be divided into two hundred equal Parts, the Index x, to which the Handle is fasten'd, will move five of those Parts in the same time, in which the Hand a moves one of the hundred Divisions round the Limb of the other circular Plate. Thus by means of an Index, and Plate W, every fifth part of each of the Divisions round the other Plate, may be known.

Further, since each of the Screws P and Q, have exactly forty Threads in an Inch; therefore the upper Plate G D E F, will move one Inch, while the Hand a moves forty times round; the four thousandth Part of an Inch, while the Hand moves over one of the Divisions round the Limb; and the twenty thousandth Part of an Inch, while the Index x moves one Part of the two hundred round the Limb of the circular Plate W: And the under Plate R N M Y will move half an Inch, the two thousandth Part of an Inch, and the ten thousandth Part of an Inch, the same way, in the said respective Times.

Hence, if the under Plate, having a large round Hole therein, be fixed to a Telescope, so that the Frame is moveable, together with the whole Instrument, except the said lower Plate; and the strait smooth Edge H I, of the fixed Plate A B I H, as likewise the strait smooth Edge D E of the moveable Plate G D E F, be perceivable thro' the round Hole in the under Plate, in the Focus of the Object-Glass; then, when the Handle of the Micrometer is turned, the Edge H I of the narrow Plate A B I H fixed to the Frame, and D E of the moveable Plate, will appear thro' the Telescope equally to approach to, or recede from each other.

By these Edges we shall be able to measure the apparent Diameters of the Sun, Moon, &c. the Manner of doing which take as follows:

Suppose in looking at the Moon thro' the Telescope, you have turned the Handle till the two Edges D E and H I, are open'd, so as just to touch or clasp the Moon's Edges; and that there was twenty one Revolutions of the Hand a, to complete that opening. First say, As the focal Length of the Object-Glass, which suppose ten Feet, is to Radius, so is 1 Inch to the Tangent of an Angle subtended by 1 Inch in the Focus of the Object-Glass; which will be found 28 Min. 30 Sec. Again, because there are exactly 40 Threads of the Screws in 1 Inch; say, if 40 Revolutions of the Hand a, give an Angle of 28' 30", what Angle will 21 Revolutions give? The Answer will be, 15 Min. 8 Sec. And such was the Moon's apparent Diameter; and so may the apparent Diameters of any other Objects be taken.

It must be here observed, that the Divisions on the Top of the Plate G D E F, are diagonal Divisions of the Revolutions of the Screws, with diagonal Divisions of Inches against them. Thus as the said Plate slides along, these Diagonals are cut by Divisions made on the Edge of the narrow Plate K L, fixed to the opposite sides of the Frame by means of two Screws. These diagonal Divisions serve for a Register to count the Revolutions of the Screws, and to shew how many there are in an Inch, or the parts of an Inch.

Mr. Derham tells us, that his Micrometer is not, as usually, to be put into a Tube, but to measure the Spectres of the Sun on Paper, (of any Radius) or to measure any part of it. By this means he can easily, and very exactly, with the help of a fine Thread, take the Declination of a solar Spot at any time of the Day; and by his half-Seconds Watch, measure the distance of the Spot from the Sun's Eastern or Western Limb.

MICROSCOPE, or ENOVSCOPE, a Dioptrical Instrument, by means whereof very minute Objects are represented exceedingly large, and view'd very distinctly; according to the Laws of Refraction. See REFRACTION.

*Microscopes* are properly distinguished into simple, or single; and compound, or double.

The Simple are those which consist of a single Lens, or a single Spherule: The Compound consist of several duly combined. See LENS.

As Optics have been improved, other Varieties have been contrived, in the sorts of *Microscopes*: Hence *Reflecting-Microscopes*, *Water-Microscopes*, &c. See REFLECTION, &c.

When, and by whom *Microscopes* were first invented, is not certainly known. *Huygens* tells us, that one *Drebbel*, a Dutchman, had the first *Microscope*, in the Year 1621; and that he was reputed the Inventor of it: tho' F. Fontana a

*Neapolitan*, claims the Invention to himself, but dates it from the same Year. As a Telescope inverted is a *Microscope*; the Discovery might easily enough have arose from thence. See TELESCOPE.

#### Foundation and Theory of Single MICROSCOPES.

If an Object A B (Tab. OPTICS, Fig. 21.) be placed in the Focus of a small convex Lens, or a simple *Microscope* D E, and the Eye be applied close to the other side of the *Microscope*, the Object will be seen distinct, in an erect Situation, and magnified in the Ratio of the distance of the Focus to the distance wherein Objects are to be placed to be seen distinctly with the naked Eye.

Dem. For the Object A B being placed in the Focus of the convex Lens D E, the Rays issuing from the several Points thereof, after Refraction, will be parallel to each other. See LENS and REFRACTION. Consequently the Eye will see it distinctly, by virtue of what is proved under the Word TELESCOPE.

Further, since one of the Rays A F proceeding from the Point A, after Refraction, becomes parallel to the incident Ray; and therefore, setting aside the thickness of the Lens, is found directly against it; and the same holds of all the other Rays carried to the Eye: the Rays A F, and B F, to which the rest coming from A and B are parallel, will enter the Eye in the same manner as if they enter'd without passing through the Lens; and will therefore appear erect; as if the Lens were away. See VISION.

Lastly, it is manifest that the Object A B will be seen under the same Angle as if view'd by the naked Eye: But since it appears very distinct, whereas to the naked Eye, at the same distance, it would appear extremely confused, 'tis the same thing as if the Object should seem removed to the distance F H, wherein it is viewed with equal distinctness, and under the same Angle. The Diameter of the Object A B, therefore, will be to the apparent Diameter I K, as F C to F H, i. e. as the distance of the Focus of the Lens to the distance wherein an Object is to be placed in order to view it distinctly. See MAGNITUDE and ANGLE.

*Huygens* takes it for granted, that an Object seen with the naked Eye, is then in its utmost distinctness, when seen at the distance of 8 Digits, or tenths of a Foot; which agrees pretty near with the Observations of others.

#### Laws of Single MICROSCOPES.

1. Simple *Microscopes* magnify the Diameter of the Object A B in the Ratio of the distance of the Focus F C to an interval of 8 Digits, v. g. If the Semi diameter of a Lens convex on both sides be half a Digit A B : I K =  $\frac{1}{2} : 8 = 1 : 16$ , that is, the Diameter of the Object will be increased in a sedecuple Proportion, or as sixteen to one.

2. Since the distance F H is constant, viz. 8 Digits, by how much the distance of the Focus, F C is smaller, so much the smaller Ratio will it have to F H; consequently the Diameter of the Object will be so much the more magnified.

3. Since in Plano-convex Lens's, the distance of the Focus is equal to the Diameter; and in Lens's convex on both sides, to the Semi-diameter; simple *Microscopes* will enlarge the Diameter so much the more, as they are Segments of smaller Spheres.

4. If the Diameter of the Convexities of a Plano-convex Lens, and a Lens convex on both sides, be the same, viz. = 1; the Distance of the Focus of the first will be 1; of the second  $\frac{1}{2}$ . Consequently, the Semi-diameter of the Object A B will be to the apparent one in the first Case as 1 to 8, in the latter as  $\frac{1}{2}$  to 8, i. e. as 1 to 16. A Lens, therefore, convex on both sides, magnifies twice as much as a Plano-convex.

As the whole depends on the just and steady situation of Objects with regard to the Lens, various Methods have been contrived to that end: Whence we have several different kinds of single *Microscopes*. The most simple is as follows.

1. AB, Fig. 22. is a little Tube, to one of whose Bases BC, is fitted a plain Glass, to which an Object, viz. a Gnat, Wing of an Insect, Down, or the like, is applied: To the other Base, A D, at a proper distance from the Object is applied a Lens convex on both sides, whose Semi-diameter is about half an Inch. The plain Glass is turn'd to the Sun, or the Light of a Candle, and the Object is seen magnified. And if the Tube be made to draw out, Lens's of different Spheres may be used.

Again, a Lens, convex on both sides, is inclosed in a Cell A C, and by a Screw H there fastened a cross; thro' the Pedestal C D passes a long Screw, by means whereof, and the female Screw I, a Style or Needle fix'd perpendicular to its extreme, is kept firm at any distance from the Lens. In E is a little Tube, on which, and on the Point G, the various Objects are to be disposed: Thus



Thus there may be Lens's of various Spheres applied.

2. But the *Microscope* which is found to answer the end best, is as follows: A B, Fig. 23. is a round Brass Tube, whose exterior Surface is form'd into a Skrew of a length somewhat less than the distance of the Focus of a Glass convex on both sides, used here for illuminating the Object, and fitted to its Base A C, by a Ring with a Skrew in it D E.

F G is another Brass Tube, somewhat wider than the first, and open each way for an Object to be apply'd to the *Microscope*. To its upper Base G H is fastned a Spring of Steel-Wire, twisted into a spiral I; whereby an Object placed between two round Plates, or Slices K and L, in the manner hereafter mentioned, is by means of the Skrew B C, brought to the *Microscopical* Lens; (or magnifying Glass; whereof there are several) and kept firm in its place. To the Basis H G, which has a female Skrew M, are fitted Cells N, with a male Skrew O, wherein Lens's of various Spheres, guarded by Ferrils, are included. In P is a female Skrew, by which an Ivory Handle P Q is fastned to the *Microscope*.

In the Ivory Slice T are round Holes, in which are fitted little Circles of Muscovy Glass, for Objects, especially small and pellucid ones, as little Insects, or the Wings, Scales, &c. of larger, to be fastned to.

When live Insects are to be view'd, they are cover'd with the Brass Slice Y, which is put in a little square Brass-bed, perforated with Holes X: And the same Slice, whether alone, or inclosed in the bed, being laid between the round Plates K and L, is brought to the Lens by means of the Screw A B; till the Object may be distinctly view'd.

If other pellucid oblong Objects are to be view'd, as Down; Cuticle, &c. instead of the Slice above, is used the Instrument mentioned above, for viewing Wings of Flies; whose Structure is manifest from inspection.

There are other Instruments in the Apparatus of the *Microscope*; as little Tongs, &c. for taking up small Objects, a Glass-Tube for viewing the Circulation of the Blood in Fishes, &c. which need no description.

What has been said hitherto, is to be understood of *Lenticular Microscopes*; for *Spherical* ones, their Doctrine will be understood from what follows.

If an Object A B be placed in the Focus of a Glass Spherule F, and the Eye be behind it, *v. g.* in the Focus G; the Object will be seen distinct, in an erect Situation, and magnified, as to its Diameter, in a Ratio of  $\frac{1}{2}$  of the Diameter E I, to the distance at which Objects are to be placed to be seen distinctly with the naked Eye.

The first part of the Proposition is proved in the same manner of Spheres, as of Lens's: As, then, a good Eye sees an Object distinctly at the distance of 8 Digits, a Glass Spherule will enlarge the Diameter of an Object in a Ratio of  $\frac{1}{2}$  of the Diameter to 88 Digits. Suppose then the Diameter of the Spherule E I  $\frac{1}{16}$  of a Digit, C E will be  $\frac{1}{16}$ , and F E  $\frac{1}{16}$ ; and therefore F C  $\frac{1}{16} + \frac{1}{16} = \frac{1}{8}$ . Consequently, the true Diameter of an Object to its apparent one is in the Ratio of  $\frac{1}{8}$  to 80; *i. e.* as 3 to 320, or 1 to 107 nearly.

Now a Lens convex on both sides, increases the Diameter in a Ratio of the Semi-diameter to the space of 8 Digits; wherefore  $\frac{1}{2}$  having a less Ratio to 8 than  $\frac{1}{4}$ ; of a Lens and a Sphere that have the same Diameter, the former will magnify more than the latter: And pretty much after the same manner it may be shewn that a Sphere of a less Diameter, magnifies more than another of a large one.

For the Methods of casting little glass Spherules for *Microscopes*; there are various. *Wolffius* describes one as follows: A small piece of very fine Glass, sticking to the wet Point of a Steel-Needle, is to be apply'd to the extreme bluish part of the Flame of a Torch; or, which is better, to the Flame of Spirit of Wine, to prevent its being blacken'd. Being there melted, and run into a little round drop, it is to be removed from the Flame; upon which it instantly ceases to be fluid: folding, then, a thin Plate of Brass, and making a very small smooth perforation, so as not to leave any Roughness on the Surfaces; and further, smoothing them over to prevent any glaring: fit the Spherule between the Plates against the Apertures, and the whole in a Frame, with Objects convenient for Observation.

Dr. *Adams* tells us another Method, thus: Take a piece of fine Window-Glass, and rase it with a Diamond into as many lengths as you think needful, not exceeding an eighth of an Inch in breadth; then holding one of those lengths between the Fore-finger and Thumb of each Hand over a very fine Flame till the Glass begins to soften, draw it out till it be as fine as an Hair, and break; then, applying each of the ends into the purest part of the Flame, you have two Spheres presently, which you may make larger or less at pleasure. If they stay long in the Flame,

they'll have Spots; so they must be drawn out immediately after they are turn'd round. As to the Stem, break it off as near the Ball as possible; and lodging the remainder of the Stem between the Plates; by drilling the Hole exactly round, all the Protuberances are buried between the Plates; and the *Microscope* performs to admiration.

After these manners may Spheres be made much smaller than any Lens; so that the best *Microscopes*, or those which magnify the most, are made thereof. For suppose the Diameter of a Spherule to be  $\frac{1}{16}$  of a Digit, the distance of its Focus will be  $\frac{1}{8}$ ; and therefore its real Diameter to its apparent one, as  $\frac{1}{8} + \frac{1}{8}$ ; that is, as  $\frac{1}{4}$  to 8, or as 3 to 32; or lastly, as 1 to 170. Its Surface therefore will be increased in the Proportion of 1 to 28900, and its Bulk in a Ratio of 1 to 4913000.

M. *Leeuwenboeck* and M. *Muffchenbroeck* have succeeded very well in spherical *Microscopes*; and the Apparatus of the latter is much commended: But we forbear any Descriptions thereof; it being easy for any who considers the Structure of those consisting of Lens's, to conceive how those of Spheres may be contrived.

*Water Microscope*. Mr. S. Gray, and after him, *Wolffius* and others, have contrived *Water-Microscopes*, consisting of Spherules, or Lens's of Water instead of Glass, fitted up somewhat after the manner of those above-mentioned; (as Spheres of Water may be likewise used instead of Glass in any of the common *Microscopes*) But since the distance of the Focus of a Lens or Sphere of Water, is greater then in one of Glass; (the Spheres, whereof they are Segments being the same) *Water-Microscopes* magnify less, and are therefore less esteemed than those of Glass.

The same Mr. Gray first observed that a small Drop or Hemispherule of Water held to the Eye by Candle-Light or Moon-Light, without any other Apparatus, magnified the Animalcule contain'd in it, vastly more than any other *Microscope*. The Reason is, that the Rays coming from the interior Surface of the first Hemisphere, are reflected so as to fall under the same Angle on the Surface of the hind Hemisphere, to which the Eye is applied, as if they came from the Focus of the Spherule; whence they are propagated to the Eye in the same manner as if the Objects were placed without the Spherule in its Focus.

Hollow Glass Spheres, of the Diameter of about half a Digit, fill'd with Spirit of Wine, are frequently used for *Microscopes*; but they don't magnify near so much.

#### Theory of Compound, or double MICROSCOPES.

Suppose an Object-Glass E D, Fig. 24. the Segment of a very small Sphere, and the Object A B placed without the Focus F.

Suppose an Eye-Glass G H, convex on both sides, and the Segment of a Sphere greater (tho' not too great) than that of D E, and let it be so disposed behind the Object, as that if C E: C L :: C L: C K, the Focus of the Eye-Glass may be in K.

Lastly, suppose L K: L M :: L M: L I.

If then O be the place wherein an Object is seen distinct with the naked Eye; the Eye in this Case being placed in I, will see the Object A B distinctly in an inverted situation, and magnified in a compound Ratio of M K to L H and L C to C O; as is proved from the Laws of Dioptrics.

#### Laws of double MICROSCOPES.

1. The more an Object is magnified by the *Microscope*, the less is its field, *i. e.* the less it takes in at one view.

2. To the same Eye-Glass, may be successively apply'd Object-Glasses of various Spheres; so as that both the entire Objects, but less magnified, and their several parts, much more magnified, may be viewed thro' the same *Microscope*. In which Case, by reason of the different distance of the Image, the Tube L K, in which the Lens's are fitted, should be made to draw out.

For the Proportion of the Object-Glass to the Eye-Glass, some commend the subduple Ratio, and some the subsextile. De-*Chales* will have the Semi-diameter of the Convexity of the Object-Glass to be  $\frac{1}{2}$  of a Digit; or at most  $\frac{3}{4}$ ; in the Eye-Glass an entire Digit, or even 1. *Cheerubin* makes the Semi-diameter of the Object-Glass  $\frac{1}{4}$ ,  $\frac{1}{3}$ , or  $\frac{1}{2}$  of a Digit; the Semi-diameter of the Eye-Glass  $\frac{1}{2}$ , or  $\frac{3}{4}$  of a Digit.

Since 'tis proved, that the distance of the Image L K from the Object-Glass D E will be greater, if another Lens, concave on both sides, be placed before its Focus; it follows, that the Object will be magnified the more if such a Lens be here placed between the Object-Glass D E, and the Eye-Glass G H. Such a *Microscope* is much commended by *Conrade*, who used an Object-Lens convex on both sides, whose Semi-diameter was two Digits; its Aperture equal to a Mustard-Seed; a Lens concave on both sides, 12, or at most 16 Digits; and the Eye-Glass convex on both sides, of 6 Digits.



4. Since the Image is projected to the greater distance, the nearer another Lens of a Segment of a larger Sphere, is brought to the Object-Glass; a Microscope may be composed of three Lens's, which will magnify prodigiously.

5. From these Considerations it follows, that the Object will be magnified the more, as the Eye-Glass is the Segment of a smaller Sphere; but the Field of Vision will be the greater, as the same is a Segment of a larger Sphere: If then two Eye-Glasses, the one a Segment of a larger, the other of a smaller Sphere, be so combin'd, as that the Object appearing very near thro' them, i. e. not farther distant than the Focus of the first, be yet distinct; the Object at the same time will be exceedingly magnified, and the Field of Vision much greater than if only one Lens were used: And the Object will be still more magnified, and the Field enlarged, if both the Object and Eye-Glass be double. But in regard an Object appears dim, when view'd through so many Glasses, part of the Rays being reflected in passing through each; the multiplying of Lens's is not adviseable: And the best among compound Microscopes, are those which consist of one Object-Glass, and two Eye-Glasses.

For a Microscope of three Lens's, De-Chales commends an Object-Glass of  $\frac{1}{2}$  or  $\frac{1}{3}$  of a Digit; and the first Eye-Glass he makes 2, or 2  $\frac{1}{2}$  Digits; the distance between the Object-Glass and Eye-Glass about 20 Lines. Conradi had an excellent Microscope, the Object-Glass whereof was half a Digit, and the two Eye-Glasses (which were placed very near) 4 Digits: But it answer'd best when in lieu of the Object-Glass, he used two Glasses, convex on both sides, their Sphere about a Digit and half, or at most two, and their Convexities touching each other within the Space of half a Line. Eustachius de Divinis, instead of an Object-Glass, convex on both sides, used two Plano-Convex Lens's, whose Convexities touched. Grindelius did the same; only that the Convexities did not quite touch. Zabnius made a Binocular Microscope, wherein both Eyes were used.

#### Structure or Mechanism of a Double MICROSCOPE.

The Industry and Address of our Country-man, Mr. Marshall, here deserves to be remember'd: The most commodious Double Microscope is of his Contrivance: In this, the Eye-Glasses are placed in the Tube at A and B, Fig. 25. and the Object-Glass at C. The little Pillar D E is turned by means of a Ball E, moveable in the Socket F; and thus the Microscope is accommodated to any Situation. The same Pillar is divided into as many parts, 1, 2, 3, 4, 5, &c. as there are Lens's, of different Spheres to be used in viewing different Objects; so that the distance of the Object from the Object-Glass may be found without any trouble. But as it is scarce exactly enough determined this way, the Tube may be brought nearer the Object at discretion, by means of the Screw G H.

The Objects are either laid on the Circle I; or fitted to proper Instruments, having their Points or Stiles passing through the little Tube L M.

Lastly, to illumine the Object, a Lens convex on both sides, N O, is disposed in a convenient Situation. The rest appears from the Figure.

Reflecting MICROSCOPE, is that which magnifies by Reflection, as the above-mentioned ones do by Refraction. See REFLECTION.

The Structure of such a Microscope may be conceiv'd thus: Near the Focus of a concave Speculum A B, place a minute Object C, that its Image may be form'd larger than it self in D. To the Speculum join a Lens convex on both sides E F, so as the Image D may be in its Focus.

The Eye will here see the Image inverted, but distinct, and enlarged; consequently the Object will be larger than if viewed through the Lens alone. See MIRROR.

The Inventor of this Microscope is the great Sir I. Newton; but it is somewhat to be feared lest the Objects appear dim.

Any Telescope is converted into a Microscope, by removing the Object Glass to a greater distance from the Eye-Glass. And since the distance of the Image is various, according to the distance of the Object from the Focus; and it is magnified the more, as its distance from the Object-Glass is greater; the same Telescope may be successively converted into Microscopes which magnify the Object in different degrees. See TELESCOPE.

MID, or MIDDLE, in Philosophy, and Mathematics. See MEAN and MEDIUM.

MIDDLE LATITUDE, in Navigation, is half the Sum of two given Latitudes. See LATITUDE.

MIDDLE LATITUDE is also us'd for a Method of working the several Cases in Sailing, nearly agreeing with Mercator's way, but without the help of Meridional Parts. See SAILING. See MERIDIAN, PART, MERCATOR, &c.

MIDHAVEN, Medium Celi, in Astronomy, is that Point of the Ecliptic which culminates, or is in the Meridian. See CULMINATION, &c.

MIDRIF, in Anatomy. See DIAPHRAGM.

MIDSHIP-Men, are Officers aboard a Ship, whose Station, when they are on Duty, is, some on the Quarter-Deck, others on the Poops, &c. Their Business is to mind the Braces, to look out, and to give about the Word of Command from the Captain, and other superior Officers. They also assist on all occasions both in sailing the Ship, and in stowing and rummaging the Hold.

They are usually Gentlemen, who, having served their time as Volunteers, and are now upon their preferment.

MIDSUMMER-DAY, is the Festival of St. John the Baptist, held on the 24th Day of June. See QUARTER-DAY.

MIGRATION, or Transmigration, the Passage or Removal of any thing out of one State, or Place into another; particularly of Colonies of People, Birds, &c. into other Countries. See TRANSMIGRATION.

The MIGRATION of the Souls of Men into other Animals after Death, is the great Doctrine of the Pythagoreans, call'd the Metempsychosis. See METEMPSYCHOSIS.

The MIGRATION of Birds, as the Swallow, Quail, Stork, Crane, Fieldfare, Woodcock, Nightingale, and other Birds of Passage, is a very curious Article in Natural History, and furnishes a notable Instance of the powerful Instinct impress'd by the Creator. See INSTINCT.

Mr. Derham observes two things very remarkable therein; the first, That these untaught, unthinking Creatures should know the proper Times for their Passage, when to come, and when to go; as also, that some should come when others go. No doubt, the Temperature of the Air as to heat and cold, and their natural Propensity to breed their Young, are the great Incentives to those Creatures to change their Habitation: But it is an odd Instinct they should at all shift their Habitation; that some certain Place is not to be found in all the Terrestrial Globe affording 'em convenient Food and Habitation all the Year round.

The second, That they should know what way to steer their Course, and whither to go. What Instinct is it, that moves a poor foolish Bird to venture over vast Tracts of Lands and Sea? If it be said, that by their high Ascents up into the Air, they can see cross the Seas, yet what should teach or persuade them that that Land is more proper for the purpose than this? That Britain, for instance, should afford them better Accommodation than Egypt? than the Canaries? than Spain? or any other of the intermediate Countries? Physico-Theol. p. 549.

Lud. de Beaufort remarks, that Birds in their Passage observe a wonderful Order and Polity: They fly in Troops, and steer their Course through huge unknown Regions, without the Compass. Cosmol. Divin. It is to be added, that the Birds of Passage are all peculiarly accommodated by the Structure of their Parts for long flights. See PASSAGE.

Naturalists are divided as to the Places whither Birds of Passage retire when they leave us. Mr. Willoughby thinks the Swallows fly into Egypt and Ethiopia. Ornith. Lib. 2. c. 3. Olaus Magnus says, they lurk in Holes, or under Water; which is confirmed by Emmeller, who assures us, that he saw a Bushel of them taken out of a frozen Fish-Pond, all hanging together head to head, feet to feet, &c. in one Cluster. Dissert. 2. c. 10. Olaus adds, that this is a common thing in the Northern Countries; and that such a Cluster being carried accidentally by some Boys into a Stove, the Swallows, after thawing, began to fly about, but weakly, and for a very little time. A further Confirmation of this Account was given by Dr. Colat, a Person very curious in such things, to the Royal Society. Speaking of the way of Fishing in the Northern Parts, by breaking Holes, and drawing their Nets under the Ice, he related, that he saw sixteen Swallows so drawn out of the Lake of Samoyed, and about thirty out of the King's great Pond in Rosinolen; and that at Schlebitzen, near a House of the Earl of Dobbia, he saw two Swallows just come out of the Waters that could scarce stand; being very wet and weak, with their Wings hanging on the Ground. He added, that he had often observed the Swallows to be weak for some days after their Appearance.

MILDEW, See MILDEW.

MILE, in Geography, a long Measure, whereby we use to express the distance between Places. See MEASURE, DISTANCE, &c.

The Mile is of different extent in different Countries. The Geographical or Italian Mile contains a thousand Geometrical Paces, Mille Passus, whence the Term Mile is derived. See PACE, LEAGUE, &c.

Cassini has made a curious Reduction of the Miles, or Leagues, of the several Countries in Europe into Roman Feet, which are equal to the Rhinland Feet generally used throughout the North. See FOOT.

The Mile of Italy  
Of England

Feet,

5000

5154



|   | Feet. |
|---|-------|
| The Mile of Scotland.                   | 6000  |
| Of Sweden                               | 30000 |
| Of Muscovy                              | 3750  |
| Of Lithuania                            | 18500 |
| Of Poland                               | 19850 |
| Of Germany, the Small                   | 20000 |
| The Middle                              | 22500 |
| The Largest                             | 25000 |
| Of France                               | 5250  |
| Of Spain                                | 7090  |
| Of Burgundy                             | 6000  |
| Of Flanders                             | 6666  |
| Of Holland                              | 8000  |
| Of Persia, called also <i>Parasanga</i> | 18750 |
| Of Egypt                                | 25000 |

**MILES**, a *Latin* Term, which, in its general import, signifies *Soldier*. See **SOLDIER** and **MILITIA**.

In our *English* Laws, and Customs, *Miles* is peculiarly appropriated to a Knight, called also *Eques*. See **KNIGHT** and **EQUES**.

**MILIARY Glands**, *Glandule Miliaries*, in Anatomy, a great number of small Glands interspersed throughout the Substance of the *Cutis*, or Skin. See **GLAND** and **CUTIS**.

The *Miliary Glands* are the Organs whereby the Matter of Sweat, and insensible Perspiration, is secreted from the Blood. See **PERSPIRATION** and **SWEAT**.

They are interwove with the pyramidal *Papille* of the Skin; and are each served with a Branch of an Artery, Vein, and Nerve; as also with a proper excretory Duct, through which the fluid Matter secreted from the Blood in the Substance of the Gland, is excreted, and sent forth at the Pores, or Perforations of the Cuticle. See **PORE** and **CUTICLE**.

**MILIARY Fever**, is a malignant Fever wherein the Skin is sprinkled over with little purple Spots, or Pustles, in form of Grains of *Millet*.

It is also call'd a *purple Fever*, from the colour of the Spots. See **PURPLE** and **FEVER**.

**MILITANT**, a Term understood of the Assembly of Christians, while here on Earth.

The *Romanists* divide the Church into *Militant*, *Patient*, and *Triumphant*: The *Militant* is on Earth; the *Patient*, or *Passive*, they place in Purgatory; and the *Triumphant* in Heaven. See **CHURCH**.

**MILITARY**, something belonging to the *Militia*, or *Soldiery*. Thus,

The **MILITARY Art** is the Science of War. See **WAR**.

**MILITARY Government** is the supreme Government, Direction, Command, and Disposition of all the *Military* Power of a Nation by Land and Sea. See **GOVERNMENT**.

The *Military Government* of *England* is wholly under the King; and neither one, nor both Houses of Parliament have any Right to levy any Forces, or make any War Offensive or Defensive. See **KING**, **ARMY**, **MILITIA**, **GUARDS**, &c.

**MILITARY Exercises**, are the Evolutions, or various manners of Ranging and Exercising Soldiers. See **EVOLUTION**.

**MILITARY Architecture**, is the Art of Fortification. See **ARCHITECTURE** and **FORTIFICATION**.

**MILITARY Execution**, is the delivery of a City or Country up to be ravaged and destroy'd by the Soldiers, upon its refusing to pay Contribution-Money. See **EXECUTION**.

**MILITARY Testament** among the *Romans*, was what we call a *Nuncupative-Will*; or a Testament made only by Word of Mouth, in the Presence of two Witnesses. See **TESTAMENT**.

This was a Privilege peculiar to the *Soldiery*, and to them only when in the Campaign; for at other times they were subject to the common Laws.

**MILITARY Column** among the *Romans*, was a Column on which was engraved a List of the Troops of an Army; or the Number of Soldiers employ'd in any Expedition. See **COLUMN**.

**MILITARY Order**, see **ORDER**.

**MILITARY Law**, see **LAW**.

**MILITARY Fever**, is a kind of malignant Fever frequent in Armies, by reason of the ill Food, &c. of the Soldiers. See **FEVER**.

**MILITARY Ways**, *Vie Militares*, are the large *Roman* Roads, which *Agrippa* procured to be made through the Empire, in the time of *Augustus*, for the more convenient marching of Troops, and conveyance of Carriages. See **ROAD**.

*N. Bergier* has wrote the History of the Origin, Progress, and amazing Extent of these *Military Roads*; which

were paved from the Gates of *Rome* to the extreme Part of the Empire. See **VIA**.

**MILITIA**, a collective Term, understood of Persons who make Profession of Arms.

The Word comes from the *Latin*, *Miles*, a Soldier; and *Miles*, from *Mille*, which was antiently wrote *Mile*: For in levying Soldiers at *Rome*, as each Tribe furnished a Thousand, *Mille* or *Mile*, Men, whoever was of that Number, was called *Miles*. See **TRIBE**.

**MILITIA** in its proper, and more restrained sense, is used to signify the Inhabitants, or, as we call them, the *Trained-Bands* of a Town, or Country; who arm themselves, on a short warning, for their own Defence. In which sense, *Militia* is opposed to regular, stated Forces.

The standing *Militia* of *England* is now computed to be about 200000 Horse and Foot; but may be increased at the pleasure of the King.

For the Direction and Command of these, the King constitutes *Lords Lieutenants* of each County, with Power to Arm, Array, and Form into Companies, Troops, and Regiments, to Conduct, (upon Occasion of Rebellion, and Invasion) and Employ the Men so Arm'd within their respective Counties, and other Places where the King commands; to give Commissions to Colonels, and other Officers; to charge any Person with Horse, Horse-man, Arms, &c. proportionable to his Estate, &c. See **LORD LIEUTENANT**.

No Person to be charged with a Horse unless he have 500 Pounds yearly Revenue, or 6000 Pounds Personal Estate; nor with a Foot-Soldier, unless he have 50 Pounds yearly, or 600 Pounds Personal Estate.

**MILK**, *Lac*, a white Juice, or Humour, which Nature prepares in the Breasts of Women, and the Udders of other Animals; for the Nourishment of their Young. See **BREASTS**.

*Milk* is thicker, sweeter, and whiter, than the *Chyle* itself, from which it is derived, and that probably, without much more Artifice or Alteration than the leaving behind some of its aqueous Parts. The Antients held it form'd from the Blood; but the Moderns are of Opinion, it comes from the pure *Chyle* convey'd by the Arteries to the Breasts, and without any other Coction filtrated through the Glands whereof they are compos'd, like *Urine* through the Reins; without undergoing any considerable change.

According to *M. Leewenboeck's* Observations, *Milk* consists of little Globules swimming in a clear transparent Liquor, call'd *Serum* or *Whey*.

*Milk* is a Composition of three different Kinds of Parts, *Buttious*, *Caseous*, and *Serous*. The *Buttious* Parts are the Cream and Oil that swim a-top. See **BUTTER**. The *Caseous* are the grosser Parts, and those that coagulate, and are made into Cheese. See **CHEESE**. The *Serous* are properly a *Lympha*, and make what we call *Whey*.

*Dr. Drake* says, that *Milk* is nothing but Oil and Water united by the Artifice of Nature, perhaps by the Intervention of some peculiar Salts, which, *Milk* itself, however sweet at first, does, after a little standing, discover to be pretty plentifully therein.

*Milk* is first found in the Breasts of Women after they have been pregnant about four Months. The Fermentation of the *Milk* in the Breasts, the first days after a Woman is delivered, occasions a Fever, which takes its Name therefrom.

*Aristotle* says, there are some Men who have *Milk* in their Breasts. *Cardan* tells us he saw one that had enough to suckle a Child.

In the *Philosophical Transactions*, we have an Account of a *Wether* brought to *Milk* by the sucking of a Lamb; which Lamb was maintain'd by it all the Summer, till it was weaned.

*Milk* corrupted in the Stomachs of Children, occasions the several Diseases incident to that Age. *Dobell*, a *Dutch* Physician, who has wrote expressly on this Subject, tells us, an excellent Remedy in such Case, is a Glass of Water with a little Salt dissolved in it: This acts as an Emetic, and throws up the Corruption that occasion'd the Disorder. *Scal* mentions this Remedy, L. 1. c. 3. See **CHILDREN**.

*Galen* observes, that in Animals fed with *Milk*, the greater part of the Food of the Mother is converted into that Humour.

There are several kinds of *Milk*, used not only as Food, but as Physic: As *Cows Milk*, *Asses Milk*, *Sheeps Milk*, and *Goats Milk*. These are prescribed as proper to alter a sharp thin Blood into a Crasis more soft, balsamic, and nutritive; and in Constitutions where they sit the first Passages, must be very good for that End, as being already prepared into Nutriment, so far as is required for their admission into the Blood. But where the Juices of the Stomach are sharp, these Liquors are apt to be turn'd into Curd. Whenever *Milk*, therefore, of what kind soever, is order'd in Consumptions, and as a Restorative, it is with good reason join'd with the testaceous Powders, and such things as are proper to destroy those Acidities.



*Asses Milk* is said to be a great Beautifier and Preserver of the Skin. *Poppea*, Wife of the Emperor *Nero*, used it for that purpose; having four or five hundred *Asses* constantly in her Retinue, to furnish her every Morning with a fresh Bath.

We have several artificial *Milks*, so call'd from their resemblance of natural ones. As,

*MILK of Sulphur*, a Preparation of Flowers of Sulphur, and Salt of Tartar; prescribed by the Physicians, as a Sudorific. See *SULPHUR*.

*Virgin's MILK*, *Lac Virginalis*, composed of Rock Alum, Spring Water, Litharge, and Vinegar; used as a Cosmetic, to drive in Pimples, and check any cutaneous Eruptions, by its cooling, restringent Quality.

*MILK of the Moon*, *Lac Luna*, is a Name given by the Naturalists to a kind of fossil Agaric. See *AGARIC*.

*MILK of the Moon*, or of *Silver*, is also the Name of a white, porous, friable, insipid Earth, extracted by sublimation from a Matter frequently found in Silver-Mines: Whence also it has the Name of *Flowers of Silver*. See *SILVER*.

*MILKY WAY*, *Via Lactea*, or *Galaxy*. See *GALAXY*.

*MILL*, in propriety, is a Machine used for Grinding: But the Word in its general Signification is used for all Machines whose Action depends on a circular Motion. See *GRINDING*, *MACHINE*, &c.

Of these there are various kinds, which acquire various Names according to the various manners in which the moving Power is apply'd; but they may all be reduced to three heads, viz. *Wind-Mills*, *Water-Mills*, and *Hand-Mills*; under which last, are also comprehended those worked by Horses, &c.

*Water-MILLS* are those turned by the force or fall of a River, &c. Of which, again, there are two kinds; those where the force of the Water is apply'd above the Wheel, call'd *Over-Shot*; and those where it is apply'd below the Wheel, call'd *Under-Shot Mills*. See *WATER-MILL*.

*Wind-MILLS*, are those turned by the force of Wind gathered in their Sails. Of these, some are call'd *Vertical*, others *Horizontal*, according to the position of the Sails; or rather according to the direction of their Motion with regard to the Horizon. See *VERTICAL* and *HORIZONTAL*.

For the best Form of Horizontal Sails, as also for determining the Position of the Axis of *Wind-Mills*, see *WIND-MILL*.

*Portable*, or *Hand-MILLS*, are those kept in Motion by the Hand; or whose Mill-Stones are turn'd, or Pistons driven by the force of Horses, or other Beasts.

The Use of *Mills* and Mill-Stones, according to *Pausanias*, was first invented by *Miletus*, Son of *Meleges*, first King of *Sparta*. Tho *Pliny* attributes the Invention of every thing belonging to Bread and Baking, to *Ceres*. *Polydore Virgil* was not able to discover the Author of so useful a Machine. 'Tis doubted whether or no *Water-Mills* were known to the *Romans*; there being no mention made in the Digest but of *Mills* turned by Slaves and *Asses*.

*Salmasius*, however, and *Gottfried*, will not allow *Water-Mills* to have been unknown to the ancient *Romans*, though they were not in ordinary use.

*Wind-Mills* are of much more modern Invention: The first Model of these was brought from *Asia* into *Europe*, in the time of the Holy Wars.

*MILL* is also used, in the general, for all Machines, which being moved by some external Force, serve to give a violent Impression on things apply'd thereto.

*Mills* in this sense, are Machines of vast use in the Manufactures, Arts, and Trades; for the making and preparing divers kinds of Merchandizes. The principal are those which follow.

*Paper-MILL*, a *Water-Mill* furnish'd with several Hammers, which beat, or pound the Rags or Cloth in a kind of Wooden-Trough: and thus by reducing them to little pieces, turn them into a kind of Pulp, by means of Water convey'd into the Troughs by a Pipe for the purpose. See *PAPER*.

*Fulling-MILL*, is a *Water-Mill* which raises and beats down large wooden Pistons in proper Vessels, call'd *Peels* or *Troughs*; in order to full, scower, and cleanse Woollen Stuffs. See *FULLING*.

*Linen-MILLS* don't differ much from *Fulling-Mills*. Their Use is to scower Linens, after having been first cleans'd when taken out of the Lixivium, or *Lye*. See *BLEACHING*.

Some of these go by Water, the generality by Horses.

*MILL* in Coinage, is a Machine used to prepare the *Lamina* or Plates of Metal, and to give them the proper thickness, hardness, and consistence before they be struck or stamped. See *COINING*.

This Machine has not been long known among us; but is of some standing in *Germany*. It consists of several Wheels dented like those of Clocks, &c. which move two Cylinders of Steel, between which the Metal is passed

to be brought to its proper thickness. It was first turned in order with Water, afterwards with Catel, &c.

*MILL*, among the Gold Wire-Drawers, is a little Machine consisting of two Cylinders of Steel, serving to flatten the Gold, or Silver Wire, and reduce it into *Lamina*, or Plates. See *GOLD-WIRE*.

They have also *Mills* to wind the Gold Wire or Thread on the Silk; composed of several rows of Bobins all turned at the same time. See *DUCTILITY*.

*Sugar-MILLS*, is a Machine that serves to bruise the Sugar-Canes, and express the Liquor or Juice contain'd therein. See *SUGAR*.

The *Sugar-Mills* are very curious Contrivances. Of these there are four kinds; being turned either by Water, Wind, Men, or Horses.

Those turned by the hand were first in use; but are now laid aside, as being an intolerable Hardship on the poor Negroes, who were doom'd thereto; besides the slowness of their Progress.

*Wind-Mills* are the most Modern, but they are yet somewhat rare: excepting in *St. Christopher's* and *Barbadoes*, and among the *Portuguese*. These make good dispatch, but have this Inconvenience, that they are not easily stop'd; which proves frequently fatal to the Negroes who feed them.

*Oil-MILLS*, whether turned by Men, Water, Hand, or Horse, serve to bruise or break the Nuts, Olives, and other Fruits and Grains, whose Juice is to be taken by Expression to make Oil. See *OIL*, *OLIVE*, &c.

*Tan*, or *Bark-MILLS*, wrought by Water or Horses, serve to cut certain Barks into a coarse sort of Powder, proper for the Tanning of Hides, &c. See *BARK* and *TANNING*.

*Sawing-MILL* is a *Water-Mill*, serving to saw several Planks or Boards at the same time. See *SAWING*.

These are frequent in *France*, especially in *Dauphiné*. They were lately prohibited in *England*, where they were begun to be introduced, from a view to the Ruin of the Sawyers, which must have ensued.

*Forge-MILLS*, turn'd by Water, serve to raise and let fall one or more huge Hammers, to beat and form the Iron into Bars, Anchors, or other massive Works. See *FORGE*.

*MILLS for Sword-Blades*, are likewise moved by Water. They are frequent at *Vienne* in *Dauphiné*. By working heavy Hammers, they forge those excellent Sword-Blades, call'd *Blades of Vienne*.

*Leather-MILLS*, are used to full, and prepare with Oil, the Skins of Stags, Buffalo's, Elks, Bulls, &c. to make what they call *Buff-Leather*, for the use of Military-Men.

This is effected by means of several large Pistons rising and falling on the Skins in large Wooden-Troughs, by means of a Wheel without-side, turn'd by the force of the Water. See *BUFF*.

*Gun-Powder MILL*, is that used to pound, and beat together the Ingredients whereof Gun-Powder is composed.

This is done in a kind of Iron or Brass Mortar by means of Iron Pestles wrought by a Wheel without the Mill, turn'd by the Water falling on it. See *GUN-POWDER*.

There are also *Silk-MILLS*, for spinning, throwing, and twisting Silks; which are large round Machines in form of Turrets, five or six Foot high, and six Yards in diameter; which being turn'd either by the force of Water, or that of Men, work at the same time an infinity of Bobins fastned thereto, whereon the Silk had been wound to be here spun, and twisted. See *SILK* and *THROWSTER*.

There are abundance of *Mills* of this kind in *France*, especially about *Lyons* and *Tours*, some of which are so disposed, as that three of them will go at the same time, and by the same Wheel wrought by Water, or by strength of Hand. That in the *Hôpital de la Charité* at *Lyons*, is wonderful, a single Man working no less than forty-eight of these *Mills*. See *MILLING*.

*MILLDEW*, *Rubigo*, a Disease happening to Plants, caused by a dewy Moisture, which falling on them, and continuing, for want of the Sun's heat, to draw it up; by its Acrimony corrodes, gnaws, and spoils the inmost Substance of the Plant, and hinders the Circulation of the nutritive Sap; upon which the Leaves begin to fade, and the Blossoms and Fruit are much prejudiced.

According to *Mess. Cook* and *Mortimer*, *Milldeu* is a thick, clammy Vapour exhaled in the Spring and Summer from Plants, Blossoms, and even the Earth itself, in close still Weather, when there is neither Sun enough to draw it on high, nor Wind enough to disperse it. Hanging thus in the lower Regions, when the Evening's Cold comes on, it condenses and falls on the Plants; with its thick clammy Substance stops up their Pores, and thus prevents Perspiration, and hinders the Sap from ascending to nourish its Flowers, Shoots, &c. See *DEW*.

'Tis added, this Dew falling on the top of the Shoot of a Cherry-Tree about Midsummer, has been found to stop the Shoot; so as the Tree has shot forth in other places.

Blights



Blights and Mildews are commonly taken for the same thing; yet are they very different. See BLIGHT.

On Plants which have smooth Leaves, as the Oak, &c. the Dew hangs, and may be seen, tasted, &c. Others, whose Leaves are rougher, imbibe it. When it falls on Wheat, &c. it bespots the Stems with a Colour different from the natural one.

These Dews, Mr. Mortimer takes to be the principal Food of Bees; being sweet, and easily convertible into Honey. See HONEY.

MILLENNARIES, MILLENNARIANS, a Sect among Christians, chiefly in the primitive Church, who hold that Jesus Christ is to come and reign on Earth for the space of a thousand Years; during which time, the Faithful are to enjoy all manner of temporal Blessings, and at the Expiration of this Term, the Day of Judgment is to take place. See MILLENNIUM.

The *Millenaries* are also call'd *Chiliasm* from the Greek *χίλιος*, mille, a Thousand. See CHILIAST.

This Opinion of the *Millenaries* is very antient; and may be traced back almost as far as the time of the Apostles. It had its Origin from a Passage in the *Apocalypse* too literally understood, wherein mention is made of Christ's Reign on Earth, &c.

The Opinion of *S. Papias*, says Mr. Launoy, touching the new Kingdom of Jesus Christ on Earth, after the Resurrection, was held for near three Centuries, e'er it was charged as erroneous; as appears from Ecclesiastical History. It was allow'd of, and follow'd by the greatest Men among the Primitive Fathers; as *Irenaeus*, *Justin Martyr*, *Tertullian*, &c. *Dionysius* of Alexandria and *St. Jerom*, opposed this imaginary *Millemary* Reign very strongly.

MILLENNIUM, a Term literally signifying a thousand Years; chiefly used for the time of our Saviour's second Appearance, and Reign on Earth. See MILLENNARIES.

Mr. *Whiston*, in several of his Writings, has endeavoured to support the Notion of the *Millemium*. According to his Computation, it was to have commenced about the Year 1720.

The Word is Latin, compounded of *mille*, a Thousand, and *annus*, Year.

MILLEPEDES, *Wood-Lice*, little Animals of considerable Use in Medicine. Thus call'd from the great number of their Feet.

*Millepedes* are so much in the Acquaintance of the People, that they seem to be Masters of their medicinal Uses, and take them in many Cases without any other Direction. They are, by all Experience, found to be very Diuretic and Absterfive; which makes them not only frequent in Prescriptions for Disorders in the Reins, but also in Obstructions of the Viscera, and particularly in the Jaundice.

They abound with a nitrous Salt, which they seem to derive from the earthy Diet they live on. It is somewhat volatilized by its Digestion and Circulation in the Insect; as such Salt always is more or less, in proportion to the digestive Powers of the Animal, into whose Blood it enters; yet not so much, but that it is brackish and pungent upon the Palate. This makes their deterfive Qualities extend further, than the larger Glands, and enables them to scour even the minutest Passages, and keep the Nerves clear from Viscidities, and such things as would clog their Springs; whereby they are good in Palsies, Epilepsies, and all nervous Distempers.

As they open and cleanse away Viscosities, and by their Minuteness and Asperities cut their way through any Obstructions, they are good in Struma's, and all inveterate Tumours or Ulcers.

Remarkable Cures have been performed in each way by a long use of them. They are best taken in Substance; or bruised in white Wine, the Liquor being taken without settling.

There are several Chymical Preparations of *Millepedes*, as Spirit, volatile Salt, Oil, and Wine of *Millepedes*.

MILL-REE, or MILL-RAV, a Portuguese Coin, current for somewhat more than the Spanish Pistole. See COIN.

The *Mille* is thus call'd, as consisting of a thousand Rees. See REE.

It is also called a *St. Stephen*, from the Figure of that Martyr impress'd thereon.

MILLIARIUM, among the Romans, was a Mile, or League; consisting of a thousand Paces, *mille passus*; whence the Name. See MILE and LEAGUE.

In the Roman Empire, the *Millaria*, in all the great Roads, were all mark'd with Stones or Columns, erected for that purpose; commencing from a Column in the heart of the City. See ROAD.

Those Columns were hence denominated *Millary Columns*. See COLUMN.

MILLING, in the Manufactories, an Operation call'd also Tulling. See FULLING.

MILLING, or Throwing of Silk, is the last preparation of Silk before dying; serving to twist it, more or less according to the Work it is intended for. See SILK.

To prepare the Silks for *Milling*, they first put it in boiling Water, inclosed between two linen Cloths. The Mill is a square Machine, composed of several pieces of Wood mortaised in each other so as to form a kind of large Cage, in the Centre whereof are two Wheels placed parallel over each other, whose Axis bears on two Poits. When the Machine is Simple, a single Man turns these Wheels by means of a little Cogg in which they catch, and a large Handle.

The Wheels put in motion by the Handle, communicate their Motion to eight Windles, or Reels, or even more, according to the largeness of the Machine; on the Wings or Arms whereof the Silk is wound from off two Rows of Bobins placed on each side the Machine, each Row at the height of one of the two Wheels in the Centre. These Bobins have their Motion by means of leathern Thongs, which bear on the little Cylinders of Wood that support them, and turn at length on the two Wheels at the Centre; so that the Silk on each Bobin twists, as it winds, and forms its separate Skain.

The smallest Wheel moves two hundred of these Bobins, over which a single Person is sufficient to inspect, to put new Bobins or Spools in lieu of those discharged of their Silk, and to knot the Ends when they break.

MILLION, in Arithmetic, the Number of ten hundred thousand; or a thousand times a thousand. See NUMERATION.

The Revenues of Princes are now only computed in Millions. See REVENUE and POLITICAL Arithmetic.

A MILLION of Gold, or MILLION of Money, is sometimes understood of a Million of Pounds; and sometimes a Million of Crowns. See CROWN, &c.

MILT, in Anatomy, is a popular Name for the Spleen. See SPLEEN.

MILT, in Natural History, the soft Row in Fishes; thus call'd by reason it yields, by expression, a whitish Juice resembling Milk. See ROW.

The Milt is properly the Seed, or the Spermatic part of the Male Fish. The Milt of a Carp is reckon'd a choice Bit. *Lewenboeck*, examining the Milt of a single Cod-fish with an excellent Microscope, found it to contain more living Animals than there are Men on the Face of the Earth. See ANIMALCULE.

MIME, MIMUS, a Term in the antient Comedy, signifying a Buffoon, or Mimic, who acted Postures suitable to the Person or Subject he represented.

The Word comes from the Greek *μιμος*, Imitator. The same Comedians were also sometimes call'd *Pantomimes*, because of their counterfeiting all manner of Postures and Gestures. See PANTOMIME.

MIMESIS, Imitation, in Rhetoric, &c. a Figure, wherein the Words, Actions, &c. of another Person are imitated. See MIMIC and PANTOMIME.

MIND, *Mens*, a thinking Being. See THINKING.

Philosophers generally allow of three Kinds of Minds, viz. God, Angels, and the human Soul. For a thinking Being must either be finite, or infinite: If infinite, it is God; and if finite, it is either join'd with a human Body, or not; if the latter, it is an Angel; if the former, a Soul. See GOD, ANGEL, and SOUL.

The human Mind is properly defined a thinking, rational Substance: By *Thinking*, it is distinguished from Body; and by *Reasoning*, from God, and Angels, which are supposed to see and know things intuitively, without the help of Deduction, and Discourse. See DISCOURSE, REASONING, and KNOWLEDGE.

MINE, in Natural History, a place under ground where Metals, Minerals, or even precious Stones, are found. See METAL, MINERAL, PRECIOUS STONE, &c.

As, therefore, the Matter dug out of Mines is various, the Mines themselves acquire various denominations: as Gold-Mines, Silver-Mines, Copper-Mines, Iron-Mines, Diamond-Mines, Salt-Mines, Mines of Antimony, of Alun, &c.

For Gold and Silver MINES, the richest and most celebrated are those of Peru and Chili in America. See GOLD and SILVER. Iron-MINES are more abundant in France than elsewhere. See IRON.

Copper-MINES are chiefly in Sweden and Denmark. See COPPER.

Tin-MINES abound in England. See TIN. Quicksilver-MINES in Hungary and Spain; Diamond MINES in Golconda; Salt-MINES in Poland, &c. See QUICKSILVER, DIAMOND, SALT, &c.

Metallic MINES are chiefly found in Mountains; tho' reason thereof does not appear. It is probable, Plains may abound as much therewith, would People dig deep enough. But Plains are commonly cultivated; and beside, the Water will scarce allow 'em to be dug. Add, that the Metals are



always run either horizontal or oblique; and for that Reason, are easiest found on the sides of Eminences.

The Metallic Veins are commonly encompassed with a sort of Stone peculiar to the Mine, and are accompanied with several Strata of different Matters, as Clay, Gravel, Rock, &c. They who work in Mines, know by the Size, and Colour of the Stones, when they approach the Vein. See STRATA and VEIN.

They discover that there is a Mine in a Mountain by the Marcasites, or Mineral Stones falling from it; by the Mineral Taste of the Waters; by the Quality of the Exhalations rais'd from it; and by the difference between the Earth over the Mines, and that of the neighbouring parts in the cold time of Spring and Autumn, the Frost lying on the adjacent Places, when it thaws about the Mines. Add, that the Grounds producing but little Grass, and that little, pale and colourless, is an indication of a Mine.

Some pretend to discover Mines by the sole virtue of the Hazle-Tree, out of which they form a forked Stick, call'd *Virgula divinatoria*, which, they say, turns of itself, in their hands, but differently, according to the different nature of the Metals or Minerals underneath. This Artifice made a great noise in France towards the end of the 17th Century; and the Corpuscular Philosophy was call'd to account for it. But it is now in little Credit. See VIRGULA DIVINATORIA.

There are some Mines, wherein the Metals are found at their first openings very crude and imperfect; which yet, in time, grow ripe and rich. *Alonso Barba* relates, that in *Porosi*, Stones have frequently been thrown aside, as not containing any thing considerable of Metal; and yet have been found many Years afterwards exceeding full thereof. *Cesalpino* assures us, that Earths which yield no Metal at all, sometimes become very fertile Veins. In an Island of the *Tyrrhene-Sea*, after the Iron Mines have been exhausted, they stop 'em up about ten Years, at the end whereof, they find 'em as rich as before.

For the Formation of Mineral and Metallic Matters in Mines, see MINERAL.

MINE, in the Art of War, is a subterraneous Canal, or Passage dug under the Wall, or Rampart of a Fortification intended to be blown up by Gun-powder.

The Alley, or Passage of a Mine, is usually about four foot square; at the end of this is the Chamber of the Mine, which is a Cavity about five foot in width and in length, and about six in height; and here the Gun-Powder is bestow'd.

The Saucidge of the Mine is the Train; for which there is always a little Aperture left. See SAUCIDGE.

There are various kinds of Mines, which acquire various Names; as Royal Mines, Serpentine Mines, Forked Mines, according as their Passages are strait, oblique, winding, &c.

There are also Mines made in the Field, which are call'd *Fougades*. See FOUGADE.

Mines are either dug within the Body of the Earth, as those made by the Besieged to blow up the Works of the Besiegers, before they make a Lodgment on the Cover'd Way: Or in Eminences and Rising Grounds, as to make a Breach in the Ramparts, &c. Or to blow up Walls: Or, lastly, to rear up Rocks.

*M. Chevalier*, in the Memoirs of the Royal Academy of Sciences, has handled the Subject of Mines with a great deal of Accuracy. He has calculated the Force of Gun-Powder, the Effort it makes, and the Resistance it meets with in heaving up the Ground. He shews, that a Cubic Foot of Air inclosed in two Cubic Feet of Gun-Powder, is capable of sustaining a Weight of near 290000 Pounds. But observes withal, that this is vastly greater than what it is found by Experience to have; and that in fact, 140 Pounds of Powder don't raise above 30000 Pound of Earth. The Reason of which difference he ascribes to several Causes; as, that the Powder does not take fire all at once, so that its force is divided; that part of the Shock is lost in the Canal or Passage of the Mine, and in the Pores of the Bodies encompassing the Mine; that the tenacity of the parts of the Earth resist a separation; that it is not enough that the Earth be supported, but it must be carry'd upwards with a certain Velocity; and that the Weight of the Atmosphere, is a very considerable obstacle, to which no regard is had in the Calculation. See GUN-POWDER.

From a great number of Experiments it appears, 1. That the Effect of a Mine is always towards the weakest side; so that the disposition of the Chamber of a Mine does not at all contribute to determine this Effect either one way or another, as the Miners mistakenly imagine. 2. That the Quantity of the Powder must be greater or less, in proportion to the greater or less Weight of the Bodies to be rais'd, and to their greater or less Cohesion; and the result of all the Experiments that have been made for determining the different Quantity of Powder to be used for different Bodies, is to allow for each Cubic Fathom

Of loose Earth,

Of firm solid Earth, and

Strong Sand,

Of Argil, or fat clayey Earth,

Of new Masonry, not very

strongly bound,

Of old Masonry well bound,

9 or 10 Pounds of Powder.

11 or 12

15 or 16

15 or 16

25 or 30

3. That the Aperture, or Funnel of a Mine that has been play'd, if it had been rightly charg'd, is a Cone, the Diameter of whose Base is double the height taken from the Center of the Mine. 4. That when the Mine has been over-charg'd, its Aperture is nearly Cylindrical, the upper Extremity not being much wider than the Chamber at bottom, where the Powder was lodg'd. 5. That, beside the shock of the Powder against the Bodies it takes up, it likewise crushes all the Earth that borders upon it, both underneath and side-ways, which Crush extends itself the further as the Matters make the less Resistance.

To account for all the Effects resulting from these Experiments, and to determine the Quantity of Powder required for the charge of a Mine, and the most advantageous Disposition for answering the Intent: Let us conceive, 1. A Mine, whereof all the parts wherewith it is encompassed are incapable of being compress'd, and make an equable Resistance; such as that of a Bomb equally thick throughout, suspended in the Air; where it must be observed, that besides the Resistance of the Body, the Effort of the Powder must likewise surmount the Weight of the ambient Air; in which Case the Body will be beaten into Dust, or at least into very small pieces.

2. Conceive a Mine encompass'd wholly by such Bodies as are equally compressible, and that resist every way with equal force. In this Case, the first Effect of the Powder will be to compress all those Bodies equally, and they will not be separated, till by the Violence of their Compression, they are all incapable, any longer, to resist its Effort; so that unless the Powder be in a great Quantity, all its Effect may end in the mere compression of the adjacent Bodies. For this reason, they sometimes block up the Chamber of the Mine with large Beams, and sometimes wall it up with Stones, that the adjacent Bodies may resist the more.

Lastly, suppose a Mine where all the Bodies that encompass it, are equally compressible, but where there is less Resistance on one side than another; in this Case, there will be a Sphere of Compression, whose Diameter will be so much the greater, as the weak Side resists the more. With regard to which, there are three things to be consider'd.

First, if the Effort of the Powder be very great with regard to the Resistance of the weak Side, the Compression will but reach a little way, that Side being tore off too suddenly for the neighbouring parts to receive their Shock. In which Case, the Aperture or Funnel will be almost Cylindrical, the Diameter of the upper Extreme not much exceeding that of the Chamber; and the Earth will be thrown to a great distance, which the Enemy may make an advantage of, by making Lodgments in the Cavity, as was done at the Siege of *Verue*. Secondly, If the Mine be under-charg'd, it only makes a simple Compression on the weakest Side, as it hapned at *Cividad Rodrigo*. Thirdly, If the Mine be charged with a Quantity of Powder between the two Extremes, it will raise a Cone of Earth, the Diameter of whose Base will have a greater or less Ratio to its height from the Centre of the Mine, as the Effort of the Powder is greater or less. The most advantageous Effect is when the Diameter of the Base of the Cone is double its height: In which case, the Earth blown up, falls almost all back again into the Aperture of the Mine; so that the Enemy cannot make any Lodgment.

To charge a Mine, therefore, so as it may have the most advantageous Effect possible, the Weight of the Matter to be carried up must be known, i. e. the Solidity of a right Cone, whose Base is double the height of the Earth over the Centre of the Mine, which is easily found from the Rules of Geometry. Having found the Solidity of the Cone in cubic Fathoms, multiply the number of Fathoms by the number of Pounds of Powder necessary for raising the Matter it contains, according to the Proportion already laid down; and if the Cone contains Matters of different Weights, take a mean Weight between 'em all; having always a regard to their degree of Cohesion.

As to the Disposition of Mines, we have but one general Rule to lay down; which is, that the Side towards which one would determine the Effect, be the weakest. But this varies according to Occasions and Circumstances.

*Knight of the Mine*, is a Military Honour, antiently confer'd on Persons who had distinguish'd themselves in Engagements in Mines.

MINE Ships, are Ships fill'd with Gun-Powder, inclosed in



in strong Vaults of Brick or Stone, to be fired in the midst of an Enemy's Fleet.

MINZ is also a French Measure. See MEASURE.

MINERA, in Medicine and Anatomy, a Term apply'd to those Parts of the Body wherein there are collections and coacervations of Humours made; which hardning, form Obstructions, and produce Diseases. In this sense we say, the *Minera morbi*, &c.

MINERAL, in Natural History, is sometimes used in the general for Fossil, and applied to any Body, simple, or compound, dug out of a Mine; from which it takes the Denomination. See MINE.

In this sense, the Metals, Sulphurs, fossil Salts, Semi-metals, &c. are *Minerals*. See FOSSIL.

On this Principle, they divide *Minerals* into two Classes; the one *fusible*, and *malleable*; i.e. which melt with Fire, and stretch on the Anvil; which are what we properly call *Metals*. The others want those two Properties; and are what in the strict sense we call *Minerals*.

Some divide *Minerals* into *Simple* and *Compound*: To the first belong *Stones*; *Salts*, as Alum, Nitre, &c. *Inflammable Minerals*, as Sulphur and Bitumen; and *Metals*, as Gold, &c.

Others of the more accurate Writers, restrain the Word *Mineral* to what we otherwise call *Semi-metal*. See SEMI-METAL.

In this sense, a *Mineral* may be defined a compound Fossil, wherein there is something discovered, in all respects like Metal, only that it is not malleable; join'd, or compounded with some other Fossil, as Salt, Sulphur, Stone, or Earth. Such are *Antimony*, *Cinnabar*, *Bismuth*, *Calaminaris*, *Vitriol*, *Pyrites*, *Marcaffites*, *Cobalt*, *Oker*, the *Magnet*, *Lapis Hematites*, *Armenus*, and *Stellatus*. See each under its proper Article, ANTIMONY, CINNABAR, BISMUTH, VITRIOL, CALAMINARIS, &c.

Some attribute the Formation of *Minerals* to the Action of the Sun without; some to the central Fire within; and some think the Cold does all by uniting condensing, and congealing certain Juices.

*Des Cartes* takes Metals to have been form'd from the beginning of the World; and to have ranged themselves, by the Laws of Gravity, about the Centre. In process of time, he supposes them to have been corroded by the acid Salts, &c. and abundance of the parts thereof carried up along with those Salts by the subterranean Heat, and deposited in divers parts of the Earth.

*Monf. Tournesort* supposes Seeds of *Minerals*, as of Animals, and Vegetables. Every thing, according to him, comes from Eggs, even Stones; and the largest Rocks were originally no more than Grains of Sand. See his System more at length under the Articles METAL and STONE.

Others, as *M. Geoffroy*, contend that Metals, &c. may be the result of a mixture of certain Matters, which had nothing metallic in them. Thus, in the Ashes of all Vegetables we find a ferruginous Matter which the Load-stone attracts; and yet it will hardly be said that Iron existed in the Plants. We see no signs of Iron in Argilla, work it in what manner you will; and yet add Linseed-Oil, and by Fire you will procure Iron. And the like may be said of divers other Matters.

Hence it is probable, Metals may be form'd by a mere combination of different Ingredients; much like Sulphur, which we all know is made by adding an inflammable Principle to a vitriolic Salt. The Earth may every where abound with those Matters, which are continually circulating through its Pores and Canals, and which meeting with an Earth homogeneous to them, fix thereto; and commence *Minerals*.

The *Minerals*, Metals, and Stones lie in Beds; and have done so ever since the Flood, if not from the Creation; yet 'tis highly probable they have a faculty of growing in their respective Beds; that, as their Beds are robb'd and emptied by Miners, so after a while they recruit again. Thus Vitriol, *Mr. Boyle* thinks, may grow by the help of the Air, and Alum does the same. We are assured (says that Author) by the experienced *Agriкола*, that the Earth, or Oil of Alum, being robb'd of its Salts, will, in tract of time, recover it by being exposed to the Air.

As for Metals, there is good reason to believe they grow likewise; from what has been alledged by *Mr. Boyle*, in his Observations about the growth of Metals, and particularly as to the growth of Iron. To the Instances he brings from *Phny*, *Lalopius*, *Cesalpinus*, and others, we may add, that in the Forest of *Dean* in *Gloucestershire*, the best Iron, and in the greatest Quantities, are found in the old Cinders which they melt over again. This some impute to the Negligence of the former Melters in not exhausting the Ore. But *Mr. Derham* thinks it rather owing to the new Impregnations of the old Ore, or Cinders from the Air; than to any seminal Principle in the Ore itself.

The Chymists generally take *Minerals* to be nothing else

but imperfect Metals, which not having arriv'd at Maturity, may be perfected by Chymical Operations, and raised to red Metals. This agreeable, but fatal Delusion, has given rise to the Sect of Philosophers, who study the Philosopher's Stone. See METAL, GOLD, PHILOSOPHER'S STONE, &c.

Crystal MINERAL, see CRYSTAL Mineral.

MINERAL-WATERS, are those, which at their springing forth from under Ground, are found impregnated with some Mineral Matter; as Salt, Sulphur, Vitriol, &c. See WATER.

Such are hot Baths, Spaws, purging, &c. Springs. See BATH, SPAW, SPRING, &c.

MINIATURE, or MIGNATURE, a delicate kind of Painting, consisting of little Points or Dots, instead of Lines; usually done on Velom, with very thin, simple Water-Colours. See PAINTING.

Miniature is distinguished from other kinds of Painting by the smallness and delicacy of its Figures, the weakness of their Colours, and faintness of the Colouring, and in that it requires to be view'd very near.

Those Colours that have the least Body, are the best and most commodious for painting in Miniature; as Carmine, Ultramarine, fine Lakes, and Green made of the Juices of several kinds of Herbs and Flowers.

Painting in Miniature is the nicest and most tedious of all others; being performed wholly with the Point of the Pencil.

There are some Painters who never use any white Colour in Miniature, but make the ground of the Velom serve to raise their Figures; in which Case, the Lights appear bright in proportion to the depth and strength of the Colours of the Figures. Others, before they go to work, give the Velom a light wash with white Lead, well prepared and purified.

When the Colours are laid on flat without dotting, tho' the Figures be small, and the ground either Velom or Paper, it is not call'd Miniature, but *Washing*.

The Colours for Miniature may be mix'd up with Water of Gum Arabic, or Gum Tragacanth.

The Word comes from the Latin *Minium*, Red Lead, that being a Colour much used in this kind of Painting. The French frequently call it Mignature, from *Mignon*, fine, pretty, on account of its smallness and delicacy.

MINIM, in Music, a Note, or Character of Time; equal to two Crochers, or half a Semibreve. See TIME, and CHARACTERS of Music.

MINIMA Naturæ, or MINIMA Naturalia, among Philosophers, are the primary Particles, whereof Bodies consist; call'd also *Corpuscles* and *Atoms*. See CORPUSCLE, ATOM, MATTER, &c.

MINIMA and Maxima, in the higher Geometry. See MAXIMA and Minima.

MINIMENTS, or MUNIMENTS. See MUNIMENTS.

MINIMS, or MINIMI, an Order of Religious, instituted about the Year 1440, by *S. Francis de Paulo*.

These have improved on the Humility of the *Monks*, by terming themselves *Minimi*, or *Minimes*, q. d. Least, or Smallest. See MINORS.

MINION, a sort of Cannon, or piece of Ordnance, whereof there are two kinds: large and ordinary. See CANNON and ORDNANCE.

The large *Minion*, or one of the largest Size, has its Bore  $3\frac{1}{2}$  Inch Diameter, and is 1000 Pounds Weight; its Load is  $3\frac{1}{2}$  Pounds of Powder; its Shot 3 Inches in Diameter, and  $3\frac{1}{2}$  Pound Weight; its Length is 8 Foot, and its total Range 125 Paces.

The ordinary *Minion* is three Inches Bore, in Diameter, and weighs about 800 or 750 Pounds Weight. It is seven Foot long; its Load  $2\frac{1}{2}$  Pounds of Powder; its Shot near three Inches Diameter, and weighs 3 Pounds 4 Ounces, and shoots point-blank 120 Paces.

MINISTER, Servant, one that serves God, the Public, or a private Person. See SERVANT.

In the Reformed Church, Priests, or those ordain'd to preach, and do the other Functions of the Priesthood, are call'd absolutely and simply *Ministers*.

In this sense, Bishops, &c. are said to be *Ministers* of God; *Ministers* of the Word; of the Gospel, &c. In some Churches they are also called Pastors. See BISHOP, PASTOR, &c.

MINISTERS of the Altar, are properly those who attend, and assist the Priest at the Administration of the Eucharist. Deacon, and Subdeacon are Titles that properly signify *Ministers*; Διακονῶν, Minister. See DEACON and SUBDEACON.

Officers of State, &c. are call'd the King's *Ministers* administering the Affairs of Justice, Policy, &c. for him. See OFFICER.

MINISTER of State, is he with whom a Prince entrusts the Administration of his State; or to whom he commits the Care, and Direction of the principal Affairs thereof. See STATE and GOVERNMENT.



*Boetius* is proposed as a Model for *Ministers of State*. The Grand Vizir is the Prime Minister of the Ottoman Empire, See VIZIR.

Foreign Ministers, or the Ministers of Foreign Princes, are their Embassadors, Envoys, Agents, or Residents in the Courts of other Princes.

There are two kinds of Foreign Ministers: Ministers of the first Rank, who are also call'd Embassadors, and Envoys in Extraordinary. See EMBASSADOR and ENVOY.

And Ministers of the second Rank, who are the ordinary Residents. See RESIDENT.

Those of the first Rank have a Representative Character, which the others have not; tho' these last are sometimes invest'd with fuller Powers than the former.

MINISTER is also the Title certain Religious Orders give to their Superior. See SUPERIOR.

In this sense we say the Minister of the Mathurins; the Minister of the Trinitarians. See MATHURIN, &c.

Among the Jesuits, the second Superior, or Deputy of each House is call'd Minister: as being an Assistant to the Superior, or Rector. See JESUITS.

The General of the Cordeliers Order is call'd the Minister General. See GENERAL.

MINISTRY, or MINISTERY, a Profession, Office, or Employment which a Person discharges for the Service of God, the Public, or some particular Person. See MINISTER.

In this sense we say, a Bishop must give account to God of his Ministry, &c.

MINISTRY is also used for the Government of a State, by some great Minister under the Sovereign Authority. In this sense we say, the Ministry of the Cardinal de Richelieu, &c.

MINISTRY is also frequently used as a collective Word, signifying the Ministers or Officers of State. Thus we say, the Ministry oppos'd a Thing; meaning, the Ministers oppos'd it.

MINIUM, a Mineral Colour, call'd also red Lead, used by Painters, Illuminers, &c. See LEAD.

Minium is a preparation of Lead, performed by Fire. There are two ways of making it. The first, of burnt Lead; the second of Ceruss, or white Lead further urged by Fire. See CERUSS, &c.

Beside the use of Minium as a Colour; it is also an Ingredient in an Officinal Composition, call'd *Emplastrum de Mino*, used as a Desiccative and Cicatrizer.

Some Authors will have the Minium of the Antients to be what we now call Vermillion. See VERMILLION.

MINOR, a Latin Term, literally denoting less, used in opposition to major, greater. See MAJOR.

Thus we say St. James minor: Asia minor: The Minor Excommunication, &c.

The four Minor Orders, are the four lesser Orders confer'd, in the Romish Church, between the Tonsure and Subdeaconate. These are that of Porter, or Door-Keeper; that of Reader; that of Exorcist; and that of Acolyte. See EXORCIST, ACOLYTE, &c.

MINOR, in Law, is used in the like signification, to denote a Person yet under Age, or who by the Laws of the Country, is not yet arriv'd to the Power of Administering his own Affairs, or coming to the Inheritance of an Estate. See AGE.

Among us, a Person is a Minor till the Age of twenty one: Till this Time his Acts are invalid. See MAJOR.

Yet if a Patron, &c. have a Right of Advowson, by the Common Law he may present at the Age of fourteen Years; and may of himself, and without his Father, or Guardian, consent to any Process relating to beneficiary Matters. See PATRON.

Hence, in the Canon Law, there is no Title *de Minoribus*; and the reason is, that the several Ages whereat the Common Law declares a Person capable of a Benefice, or of Sacred Orders, are so many Species of Canonical Majorities.

MINOR, in Logic, is the second Proposition of a formal, or regular Syllogism, call'd also the Assumption. See SYLLOGISM, PROPOSITION, and ASSUMPTION.

I grant the Major, but deny the Minor. See TERM.

MINOR, in Music, is apply'd to certain Concords, which yet differ from others of the same Denomination by a half Tone. See SEMI-TONE.

Thus we say, a third Minor, or lesser third: A sixth Major, and Minor. See THIRD, SIXTH, &c.

Concords that admit of Major and Minor, i. e. greater, and less, are said to be Imperfect Concords. See CONCORD.

MINORS, or Friars MINORS, an Appellation which the Cordeliers assume, out of shew of Humility; calling themselves *Fratres Minores*, i. e. Lesser Brothers; and sometimes *Minorci*. See CORDERLIERS.

The Title of *Minors*, however, is not absolutely restrain'd to the Cordeliers, but also given, in the general, to all the Mendicants, or begging Religious, founded by St. Francis &c. See FRANCISCANS.

There is also an Order of Regular Minors at Naples, established in the Year 1588, and confirmed by Sixtus V.

MINOT, a French Measure. See MEASURE.

MINOTAUR, in Antiquity, a fabulous Monster, much talk'd of by the Poets; feign'd to be half Man, and half Bull.

The Minotaur was brought forth by Pasiphae, Wife of Minos King of Crete. It was shut up in the Labyrinth of that Island; and at last kill'd by Theseus. See LABYRINTH.

Servius gives the Explication of this Fable. He says, that a Secretary of King Minos, named Taurus, Bull, had an Intrigue with the Queen, Pasiphae, in the Chamber of Dedalus; and that she was at length deliver'd of Twins, one of which resembled Minos, and the other Taurus. This occasion'd the Production to be reputed monstrous.

MINOVERY, a Trespass committed in the Forest, by something that is a Man's Handy-Work; as an Engine to catch Deer, &c. See FOREST.

The Word is form'd of the French *Main-oeuvre*, Hand-Work.

MINSTER, antiently signified the Church of a Monastery, or Convent. See CHURCH.

The Word is Saxon, *Mynster*.

MINSTREL, an antient Term for a Fidler, or a Player on any other kind of Musical Instrument.

The Word *Minstrel* in its Original, was used for People who sung and serenaded their Mistresses. Afterwards it became a Name for all kinds of Musicians: and at length pass'd to Buffoons and Country Scrapers.

Borel derives the Word from *Manus* and *Histris*, one who diverts with the Hand; or from *Minor Histris*, little Buffoon. Du Cange derives it from *Minstrellus*, a diminutive of Minister, by reason the Minstrels were antiently ranked among the lower Officers, Ministers, or Servants.

MINT, the Place where the King's Coin is form'd. See COIN.

Antiently there were Mints in most Cities of England. See MONEY.

The chief Mint at present is in the Tower of London. See TOWER.

The Officers of the Mint are, 1. The Warden, who is the Chief, and is to receive the Bullion, and over-see all the other Officers. 2. The Master Worker, who receives the Bullion from the Warden, causes it to be melted, and deliver'd to the Moniers, and takes it from them again when coin'd. 3. Comptroller, who is to see that the Money be made to the just Assize, and to over-see the Officers. 4. The Assay-Master, who weighs the Silver and Gold, and sees whether it be Standard. 5. The Auditor, who takes all the Accounts. 6. The Surveyor of the Melting, who is to see the Silver cast out, and that it be not alter'd after it is deliver'd to the Melter, i. e. after the Assay-Master has made Trial of it. 7. The Clerk of the lions, who is to see that the Iron be clean, and fit to work with. 8. The Graver, who engraves the Dies and Stamps for the Coinage of the Money. 9. The Melters, who melt the Bullion before it comes to Coining. 10. The Blanchers, who boil and cleanse the Money. 11. The Porters, who keep the Gate of the Mint. 12. The Provost of the Mint, who provides for all the Moneyers, and over sees them. And, Lastly, the Moniers, some of which shear the Money; some forge it; and some stamp or coin it; and some round and mill it. See COINAGE.

MINT-Water, the distill'd Water of the Plant of that Name. See WATER.

MINTERS, or Moneyers. See MONEYERS and MINT.

MINTING, is sometimes used for the Coining of Money. See COINING.

MINUSCULE, or MINUSCULÆ, in Printing, are the small, or running Letters; as contradistinguished from Majuscule, or Capitals. See LETTER, MAJUSCULÆ, &c.

MINUTE, in Geography, and Astronomy, is the 60th part of a Degree; which is the 360th part of a Circle. See DEGREE.

Thus we say, the Diameter of the Sun is seen under an Angle of 39 Minutes in Winter; and 31 in Summer. See DIAMETER and SUN.

In this sense, a Minute is also call'd a Prime, or Prime Minute. See PRIME.

The Divisions of Degrees are Fractions, whose Denominators increase in a Sexageuple Ratio; that is, a Minute or Prime is  $\frac{1}{60}$ ; a Second, or second Minute is  $\frac{1}{3600}$ , &c. See SEXAGESIMAL.

In Astronomical Tables, &c. Minutes are expressed by acute Accents, thus, ' ; Seconds by two, " ; Thirds by three, ". See SECOND, THIRD, &c.

MINUTE, in computation of Time, is used for the 60th part of an Hour. See HOUR.

MINUTE, in Architecture, is a 30th Part, or Division of a Module. See MODULE.

MINUTE,



**MINUTE**, in speaking of Weights, is the 24th part of a Grain. See **GRAIN**.

**MINUTE** is also used to signify a short Memoir, or Sketch of any thing taken hastily in writing.

In this sense we say, the *Minutes* of the Proceedings of the House of Lords, &c.

The Word comes from the *Latin Minutus*, small.

**MIQUELETS**, a kind of foot Soldiers, inhabiting the *Pyrenean Mountains*; arm'd with Pistols under their Belts, a Carbine, and a Dagger.

The *Miquelets* are dangerous People for Travellers to meet.

**MIRABOLANS**, or **MIROBOLANS**, in Pharmacy. See **MYROBOLANS**.

**MIRACLE**, in the popular sense of the Word, is a *Prodigy*, or an extraordinary Event that surprizes us by its Novelty.

In the more Accurate and Philosophical Sense, a *Miracle* is an Effect that does not follow from any of the known Laws of Nature; or which is inconsistent with some known Laws thereof. See **NATURE**.

A *Miracle*, therefore, being a suspension of some Law, can't come from any hand less than his who fix'd that Law. See **GOD**, **LAW**, &c.

*Spinoza* denies that any Power can supersede that of Nature; or that any thing can disturb or interrupt the Order of Things; and accordingly defines a *Miracle* to be a rare Event, happening in consequence of some Laws that are unknown to us. See **SPINOSISM**.

The Divines define a *Miracle* to be an extraordinary and wonderful Effect, above the Power of Nature, wrought by God, to manifest his Power or Providence; or to give Credit to some Messenger sent from himself. Thus Jesus Christ evinced the Truth of his Mission, and his Doctrine by *Miracles*; and thus also did *Moses*.

It is still a dispute in the World, how far it may be in the power of the Devil to work *Miracles*; or wherein the specific difference lies between the *Miracles* of *Moses*, and those of *Pharaoh's* Magicians; those of Jesus Christ and the Apostles, and those of *Simon Magus* and *Apollonius Tyaneus*: Whether the latter were any more than mere Delusions of the Senses; or whether any supernatural and diabolical Power concurred with them. See **MAGIC**.

The Church of Rome abounds in *Miracles*; if we believe their Writers, some of their Monks have wrought more *Miracles* than all the Apostles; and that without any visible Necessity for them.

As full as that Church pretends to be of Saints, it is a Rule with them, that none are ever Canonized till there be good Proof of his having wrought *Miracles*. So that were all those allowed good *Miracles*, and to have happened out of the common Order of Nature, they are so numerous, one would be tempted to think there were no Order or Law of Nature at all. See **SAINT**.

There are those however, who set aside the Authority of all *Miracles*; thinking it unbecoming the Wisdom of God to establish such Laws, as that he should find it frequently necessary to supersede. And as the former, from the avowed Authority of some *Miracles*, fetch an Argument for the Truth of all; pleading those which are allow'd as well as those which are question'd; so these alledge the false ones as conclusions against them all.

The Romans attribute *Miracles* to their Emperors *Adrian* and *Vespasian*.

St. *Augustine* is a strong Advocate for *Miracles*. He mentions several whereof he was an Eye-Witness, and others whereof he was informed by those that were. In the single City of *Hippo*, he tells us there were seventy *Miracles* wrought in the space of two Years, on the building a Chapel in honour of St. *Stephen*.

The *Miracles* may prove the Superintendency of a voluntary Agent; and that the Universe is not guided by Necessity or Fate; yet that Mind must be weak and inadvertent, which needs them to confirm the Belief of a Wise and Good Deity: Since the Deviation from general Laws, unless upon very extraordinary Occasions, must be a Presumption of Inconstancy and Weakness, rather than of a steady Wisdom and Power; and must weaken the best Arguments we have for the Sagacity and Power of the Universal Mind. *Inquiry into the Original of the Ideas of Beauty*, &c.

**MIRROR**, or **MIRROUR**, or *Speculum*, Body which exhibits the Images of Objects presented thereto, by Reflexion. See **REFLEXION**.

The Use of *Mirrors* is very antient. Mention is made of a *Brazen Mirror*, or Looking-Glass in *Exodus xxxviii. 8.* where *Moses* is said to have made a *Brazen Laver*, or *Bason*, of the Looking-Glasses of the Women continually assembled at the Door of the Tabernacle. 'Tis true, some modern Commentators will not allow the *Mirrors* themselves to have been Brasses; but of Glass, only set, or framed in Brasses. But the most learned among the Rabbins do all allow, that in those times, the *Mirrors* made use of by the Hebrew Women in dressing their Heads, were of Metal; and that the devout Women

mention'd in this Passage, made Presents to *Moses* of all their *Mirrors*: to make the *Brazen Laver*. See the *Jesuit Bonfrezius's* Comment on this Text.

It might likewise be proved, that the Antient Greeks made use of *Brazen Mirrors*; from divers Passages among the antient Poets. See **BURNING-MIRROUR**.

**MIRROUR**, in *Catoptrics*, is any polish'd Body impervious to the Rays of Light, and which of consequence reflects it equally. See **LIGHT**.

Thus Water in a deep Well or River, and smooth polite Metals, are rank'd among the number of *Mirrors*.

In this sense, the Doctrine of *Mirrors* makes the Subject of *Catoptrics*. See **CATOPTRICS**.

**MIRROUR**, however, in the more confined Sense of the Word, is peculiarly used to signify a smooth Surface of Glass, tinn'd or quick-silver'd on the back-side, which exhibits the Images of Objects oppos'd thereto.

The Doctrine of **MIRROURS** is built on the following general Principles.

I. Light reflected from any *Mirror*, or *Speculum*, makes the Angle of Incidence equal to that of Reflexion; which see demonstrated under the Word **REFLEXION**.

Hence, a Ray of Light, as *A B* (*Tab. OPTICS, Fig. 26.*) falling perpendicularly on the Surface of a *Speculum*, will be reflected back upon itself: which we find by Experience it actually does.

From the same Point of a *Mirror*, therefore, there can't be several Rays reflected to the same Point; since in that Case, all the Angles of Incidence must be equal to the same Angle of Reflexion *C B G*, and therefore to each other; which is absurd. Nor can the Ray *A B* be reflected into two or more Points; since, in that Case, all the Angles of Reflexion would be equal to the same Angle of Incidence *A B F*: which is likewise absurd.

2. From every Point of a *Mirror*, are reflected Rays thrown on it from every Point of a radiant Object.

Since then Rays coming from different parts of the same Object, and striking on the same Point of the Object, cannot be reflected back to the same Point; the Rays which flow from different Points of the same radiating Object, are again separated after reflexion: so that each Point shews whence it came. See **RADIANT**.

Hence it is, that the Rays reflected from *Mirrors* exhibit the Objects to view. Hence, also, it appears, that rough uneven Bodies must reflect the Light in such manner, as that Rays coming from different Points, will be blended or thrown confusedly together.

**MIRROURS** are either *Plane*, *Concave*, *Convex*, *Cylindrical*, *Conical*, *Parabolical*, or *Elliptical*.

*Plane* **MIRROURS**, or *Specula*, are those which have a plain or flat Surface. See **PLANE**.

These, by a popular Word, we call *Looking-Glasses*. For the Manner of making plain *Mirrors*, or *Specula*, see **LOOKING-GLASS**.

Laws and Phenomena of Plain **MIRROURS**.

I. In a plain *Mirror*, every Point of an Object, as *A*, (*Tab. OPTICS, Fig. 27.*) is seen in the Interjection of the Cathetus of Incidence, *A B*, with the reflected Ray *C B*.

Hence, 1. As all the reflected Rays meet with the Cathetus of Incidence in *B*; by whatever reflected Rays the Point *A* be seen, it will still appear in the same Place. Consequently, any number of Persons viewing the same Object in the same *Mirror*; will all see it in the same place behind the *Mirror*. And hence it is, that the same Object has only one Image, and that we don't see it double with both Eyes. See **VISION**.

2. The distance of the Image *B*, from the Eye *C*, is compounded of the Ray of Incidence *A D*, and the reflected Ray *C D*: And the Object *A* radiates reflectedly, in the same manner as it would do directly, were it removed into the place of the Image.

II. The Image of a radiant Point, *B*, appears just so far behind a plain *Mirror*, as the radiant Point is before it.

Hence, 1. If the *Mirror* *A G* be placed horizontal: the Point *A* will seem so much below the Horizon, as it is really elevated above it: Consequently, erect Objects will appear as if inverted; and therefore Men standing on their Feet, as if on their Heads. Or if the *Mirror* be fastened to the Ceiling of a Room, parallel to the Horizon, Objects on the Floor will appear above the Ceiling as much as they really are below it; and that upside down.

III. In a plain *Mirror*, the Images are perfectly Similar, and equal to the Objects. And hence their Use as *Looking-Glasses*.

IV. In a plain *Mirror*, things on the right Hand, appear as on the left; and vice versa.

Hence also, we have a Method of Measuring any inaccessible Altitude by means of a plain *Mirror*.

Thus, the *Mirror* being placed horizontally in *C*, *Fig. 28.* retire from it till such time as the Top of the Tree be seen therein.



herein. Measure the height of the Eye DE; the distance of the Station from the Point of Reflexion EC, and the distance of the Foot of the Tree from the same. Then to EC, CB, and ED, find a fourth Proportional AB. This is the Altitude sought.

V. If a plain Mirror be inclined to the Horizon in an Angle of 45 Degrees; an Object perpendicular to it will appear parallel, and an horizontal Object perpendicular.

And hence, the Eye being placed beneath the Mirror, the Earth will appear perpendicularly over it; or if placed over it, the Earth will appear perpendicularly under it. Hence also, a Globe descending down a Plane a little inclined, may, by means of a Mirror, be exhibited as mounting up a Vertical Plain, to the great surprize of such as are unacquainted with Catoptrics.

And hence we have a Method of representing ourselves as if flying.

For a Mirror inclined to the Horizon under an Angle of 45°, we have observed, will represent Vertical Objects as if Horizontal. Consequently, a large Mirror being so disposed; as you advance toward it, you will seem to move horizontally; and nothing will be wanting to the Appearance of flying, but to strike out the Arms and Legs. It must be added, however, that as the Floor is elevated along with you, your Feet will still be seen to walk as along a vertical Plane. To deceive the Eye entirely, therefore, it must be kept from the Feet.

VI. If the Object AB (Fig. 29.) be parallel to the Speculum CD, and be equally distant from it, with the Eye; the reflecting Line CD will be half the length of the Object AB.

And hence, to be able to see the whole Body in a plain Mirror; its height and breadth must be half your height, and breadth. Consequently, the height and breadth of any Object to be seen in a Mirror, being given; we have also the height and breadth of the Mirror wherein the whole Object will appear, at the same distance with the Eye.

Hence also, as the length and breadth of the reflecting part of the Speculum, are subduple of those of the Object to be reflected; the reflecting part of the Mirror, is to the Surface reflected in a subquadruple Ratio. Consequently, the reflecting Portion being a constant Quantity; if in any place you see the whole Body in a Mirror, you will see it in every other place, whether you approach nearer, or recede farther from it.

VII. If several Mirrors, or several Fragments, or Pieces of a Mirror, be all disposed in the same Plane; they will only exhibit an Object once.

VIII. If two plain Mirrors, as XY, and ZX, (Fig. 30.) be join'd at an Angle X; the Eye O, placed within that Angle, will see the Image of an Object A placed within the same, as often repeated as there may be Catheti drawn determining the places of the Images, and terminated without the Angle YXZ.

Hence, as the more Catheti terminated without the Angle, may be drawn as the Angle is more acute; the acuter the Angle, the more numerous the Images. Thus Z. Traber found at an Angle of one third of a Circle, the Image was represented twice or thrice, at  $\frac{1}{3}$  thrice, at  $\frac{1}{5}$  five times, at  $\frac{1}{12}$  twelve times.

Further, if the Mirrors be placed upright, and so contracted; or if you retire from them, or approach to them, till the Images reflected by them coalesce, or run into one, they will appear monstrously distorted: Thus if they be at an Angle somewhat greater than a right one, you will see it with only one Eye; if the Angle be less than a right one, you will see three Eyes, two Noses, two Mouths, &c. At an Angle still less, the Body will have two Heads. At an Angle somewhat greater than a right one, at the distance of four Feet, the Body will be headless, &c. Again, if the Mirrors be placed the one parallel to the Horizon, the other inclined to it, or declined from it, it is easy to perceive that the Images will be still more Romantic. Thus, one being declined from the Horizon to an Angle of 144 Degrees, and the other inclined to it; a Man sees himself standing with his Head to another's Feet.

Hence it appears how Mirrors may be manag'd in Gardens, &c. so as to convert the Images of those near 'em into Monsters of various kinds: And since glass Mirrors will reflect the Image of a lucid Object twice or thrice; if a Candle, &c. be placed between the Mirrors, it will be multiply'd an infinite number of times.

On these Principles are founded various Catoptric Machines, some of which represent Objects infinitely multiply'd and distorted; others infinitely magnify'd, and set at vast distances. See CATOPTIC, CISTULA, &c.

Convex Mirrors are those whose Surface is convex. See CONVEX.

Note, by Convex Surfaces, Authors generally mean such as are spherically Convex. See CONVEXITY.

Manner of preparing or making Convex Specula, or MIRRORS.

There are divers Methods used by divers Artists; particularly as to the Matter, or Composition. One of the best that is known, is given us by *Wolffius* thus;

Melt one part of Tin, and another of Marcasite together, and to the melted Mass add two parts of Mercury; as soon as the Mercury begins to evaporate into Smoak (which it presently does) the whole Compost is to be thrown into cold Water, and when well cool'd, the Water decanted off. The Mixture is then to be strain'd through a linen Cloth two or three fold; and what is thus secerned, pour'd into the Cavity of a glass Sphere: this Sphere is to be turn'd gently round its Axis till the whole Surface is cover'd; the rest being reserved for future use.

If the Sphere were of colour'd Glass, the Mirror will be so too.

And in the same manner may Conic, Elliptic, Cylindric, and other Mirrors be made.

How they may be made of Metal, see under Concave MIRROR.

Laws, or Phenomena of Convex MIRRORS.

I. In a spherical convex Mirror, the Image of a radiant Point appears between the Centre, and the Tangent; but nearer to the Tangent than the Centre.

Hence, the distance of the Object from the Tangent is greater than that of the Image. And, consequently, the Object is further distant from the Speculum than the Image.

II. If the Arch BD, (Fig. 31.) intercepted between the Point of Incidence D, and the Cathetus AB; or the Angle C form'd in the Centre of the Mirror by the Cathetus of Incidence AC, and that of Obligation FC, be double the Angle of Incidence; the Image G will appear on the Surface of the Speculum.

III. If the Arch intercepted between the Point of Incidence, and the Cathetus; or the Angle C form'd in the Centre of the Mirror by the Cathetus of Incidence, and the Cathetus of Obligation, be more than double the Angle of Incidence; the Image will be without the Mirror.

IV. If the Arch intercepted between the Point of Incidence, and the Cathetus; or the Angle form'd in the Centre of the Mirror, by the Cathetus of Incidence, and that of Obligation be less than double the Angle of Incidence; the Image will appear within the Speculum.

V. In a convex Mirror, a remoter Point, A, (Fig. 32.) is reflected from a Point F, nearer the Eye O, than any nearer Point B in the same Cathetus of Incidence.

Hence, if the Point of the Object A, be reflected from the Point of the Mirror F; and the Point of the Object B from the Point of the Mirror E: all the intermediate Points between A and B will be reflected from the intermediate Points of the Speculum between F and E. Consequently FE will be the Line that reflects AB.

Hence also, a Point of the Cathetus B, seems at a greater distance Cb from the Centre C; than a more remote one, A.

VI. A nearer Point B (Fig. 33.) not in the same Cathetus with a remoter, H; is reflected to the Eye O, from a nearer Point of the Speculum, than the remoter H.

Hence, if the Point of an Object A, be reflected from the Point of a Mirror C; and the Point of the Object B, from the Point of the Speculum D, all upon the same Point O: All the intermediate Points between A and B will be reflected from all the intermediate Points between C and D. Consequently, the Image FG, of the Object BA, is contain'd between the Cathetus BE, and AE.

VII. In a spherical convex Mirror, the Image is less than the Object.

And hence the Use of such Mirrors in the Art of Painting, where Objects are to be represented less than the Life.

VIII. In a convex Mirror, the more remote the Object; the less its Image: And again, the smaller the Mirror, the less the Image.

IX. In a convex Mirror, the right hand is turn'd to the left; and the left to the right: And Magnitudes perpendicular to the Mirror, appear topsy turvey.

X. The Image of a right Line perpendicular to the Mirror, is a right Line; but that of a right Line either oblique to the Mirror, or parallel thereto, is convex.

XI. Rays reflected from a convex Mirror, diverge more than if reflected from a plane Mirror.

Hence Light, by being reflected from a spherical Mirror, is weakened; and, consequently, the Effects of the reflected Light are weaker than those of the direct. Hence also, Myopes see remote Objects more distinctly in a convex Mirror, than they do directly.

Rays reflected from a convex Mirror of a smaller Sphere, diverge more than if reflected from a larger. Consequent



ly, the Light is more weaken'd, and its Effects are less considerable in the former Case than the latter.

Concave MIRRORS are those whose Surface is concave. See CONCAVE.

Note, by Concave, Authors commonly mean Spherically Concave.

*The Manner of preparing or making Concave MIRRORS.*

First, a Mould is to be provided for casting them. In order to this, take Clay well dry'd, pulverize, and sift it; mix it up with Water, and then strain or filter it; with this, work up Horse-Dung and Hair shred small, till the Mass be sufficiently tough; to which, on occasion, may be added Charcoal-Dust, or Brick-Dust, well sifted.

Two coarse Molds are then prepared of a gritty Stone, the one concave, the other convex, which are to be ground on one another with wet Sand between, till such time as the one perfectly fits the other. By this means a perfect spherical Figure is acquir'd.

The Mass prepared before, is now to be extended on the Table by means of a wooden Roller, till it be of Thickness proper for the Mirror; and then being strew'd with Brick-Dust to prevent its sticking, it is laid over the convex Mould, and so gets the figure of the Mirror. When this is dry, it is cover'd with another Lay of the same Mass; which once dry'd, each Cover, or Segment of the hollow Sphere made of Clay, is taken off. The innermost of the two being laid aside, the stone Mould is anointed with grease prepared from Chalk and Milk, and the outer Cover again put over it.

Lastly, the Joining being cover'd over with the same Clay whereof the Cover is form'd; the whole Mould is bound together with Iron-Wire; and two Holes cut through the Cover, the one for the melted Matter of the Mirror to be poured thro', the other for the Air to escape at, to prevent the Mirror's being spoil'd with bubbles.

The Mould thus prepared; eight parts of Copper, one of English Tin, and five of Mechatine, are melted together; a little of the mixture is taken out with a Ladle, and if it be too red, when cold, more Tin is put in; if too white, more Copper: The Mass is then poured into the Mould before prepared; and so assumes the figure of a Mirror.

Some with ten parts of Copper mix four of English Tin, a little Antimony and Sal Armoniac, stirring the Mass about as long as any Fumes arise from it. Others have other Compositions; many of which are described by Schottus and Zabnius.

The Mirror being thus cast, is cemented to a Wooden Frame, and thus work'd to and fro over the convex Stone-Mould, first with Water and Sand; and, lastly, without Sand, till it be fit for polishing. The Stone-Mould is then cover'd with Paper, and that smear'd over with Tripoly Dust and Calx of Tin: over which the Mirror is work'd to and fro till it have got a perfect Polish. And in the same manner are Glass Mirrors polish'd, excepting that the convex Surface is there work'd in the concave Mould.

When the Mirrors are very large, they are fix'd on a Table, and first ground with a gritty Stone, then with Pumice, then with fine Sand, by means of a Glass cemented to a wooden Frame; and lastly rubb'd with Calx of Tin and Tripoly Dust by a wet Leather.

For concave Mirrors of Glass; the Mould is made of Alabaster: The rest, as in Metal Mirrors.

#### *Laws and Phenomena of Concave MIRRORS.*

I. If a Ray, as  $KI$ , (fig. 34.) fall on a concave Mirror  $LI$ , under an Inclination of 60 Degrees, and parallel to the Axis  $AB$ ; the reflected Ray  $IB$  will concur with the Axis  $AB$  in the Pole of the Glass  $B$ . If the Inclination of the incident Ray be less than 60 Degrees, as that of  $E$ , the reflected Ray  $EF$  will concur with the Axis at the distance  $BF$ , which is less than a fourth part of the Diameter. And universally, the distance of the Point  $F$ , wherein the Ray  $HE$  concurs with the Axis, from the Centre  $C$ , is to half the Radius  $CD$  in the Ratio of the whole Sine, to the Cosine of Inclination.

Hence it is gathered by Calculation, that in a concave spherical Mirror, whose breadth subtends an Angle of 6 Degrees, parallel Rays meet after Reflection in a part of the Axis less than the one thousand four hundred fifty seventh part of the Radius: if the breadth of the concave Mirror be 12, 18, 24, 30, or 36 Degrees; the part of the Axis wherein the parallel Rays meet after Reflexion is less than  $\frac{1}{1000}$ ,  $\frac{1}{500}$ ,  $\frac{1}{300}$ ,  $\frac{1}{200}$ ,  $\frac{1}{150}$  of the Radius.

And on this Principle it is, that Burning-Glasses are built.

For since the Rays diffused thro' the whole Surface of the concave Mirror, after reflection are contracted into a very small compass; the Light and Heat of the parallel Rays must be prodigiously increased thereby, viz. in a duplicate Ratio of the breadth of the Mirror, and the Diameter of the Circle wherein all the Rays are collected: And since the Sun's Rays are, as to any purposes on Earth, parallel,

(see LIGHT) no wonder concave Mirrors should burn with so much violence. See BURNING-Glass.

From this same Principle is likewise deduced a Method of representing the Images of Objects in a dark Room; which see under CAMERA Obscura.

II. A lucid Body being placed in the Focus  $F$ , of a concave Mirror,  $HBC$ ; the Rays after reflexion become parallel.

Hence an intense Light may be projected to a vast distance, by a lighted Candle, &c. placed in the Focus of a concave Mirror. Hence also, if the parallel Rays be received by another concave Mirror, they will again concur in its Focus, and burn.

Zabnius mentions an Experiment of this kind made at Vienna, where two concave Mirrors, the one six, the other three Foot diameter, being placed about 24 Feet apart, with a Live-Coal in the Focus of the one, and a Match and Tinder in the other, the Rays of the Coal lighted the Candle.

III. If a lucid Body be placed between the Focus  $F$ , and the Mirror  $HCB$ , the Rays after reflexion will diverge from the Axis  $BG$ . Whence it follows that Light is weakened by reflexion.

IV. If a lucid Body be placed between the Focus  $F$ , and the Centre  $I$ , the Rays after reflexion will meet in the Axis beyond the Centre.

Hence if a Candle be placed in  $G$ , its Image will be in  $K$ ; if it be placed in  $K$ , its Image will be in  $G$ ; in the intermediate Points between  $G$  and  $K$  the Section of Light will be a Circle, and that so much the greater, as it is nearer the Point of Concourse.

V. If a luminous Body be placed in the Centre of the Mirror, all the Rays will be reflected back upon themselves.

Hence if the Eye be placed in the Centre of a concave Mirror, it will see nothing but itself, and that confusedly through the whole Mirror.

VI. If a Ray falling from the Point of the Cathetus  $b$ , (fig. 35.) on the convex Mirror  $bF$ , be together with its reflex  $lF$ , continued within the Concavity of the Mirror;  $FH$  will be the Incident Ray from the Point of the Cathetus  $H$  and  $FO$  its reflex.

Hence, 1. Since the Point of the Cathetus  $H$  is the Image of the Point  $b$  in the convex Mirror; but the Point  $b$  the Image of  $H$  in the concave: if the Image of an Object reflected by a convex Speculum, be seen by a Reflexion made in its Concavity, it will appear like the Object itself.

2. Since the Image of an infinite Cathetus is less in a convex Glass by one fourth of its Diameter; a Portion of the Cathetus less than a fourth part of the Diameter, may appear of any magnitude required in a concave one.

3. A Point therefore distant from a concave Speculum, less than  $\frac{1}{4}$  of the Diameter must appear behind the Mirror at any distance, how great soever.

4. Since the Image of any Object how broad soever, is contain'd, in a convex Speculum, between the two Lines of Incidence of its extreme Points; if an Object be placed between the two Lines at a distance less than  $\frac{1}{4}$  of its Diameter, the breadth of the Image, how great soever, may all appear.

4. Since then the Image of an Object included between two Lines, at a distance less than one fourth of the Diameter, may exceed the just height and breadth of the Object; nay, may be made of any magnitude, how big soever: Objects placed between the Focus and Mirror, must appear of enormous magnitudes in concave Mirrors; the Image being so much the greater in the concave Mirror, as it is less in the convex.

5. In a convex Mirror, the Image of a remote Object appears nearer the Centre than that of a nearer Object: therefore in a concave Mirror, the Image of an Object remote from the Mirror, appears at a greater distance than that of a nearer Object, provided the distance of the Object from the Centre be less than a fourth part of the Diameter.

6. In a convex Speculum, the Image of a remote Object is less than that of a near one; therefore in a concave one, the Image of an Object placed between the Focus and the Mirror, is nearer the Focus than the Speculum.

7. The Image therefore of an Object receding continually from a concave Speculum, becomes continually greater, provided it don't recede beyond the Focus, where it becomes confused; and as it approaches, it grows continually less.

8. In a convex Speculum, if the Sphere, whereof it is a Segment, be smaller, the Image is smaller than in another of a larger Sphere; therefore in a concave, if the Sphere whereof it is a Segment, be smaller, the Image will be larger than in another, whose Sphere is larger: whence concave Mirrors, if they be Segments of very small Spheres, will do the Office of Microscopes.



# TAB MISCELLANY

Fig. 1: Marquetry.

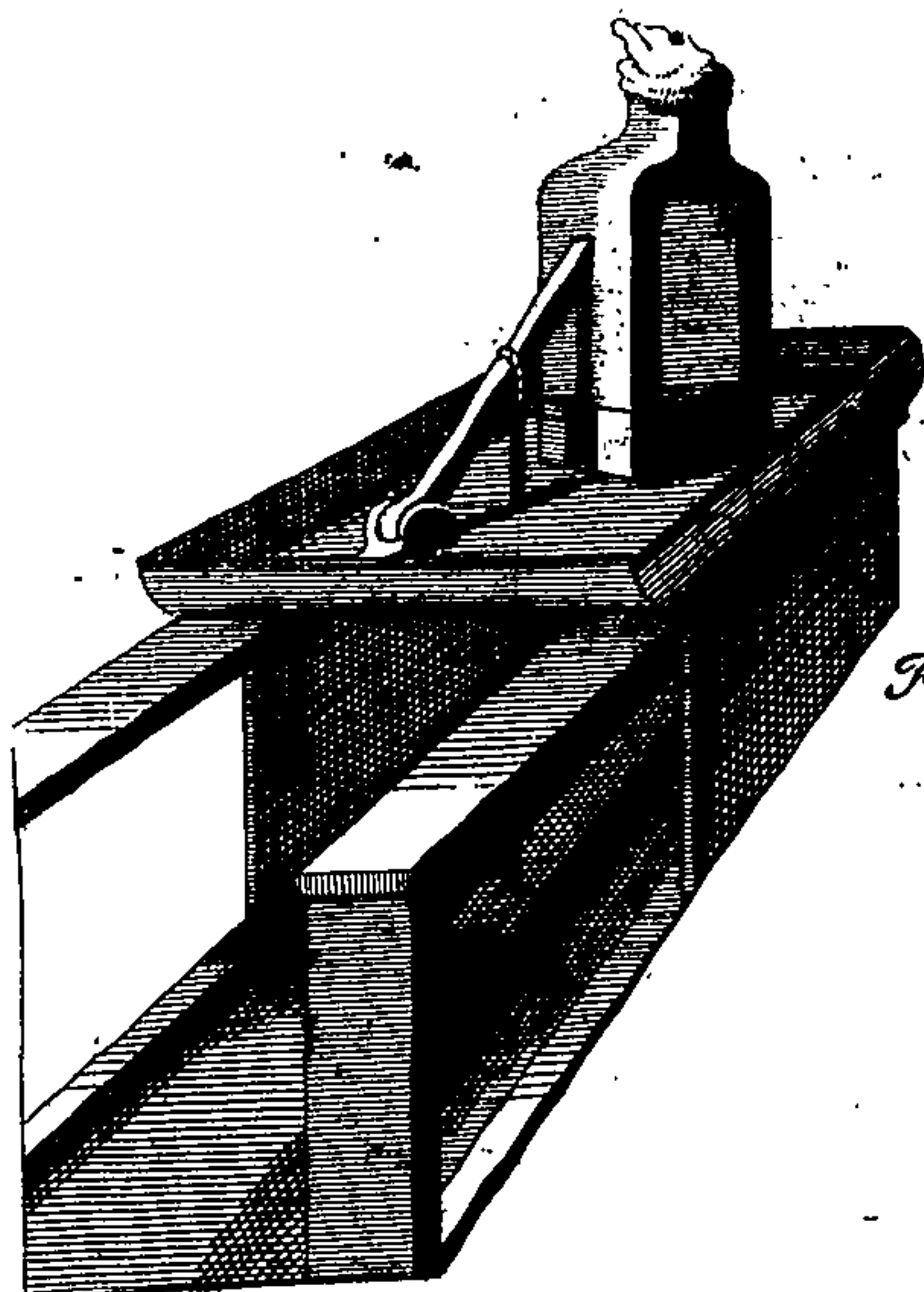


Fig. 5.  
Fountainpen

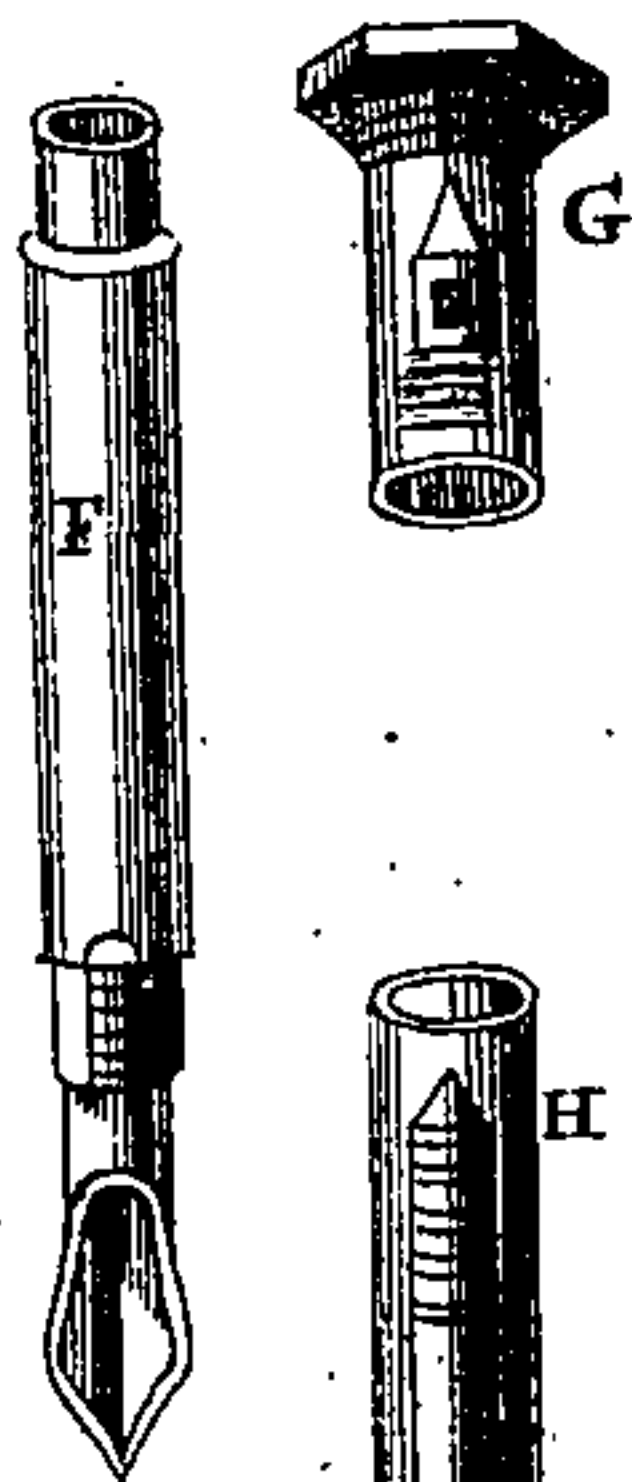


Fig. 7. Rocket

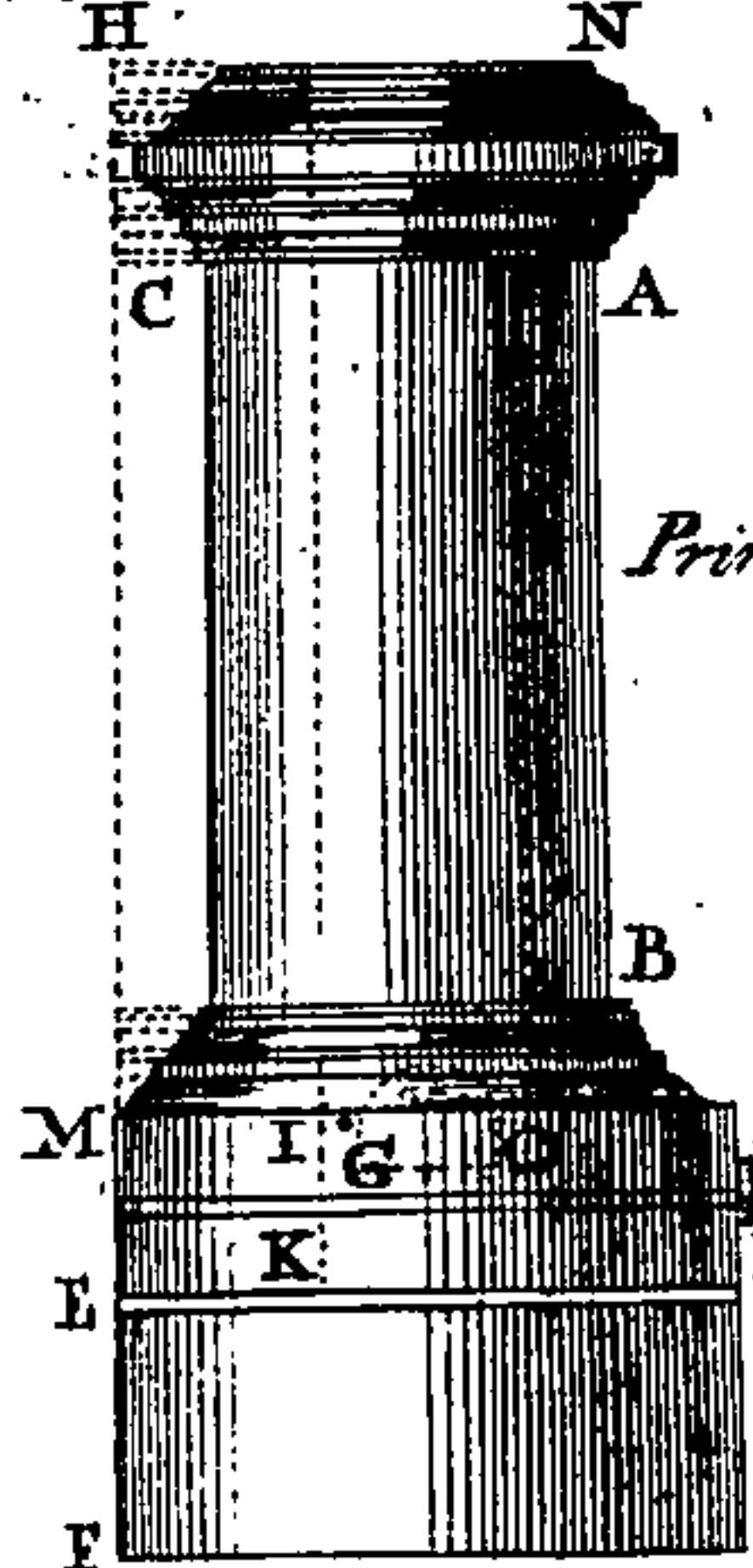


Fig. 8.  
Printing Press

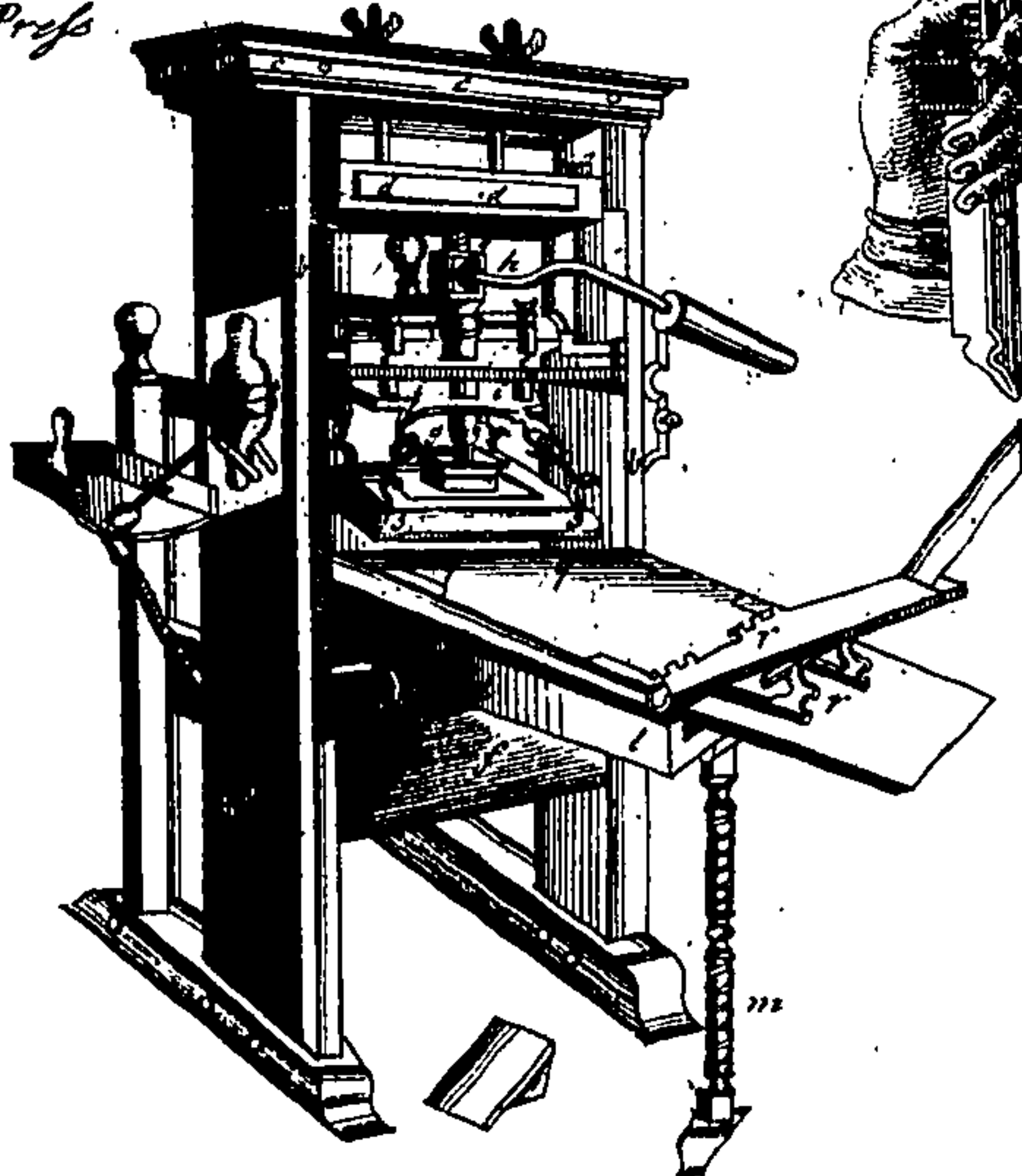


Fig. 9. Composing Stick



Fig. 6. Pentagraph

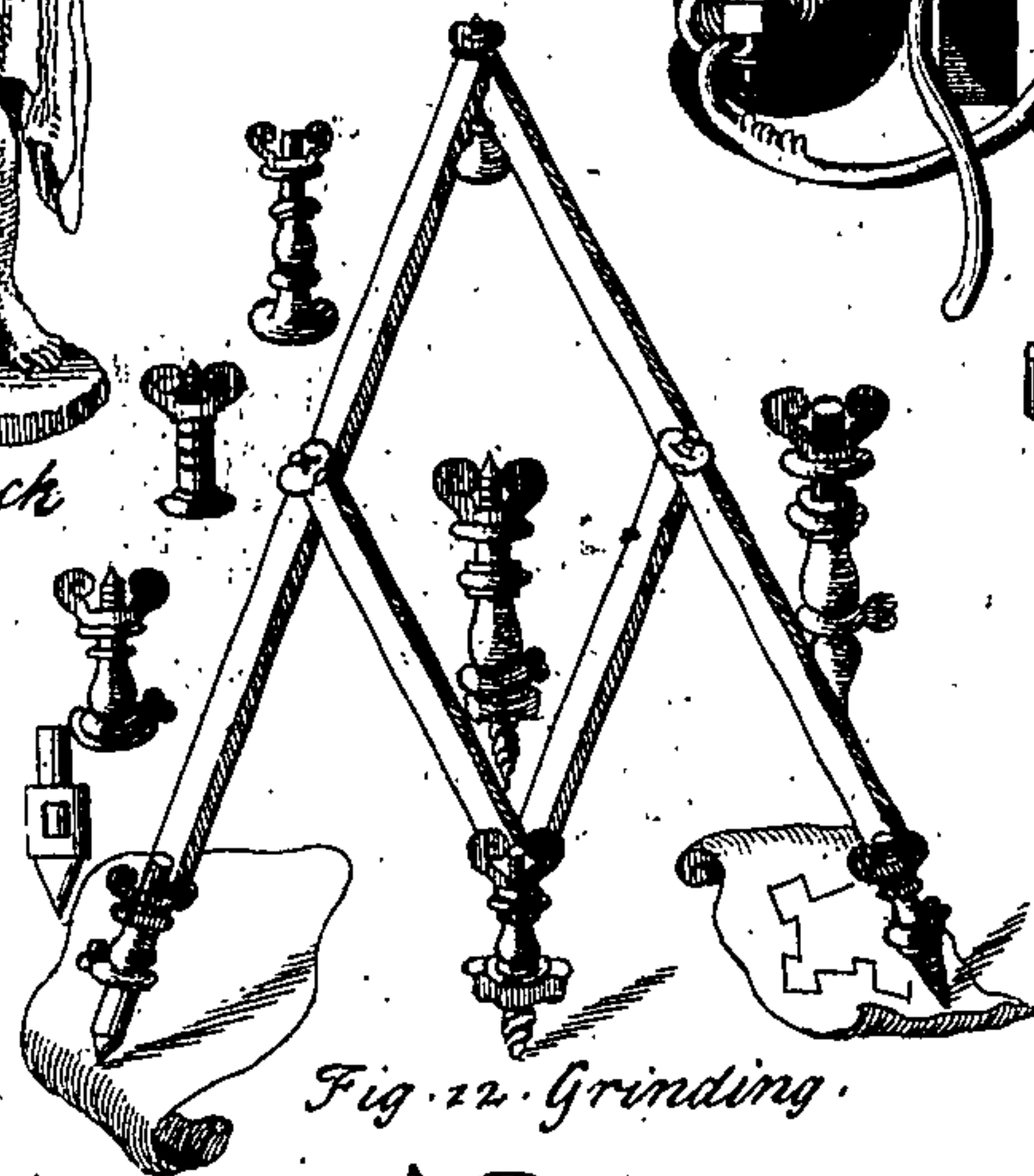


Fig. 22. Grinding.

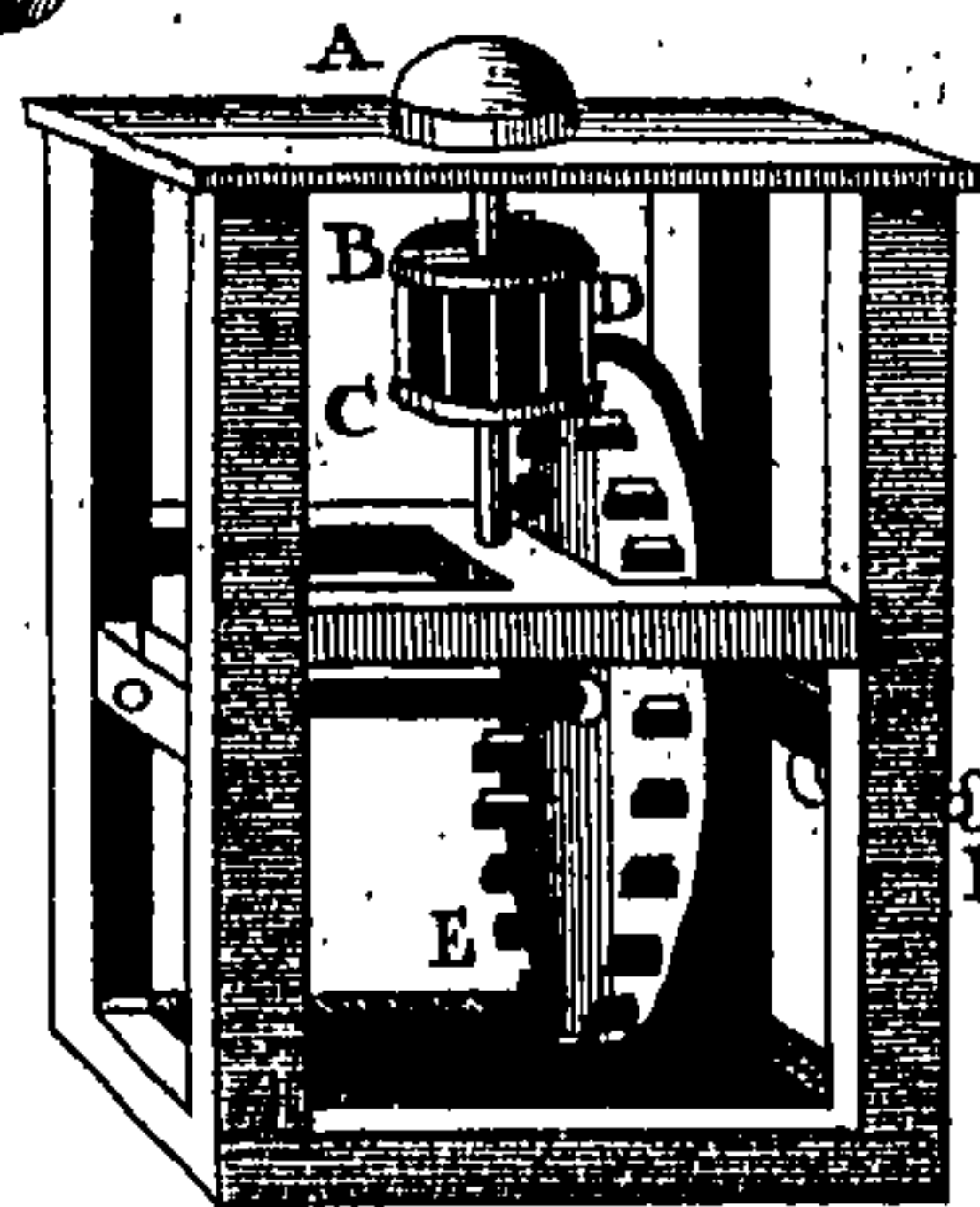
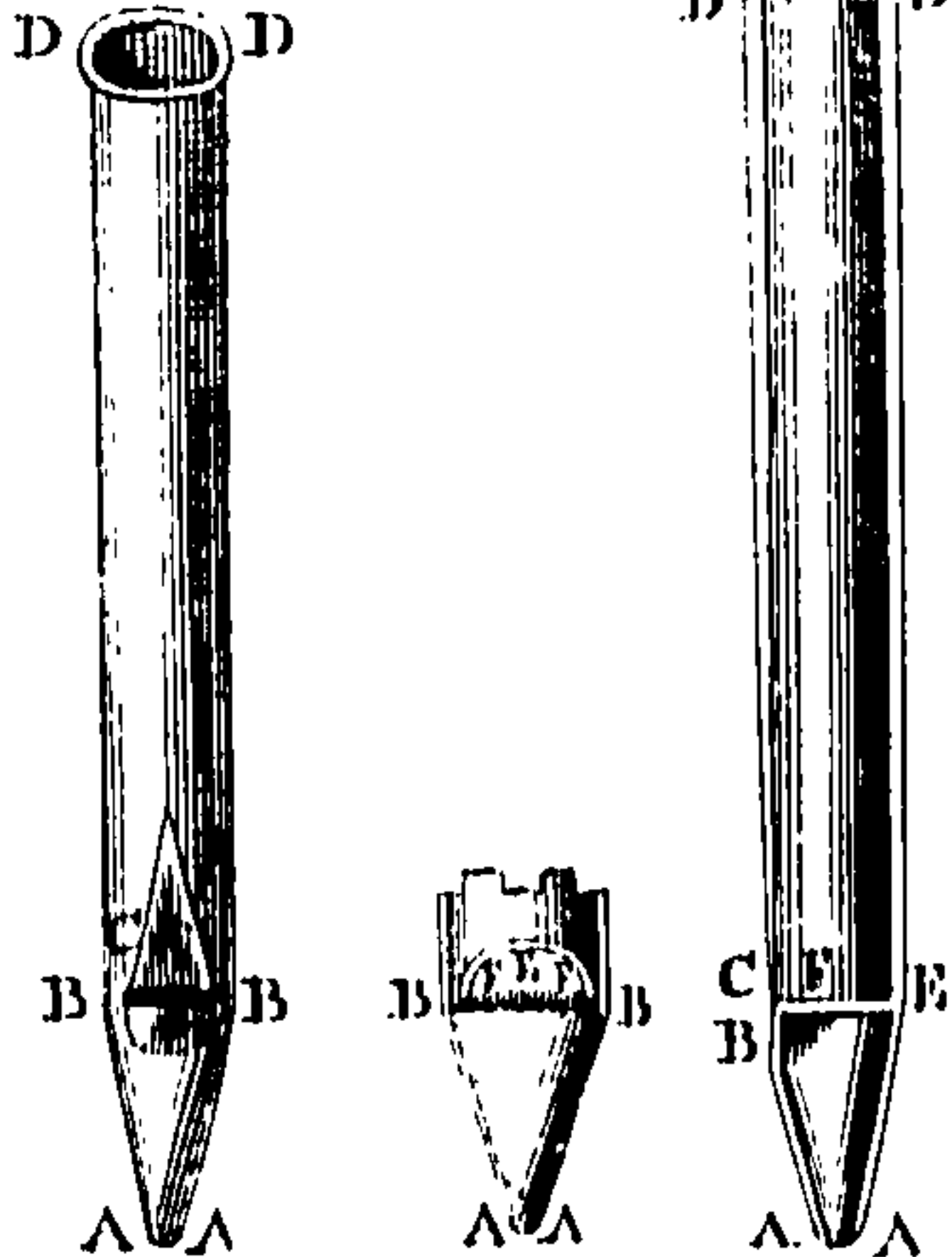


Fig. 23. Grinding

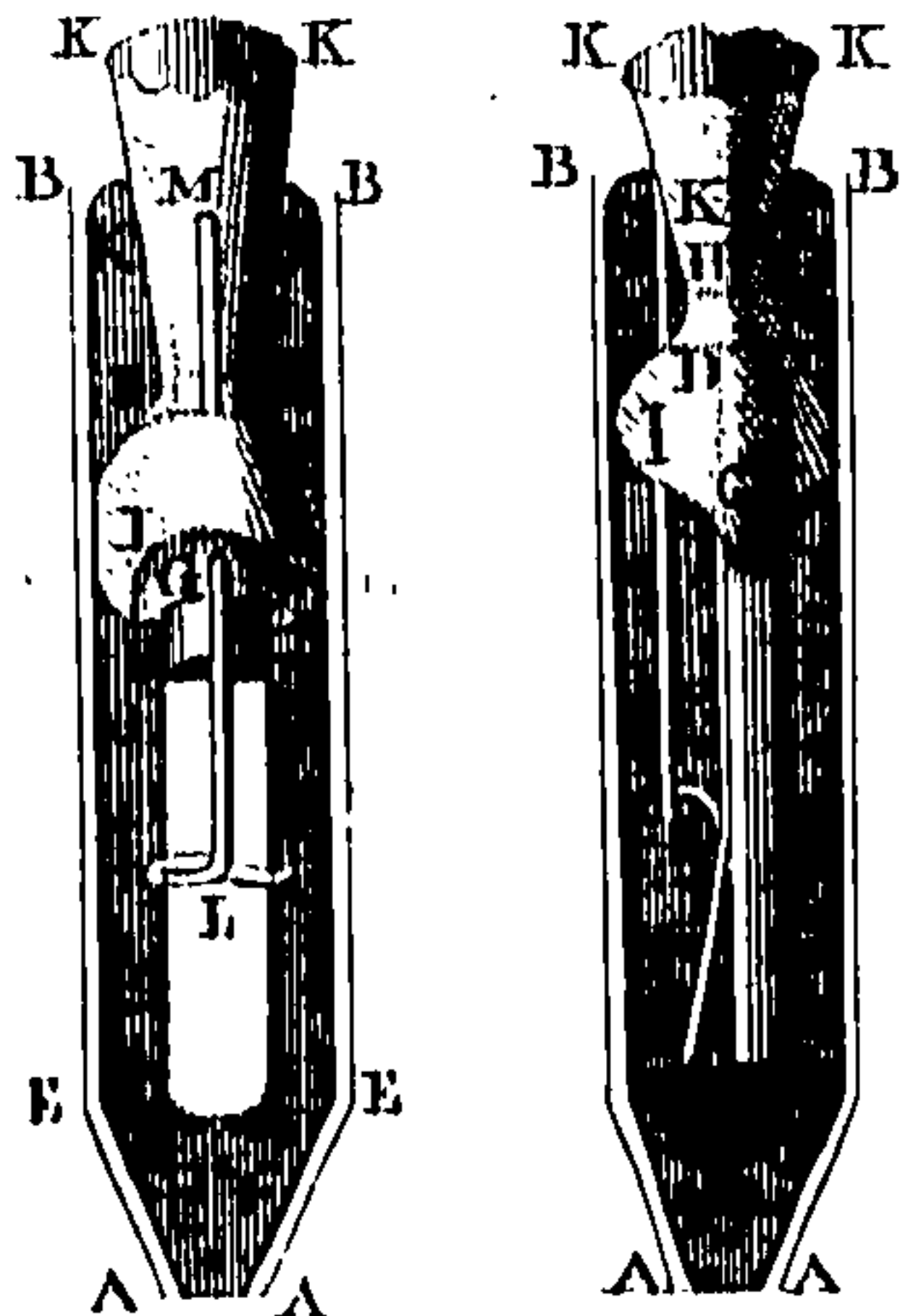


## TAB. MUSIC

Fig. 1. Organism.



*Fig. 2. Organ*



Gammut, or Guido's

|   | re | la  | nat |
|---|----|-----|-----|
|   | do | sol | re  |
|   | re | fa  | ut  |
|   | bb | mi  |     |
|   | bb |     |     |
|   | aa | re  | la  |
| G | a  | ut  | sol |
|   | f  |     | fa  |
|   | e  | la  | mi  |
|   | d  | sol | re  |
| H | c  | fa  | ut  |
|   | b  | mi  |     |
|   | aa | re  | la  |
|   | G  | ut  | sol |
| D | F  |     | fa  |
|   | E  | la  | mi  |
|   | D  | sol | re  |
|   | C  | fa  | ut  |
|   | B  | mi  |     |
|   | A  | re  |     |
|   | F  | ut  |     |



VII. If an Object be placed between a concave *Mirror* and its Focus, its Image will appear behind the *Mirror*, in an erect but inverted Situation.

VIII. If an Object A B, (Fig. 36.) be placed between the Focus and the Centre, its Image E F will appear inverted, and in the open Air, beyond the Centre, the Eye being placed beyond the Centre.

IX. If an Object E F be placed beyond the Centre C, and the Eye likewise beyond the Centre, the Image will appear inverted in the open Air between the Centre and the Focus.

Hence, the inverted Images of Objects placed beyond the Centre, are reflected by a concave *Mirror*, erect, and may be received on a Paper apply'd between the Centre and the Focus, especially if the Room be dark: if the Object E F be further distant from the Centre than is the Focus, the Image will be less than the Object.

On this Principle, concave *Mirrors*, especially those which are Segments of large Spheres, and are capable of reflecting intire Objects, exhibit many pleasing Phenomena. Thus, if a Man flourish a Sword against the *Mirror*, another comes out thereof, and meets him with the same Motions; and the Image of his Head coming out of the *Mirror*, if he strike it with his real Sword, the imaginary Sword will strike his real Head. If he stretch out his Hand, another Hand will be stretch'd out of the *Mirror*, and meet it at a great distance in the open Air, &c.

And on the same Principle are built Catoptric Cistulae, which when look'd into, exhibit Images vastly bigger than the Chest. See CATOPTIC Cistula.

X. The Image of a right Line perpendicular to a concave *Mirror*, is a right Line; but all oblique or parallel Lines are concave.

*Cylindrical, Conical, Parabolical, and Elliptical MIRRORS*, or *Specula*, are those terminated by a Surface respectively Cylindrical, Conical, Parabolical, and Sphaeroidical. See CYLINDER, CONE, PARABOLA, &c.

To prepare, or make *Cylindrical, Conical, Parabolical, Elliptical, and Hyperbolical MIRRORS*.

For *Cylindrical* and *Conical Mirrors*, if they are to be of Glass, the Method of preparing 'em is the same as that already laid down for convex *Mirrors*.

If of Metal, they are to be made after the manner of *Concave Mirrors*, only that the clay Moulds there described, require other Wooden ones of the Figure of the *Mirror*.

For *Elliptical, Parabolical, and Hyperbolical Mirrors*, the Mould is to be thus prepared. On a Wooden or Brazen Plane or Table, describe the Figure of an *Ellipsis*, A B, (Fig. 37.) a *Parabola*, or an *Hyperbola* C D, (Fig. 38.) after the manner taught under those heads; which done, cut out the Figure from the Plane with all the Accuracy imaginable.

To the Elliptic Figure, fit an Axis, as E F, with two Fulcra to sustain it, &c. and to move it. Lay a Quantity of the Lay above described under it; and turn about the Axis by the Handle, till the Plane A B have turn'd, or impress'd the Elliptical Figure exactly thereon.

The Axis of the Parabolical, or Hyperbolical Figure C D, is to be fix'd at the Vertex in such manner as it may always remain Erect. This to be turn'd about as above, till it have given its own Figure to the Clay apply'd about it.

The part of the Mould thus form'd, is to be dry'd, and either smear'd over with Fat, or sprinkled with Brick-Dust. Then a convex Mould to be made, by putting a Quantity of the same Clay into the Cavity thus form'd. This latter is call'd the *Male*, as the former the *Female* Mould.

The Male Mould being well dried, is to be apply'd within the Female; in such manner as only to leave the intended Thickness of the *Mirror* between them. The rest as for concave *Mirrors*.

These *Mirrors* are not made without the utmost difficulty; by reason, be the Moulds ever so just, the Figure of the *Mirror* is apt to be damaged in the Grinding.

*Phænomena, or Properties of Cylindrical MIRRORS.*

I. The Dimensions of Objects corresponding length-wise to the *Mirror*, are not much chang'd; but those corresponding breadth-wise, have their Figures alter'd, and their Dimensions lessen'd so much the more, as they are further from the *Mirror*: Whence arises a very great Distortion.

II. If the Plane of Reflexion cut the cylindric *Mirror* thro' the Axis, the Reflexion is performed in the same manner, as in a plain *Mirror*; if it cut it parallel to the Base, the Reflexion happens in the same manner as in a spherical *Mirror*; if, lastly, it cut it obliquely, or be oblique to its Base, the Reflexion is the same as in an Elliptic *Mirror*.

Hence, as the Plane of Reflexion never passes through the Axis of the *Mirror*, except when the Eye and Objective-Line are in the same plane; nor parallel to the Base, except when the radiant Point and the Eye are at the same height: The Reflexion in a Cylindrical *Mirror* is usually the same as in an Elliptic one.

III. If a hollow cylindric *Mirror* be opposed directly to the Sun, instead of a Focus of a Point, the Rays will be reflected into a lucid Line parallel to its Axis, at a distance somewhat less than a fourth part of its Diameter.

Hence arises a Method of Drawing *Anamorphoses*, i. e. wild deformed Figures on a Plane, which appear beautiful and well proportion'd when view'd in a cylindrical *Mirror*. See ANAMORPHOSIS.

For *Elliptic, Parabolic, Conic, and Pyramidal Mirrors*, we are not much acquainted with their Properties: Only that,

In the First, if a Ray strike on it from one of its Focus's, it is reflected into the other: So that a lighted Candle being placed in one, its Light will be collected in the other.

That the Second, inasmuch as all the Rays they reflect meet in one Point, make the best Burning-Glasses of all others.

And, Lastly, that wild irregular Figures may be so drawn on a Plane, as that the Eye being placed over the Axis of the two last, they shall appear beautiful and well proportion'd. See ANAMORPHOSIS.

MIS, a Particle prefix'd to divers Terms, particularly Law-Terms; denoting some Fault, or Defect.

As in *Misprision*; *Misdicere*, to scandalize one; *Misdocere*, to teach amiss, &c. See MISPRISION, &c.

MISANTHROPY, a general Hatred to Man, and Mankind: In opposition to *Philanthropy*. See PHILANTHROPY.

The Word comes from the Greek *μισος*, Odium, Hatred; and *ανθρωπος*, Homo, Man.

MISADVENTURE, or MISADVENTURE, in Law, is used by *Britton*, &c. in an especial Signification, for the killing a Man partly by Negligence, and partly by Chance: As if a Person, thinking no harm, carelessly throws a Stone, or shoots an Arrow, wherewith he kills another; in this case he commits no *Felony*, but only loses his Goods, and has a Pardon of course for his Life. See HOMICIDE.

*Stamford* distinguishes between *Adventure* and *Misadventure*. The first he makes to be meer Chance; as if a Man being upon, or near the Water, be taken with some sudden Sickness, and so fall in, and be drown'd; or into the Fire, and be burnt.

*Misadventure*, according to him, is when a Man comes to his Death by some outward Violence, as the Fall of a Tree; the Running of a Cart-Wheel; the Stroke of a Horse, &c.

*West* distinguishes Homicide into casual and mix'd. The first, when a Man is slain by mere Accident, against the mind of the Killer; as if the Ax fly off the Helve, and kill a Man: Which is the same with *Britton's Misadventure*.

MISCONTINUANCE, in Law, the same with *Discontinuance*. See DISCONTINUANCE.

MISDEMEANOUR, an Offence, or Fault, particularly in the Execution of an Office.

*High Crimes and MISDEMEANOURS*, are Offences of a heinous nature, next to High Treason.

MISE, a French Term, literally denoting Expence, or Disbursement, wrote in *Latin Misum* or *Misa*; and used in our Law-Books in divers Acceptations.

First, as an honorary Gift, or customary Present, wherewith the People of *Wales* used to salute every new King and Prince of *Wales* at their Entrance upon the Principality. Antiently it was given in Cattle, Wine, Corn, &c. for the Support of the Prince's Family; but when that Dominion was annex'd to the *English Crown*, the Gift was chang'd into Money. The County of *Flint* pays 2000 Marks, &c. for their *Mise*.

The County of *Chester* also pays a *Mise* or Tribute of 5000 Marks at the Change of every Owner of the said Earldom, for the enjoying of the Privileges of that Palatinate. At *Chester* they have a *Mise-Book*, wherein every Town and Village in the County is rated what to pay toward the *Mise*.

*Mises* are also taken for the Profits of Lands; sometimes for Taxes or Taillages; and sometimes for Expences or Costs: As *pro Missis & Custagiis*, for Costs and Charges in the Entries of Judgments, &c.

*Mise* is also a Term used in speaking of a Writ of Right. What in other Actions is call'd an *Issue*, in a Writ of Right is call'd a *Mise* or *Me*: so that to join the *Mise* upon the Meer, is as much as to say, to join *Issue* on the meer Right, i. e. to join upon this Point, whether has the more Right, the Tenant or Demandant. See ISSUE, &c.



Yet even in a Writ of Right, if a Collateral Point be try'd, it is there call'd an *Issue*, not a *Mise*. See RIGHT.

MISE is also used as a Participle, for *cast* or *put upon*. Sometimes corruptly for *Mease*, a Messuage or Tenement. In some Manors, a *mease Place* is taken for such a Messuage or Tenement, as yields the Lord a Herriot at the Death of the Tenant.

MISERERE, *have mercy*, the Name, and first Word of one of the Penitential Psalms; being that commonly given by the Ordinary to such condemn'd Malefactors, as are allow'd the Benefit of the Clergy. Whence it is also call'd the *Psalm of Mercy*. See CLERGY.

MISERERE *mei*, is a kind of Colic, or Disorder of the Intestines, wherein the Excrements, instead of passing off the common way, are thrown up by the Mouth. See COLIC.

The *Miserere mei* is the same with what we otherwise call *Volulus* and *Iliac Passion*. See ILIAC Passion.

It takes its Name from the intolerable Pain and Anguish it occasions the Patient; which is such, as claims Pity from the Beholders: *Miserere mei* being a Latin Phrase, which literally signifies, *Have pity on me*.

MISERICORDIA, *Mercy*, in Law, is an arbitrary Amerciament or Punishment imposed on any Person for an Offence. See AMERCIAMENT.

Where the Plaintiff or Defendant in any Action is amerced, the Entry is always *Ideo in Misericordia*. It is thus call'd, according to *Fitzherbert*, by reason it ought to be but small; and less than the Offence, according to the Tenor of *Magna Charta*.

Hence, if a Man be unreasonably amerced in a Court not of Record, as a Court-Baron, &c. there is a Writ call'd *Moderata Misericordia*, directed to the Lord, or his Bailiff, commanding them to take moderate Amerciaments. See MODERATA, &c.

*Multa lenior sic dicta, quod lenissima imponitur Misericordia; Graviorum enim multas Fines vocant; Atrocissimas, Redemptiones*. See FINE and REDEMPTION.

*Misericordia Communis*, is when a Fine is set on the whole County or Hundred.

MISFEASANCE, in Law, Misdoings or Trespases. Whence also *Misfeasor*, a Trespasser. See TRESPASS.

MISNA, or MISCHNA, a part of the Jewish Talmud. See TALMUD.

The *Misna* contains the Text; and the *Gemara*, which is the second part of the Talmud, contains the Commentaries: so that the *Gemara* is, as it were, a Glossary on the *Misna*.

The *Misna* consists of various Traditions of the Jews, and of Explanations of several Passages in Scripture. The Jews maintain, that it was compleated, and reduc'd into a Body, by Rabbi *Juda*, in the second Century, to prevent the Memory of their Traditions from perishing. But the Generality of the Learned scarce allow it of so much Antiquity, and bring it several Centuries lower.

It is written in a much purer Style, and is not near so full of Dreams and Visions as the *Gemara*. See GEMARA.

MISNOMER, a Term in Law, compounded of the French *Mes*, which in Composition signifies *amiss*; and *nommer*, to name: It denotes the using of one Name for another; a mistaking or misnaming. See NAME.

MISPRISION, a Term in Law, signifying Neglect, or Oversight.

MISPRISION of Treason, or Felony, is a Neglect or light Account shew'd of Treason or Felony by not revealing it, when we know it to be committed; or by letting any Person, &c. on Suspicion of Treason, to go, before he is indicted. See TREASON.

It is the Concealment, or not disclosing of known Treason; for which the Offenders are to suffer Imprisonment during the King's Pleasure, and to lose their Goods, and Profit of their Lands, during their Lives.

*Misprision of Felony* is only fineable by the Justices, before whom the Party is attainted; but Justices of the Common Pleas have a power to assess any Amerciaments upon Persons offending by *Misprisions*, Contempts or Neglects, for not doing, or misdoing any thing in or concerning Fines.

MISPRISION of Clerks, is a Neglect of Clerks in writing or keeping Records. By the *Misprision* of Clerks, no Process shall be annull'd or discontinu'd. And Justices of Assize shall amend the Defaults of Clerks mis-spelling of a Syllable or Letter in Writing.

MISSAL, MISSALE, a Mass-Book, containing the several Masses to be used for the several Days, Feasts, &c. See MASS.

The *Missal* was first compil'd by Pope *Zachary*, and afterwards reduc'd into better Order by Pope *Gregory* the Great, who call'd it the Book of Sacraments.

Each Diocese, and each Order of Religious, have their particular *Missal*, accommodated to the Feast of the Province, or of the Order.

MISSELTOE, MISSLETOE, or MISLETOE, in Natural History, a Plant of the Parasite Kind; growing, not on the Ground, but on other Trees, as the Oak, Apple-Tree, Pear-Tree, Plumb-Tree, Acacia Americana, Beech, Chestnut, &c. See PARASITE.

*Mistletoe*, by Physicians, &c. call'd *Viscum*, grows to the height of about two Feet. It consists of several Stems, which are usually cover'd with a greenish, sometimes a yellowish Bark, about the Thickness of the Finger, hard, woody, and divided by Knots; from which spring the Leaves, which grow by two and two opposite to each other, oblong, thick, of a greenish, or yellowish Colour, vein'd their whole Length, and rounded at the End. In Flowers grow by three and three, Trefoil-wise, at the Extremes of the Branches: each Flower is a yellow Calyx, one third of an Inch in Diameter, divided into four Parts. The Fruit likewise grows by three and three, at the Extremes of the Branches. They are a kind of oval Berries, not unlike little Pearls, fill'd with a flattish Seed in form of a Heart; cover'd with a fine silver'd Membrane, and enclos'd with a viscid, glutinous Humour, of a whitish Colour, wherein the Seed naturally buds or germinates, and puts forth two Eyes. From this Juice it is, that the Latins denominate the Plant *Viscum*. The Fruit grows on different Branches from the Flowers.

That uncommon Soil, whercon the *Mistletoe* grows, has occasion'd abundance of fabulous Notions both as to its Production and Virtues.

*Pliny* and most Naturalists relate, that Thrushes being exceedingly fond of the Berries of the *Mistletoe*; they swallow 'em, and cast 'em out again on the Branches of Trees where they use to perch; and by this means give Occasion to a new Production of *Mistletoe*. By cracking the Berries with their Bills, or Claws, they are supposed to let out the Viscous Juice, which facilitates their Sticking: And hence that Proverb, *Turdus sibi cacat Malum*; the *Viscum* being sometimes used as Bird-Lime.

Mr. *Bradley* endeavours to refute the popular Opinion of the Antients, that the Seeds of the *Mistletoe* could not vegetate. Their endeavouring to propagate it in the Earth without success, he takes to have led them into the Error: And asserts, that it may be propagated by Seed on any Tree whatever. The Method too is very easy. About Christmas, when the Berries are full ripe, you need only apply them on the smooth Bark of any Tree; the viscid Juices they are encompass'd withal, will make them stick; and, provided the Birds do not devour the Seed, you may, without any further Trouble, expect a young Plant the following Year.

Others rather chuse to account for the Propagation of *Mistletoe* from the System hereafter advanced for that of Mushrooms. See MUSHROOM.

For the Virtues of *Mistletoe*, it seems of the most Efficacy in the Epilepsy; against which some will have it a Specific. Dr. *Colbatch* has wrote expressly to prove it such. It is also prescribed in Apoplexies, Lethargies, and Vertigos; and wore about the Necks of Children to prevent Convulsions, and ease the cutting of their Teeth.

The best is the *Mistletoe of the Oak*; tho' it is not this which is commonly used, but that of the Apple or Pear-Tree. Mr. *Bradley* observes, that there is no Variety in this Plant, but that the Leaves, Flowers, Fruit, &c. are all alike on whatever kind of Tree it grows: But others pretend to distinguish that of the Oak by several particulars.

The Virtues ascribed to the *Mistletoe*, may perhaps be the Remains of the Religious Honours paid it by the ancient Gauls; among whom the Druids, assembled constantly on the first Day of the Year, went in quest thereof with Hymns, and other Ceremonies and Rejoycings, distributing it again among the People, as a Thing sacred, after having first consecrated it, crying *Au guy l'An neuf*, to proclaim the new Year. See DRUIDS.

The Cry is still kept up at *Picardy*, where they add *Plantez*, to wish a plentiful new Year.

M. *Perrault* observes, that the *Mistletoe* is full of a poisonous Juice, which weakens the Tree whereon it grows; and that the Fruit has always a disagreeable Taste while it sticks on it.

MISSEN-Mast of a Ship, is a Mast, or round long piece of Timber, standing in the sternmost part. See MAST.

Some great Ships require two *Missem*.

Next the Main-Mast, is the *Main-Missem*; and that next the Poop, is call'd the *Bonaventure-Missem*. When at Sea they use the Word *Missem* alone, they always mean the *Missem* and not the Mast.

To change the *Missem*, is to bring the *Missem-Tard* over to the other side the Mast. To peck the *Missem*, is to pull the *Missem* right up and down the Mast. To spell the *Missem*, &c.

MISSION, a Term in Theology used to signify a Power or Commission to preach the Gospel. See GOSPEL.



Jesus Christ gave his Disciples their *Mission* in these Words, *Go, and teach all Nations, &c.*

The *Romanists* reproach the *Protestants*, that their Ministers have no *Mission*; as not being authorized in the Exercise of their Ministry, either by an uninterrupted Succession from the Apostles, or by Miracles; or by any extraordinary Proof of a Vocation.

The *Anabaptists* deny any other *Mission* necessary for the Ministry than the Talents necessary to discharge it.

*Mission* is also used for divers Establishments of People zealous for the Glory of God, and the Salvation of Souls, who go and preach the Gospel in remote Countries, and among Infidels. See *MISSIONARY*.

There are *Missions* in the East, as well as the West-Indies.

Among the *Romanists*, the Religious Orders of St. Dominic, St. Francis, St. Augustin, and the *Jesuits*, have *Missions* in the Levant, America, &c.

The *Jesuits* have *Missions* in China, and all other parts of the Globe, where they have been able to penetrate.

The Mendicants abound in *Missions*.

*MISSION* is also the Name of a Congregation of Priests, and Laymen, instituted by Vincent de Paul, and confirmed in 1526 by Pope Urban VIII. under the Title of Priests of the Congregation of the Mission.

These profess to make it their whole Business to assist the poor People in the Country; and to this purpose oblige themselves never to preach, or administer any of the Sacraments in any Town where there is an Archbishop, Bishop, or Provincial residing.

They are settled in most Provinces of France, Italy, Germany, and in Poland.

At Paris they have a Seminary which they call the Foreign Mission, where Youth are bred up and qualify'd for foreign *Missions*.

*MISSIONARY*, an Ecclesiastic who devotes himself and his Labours to some *Mission*, either for the Instruction of the Orthodox, the Conviction of Heretics, or the Conversion of Infidels.

*MISSIVE*, something sent to another. The Word is form'd from the Latin *Mitto*, I send.

In this sense we say *Missive* Letters, or Letters *Missive*, i. e. Letters sent from one to another. See *LETTER*.

In propriety, Letters *Missive* are Letters of Business; but not Business of great concern; in contradistinction from Letters of Gallantry, Letters on Points of Learning, Dispatches, &c.

*MIST*, a Meteor, call'd also Fog. See *Fog*.

*MISY*, in Natural History, see *CHALCITIS*.

*MITE*, a small Coin, formerly current; equal to about one third part of a Farthing. See *MONEY* and *COIN*.

*MITE* is also a small Weight used by the Moneyers. It is equal to the twentieth part of a Grain, and is divided into 24 *Doits*. See *WEIGHT*.

*MITHRIDATE*, in Pharmacy, an Antidote, or Composition serving either as a Remedy or a Preservative against Poisons.

*Mithridate* is one of the capital Medicines in the Apothecaries Shops; being composed of a vast Number of Drugs, as Opium, Myrrh, Agaric, Saffron, Ginger, Cinnamon, Spikenard, Frankincense, Castor, Pepper, Gentian, &c.

It is accounted a Cordial, Opiate, Sudorific and Alexipharmic.

*Martialis* says it is more effectual against Poisons than Venice-Treacle; tho' easier to be made. See *POISON*.

It takes its Name from its Inventor, *Mithridates* King of Pontus, who is said to have so fortify'd his Body against Poisons with Antidotes and Preservatives, that when he had a mind to dispatch himself, he could not have any Poison that would have effect.

The Receipt of it was found in his Cabinet, written with his own Hand, and was carried to Rome by Pompey. It was translated into Verse by Democritus, a famous Physician, and was afterwards translated by Galen, from whom we have it: Tho' there is room to imagine it has undergone considerable Alterations since the time of its Royal Prescriber.

*MITRALES Valvule*, *MITRAL Valves*, in Anatomy, two Valves in the Heart; thus call'd from their resembling a Mitre. See *VALVE* and *Heart*.

They are placed at the Orifice of the Pulmonary Vein, in the left Ventricle of the Heart. Their Office is to close the Orifice thereof, and prevent the return of the Blood through the Pulmonary Vein into the Lungs again. See *PULMONARY Vein*, *CIRCULATION*, &c.

*MITRE*, a Pontifical Ornament, wore on the Head by Bishops, and certain Abbots, on Solemn Occasions. See *BISHOP*, *ABBOT*, &c.

The Mitre is a round Cap, pointed, and cleft a-top with two Fannels hanging down the Shoulders.

The Abbots wear the Mitre turned in Profile; and bear the Crozier inwards, to shew that they have no spiritual Jurisdiction without their own Cloisters.

The Pope has granted to some Canons of Cathedrals the Privilege of wearing the *Mitre*. The Counts of Lyons are said to have assisted at Church in *Mitres*.

In Germany, several great Families bear the *Mitre* for their Crest; to shew that they are Advocates, or Feudatories of antient Abbies, or Officers of Bishops, &c.

The Pope has four *Mitres*, which are more or less rich according to the Solemnity of the Feast-Days they are to be worn on.

The *Mitre* was originally the Women's Head-Dress, as the Hat was that of the Men. This appears from *Servius*, who reproaches the Trojans, or Phrygians, that were dress'd like Women, and wore *Mitres*;

*Et Tunicae Manicas, & habent redimicula Mitrae.*

The Cardinals antiently wore *Mitres*, before the Hat which was first granted them by the Council of Lyons in 1245.

Authors make no mention of the *Mitre* as an Episcopal Ornament before the Year 1000.

The Word comes from the Latin *Mitra*, of the Greek *μῖτρα*.

*MITRE*, in Architecture, is the Work-men's Term for an Angle, that is just 45 Degrees; or half a right one.

If the Angle be a quarter of a right Angle, they call it a *Half Mitre*.

To describe such Angles, they have an Instrument call'd the *Mitre Square*; with this they strike *Mitre-Lines* on their Quarters, or Battens: And for dispatch, have a *Mitre-Box*, as they call it, which is made of two pieces of Wood, each about an Inch thick, one nailed upright on the Edge of the other; the upper piece hath the *Mitre-Lines* struck upon it on both sides, and a Kerf to direct the Saw in cutting the *Mitre* Joints readily, by only applying the Piece into this Box.

*MITRED Abbots*, see *ABBOT*.

*MITTIMUS*, in Law, a Writ, by which Records are transfer'd from one Court to another; sometimes immediately, as out of the King's Bench into the Exchequer; and sometimes by a *Certiorari* into the Chancery, and from thence by a *Mittimus* into another Court.

The Word is also used for a Precept directed by a Justice of Peace to a Goaler, for the receiving and safe keeping a Felon, or other Offender, by him committed to the Goal.

*MIXT*, or *Mixt Body*, in Philosophy, is that which is compounded of divers Elements, or Principles; in contradistinction to those which the Chymists suppose to be *Elementary*, or consisting of one Principle only; as they take Sulphur, Salt, &c. to be. See *ELEMENT*.

The Schoolmen define a *Mixt Body* to be a Whole, resulting from several Ingredients, alter'd, or new modified by the Mixture. On which Principle, the several Ingredients don't actually exist in the *Mixt*, but are all changed, so as to conspire to a new Body of a different Form, from the Forms of the Ingredients. But the modern Philosophers rarely conceive the Term in so much strictness.

The Business of Chymistry, we say, is to resolve *Mixt Bodies* into their Principles, or component Parts. See *PRINCIPLE*, *CHYMISTRY*, &c.

The School-Philosophers distinguish *Mixt Bodies* into *Perfect* and *Imperfect*. *Perfect Mixts* are the Class of Vital or Animated Bodies, where the Elements or Ingredients they are composed of, are changed or transformed by a perfect Mixture. Such are Plants, Beasts, and Men.

*Imperfect Mixts* are inanimate Bodies, the Forms whereof remain still the same as of the Ingredients that constitute them: Such are Meteors, Minerals, Metals, &c.

*Mixt Figure*, in Geometry, is that which consists partly of right Lines, and partly of curve Lines. See *FIGURE*.

*Mixt Number*, in Arithmetic, that which is partly an Integer, and partly a Fraction; as 4  $\frac{1}{2}$  to  $\frac{1}{4}$ . See *FRACTION*.

*Mixt Action*, in Law, is an Action of two different Natures; being partly real, and partly personal. See *ACTION*, *real*, *personal*.

A *Mixt Action* is that which lies both for the Thing detained; and against the Person of the Detainer.

Or a *Mixt Action* is that which seeks both the Recovery of a thing we are unjustly deprived of; and Damages, or a Penalty for the unjust detainment thereof. Such are Actions of Waste, and Quare Impedit; Actions for Tithes on the Statute 2 & 3 Edw. 6. &c.

*Mixt Tithes*, are those of Cheese, Milk, &c. and of the Young of Beasts. See *TITHES*.

*Mixt Mode*, according to Mr. Lock, is a Combination of several simple Ideas of different Kinds. See *IDEA* and *MODE*.

Thus, Beauty, as it consists in a certain Composition of Colour, Figure, Proportion, &c. of different Parts, causing Delight to the Beholder, is a *Mixt Mode*. Such also is Theft, Murder, &c. See *MODE*.

The Mind, that Author observes, being once furnished with simple Ideas, can put them together in several Compositions, without examining whether they exist so in Nature.



ture together. And hence it is that these Ideas are call'd Notions; as if they had their Original and constant Existence more in the Thoughts of Men, than in the Reality of Things; and that to form such Ideas, it sufficed that the Mind put the Parts of them together; and that they were consistent in the Understanding, without considering whether they had any real Being.

There are three ways whereby we get these complex Ideas of *Mixt Modes*. First, By Experience and Observation of Things themselves: Thus by seeing two Men wrestle, we get the Idea of Wrestling. Secondly, By Invention, or voluntary putting together of several simple Ideas in our own Mind: So he that first invented Printing, had an Idea of it first in his Mind before ever it existed. Thirdly, By explaining the Names of Actions we never saw, or Notions we cannot see; and by enumerating all those Ideas which go to the making them up.

Thus the mixt *Mode* which the Word *Lie* stands for, is made up of these simple Ideas; First, Articulate Sounds. Secondly, Certain Ideas in the Mind of the Speaker. Thirdly, Those Words, the Signs of these Ideas; Fourthly, Those Signs put together by Affirmation, or Negation, otherwise than the Ideas they stand for are in the Mind of the Speaker, since the Language was made.

Complex Ideas are usually got by the Explication of those Terms that stand for them. For since they consist of simple Ideas combined, they may by Words standing for those simple Ideas be represented to the Mind of one who understands those Words, tho' that Combination of simple Ideas was never offer'd to his Mind by the real Existence of Things.

*Mixt Ratio*, or *Proportion*, is when the Sum of the Antecedent and Consequent is compared with the difference between Antecedent and Consequent; as if  $\frac{3}{a} : \frac{4}{b} : \frac{12}{c} : \frac{16}{d}$

$\frac{7}{a \times b} : \frac{1}{a \times b} : \frac{28}{c \times d} : \frac{4}{c \times d}$ . See *RATIO*.

*MIXTION*, the Act of *Mixing*; or the Union and Coa-  
lition of divers Corpuscles into one Body. See *MIXT*.

The *Peripatetics*, who hold an Alteration essential to *Mixtion*, define it the Union of several alter'd Ingredients, or Miscibles.

*Mixtion* makes a considerable Operation in the Chymical and *Galenical* Pharmacy.

*MIXTURE*, in a Philosophical sense, is an Assemblage, or Union of several Bodies of different Properties, in the same Mass.

To determine the Ratio of the Ingredients of a *Mixture*, is that celebrated Problem proposed by *Hiero* King of *Syracuse* to *Archimedes*, on occasion of a Crown of Gold wherein the Workman had fraudulently mix'd Silver; the Solution whereof was matter of so much Transport to that divine Mechanic.

It may be determined thus:

Weigh the *Mixture*, immerse it in some Fluid; and find the Weight it loses therein. (See *SPECIFIC Gravity*.) Then find what Weight any determinate Quantity of either Ingredient loses in the same Fluid: And by the Rule of Three find what Weight each ought to lose therein, were its Weight equal to that of the *Mixture*. Subtract the less Loss from the greater, which will give the Excess where-with the Loss of the lighter exceeds that of the heavier. Then subtract the Weight lost by the heavier, from that lost by the whole *Mixture*, to find the Excess of the Weight lost by the *Mixture* beyond that lost by the heavier.

*MIXTURE*, in Matters of Drapery, the Union, or rather Confusion of several Wools of different Colours, not yet spun.

Hence a *Mixture*, or mix'd Stuff, is that whose Woof and Warp are of Wools of different Colours dy'd and mix'd before they were spun.

*MOAT*, in Fortification, call'd also *Foss* and *Ditch*, a hollow Space or Ditch dug round a Town, or Fortress to be defended, on the outside the Wall or Rampart. See *RAMPART*.

The Length and Breadth of the *Moat* often depends on the nature of the Soil; according as it is Marshy or Rocky.

A *Dry MOAT* is that which is destitute of Water, and ought to be deeper than one which is full of Water.

A *Lined MOAT* is that whose Scarp and Counterscarp are cased with a Wall of Mason's Work lying a-slope.

A *Flat-bottom'd MOAT* is that which hath no sloping, its Corners being somewhat rounded.

The Brink of the *Moat* next the Rampart in any Fortification is call'd the *Scarp*, and the opposite one the *Counterscarp*. See *SCARP* and *COUNTERSCARP*.

*MOATAZALITES*, a Religious Sect among the *Turks*.

There are two Opinions among the *Turkish* Divines concerning God. The first admit Metaphysical Forms, or Attributes; as that God has a Wisdom by which he is Wise; a Power by which he is Powerful; an Eternity by which he is Eternal, &c.

The Second allow God to be Wise, Powerful, Eternal; but will not allow any Form in God; for fear of admitting a multiplicity.

Those who follow this latter Opinion are call'd *Moatazites*: They who follow the former, *Sephalites*.

*MOBILE*, Moveable; any thing susceptible of Motion, or that is disposed to be moved either by itself, or by some other prior *Mobile*, or Mover.

*Primum MOBILE* in the antient Astronomy, was a ninth Heaven, or Sphere, imagined above those of the Planets and fixed Stars. See *SPHERE*.

This was supposed to be the first Mover, and to carry all the lower Spheres round along with it; by its Rapidity communicating to 'em a Motion whereby they revolved in twenty-four Hours. But the diurnal Revolution of the Planets is now accounted for without the Assistance of any such *Primum Mobile*.

*Perpetuum MOBILE*, see *PERPETUAL Motion*.

*MOBILIA Bona*, in the Civil Law, are what in Common Law, &c. we call *Moveables*, or *Moveable Goods*. See *MOVABLES*.

*MOBILITY*, in the Schools, &c. an Aptitude, or Facility to be moved.

The *Mobility* of Mercury is owing to the smallness and sphericity of its Particles; and is that which renders its Fixation so difficult. See *MERCURY* and *FIXATION*.

The Hypothesis of the *Mobility* of the Earth is the most plausible; and is that commonly admitted, by the latter Astronomers. See *EARTH*.

Pope *Paul V.* appointed Commissioners to examine the Opinion of *Copernicus* touching the *Mobility* of the Earth. The Result of their Enquiry, was, a Prohibition to assert, not that the *Mobility* was possible, but that it was actually true. That is, they allow'd the *Mobility* of the Earth to be held as an Hypothesis which gives an easy and sensible Solution of the Phenomena of the heavenly Motions; but forbade the *Mobility* of the Earth to be maintain'd as a Thesis, or a real effective thing; by reason they conceiv'd it contrary to Scripture.

*MODAL*, in Logic, &c. a Term apply'd to Propositions containing certain Conditions, or Restrictions. See *CONDITIONAL*.

*MODE*, or *MOOD*, in Philosophy, a Manner of Being; or a Quality, or Attribute of a Substance, or Subject, which we conceive as necessarily depending on the Subject, and incapable of subsisting without it. See *SUBSTANCE*.

Mr. *Lock* defines *Modes* to be those Ideas (he should have said *Things*) which don't imply any supposition of subsisting by themselves, but are consider'd as mere dependences and affections of Substances.

Our Ideas of things may be reduced to two Kinds: The one of Things which we conceive separately, and by themselves, call'd *Substances*; and the other of Things which we conceive as existing in others, in such manner as that we cannot allow them existence without 'em; and these we call *Modes*, or *Accidents*. See *ACCIDENT*.

Thus, when we reflect on Wax, and Roundness; we consider the Wax as a thing which may subsist without the Roundness; Wax therefore we denominate a *Substance*: on the contrary, we consider *Roundness* so dependant on the Wax, that it can't subsist without it, there being no conceiving of Roundness distinct and separate from a round Body: This therefore we call a *Mode*, or *Accident*. See *IDEA*.

It is the Characteristic, then, of a true *Mode*, to have such a relation to some Subject, as not to be clearly and distinctly conceivable without conceiving the Subject, whereof it is a *Mode*, at the same time: When, on the other hand, the conception of the Subject does not at all infer or require that of the *Mode*. See *SUBSTANCE*.

Thus, what gives us to know that Thought is not a *Mode* of extended Substance, or Matter, is, that Extension, and the other Properties of Matter may be divided from Thought, without ceasing to conceive Thought all the while. See *THINKING*, *EXTENSION*, &c.

We always consider Things as clothed with certain *Modes*; except when we reflect on the Abstract, or General: And it is the Variety of *Modes*, and Relations, that occasions the great Variety of Denominations of the same thing. It is the various *Modes* of Matter, e. g. that make all the Diversity of Bodies, or corporeal Beings in Nature. See *RELATION*, *MATTER*, &c.

There are various Divisions and Kinds of *Modes*: One of the most common, is into *Internal* and *External*.

*Internal Modes* are those inherent in the Substance, as Roundness in the Bowl; Flatness in the Nose; Crookedness in the Finger, &c.

These, we have observ'd, cannot exist, nor even be conceiv'd without the Subject, as being only Circumstances thereof, or even, according to some, only the Subject itself consider'd, not simply, but as such. Thus the Roundness of the Bowl, is only the Bowl itself consider'd as round, &c.



**External MODES** are those extraneous to the Subject ; as when we say a thing is desir'd, lov'd, beheld, &c. These coincide with what we call *Relations*.

Add, that there are *Modes* which are likewise Substances, as Apparel, Hair, &c. which may subsist without the Subject.

Mr. Lock divides *Modes* into *Simple* and *Compound*.

**Simple MODES** are Combinations of simple Ideas of the same Kind, or even of the same simple Ideas divers times repeated ; as a Dozen, a Score, &c. which are only the Ideas of so many distinct Units put together.

**Mixed MODES** are Combinations of simple Ideas of several Kinds ; as in *Beauty*, which consists in a certain Composition of Colour, Figure, &c. *Theft*, which is the conceal'd Change of the Possession of any thing without consent of the Proprietor, &c.

With regard to *Simple Modes* ; that Author observes, that the Modifications of any simple Idea are as perfectly different and distinct Ideas in the Mind as those the most remote and inconsistent. Thus *two* is as distinct from *three*, as *Blindness* from *Heat*. With this View he examines the *Simple Modes* of Space.

*Space* is a simple Idea, which we get both by Sight and Touch : When we consider it barely in Length between two Bodies, it is call'd *Distance* : When in Length, Breadth, and Thickness, it may be call'd *Capacity* : When consider'd between the Extremities of Matter, which fills the Capacity of Space with something solid, tangible, and moveable, it is call'd *Extension* ; and thus Extension will be an Idea belonging to Body : But Space may be conceived without it. Each different Distance is a different Modification of Space ; and each Idea of any different Space, is a simple *Mode* of this Idea. Such are an Inch, Foot, Yard, &c. which are the Ideas of certain stated Lengths, which Men settle in their Minds for the Use, and by the Custom of Measuring. When these Ideas are made familiar to Men's Thoughts, they can in their Minds repeat them as often as they will, without joining to them the Idea of Body, and frame to themselves the Ideas of Feet, Yards, and Fathoms, beyond the utmost Bounds of all Bodies, and by adding these still to one another, enlarge their Idea of Space, as much as they please.

From this Power of repeating any Idea of Distance, without being ever able to come to an end, we come by the Idea of Immensity. See **EXTENSION, DISTANCE, MEASURE, &c.**

Another *Mode*, or Modification of Space, is taken from the relation of the Parts of the Termination of Extension, or circumscrib'd Space amongst themselves ; and this is what we call *Figure*. This, the Touch discovers in sensible Bodies, whose Extremities come within our reach ; and the Eye takes, both from Bodies and Colours whose Boundaries are within its view ; where, observing how the Extremities terminate, either in straight Lines, which meet at discernible Angles ; or in crooked Lines, wherein no Angles can be perceived ; by considering these as they relate to one another in all parts of the Extremities of any Body or Space, it has the Idea we call *Figure* : Which affords to the Mind infinite Variety. See **FIGURE**.

Another *Mode* belonging to this Head, is that of *Place*. Our Idea of Place is nothing but the relative Position of anything, with reference to its distance from some fixed and certain Points : Whence we say, that a thing has, or has not changed Place, when its distance either is, or is not alter'd with respect to those Bodies, with which we have occasion to compare it. That this is so, we may easily gather from hence ; that we can have no Idea of the Place of the Universe : tho we can of all its Parts. See **PLACE**.

Another *Mode* of Space, is the Idea which we get from the fleeting, and perpetually perishing Parts of Succession, which we call *Duration*. The *Simple Modes* of it are any different Lengths of it, whereof we have distinct Ideas, as Hours, Days, Years, &c. Time, and Eternity. The Idea of *Succession* is got by reflecting on that train of Ideas, which constantly follow one another in our Minds, as long as we are awake. See **SUCCESSION**.

The distance between any Parts of this Succession is what we call *Duration* : And the Continuation of the Existence of ourselves, or any thing else commensurate to the Succession of any Ideas in our Minds, is what we call our own Duration, or that of another thing co-existing with our thinking.

A Man having once got this Idea of Duration, can apply it to things which exist, while he doth not think : And thus we measure the time of our Sleep, as well as that wherein we are awake. See **DURATION**.

In regard to some other *Simple Modes*, Mr. Lock observes, That the Mind has several distinct Ideas of Sliding, Rolling, Walking, Creeping, &c. which are all but the different Modifications of Motion. Swift and Slow are two different Ideas of Motion, the Measures whereof are made

out of the Distances of Time and Space put together. The like Variety we have in Sounds ; every articulate Word is a different Modification of Sound, as are all Notes of different length put together, which make that complex Idea call'd Time. See **TIME**.

The *Modes* of Colours might be also very various ; some of which we take notice of as the different Degrees, or as they are termed, Shades of the same Colour. But since we seldom make Assemblages of Colours without taking in Figure also, as in Painting, &c. those which are taken notice of, do most commonly belong to mix'd *Modes*, as Beauty, Rainbow, &c. All compounded Tastes and Smells are also *Modes* made up of the simple Ideas of those Senses.

As to the *Modes of Thinking* ; when the Mind turns its view inward upon itself, Thinking is the first Idea that occurs, wherein it observes a great Variety of Modifications ; and therefore frames to itself distinct Ideas.

Thus the Perception annex'd to any Impression on the Body made by an external Object, is call'd *Sensation*. Where an Idea recurs without the presence of the Object, it is call'd *Remembrance*. When sought after by the Mind, and brought again in view, it is call'd *Recollection*. When held there long under attentive Considerations, it is call'd *Contemplation*. When Ideas float in the Mind without regard or reflection, it is call'd in French, *Rejvery*. When the Ideas are taken notice of, and, as it were, register'd in the Memory, it is *Attention*. When the Mind fixes its view on any one Idea, and considers it on all sides, it is *Intention* and *Study*.

Of these various *Modes* of Thinking, the Mind forms as distinct Ideas, as it does of White and Red, a Square, or a Circle.

For *Mix'd MODES*, there are three ways whereby we get the complex Ideas thereof. 1. By Experience and Observation of things themselves ; thus by seeing two Men wrestle, we get the Idea of Wrestling. 2. By Invention, or voluntary putting together of several simple Ideas in our own Minds ; so he that first invented Printing, had an Idea of it first in his Mind, before ever it existed. 3. By explaining the Names of Actions we never saw, or Notions we cannot see ; and by enumerating all those Ideas, which go to the making them up : Thus the mix'd *Mode* which the Word *Lie* stands for, is made up of these simple Ideas : (1.) Articulate Sounds. (2.) Certain Ideas in the Mind of the Speaker. (3.) Those Words, the Signs of these Ideas. (4.) Those Signs put together by Affirmation, or Negation, otherwise than the Ideas they stand for are in the Mind of the Speaker.

*Mixt Modes* have their Unity from an Act of the Mind, combining those several simple Ideas together, and considering them as one complex one : The Mark of this Union is one Name given to that Combination. Men seldom reckon any number of Ideas to make one complex one, but such Collections, as there be names for. Thus, the Killing of an old Man is as fit to be united in one complex Idea, as that of a Father ; yet there being no Name for it, it is not taken for a particular complex Idea ; nor a distinct Species of Action from that of Killing any other Man : Those Collections of Ideas have Names generally affixed, which are of frequent use in Conversation ; in which Cases Men endeavour to communicate their Thoughts to one another, with all possible dispatch. Those others, which they have seldom occasion to mention, they lay not together, nor give them Names.

This gives the Reason, why there are Words in every Language, which cannot be rendred by any one single Word of another. For the Fashions and Customs of one Nation make several Combinations of Ideas familiar in one, which another had never any occasion to make. Such were, *Ορεισμοί*, among the Greeks ; and *Proscriptio* among the Romans. This also occasions the constant Change of Languages ; because the Change of Custom and Opinion brings with it new Combinations of Ideas, which, to avoid long Descriptions, have new Names annexed to them, and so they become new Species of *Mixed Modes*.

Of all our simple Ideas, those which have had most mixed *Modes* made out of them, are Thinking, and Motion, (which comprehend in them all Action) and Power, from whence these Actions are conceived to flow. For Actions being the great Business of Mankind, it is no wonder that the several *Modes* of Thinking and Motion, should be taken notice of ; and the Ideas of them observed, and laid up in Memory, and have Names assigned them. For without such complex Ideas with Names to them, Men could not easily hold any Communication about them.

Of this kind are the *Modes* of Actions distinguish'd by their Causes, Means, Objects, Ends, Instruments, Time, Place, and other Circumstances ; as also of the Powers fitted for those Actions. Thus Boldness is the Power to do or speak what we intend, without Fear or Disorder ; which Power of doing any thing, when it hath been acquir'd by frequent doing the same thing, is that Idea we call *Habit* ;



bit; and when forward and ready upon every Occasion, to break into Action, we call it *Disposition*: Thus Tenderness is a Disposition or Aptness to be angry. Power being the Source of all Action, the Substances, wherein those Powers are, when they exert this Power, are call'd *Causes*: And the Substances thereupon produced, or the simple Ideas introduced into any Subject, *Effects*. The Efficacy whereby the new Substance or Idea is produced, is call'd in the Subject exerting that Power, *Action*; in the Subject wherein any simple Idea is changed, or produced, *Passion*. Which Efficacy in intellectual Agents; we can conceive to be nothing else, but *Modes* of Thinking and Willing: In corporeal Agents, nothing else but Modifications or Motions.

Whatever sort of Action, besides these, produces any Effect, we have no Notion or Idea of. And, therefore, many Words which seem to express some Action, signify nothing of the Action, but barely the Effect, with some Circumstances of the Subject wrought on, or Cause operating: Thus Creation, and Annihilation, contain in them no Idea of the Action, or Manner whereby they are produced, but barely of the Cause, and the Thing done. And when a Country-man says, the Cold freezes Water, though the word, *Freezing*, seem to import some Action, yet it truly signifies nothing but the Effect, *viz.* that the Water that was before fluid, is become hard and consistent; without intimating any Idea of the Action whereby it is done.

In *Mixed Modes*, it is the Name that seems to preserve their Essences, and to give them their lasting Duration. The Collection of Ideas is made by the Mind; but the Name is, as it were, the Knot which ties them fast together: Hence we seldom take any other for distinct Species of *mixed Modes*, but such as are set out by Names. We must observe, that the Names of *mixed Modes* always signify the real Essences of their Species; which being nothing but the abstract complex Ideas, and not refer'd to the real Existence of Things, there is no supposition of any thing more signified by any Name of a *mixed Mode*, but barely that complex Idea, the Mind itself has form'd; which when the Mind has form'd, is all it would express by it, and is that on which all the Properties of the Species depend, and from which alone they flow; and so, in these, the real and nominal Essence is the same.

This also shews the Reason, why the Names of *mixed Modes* are commonly got, before the Ideas they stand for are perfectly known; because there being no Species of these ordinarily taken notice of, but such as have Names, and those Species being complex Ideas made arbitrarily by the Mind, it is convenient, if not necessary, to know the Names, before we learn the complex Ideas; unless a Man will fill his Head with a company of abstract complex Ideas, which others having no Names for, he has nothing to do with, but to lay by, and forget again. In the beginning of Languages, it was necessary to have the Idea, before one gave it the Name; and so it is still, where a new complex Idea is to be made, and a Name given it. In simple Ideas, and Substances, it is otherwise; which being such Ideas, as have real Existence and Union in Nature, the Ideas or Names are got, one before the other, as it happens.

The Schoolmen make numerous other Divisions of *Modes*; as into *Immediate* and *Mediate*: *Essential* and *Non-Essential*: *Positive* and *Privative*: Of *Spirit* and of *Body*: Of *Thinking*, and of *Having*.

*Immediate Modes* are those immediately attributed to their Subjects or Substances.

*Mediate Modes* are those attributed to Subjects by the intervention of some other *Mode*.

Thus, *e. gr.* Motion is an immediate *Mode* of the Body; Knowledge of the Mind, &c.

But Swiftness and Slowness are not immediately attributable to the Body; but only to the Body in respect of the Motion.

*Essential, or Inseparable Modes*, are Attributes without which the Substance cannot exist; as Wisdom, Goodness, Power, &c. in God: Figure, Place, Quantity, Extension, &c. of Body. See *ATTRIBUTE*.

*Non-Essential, or Separable Modes*, are Attributes affecting created Substances, and remaining affix'd thereto so long as it is necessary; such are Coldness, of Water: Hardness, of Stone: Whiteness, of Milk, &c.

*Positive Modes*, are those which give something real, positive, and absolute to their Substances. Thus Roundness is a positive *Mode* of a Globe, &c.

*Privative Modes* are attributed to Subjects, when the Mind perceiving some Attributes wanting therein, frames a Word, which at first sight seems to note something positive, but which in reality only notes the want of some Property, or *Mode*. Thus a Privation of Light is attributed to a blind Man, &c.

*Modes of Spirit* are two, *viz.* Cognition, or Knowledge; and Willing. See *KNOWLEDGE* and *WILLING*.

*Modes of Body* are three, *viz.* Figure, Rest, and Motion. See *FIGURE*, *REST*, and *MOTION*.

*Modes of Thinking* are the same with Essential Attributes or *Modes*. See *Essential Mode*.

*Modes of Having*, are those whereby any thing may be had by another.

Aristotle enumerates seven of these: A thing, for instance, may be had either by the *Mode* of Quality, as Knowledge; by that of Magnitude, as Circumference; by the *Mode* of Part, as the Hand, &c.

*Mode* is also used in Logic, for the Modification of a Proposition; or that which renders it *Modal* and *Conditional*. See *CONDITIONAL*.

*Mode* in Grammar, } See *MOOD*.

*Mode* in Logic, }

*Mode* in Music, is defined by some Authors; the particular Manner of constituting the Octave; or the melodious Constitution of the Octave, as it consists of seven Essential, or Natural Notes besides the Key, or Fundamental. See *OCTAVE*.

A *Mode*, then, is not any single Note, or Sound; but the particular Order of the concinnous Degrees of an Octave: The fundamental Note whereof may, in another sense, be call'd the *Key*, as it signifies that principal Note which regulates the rest.

The proper difference between a *Mode* and a *Key*, consists in this, that an Octave with all its natural and concinnous Degrees, is call'd a *Mode*, with respect to the Constitution; or the manner and way of dividing it; and with respect to the place of it in the Scale of Music, that is, the Degree or Pitch of Tune, it is call'd a *Key*: that is, an Octave of Sounds may be rais'd in the same Order, and Kind of Degrees which makes the same *Mode*, and yet be begun higher or lower; that is, be taken at different Degrees with respect to the whole, which makes different *Keys*: and from the same Definition it follows, that the same *Key* may be found with different *Modes*; that is, the Extremes of two Octaves may be in the same Degree of Tune, and the Division of 'em different. See *KEY*.

Now it may be further observed, that of the natural Notes of every *Mode*, or Octave, three go under the Name of the essential Notes in a peculiar manner, *viz.* the Fundamental, the Third, and Fifth; their Octaves being reckon'd the same, and mark'd with the same Letters in the Scale: the rest are particularly call'd Dependents. Again, the Fundamental is also call'd the final; the Fifth the Dominante; and the Third, as being between the other two, the Mediant. See *KEY*.

The Doctrine of the Antients with regard to *Modes*, which they sometimes also call *Tones*, is somewhat obscure; there being an unaccountable Difference among their Authors as to the Definitions, Divisions, and Names of their *Modes*. They agree indeed, that a *Mode* is a certain System or Constitution of Sounds; and that an Octave, with all its intermediate Sounds, is such a Constitution: but the specific differences of Tones, some place in the manner of Division, or Order of its concinnous parts; and others merely in the different Tension of the Whole, *i. e.* as the whole Notes are acuter or graver, or stand higher or lower in the Scale of Music.

Boethius is very dark on this head; and defines a *Mode* to be, as it were, an intire Body of Modulation, consisting of a Conjunction of Consonances, as the Diapason.

Ptolemy makes the *Modes* the same with the Species of the Diapason; but at the same time speaks of their being at some distance from each other. Some contended for thirteen, some for fifteen *Modes*, which they placed at a Semitone's distance from each other; but it is plain, those understood the differences to be only in their place or distances from each other; and that there is one certain harmonious Species of Octave apply'd to all, *viz.* that Order which proceeds from the *Proslambanomenos* of the *Sytema lambanomenon*, or the A of the modern System. Ptolemy argues that if this be all, they may be infinite, tho' they must be limited for Use and Practice. But, indeed, much the greater part define them by the Species *Diapason*; and therefore only make seven *Modes*; but as to their Use, we are left intirely in the dark.

If the *Modes* be nothing but the seven Species of Octaves, the Use of 'em can only be, that the *Proslambanomenos* of any *Mode* being made the principal Note of any Song, there may be different Species of Melody answering to those different Constitutions. But then we are not to conceive that the *Proslambanomenos*, or Fundamental of any *Mode* is fixed to any particular Chord of the System, *e. g.* the *Phrygian* to g; so that we must always begin there, when we would have a piece of Melody of that Species. When we say in general, that such a *Mode* begins in c, it is no more than to signify the Species of Octave as they appear in a certain fix'd System; but we may begin in any Chord of the System, and make it the *Proslamb.* of any *Mode* by



by adding new Chords, or altering the tuning of the old. If this were the true nature, and use of the Tones, most of these *Modes* must be imperfect, and incapable of good Melody, as wanting some of those which we reckon the essential and natural Notes of a true *Mode*. Again, if the essential difference of the *Modes* consist only in the Gravity or Acuteness of the whole Octave, then we may suppose one Species or concinnous Division of the Octave, which being apply'd to all the Chords of the System, makes them true Fundamentals for a certain Series of successive Notes, by changing, as above, the Tone of certain Chords in some cases, or by adding new Chords to the System. But that must have been a simple kind of Melody, produced by admitting only one concinnous Series, and that too wanting some useful and necessary Chords.

Music was considerably improved in the XIth Century, by *Guido Aretinus*; who, among other Innovations, reformed the Doctrine of *Modes*. It is true, they were still defined by the Species of the Octave, in *Ptolemy's* manner, and their number was fix'd to seven; but afterwards taking occasion to consider the Harmonical and Arithmetical Divisions of the Octave, whereby it resolves into a 4th above a 5th, or a 5th above a 4th, they hence constituted 12 *Modes*, making of each Octave two different *Modes*, according to this different Division; but because there are two of them that cannot be divided both ways, there are but 12 *Modes*. Of these, such as were divided harmonically, that is, with the 5th lowest (which were six) were call'd *Authentic*; and the other six which had the 5th highest, were call'd *Plagal Modes*. See the Scheme annex'd.

| Plagal. | Authentic. |
|---------|------------|
| 8ve.    | 8ve.       |
| 4th     | 5th        |
| 4th     | 4th        |
| c — c   | c — c      |
| d — d   | d — d      |
| e — e   | e — e      |
| f — f   | f — f      |
| g — g   | g — g      |
| a — a   | a — a      |

To these *Modes*, they gave the Names of the ancient *Greek* Tones, as *Dorian*, *Phrygian*, *Lydian*: But the several Authors differ in the Application and Order of these Names. So that we are still in great measure at a loss what they meant by those distinctions, and what their real use was. The best Account we can give is this; They consider'd that an Octave which wants a 4th or 5th, is imperfect; these being the Concords next to Octave, the Song ought to

touch those Chords most frequently and remarkably; and because their Concord is different, which makes the Melody different, they established by this two *Modes* in every natural Octave that had a true 4th and 5th: Then, if the Song was carried as far as this Octave above, it was call'd a perfect *Mode*; if less, as to the 4th or 5th, it was call'd imperfect; if it moved both above and below, it was call'd a mix'd *Mode*. Thus it is some Authors speak about these *Modes*. Others, considering how indispensable a Chord the 5th is in every *Mode*, they took for the Final, or Key-Note in the Arithmetically divided Octaves, not the lowest Chord of that Octave, but that very 4th. The only difference then in this Method between the Authentic and Plagal *Modes* is, that the Authentic goes above its Final to the Octave; the other ascends a 5th, and descends a 4th; which will indeed be attended with different Effects, but the *Mode* is essentially the same, having the same Final to which all the Notes refer. We are now to consider wherein the *Modes* of one Species, as Authentic, or Plagal, differ among themselves. This must either be by standing higher or lower in the Scale, i.e. by the different Tension of the whole Octave, or rather by the different Subdivision of the Octave into its concinnous Degrees; there can be no other. We are to consider then, whether these Differences are sufficient to produce such very different Effects as are ascribed to the several *Modes*; for instance, that the one produces Mirth, another Sadness, a third is proper for Religion, a fourth for Love, &c. That these Effects are owing merely to the Constitution of the Octave, scarce any body will affirm. The differences in the Constitution will, indeed, have some influence, but it will be so little, as that by the various Combinations of other Causes, one of these *Modes* may be used to different purposes. The greatest difference is that of those Octaves which have the 3d 1, or d.g., making what on other occasions we call the *Sharp* and *Flat* Key.

However, if the *Modes* depend upon the Species of Octaves, how can they be more than seven? And as to the distinction between Authentic and Plagal, we have already observed, that it is imaginary with respect to any essential difference constituted thereby in the Kind of the Melody; or tho' the carrying the Song above or below the Final, may have different Effects, yet this is to be ascribed to other Causes besides the Constitution of the Octaves. It is particularly observable, that those Authors who give us examples in actual Composition of their twelve *Modes*, frequently take in the Artificial Notes # and b, to perfect the Melody of their Key; and by this means depart from the Constitution of the Octave, as it stands fix'd in

the natural System. There is nothing certain or consistent therefore in their way of speaking; but the *Modes* are all really reducible to two, viz. the Sharp and Flat; the other differences respecting only the Place of the Scale where the Fundamental is taken.

The ancient *Modes*, besides their general Division into Authentic and Plagal, had also their respective Names from the several *Greek* Provinces where they are supposed to have been invented. Originally, indeed, there were but three, viz. *Doric*, *Lydian*, and *Phrygian*; which were particularly call'd Tones, because at a Tone's distance from one another. The rest were added afterwards, and were some of them named from the relations they bore to the former, particularly the *Hypo-Doric*, as being below the *Doric*.

The *Doric Mode* was a mixture of Gravity and Mirth, invented by *Thamiras* of *Thrace*. See *Doric*.

The *Phrygian Mode* was adapted to the kindling of Rage; invented by *Marfyas* the *Phrygian*. See *Phrygian*.

The *Lydian Mode* was proper for Funeral Songs; invented, according to *Pliny*, by *Amphion*. See *Lydian*.

The *Myxolodian* was invented by *Sappho*.

The *Æolic*, *Ionic*, and *Hypo-Doric* were invented by *Philostratus*.

The *Hypo-Lydian* by *Polymnestes*.

Besides these *Modes of Tune*, old Authors have also introduced *Modes of Time*, or Measures of Notes.

These at first were distinguished into Greater and Less, and each of these again into Perfect and Imperfect. But afterwards they reduced all into four *Modes*, which included the whole Business of Times. As those *Modes* are now disused, they are hardly worth the reciting.

The common *Mode* now in use, is much more Simple and Natural than any of those; the Proportion, which in theirs varied, being in ours fix'd, viz. 2 : 1. A Large equal to two Long; a Long to two Breves; a Breve to two Semi-breves, &c. proceeding in the same Proportion to the last or lowest Notes. And if on some Occasions the Proportion of 3 : 1 betwixt two successive Notes is required, it is easily express'd by annexing a Point (·). See *Time*, *Note*, &c.

The Antients had likewise their *Modi* *ΜΕΛΟΡΟΕΙΑ*, of which *Aristides* names these, *Dithyrambic*, *Nomic*, and *Tragic*, call'd *Modes* from their expressing the several Motions and Affections of the Mind. See *ΜΕΛΟΡΟΕΙΑ*.

*MODEL*, an Original, or Pattern proposed for any one to copy or imitate.

*St. Paul's Church* is said to be built on the *Model* of *St. Peter's* at *Rome*.

*MODEL* is particularly used in Building for an Artificial Pattern, made of Wood, Stone, Plaster, or other Matter, with all its Parts and Proportions; in order for the better Conducting and Executing of some great Work, and to give an Idea of the Effect it will have in Large.

In all large Buildings, it is much the surest way to make a *Model* in *Relievo*; and not to trust to a bare Design, or Draught. See *DESIGN*.

There are also *Models* for the Building of Ships, &c. for extraordinary Stair-Cases, &c.

*MODEL*, in Painting and Sculpture, is any thing proposed to be imitated.

Hence in the Academies they give the Term *Model* to a naked Man, disposed in several Postures, to give an Opportunity for the Scholars to design him in various Views and Attitudes.

The Sculptors have little *Models* of Clay or Wax to assist them in their Designs of others that are larger in Marble, &c. and to judge of the Attitude and Correctness of a Figure. See *FIGURE*.

The Statuaries likewise give the Name *Model* to certain Figures of Clay or Wax, which are but just fashion'd, to serve by way of Guide for the making of larger, whether of Marble, or other Matter. See *STATUE*.

*MODERATOR*, in the Schools, the Person who presides at a Dispute, or at a public Assembly. See *PRESIDENT*.

Such a Doctor was the *Moderator*, the President at such a Disputation; in such an Assembly, &c.

*MODERN*, something new, or of our Time; in opposition to any thing Antique, or Ancient.

*MODERN Authors*, according to *Nauda*, are all those that have wrote since *Boetius*. The *Modern Philosophy* commences with *Galileus*. The *Modern Astronomy* with *Copernicus*. See *PHILOSOPHY* and *ASTRONOMY*.

*MODERN Medals* are all those that have been struck within these 300 Years. See *MEDAL*.

*MODERN* in Architecture, is improperly apply'd to the present, or *Italian* Manner of Building; as being according to the Rules of the *Antique*. See *ANTIQUE*. Nor is the Term less abused, when attributed to Architecture purely Gothic. See *GOTHIC*.

*Modern Architecture*, in strictness, is only applicable to that which partakes partly of the *Antique*, retaining some-



what of its Delicacy and Solidity; and partly of the Gothic, whence it borrows Members and Ornaments, without Proportion or Judgment. See ARCHITECTURE.

**MODIFICATION**, or **MODE**, in Philosophy, that which modifies a thing; that is, gives it this or that manner of Being. See **MODE**.

Quantity and Quality are Accidents that make the Modification of all Bodies. See QUANTITY and QUALITY.

According to Spinoza's System, all the Beings that compose the Universe, are only so many different Modifications of one and the same Substance. 'Tis the different Arrangement and Situation of their Parts, that make all the difference between them. See SPINOSISM.

**MODIFICATIVE**, something that modifies, or gives a thing a certain Manner of being.

Father Buffier establishes a new Part of Speech, which he calls *Modificative*. Nouns, and Verbs, he observes, are susceptible of divers Circumstances or Modifications: In the Phrase *Zeal acts*, we have a Noun and Verb without any Modification; but in that, *Zeal without Discretion acts rashly*, the Noun and the Verb are each attended with a Modification or Circumstance.

This last Kind of Words, which serve to modify Nouns and Verbs, since it has no general Name in the common Grammars, he chuses to call *Modificatives*. It includes what Grammarians commonly call *Adverb*, *Conjunction*, and *Preposition*. See CONJUNCTION, PREPOSITION, &c.

**MODILLIONS**, in Architecture, Ornaments in the Cornish of the Ionic, Corinthian, and Composite Columns. See CORNISH.

The *Modillions* are little Consoles or Brackets under the Soffit of the Cornish, seeming to support the Lamier, tho in reality they are no more than Ornaments. See CONSOLE.

They ought always to be placed over the middle of the Column. They are particularly affected in the Corinthian Order, where they are usually enrich'd with Sculpture.

The *Modillions* is usually in form of an S inverted, and fitted to the Soffit of the Cornish. See CORNISH.

The Proportions of *Modillions* must be so adjusted, as to produce a Regularity in the Parts of the Soffits.

The *Inter-Modillions*, i. e. the Distances between them, depend on the *Inter-Columns*, which oblige the *Modillions* to be made of a certain Length and Breadth, in order to make the Intervals perfect Squares, which are always found to have better effect than Parallelograms. To this it must be added, that in adjusting the *Modillions*, Care should be taken that they have such a Proportion, as that when the Orders are placed over one another, there be the same Number in the upper Order as in the lower, and that they fall perpendicularly over each other.

*Modillions* are also used under the Cornishes of Pediments; tho *Vitruvius* observes that they were not allow'd of in his time, in regard *Modillions* were intended to represent the Ends of Rafter, which could not be suppos'd to be used in a Pediment. See PEDIMENT.

Some will have the *Modillions* of a Pediment to represent Purlins; and those at the Eaves to represent Rafter. *Daviler* rather takes them for a kind of inverted Consoles or Corbels.

The *Modillion* is sometimes also call'd *Mutule*, tho Use has introduc'd a little difference between the Idea of a *Modillion* and a *Mutule*; the *Mutule* being peculiar to the Doric Order; and the *Modillions* to the higher Orders. See MUTULE.

The Word comes from the Italian *Modiglione*, a little Measure.

**MODIOLUS**, a Surgeon's Instrument, the same with *Abapiston* and *Trepandum*. See TREPANUM.

**MODIUS**, in Antiquity, a Kind of Bushel, or Measure in use among the Romans for several Sorts of Grain. See MEASURE.

It contain'd about nine English Quarts.

**MODO & Forma**, in Law, a Phrase used in Processes and Pleadings, whereby the Defendant absolutely denies the thing charg'd on him by the Plaintiff, *Modo & Forma declarata*.

The Civilians in the like sense say, *Negat allegata prout allegantur, esse vera*.

**MODULATION**, in Music, is the Art of keeping in, or changing the Mode or Key. See **MODE**.

Under this Term is comprehended the regular Progression of the several Parts thro the Sounds that are in the Harmony of any particular Key, as well as the proceeding naturally and regularly from one Key to another.

The Rules of *Modulation* in the first sense belong to Harmony and Melody. See HARMONY and MELODY.

We shall here only add a word with regard to the Rules of *Modulation* in the latter sense.

As every Piece must have a principal Key; and since the Variety so necessary in Music to please and entertain, forbids the being confined to one Key; and that therefore it is not only allowable, but necessary, to modulate into,

and make Cadences on several other Keys, having a Relation and Connection with the principal Key: It must be consider'd what it is that constitutes a Connection between the Harmony of one Key and that of another, that it may be hence determin'd into what Keys the Harmony may be conducted with Propriety. See KEY.

As to the Manner in which the *Modulation* from one Key to another is to be perform'd, so that the Transition may be easy and natural; 'tis not easy to fix any precise Rules: for tho it is chiefly perform'd by the help of the 7th g of the Key, into which the Harmony is to be changed, whether it be flat or sharp; yet the Manner of doing it is so various and extensive, as no Rules can easily circumscribe. A general Notion of it may be conceiv'd under the following Terms.

The 7th g in either sharp or flat Key, is the 3d g to the 5th f of the Key, by which the Cadence in the Key is chiefly perform'd; and by being only a Semi-tone under the Key, is thereby the most proper Note to lead into it, which it does in the most natural manner imaginable. In somuch that the 7th g is never heard in any of the Parts, but the Ear expects the Key should succeed it; for whether it be used as a 3d, or as a 6th, it always affects us with so imperfect a Sensation, that we naturally expect something more perfect to follow, which cannot be more easily and smoothly accomplish'd, than by the small Interval of a Semi-tone, to pass into the perfect Harmony of the Key. Hence it is, that the Transition into one Key is best effected, by introducing its 7th g, which so naturally leads to it.

**MODULE**, in Architecture, a certain Measure, or Bigness taken at pleasure, for regulating the Proportions of Columns, and the Symmetry or Distribution of the whole Building. See COLUMN.

Architects usually chuse the Semi-diameter of the bottom of the Column for their *Module*; and this they subdivide into Parts, or Minutes.

*Vignola* divides his *Module*, which is a Semi-diameter, into twelve Parts in the Tuscan and Doric, and into eighteen for the other Orders.

The *Module* of *Palladio*, *Scamozzi*, *M. Cambray*, *Desgodetz*, *Le Clerc*, &c. which is also equal to the Semi-diameter, is divided into thirty Parts or Minutes in all the Orders. See MINUTE.

Some divide the whole height of the Column into 20 Parts for the Doric, 22½ for the Ionic, 25 for the Roman, &c. and one of these Parts they make a *Module*, to regulate the rest of the Building by.

There are two Ways of determining the Measures, or Proportions of Buildings; the first by a fix'd Standard Measure, which is usually the Diameter of the lower part of the Column, call'd a *Module*, subdivided into 60th Parts, call'd *Minutes*. In the second, there are no Minutes, nor any certain and stated Division of the *Module*; but it is divided occasionally into as many Parts as are judg'd necessary. Thus, the height of the Attic Base, which is half the *Module*, is divided either into three, to have the height of the Plinth; or into four, for that of the greater Torus; or into six, for that of the lesser. Both these Manners have been practis'd by the antient, as well as the modern Architects: But the second, which was that chiefly used among the Antients, is in my Opinion preferable. *Perrault*.

As *Vitruvius*, in the Doric Order, has lessen'd his *Module*, which in the other Orders is the Diameter of the lower part of the Column; and has reduc'd that great *Module* to a mean one, which is the Semidiameter: I here reduce the *Module* to a third part for the same reason, viz. to determine the several Measures without a Fraction. For in the Doric Order, beside that the height of the Base, as in the other Orders, is determin'd by one of these mean *Modules*; the same *Module* gives likewise the heights of the Capital, Architrave, Triglyphs, and Metopes. But our little *Module*, taken from the third of the Diameter of the lower part of the Column, has Uses much more extensive; for, by this the heights of Pedestals, of Columns, and Entablatures, in all the Orders, are determin'd without a Fraction.

As then the great *Module*, or Diameter of the Column, has 60 Minutes; and the mean *Module*, or half the Diameter, 30 Minutes; our little *Module* has 20. *Id.*

**MODUS Decimandi**, is when Land, a Sum of Money, or a yearly Pension, belongs to the Parson, either by Composition or Custom, in Satisfaction for Tithes in Kind.

**MOHAIR**, **MOVAIR**, or **MOIR**, a kind of Stuff, or dinary of Silk, both West and Warp; having its Ground wove very close.

There are two kinds of *Mohairs*, the one smooth and plain; the other water'd like *Tabbys*: The Difference between the two only consists in this, that the latter is calander'd, the other not.

There are also *Mohairs* both plain, and water'd, the Wool whereof is Woollen, Cotton, or Thread.

**MOIDORE**, **MOEDORE**, or **MOEDA**, a Gold Coin struck and current in Portugal. See COIN.



The *Moidore* is properly their *Pistole*; and is equivalent to two Mille-Rees. See *PISTOLE*, &c.

There are also *Doppio-Moedas*, or double Pistoles, and Demi-Pistoles.

MOIETY, a French Word, *Moitie*; signifying the half of any thing.

MOINEAU, in Fortification, is a flat Bastion raised in the middle of a Curtain when it is too long, and the Bastions of the Angles too remote to be able to defend one another. See *BASTION*.

Here Musqueteers are placed, to fire each way.

MOLA, in Medicine, see *MOLE*.

The Word is Latin, and literally signifies a Mill-stone.

MOLA, in Anatomy, a Bone of the Knee, call'd also *Patella*, *Rotula*, &c. See *PATELLA*.

MOLARES, in Anatomy, the Grinders, an Epithet given to the large Teeth; as serving, like Mill-stones, to grind the Food. See *TEETH*.

The Number of *Molares* is not always the same. Some Persons have twenty; and others only sixteen, viz. four, or five on each side of either Jaw. They are very large, hard, and strong; being fastned into their Alveoli or Sockets by several Roots.

MOLASSES, MOLOSSES, or MELASSES, that gross, yet fluid Matter, remaining of Sugar, after refining, and which no boiling will bring to a consistence more solid than that of Syrup; hence also call'd *Syrup of Sugar*. See *SUGAR* and *REFINING*.

Properly, *Molasses* are only the Sediment of one kind of Sugar call'd *Chypré*, or brown Sugar, which is the Refuse of other Sugars not to be whiten'd, or reduced into Loaves.

*Molasses* are much used in *Holland* among poor People, for the Preparation of Tobacco, and instead of Sugar.

There is also a kind of Brandy, or Spirit made of it; but exceedingly unwholesome, and therefore much discouraged. See *BRANDY*.

MOLE, MOLA, or MOLA *Carnea*, in Medicine, a misshapen Mass of hard Flesh, sometimes generated in the Wombs of Women, instead of a *Fetus*; call'd also a *false Conception*.

The *Mole* is the Chaos of an Embryo; and would have grown to an Infant, had not the Process of Conception been disturbed. Tho' it be without regular Bones, Viscera, &c. yet the Lineaments frequently are not so far effaced, but that there are some Remains of a Child; sometimes a Hand, and sometimes a Foot, have been spied; but commonly the Secundines.

It is rare that more than one *Mole* is excluded; though *Sennertus* observes that there are Instances of two, three, or even more. He adds, that tho' they usually come alone, yet they have been known to come with a *Fetus*, sometimes before it, and sometimes after it. See *CONCEPTION*.

The *Mole* is distinguished from an Embryo, in that it has no Placenta whereby to receive its Nourishment from the Mother. Instead of that, it grows immediately to the Womb; and is nourished thence. It has a kind of Vegetative Life, and continues growing in bulk till the time of exclusion. Sometimes it has been born in the Womb for two or three Years.

This Production is supposed to arise from some Defect or Indisposition of the *Ovum*, or Egg; or, perhaps, from the Male Seed's wanting force to penetrate it sufficiently in order to open, and expand the Parts. Or the Effect may be accounted for, by supposing an *Ovum* to drop into the Womb, without being impregnated by the Seed of the Male: In all which cases, the Egg continuing to grow, and yet wanting something necessary to organize and form it into an Embryo, becomes a shapeless Lump. See *EMBRYO*.

Authors are divided whether or no the Women ever bring forth *Moles* without any intercourse with Men. Some say there are *Moles* which derive their Origin from the Menstruous Blood detain'd, coagulated, and harden'd; through which the Blood and Spirits have made themselves Passages, &c. See *MENSES*.

The *Mole* is distinguished from a true Conception, by its tremulous palpitating Motion; by its rolling from side to side; and by the Belly's swelling equally every way. The Breasts swell as in case of a just Embryo; but the Humour generated therein is not true Milk, but a crude Matter, form'd of the suppressed Menses.

To bring the *Mola* out of the Womb, Bleeding and violent Purging are used, and at last strong Emmenagogues. If these fail, recourse is to be had to manual Operation.

The Latins give it the Name *Mola*, which literally signifies Mill-stone, from its resemblance thereto in Form and Hardness.

MOLE, *Moles*, a Peer, or Massive Work of Masonry, consisting of large Stones thrown into the Sea, in manner of a Bank, with design to shut up a Port, and defend the

Vessels in it from the Impetuosity of the Waves, and to prevent the Passage of any Vessel without leave. Thus we say the *Mole* of the Harbour of *Messina*. See *PILE*.

The Word *Mole* is sometimes also used to signify the Harbour itself. See *HARBOUR*.

Among the Romans, *Mole*, *Moles*, was also used for a kind of Mausoleum built in manner of a round Tower on a square Base, insulate, encompass'd with Columns, and cover'd with a Dome. See *MAUSOLEUM*.

The *Mole* of the Emperor *Adrian*, now the Castle of St. Angelo, was the greatest, and most richly of all the *Moles*. It was crown'd with a Brazen Pine-Apple, wherein was a golden Urn containing the Ashes of the Emperor.

MOLECULE, MOLECULA, in Physics, a little Mass, or part of any thing. See *MASS*, &c.

Thus we say the Air, by Respiration, insinuating itself into the Veins and Arteries, endeavours by its elastic Power to divide and break the *Molecules* of the Blood, which on their side resist such division.

MOLINE, in Heraldry. A Cross. MOLINE is that which turns round both ways at all its Extremities, tho' not so wide or sharp as that said to be *anchored*. See *CROSS*.

In *Upton*, the Points are all cut off, which makes it very different from the Cross Anchored. See *FER de Moulin*.

MOLINISTS, a Sect among the Romanists, who follow the Doctrine and Sentiments of the Jesuit *Molina*, relating to sufficient and efficacious Grace. See *GRACE*, &c.

Their great Antagonists are the *Jansenists*. See *JANSENISTS*.

MOLINOSISTS, a Sect among the Romanists, who adhere to the Doctrine of *Molinos*.

These are likewise call'd *Quietists*. See *QUIETISTS*.

MOLMUTIN, or MOLMUTIAN *Laws*, the Laws of *Durzwallo Molmutius*, XVIIth King of the Britons, who began his Reign 440 Years before the Incarnation. See *LAW*.

He was the first who published any Laws in this Land; and they continued famous therein till the time of *William the Conqueror*.

MOLOSSUS, in the Greek and Latin Poetry, the Name of a Foot consisting of three long Syllables: As *Auderī, cantabāt, Virtutem*. See *FOOT*.

It takes its Name either from a Dance in use among the People call'd *Molossi*, or *Epirotes*; or from the Temple of *Jupiter Molossus*, where Odes were sung, in which this Foot had a Share; or because the March of the *Molossi* when they went to the Combate, was composed of these Feet, or had their Cadence.

MOLTA, or MOLTURA, a Duty, or Toll paid by Vassals to the Lord for grinding their Corn at his Mill.

MOLTING, or MOULTING, the falling off or change of Hair, Feathers, Skin, Horns, Voice, and other Dispositions of the Body of Animals, happening in some, annually, in others at certain Stages of their Life.

The generality of Beasts *Molt* in the Spring.

The *Molting* of a Deer is the quitting of his Horns in February or March; the *Molting* of a Serpent is the putting off his Skin. See *EXUVIÆ*.

MOMENT, in Time, is the most minute, and insensible Division of Time; or what we otherwise call an *Instant*. See *TIME*.

MOMENTS, in the new Doctrine of Infinites, are the infinite small Parts of Quantity. See *INFINITE*.

*Moments* are the same with what we otherwise call *Infinitesimals*, *Differentials*, and *Fluxions*; being the *Momentary* Increments, or Decrements of Quantity consider'd as in a continual Flux. See *DIFFERENTIAL* and *FLUXION*.

*Moments* are the generative Principles of Magnitude: They have no determined Magnitude of their own; but are only inceptive thereof. See *INCEPTIVE*.

Hence, as it is the same thing if in lieu of these *Moments*, the Velocities of their Increases and Decreases be made use of, or the finite Quantities proportionable to such Velocities; the Method of Proceeding which considers the Motions, Changes, or Fluxions of Quantities, is denominated by Sir *I. Newton* the Method of *Fluxions*. See *FLUXIONS*.

*Leibnitz*, and most of the Foreigners, considering these infinitely small parts or Infinitesimals as the differences of two Quantities; and thereby endeavouring to find the differences of Quantities, i. e. some *Moment* or Quantity infinitely small, which being taken an infinite Number of Times, shall equal a given Quantity, call these *Moments Differentials*; and the Method of Procedure, the *Differential Calculus*. See *CALCULUS DIFFERENTIALIS*.

MOMENT, in Mechanics, is the same with *Impetus*, or Quantity of Motion in any moving Body; and sometimes it is used simply for the Motion itself. See *IMPETUS*.

*Moment* is frequently defined by the *vis insita*, or the Power by which moving Bodies continually change Place. See *VIS*.



In comparing the Motions of Bodies, the Ratio of their *Moments* is always compounded of the Quantity of Matter, and the Celerity of the moving Body; so that the *Moment* of any such Body may be consider'd as a Rectangle under the Quantity of Matter, and the Celerity. And since it is certain that all equal Rectangles have their sides reciprocally proportionable; therefore if the *Moments* of any moving Bodies are equal, the Quantity of Matter in one so that of the other will be reciprocally as the Celerity of the latter to the Celerity of the former; and, on the contrary, if the Quantities of Matter are reciprocally proportionable to the Celerities, the *Moments*, or Quantities in each, will be equal.

The *Moment* also of any moving Body may be consider'd as the Aggregate or Sum of all the *Moments* of the Parts of that Body; and therefore where the Magnitudes and Number of Particles are the same, and where they are moved with the same Celerity, there will be the same *Moments* of the Wholes. See MOTION.

MONARCHY, a large State govern'd by one; or a State where the supreme Power is lodged in the hands of a single Person. See GOVERNMENT.

The most ancient Monarchy was that of the *Assyrians*, which was founded soon after the Deluge.

We usually reckon four Grand or Universal Monarchies, the *Assyrian*, *Persian*, *Grecian*, and *Roman*. But St. *Augustin* makes them but two, viz. those of *Babylon* and *Rome*. There is no necessity to make the *Medes*, *Persians* and *Greeks* succeed to the whole Power of the *Assyrians*, to multiply the number of the Monarchies. It was the same Empire still, and the several Changes that hapned in it, did not constitute different Monarchies. Thus the *Roman* Empire was successively govern'd by Princes of different Nations, yet without any new Monarchy being formed thereby. *Rome* therefore may be said to have immediately succeeded *Babylon* in the Empire of the World. See EMPIRE.

Of Monarchies some are Absolute and Despotic, where the Will of the Monarch is uncontrollable; as *France*, &c. others limited, where the Prince's Authority is restrained by Laws, and part of the supreme Power lodged in other hands; as in *England*. Some again are Hereditary, where Succession devolves immediately from Father to Son; and others Elective, where, on the Death of the Monarch, his Successor is appointed by Election, as *Poland*.

The Word comes from the Greek *μοναρχης*, one who governs alone; form'd of *μονος* solus, and *αρχη* Imperium, Government.

According to *Hobbes*, Monarchy, as well as Aristocracy, derives all its Authority from the People, who transfer all their Right, viz. the supreme Power, by a Plurality of Suffrages, &c. to some one Person call'd a Monarch; so that whatever the People could have done before this Translation, may be now rightfully done by him, to whom the Translation is made. This done, the People are no longer to be look'd on as a Person, but a dissolv'd Multitude; in regard they were only one by virtue of the supreme Power, which they have now transferred to another.

Nor can the Monarch, says he, oblige himself by any Covenants, to any Person, for the Authority he has receiv'd; in regard he receives the Power from the People, which, as soon as that is done, ceases to be a Person; and the Person ceasing, the Obligation to the Person ceases of course. The People therefore are oblig'd to pay Obedience to the Monarch, by virtue of those Covenants, whereby they mutually oblige themselves to what the People, as a Person, injoins to be done.

He argues further, that as a Monarch cannot be oblig'd by any Covenants; so neither can he do any injury to his Subjects: an Injury being nothing else but a Breach of Covenant; and where there is no Covenant, there can be no Breach. *De Cive*, cap. 8.

MONASTERY, a Convent, or House built for the Reception of Religious, whether it be Abbey, Priory, Nunnery, or the like. See ABBEY, PRIORY, &c.

Monastery is in a more immediate sense apply'd to the Houses of Mendicant Friars, and Nuns. The rest are more properly call'd Convents. See CONVENT.

MONASTIC, something belonging to the Monks, or the Monks's Life. See MONK.

The Monastic Profession is a kind of civil Death, which has the same Effects with the natural Death. The Council of Trent, &c. fix sixteen Years for the Age at which a Person may be admitted into the Monastical Life.

St. *Anthony* is the Person who in the fourth Century first instituted the Monastic Life; as St. *Pacome*, in the same Century, is said to have first set on foot the Cœnobic life, i. e. Regular Communities of Religious. See COENOBITE.

In a short time, the Desarts of *Egypt* became inhabited with a Set of Solitaries, who took upon them the Monastic

Profession. See SOLITARY. St. *Basil* carry'd the Monks's Humour into the *East*, where he compos'd a Rule, which afterwards obtain'd thro a great part of the *West*. In the eleventh Century, the Monastic Discipline was grown very remiss. St. *Odo* first began to retrieve it in the Monastery of *Cluny*.

That Monastery, by the Conditions of its Erection, was put under the immediate Protection of the Holy See; with a Prohibition to all Powers, both Secular and Ecclesiastical, to disturb the Monks in the Possession of their Effects, or the Election of their Abbot. In virtue hereof, they pleaded an Exemption from the Jurisdiction of the Bishop; and extended this Privilege to all the Houses dependent on *Cluny*. This made the first Congregation of several Houses under one Chief immediately subject to the Pope, so as to constitute one Body, or, as they now call it, one Religious Order. Till then, each Monastery was independent of other, and subject to the Bishop. See ORDER, ABBOT, RELIGIOUS, &c.

MONETAGIUM, MONETAGE, was antiently the Right, or Privilege of Coining Money. See MINT, COINING, &c.

MONK, was antiently a Person who retir'd from the World, to give himself up wholly to God, and to live in Solitude, and Abstinence. See RELIGIOUS.

Such were the *Hermites* and *Anchorites*, who withdrew into Desarts, and lived remote from all Commerce of Mankind. See HERMITE and ANCHORITE.

The Word is deriv'd from the Latin *Monachus*, and that from the Greek *μοναχος*, which signifies alone; by reason the antient Monks liv'd in Solitude, as the true Monks still do.

Some Writers, as Father *Helyot*, *Dissert. Prelim.* trace the Original of Monks up as early as the time of the *Therapeute*, and maintain that there had been an uninterrupted Succession of Monks from the *Therapeute* to St. *Anthony*. Others, on the contrary, are contented with going back as far as St. *Paul*, the first Hermite. See THERAPEUTE.

The Monks, at least the antient ones, were distinguish'd into Solitary and Cœnobites.

The Solitary are those who live alone, in Places remote from all Towns, or Habitations of Men, as do still some of the *Hermites*. See SOLITARY.

The Cœnobites are those who live in Community with several others in the same House, and under the same Superiors. See COENOBITE.

Those Houses again were of two kinds, viz. *Monasteries* and *Lauri*. See MONASTERY and LAURUS.

Those we call Monks now-a-days, are Cœnobites, who live together in a Convent or Monastery, who make Vows of living according to a certain Rule establish'd by the Founder, and wear a Habit which distinguishes their Order.

Those that are endow'd, or have a fix'd Revenue, are properly call'd Monks, as the *Chartreux*, *Benedictines*, *Bernardines*, &c. The Mendicants, or those that beg, as the *Carthusians*, and *Franciscans*, are properly call'd Religious, tho the Names are frequently confounded. See RELIGIOUS.

The first Monks were those of St. *Anthony*; of St. *Basil*, call'd in the *East* *Calogers*, from *καλός* *μεγας*, Good old Man; and those of St. *Jerom*; the *Hermites* of St. *Augustine*, and afterwards those of St. *Benedict* and St. *Bernard*; at length came those of St. *Francis*, St. *Dominic*, with a Legion of others; which see under their proper Heads. BENEDICTINES, &c.

Monks are distinguish'd by the Colour of their Habits into Black, White, Grey, &c.

Among the Monks, some are call'd Monks of the Choir, others Professed Monks, and others Lay Monks; which last are destin'd for the Service of the Convent, and have neither Clericature nor Literature. See LAY.

Cloister'd Monks, are those who actually reside in the House, in opposition to Extra-Monks, who have Benefices depending on the Monastery. They are distinguish'd further into Reformed, whom the Civil and Ecclesiastical Authority have made Masters of ancient Convents, and put it in their power to retrieve the antient Discipline, which had been relax'd; and Antient, who enter the Convent, to live in it according to its Establishment at the time when they make their Vows, without obliging themselves to any new Reform.

Antiently, the Monks were all Laymen, and were only distinguish'd from the rest by a particular Habit, and an extraordinary Devotion. Not only the Monks were prohibited the Priesthood; but even Priests were expressly prohibited from becoming Monks, as appears from the Letters of St. *Gregory*. Pope *Syricius* was the first who call'd them to the Clericature, on occasion of some great Scarcity of Priests, that the Church was then suppos'd to labour under. And since that time, the Priesthood has been usually united to the Monastical Profession. See FATHER, &c.

MONKS Rubarb, see RHEBARBA.



**MONKS Seam**, among Sailors, is, when the Selvedges of Sails are laid a little over one another, and sewed on both sides.

**MONETARIUS**, a Name Antiquaries and Medalists give to those who struck the ancient Coins, or Money.

All the old Roman, &c. Coins, have the Name of the *Monetarius*, either written at length, or at least the initial Letters of it.

**MONEY**, or *MONY*, *Moneta*, a Piece of Metal mark'd for Coin, with the Arms of a Prince, or State, who make it circulate or pass, at a common rate, for things of different Value; to facilitate the Business of Commerce. See **COMMERCE**.

*Paulus* the Lawyer, defines *Money* a thing stamp'd with a public Coin, and deriving its Use and Value from its Impression rather than its Substance. ff. de Contr. Empt.

*Monf. Boizard* defines it a piece of Matter to which public Authority has affixed a certain Value and Weight to serve as a Medium in Commerce.

The *Æra* of the Invention of *Money* is not easy to be settled. There is no room to doubt but that in the earliest Ages, the ordinary way of Traffick among Men was by trucking or exchanging Commodity for Commodity. Thus in *Homer*, *Glaucus's* golden Armour was valued at one hundred Cows; and *Diomedes's* Armour at ten. See **EXCHANGE**.

But in course of time, it was found necessary in the way of commutative Justice, to have some common Measure or Standard, according to which all other things should be estimated. This, as the *Jews* gather from *Josephus*, was first invented by *Cain*: Tho the first tidings we hear of it, is in the time of *Abraham*, who paid 400 Shekels for a Burying-Place.

The *Greeks* refer the Invention of *Money* to *Hermodice*, Wife of King *Midas*: And the *Latins* to *Janus*.

This being a common Measure for reducing Wares to a Balance, it was call'd by the *Greeks* *Nomisma*; not from King *Numa*, but from *Nomos*, as being established by Law. By the *Latins* it was call'd *Pecunia*; either because the Wealth of those Days consisted in their Cattel; or, as *Pliny* will have it, because their first Coin was stamp'd with the Figure of a Cow. They also call'd it *Moneta*, à *monendo*, as *Suidas* observes, because when the *Romans* were at a want of *Money*, *Juno* admonished them to use Justice, and there should be no want of *Money*. The Effect whereof when they had found, she was sur-named *Juno Moneta*, and *Money* was coin'd in her Temple. In process of time, *Money* herself was made a Goddess, and inshrined by the Name of *Dea Pecunia*, in the Figure of a Woman holding a Balance in one hand, and a *Cornucopia* in the other.

On the foot *Money* now stands, it may be divided into *Real*, or *Effective*; and *Imaginary*, or *Money of Account*.

Under *Real MONEY* come all Coins or Species, of Gold, Silver, Copper, &c. which have course in Commerce, and do really exist: Such are *Guineas*, *Crowns*, *Pistoles*, *Louis's*, *Pieces of Eight*, *Ducats*, &c. Which see under their proper heads; as also under **COIN**.

*Imaginary MONEY*, or *Money of Account*, is that which has never existed, or at least which does not exist in real Species, but has been invented and retained to facilitate the Stating of Accounts, by keeping them still on a fixed footing, not to be changed like current Coins, which the Authority of the Sovereign raises or lowers according to the Exigencies of State. Of this kind are *Pounds*, *Livres*, *Maravedies*, &c.

This *Money of Account*, *M. Boissart* observes, is a Sum of *Money*, or a certain number of Species which may change in Substance and Quantity, but never in Quality. Thus fifty Pounds consists of fifty Pieces call'd Pounds, which are not real, but may be paid in several real Species, as in *Guineas*, *Crowns*, *Shillings*, &c. which are changeable, as *Guineas*, &c. which are sometimes higher, sometimes lower.

*Real Money*, as the *Civilians* observe, has three essential Qualities, viz. *Matter*, *Form*, and *Weight* or *Value*.

For *Matter*, Copper is that thought to have been first coin'd; afterwards Silver, and, lastly, Gold; as being the most beautiful, scarce, cleanly, divisible, and pure of all Metals.

The Degrees of Goodness are express'd in Gold by Carats; and in Silver by Penny-weights. See **CARACTS**, &c.

For there are several reasons for not coining 'em pure, and without alloy, viz. the great Loss and Expence in refining them, the necessity of hardening them to make 'em more durable, and the scarcity of Gold and Silver in most Countries. See **ALLOY**.

Among the ancient *Britons*, Iron Rings, or, as some say, Iron Plates, were used for *Money*. Among the *Lacedæmonians* Iron Lingets quench'd with Vinegar, that they might not serve for any other use. *Seneca* observes, that there was antiently stamp'd *Money* of Leather; *Corium forma publica impressum*. And the same thing was put in practice by *Frederic II.* at the Siege of *Milan*; to say nothing of an

old Tradition among ourselves, that in the confused times of the Barons Wars, the like was done in *England*: But the *Hollanders*, we know, coin'd great Quantities of Pastebord in the Year 1574. *Numa Pompilius* made *Money* of Wood and Leather. Nor does it appear that the *Romans* were much acquainted with the Art of striking *Money* in Metal in the Time of their Kings. The first Silver *Money* they coin'd was in the Year of *Rome* 484; and their first Gold *Money* in 546. See **COINING**.

As to the *Form of Money*, it has been more various than than the Matter.

Under the *Form* are comprehended the Weight, Figure, Impression, and Value.

For the *Impression*, the *Jews*, tho they detested Images, yet stamp'd on one side their Shekel, the golden Por which had the Manna; and on the other, *Aaron's Rod*. The *Dardans*, two Cocks fighting. *Alexander* his Horse *Bucephalus*. The *Athenians* an Owl, or an Ox; whence the Proverb on bribed Lawyers, *Bos in Lingua*. They of *Ægina*, a Snail; whence that other saying, *Virtutem & Sapientiam vincunt testudines*. For the *Romans*, as they impress'd the Image and Inscription of the Consul on their Coins while the Common-wealth flourish'd; and afterwards that of the Emperor on one side; so they always varied the Reverse upon new Events or Exploits. Some think that the great Ounce Medals both of Brass and Gold were struck chiefly to do honour, and preserve the Memories of great Men; but it is pretty plain they were current as well as the smaller. See **MEDAL** and **MEDALLION**.

This Practice of stamping the Prince's Image on Coins, has obtain'd among all civiliz'd Nations; the *Turks* and other *Mahometans* alone excepted, who, in detestation of Images, inscribe only the Prince's Name, with the Year of the transmigration of their Prophet.

As to the *Figure*, it is either round, as in *England*; multangular or irregular, as in *Spain*; square, as in some parts of the *Indies*; or nearly globular, as in most of the rest.

After the Arrival of the *Romans* in this Island, the *Britons* imitated them, coining both Gold and Silver with the Images of their Kings stamp'd on 'em. When the *Romans* had subdued the Kings of the *Britons*, they also suppress'd their Coins, and brought in their own; which were current here from the time of *Claudius* to that of *Valentinian* the Younger; about the space of 500 Years.

*Mr. Camden* observes, that the most antient *English* Coin he had known was that of *Ethelbert* King of *Kent*, the first Christian King in the Island; in whose time all *Money* Accounts began to pass by the Names of *Pounds*, *Shillings*, *Pence*, and *Mancuses*.

*Pence* seems borrow'd from the *Latin* *Pecunia*, or rather from *Pendo*, on account of its just Weight, which was about three Pence of our *Money*. These were coarsely stamp'd with the King's Image on the one side, and either the Mint-Master's, or the City's where it was coin'd, on the other. Five of these Pence made their Scilling, probably so call'd from *Seilingas*, which the *Romans* used for the fourth part of an Ounce. Forty of these Scillings made their Pound, and 400 of these Pounds were a Legacy, or a Portion for a King's Daughter; as appears by the last Will of King *Alfred*. See **PENNY**, &c.

By these Names they translated all Sums of *Money* in their old *English* Testament; Talents by Pundes; *Judas's* thirty pieces of Silver by thirty Scillinga; Tribute *Money*, by Penining; the Mite by Feorthling.

But it must be observed, they had no other real *Money*, but Pence only; the rest being imaginary *Monies*, i. e. Names of Numbers, or Weights. Thirty of these Pence made a Mancus, which some take to be the same with a Mark; Manca, as appears by an old MS. was quinta pars *Uncie*. See **MANCUS**.

These Mancas or Mancus's, were reckon'd both in Gold and Silver. For in the Year 680, we read that *Ina* King of the *West-Saxons*, obliged the *Kentishmen* to buy their Peace at the price of thirty thousand Manca's of Gold. In the Notes on King *Cannute's* Laws, we find this distinction, that Mancusa was as much as a Mark of Silver; and Manca a square piece of Gold, valued at thirty Pence.

The *Danes* introduced a way of reckoning *Money* by Ores, mentioned in *Dooms-Day Book*; but whether they were a several Coin, or a certain Sum, does not plainly appear. This, however, may be gathered from the *Abby-Book* of *Barton*, that twenty Ores were equivalent to two Marks. They had also a Gold Coin call'd *Bizantiga*, or *Besants*, as being coin'd at *Constantinople*, then call'd *Bizantium*. The value of which Coin is not only now lost, but was so entirely forgot even in the time of King *Edward* the Third; that whereas the Bishop of *Norwich* was fin'd a *Bezantine* of Gold to be paid the Abbot of *St. Edmund's Bury*, for infringing his Liberties (as it had been enacted by Parliament in the time of the Conqueror) no Man then living could tell how much it was; so it was refer'd to the King to rate how much he should pay. Which is the



more unaccountable, because but an hundred Years before, two hundred thousand Hefants were exacted by the Soldan for the Ransom of St. Lewis of France; which were then valued at one hundred thousand Livres.

Tho' the Coining of Money be a special Prerogative of the King, yet the antient Saxon Princes communicated it to their Subjects; insomuch that in every good Town there was at least one Coiner; but at London eight; at Canterbury four for the King, two for the Arch-bishop, one for the Abbot at Winchester, six at Rochester, at Hastings two, &c. See MINT.

The Norman Kings continu'd the same Custom of Coining only Pence, with the Prince's Image on one side, and on the other the Name of the City where it was coin'd, with a Cross so deeply impress'd, that it might be easily parted, and broken into two Halves, which so broken, they call'd Half-pence; or into four Parts, which they call'd Farthings, or Farthings. See FARTHING.

In the time of King Richard the First, Money coin'd in the East Parts of Germany, came in special request in England, on account of its Purity, and was call'd *Easterling Money*, as all the Inhabitants of those Parts were call'd *Easterlings*. And shortly after, some of those People skilled in Coining were sent for hither, to bring the Coin to Perfection; which since has been call'd *Sterling* for *Easterling*. See STERLING.

King Edward the First, who first adjusted the Measure of an Ell by the Length of his Arm, herein imitating Charles the Great, was the first also who establish'd a certain Standard for the Coin, which is express'd to this effect by Greg. Rockley, Mayor of London, and Mint-Master. A Pound of Money containeth twelve Ounces: In a Pound there ought to be eleven Ounces, two Easterlings, and one Farthing; the rest Allay. The said Pound ought to weigh twenty Shillings and three Pence in Account and Weight. The Ounce ought to weigh twenty Pence, and a Penny twenty four Grains and a half. Note, that eleven Ounces two Pence Sterling ought to be of pure Silver, call'd *Leaf Silver*, and the Minter must add of other Weight seventeen Pence Half-penny Farthing, if the Silver be so pure.

About the Year 1320. the States of Europe first began to coin Gold, and among the rest, our King Edward the Third. The first Pieces he coin'd were call'd *Florentines*, as being coin'd by *Florentines*; afterwards he coin'd Nobles; then Rose Nobles, current at six Shillings and eight Pence; Half Nobles, call'd *Half-Pennys*, at three Shillings and four Pence of Gold: and Quarters at twenty Pence, call'd *Farthings of Gold*. The succeeding Kings coin'd Rose Nobles, and double Rose Nobles, great Sovereigns, and half Penny Nobles, Angels, and Shillings.

King James the First coin'd Unites, double Crowns, Britannie Crowns. Then the Crowns, Half Crowns, &c.

There are various Kinds of false or base Money, viz. either that struck by an unqualify'd Person, and of unstatutable Metals; or that which has lost of its Weight, either by being clipped on the Corners, or filed on the Edges, or lastly, by having some of its Surface peel'd off; if Gold, by *Aqua Regia*; if Silver, by *Aqua Fortis*. Another Kind of base Money is that made by Pieces of Iron, Copper, or other Metal, cover'd on each side with a thin Plate or Leaf of Gold or Silver, neatly solder'd and join'd around the Edges, and struck, like other Coin, with Figures, Legens, &c. only to be distinguish'd from them by the Bulk, and Weight, and Sound.

The Word Money comes from the old Anglo-Saxon *Munet*, and that from *Moneta a Mundo*, as before observ'd. From the same *Moneta* the Germans have borrow'd their *Muntz*, the French *Monnoye*, the Spaniards *Moneda*, and the Italians *Moneta*.

#### MONEYS of Account, or Manners of reckoning MONEY in Europe and Asia.

We here confine ourselves to the Moneys of Account of those two Parts of the World: America having none; the respective Moneys of Account of the Europeans, who have there made Settlements, being establish'd with 'em. As to Africa, the Cities of Barbary and Egypt, whither the Europeans traffick, reckon much after the same manner as in the Levant, and in the Dominions of the Grand Signior: For the rest, throughout that vast Extent of Coasts, where we trade for Negroes, Gold-Dust, Elephants Teeth, Wax, Leathers, &c. either the miserable Inhabitants do not know what Money of Account is; or if they have any, 'tis only what Strangers, settled among them, have introduc'd. The *Macoute*, however, and the *Piece*, which are Manners of accounting among these Barbarians, will be deliver'd in their place.

English MONEY of Account is the Pound, Shilling, and Penny Sterling: The Pound containing 20 Shillings, and the Shilling 12 Pence. See POUND, &c. See also COIN, and STERLING.

French MONEY of Account, was antiently the Paris, Tournois, and the Ecu, or Crown: but since the Ordinance of 1667, they only reckon by Livres, i. e. Pounds; Sols, i. e. Shillings; and Deniers Tournois, i. e. Pence. The Livre, 20 Sols, or  $\frac{1}{2}$  of the Ecu, or Crown; the Sol, 12 Deniers. See LIVRE, DENIER, &c.

The Maille, Obole, or Half-penny Tournois, is also now a Money of Account, tho' antiently a real Coin. The Maille is divided into two Pites, and each Pite into two Semi-pites; all Moneys of Account. To which must be added the Franc, of the same Value with the Livre, viz. 20 Sols Tournois; and the Blanc, 5 Deniers Tournois; and the Carolus, Ten: All three antiently real Coins. See FRANC, &c.

Dutch and Flemish MONEYS of Account. In Holland, Zealand, Brabant, and Cologne, they use the Pundt, or Livre de Gros; Schelling, or Sol de Gros; and Penning, or Deniers Gros. The Pundt, containing 20 Schelling; and the Schelling, 12 Pennings. The Pundt equal to 7 Livres, 4 Sols French, or 10 Shillings  $\frac{1}{2}$  Sterling. They also account by Florins or Guilders, Patards and Pennings: The Florin is equal to  $\frac{1}{2}$  of the Pound, or 20 Patards; and the Patard, 12 Pennings. The Merchants use each Method of Accounting indifferently.

Spanish MONEY of Account, is the Peso, Ducat of Silver and Vellon, Rial of Vellon, and Cornados and Maravedis of Silver and Vellon. The Peso is to the Ducat as 12 to 10. The Ducat of Silver contains 11 Rials of Silver; and that of Vellon, 11 Rials of Vellon; which makes a difference of near one half. The Silver Rial being current for 7 Shillings Sterling, and that of Vellon only at 3  $\frac{1}{2}$  d. Sterling. 34 Maravedis make the Rial of Vellon, and 63 that of Silver. The Maravedis is divided into 4 Cornados.

German and Swiss MONEYS of Account. In Switzerland, and many of the chief Cities of Germany, particularly Frankfurt, they account by Florins (but on a footing different from that of Holland) by Creux's or Creuxers, and Pennins. The Florin equal to 3 Shillings Sterling, and divided into 60 Creux or Kreux, and the Creux into 8 Pennins. In others, as Nuremberg, &c. they account by Rixdollars, Florins, and Creux. The Rixdollar equal to 4  $\frac{1}{2}$  d. Sterling, divided into 100 Creux, and the Creux into 8 Pennins. In others, as Hambourg, Berlin, &c. by Rixdollars, Marks Lubs, Schellings Lubs, and Deniers Lubs. The Rixdollar and Dollar on the foot of the French Crown, or 4  $\frac{1}{2}$  Sterling, divided into 3 Marks, and the Mark into 16 Schellings, and the Schelling into 12 Pennins. At Fianbourg they also use the Livre, Schelling, and Denier de Gros. At Ausbourg and Bolzamon, they account by Tallers and Creux's; the Taller equal to 4  $\frac{1}{2}$  d. Sterling, divided into 90 Creux's. At Namboorg, by Rixdollars Gros and Fenins; the Rixdollar equal to 4  $\frac{1}{2}$  d. Sterling, divided into 36 Gros, and the Gros into 12 Fenins. At Strasboorg by Florins, Creux, and Pennins. The Florin equal to 1  $\frac{1}{2}$  d. Sterling, divided into 60 Creux, and the Creux into 8 Pennins.

Italian MONEYS of Account. In Italy, the Money of Account are various, almost as the Cities of Commerce. At Rome, they account by Pounds, Shillings, and Pence of Gold di Stamp. At Venice, by Ducats, and Gros di Banco. The Ducat divided into 24 Gros, each Gros equal to 3 Pence  $\frac{1}{2}$  Sterling. And by Ducats Currant, call'd also Sequins, equal to 9  $\frac{1}{2}$  d. Sterling; and by Pounds, Shillings, and Pence. At Lucca and Bergamo, they use the four last; and only the three last at Bologna, Mantua, and Savoy: In Geneva, besides Pounds, Shillings, and Pence, they account also by Florins, containing 6 Soldis, or 6 Pence  $\frac{1}{2}$  Sterling. At Leghorn and Genoa, besides Pounds, Shillings, and Pence, they account by Piastrs, equal to 4  $\frac{1}{2}$  d. Sterling. At Novara, their Moneys of Account are Crowns, Shillings, and Pence of Gold de Marc. At Ranconis, Pounds, Florins, and Gros. At Ancona, Crowns, Shillings, and Pence. At Naples, Ducats, Tarins, and Grains, equal to one Shilling Sterling, divided into 20 Grains.

Sicilian and Maltese MONEYS of Account. At Messina, Palermo, and throughout Sicily, they account by Pounds, Ounces, Tarins, Grains, and Piccoli's; which are summ'd by 30, 20, and 6: the Ounce being 30 Tarins, the Tarin 20 Grains, and the Grain 6 Piccoli's. At Malta, they account by Pounds, Ounces, Carlins, and Grains. The Ounce 30 Tarins, or 60 Carlins, or 600 Grains; the Carlin equal to 6  $\frac{1}{2}$  d. Sterling.

Polish MONEYS of Account. Throughout Poland, most of the Dominions of the King of Prussia, and Dantzic, they account by Rixdollars, Roupes, and Grochs. The Rixdollar equal to 4  $\frac{1}{2}$  d. Pence Sterling, and divided into 32 Roupes; and again, in the Prussian Territories, into 24 Grochs: In Poland, into 90 Grochs. Sometimes they use the Florin, Groch, and Penny.

Swedish, Danish, and Muscovite MONEYS of Account. In Sweden, they account by Dalles, equal to 32 Sols Lubs, or 3 Shil-



5 Shillings Sterling. In *Denmark*, by Rixdollars; Hors, and Schellings; the Rixdollar divided into 4 Hors; and the Hor into 2 Schellings. In *Muscovy*, they account by the Roubles, Altins, and Grifs or Grives. The Rouble equal to 100 Copecs, or 2 Rixdollars, or 9 Shillings Sterling; divided into 10 Grifs; 5 Altins  $\frac{1}{2}$  make the Grif, or 10 Copecs; the Copec at 13 Pence  $\frac{1}{4}$  Sterling.

*Turkish* MONEYS of Account. The *Turks*, both in *Europe*, *Asia*, and *Africa*, account by Bourfes or Purfes; either of Silver or Gold (the last only used in the Seraglio) with half Purfes of Gold, call'd also Rizers. The Purse of Silver equal to 1500 *French* Livres, or 112 *l.* 10 *s.* Sterling. The half Purse in proportion. The Purse of Gold 15000 *French* Crowns, or 6750 Pounds Sterling; seldom used but for Presents to Favourites: So that a Purse, simply, signifies a Purse of Silver, or 1500 Livres. They are call'd Purfes, because all the Money in the Treasury of the Seraglio is kept in Leather Bags or Purfes, of those Contents. The Merchants also use *Dutch* Dallers, call'd Allani or Abouquels, with Meideins and Aspres. The Daller equal to 33 Meideins, and the Meidein to 3 Aspres; the Aspre to  $\frac{1}{2}$  Penny Sterling.

*Persian* MONEYS of Account. In *Persia*, they account by the Toman (call'd also Man, and Turnein) and the Dinar-bisti. The Toman is composed of 50 Abassi's, or 100 Mamoudi's, or 200 Chapes, or 10000 Dinars; which accounting the Abassi on the foot of 18 *French* Sols, or the Dinar on that of a Denier, amounts to 3 *l.* 12 *s.* 6 *d.* Sterling the Toman. They also account by Larins, especially at *Ormus*, and on the Coasts of the *Persian* Gulph. The Larin equivalent to 11 Pence Sterling; and on that footing used also in *Arabia*, and a great part of the *East Indies*.

*Chinese* MONEYS of Account, are the Pic, Picol, and Tael; which tho in effect Weights, do likewise serve as Moneys of Account; obtaining in *Tunquin* as well as *China*. The Pic is divided into an hundred Cati's, some say 125. The Cati into 16 Taels; each Tael equal to 1 Ounce 2 Drachms. See *Chinese* COINS. The Picol contains 66 Cati's  $\frac{1}{2}$ ; the Tael equivalent to 6 *s.* 8 *d.* Sterling.

*Japanese* MONEYS of Account, are the Schuites, Cockiens, Oebans or Oubans, and Taels. Two hundred Schuites are equal to five hundred *Dutch* Livres, or Pounds; the Cockien equal to ten *Low-Country* Livres; 1000 Oebans make 45000 Taels.

*Mogul* MONEYS of Account. At *Surat*, *Agra*, and the rest of the Estates of the Great *Mogul*, they use Lacres, Acres, or Leeths; implying a hundred thousand: Thus a Lacre of Roupias is a hundred thousand Roupias; the Lacre being nearly on the footing of the Tun of Gold in *Holland*, and the Million of *France*.

MONEYS of Account of other Islands and Coasts of *India*. Throughout *Malabar*, and at *Goa*, they use Tanga's, Vintins, and Pardo's Xeraphin. The Tanga is of two kinds, viz. of good, and bad Alloy. Hence their Custom is to count by good or bad Money. The Tanga of good Alloy is better than the bad; so that 4 Tanga's good being allow'd the Pardo's Xeraphin, there will be required 5 of the bad; four Vintins good make a Tanga likewise good; 15 Barucos a Vintin. The good Baruco is equal to a *Portuguese* Rey, a *French* Denier, or  $\frac{1}{12}$  of a Penny Sterling. In the Island of *Java*, they use the Santa, Sapacou, Fardo's, and Cati's; which last Money, together with the Leeth, or Lacre, is much used throughout all the *East-Indies*. The Santa is 200 Caxas, or little Pieces of that Country hung on a String; and is equal to  $\frac{1}{12}$  of a Penny Sterling. Five Santa's make the Sapacou. The Fardo equal to 2 *s.* 8 *d.* Sterling. The Cati contains 20 Taels; the Tael 6 *s.* 8 *d.* Sterling.

There are Islands, Cities, and States of the *East-Indies*, whose Moneys of Account are not here express'd; partly because reducible to some of those above-mentioned; and partly because we find no certain consistent account of 'em in any of the Authors, or Memoirs herein consulted.

*African* MONEYS of Account. From *Cape Verd*, to the *Cape of Good Hope*, all Exchanges and Valuations of Merchandizes are made on the foot of the Macoute and Piece; which tho no Moneys of Account, for those Barbarians having no real Moneys, need no imaginary ones to value them by, yet serve in lieu thereof. At *Loango de Noirie*, and other Places on the Coast of *Angola*, the Estimations are made by Macoutes; and at *Malimbo*, and *Cabinda*, on the same Coast, the Negroes reckon by Pieces. Among the first, the Macoute is equivalent to ten: Ten Macoutes make an hundred; which likewise leaves us a kind of imaginary Money. To estimate any Purchase, Exchange, &c. they fix on the one side the number of Macoutes required, e. g. for a Negro; on the other for how many Macoutes they agree to receive each kind of Merchandize required for the Negro; so that there are several Bargains made for one. Suppose, e. g. the Slave be fix'd at 3500; this amounts to 350 Macoutes. To make up this number

of Macoutes in Merchandizes, they fix the Price of each in Macoutes. Two *Flemish* Knives, e. g. are accounted one Macoute; a Copper-Bason two Pounds Weight, three; a Barrel of Gun-Powder, three, &c. For the Piece, it serves in like manner to estimate the Value of Goods Duties, &c. on either side. Thus the Natives require ten Pieces for a Slave; and the *Europeans* put, e. g. a Fusée at 1 Piece; a piece of Salampoures blue, at 4 pieces, &c.

MONEYS of Account among the Antients.

*Grecian* MONEYS of Account. The *Grecians* reckon'd their Sums of Money by Drachmæ, Minæ, and Talenta. The Drachma equal to 7  $\frac{1}{2}$  *d.* Sterling; 100 Drachmæ made the Mina, equal to 3 *l.* 4 *s.* 7 *d.* Sterling; 60 Minæ made the Talent, equal to 193 *l.* 15 *s.* Sterling: Hence 100 Talents amounted to 19375 *l.* Sterling.

The Mina and Talentum indeed, were different in different Provinces: Their Proportions in *Attic* Drachms are as follow. The *Syrian* Mina contain'd 25 *Attic* Drachms; the *Ptolemaic* 33  $\frac{1}{2}$ ; the *Antiochic* and *Eubæan* 100; the *Babylonic* 116; the greater *Attic* and *Tyrian* 133  $\frac{1}{2}$ ; the *Ægeian* and *Rhodian* 166  $\frac{2}{3}$ .

The *Syrian* Talent contain'd 15 *Attic* Minæ; the *Ptolemaic* 20; the *Antiochic* 60; the *Eubæan* 60; the *Babylonic* 70; the greater *Attic* and *Tyrian* 80; the *Ægeian* and *Rhodian* 100.

*Roman* MONEYS of Account, were the Sestertii Nummi, Sestertia, and Decies Sestertium. The Sestertius equal to 1 *d.* 3 *q.* Sterling. One thousand of these made the Sestertium, equal to 8 *l.* 1 *s.* 5 *d.* 2 *q.* Sterling. One thousand of these Sestertia made the Decies Sestertium (the Adverb Centies being always understood) equal to 8072 *l.* 18 *s.* 4 *d.* Sterling. The Decies Sestertium they also call'd Decies Centena millia Nummum. Centies Sestertium, or Centies HS were equal 80729 *l.* 3 *s.* 4 *d.* Millies HS to 8072912 *l.* 13 *s.* 4 *d.* Millies Centies HS 888020 *l.* 16 *s.* 8 *d.*

MONEYERS, MONEYORS, or MONIERS, Officers of the Mint, who work, and coin Gold and Silver Money; and answer all the Waste, and Charges. See MINT and COINING.

MONEYERS are also taken for Bankers; or those who make a Trade of turning, and returning Money. See BANKER.

MONITORY Letters, are Letters of Admonition, or Warning, sent from an Ecclesiastical Judge upon Information of Scandals and Abuses within Cognizance of his Court.

MONOCHORD, a musical Instrument wherewith to try the Variety and Proportion of musical Sounds. See TUNE.

It is compos'd of a Rule, divided and subdivided into divers Parts, whereon there is a String pretty well stretch'd upon two Bridges, at each Extreme thereof. In the middle between both is a moveable Bridge, by whose means, in applying it to the different Divisions of the Line, you find that the Sounds are in the same Proportion to one another, as the Divisions of the Line cut by the Bridge were.

The Monochord is also call'd the Harmonical Canon, or Canonical Rule; because serving to measure the Degrees of Gravity, and Acuteness of Sounds. See GRAVITY, &c.

There are also Monochords with 48 fix'd Bridges; the Use of all which may be supply'd by one single moveable Bridge; which are placed in the middle, by only shifting it under new Chords or Strings, always representing the entire Sound, or the open Note.

Pythagoras is held to have been the Inventor of the Monochord. Ptolemy examined his Harmonical Intervals with the Monochord. See CANON.

When the Chord was divided into equal parts, so that the Terms were as 1 and 1, they call'd them Unisons; if they were as 2 to 1, Octaves, or Diapasons; when they were as 8 to 2, Fifths, or Diapentes; if they were as 4 to 3, they called them Fourths, or Diatessérons; if the Terms were as 5 to 4, Dittos, or a Tierce Major; if as 6 to 5, a Demi-Diton, or a Tierce Minor; lastly, if as 24 to 25, Demi-diton or Dieze. See UNISON, OCTAVE, DIAPASON, DIAPENTE, DIATESSERON, &c.

The Monochord being thus divided, was properly what they call'd a System, of which there were many kinds, according to the different Divisions of the Monochord. See SYSTEM.

Dr. Wallis has taught the Division of the Monochord in the Philosophical Transactions; but that Instrument is now disused, the modern Music not requiring such Division.

MONOCHORD, is also used for any musical Instrument, consisting of only one Chord, or String. See CHORD.

The Trumpet Marine is a Monochord. See TRUMPET.

The Word is *Greek*, form'd of *μῦρον* solus, single, and *χορδῶν* Chord.

MONOCHROMA, a Picture all of one Colour. See CAMIEX, CLAIR ONSCURE, &c.



The Word is compounded of the Greek *μῆνος*, single; and *χρῶμα*, Colour.

**MONODY**, **MONODIA**, in the ancient Poetry; a kind of mournful Song, or Ditty, sung by a Person all alone; to utter his Grief.

The Word is compounded of *μῶν* & *solus*; and *ὁδὸς*, Song.

**MONOGAMY**, the State or Condition of those who have only married once. See **MARRIAGE**, **BIGAMY**, &c.

The Word is compounded of *μῆνος* & *solus*, and *γάμος* Marriage.

**MONOGRAM**, or **MONOGRAMMON**, a Cypher; or Character composed of one or more Letters interwoven; being a kind of Abbreviation of a Name; antiently much used as a Badge, Seal, Arms, &c. See **SEAL**, **CYPHER**, &c.

Under the Eastern Empire, it is usual to find **MIK**; which are the Monogram of *Maria*, *Jesus*, *Constantine*.

The use of Monograms is of an antient standing, as appears from *Plutarch*; and from some Greek Medals of the time of *Philip* of *Macedon*, *Alexander* his Son, &c.

The *Roman Labarum* bore the Monogram of *Jesus Christ*, consisting of two Letters, a *P* placed perpendicular over the middle of a *X*, as we find it in several Medals of the time of *Constantine*; those being the two first Letters of the Word *ΧΡΙΣΤΟΣ*, *Christ*. See **LABARUM**.

The Kings formerly marked their Coins with their Monogram: Of this we have instances in *Charlemain's* Coins. That Prince also used the Monogram for his Signature. *Eginard* gives us this reason for it, viz. that *Charlemain* could not write; and that having attempted in vain to learn in his grown Age, he was reduced to the necessity of Signing with a Monogram.

The Antients used Monograms as Notes or Abbreviations of Inscriptions; for the understanding whereof we have express Treatises of *Valerius Probus*, *Paulus Diaconus*, &c. See **CHARACTER**.

**MONOLOGUE**, a Dramatic Scene, wherein a Person appears alone on the Stage, and speaks to himself. See **SOLILOQUY**.

The Word Monologue is derived from the Greek *μῶν* & *solus*, and *λογος*, Discourse, Speech.

**MONOMACHIA**, a Duel, or single Combat of Man against Man. See **DUEL**.

*Monomachia* was antiently allow'd by Law for the Trial or Proof of Crimes. It was even permitted in pecuniary Causes, as appears by antient Records. It is now forbid both by the Civil and Canon Laws. See **COMBAT**.

*Alciat* has wrote a Treatise de *Monomachia*.

The Word comes from the Greek *μῶν* & *solus*, and *μαχη*, Combate.

**MONOME**, in Algebra, a Quantity that has but one Denomination, or Name; as *ab*, *aab*, *aaabb*. See **QUANTITY**.

The Monome may be either Rational, or Irrational. See **RATIONAL**, &c.

**MONOPETALOUS**, in Botany, a Term apply'd to Flowers which have only one undivided Petalum, or Leaf. See **FLOWER**, **PETALA**, &c.

**MONOPHYTES**, a general Name given to all those Sectaries in the *Levant* who only own one Nature in *Jesus Christ*.

The *Monophytes* however, properly so call'd, are the Followers of *Severus*, and *Petrus Fullensis*.

The Word comes from the Greek *μῶν* & *solus*, and *φυσις* Nature.

**MONOPOLY**, an unlawful kind of Traffick, when one or more Persons make themselves sole Masters of any Commodity, with design to enhance its price; those who have occasion for it being obliged to purchase it at their hands, and on their own terms.

There are two kinds of *Monopolies*: The one, when a Merchant buys up, for instance, all the Corn of a Province, to retail it at an advanced Rate to the People.

The other when a Letter, or Patent is procured from the Prince, prohibiting any other Person to sell any Commodity besides the Patentee.

The Word is pure Greek, form'd of *μῶν* & *πᾶσι*, signifying to sell alone.

Among the *Romans*, the Term was so odious, that *Tiberius*, as *Suetonius* relates, having occasion to make use of it, begg'd leave of the Senate for it, as being borrow'd from the *Greek*.

**MONOPTERE**, a kind of Temple among the Antients, round, and without Walls; having a Dome supported with Columns. See **TEMPLE**.

**MONOPTOTE**, **MONOPTOTON**, in Grammar, a Noun which has only one Case. See **CASE**.

**MONOPYRENEOUS** Fruits, are such as only contain one Kernel, or Seed. See **FRUIT**.

**MONORYME**, a Poetical Composition, all the Verses whereof end with the same Ryme.

*Monorymes* are said to have been invented by the old French Poet *Leonin*, who address'd some *Latin* Verses of

this kind to Pope *Alexander III*. Whence they are also call'd *Leonine Verses*. See **LEONINE**.

They are but little used in *English*; more in *French*.

The Word comes from the Greek *μῶν* & *solus*, and *ρῦμα*, Ryme. See **RYME**.

**MONOSTICH**, **MONOSTICON**, an Epigram consisting of one single Verse.

**MONOSYLLABLE**, a Word of a single Syllable; or, consisting of one, or more Letters pronounced all together. See **WORD** and **SYLLABLE**.

The *French* Language abounds in *Monosyllables* more than any other. This renders it the more perplexing to Foreigners, and yet the Beauty of the Language seems to consist in it. One of the best and smoothest Lines in *Malherbe* consists of twelve *Monosyllables*; speaking of *Calista*, he says,

*Et moi je ne voy rien quand je ne la vois pas.*

In this the Genius of the *English* Tongue differs much from the *French*, an uninterrupted Series of *Monosyllables* having always an ill Effect. This *Mr. Pope* both intimates and exemplifies in the same Verse.

*And ten low Words oft creep in one dull Line.*

*Pasquier* cites an Elegy of forty two Verses, consisting wholly of *Monosyllables*.

**MONOTHELITES**, an ancient Sect, who sprung out of the *Eutychians*; thus call'd, as only allowing of one Will in *Jesus Christ*; as the Word *Monotheliste* in the Greek imports.

The Opinion of the *Monothelites* had its Rise in 630, and had the Emperor *Heraclius* for an Adherent. It was the same with that of the *Severian Acephali*.

They allow'd of two Wills in *Christ*, consider'd with regard to the two Natures; but reduc'd them to one, by reason of the Union! of the two Natures: Thinking it absurd there should be two free Wills in one and the same Person.

They were condemn'd by the sixth General Council, as being supposed to destroy the Perfection of the Humanity of *Jesus Christ*, in depriving it of Will and Operation. That Council declared their Belief of two Wills, and two Operations, without Division, or without changing the one for the other, without either distinguishing or confounding them: the Human Will being subject to the Divine.

**MONOTONIA**, **MONOTONY**, a Want of Variation, or Inflection of the Voice, or a Fault in Pronunciation, where a long Series of Words are deliver'd with one unvaried Tone. See **PRONUNCIATION**.

This is one of the principal Faults of our *English* Orators. *Monotonia* is oppos'd to Chanting or Singing.

**MONSEIGNEUR**, in the Plural **MESSEIGNEURS**, a Title of Honour and Respect used by the *French* in writing to Persons of superior Rank or Quality. See **SEIGNEUR**.

The Word is a Compound of *mon*, *my*, and *Seigneur*, Lord.

Dukes, Peers, Archbishops, Bishops, and Presidents a la *Mortier*, are complimented with the Title of *Monseigneur*. In the Requests presented to the Sovereign Courts, they use the Term *Nosseigneurs*.

**MONSEIGNEUR**, absolutely used, is a Quality now given to the Dauphin of *France*.

This Custom was unknown till the time of *Louis XIV*. Till then, the Dauphin was stiled *Monsieur le Dauphin*.

**MONSIEUR**, in the Plural **MESSEIGNEURS**, a Term, or Title of Civility, used by the *French*, in speaking to their Equals, or those a little below them; answering to *Mr* or *Sir*, among the *English*. See **SIR**.

The Supercriptions of all Letters begin, *A Monsieur*, *Monsieur* such a one.

The Word is a Compound of *mon*, and *Sieur*, *Sir*. See **SIEUR**.

*Borel* derives the Word from the Greek *χρῶμα*, Lord, or *Sire*, q. d. *monseigneur*. *Pasquier* derives *Sieur*, and *Monsieur*, from the *Latin* *Senior*, Elder. The *Italians* say *Signor*, and the *Spaniards* *Senor*, in the same Sense, and from the same Origin.

The use of the Word was formerly more extensive. They apply'd it to the People of many Ages before them: Thus, *Monsieur St. Augustine*, *Monsieur St. Ambrose*; and the Vulgar still say *Monsieur St. Paul*, *Monsieur St. James*, &c.

The *Romans*, during the flourishing times of their Liberty, were unacquainted with that term of Parade and Flattery, which they afterwards made use of under the Name of *Domitus*. In speaking, or writing to each other, they only gave them their proper Names; which Practice lasted even after *Cesar* had brought the Republic under his Command. But after the *Roman* Emperors were once well seated in the Throne, the Courtiers, and Minions who



who by Flattery sought to procure Favours from them, studied new Honours. *Suetonius* observes, that a Comedian on the Theatre having call'd *Augustus*, *Dominus*, Lord; the Spectators all stared at him. So that the Emperor forbade, for the future, that Quality to be attributed to him. *Caesar* was the first who expressly commanded himself to be call'd *Dominus*. *Martial*, entirely devoted to Tyranny, calls *Dominus*, *Dominum deumque nostrum*. In time, the Title was also apply'd to the People; and of *Dominus*, at length was form'd *Dom*. See *Dom*.

MONSIEUR, absolutely used, is a Title or Quality affixed to the second Son of France, or the King's Brother.

In a Letter of *Philip de Valois*, that Prince speaking of his Predecessor, calls him *Monsieur le Roy*, *Monsieur* the King. At present, no body calls the King *Monsieur*, but the Children of France.

MONSOON, a regular, or periodical Wind, in the *East-Indies*, blowing constantly the same way, during six Months of the Year, and the contrary way the remaining six. See *WIND*.

In the *Indian Ocean*, the Winds are partly general, and blow all the Year round the same way, as in the *Æthiopic Ocean*; and partly periodical, i. e. half the Year blow one way, and the other half near on the opposite Points. And those Points and Times of shifting differ in different Parts of this Ocean. *Halley*.

These latter, or periodical Winds, are what we call *Monsoons*.

*Monsoons* then are a Species of what we otherwise call *Trade-Winds*. See *TRADE WIND*.

They take the Denomination *Monsoon* from an antient Pillar, that first cross'd the *Indian Sea* by means hereof. Others derive the Name from a *Portuguese* Word signifying Motion, or Change of Wind, and Sea.

*Lucretius* and *Apollonius* make mention of annual Winds which arise every Year, *Etesia Flabra*, which seem to be the same with what in the *East-Indies* we now call *Monsoons*.

MONSTER, a natural Birth, or Production of a living thing, degenerating from the proper and usual Disposition of Parts, in the Species it belongs to. As when there are too many Members, or too few; or some of 'em are extravagantly out of Proportion.

*Aristotle* defines a *Monstier* to be a Defect of Nature, when acting towards some end, it cannot attain to it, by reason some of its Principles are corrupted.

*Monsters* do not propagate their kind; for which reason some rank Mules among the Number of *Monsters*; as also *Hermaphrodites*. See *MULE* and *HERMAPHRODITE*.

The Word comes from the *Latin* *Monstrum*, of *Monstrando*, shewing.

*Du Cange* mentions an Inventory of the Church d'Evreux with this Article, *Item unum Monstrum cum Offibus Sancti Petri in Beril, & Crucifixo in summitate*.

Females, which bring forth Twins, are most liable to produce *Monsters*. The reason, probably, is owing to this; that tho the Twins are cover'd with one common Chorion, yet they have each their separate Amnios, which, by their contiguity may chance to grow together, and so occasion a confusion, or blending of the Parts. Hence so many double Creatures. See *DOUBLE*.

*F. Malbranche* accounts for the Production of *Monsters* in the Animal World, thus:

The Creator has established such a Communication between the several parts of his Creation, that we are not only naturally led to imitate one another, i. e. have a disposition to do the same things, and assume the same manners with those with whom we converse; but also have certain natural Dispositions which incline us to Compassion, as well as Imitation. These things most Men feel, and are sensible of; and, therefore, need not be proved. The Animal Spirits then are not only naturally carried into the respective parts of the Body to perform the same Actions, and the same Motions which we see others do, but also to receive in some manner their Wounds, and take part in their Sufferings.

Experience tells us, that when we look attentively on any Person severely beaten, or that has a large Wound, Ulcer, or the like; the Spirits immediately flow into those parts of our Body which answer to those we see suffer in the other; unless their Course be stopp'd from some other Principle. This Flux of Spirits is very sensible in Persons of a delicate Constitution, who frequently shudder, and find a kind of trembling in the Body on these Occasions; and this Compassion in Bodies, produces Compassion in the Mind.

Now it must be here observed, that the view of a Wound, &c. produces a Wound in the Person who views it, by so much the greater and more sensible, as the Person is more weak and delicate; the Spirits making a stronger Impression on the Fibres of a delicate Body, than in those of a robust one. Thus strong, vigorous Men, &c. see an Execution without much concern, while Women, &c.

are struck with Pity and Horror. As to Children still in their Mother's Womb; the Fibres of their Flesh being incomparably finer than those in Women, the Course of the Animal Spirits must necessarily produce much greater Alterations.

This thing being laid down, *Monsters* are easily accounted for. Suppose, e. g. a Child born a Fool, and with all its Legs and Arms broke in the same manner as those of Criminals in some Countries are; which case we chuse to instance in, because we are told from *Paris* that such a *Monster* was actually born there, and liv'd in one of their Hospitals twenty Years: The Cause of this Accident, according to the Principles laid down, was, that the Mother seeing a Criminal executed, every Stroke given to the poor Man, strook forcibly the Imagination of the Mother; and by a kind of Counter-stroke, the tender and delicate Brain of the Child. Now, tho the Fibres of the Woman's Brain were strangely shaken by the violent flux of the Animal Spirits on this occasion, yet they had strength and consistence enough to prevent an entire disorder and overturning; whereas the Fibres of the Child's Brain being unable to bear the shock of those Spirits, were entirely dissipated; and that Ravage was great enough to deprive him of Reason all his Life time.

Again, the view of the Execution frightening the Woman, the violent Course of the Animal Spirits was directed forcibly from the Brain to all those Parts of the Body corresponding to the suffering parts of the Criminal; and the same thing must happen in the Child. But in regard the Bones of the Mother were strong enough to resist the Impulse of those Spirits, they were not damaged. And yet the rapid Course of these Spirits could easily overpower, and break the tender and delicate Fibres of the Bones of the Child; the Bones being the last parts of the Body that are form'd, and having a very slender consistence while the Child is yet in the Womb.

To which it may be here added, that had the Mother determined the Course of these Spirits towards some other part of her Body, by tickling or scratching herself vehemently, the Child would not, in all probability, have had its bones broken; but the part answering that, to which the Motion of the Spirits was determined, would have been the sufferer.

Hence appears the reason, why Women in the time of Gestation, seeing Persons, &c. mark'd in such a manner in the Face, impress the same Mark on the same parts of the Child: And why, upon rubbing some hidden part of the Body, when startled at the Sight of any thing, or agitated with any extraordinary Passion, the Mark or Impression is fix'd on that hidden part rather than on the Face of the Child. From the Principles here laid down, may most, if not all, the Phenomena of *Monsters* be easily accounted for.

There are also *Monsters* in the Vegetable World: Such, e. g. are what some Botanists call *Mules*. See *MULE*, *GENERATION*, &c.

Florists give the Denomination *Monsters* to what we otherwise call *Double Flowers*.

MONSTRANS de Droit, a Writ issuing out of Chancery to be restored to Lands or Tenements that are mine in Right, tho on some occasion found in Possession of one lately dead.

MONSTRAVERUNT, a Writ which lies for a Tenant who holds freely by Charter in antient Demeasn, upon his being distrained for the payment of any Toll or Imposition contrary to the Liberty he does, or ought to enjoy.

MONSTRUM was antiently used for the Box wherein Relicks were kept. See *MONSTER*.

MONSVeneris, see *VENERIS Mons*.

MONTANISTS, antient Heretics, so call'd from their Leader *Montanus*, who acted the Prophet, and had his Prophetesses.

They were also called *Phrygians*, *Catapbrygians*, and *Quintilians*. See *PHYRGIAN*, *CATAPHYGIAN*, and *QUINTILIAN*.

MONTH, *MENSIS*, the twelfth part of a Year. See *YEAR*.

Time, we have observ'd, is Duration mark'd out for certain uses; and measured by the Motions of the Heavenly Bodies. See *TIME* and *DURATION*.

Hence result divers kinds of Years, and *Months*, according to the particular Luminary by whose Revolutions they are determined, and the particular purposes they are destined for; as *Solar Months*, *Lunar Months*, *Civil Months*, *Astronomical Months*, &c.

*Solar Month* is the Space of Time wherein the Sun moves thro one entire Sign of the Ecliptic. See *SUN*.

Hence, if regard be had to the Sun's true Motion, the *Solar Months* will be unequal; since the Sun is longer in passing thro' the Winter Signs, than those of the Summer.

But as he constantly travels thro' all the Twelve in 365 Days, 5 Hours, and 49 Minutes, the Quantity of a mean *Month* will be had by dividing that Number by 12. On this



this Principle, the Quantity of a *Solar Month* will be found 30 Days, 10 Hours, 29 Minutes, 5 Seconds.

*Lunar MONTHS* are either *Synodical*, *Periodical*, or *Illuminative*.

*Lunar Synodical MONTH*, call'd also, absolutely, *Lunar MONTH*, and *Lunation*, is the Space of Time between two Conjunctions of the Moon with the Sun; or between two New Moons. See *SYNODICAL Month* and *LUNATION*.

The Quantity of the *Synodical Month* is 29 days, 12 h. 44', 3'', 2'''. See *MOON*.

*Lunar Periodical MONTH* is the Space of time wherein the Moon makes her round thro' the Zodiac; or wherein she returns to the same Point. See *PERIODICAL*.

The Quantity of this *Month* is 27 days, 7 h. 43'. 8'.

The antient *Romans* made use of *Lunar Months*, and made 'em alternately of 29 and 30 Days. They mark'd the Days of each *Month* by three Terms, viz. *Calends*, *Nones*, and *Ides*. See *CALENDS*, *NONES*, &c.

*Lunar Illuminative MONTH*, is the Space from the first time of her Appearance after New Moon, to her first Appearance after the New Moon following.

Hence, as the Moon appears sometimes sooner after the New Moon, and sometimes later; the Quantity of the *Illuminative Month* is not always the same.

By this *Month* the *Turks* and *Arabs* go.

*Astronomical*, or *Natural MONTH*, is that measured by some exact Interval corresponding to the Motion of the Sun, or Moon.

Such are the *Lunar* and *Solar Months* above-mentioned. Where note, That these *Months* can be of no use in Civil Life; where it is requir'd that the *Months* begin and end on some certain day. For this reason recourse is had to another form of *Months*.

*Civil*, or *Common MONTH*, is an interval of a certain number of whole Days, approaching nearly to the Quantity of some *Astronomical*, either *Lunar*, or *Solar Month*. See *DAY*.

These *Civil Months* are various, according to the *Astronomical Month* they are accommodated to.

*Civil Lunar MONTHS* are to consist alternately of 29 and 30 Days. Thus will two *Civil Months* be equal to two *Astronomical* ones, abating for the odd Minutes. And, consequently the New Moon will be hereby kept to the first Day of each such *Civil Month* for a long time together.

However, to make 'em keep constant Pace with the *Civil Months*, at the end of each 48 *Months*, a *Month* of 29 days must be added; or else every 33d *Month* must consist of 30 days.

This was the *Month* in Civil, or Common Use among the *Jews*, *Greeks*, and *Romans*, till the time of *Julius Caesar*.

*Civil Solar MONTHS* are to consist alternately of 30 and 31 Days; excepting for one *Month* of the twelve, which for every fourth Year should consist of 30 Days, and the other Years of 29.

This Form of *Civil Months* was introduced by *Julius Caesar*.

Under *Augustus*, the sixth *Month*, till then from its place call'd *Sextilis*, was denominated *Augustus*, in honour of that Prince, and to make the Compliment yet greater, a Day was added to it. So that it now consisted of 31 Days, tho till then it had only contain'd 30. To make up for which, a Day was taken from *February*; so that henceforward it only consisted of 28 Days, and every third Year of 29; tho before it had ordinarily consisted of 29 Days, &c.

And such are the *Civil* or *Calendar Months* which now obtain thro' *Europe*. See *CALENDAR*.

*Philosophical MONTH*, among *Chymists*, is the space of 40 Days and Nights. See *MENSTRUUM*.

*MONTHLY Comets*, see *MENSES*.

*MONT-PAGNEL*, in Military Matters, an Eminence chose without the reach of the Cannon of a Place besieged, where curious Persons post themselves to see an Attack, and the manner of the Siege, without being exposed to danger. The Word literally denotes the Post of the Invulnerable.

*MONUMENT* in Architecture, a Building destin'd to preserve the Memory, &c. of the Person who rais'd it, or for whom it was rais'd.

Such is a *Triumphal Arch*, a *Mausoleum*, a *Pyramid*, &c. See *MAUSOLEUM*, &c.

The Word comes from the *Latin Monere*, to advise, and advertize.

The first *Monuments* which the Antients erected, were the Stones which they laid over their Tombs, whereon they wrote the Names and Actions of the deceas'd. See *TOMB*.

These Stones were distinguish'd by various Names according as their Figures were different. The *Greeks* gave the Name *Stiles* to such as were Square in their Base, and preserv'd the same Depth throughout their whole Length; whence were deriv'd our *Square Pilasters*, or *Attic Columns*. See *PILASTER*.

They call'd those *Stiles*, which being round in their Base, ended in a Point at top, which gave occasion to the Invention of diminish'd Columns.

The Name *Pyramids* they gave to those which were square at the Foot, and terminated in a point at top, in manner of a Funeral Pile. See *PYRAMID*.

And the Name *Obelisk*, to those whose Bases were more in Length than in Breadth, and which rose, still lessening, to a very great Height, resembling the Figure of the Spits or Instruments used by the Antients in roasting the Flesh of their Sacrifices, which they call'd *Obelisk*. See *OBELISK*.

The *MONUMENT*, absolutely so call'd among us, denotes a Magnificent Pillar erected by Order of Parliament, in Memory of the Burning of the City, Anno 1656, in the very place where the Fire began.

It is of the *Tuscan Order*, 202 Foot high from the Ground, and 15 Foot in Diameter, all of solid *Portland Stone*, with a *Stair-Case* in the Middle of black *Marble*. The *Pedestal* is 21 Foot square, and 40 high; the Front being enrich'd with curious *Basso Relievo's*.

*MONY*. See *MONEY*.

*MOOD*, or *MODE*, in Logic, call'd also *Syllogistic Mood*, is a proper Disposition of the several Propositions of a *Syllogism*, in respect of Quantity and Quality. See *SYLLOGISM*.

By proper Disposition, we mean such wherein the Antecedent being true, the Consequent, in virtue of the Form, cannot be false. So that all those *Moods* or *Manners* of *Syllogisms* are at once excluded, where no Conclusion formally follows; or where the Antecedent being true, a false Conclusion may be drawn from it. See *CONCLUSION*, &c.

There are two kinds of *Moods*; the one direct, the other indirect: *Direct Mood* is that wherein the Conclusion is drawn from the Premises directly and immediately; as, Every Animal is a living Thing; every Man is an Animal; therefore every Man is a living Thing.

An *Indirect Mood*, is that wherein the Conclusion is not infer'd immediately from the Premises, but follows from 'em by means of a Conversion. As every Animal is a living Thing, every Man is an Animal; therefore some living Thing is a Man.

There are fourteen direct *Moods*; whereof four belong to the first Figure; five to the fourth; 4 to the 2d; and 6 to the 3d. See *FIGURE*.

They are denoted by so many artificial Words framed for that purpose, viz. 1. *Barbara*, *Celarent*, *Darii*, *Ferioq*; 4. *Baralip*, *Celantes*, *Dabitis*, *Fapesmo*, *Frisesom*. 2. *Cesare*, *Camestres*, *Fesjmo*, *Baroco*. 3. *Darapti*, *Felapton*, *Difamii*, *Datisi*, *Locurdo*, *Ferison*.

The Use and Effect of which Words lie wholly in the Syllables, and the Letters whereof the Syllables consist. Each Word, e. g. consists of three Syllables, denoting the three Propositions of a Syllable, viz. Major, Minor, and Conclusion. Add, that the Letters of each Syllable are either Vowels or Consonants. The Vowels are *A*, which denotes an universal affirmative Proposition; *E*, an universal Negative; *I*, a particular Affirmative; and *O*, a particular Negative.

Thus *Barbara* is a *Syllogism* of the 1st Figure, consisting of three universal affirmative Propositions: *Baralip* of the 4th Figure, consisting of universal affirmative Premises, &c. particular affirmative Conclusions, &c. See *BARBARA*, *CELARENT*, *DARII*, &c.

The Consonants are chiefly of use in the Reduction of *Syllogisms*. See *REDUCTION*.

*Mood* or *Mode*, in Grammar, is used to signify the different Manners of conjugating Verbs, agreeably to the different Actions or Affections to be expressed, e. g. shewing, commanding, wishing, &c. See *VERB*.

Hence arise 5 *Modes*, viz. the *Indicative*, *Imperative*, *Optative*, *Subjunctive*, and *Infinitive*. See *INDICATIVE*, *IMPERATIVE*, *OPTATIVE*, &c.

Some Grammarians reckon but four *Modes*, confounding the Optative with the Subjunctive; and some make six, dividing the Optative into Potential and Optative.

The *Greeks* have five *Modes* of Verbs differing in Termination; but the *Latins* have but four.

In *English* the Terminations are the same in all the *Modes*.

For the Origin of *Modes*, it may be observed, that Verbs are of that kind of Words which signify the Manner and Form of our Thoughts; whereof the Principal is Affirmation. Verbs are also form'd to receive different Inflections, as the Affirmation regards different Persons and different Times, whence arise the Tenses and Persons of Verbs.

But besides these, Men have thought fit to invent other Inflections, to explain what pass'd in their Mind still more distinctly: For, in the first place, they consider'd, that beside the simple Affirmations, as *be lover*, *be loved*, there were others modified and conditional, as, *if be loved*, *tho' be should love*. And the better to distinguish these Affirmations from the others, they doubled the Inflections of those



those Tenses, or Times, making some serve for simple Affirmations, as *love, loved*; and reserving the rest for Affirmations that were modified; as, *if he should love, might be have loved*: yet they kept not steadily to their Rules, but sometimes made use of simple Inflections to express Affirmations that were modified; as *essi vereor*, for *essi verear*. And it is from this last kind of Inflection, that Grammarians have formed the *Mood* they call *Subjunctive*. See *SUBJUNCTIVE*.

But further, besides the Affirmation, the Action of our Will may be taken for a *Mode*, or Manner of our Thought; and Men have found themselves under a Necessity of expressing what they *will*, as well as what they *think*. Now we may will a thing in several manners; whereof there are three which may be consider'd as the Principal. First, then, We sometimes will things which don't depend on ourselves, and in that case we only will them by a bare wish, which the *Latins* express by the Particle *Utinam*; and we by, *Please God*. Some Languages, as for instance, the *Greek*, have invented particular Inflections for this end; whence the Grammarians have taken occasion to call it the *Optative Mode*: And there seems something like both in the *French, Italian, and Spanish* Tongues, in regard these have a kind of triple Tenses; but in *Latin, English, &c.* the same Inflections serve for the *Subjunctive*, and for the *Optative*. For this reason, one may very well retrench this *Mode* from the *Latin* Conjugations; it being the different Inflections that make *Modes*, not the different Manner of signifying, which may be varied to infinity. See *OPTATIVE*.

We sometimes will in another manner; as when we are content it should pass, tho' we don't absolutely desire it; as when *Terence* says, *Profudat, perdat, pereat*, let him spend, sink, perish. Men might have invented a particular Inflection, to express this Movement, as in *Greek* they have done to express a simple Desire. But they han't done it; and in lieu thereof, make use of the *Subjunctive*. In *English* we add the Particle, Let him spend, &c. Some Authors call this the *Potential* or *Concessive Mode*.

The third manner of willing, is when what we desire, depending on another Person, of whom we can obtain it, we signify our Will that he do it. And this is the Motion we use, when we command or pray; and to express this Motion, was invented the *Mode* we call *Imperative*; which has no first Person in the Singular, because a Man, properly speaking, cannot command himself: In some Languages it has no third Person, because, in strictness, a Man cannot command any Person, but him to whom he speaks and addresses himself. And in regard the Command or Prayer always relates to what is to come, it happens that the *Imperative Mode*, and the *Future Tense*, are frequently used for each other, especially in the *Hebrew*; as, *non occides, thou shalt not kill, for do not kill*. Hence some Grammarians place the *Imperative* among the Number of *Futures*. See *IMPERATIVE*.

Of all the *Modes* we have mention'd, the *Oriental Languages* have none but the last, which is the *Imperative*; and on the contrary, the modern Languages have none of them any particular Inflection for the *Imperative*. The Method we take for it in *English*, is either to omit the Pronoun, or transpose it; thus, *I love*, is a simple Affirmation; *Love*, an *Imperative*: *We love*, an Affirmation; *Love we*, an *Imperative*.

MOOD, in Philosophy, } See *MODE*.

Moon, in Music,

MOON, *Luna*, ☾, in Astronomy, one of the heavenly Bodies, usually rank'd among the Planets; but with more propriety accounted a *Satellite*, or *Secondary Planet*. See *PLANET* and *SATELLITE*.

The *Moon* is an Attendant of our Earth, whom she respects as a Centre, and in whose Neighbourhood she is constantly found; insomuch as if view'd from the Sun, she would never appear to depart from us by an Angle greater than ten Minutes. See *EARTH*.

As all the other Planets move primarily round the Sun, so does the *Moon* round the Earth: her Orbit is an Ellipsis, in which she is retain'd by the Force of Gravity; performing her Revolution round us in 27 Days, 7 Hours, 43 Minutes; which is also the precise time of her Rotation round her Axis. See *ORBIT*, and *REVOLUTION*.

The mean Distance of the *Moon* from the Earth, is 60 $\frac{1}{2}$  Semi-diameters of the Earth; which is equivalent to 240,000 Miles. See *DISTANCE*.

The mean Excentricity of its Orbit, is  $\frac{1}{100}$  of its mean Distance, which makes a considerable Variation in that mean Distance. See *ECCENTRICITY*.

The *Moon's* Diameter is to that of the Earth, as 11 to 40.23 or 2175 Miles: Its mean apparent Diameter is 31 Minutes 15 $\frac{1}{2}$ , and that of the Sun 32 Minutes 12 Seconds. See *DIAMETER* and *SEMI-DIAMETER*.

The *Moon's* Surface contains 14,000,000 square Miles; and its Solidity 5,000,000,000 cubical ones: The Density of the *Moon's* Body is to that of the Earth, as 48911 to

39214, to that of the Sun as 48911 to 10000: Its Quantity of Matter to that of the Earth, nearly as 1 to 39.15: and the Force of Gravity on its Surface, is to that on the Surface of the Earth, as 139.2 to 407.8. See *SOLIDITY*, *DENSITY*, *GRAVITY*, &c.

#### Phænomena of the Moon.

The Phænomena or different Appearances, of the *Moon*, are very numerous: Sometimes she is *increasing*, then *waneing*; sometimes *horned*, then *semi-circular*; sometimes *gibbous*, then *full* and *globular*. See *PHASES*.

Sometimes, again, she illumines us the whole Night; sometimes only a part of it; sometimes she is found in the Southern Hemisphere; sometimes in the Northern: All which Variations having been first observ'd by *Eudymion*, an ancient *Grecian*, who first watch'd her Motions, he was fabled to have fallen in love with her.

The Source of most of these Appearances, is, that the *Moon* is a dark, opaque, and spherical Body; and only shines with the Light she receives from the Sun: whence only that Half turn'd towards him is illumin'd; the opposite one remaining in its native Darkness. The Face of the *Moon* visible on our Earth, is that part of her Body turn'd towards the Earth; whence, according to the various Positions of the *Moon* with regard to the Sun, and Earth, we observe different Degrees of Illumination; sometimes a large, and sometimes a less Portion of the enlighten'd Surface being visible.

#### The Phases of the Moon.

To conceive the Lunar Phases: Let S (Plate *ASTRONOMY*, fig. 13.) represent the Sun, T the Earth, R T S a Portion of the Earth's Orbit, and A B C D E F G the Orbit of the *Moon*, wherein she revolves round the Earth, in the space of a Month, advancing from West to East: Connect the Centres of the Sun and *Moon* by the right Line S L, and thro the Centre of the *Moon* imagine a Plane M L N, to pass perpendicular to the Line S L: the Section of that Plane with the Surface of the *Moon*, will give the Line that bounds Light and Darkness, and separates the illumin'd Face from the dark one. See *ILLUMINATION*.

Connect the Centres of the Earth and *Moon* by T L, perpendicular to a Plane P L O, passing thro the Centre of the *Moon*; that Plane will give on the Surface of the *Moon*, the Circle that distinguishes the visible Hemisphere, or that towards us, from the invisible one, and therefore call'd the *Circle of Vision*. See *CIRCLE OF VISION*.

Whence it appears, that whenever the *Moon* is in A, the Circle bounding Light and Darkness, and the Circle of Vision, coincide: So that all the illumin'd Face of the *Moon* will be turn'd towards the Earth; in which Case, the *Moon* is with respect to us *full*, and shines the whole Night; with respect to the Sun, she is in *Opposition*; in regard the Sun and *Moon* are then seen in opposite Parts of the Heavens, the one rising when the other sets. See *FULL MOON* and *OPPOSITION*.

When the *Moon* arrives at B, the whole illumin'd Disk M P N is not turn'd towards the Earth; so that the visible Illumination will be short of a Circle, and the *Moon* will appear *gibbous*, as in B. See *GIBBOUS*.

When she reaches C, where the Angle C T S is nearly right, there only one half of the illumin'd Disk is turn'd towards the Earth, and then we observe a *Half Moon*, as in C; and she is said to be *dicbotomized* or *bisected*. See *HALF MOON* and *DICBOTOMY*.

In this Situation the Sun and *Moon* are a fourth part of a Circle remov'd from each other; and the *Moon* is said to be in a *quadrate Aspect*, or to be in her *Quadrature*. See *QUADRATURES*.

The *Moon* arriving at D, a small part of the illumin'd Face M P N, is only turn'd towards the Earth: for which reason, the small part that shines upon us, will be seen *falcated*, or bent into narrow Angles or *Horns*, as in D. See *FALCATED*.

At last, the *Moon* arriving at E, shews no part of her illumin'd Face to the Earth, as in D; this Position we call the *New Moon*, and she is then said to be in *Conjunction* with the Sun; the Sun and *Moon* being in the same Point of the *Ecliptic*. See *NEW MOON*, and *CONJUNCTION*.

As the *Moon* advances towards E, she resumes her *Horns*; and as before the *New Moon*, the *Horns* were turn'd Westward; so now they *change* their Position, and look Eastward: when she comes at G, she is again in *quadrate Aspect* with the Sun; in H *gibbous*, and in A again *full*.

Here, the Arch E L, or the Angle S T L, contain'd under Lines drawn from the Centres of the Sun and *Moon* to that of the Earth, is call'd the *Elongation* of the *Moon* from the Sun: and the Arch M O, which is the Portion of the illumin'd Circle M O N, that is turn'd towards us, and which is the Measure of the Angle that the Circle bounding Light and Darkness, and the Circle of Vision, make with each other, is every where nearly similar to the Arch



of Elongation *EL*; or which is the same thing, the Angle *STE* is nearly equal to the Angle *MLO*: as is demonstrated by Geometers. See *ELONGATION*.

To delineate the *Moon's Phases* for any time. Let the Circle *COBP* (fig. 14.) represent the *Moon's Disk* turn'd towards the Earth, and let *OP* be the Lines in which the Semi-circle *OMP* is projected, which suppose cut at right Angles by the Diameter *BC*; then making *LP* the Radius, take *LF* equal to the Co-sine of the Elongation of the *Moon*; and upon *BC*, as the greater Axis, and *LI*, the less, describe the Semi-Ellipsis *BFC*; this Ellipsis will cut off from the *Moon's Disk* the Portion *BEC* of the illumin'd Face visible on the Earth.

As the *Moon* illumines the Earth by a Light reflected from the Sun, so is she reciprocally illumin'd by the Earth, which reflects the Sun's Rays to the Surface of the *Moon*, and that more abundantly than she receives them from the *Moon*. For the Surface of the Earth is above 15 times greater than that of the *Moon*; and therefore supposing the Texture of each Body alike, as to the Power of Reflecting; the Earth must return 15 times more Light to the *Moon*, than she receives from it. In *New Moons*, the illumined Side of the Earth is turn'd fully towards the *Moon*, and will therefore at that time illumine the dark Side of the *Moon*; and then the *Lunar Inhabitants* (if such there be) will have a full Earth, as we, in a similar Position, have a full *Moon*: And hence arises that dim Light observ'd in the Old and New *Moons*; whereby, besides the bright Horns, we perceive somewhat more of her Body behind them, tho' very obscurely. When the *Moon* comes to be in opposition to the Sun, the Earth seen from the *Moon* will appear in *Conjunction* with him, and its dark Side will be turn'd towards the *Moon*; in which Position the Earth will disappear to the *Moon*, as that does to us at the time of the *New Moon*, or in her *Conjunction* with the Sun. After this, the *Lunar Inhabitants* will see the Earth in a horned Figure. In fine, the Earth will present all the same Phases to the *Moon*, as the *Moon* does to the Earth.

Dr. Hook, accounting for the Reason why the *Moon's Light* affords no visible Heat, observes, that the Quantity of Light which falls on the Hemisphere of the full *Moon*, is rarify'd into a Sphere 288 times greater in Diameter than the *Moon*, e'er it arrive at us; and consequently that the *Moon's Light* is 104368 weaker than that of the Sun. It would therefore require 104368 full *Moons* to give a Light and Heat equal to that of the Sun at Noon. See *SUN, HEAT, &c.*

#### Motion of the Moon.

Tho' the *Moon* finishes its Course in 27 Days, 7 Hours, which Interval we call a *Periodical Month*, she is longer in passing from one *Conjunction* to another; which Space we call a *Synodical Month*, or a *Lunation*. See *MONTH* and *LUNATION*.

The reason is, that while the *Moon* is performing its Course round the Earth in its own Orbit, the Earth with its Attendant is making its Progress round the Sun, and both are advanced almost a whole Sign towards the East; so that the Point of the Orbit, which in the former Position was in a right Line passing the Centres of the Earth and Sun, is now more westerly than the Sun: and therefore when the *Moon* is arrived again at that Point, it will not be yet seen in *Conjunction* with the Sun; nor will the *Lunation* be completed in less than 29 Days and a half. See *PERIODICAL, SYNODICAL, &c.*

Were the Plane of the *Moon's Orbit* coincident with the Plane of the *Ecliptic*, i. e. were the Earth and *Moon* both moved in the same Plane, the *Moon's Way* in the Heavens, view'd from the Earth, would appear just the same with that of the Sun; with this only difference, that the Sun would be found to describe his Circle in the space of a Year, and the *Moon* hers in a Month: but this is not the Case; for the two Planes cut each other in a right Line, passing thro' the Centre of the Earth, and are inclin'd to each other in an Angle of about five Degrees. See *INCLINATION*.

Suppose, e. g. *AB* (fig. 15.) a Portion of the Earth's Orbit; *T* the Earth; and *CEDF* the *Moon's Orbit*, wherein is the Centre of the Earth: from the same Centre *T*, in the Plane of the *Ecliptic*, describe another *CDGDH*, whose Semi-diameter is equal to that of the *Moon's Orbit*: Now, these two Circles being in several Planes, and having the same Centre *T*, will intersect each other in a Line *DC*, passing thro' the Centre of the Earth. Consequently, *CED*, one half of the Orbit of the *Moon*, will be rais'd above the Plane of the Circle *CGH*, towards the North; and *DFC*, the other half, will be sunk below it towards the South. The right Line *DC*, wherein the two Circles intersect each other, is call'd the *Line of the Nodes*, and the Points of the Angles *C* and *D* the *Nodes*: whereof, that where the *Moon* ascends above the Plane of the *Ecliptic*, Northwards, is call'd the *Ascending Node*, and the Head of

the *Dragon*; and the other *D*, the *Descending Node*, and the *Dragon's Tail*. See *NODE*. And the Interval of Time between the *Moon's* going from the ascending Node, and returning to it, a *Dracontic Month*. See *DRAGON'S HEAD, &c. DRACONTIC Month, &c.*

If the Line of the Nodes were immovable, that is, if it had no other Motion, but that whereby it is carry'd round the Sun, it would still look towards the same Point of the *Ecliptic*, i. e. would always keep parallel to itself; but it is found by Observation, that the Line of the Nodes constantly changes place, and shifts its Situation from East to West, contrary to the Order of the Signs, and by a Retrograde Motion, finishes its Circuit in about 19 Years; in which time each of the Nodes returns to that Point of the *Ecliptic*, whence it before receded. See *CYCLE*.

Hence it follows, that the *Moon* is never precisely in the *Ecliptic*, but twice, each Period, viz. when she is in the Nodes: throughout the rest of her Course she deviates from it, being nearer or further from the *Ecliptic*, as she is nearer or further from the Nodes. In the Points *F* and *E*, she is at her greatest Distance from the Nodes; which Points are call'd her *Limits*. See *LIMITS*.

The *Moon's Distance* from the Nodes, or rather from the *Ecliptic*, is call'd her *Latitude*, which is measur'd by an Arch of a Circle drawn thro' the *Moon* perpendicular to the *Ecliptic*, and intercepted between the *Moon* and the *Ecliptic*. The *Moon's Latitude*, when at the greatest, as in *E* or *F*, never exceeds 5 Degrees, and about 18 Minutes; which Latitude is the Measure of the Angles at the Nodes. See *LATITUDE*.

It appears by Observation, that the *Moon's Distance* from the Earth is continually changing; and that she is always either drawing nearer, or going further from us. The reason is this, that the *Moon* does not move in a circular Orbit, which has the Earth for its Centre; but in an Elliptic Orbit (such as is represented in Fig. 16.) one of whose Foci, is the Center of the Earth: *AP* represents the greater Axis of the Ellipsis, and the Line of the *Apsides*; and *TC*, the *Eccentricity*: the Point *A*, which is the highest *Apsis*, is call'd the *Apogee* of the *Moon*; and *P*, the lowest *Apsis*, is the *Moon's Perigee*, or the Point wherein she comes nearest the Earth. See *APOGEE* and *PERIGEE*.

The Space of Time wherein the *Moon*, going from the *Apogee*, returns to it again, is call'd the *Anomalistic Month*. See *ANOMALISTIC*.

If the *Moon's Orbit* had no other Motion, but that wherewith it is carry'd round the Sun, it would still retain a Position parallel to itself, and always point the same way, and be observ'd in the same Point of the *Ecliptic*; but the Line of the *Apsides* is likewise observ'd to be movable, and to have an angular Motion round the Earth from West to East, according to the Order of the Signs, returning to the same Situation in the space of about nine Years. See *ANGULAR Motion* and *APSIDES*.

#### Irregularities in the Moon's Motion.

The Irregularities of the *Moon's Motion*, and that of her Orbit, are very considerable: For, 1. When the Earth is in her *Aphelion*, the *Moon* is in her *Aphelion* likewise; in which case she quickens her Pace, and performs her Circuit in a shorter time: On the contrary, when the Earth is in its *Perihelion*, the *Moon* is so too, and then she slackens her Motion; and thus revolves round the Earth in a shorter space, when the Earth is in her *Aphelion*, than when in her *Perihelion*: So that the *Periodical Months* are not all equal. See *PERIODICAL Month*.

2. Again, when the *Moon* is in her *Syzygies*, i. e. in the Line that joins the Centers of the Earth and Sun, which is either in her *Conjunction* or *Opposition*; she moves swifter, *ceteris paribus*, than when in the *Quadratures*. See *SYZYGIES*.

Further, 3. According to the different Distance of the *Moon* from the *Syzygies*, i. e. from *Opposition* or *Conjunction*, she changes her Motion: In the first Quarter, that is, from the *Conjunction* to her first *Quadrature*, she abates somewhat of her Velocity; which, in the second Quarter, she recovers: In the third Quarter, she again loses; and in the last, again recovers. This Inequality was first discover'd by Tycho Brahe, who call'd it the *Moon's Variation*. See *VARIATION*.

4. Add to this, that the *Moon* moves in an Ellipsis, one of whose Foci is in the Centre of the Earth, round which she describes Areas proportionable to the Times, as the primary Planets do round the Sun; whence her Motion in the *Perigee* must be quickest, and slowest in the *Apogee*.

5. The very Orbit of the *Moon* is changeable, and does not always persevere in the same Figure; its *Eccentricity* being sometimes increas'd, and sometimes diminish'd; greatest, when the Line of *Apsides* coincides with that of the *Syzygies*; and least, when the Line of *Apsides* cuts the other at right Angles. See *ORBIT*.



6. Nor is the Apogee of the Moon without an Irregularity; being found to move forwards, when it coincides with the Line of Syzygies, and backwards, when it cuts the Line at right Angles. See APOGEE: Nor is this Progress and Regress in any measure equal: in the Conjunction, or Opposition, it goes briskly forwards; and in the Quadratures, moves either slowly forwards, stands still, or goes backward. See SYZYGIES.

7. The Motion of the Nodes is not uniform; but when the Line of the Nodes coincides with that of the Syzygies, they stand still; when the Nodes are in the Quadratures, i.e. when their Line cuts that of the Syzygies at right Angles, they go backwards, from East to West; and this, Sir I. Newton shews, with the Velocity of 16", 19", 24", in an Hour. See NODE.

The only equable Motion the Moon has, is that where-with she turns round her Axis exactly in the same space of Time, in which she revolves round us in her Orbit; whence it happens, that she always turns the same Face towards us.

For, as the Moon's Motion round its Axis is equal, and yet its Motion or Velocity in its Orbit is unequal; it follows, that when the Moon is in its Perigee, where it moves swiftest in its Orbit, that part of its Surface, which, on account of its Motion in the Orbit, would be turn'd from the Earth, is not so, entirely; by reason of its Motion round its Axis: Thus, some Parts in the Limb, or Margin of the Moon, sometimes recede from the Center of the Disk, and sometimes approach towards it, and some Parts, that were before invisible, become conspicuous: which is call'd the Moon's Libration.

Yet this Equability of Rotation occasions an apparent Irregularity; for the Axis of the Moon, not being perpendicular to the Plane of its Orbit, but a little inclined to it: and this Axis maintaining its Parallelism, in its Motion round the Earth; it must necessarily change its Situation, in respect of an Observer on the Earth; to whom, sometimes the one, and sometimes the other Pole of the Moon, becomes visible. Whence it appears to have a kind of Libration. See LIBRATION and AXIS.

#### Physical Laws of the Moon's Motion.

Thus much for the Lunar Phenomena: It remains that we assign the Physical Cause thereof. The Moon, we have observed, moves round the Earth, by the same Laws, and in the same Manner, as the Earth round the Sun and other Planets. The Solution therefore of the Lunar Motion, in general, comes under those of the Earth, and other Planets. See PLANET and EARTH.

As for the particular Irregularities in the Moon's Motion, to which the Earth, and other Planets, are not subject, they arise from the Sun, which acts on, and disturbs her in her ordinary Progress thro her Orbit; and are all mechanically deducible from the same great Law, whereby her general Motion is directed, viz. the Law of Gravitation or Attraction. See GRAVITATION.

Other secondary Planets, w. g. the Satellites of Jupiter and Saturn, are doubtless subject to the like Irregularities with the Moon; as being exposed to the same perturbing or disturbing Force of the Sun; but their Distance secures them from our Observation. See SATELLITE and DISTURBING Force.

The Laws of the several Irregularities in the Syzygies, Quadratures, &c. see under SYZYGIES, QUADRATURES, &c.

#### The Astronomy of the Moon.

1. To determine the Period of the Moon's Revolution round the Earth, or the Periodical Month; and the Time between one Opposition and another, or the Synodical Month: since, in the middle of a Lunar Eclipse, the Moon is opposite to the Sun: (See ECLIPSE.) Compute the time between two Eclipses, or Oppositions; and divide this, by the number of Lunations, that have passed in the mean time: the Quotient will be the Quantity of the Synodical Month. Compute the Sun's mean Motion during the time of the Synodical Month, and add this to the entire Circle described by the Moon: Then, as the Sum is to 360°, so is the Quantity of the Synodical Month to the Periodical.

Thus, Copernicus in the Year 1500, November 6. at 12 at Night, observed an Eclipse of the Moon at Rome; and August 1, 1523, at 4 h. 25', another at Cracow: hence, the Quantity of the Synodical Month is thus determined:

Obs. 11 A. 1523 d. 237 h. 4.25'

Obs. 1 A. 1500 d. 310 h. 2.20'

Interval of Time A 22 d. 292 h. 2.5'  
And the Days 5

Exact Interval A. 22 d. 297 h. 2.5'  
or 11991005'

Which divided by 282 Months elapsed, in the mean time, gives the Quantity of the Synodical Month 42521', 9", 9"; that is, 29 days, 12 hours, 41 minutes.

From two other Observations of Eclipses, the one at Cracow, the other at Babylon, the same Author determines more accurately the Quantity of the Synodical Month to be

That is 29 d. 11 h.

The Sun's Motion in the time 29. 6. 24.18

The Moon's Motion 389. 6. 24.18

Quantity of the Periodical Month 27 d. 7 h. 43'. 5".

Hence, 1. The Quantity of the Periodical Month being given; by the Rule of Three we may find the Moon's diurnal and hourly Motion, &c. And thus may Tables of the mean Motion of the Moon be constructed. See TABLES; see also DIURNAL and HORARY.

2. If the Sun's mean diurnal Motion be subtracted from the Moon's mean diurnal Motion; the Remainder will give the Moon's diurnal Motion from the Sun: and thus may a Table of Latitudes be constructed, such as those of Bullialdus. See LATITUDES.

3. Since in the middle of a total Eclipse, the Moon is in the Node; if the Sun's Place be found for that time, and to this be added six Signs, the Sum will give the Place of the Node. See NODE.

4. From comparing the ancient Observations with the modern, it appears that the Nodes have a Motion, and that they proceed in Antecedentia, i. e. from Taurus to Aries, from Aries to Pisces, &c. If then to the Moon's mean diurnal Motion, be added the diurnal Motion of the Nodes, the same will be the Motion of the Latitude; and thence, by the Rule of Three, may be found in what time the Moon goes 360° from the Dragon's Head, or in what time she goes from, and returns to it: That is the Quantity of the Draconic Month.

5. If the Motion of the diurnal Apogee be subtracted from the mean Motion of the Moon, the Remainder will be the Moon's mean Motion from the Apogee: and thence, by the Rule of Three, is determin'd the Quantity of the Anomalistic Month.

According to the Observations of Kepler, the mean Synodical Month is 29 d. 12 h. 44'. 3". 21". Her Periodical Month 27 d. 7 h. 43'. 8". The Place of the Apogee for the Year 1700, January 1. Old Stile, was 11 S. 8°. 57'. 1". The Plane of the Nodes 4 S. 27°. 39'. 17". Mean diurnal Motion of the Moon 13°. 10'. 35". Diurnal Motion of the Apogee 6'. 41". Diurnal Motion of the Nodes 3'. 11". Lastly, the Eccentricity 4362 Parts, such, whereof the Diameter of the Eccentrice is 10000: and therefore the diurnal Motion of the Latitude is 13°. 13'. 46"; and the diurnal Motion from the Apogee 13°. 3'. 54".

#### Theory of the LUNAR Motions and Irregularities.

The Tables of Equation, which serve to solve the Irregularities of the Sun, do likewise serve for those of the Moon. See EQUATION.

But then these Equations must be corrected for the Moon; otherwise they will not exhibit the true Motions in the Syzygies. The Method is thus: Suppose the Moon's Place in the Zodiac, required in Longitude, for any given time; here, we first find, in the Tables, the place where it would be, supposing its Motion uniform, which we call mean, and which is sometimes faster, and sometimes slower than the true Motion: then, to find where the true Motion will place her, which is also the apparent, we are to find in another Table at what Distance it is from its Apogee; for, according to this Distance, the Difference between her true and mean Motion, and the two Places which correspond thereto, is the greater. The true Place thus found, is not yet the true Place; but varies from it, as the Moon is more, or less remote both from the Sun, and the Sun's Apogee: which Variation respecting, at the same time, those two different Distances, they are to be both considered and combined together, as in a Table apart. Which Table gives the Correction to be made of the true Places first found: That Place thus corrected, is not yet the true Place, unless the Moon be either in Conjunction, or Opposition: If she be out of these, there must be another Correction, which depends on two things taken together, and compared, viz. the Distance of the Moon's corrected Place from the Sun; and of that at which she is with regard to her own Apogee; this last Distance having been changed by the first Correction.

By all these Operations and Corrections, we at length arrive at the Moon's true Place for that instant. In this it must be owned, occur prodigious difficulties: The Lunar Inequalities are so many, that it was in vain the Astronomers laboured to bring 'em under any Rule, before the Great Sir I. Newton; to whom we are indebted both for the mechanical Causes of these Inequalities, and for the Method of computing and ascertaining them: So that he



has a World, in great measure, of his own discovering, or rather subduing.

From the Theory of Gravity he shews, that the larger Planets revolving round the Sun, may carry along with them smaller Planets revolving round themselves; and shews, *a priori*, that these smaller must move in Ellipses having their Umbilici in the Centres of the larger; and have their Motion in their Orbit variously disturbed by the Motion of the Sun; and, in a word, must be affected with those Inequalities which we actually observe in the *Moon*. And from this Theory, argues analogous Irregularities in the Satellites of Saturn.

From this same Theory he examines the force which the Sun has to disturb the *Moon's* Motion, determines the horary Increase of the Area which the *Moon* would describe in a circular Orbit by Radii drawn to the Earth — her Distance from the Earth — the Horary Motion in a circular and elliptic Orbit — the mean Motion of the Nodes — the true Motion of the Nodes — the horary Variation of the Inclination of the *Moon's* Orbit to the Plane of the Ecliptic.

Lastly, From the same Theory he has found the annual Equation of the *Moon's* mean Motion to arise from the various dilatation of her Orbit; and that Variation to arise from the Sun's force, which being greater in the Perigee; distends the Orbit; and being less in the Apogee, suffers it to be again contracted. In the dilated Orbit, she moves more slowly; in the contracted, more swiftly: and the annual Equation, whereby this Inequality is compensated, in the Apogee, and Perigee is nothing at all; at a moderate distance from the Sun, amounts to  $11', 50''$ ; and in other places is proportional to the Equation of the Sun's Centre, and is added to the mean Motion of the *Moon*, when the Earth proceeds from its Aphelion to its Perihelion; and subtracted when in its opposite part. Supposing the Radius of the *Orbis magnus* 1000, and the Earth's Eccentricity  $16\frac{7}{8}$ ; this Equation, when greatest, according to the Theory of Gravity, comes out  $11', 49'', 8'''$ . He adds, that in the Earth's Perihelion the Nodes move swifter than in the Aphelion, and that in a triplicate Ratio of the Earth's distance from the Sun, inversely. Whence arise annual Equations of their Motions, proportionable to that of the Centre of the Sun. Now the Sun's Motion is in a duplicate Ratio of the Earth's Distance from the Sun inversely, and the greatest Equation of the Centre which this Inequality occasions, is  $1^\circ, 56', 26''$ , agreeable to the Sun's Eccentricity  $16\frac{5}{8}$ . If the Sun's Motion were in a triplicate Ratio of its Distance inversely, this Inequality could generate the greatest Equation  $2^\circ, 66', 9''$ ; and therefore the greatest Equations which the Inequalities of the Motions of the *Moon's* Apogee and Nodes occasion, are to  $2^\circ, 56', 9''$ , as the mean diurnal Motion of the *Moon's* Apogee, and the mean diurnal Motion of her Nodes are to the mean diurnal Motion of the Sun. Whence the greatest Equation of the mean Motion of the Apogee comes out  $19'', 52''$ ; and the greatest Equation of the mean Motion of the Nodes  $9' 27''$ . The former Equation is added, and the latter subtracted, when the Earth proceeds from its Perihelion to its Aphelion; and the contrary in the opposite part of its Orbit.

From the same Theory of Gravity it also appears, that the Sun's Action on the *Moon* must be somewhat greater when the transverse Diameter of the Lunar Orbit passes through the Sun, than when it is at right Angles with the Line that joins the Earth and Sun: And, therefore, that the Lunar Orbit is somewhat greater in the first case, than in the second. Hence arises another Equation of the mean Lunar Motion, depending on the Situation of the *Moon's* Apogee with regard to the Sun, which is greatest when the *Moon's* Apogee is in an Octant with the Sun; and none, when that arrives at the Quadrature, or Syzygies; and is added to the mean Motion, in the Passage of the *Moon's* Apogee from the Quadrature to the Syzygies, and subtracted in the Passage of the Apogee from the Syzygies to the Quadrature. This Equation, which he calls *Semestris*, when greatest, viz. in the Octants of the Apogee, arises to  $3', 34''$ , at a mean distance of the Earth from the Sun; but it increases and diminishes in a triplicate Ratio of the Sun's distance inversely; and therefore in the Sun's greatest distance, is  $3', 34''$ ; in the smallest,  $3', 56''$ , nearly. But when the Apogee of the *Moon* is without the Octants, it becomes less, and is to the greatest Equation, as the Sine of double the distance of the *Moon's* Apogee, from the next Syzygy or Quadrature, to the Radius.

From the same Theory of Gravity it follows, that the Sun's Action on the *Moon* is somewhat greater when a Line right drawn through the *Moon's* Nodes passes through the Sun, than when that Line is at right Angles with another joining the Sun and Earth: And hence arises another Equation of the *Moon's* mean Motion, which he calls *Secunda Semestris*, and which is greatest when the Nodes are in the Sun's Octants, and vanish when they are in the Syzygies, or Quadratures; and in other Situations of the

Nodes is proportionable to the Sine of double the distance of either Node from the next Syzygy, or Quadrature: it is added to the *Moon's* mean Motion while the Nodes are in their Passage from the Sun's Quadratures to the next Syzygy, and subtracted in their Passage from the Syzygies to the Quadratures in the Octants. When it is greatest, it amounts to  $47''$ , at a mean distance of the Earth from the Sun; as appears from the Theory of Gravity: At other distances of the Sun, this Equation in the Octants of the Nodes is reciprocally as the Cube of the Sun's distance from the Earth; and therefore in the Sun's Perigee is  $45''$ ; in his Apogee nearly  $49''$ .

By the same Theory of Gravity, the *Moon's* Apogee proceeds the fastest when either in Conjunction with the Sun, or in Opposition to it; and returns when it makes a Quadrature with the Sun. In the former Case, the Excentricity is greatest, and in the latter smallest. These Inequalities are very considerable, and generate the principal Equation of the Apogee, which he calls *Semestris*, or *Semimenstrual*. The greatest *Semimenstrual* Equation is about  $12^\circ, 18'$ .

Horrox first observ'd the *Moon* to revolve in an Ellipsis round the Earth placed in the lower Umbilicus: And Halley placed the Centre of the Ellipsis in an Epicycle whose Centre revolves uniformly about the Earth: And from the Motion in the Epicycle arise the Inequalities now observed in the Progress and Regress of the Apogee, and the Quantity of the Eccentricity.

Suppose the mean distance of the *Moon* from the Earth divided into 100000, and let T (Plate ASTRONOMY, Fig. 17.) represent the Earth, and TC the mean Eccentricity of the *Moon* 5505 parts; produce TC to B, that CB may be the Sine of the greatest Semi-menstrual Equation  $12^\circ, 18'$  to the Radius TC; the Circle BDA, described on the Centre C, with the Interval CB, will be the Epicycle wherein the Centre of the Lunar Orb is placed; and wherein it revolves according to the Order of the Letters BDA. Take the Angle BCD equal to double the annual Argument, or double the distance of the true Place of the Sun from the *Moon's* Apogee once equated, and CTD will be the Semi-menstrual Equation of the *Moon's* Apogee, and TD the Eccentricity of its Orbit tending to the Apogee equated a second time. Now the *Moon's* mean Motion, Apogee, and Eccentricity, as also the greater Axis of its Orbit 200000; the *Moon's* true place, as also her distance from the Earth are found, and that by the commonest Methods.

In the Earth's Perihelion, by reason of the greater force of the Sun, the Centre of the *Moon's* Orbit will move more swiftly about the Centre C, than in the Aphelion, and that in a triplicate Ratio of the Earth's distance from the Sun inversely. By reason of the Equation of the Centre of the Sun, comprehended in the annual Argument, the Centre of the *Moon's* Orbit will move more swiftly in the Epicycle BDA, in a duplicate Ratio of the distance of the Earth from the Sun inversely. That the same may still move more swiftly in a simple Ratio of the distance inversely from the Centre of the Orbit D, draw DE towards the *Moon's* Apogee, or parallel to TC; and take the Angle EDG equal to the Excess of the annual Argument, above the Distance of the *Moon's* Apogee from the Sun's Perigee in Consequentia; or which is the same, take the Angle CDF equal to the Complement of the true Anomaly of the Sun to  $360^\circ$ ; and let DF be to DC as double the Eccentricity of the *Orbis magnus* to the mean distance of the Sun from the Earth, and the mean diurnal Motion of the Sun from the *Moon's* Apogee, to the mean diurnal Motion of the Sun from its own Apogee, conjunctly, i. e. as  $33\frac{7}{8}$  is to 1000, and  $52', 27'', 16'''$  to  $59' 8'' 15'''$  conjunctly; or as 3 to 100. Conceive the Centre of the *Moon's* Orbit placed in the Point E, and to revolve in an Epicycle whose Centre is D, and Radius DE, while D proceeds in the Circumference of the Circle BDA: Thus the Velocity wherewith the Centre of the *Moon's* Orbit moves in a certain Curve, described about the Centre C, will be reciprocally as the Cube of the Sun's distance from the Earth. The Computation of this Motion is difficult, but will be made easy by the following Approximation. If the *Moon's* mean distance from the Earth be 100000 parts, and its Eccentricity TC 5505 of those parts, the right Line CB or CD will be found 1172  $\frac{1}{2}$ , and the right Line DF 35  $\frac{1}{2}$ . This right Line at the distance TC, subtends an Angle to the Earth, which the transferring of the Centre of the Orbit from the place D to E generates in the Motion of this Centre; and the same right Line doubled, in a parallel Situation, at the distance of the upper Umbilicus of the *Moon's* Orbit from the Earth, subtends the same Angle, generated by that translation in the Motion of the Umbilicus; and at the distance of the *Moon* from the Earth subtends an Angle which the same translation generates in the Motion of the *Moon*; and which may therefore be call'd the *Second Equation of the Centre*.



This Equation at a mean distance of the Moon from the Earth, is as the Sine of the Angle contain'd between the right Line D F, and a right Line drawn from the Point F to the Moon, nearly; and when greatest, amounts to  $2' 25''$ . Now the Angle comprehended between the right Line D F and a Line from the Point D, is found either by subtracting the Angle E D E from the mean Anomaly of the Moon, or by adding the Moon's distance from the Sun to the distance of the Moon's Apogee from the Apogee of the Sun. And as Radius is to the Sine of the Angle thus found, so is  $2' 25''$  to the second Sine of the Centre, which is to be added, if that Sine be less than a Semi-circle, and subtracted if greater: Thus we have its Longitude in the very Syzygies of the Luminaries.

If a very accurate Computation be required, the Moon's Place thus found must be corrected by a second Variation. The first and principal Variation we have already consider'd, and have observ'd it to be greatest in the Octants. The second is greatest in the Quadrants, and arises from the different Action of the Sun on the Moon's Orbit, according to the different Position of the Moon's Apogee to the Sun, and is thus computed: As Radius is to the versed Sine of the distance of the Moon's Apogee from the Sun's Perigee, in consequentia so is a certain Angle P to a fourth Proportional. And as Radius is to the Sine of the Moon's distance from the Sun, so is the Sine of this fourth Proportional and another Angle Q to the second Variation, which is to be subtracted, if the Moon's Light be increasing; and added, if diminishing.

Thus we have the Moon's true Place in her Orbit; and by reduction of this Place to the Ecliptic, the Moon's Longitude. The Angles P and Q are to be determined by observation: in the mean time, if for P be assumed  $2'$ , and for Q  $1'$ , we shall be near the truth.

#### Nature of the MOON.

1. From the various Phases of the Moon: From her only shewing a little part illumined, when following the Sun ready to set: From that Part's increasing as she recedes from the Sun, till at the distance of  $80^\circ$  she shines with a full Face; and again wains as she re-approaches that Luminary, and loses all her Light when she meets him: From the lucid Part's being constantly turn'd towards the West, while the Moon increases; and towards the East when she decreases; it is evident, that only that part shines on which the Sun's Rays fall: And from the Phenomena of Eclipses, happening when the Moon should shine with a full face, viz. when she is  $180^\circ$  distant from the Sun; and the darkned Parts appearing the same in all Places, it is evident she has no Light of her own, but borrows whatever Light she has from the Sun. See PHASES, ECLIPSE, and SUN.

2. The Moon sometimes disappears in the clear Heaven, so as not to be discoverable by the best Glasses; little Stars of the fifth and sixth Magnitude all the time remaining visible. This Phenomenon Kepler observed twice Anno 1580, and 1583; and Hevelius in 1620. Riccioli, and other Jesuits at Bononia, and many People throughout Holland observed the like April 14, 1642. yet at Venice and Vienna she was all the time conspicuous. December 23, 1703, there was another total Obscuration: At Arles she first appear'd of a yellowish brown; at Avignon ruddy and transparent, as if the Sun had shone through; at Marseilles, one part was reddish, the other very dusky; and, at length, tho' in a clear Sky, wholly disappear'd. Here it is evident, that the Colours appearing different at the same time, do not belong to the Moon; that they are occasion'd by an Atmosphere around her variously disposed in this and that Place, for refracting of these or those coloured Rays.

3. The Eye, either naked, or arm'd with a Telescope, sees some parts in the Moon's Face darker than others, which are call'd Maculae, or Spots. Through the Telescope, while the Moon is either increasing or decreasing, the illumined parts in the Maculae appear evenly terminated; but in the bright Parts, the Bound of the Light appears jagged and uneven, composed of dissimilar Arches, convex and concave. (see Tab. ASTRONOMY, Fig. 18.) There are also observed lucid Parts dispersed among the darker; and illumined Parts seen beyond the limits of Illumination; other intermediate ones remaining still in darkness; and near the Maculae, and even in 'em, are frequently seen such lucid Specks. Beside the Maculae observed by the Ancients, there are other variable ones invisible by the naked Eye, call'd New Maculae, always opposite to the Sun; and which are hence found among those parts which are the soonest illumined in the increasing Moon, and in the decreasing Moon lose their Light later than the intermediate ones; running round, and appearing sometimes larger, sometimes smaller.

Hence, (1.) As all parts are equally illumined by the Sun, in as much as they are equally distant from him:

If some appear brighter, and others darker; some reflect the Sun's Rays more copiously than others; and therefore they are heterogeneous. And, (2.) Since the Boundary of the illumined Part is very smooth and equable in the Maculae, their Surface must be so too. (3.) The parts illumined by the Sun sooner, and deserted later than others that are nearer, are higher than the rest, i. e. stand up above the other Surface of the Moon. (4.) The New Maculae answer perfectly to the Shadows of terrestrial Bodies.

4. Hevelius writes, that he has several times found, in Skies perfectly clear, when even Stars of the 6th and 7th Magnitude were conspicuous, at the same Altitude of the Moon, and the same Elongation from the Earth, and with one and the same excellent Telescope; that the Moon and its Maculae do not appear equally lucid, clear, and perspicuous, at all times; but are much brighter, purer, and more distinct at one time than another. From the Circumstances of the Observation, 'tis evident, the reason of the Phenomenon is not either in our Air, in the Tube, in the Moon, nor in the Spectator's Eye; but must be look'd for in something existing about the Moon.

5. Cassini frequently observ'd Saturn, Jupiter, and the fix'd Stars, when hid by the Moon, near her Limb; whether the illumined or dark one, to have their circular Figure changed into an oval one; and in other Occultations found no alteration of Figure at all. In like manner, the Sun and Moon rising and setting in a vaporous Horizon, do not appear Circular, but Elliptic.

Hence, as we know, by sure Experience, that the Circular Figure of the Sun and Moon is only changed into an Elliptic one by means of the Refraction in the vapoury Atmosphere; 'tis pretty apparent, that at the time when the circular Figure of the Stars is thus changed by the Moon, there is a dense Matter incompassing the Moon, wherein the Rays emitted from the Stars are refracted; and that at other times, when there was no change of Figure, this Matter was wanting.

This Phenomenon is well illustrated by the following Experiment: To the inner bottom of any Vessel, either Plane, Convex, or Concave, with Wax fasten a Circle of Paper; then pouring in Water, that the Rays reflected from the Circle into the Air may be refracted before they reach the Eye; viewing the Circle obliquely, the circular Figure will appear changed into an Ellipsis.

6. The Moon is a dense opaque Body, beset with Mountains, Valleys, and Seas. That the Moon is dense, and impervious to the Light, has been shewn: but some parts sink below, and others rise above the Surface; and that considerably, in as much as they are visible at so great a distance of the Earth from the Sun: In the Moon therefore are huge Mountains, and very deep Valleys. Riccioli measured the height of one of the Mountains, call'd St. Catherine, and found it nine Miles high. Again, in the Moon are spacious Tracts, having smooth even Surfaces, and those reflecting less Light than the rest: Hence, as the Surface of fluid Bodies is naturally even, and as when transparent, they transmit a great part of the Rays of Light, and reflect very little; the Lunar Spots are fluid, transparent Bodies: and as they continue constantly the same, are Seas. In the Moon, therefore, are Mountains, Valleys, and Seas. Hence again, the lucid parts of the Spots are Islands and Peninsula's.

And since in the Maculae, and near their Limbs, are seen some parts higher than others, in the Lunar Seas are Rocks and Promontories.

And since the new Spots are contiguous to the Mountains, and in all respects like the Shadows of Bodies on our Earth; no doubt they are the Shadows of the Lunar Mountains: Whence also appears the Matter of the Moon is opaque.

Note, This Reasoning will be put past doubt by viewing the sensible Horizon from some Eminence: Where it passes over a Plain, the Line will appear smooth and even; where a-cro's Mountains and Valleys, irregular and winding; smooth, but dark, &c.

7. The Moon is compass'd with an heavy and elastic Atmosphere, wherein Vapours and other Exhalations arise, and whence they return in form of Dew and Rain.

In a total Eclipse of the Sun, we find the Moon incircled with a lucid Ring parallel to her Periphery.

Of this, we have too many Observations to doubt: In the great Eclipse of 1713, the Ring was very conspicuous at London, and elsewhere. Kepler observes the same of an Eclipse in 1605, at Naples and Antwerp; and Holsius of another in 1606 at Leipzig, described at large in the *Acta Eruditorum*, with this notable Circumstance, that the part next the Moon was visibly brighter, than that furthest from it; which is confirmed by the Observations of the French Astronomers in the *Memoires de l'Academie*, &c. 1706.

Hence about the Moon is some Fluid, which corresponds to her Figure, and which both reflects and refracts the Sun's Rays. And hence also, this Fluid is denser below, near



near the *Moon's* Body; and rarer above. Now as the Air which encompasses our Earth is such a Fluid, it is manifest there is Air about the *Moon*; and since the different Density of the Air depends on its different Gravity and Elasticity, no doubt the different Density of the Lunar Air has the same Causes. Again, we have observ'd the Lunar Air is not always equally clear and transparent: sometimes it changes the spherical Figures of the Stars into Ovals; and in the several total Eclipses just mentioned, there was observed a trembling in the *Moon's* Limb, immediately before immersion, with an Appearance of thin, light Smoak flying over it during immersion, very apparent in England. And hence, as these same Phenomena are observed in our Air when full of Vapours, it is pretty plain, at the time when these Phenomena are observed in that of the *Moon*, it is full of Vapours and Exhalations. And, lastly, since at other times the Lunar Air is clear and transparent, producing none of these Phenomena, the Vapours must have been precipitated on the *Moon*; and therefore either Dew, or Rain, or Snow have fallen.

7. The *Moon* is a Body in all respects like our Earth, and fitted for the same purposes. For we have shewn that it is Dense—Opaque—has Mountains and Valleys—Seas, with Islands, Peninsula, Rocks, and Promontories—a changeable Atmosphere, wherein Vapours and Exhalations rise and fall—Day and Night; a Sun to illumine the one, and a *Moon* the other,—Summer and Winter, &c.

From these, by Analogy, may infinite other Properties and Appendages of the *Moon* be deduced: From the Changes in the Atmosphere will follow Winds, and other Meteors; and according to the different Seasons of the Year, Rain, Mists, Frost, Snow, &c. From the Inequalities upon the *Moon's* Surface will arise Lakes, Rivers, Springs, &c.

Now Nature, we know, produces nothing in vain: Rains and Dews fall on our Earth to make Plants vegetate; and Plants take Root, grow, produce Seeds and Fruits for Animals to feed on. But Nature is still uniform and consistent with herself, and like things serve for like Ends: Why then may not there be Plants and Animals in the *Moon*? To what other purpose so nice a Provision for them?

These Arguments will receive new force when we come to shew that our Earth itself is a Planet; and that when viewed from the other Planets, it appears, in some, like the *Moon*; in others, like Venus; in others, Jupiter, &c. A Similitude between the Planets, both Optical and Physical, being a strong Presumption their Furniture is alike. See EARTH and PLANET.

To measure the Height of the Mountains of the *Moon*.

Suppose E D (Fig. 19.) the *Moon's* Diameter, E C D the Boundary of Light and Darkness; and A the Top of the Hill in the dark part beginning to be illumined: With a Telescope observe the Proportion of A E, or the distance of A from the Line where the Light commences, to the Diameter of E D: Here we have two sides of a rectangled Triangle A E, C A; the Squares of which added together give the Square of the third; whence the Semi-diameter C D being subtracted, leaves A B, the Height of the Mountain.

Ricciolus, v. g. found the Top of the Hill St. Catherine illumined at the distance of  $\frac{1}{4}$  of the *Moon's* Diameter from the Confines of Light. Supposing, therefore, C E, 8; and A E, 1; the Squares of the two will be 65, whose Root is 8.062 the length of A C; subtracting therefore B C = 8, the Remainder is A B = 0.62. The *Moon's* Semi-diameter, therefore, is to the Mountain's height as 8 is to 0.62; i. e. as 800 to 62. Supposing, therefore, the Diameter of the *Moon* 1182 English Miles, by the Rule of Three we find the height of the Mountain 9 Miles.

The Heights, &c. of the Lunar Mountains being measurable, Astronomers have taken occasion to give each its Name. Ricciolus, whom most others now follow, distinguished them by the Names of the Celebrated Astronomers; and by these Names they are still expressed in Observations of the Lunar Eclipse, &c. See the Figure, (Tab. ASTRONOMY, Fig. 20.)

The apparent Magnitude of the *Moon*.

The Magnitude of the *Moon*, at rising and setting, is a Phenomenon that has extremely embarrassed the modern Philosophers. According to the ordinary Laws of Vision, it should appear the least when nearest the Horizon, as being then nearest to the Eye; and yet we find the contrary true in fact. Des Cartes, and from him Dr. Wallis, and most other Authors, account for this from the long Series of Objects interposed between the Eye and the Extremity of the sensible Horizon, which make us imagine it more remote than when in the Meridian, where the Eye sees nothing in the way between the Object and itself. This Idea of a great distance, makes us imagine the *Moon* the bigger: For any Object being seen under any certain Angle, and

believed, at the same time, very remote, we naturally judge it must be very large, to appear under such an Angle at such a distance. And thus a pure Judgment of the Soul makes us see the *Moon* bigger in the Horizon, than in the Meridian; notwithstanding its Image painted on the Retina is less in the former Situation than the latter.

This Hypothesis, F. Gouye destroys, by observing that the narrower and more confined the sensible Horizon is, the greater does the *Moon* appear; the contrary of which should happen on the Principle laid down.

Gassendi is of opinion, that the Pupil of the Eye, which is always more open as the Place is more dark; being more so in the Morning and Evening than at other times, by reason the Earth is covered with gross Vapours; and besides, being obliged to pass through a longer Column or Series of 'em, to reach the Horizon, the Image of the *Moon* enters the Eye at a greater Angle, and is really painted there greater.

In answer to which, it must be said, that notwithstanding this dilatation of the Pupil, occasion'd by the Obscurity; if the *Moon* be viewed through a little pin-hole made in a Paper, she appears less when in the Horizon.

F. Gouye finding both the Conjectures false, advances a third: He is of opinion then, when the *Moon* is in the Horizon; the neighbourhood of the Earth, and the gross Vapours wherewith the *Moon* then appears enveloped, have the same Effect, with regard to us, as a Wall, or other dense Body placed behind a Column; which in that Case appears bigger than when insulate, and encompassed on all sides with an illumined Air. Further, it is observed that a Column when fluted, appears bigger than before, when it was plain; the Flutes being so many particular Objects, which by their Multitude occasion the Mind to imagine the whole Object whereof they are composed of a larger extent. The same thing may be said of the several Objects seen towards the Horizon, to which the *Moon* corresponds at her Rising and Setting. And hence it is that she appears greater still, when she rises or sets between Trees; the narrow, yet distinct Intervals whereof have the same Effect with regard to the apparent Diameter of the *Moon*, as a greater number of Flutes with regard to the Shaft of a Column.

For the Eclipses of the *Moon*, see ECLIPSES.

For the *Moon's* Parallax, see PARALLAX.

To find the *Moon's* Age. To the Day of the Month add the Epact of the Year, and the Months from March inclusive. The Sum, if under 30; if over, the Excess is the *Moon's* Age. If the Month have but 30 Days, the Excess above 29 is the *Moon's* Age.

To find the Time of the *Moon's* being in the Meridian, or Southing: Multiply her Age, if under 15 Days, by 4; and divide the Product by 5; the Quotient gives the Hour, and the Remainder multiplied by 12, the Minute. If her Age exceed 15, subtract 15, and proceed with the Remainder as before.

To find the Time of the *Moon's* beginning to shine. Multiply her Age, if under 15, by 48; and divide the Product by 60: the Quotient gives the Hours; and the Remainder the Minutes. If her Age be above 15 Days, subtract the time thus found, from 24; the Remainder gives the time of shining in the Morning.

MOOR, MORA, a Heath, or barren Tract of Ground. See HEATH.

It is sometimes also used for a Morass, Moss, or Fen. See MORASS.

Mora Muffa, in ancient Writings, particularly denotes a Moss, or Peat-Moss.

MOORING, at Sea, is the laying out of Anchors, in a proper place, for the secure Riding of a Ship. See ANCHOR.

To Moor a-croft, is to lay out one of the Anchors on one side, or a-thwart a River, and the other right against it.

To Moor alongst, is to have an Anchor in a River, and a Hawser on Shore.

To Moor Quarter-shot, is to moor Quartering, between the two first ways.

MOORING for East, West, &c. is when they observe which way, and on what Point of the Compass the Wind or Sea is most likely to endanger the Ship, and there lay out an Anchor.

MOORS-HEAD, in Chymistry, a Copper-Cap made in form of a Head, to be set over the Chimney of a Reverberating Furnace. See REVERBERATORY.

MOORS-HEAD is also the Head of a Copper or Glass Still or Alembic, which is luted on to the Body or Cucurbit, and hath a Beak or Pipe to let the Spirit run down into the Receiver.

MOOT, a difficult Case, or Question argued by the Students of Inns of Court, by way of Exercise. See MOORING.

The Word is formed either from the Saxon, *Mooting*, Assembly; or the French, *Mot*, Word.

MOOTING,







him. In this Situation she is call'd by the *Greeks* *Phosphorus*; by the *Latins* *Lucifer*, &c. See *PHOSPHORUS*.

MORNING *Twilight*, see *CREPUSCULUM*.

MORPHEW, is that Freckle or Scurf which breaks out sometimes upon the Skin, particularly about the Forehead. See *FRECKLES*.

MORSELLI, and MORSULI, antient Names for those Forms of Medicines which were to be chew'd in the Mouth, as a *Lozenge*; the Word signifying a little Mouthful. See *LOZENGE*.

MORSUS *Diaboli*, Devil's Bit; a Plant which seems to have a fringe around its Leaves, is thus call'd.

From a likeness hereto, has the Edge or Selvidge of the *Tubæ Fallopiæ*, obtain'd the same Appellation. See *FALLOPIAN*.

MORSUS *Canis rabidi*, } See { *HYDROPHOBIA*.

MORSUS *Viperæ*, } See { *VIPER*.

MORT *d'Ancestre*, in Law, see *ASSIZE of Mort d'Ancestre*.

MORTALITY, a Term frequently used to signify a contagious Disease, which destroys great Numbers either of Men, or Beasts.

*Bills of MORTALITY*, are Weekly Lists compiled by the Parish-Clerks in and about *London*, containing the Numbers of such as die of each Disease, as well as of those that are born every Week.

The *Bills* are of some standing in *England*, in imitation whereof they are now established at *Paris*. They are very useful on several accounts, particularly in judging of the Mortality of any Disease, and whether an Epidemic or Infectious Distemper increases or abates.

Mr. *Graunt*, who examin'd those of *London* very accurately, has wrote an express Treatise of 'em. Among other things, he calculates from 'em, that of 100 Persons who are born in the same Week, there are but 64 left at the end of six Years; but 40 at the end of sixteen Years; at the end of twenty six Years, but 25; and the end of thirty six Years, but 16; at the end of forty six Years, but 10; at the end of fifty six, no more than six; at the end of sixty six Years, but 3; at the end of seventy six, but 1; and at the end of eighty Years, they are reduced to none.

He likewise makes it appear, that in *England* in general, more are born than die; but in *London*, more die than are born: The Proportion of Births to Burials, in the former, being as  $1\frac{1}{2}$  to one; in the latter as  $\frac{1}{10}$  to one. Thus also Cities and Market-Towns are found to bury  $1\frac{7}{10}$  to 1 Birth. But in *Paris* they outdo *London*; their deaths being  $1\frac{1}{2}$  to 1 Birth. In the Villages of *England*, fewer die than are born; there being but one death to  $1\frac{12}{100}$  Births. See *MARRIAGE*.

MORTAR, or MORTER, in Architecture, is a Preparation of Lime, Sand, &c. mixed up with Water; serving, as a Cement, to bind the Stones, &c. of a Building. See *BUILDING, CEMENT, &c.*

The Antients had a kind of Mortar so very hard and binding, that, after so long a Duration, 'tis next to impossible to separate the Parts of some of their Buildings; tho' there are some who ascribe that excessive Strength to Time, and the Influences of certain Properties in the Air, which is found to harden some Bodies very surprizingly.

*De Lorme* observes, that the best Mortar is that made of *Puzzioli*; adding, that it penetrates black Flints, and turns 'em white.

The Lime used in the antient Mortar is said to be burnt from the hardest Stones, and even Fragments of Marble. See *LIME*.

Mr. *Worledge* observes, that fine Dust makes weak Mortar; and the rounder the Sand, the stronger the Mortar. He therefore advises the Sand to be washed e'er mixed; and adds, that dirty Water weakens the Mortar considerably. See *SAND*.

The Proportion of Lime and Sand in our common Mortar is extremely variable. *Vitruvius* prescribes three parts of Pit-Sand and two of River-Sand to one of Lime; but the Sand here seems to be over-dosed. About *London*, the Proportion of Sand to quick Lime is as 36 to 25. In some Parts they use equal Quantities of each.

*Wolfius* observes, that the Sand should be dry and sharp, so as to prick the Hands when rubbed; yet not earthy, so as to foul the Water it is wash'd in.

*Vitruvius* observes, that Fossil-Sands dry sooner than those taken out of Rivers. Whence, he adds, the latter is fittest for the Insides, the former for the Outides of a Building. He subjoins, that Fossil-Sand lying long in the Air, becomes earthy. *Palladio* takes notice, that of all Sands white ones are the worst; the reason is owing to their want of Asperity.

Mixing and blending of MORTAR;

M. *Felbien* observes that the Antient Masons were so very scrupulous herein, that the *Greeks* kept ten Men constantly employ'd for a long space of time, to each Bason, which

render'd it of such prodigious Hardness, that *Vitruvius* tells us the Pieces of Plaster falling off from old Walls served to make Tables. *Felbien* adds, it is a Maxim among old Masons to their Labourers, that they should dilute with the Sweat of their Brow, i. e. labour it a long time, instead of drowning it with Water, to have done the sooner.

Besides the common Mortar used in laying of Stones, Bricks, &c. there are several other kinds. As, *White MORTAR*, used in Plastering the Walls and Ceilings; made of Ox-Hair mixed with Lime and Water, without any Sand. See *PLASTER*.

The MORTAR used in making of Water-Courses, Cisterns, &c. is very hard and durable, made of Lime and Hog's Grease, sometimes mix'd with the Juice of Figs, and sometimes with liquid Pitch: after Application it is washed over with Linseed-Oil. See *CISTERN*.

MORTAR, for Furnaces, &c. is made with red Clay wrought in Water, wherein Horse-Dung and Chimney-Soot has been steep'd. See *FURNACE*.

MORTAR for Sun-Dials on Walls may be made of Lime and Sand temper'd with Linseed Oil; or, for want of that, with scumm'd Milk. This will grow to the Hardness of a Stone.

In Buildings, one part of wash'd Soap-Ashes mixed with another of Lime and Sand, make a very durable Mortar.

MORTAR, or MORTIER, a Badge, or Ensign of Dignity bore by the Chancellors, and Great Presidents of the Parliaments of *France*.

It consists of a Piece of Velvet edged with a Gold-Lace. They formerly bore it on their Head, but now in their Hands.

Hence they are call'd *Présidents a Mortier*.

MORTAR-PIECE, a short Piece of Ordnance, very thick and wide, proper for the Carriage of Bombs, Carcasses, Snells, Stones, &c. See *ORDNANCE, BOMB, CARCASS, &c.*

There are two kinds of Mortars; the one hung, or mounted on a Carriage with low Wheels, after the manner of Guns, call'd *Pendent* or *Hanging Mortars*: The other fixed on an immoveable Base, call'd *Standing Mortars*.

At the head of the Bore, or Chase of the Mortar, is the Chamber, for the Charge of Powder. This is usually made Cylindrical, all but the Base, which they make Hemispherical: Tho' some of the later Engineers prefer Spherical Chambers; as the Surface of those being less, under equal Capacities, make less Resistance to the Gun-Powder. See *CHAMBER*.

The Thickness of the Mortar about the Chamber is to be much greater than about the Chase; by reason the Gun-Powder makes a much greater Effort about the Chamber than elsewhere. The Diameter of the Chamber to be much less than that of the Bore; by reason Bombs, Shells, &c. are much lighter than Bullets of equal Diameters; and, consequently, less Powder suffices. See *BULLET*.

To charge, or load a Mortar, the proper Quantity of Gun-Powder is put into the Chamber; and if there be any vacant space, they fill it up with Hay; some chuse a wooden Plug. Over this they lay a Turf; some a wooden Tampian fitted to the Bore of the Piece; and lastly the Bomb, taking care that the Fusée be in the Axis thereof, and the Orifice be turn'd from the Muzzle of the Piece. What remains, is to be fill'd up with Hay, Straw, Turf, &c. so as the Load may not be exploded without the utmost Violence. See *CHARGE*.

The Quantity of Gun-Powder to be used, is found by dividing the Weight of the Bomb by 30. Tho' this Rule is not always to be strictly observed. See *GUN-POWDER*.

To elevate the Mortar, so as its Axis may make any given Angle with the Horizon; they apply the Artillery-Level, or Gunner's Quadrant; the use whereof see under the Articles *LEVEL* and *QUADRANT*.

An Elevation of 70 or 80 Degrees is what is commonly chose for rendring Mortars most serviceable in casting Shells into Towns, Forts, &c. tho' the greatest Range be at 45°. See *RANGE*.

If all Mortar-Pieces were, as they ought to be, exactly Similar, and their Requisites of Powder as the Cubes of the Diameters of their several Bores; and if their Shells, Bombs, Carcasses, &c. were also Similar, then, comparing like with like, their Ranges on the Plane of the Horizon, under the same Degree of Elevation, would be equal; and, consequently, one Piece being well proved, i. e. the Range of the Granado, Bomb, Carcass, &c. being found to any Degree of Elevation, the whole Work of the Mortar-Piece would become very easy, and exact.

But since Mortars are not thus Similar, 'tis required that the Range of the Piece at some known Degree of Elevation be accurately found by measuring; and from hence all the other Ranges may be determined.

Thus, to find the Range of the Piece at any other Elevation required; say, as the Sine of double the Angle under which



which the Experiment was made, is to the Sine of double the Angle proposed, so is the Range known to the Range required.

Suppose, for instance, 'tis found that the Range of a Piece elevated to 30 Degrees is 2000 Yards; to find the Range of the same Piece with the same Charge when elevated to 45 Degrees: Take the Sine of 60°, the double of 30°, and make it the first Term of the *Rule of Three*; the second Term must be the Sine of 90°, the double of 45°; and the third the given Range 2000: The fourth Term will be 2310, the Range of the Piece at 45°. If the Elevation be greater than 45°, instead of doubling it, take the Sine of double its Complement to 90°. As suppose the Elevation of a Piece be 50°. take the Sine of 80°, the double of 40°.

Again, if a determinate Distance to which a Shot is to be cast, be given, and the Angle of Elevation to produce that Effect be required; the Range known must be the first Term in the *Rule of Three*, which suppose 2000 Yards; The Range proposed, which we suppose 1500 Yards, the second Term; and the Sine of 60 double of the Elevation for the Range of 2000 Yards, the third Term. The fourth Term will be found the Sine of 43°, 52', whose half 21°, 55', is the Angle of Elevation the Piece must have, to produce the desired Effect. And if 21°, 55' be taken from 90°, you will have 68°, 4' for the other Elevation of the Piece, with which the same Effect will likewise be produced.

For the greater Ease, and to avoid the trouble of finding Sines of double the Angles of proposed Elevations, *Galileo* and *Torricelli* give us the following Table, wherein the Sines of the Angles sought are had by inspection.

A TABLE of Sines for the Ranges of MORTARS.

| Degrees. | Degrees. | Ranges. | Degrees. | Degrees. | Ranges. |
|----------|----------|---------|----------|----------|---------|
| 90       | 0        | 0       | 66       | 24       | 7431    |
| 89       | 1        | 349     | 65       | 25       | 7660    |
| 88       | 2        | 698     | 64       | 26       | 7880    |
| 87       | 3        | 1045    | 63       | 27       | 8090    |
| 86       | 4        | 1392    | 62       | 28       | 8290    |
| 85       | 5        | 1736    | 61       | 29       | 8480    |
| 84       | 6        | 2079    | 60       | 30       | 8660    |
| 83       | 7        | 2419    | 59       | 31       | 8829    |
| 82       | 8        | 2556    | 58       | 32       | 8988    |
| 81       | 9        | 3090    | 57       | 33       | 9135    |
| 80       | 10       | 3420    | 56       | 34       | 9272    |
| 79       | 11       | 3746    | 55       | 35       | 9397    |
| 78       | 12       | 4067    | 54       | 36       | 9511    |
| 77       | 13       | 4384    | 53       | 37       | 9613    |
| 76       | 14       | 4695    | 52       | 38       | 9703    |
| 75       | 15       | 5000    | 51       | 39       | 9781    |
| 74       | 16       | 5299    | 50       | 40       | 9841    |
| 73       | 17       | 5592    | 49       | 41       | 9903    |
| 72       | 18       | 5870    | 48       | 42       | 9945    |
| 71       | 19       | 6157    | 47       | 43       | 9976    |
| 70       | 20       | 6428    | 46       | 44       | 9994    |
| 69       | 21       | 6691    | 45       | 45       | 10000   |
| 68       | 22       | 6947    |          |          |         |
| 67       | 23       | 7193    |          |          |         |

The Use of this Table is obvious. Suppose, for Instance, it be known by Experiment that a Mortar elevated 15°, charged with three Pounds of Powder, throw a Bomb to the Distance of 350 Fathom; and it be required, with the same Charge, to throw a Bomb 100 Fathom farther: Seek in the Table the Number answering to 15 Degrees, and you will find it 5000. Then as 350 is to 450, so is 5000 to a fourth Number, which is 6428. Find this Number, or that nearest it, in the Table, and against it you will find 20°, or 75°; the Angles of Elevation.

For the Weight, Dimensions, &c. of the Bombs, &c. to be cast out of Mortars, and the Lines of the Projection; see BOMB, PROJECTILE, &c.

MORTGAGE, in our Law, is the same with *Hypotheca* in the Civil Law, viz. an Obligation, whereby Land or Tenement of the Debtor, are pawned or bound over to the Creditor for Money or other Effects borrow'd; peremptorily to be the Creditor's for ever, if the Money be not paid at the Day agreed on.

The Creditor holding such Land, on such Agreement, is in the mean time call'd *Tenam in Mortgage*.

*Glanville* defines *Mortgage*, *Mortuum Padium*, to be that *cujus fructus vel redditus interim percepti in nullo se acquietant*. Thus 'tis call'd *Mortgage*, i. e. dead Gage, of Mort, Death, and Gage, Pledge; because whatever Profit it yields, yet it redeems not itself by yielding such Profit, except the whole Sum borrow'd be likewise paid at the Day; the Mortgager being by Covenant to receive the Profits till default of Payment. Others hold it call'd *Mortgage*, because if the Money be not paid at the Day, the Land *moritur*, dies, to the Debtor, and is forfeited to the Creditor.

He who lays this Pawn or Gage, is call'd the *Mortgager*, and he that takes it the *Mortgagee*.

This, if it contain excessive Usury, is prohibited by a Statute 37 Henry VIII.

The French sometimes use the Word in the same sense in their Language, where it stands in Contradistinction to a simple Contract, which does not carry with it the mean Profits; and which they call *Vif-gage*, Live-pledge.

As a *Mortgage* is an Engagement for the Security of the Creditor, all means have been taken to assure him of the Effect; that of the Pawn or Pledge, seems to have been the most antient, being in reality the same thing, all the difference consists in this, that in a *Mortgage* the Pawn was put into the hands of the Creditor; whereas in a simple Engagement, the Thing remained in the hands of the Debtor. But it was afterwards found much more commodious to engage an Inheritance by a simple Convention, than by an actual Delivery.

Accordingly, this was practised by the Greeks, and from them borrow'd by the Romans; who, the better to prevent Deceits, fixed up visible Marks to inform the Public, that the Estate was engaged by the Proprietor: Tho these Marks were found so injurious to the Debtors, that the Use of 'em was at length prohibited.

The Romans had four Kinds of *Mortgages*, or *Hypothecæ*. The *Conventional*, which proceeds from the Will and Consent of the Contracters; the *Legal*, which is introduced by the Law, and which is therefore call'd *Tacit*. The *Mortgage of the Prætor*, when by the Flight or Refusal of the Debtor, the Creditor was put in possession of his Effects. And the *Judiciary Mortgage*, when the Creditor was put in possession, in consequence of a Decree or Sentence. The Civil Lawyers distinguish twenty-six different Kinds of *Tacit Mortgages*.

MORTIFICATION, in Medicine, &c. a Disease, wherein, the natural Juices of any part quite lose their proper Motions; and by that means fall into a fermentative one, and corrupt and destroy the Texture of the Part.

There are two Species, or rather Degrees of *Mortification*: The one call'd a *Gangrene*, which is a *Mortification* in its first, or beginning State: The other a *Sphacelus*, which is a perfect, or finish'd *Mortification*. See GANGRENE and SPHACELUS.

MORTMAIN, a Term in Law, signifying an Alienation of Lands and Tenements to any Guild, Corporation, or Fraternity, and their Successors; as Bishops, Parsons, Vicars, &c. See ALIENATION.

Such Alienation may not be done without the King's Licence; and that of the Lord of the Mannor; or of the King alone, if it be immediately holden of him.

The Presidents and Governours of the Hospitals may, without Licence in *Mortmain*, purchase Land, &c. not exceeding the yearly Value of 3000 l. Stat. 14. Car. 2.

The Word literally denotes *Dead-Hand*, being a Compound of *Mort*, dead, and *Main*, Hand.

Thus *Hottoman de Verb. Feudal.* says, *Manus mortua locutio est que usurpatur de iis quorum possessio, ut ita dicam Immortalis est, quia nunquam heredem habere desinent. Qua de causa res nunquam ad priorem Dominum revertitur. Nam Manus pro possessione dicitur, Mortua per Antiphrasin pro Immortali, &c.*

The Reason of the Name proceeds from this, that the Services and other Profits due for such Lands, should not, without such Licence, come into a dead Hand, (*Mainmort*), i. e. into a Hand as it were dead, that is, so dedicated to God, or pious Uses, as to be different from other Lands, Tenements, or Hereditaments, and never to revert to the Donor, or any temporal or common Use. *Hottoman* defines *Mort-main* to be the Possession of those who are, as it were, immortal, because they never ceased to have Heirs; so that the Estate never reverts to its first Lord. *Main*, Hand, being used for Possession; and *Mort*, Deed, by Antiphrasis, for immortal.

MORTOISE, or MORTISE, in Carpentry, &c. a kind of Joint, wherein a Hole or Incision, of a certain Depth, is made in the Thickness of a Piece of Wood, which is to receive another Piece, call'd a *Tennon*. See TENON.

The Word is originally French. *Borel* derives it from *mordre*, to bite.

MORTUARY, is a Gift left by a Man at his Death to his Parish-Church, for a Recompence of his Personal Tithes and Offerings, not duly paid in his Life-time. It is not properly and originally due to an Incumbent from any but those of his own Parish: But, by Custom, in some Places of the Kingdom, it is paid to the Parsons of other Parishes, as the Corps passes thro them.

MOSAIC, *Mosaic Work*, or, as some chuse to call it, *MUSIC*, from the Latin *Opus Musivum*; an Assemblage of little Pieces of Glass, Marble, precious Stones, &c. of various Colours, cut square and cemented on a Ground of Stucco, &c. imitating the natural Colours and Degradations of Painting. See PAINTING.



In this sense *Mosaic Work* includes *Marquetry*, or *Inlaid Work*, *Vaneering*, &c. But in the restrain'd sense of the Word, it only takes in Works of Stone, Metals and Glass; those of Wood being distinguish'd by the Name of *Marquetry* or *Inlaying*.

Others distinguish otherwise between *Mosaic*, and *Marquetry*. In that properly call'd *Mosaic*, the several Stones are all of the same Colour; and the Changes, and Diminutions of Colours, and Shades, are made by applying different Stones one on another, but all of the same Colour. *Marquetry*, on the contrary, consists of Stones of different Colours; and by these the several Colours, Shades, Degradations, &c. are express'd.

The Critics are divided as to the Origin and Reason of the Name *Mosaic*. Some derive it from *Mosaicum*, a Corruption of *Musæum*, as that is of *Museum*, as it was call'd among the Romans. *Scaliger* derives it from the Greek *μουσαῖον*, and imagines the Name was given to this sort of Works, as being very fine, and ingenious. *Nebriensis* is of opinion they were so call'd, because *ex illis Picturis ornabantur Musea*.

*Mosaic* seems to have taken its Origin from *Paving*: The fine Effect and Use of Pavements, composed of Pieces of Marble of different Colours so well join'd together, as that when dry'd they might be polish'd, and the whole make a very beautiful and solid Body, which continually trodden upon, and washed with Water, was not at all damaged; gave the Painter the hint; who soon carry'd the Art to a much greater Perfection: so as to represent Foliages, Masques, and other Grotesque Pieces of various Colours, on a Ground of black or white Marble. In fine, observing the good Effect which this kind of Work had in Pavements, and finding that it resisted Water, they proceeded to line Walls therewith, and to make various Figures for the Ornament of their Temples and public Buildings.

But Nature not producing Variety of Colours enough for 'em in Marbles, to paint all kinds of Objects, they bethought of counterfeiting 'em with Glass and Metal Colours; which succeeded so well with 'em, that having given all manner of Tints to an infinite number of little Pieces of these two Matters, to counterfeit Stones of various Colours, in order to get more Colours; the Workmen arranged 'em with so much Art, that their *Mosaic* seem'd almost to dispute with Paintings. This way of representing Objects having this advantage, that it resists the Injuries of the Air as well as Marble itself; and even grows more beautiful with Time, which effaces all other kind of Painting.

But the Moderns are gone further, and setting aside Glass and Metals, as too mean Materials, have introduced, along with the finest Marbles, the richest of precious Stones, as Lapis, Agat, Cornelians, Emeralds, Turquoises, &c.

Of these three Kinds of *Mosaic-Work*, that of colour'd Glass and Metals is now little in use, tho of a surprizing Lustre and Durableness: of the other two, that of Marbles alone is in common Use; the *Mosaic* of precious Stone being so very dear, that the few Workmen who apply themselves to it, make little else but petty Works, as Ornaments for Altar-Pieces, Tables for rich Cabinets, &c. Tho out of these must be excepted that sumptuous Chapel of the Dukes of *Tuscany*, which has been so long in hand, and which, if ever it be finish'd, will be a noble Monument of the Magnificence and Piety of those Princes, as well as of the Patience and Address of the Workmen employ'd therein.

We shall however enter into some Detail of the Manner of working in those three Kinds of *Mosaic*; to which we shall add a fourth much newer, yet equally ingenious with any of the rest, made with a kind of *Gypsum* or *Talc*, found in Stone-Quarries about *Paris*.

#### MOSAIC Work of Glass.

This Kind of *Mosaic* they begin with little Pieces of Glass, which they provide of as many different Colours as possible. To this end, the Glassmen's Furnaces being disposed, and their Pots or Crucibles full of the Matter of which Glass is made, or rather of Glass already made, they put what Colour or Dye they think fit in each Crucible, always beginning with the weakest, and augmenting the Strength of the Colours from Crucible to Crucible, till they come to the deepest Die, as in mixing of Colours on a Palette to paint in Oil. When the Glass is well boil'd, and all the Colours in their perfection, they take out the Glass hot, as it is, and lay it on a smooth Marble, flattening it down with another like Marble, and then cutting it into Slices of equal bigness, and about the thickness of an Inch and half. They then with an Instrument, which the *Italians* call *Bocca di Canie*, make other Pieces square, and others of different Figures and Sizes, as occasion requires; these

they dispose orderly in Cases; as in Painting in *Fresco*, 'tis usual to range all the different Tints in Shells, and according to their Colour.

If 'tis desir'd to have Gold; either in the Ground of the Painting, or in the Ornaments, or the Draperies, they take some of the Pieces of Glass, form'd and cut in the manner just mention'd. These they moisten on one side with Gum-Water, and afterwards lay 'em over with Gold-Leaf. They then put this Piece, or several Pieces at a time, on a Fire-shovel, which they place in the mouth of the Furnace, after having first cover'd them with another hollow Piece of Glass. Here they continue till such time as they become red-hot; after which the Shovel is drawn out; all at once, and the Gold becomes so firmly attach'd to the Glass, that it will never afterwards leave it.

Now, to apply these several Pieces, and out of 'em to form a Picture, they first make a Cartoon, or Design; this they transfer on the Ground or Plaster, by calquing, as in Painting in *Fresco*. See *Fresco*.

As this Plaster is to be laid thick on the Wall, it will continue fresh and soft a considerable time, so that there may be enough prepar'd at once to serve three or four days. It is compos'd of Lime made of hard Stone, with Brick-dust very fine, Gum-*Tragacanth*, and Whites of Eggs; when it is thus prepar'd, and laid on the Wall, and made the Design of what is to be represented, with Pliers they take out the little Pieces of Glass, ranging 'em one after another, and still keeping strictly to the light Shadow, different Tints and Colours represented in the Design before; pressing or flattening 'em down with a Ruler, which serves both to sink 'em within the Ground, and to render the Surface even.

Thus, in a long time, and with an infinite deal of trouble, they finish the Work, which is still the more beautiful, as the Pieces of Glass are more uniform, and rang'd at more equal heights. Some of these are executed with so much Justness, that they appear as smooth as a Table of Marble, and as finish'd and masterly as a Painting in *Fresco*; with this advantage, that they have a fine Lustre, and will hold almost for ever.

The finest Works of this kind, that have descended to us, and those whereon the Moderns have retriev'd the Art, almost lost, are those of the Church of *St. Agnes*, formerly the Temple of *Bacchus* at *Rome*; at *Pisa*, *Florence*, and other Cities of *Italy*. The most esteem'd among the Works of the Moderns, are those of *Joseph Pine*, and the Chevalier *Lanfranc*, in the Church of *St. Peter* at *Rome*. There are very good ones likewise at *Venice*.

#### MOSAIC Work of Marble, and precious Stones.

These two Kinds of *Mosaics* bear so near a relation to each other, as to the Manner of Working, that to avoid Repetition, we shall give 'em both under one; observing, by the way, wherein the one differs from the other, either in the sawing or the ranging of the Stones.

*Mosaic of Marble* is used in large Works, as in Pavements of Churches, Basilics, and Palaces; and in the Incrustation and Vaneering of the Walls of the same Edifices. As to that of Stones, especially *precious Stones*, 'tis only used in small Works, as before observ'd.

The Ground of *Mosaic Works* wholly Marble, is ordinarily a massive Marble, either white or black. On this Ground the Design is cut with a Chisel, having been first calqued. When 'tis dug of a sufficient Depth, i. e. an Inch or more, 'tis fill'd up with Marble of a proper Colour, first contourn'd, or fashion'd to the Design, and reduc'd to the Thickness of the Indentures, with various Instruments. To make the Pieces, thus inserted into the Indentures, hold, whose several Colours are to imitate those of the Design, they use a Stuc, compos'd of Lime and Marble Dust; or a Mastic, which each Workman prepares differently; after which, the Work is half polish'd with a soft kind of Stone.

The Figures thus mark'd out, the Painter, or Sculptor himself draws, with a Pencil, the Colours of the Figures not determin'd by the Ground, and in the same manner makes Strokes or Hatchings, in the Places where Shadows are to be; and when he has engrav'd with the Chisel all the Strokes thus drawn, he fills them up with a black Mastic, compos'd partly of *Burgundy-Pitch*, pour'd on hot; taking off, afterwards, what is superfluous, with a piece of soft Stone or Brick, which with Water and beaten Cement, takes away the Mastic, polishes the Marble, and renders the whole so even, one would imagine it only consisted of one Piece: 'Tis this kind of *Mosaic* we see in the pompous Church of the Invalids at *Paris*, and the fine Chapel at *Versailles*; and wherewith some entire Apartments of that Palace are incrustated.

For *Mosaic Work of precious Stones*; there are required other and more delicate Instruments than those used in Marble; as Wheels, Drills, Tin-Plates, &c. used by *Lapidaries*, and Engravers on Stone.



As none but the richest Marbles and Stones enter this Work, to make 'em go the further, they are sawn into the thinnest Leaves imaginable, scarce exceeding half a Line in Thickness; the Block to be saw'd, is fasten'd firmly with Cords, on the Bench, only rais'd a little on a piece of Wood, one or two Inches high. Two Iron Pins, which are on one side the Block, and which serve to fasten it, serve also to direct the Saw, which with Pieces thus saw'd, are put into a Vice contriv'd for the purpose; and with a kind of Saw or Bow made of fine Brass Wire, bent on a piece of springy Wood, together with Emery steep'd in Water, the Leaf is gradually fashion'd, by following the Strokes of the Design made on Paper, and glued on the Piece. See MARQUETRY.

When there are Pieces enough fasten'd to form an entire Flower, or some other Part of the Design, they are apply'd. The Ground that supports this *Mosaic*, is usually of Free Stone. The Matter wherewith the Stones are join'd together, is a Mastic, or kind of Stuc, laid very thin on the Leaves as they are fashion'd; and the Leaves in this State, apply'd with Pliers. If any Contour, or Side of a Leaf, be not either rounded enough, or squared enough, to fit the Place where it is to be used, when 'tis too large, 'tis brought down with a Brass File or Rasp, and when too small, is managed with a Drill, and other Lapidary-Instruments.

#### Manner of making MOSAIC Work of Gypsum.

The Gypsum is a kind of coarse Talc, or a shining transparent Stone, found in the Quarries of *Montmartre* near *Paris*, among the Stones thence dug to make the Plaster of *Paris*: 'tis different from the Plaster, but retains the Name the *Romans* gave the Plaster, viz. *Gypsum*. Of this Stone, calcined in a Kiln, and beaten in a Mortar, and pass'd thro a Sieve, they make a kind of artificial Marbles, imitating precious Stones, and of these compose a kind of *Mosaic* Work, which comes little short either of the Durableness or Vivacity of the natural Stones; and which has this advantage, that it admits of continu'd Pieces, or Paintings of entire Compartments, without any Joining visible.

Some make the Ground of Plaster of *Paris*, others of Free Stone: if the former, 'tis spread in a wooden Frame, of the length and breadth of the intended Work, and about an Inch and half thick. This Frame is so contriv'd, as, the Tenons being only join'd to the Mortises by single Pins, they may be taken asunder, and the Frame be dismounted when the Plaster is dry. This Frame they cover on one side with a strong Linnen Cloth, nail'd all around, which being plac'd horizontally, with the Linnen at bottom, is fill'd with Plaster, pass'd thro a wide Sieve. The Plaster being half dry, the Frame is set perpendicular, and left till it be quite dry; then taken out, by dismounting the Frame. In this *Mosaic*, the Ground is the most important Part.

Now to prepare the sifted Gypsum to be apply'd on this Ground, they dissolve and boil it in the best *English* Glue, and after mixing with it the Colour it is to bear, the whole is work'd up together into the ordinary Consistence of Plaster; and then taken and spread on the Ground, five or six Inches thick. It must be observ'd, that if the Work be such, as that Mouldings are requir'd, they are form'd with Gouges and other Instruments.

'Tis on this Plaster, thus colour'd like Marble or precious Stone, and which is to serve as a Ground to a Work either of Lapis, Agar, Alabaster, or the like, that the Design to be represented is drawn; having been first pounced or calqued. To hollow or impress the Design, they use the same Instruments with the Sculptors; the Ground whereon they are to work, not being much less hard than Marble itself. The Cavities thus made in the Ground, are fill'd up with the same Gypsum boil'd in Glue, only differently colour'd; and thus are the several Colours of the Original represented. To have the necessary Colours and Tints at hand, they temper Quantities of the Gypsum with the several Colours, in little Pots. When the Design is thus fill'd, and render'd visible, by half polishing it with Brick or soft Stone; they go over it again, cutting such Places as are either to be weaker, or more shadow'd, and filling 'em with Gypsum; which is repeated till all the Colours, added one after another, represent the Original to the Life. The Work being finish'd, is scower'd with soft Stone, Sand and Water; then with Pumice-stone, and lastly, polish'd with a wooden Mullet and Emery. Lastly, the Lustre is given it, by smearing it over with Oil, and rubbing it a long time with the Palm of the Hand; which gives it a Lustre nothing inferior to that of natural Marble.

If 'tis only requir'd to make a variegated Table, or other Work of several Colours; without *Mosaic* Figures, the Process is somewhat different. To this end, they only prepare separately, in large Bowls, as many different Colours as Nature shews in the Marble to be imitated, and after incorporating 'em with the Gypsum and Glue-Water, they

take a Truel-full of each, and dispose 'em in a Trough, without any order; then without mingling 'em, and only by cutting or crossing the Gypsum of each Truel once or twice with each of the rest, they give 'em that beautiful Confusion, which makes the Value of natural Marbles: Of these they then make their Tables, or lay 'em in a Mold; according to the Work to be done.

As to *Marquetry* or *Inlaid-Work*, the Antients were well acquainted with it, and used it for the adorning of their Beds, Tables, and other Moveables; using for this purpose Ivory, and the richest Woods. But *Friar John of Verona* seems to have contributed the most to its Perfection, by discovering the Secret of dying Woods of all Colours and Degrees; by which means he was enabled to imitate Painting, and even to represent Architecture in Perspective.

They begin with sawing their Woods into Leaves, of the Thickness of one or two Tenths of an Inch; then take Pieces of the Design they are to follow, and fasten 'em to those Leaves, and with a little Steel saw the Contour of the Design. All that is necessary being taken off with the Saw, they give the Shadow to those Places that require it, by placing the Piece in a hot Sand, or otherwise, with the Direction necessary to shadow it more or less. This done, they lay each Piece in its place, on a Ground of another Wood, as dry Oak, and there fasten them with strong Glue.

There are two other Branches of *Mosaic* Work; the one call'd *Damaskening*, or *Damask-Work*, consisting in an Assemblage of Gold or Silver Threads, of which are sometimes form'd flat Works, and sometimes *Basso-Relievos*. See DAMASKEENING.

The other is call'd *Shell-Work*, consisting of Shells, artificial Congelations, Petrifications, &c. used in Grottos. See SHELL-Work.

MOSQUE, among the *Mahometans*, is a Temple set apart for the Exercises of Religion. See TEMPLE.

There are Royal Mosques founded by the Emperors, as *Solimania* and *Velidea* at *Constantinople*; and Private Mosques founded by Musties, Viziers, Bassa's, &c. they are built like large Halls, with Isles, Galleries, and Domes; and are adorned on the inside with Compartments, and Pieces of *Arabesque* Work. On one side is always found a Pool with several Cocks.

The Turks have converted most of the Christian Churches into Mosques. At the top is always placed a Crescent.

The Word comes from the *Turkish* *Mescht*, which properly signifies a Temple built of Wood, such as the Turks first used. Hence the *Spaniards* derive their *Mesbeta*, and the *Italians* *Mosbeta*, and the *French* and *English* *Mosque*. *Borel* derives the Word from the *Greek* *μῶς* & *Calf*, because of the frequent mention of a Cow in the *Alcoran*. Others, and with the greatest Appearance of Reason, derive it from the *Arabic* *Maschiad*, a Place of Worship.

MOSSE, *Usnea* in Natural History, a little Plant of the Parasite kind, growing on the Barks, &c. of several Trees, as Oak, Poplar, Ash, Cedar, &c. See PARASITE.

The most esteemed, and odoriferous is that of the Cedar; it is of some medicinal Use, being Astringent, and proper to stop Hemorrhagies and Dyssenteries.

The Antients took the Moss of Trees to be the Effect of a Disorder or Discomposure of the Texture of the Bark; or at most a kind of little Filaments arising from the Bark. But the Moderns find by several Observations, that Mosses are all real, distinct Plants, whose Seed, being extremely small, is inclosed in little Capsular, which bursting of themselves, the Seed is carried off by the Winds, till falling on the Inequalities of the Bark of Trees, it is there stop'd, takes Root, and feeds at the expence of the Tree, as Mouldiness does on Bread, &c. See MOULDINESS.

The different kinds of Mosses are very numerous; *Monf. Vaillant* reckons 137 several Species in the single Neighbourhood of *Paris*.

There is also a kind of greenish Moss growing on human Skulls that have been long exposed to the Air, call'd *Usnea*, or *Muscus calvarius*. The Antients made a deal of Use of it as an Astringent, &c. See USNEA.

Mosses make an Article of Commerce; there being several kinds used in Medicine, in Perfuming, &c. Among others, the *Sea-Moss*, call'd *Coralline*, (see CORALLINE) and the Moss of Cedar and Firr, which enter the Composition of Cypress Powder.

The Moss of common Trees, as Oak, Ash, Poplar, &c. is used for Caulking of Vessels. 'Tis also used by Bird-Merchants, to prepare Cages for certain kinds of Birds to hatch in.

The Gardeners, &c. reckon Moss among the Diseases, or Infirmities of Plants. See DISEASE.

*Mr. Mortimer*, &c. directs it to be rubb'd, and scraped off with some proper Instrument that will not hurt the Bark of the Tree, or with a piece of Hair-Cloth after a soaking Rain; tho' the surest Cure is by removing the Cause; which is effected by draining the Land well of



all superfluous Moisture. Or, it may be prevented, in the first planting of Trees, by not setting them too deep.

**MOTE**, *Mota*, of the Saxon, *Gemote*; a Term frequently occurring in our antient Customs, literally denoting a Meeting, Court, or Plea.

Of **MOTES**, or *Gemotes*, consider'd in the Sense of Assemblies, or Courts, there were divers kinds, as *Witbenagemote*, *Folkegemote*, *Schiregemote*, *Hundredgemote*, *Burgemote*, *Wardagemote*, *Haligemote*, *Swainagemote*, &c. See each under its proper Article, **WITBENAGEMOTE**, **FOLKEGEMOTE**, &c.

**MOTE**, *Mota*, was also used for a Fortress, or Castle; or the Scire or Place where such Castle stood: As *Mota de Windfor*, &c.

**MOTE** was also a standing Water to keep Fish; or a large Ditch encompassing a Castle, or Dwelling-House. See **MOAT**.

**MOTHER**, *Mater*, a Female who stands in the Relation of Parent to another. See **PARENT**, &c.

Thus *Eve* is call'd our common Mother. *Cybele* among the Antients was the Mother of the Gods.

The Queen Mother is the same with what we otherwise call Queen Dowager, See **DOWAGER**.

We meet with Empresses on Medals and Inscriptions with the Titles of Mother of the Camp; Mother of the Senate, Mother of the Country: *Mater Senatus*, *Mater Patria*, &c. See **FATHER**.

**MOTHER TONGUE**, is properly an original Language, from which others are apparently form'd. See **LANGUAGE**.

Of Mother Tongues, *Scaliger* reckons ten in Europe, viz. the Greek, Latin, Teutonic or German, Sclavonic, Epirotic, Scythian or European Tartar, Hungarian, Cantabrian, Irish, and British. See **GREEK**, **LATIN**, **TEUTONIC**, &c.

**MOTHER CHURCHES** are those which have founded or erected others. See **CHURCH**.

In Beneficiary Matters we say it is not lawful for a Man to enjoy at the same time both the Mother and the Daughter: Meaning that the Canon Law does not allow an Abby, and the Benefices depending thereon, to be held by the same Person.

**MOTHER of Pearl**, see **PEARL**.

*Fits of the MOTHER*, see **HYSTERIC Affection**.

**MOTION**, primarily so call'd, or *Local Motion*, is a continued, and successive Change of Place; or that State of a Body whereby it corresponds successively to several different Places, or is present successively in several Parts of Space. See **PLACE**.

In this sense, the Doctrine and Laws of Motion make the Subject of *Mechanics*, or *Statics*. See **MECHANICS**, &c.

The antient Philosophers consider'd Motion in a more general and extensive Sense. They defined it by a Passage out of one State into another; and thus made six Kinds, viz. *Creation*, *Generation*, *Corruption*, *Augmentation*, *Diminution*, and *Lation*, or *Local Motion*. See **CREATION**, **GENERATION**, &c.

Some of the later Schoolmen reduce these six Kinds of Motion to four: The first is general, including any Passage from one State to another; under which sense of Motion come *Creation*, *Production*, and *Mutation*. The second is a Passage of something already existing from one State to another; and thus *Generation* is a Motion. The third, a successive Passage of something already existing from one Term to another; and thus *Alteration* and *Accretion* are Species of Motion. The last, is *Lation*, or *Local Motion*; and thus *Walking* is Motion.

But the latest Philosophers unanimously deny any other Motion beside *Local Motion*; and reduce all the Species above-mentioned to this one: So that we have here only to do with *Local Motion*; whereof the rest are only so many different Determinations, or Effects. See **ACCRETION**, **ALTERATION**, **GENERATION**, &c.

Physical Writers, both Antient and Modern, have ever been perplexed about the Nature and Definition of *Local Motion*.

The *Peripatetics* define it by *Alus Entis in potentia*, prout in potentia, *Arist.* 3. *Phys.* c. 2. But the Notion is too Abstract and Metaphysical for our Days; and is of no use in explaining the Properties of Motion.

The *Epicureans* call it the Migration of a Body, or a part of a Body, from one Place to another. On which Definition, the later *Epicureans* refine, and call it the Migration or Passage of a Body from Space to Space: Thus substituting the word *Space* for that of *Place*.

The *Cartesians* define Motion a Passage, or Removal of one Part of Matter out of the Neighbourhood of those Parts immediately contiguous thereto, into the Neighbourhood of others.

Which Definition agrees, in effect, with that of the *Epicureans*; all the Difference between 'em consisting in this, that what the one calls Body and Place; the other calls Matter, and contiguous Parts.

*Borelli*, and other late Writers after him, define Motion more accurately and fully, the successive Passage of a

Body from one Place to another, in a determinate time, by being successively contiguous to all the Parts of the intermediate Space.

Motion, then, they agree to be the translation of a Body from Place to Place: But they differ infinitely when they come to explain wherein this Translation consists. And hence their Divisions of Motion become exceedingly precarious.

*Aristotle*, and the *Peripatetics*, divide all Motion into Natural and Violent.

Natural Motion is that which has its Principle, or moving Force, within the moving Body. Such is that of a Stone falling towards the Centre of the Earth.

Violent Motion is that whose Principle is without, and against which the moving Body makes a Resistance: Such is that of a Stone thrown upwards.

The Moderns generally divide Motion into Absolute and Relative.

Absolute Motion is the Change of Place, in any moving Body; whose Celerity, therefore, will be measured by the Quantity of the absolute Space which the moveable Body runs thro'.

Relative Motion is a Mutation of the Relative, or vulgar Place of the moving Body; and has its Celerity accounted by the Quantity of relative Space run thro'.

Others divide Motion into Proper, and Improper or Foreign.

Proper Motion is a removal out of one proper Place into another, which hereby becomes proper, as being possessed by this Body alone; in exclusion of all others: Such is the Motion of a Wheel in a Clock.

Improper, or Extraneous, or Foreign, or Common Motion, is the Passage of a Body out of one common Place into another common Place: Such is that of a Clock when moved in a Ship, &c.

The Reason of all this Diversity seems to arise from the not attending to the different Meanings of the Words; but comprizing all in one Definition and Distinction; which they should rather have distinguish'd into several parts.

Some, e. g. in their Definitions of Motions, consider the moving Body, not as it regards the adjacent Bodies, but as it regards immoveable and infinite Space. Others, again, consider the moving Body, not as it regards infinite Space, but as it regards other Bodies vastly remote. And others, lastly, consider the moving Body, not as it regards remote Bodies, but that Surface only to which it is contiguous.

But these various Meanings once settled, the Dispute clears up; for as every thing that moves may be consider'd in these three several Manners; there hence arise three several kinds of Motions; whereof that which regards the Parts of infinite immoveable Space, without consideration of the circumambient Bodies, may be call'd absolutely and truly proper Motion. That which regards circumambient Bodies vastly remote, which may themselves possibly be moved, we call relatively common Motion. The last, which regards the Surfaces of the next contiguous Bodies, in as much as it may want all both absolute and common Motion, we call relatively proper Motion.

1. An absolutely and truly proper Motion then, is the Application of a Body to different Parts of infinite and immoveable Space. This alone is proper and absolute Motion, being always generated and changed by Forces impress'd on the moving Body itself, and by those only; and being that to which the real Forces of all Bodies to put others in Motion by impulse, are owing; and to which those Motions are proportioned. But this Motion we cannot investigate or determine accurately; nor can we distinguish, when two Bodies are impell'd on each other, in which of the two, e. g. that which appears to move the more swiftly, or the other which appears to move more slowly, and perhaps even to be at rest, the real Motion, and, consequently, the real Force whence the Impulse arose, is placed; not being able to determine whether the Centre of Gravity, or of the whole System (which is but a Point in infinite Space) is itself at rest or in Motion.

2. Relatively common Motion is a Change of the Situation of a Body with respect to other remote circumambient Bodies; and this is the Motion we speak of, when we say that Men, Cities, and the Earth itself moves round the Sun. This is also the Motion we mean, when we estimate the Quantity of Motion, and the Force any Body has to impel another: For instance, if a wooden Sphere, fill'd with Lead to make it the heavier, be cast from the Hand we use to estimate the Quantity of Motion, and the Force which the Sphere has to impel another, from the Celerity of the Sphere and the Weight of the included Lead; and that truly with regard to the Force itself, and the Effect thereof as it falls under our Senses: But whether the real Power or Motion be in the Sphere which appears to strike, or in the Earth which appears to be struck, that, as has been observed above, we cannot determine.

Lastly,



Lastly, *Relatively proper Motion* is the successive Application of a Body to the different parts of the contiguous Bodies. And this is the *Motion* usually understood in Physical Disputes about the Natures of particular things; as when we say, that Heat, Sound, Fluidity, &c. consist in *Motion*. This must be added however, that by successive Application of a Body, its whole Surface, taken together, must be conceiv'd successively apply'd to different parts of contiguous Bodies.

From these several Definitions of *Motion* arise as many Definitions of *Place*: For when we speak of *Motion* (or Rest) truly and absolutely proper, then *Place* is that part of infinite and immoveable Space which the Body fills. When of *Motion* relatively common, then *Place* is a part of any Space or moveable Dimension. When of *Motion* relatively proper, (which is really very improper) *Place* is then the Surface of the next adjacent Bodies, or sensible Spaces. See *PLACE*.

The Definition of Rest is pretty well agreed on; but whether Rest be a mere Privation of *Motion*, or any thing positive, is hotly disputed. Malebranch, and others, maintain the former side of the Question. Cartes, and others, the latter: These last contend, that a Body at rest, has no power to persevere in that rest, nor to resist any Bodies that would destroy it; and that *Motion* may as well be call'd a Cessation of Rest, as Rest of *Motion*. See *REST*.

The main Argument urg'd by the former is this: Suppose a Globe at rest, and suppose God cease to will its rest; What will be the Consequence? it will rest still. Let it be in *Motion*, and let God cease to will its *Motion*; What will be the Consequence? it will cease to move; that is, be at rest; because the Power whereby a Body in *Motion* perseveres in that state, is the positive Will of God; that whereby the quiescent Body perseveres, only his privative Will.

But this is a manifest *Petitio principii*; for the Force or Conatus whereby Bodies, whether moving or quiescent, persevere in those states, is the mere Inactivity of Matter; and therefore were it possible for God not to will any thing, a Body already in *Motion*, would move for ever; as a Body at Rest, would rest for ever. To this Inactivity of Matter, it is owing that all Bodies resist according to their Quantities of Matter, and that any Body striking another with any given Velocity, will move it in the same Proportion which its Density, or Quantity of Matter has, to the Density or Quantity of Matter of the other.

*Motion* has ever been esteem'd a Species of Quantity; and its Quantum, or Greatness, which we otherwise call its Momentum, is estimated partly from the length of the Line which the moving Body describes; as if a Body pass over a Line of 100 Feet, the Quantity of its *Motion* is greater than if it pass'd over 10 Feet: and partly from the Quantity of the Matter moved together, or at the same time, i. e. not from the Bulk or Extension of the Body, but from its Mass or Weight; the Air, and other subtile Matters wherewith the Pores are filled, not entring into the account: As if a Body of two cubic Feet run over a Line of 100 Feet, the Quantity of its *Motion* is greater than that of a Body of one cubic Foot describing the same Line: For whatever *Motion* one Whole has, that is had in one Half of the other; and the *Motion* of the Whole is the Sum of the *Motion* of all its Parts.

Hence it follows, that for two unequal Bodies to have equal *Motions*, or Momentums, the Lines which they pass over must be in a reciprocal Proportion of their Masses or Weights, i. e. if one Body have three times the Quantity of Matter that another has, the Line it runs over must be  $\frac{1}{3}$  of the Line run over by the other. If two Bodies then fastened to the two Extremities of a Balance or Lever, have their Masses in a reciprocal Ratio of their Distances from the fixed Point, when these are moved they must describe Lines in a reciprocal Ratio of these Masses.

For instance, if the Body A (Tab. MECHANICS, Fig. 3c.) have three times the Mass or Weight of B, and each be fasten'd to the Extremities of the Lever A B, whose Fulcrum or fixed Point is C, in such manner as that the Distance B C is thrice the Distance C A; the Lever can't incline either way, but the Space which the less Body moves will be thrice the Space A D, which the greater moves: So that their *Motions* will be equal; nor is there any reason why the Body A tending downwards, v. g. with four Degrees of *Motion*, should raise the Body B, rather than B tending downwards likewise with the same four Degrees of *Motion*, should raise the Body A: They will therefore be in Equilibrium. On which Foundation depends the whole Doctrine of Mechanics.

Hence that great Problem of Archimedes,  $\Delta\sigma\epsilon\ \tau\omega\ \sigma\acute{o}\ \eta\ \tau\eta\ \gamma\acute{\omega}\ \kappa\iota\upsilon\sigma\iota\varsigma$ ; with any given Power, how small soever, to raise any Weight given, how great soever; for by increasing the Distance C B infinitely, the Power of the Body A will be increased infinitely. See MECHANICS and EQUILIBRIUM.

As it is allow'd on all hands, that *Motion* is no essential Attribute of Matter; hence arises a dispute about its Production, and to what Cause it owes its Continuation.

The Cartesian's maintain, that the Creator at the Beginning impress'd a certain Quantity of *Motion* on Bodies; and that under such Laws, as that no part of it should be lost, but the same Portion of *Motion* be constantly preserv'd in Matter. And hence conclude, that if any moving Body strike on any other Body, the former loses no more of its *Motion* than it communicates to the latter. See CARTESIAN.

This Principle Sir Is. Newton overturns in the following Words: — 'From the various Compositions of two *Motions*, it is manifest there is not always the same Quantity of *Motion* in the World; for if two Balls join'd together by a slender Wire, revolve with an uniform *Motion* about their common Centre of Gravity, and at the same time that Centre be carried uniformly in a right Line drawn in the Plane of their circular *Motion*; the Sum of the *Motion* of the two Balls, as often as they are in a right Line drawn from their common Center of Gravity, will be greater than the Sum of their *Motions* when they are in a Line perpendicular to that other. Whence it appears, that *Motion* may both be generated and lost. But by reason of the tenacity of fluid Bodies, and the friction of their Parts, with the Weakness of the elastic Power in solid Bodies, Nature seems to incline much rather to the Destruction than the Production of *Motion*; and in reality *Motion* becomes continually less and less. For Bodies which are either so perfectly hard, or so soft, as to have no elastic Power, will not rebound from each other: Their Impenetrability will only stop their *Motion*. And if two such Bodies, equal to each other, be carried with equal but opposite *Motions*, so as to meet in a void Space, by the Laws of *Motion* they must stop in the very Place of Concourse, lose all their *Motion*, and be at rest forever, unless they have an elastic Power to give 'em a new *Motion*. If they have Elasticity enough to enable 'em to rebound with  $\frac{1}{2}$ , or  $\frac{1}{3}$ , or  $\frac{1}{4}$  of the Force wherewith they meet, they will lose  $\frac{1}{2}$ , or  $\frac{1}{3}$ , or  $\frac{1}{4}$  of their *Motion*. And this is confirmed by Experiments: For if two equal Pendulums be let fall from equal heights, so as to strike full on each other; if those Pendulums be of Lead, or soft Clay, they will lose all, or almost all their *Motion*; and if they be of any Elastic Matter, they will only retain so much *Motion* as they receive from their elastic Power.' If it be asked, how it happens that *Motion* being thus continually lost, should be continually renewed: The same Author adds, that it is renewed from some active Principles, 'Such as the Cause of Gravity, whereby the Planets and Comets preserve their *Motions* in their Orbits, and all Bodies acquire a great degree of *Motion* in falling; and the Cause of Fermentation, whereby the Heart and Blood of Animals preserve a perpetual Warmth and *Motion*; the inner parts of the Earth are kept continually warm'd; many Bodies burn and shine; and the Sun himself burns and shines, and with his Light warms and cheers all things,' (as also from the Cause of Elasticity, by which Bodies restore themselves into their former Figures;) 'For we find but little *Motion* in the World, except what plainly flows, either from the active Principles, or from the Command of the Willer.' See GRAVITY, FERMENTATION, ELASTICITY, &c.

As to the Continuation of *Motion*, or the Cause why a Body once in *Motion* comes to persevere in it; this has been extremely controverted among Physical Writers, and yet follows very evidently from one of the grand Laws of Nature, viz. That all Bodies persevere in their present State, whether of Rest or *Motion*, unless disturbed by some foreign Powers. *Motion* therefore once begun, would be continued in infinitum, were it to meet with no interruption from external Causes; as the Power of Gravity, the Resistance of the Medium, &c. So that Aristotle's Principle, Whatever is moving affects Rest, is groundless. See NATURE.

Nor has the Communication of *Motion*, or the manner how a moving Body comes to affect another at Rest; or how much of its *Motion* is communicated by the first to the last, been less disputed. See the Laws thereof under the Word PERCUSSION.

MOTION, we have observ'd, is the Subject of Mechanics; and Mechanics is the Basis of all Natural Philosophy; which is hence denominat'd Mechanical. See MECHANICAL.

In effect, all the Phenomena of Nature; all the Changes that happen in the System of Bodies, are owing to *Motion*; and are directed according to the Laws thereof.

Hence, the modern Philosophers have apply'd themselves particularly to cultivate the Doctrine of *Motion*; to investigate the Properties, Laws, &c. thereof; by Observation, Experiment, and the Use of Geometry. And to this we owe the great Advantages of the modern Philosophy above that of the Antients; who were extremely disregful



regardful of *Motion*; notwithstanding that they seem'd so sensible of its Importance, that they defined *Nature* by the first Principle of *Motion* and Rest of the Substance wherein it is. See *NATURE*.

Among all the Antients, there is nothing extant of *Motion*, excepting some things in *Archimedes's Books de Aequiponderantibus*. To *Gallileo*, a great part of the Doctrine of *Motion* is owing. He first discover'd the general Laws of *Motion*, and particularly of the *Descent* of heavy Bodies, both at large, and on *inclined Planes*; the Laws of the *Motion* of *Projectiles*; the Vibrations of *Pendulums*, and stretched *Chords*; with the Theory of *Resistances*, &c. which were things the Antients had no Notion of. See *DESCENT, PENDULUM, PROJECTILE, RESISTANCE, &c.*

His Disciple, *Torricelli*, polish'd, and improv'd on the Discoveries of his Master; and added to them divers Experiments concerning the Force of Percussion, and the Equilibrium of Fluids. See *FLUID*. *M. Huygens* improved very considerably on the Doctrine of the Pendulum; and both he and *Borelli* on the Force of Percussion. Lastly, *Newton, Leibnitz, Varignon, Mariotte, &c.* have brought the Doctrine of *Motion* still nearer to Perfection.

The general Laws of *Motion* were first brought into a System, and Analytically demonstrated together, by *Dr. Wallis, Sir Christopher Wren*, and *M. Huygens* all much about the same time; the first in Bodies not Elastic, and the two last in Elastic Bodies. Lastly, the whole Doctrine of *Motion*, including all the Discoveries both of the Antients and Moderns on that head, was given by *Dr. Wallis* in his *Mechanica, or de Motu*, published in 1669.

*MOTION* may be consider'd either as *Equable*, and *Uniform*; or as *Accelerated*, and *Retarded*. *Equable Motions* again may be consider'd either as *Simple*, or as *Compound*. *Compound Motion* may again be consider'd either as *Rectilinear*, or *Curvilinear*.

And all these again may be consider'd either with regard to themselves, or with regard to the manner of their Production, and Communication, by Percussion, &c.

*Equable MOTION*, is that wherein the moving Body proceeds with the same unvary'd Velocity.

The Laws of *Equable Motion* are as follow; the Reader being only to observe, by the way, that by *Mass* we mean Quantity of Matter or Weight, express'd by *M*; by *Momentum*, the Quantity of Motion or Impetus, express'd by *I*; by *Time*, the Duration of *Motion*, express'd by *T*; by *Velocity*, its Swiftness, noted by *V*; and by *Space*, the Line it describes, noted *S*. See *MOMENT, MASS, VELOCITY*.

Thus if the Space be  $=f$ , and the Time  $=t$ ; the Velocity will be also express'd  $f:t$ : And if the Velocity  $=v$ , and the Mass  $=m$ ; the Momentum will likewise be  $=vm$ .

#### Laws of Uniform or Equable MOTION.

*Theor. I.* The Velocities *V* and *v* of two Bodies moving equably, are in a Ratio compounded of the direct Ratio of the Spaces *S* and *f*, and the reciprocal Ratio of the Times *T* and *t*.

Demonst. For  $V = S:T$  and  $v = f:t$ .  
therefore  $V : v :: \frac{S}{T} : \frac{f}{t}$

$$V : v :: S t : f T$$

Q. E. D.

*Schol.* This and the following Theorems may be illustrated in Numbers; thus suppose that a Body *A*, whose Mass is as 7, that is, 7 Pound, in the time of 3 Seconds passes over a Space of 12 Feet; and another Body *B*, whose Mass is as 5, in the time of 8 Seconds passes over a Space of 16 Feet. We shall then have  $M = 7$ ,  $T = 3$ ,  $S = 12$ ;  $m = 5$ ,  $t = 8$ ,  $f = 16$ . And therefore  $V = 4$ ,  $v = 2$ . The Case then will stand thus:

$$V : v :: S t : f T$$

$$4 : 2 :: 12.8 : 16.3 :: 4 : 2.$$

*Corol.* If  $V = v$ , then will  $S t = f T$ ; therefore  $S : f :: T : t$ . That is, If two Bodies move equably, and with the same Velocities, their Spaces are as the Times.

*Schol.* The Corollaries may be illustrated by Numbers, in like manner as the Theorems. Thus suppose  $S = 12$ ,  $T = 6$ ,  $f = 8$ ,  $t = 4$ . Then will the  $V = 12 : 6 = 2$ , and  $v = 8 : 4 = 2$ .

Consequently by reason  $V = v$

$$S : f :: T : t$$

$$12 : 8 :: 6 : 4.$$

*Corol. 2.* If  $V = v$ , and also  $t = T$ ; then will  $S = f$ , and so the Bodies moving equably, will describe equal Spaces in equal Times.

*Theor. II.* The Spaces *S* and *f*, over which two Bodies pass, are in a Ratio compos'd of the Ratio of the Times *T* and *t*, and of the Velocities *V*, &c.

Dem. For  $V : v :: S t : f T$

Therefore  $V f T = v S t$

And  $S : f :: V T : v t$

In Numbers  $12 : 16 :: 4.3 : 2.8 :: 12 : 16$

*Corol.* If  $S = f$ ,  $V T = v t$ , so that  $V : v :: t : T$ . that is, if two Bodies moving equably, describe equal Spaces; their Velocities will be in a reciprocal Ratio of their Times.

In Numbers, if we suppose  $S = 12$ , and  $f = 12$ . Because  $S = V T$  and  $f = v t$ ; if  $V = 2$  and  $v = 3$ ,  $T = 6$  and  $t = 4$ .

So that we have  $V : v :: t : T$

$$2 : 3 :: 4 : 6.$$

*Cor. 2.* Further, if  $t = T$ , then will  $V = v$ ; and therefore Bodies which move equably, describe equal Spaces in equal Times, and have their Velocities equal.

*Theor. III.* The Momenta, or Quantities of Motion, of two Bodies moving equably, *I* and *i*, are in a Ratio compounded of the Velocities *V* and *v*, and the Masses or Quantities of Matter *M* and *m*.

Dem. For  $I = V M$ , and  $i = v m$ ; therefore  $I : i :: V M : v m$ ; that is, the Ratio of *I* to *i* is compounded of the Ratio of *V* to *v*, and of *M* to *m*. Q. E. D.

*Cor. 1.* If  $I = i$ , then will  $V M = v m$ ; and therefore  $V : v :: m : M$ . That is, if the Momenta of two Bodies moving equably, be equal; their Velocities will be in a reciprocal Ratio of their Masses.

*Cor. 2.* And therefore if  $M = m$ ,  $V = v$ ; that is, if the Momenta and Masses of two moving Bodies be equal, their Velocities are also equal.

*Theor. IV.* The Velocities *V* and *v* of two Bodies moving equably, are in a Ratio compounded of the direct Ratio of their Momenta *I* and *i*, and the reciprocal one of their Masses *M* and *m*.

Dem. Since  $I : i :: V M : v m$

$$I v m = i V M$$

$$V : v :: I m : i M$$

Q. E. D.

In Numbers  $4 : 2 :: 28.5 : 10.7 = 4.1 = 2.1 = 4.2$ .

*Cor. 1.* If  $V = v$ , then  $I m = i M$ ; and therefore  $I : i :: M : m$ ; that is, if two Bodies move equably, and with the same Velocity, their Momenta will be in the same Ratio with their Masses.

*Cor. 2.* If  $M = m$ ,  $I = i$ ; and therefore if two Bodies, that have the same Masses, move equably, and with equal Velocity, their Momenta are equal.

*Theor. V.* In an equable Motion, the Masses of the Bodies *M* and *m* are in a Ratio compos'd of the direct Ratio of their Momenta, and the reciprocal Ratio of their Velocities *V* and *v*.

Dem. Since  $I : i :: V M : v m$

Therefore  $I v m = i V M$

$$M : m :: I v : i V.$$

In Numbers  $7 : 5 :: 28.2 : 10.4 :: 7.1 : 5.1 :: 7 : 5$ .

*Cor.* If  $M = m$ , then will  $I v = i V$ ; and therefore  $I : i :: V : v$ . That is, if two Bodies moving equably, have their Masses equal, their Momenta will be as their Velocities.

In Numbers, suppose  $I = 12$ ,  $i = 8$ ,  $M = 4$ ,  $m = 4$ ; then will  $V = 12 : 4 = 3$ , and  $v = 8 : 4 = 2$ .

Therefore  $I : i :: V : v$

$$12 : 8 :: 3 : 2.$$

*Theor. VI.* In an equable Motion, the Momenta *I* and *i* are in a Ratio compounded of the direct Ratio's of the Masses *M* and *m*, and the Spaces *S* and *f*, and the reciprocal Ratio of the Times *T* and *t*.

Dem. Because  $V : v :: S t : f T$

And  $I : i :: V M : v m$

Therefore  $V I : v i :: V M S t : v m f T$

$$I : i :: M S t : m f T$$

Q. E. D.

*Cor. 1.* If  $I = i$ , then will  $M S t = m f T$ ; and therefore  $M : m :: f T : S t$ ,  $S : f :: m T : M t$  and  $T : t :: M S : m f$ ; that is, if two Bodies moving equably, have their Momenta equal, 1. Their Masses are in a Ratio compounded of the direct Ratio of their Times, and the reciprocal one of their Spaces. 2. Their Spaces are in a Ratio compounded of the direct Ratio of the Times, and the reciprocal one of their Masses. 3. Their Times are in a Ratio, compounded of their Masses and their Spaces.

*Cor. 2.* Further, if  $M = m$ ; then will  $f T = S t$ ; and therefore  $S : f :: T : t$ ; that is, if two Bodies moving equably, have their Momenta, and their Masses equal, their Spaces are as their Times.



Cor. 3. Again, if  $T = t$ , then will  $S = f$ . Two moving Bodies therefore, whose Masses and Momenta are equal, describe equal Spaces in equal Times.

Cor. 4. If besides  $I = i$ ,  $S = f$ ; then will  $mT = Mt$ ; and therefore  $M : m :: T : t$ ; that is, if two moving Bodies, whose Momenta are equal, pass over equal Spaces, their Masses are proportionable to their Times.

Cor. 5. Further, if  $T = t$ , then will  $M = m$ ; and therefore Bodies, whose Momenta are equal, and which moving equably, describe equal Spaces in equal Times, have their Masses equal.

Cor. 6. If besides  $I = i$ ,  $T = t$ ; then will  $MS = mf$ ; and therefore  $S : f :: m : M$ ; that is, the Spaces pass'd over in the same time, by two moving Bodies, whose Momenta are equal, are in a reciprocal Ratio of their Masses.

Theor. VII. In an equable Motion, the Spaces  $S$  and  $f$  are in a Ratio compounded of the direct Ratio's of the Momenta  $I$  and  $i$ , and the Times  $T$  and  $t$ ; and the reciprocal one of the Masses  $M$  and  $m$ .

Dem. Because  $I : i :: MSt : mft$ ,

$$ImfT : iMSt$$

Wherefore  $S : f :: ITm : iMt$ .

Q. E. D.

In Numb.  $12 : 16 :: 3.28 : 5.8.10.7 :: 3.4.1 : 8.2.1$

$12 : 16.$

Cor. 1. If  $S = f$ ,  $ITm = iMt$ ; and therefore  $I : i :: M : Tm$ ,  $M : m :: IT : it$ ,  $T : t :: iM : Im$ . If two Bodies therefore move equably over equal Spaces, 1. Their Momenta will be in a Ratio compounded of the direct Ratio of the Masses, and the reciprocal one of the Times. 2. Their Masses will be in a Ratio compounded of the Momenta and the Times. 3. The Times will be in a Ratio compounded of the direct Ratio of the Masses, and the reciprocal one of the Momenta.

Cor. 2. If beside  $S = f$ ,  $M = m$ ; then will  $IT = it$ ; and therefore  $I : i :: t : T$ . That is, Bodies whose Masses are equal, have their Momenta reciprocally proportionable to the Times in which they move over equal Spaces.

Cor. 3. If beside  $S = f$ ,  $T = t$ ; then will  $iM = Im$ ; and therefore two Bodies moving equably, and thro equal Spaces in equal Times, have their Momenta proportionable to their Masses.

Theor. VIII. Two Bodies moving equably, have their Masses  $M$  and  $m$ , in a Ratio compounded of the direct Ratio's of the Momenta  $I$  and  $i$ , and the Times  $T$  and  $t$ , and the reciprocal one of the Spaces  $f$  and  $S$ .

Dem. Because  $I : i :: MSt : mft$ ,  $ImfT = iMSt$ .

Wherefore  $M : m :: ITf : iTs$ .

Q. E. D.

In Numbers  $7 : 5 :: 3.28.16 : 8.10.12 :: 3.7.2 : 1.10.3 :: 7 : 5.$

Again  $I : i :: MSt : mft$ .

In Numbers  $28 : 10 :: 7.12.8 : 5.16.3 :: 7.4.1 : 5.2.1 :: 28 : 10.$

Corol. 1. If  $M = m$ , then will  $ITf = iTs$ ; and therefore  $I : i :: t : S$ ,  $S : f :: IT : it$ , and  $I : t :: iS : If$ . That is, in two moving Bodies, whose Masses are equal; 1. The Momenta are in a Ratio compounded of the direct Ratio of the Spaces, and the reciprocal one of the Times. 2. The Spaces are in a Ratio compounded of the Momenta and the Times. 3. The Times are in a Ratio compounded of the direct Ratio of the Spaces, and the reciprocal one of the Momenta.

Cor. 2. If beside  $M = m$ ,  $T = t$ , then will  $iS = If$ ; and therefore  $I : i :: S : f$ . That is, the Momenta of two Bodies, whose Masses are equal, are proportional to the Spaces pass'd over in equal Times.

Theor. IX. In equable Motions, the Times  $T$  and  $t$  are in a Ratio compounded of the direct Ratio's of the Masses  $M$  and  $m$ , and the Spaces  $S$  and  $f$ , and the reciprocal one of the Momenta  $I$  and  $i$ .

Dem. Because  $I : i :: MSt : mft$ ,  $ImfT = iMSt$ .

Wherefore  $T : t :: iMS : Imf$ .

Q. E. D.

Cor. If  $T = t$ ,  $iMS = Imf$ ; and therefore  $I : i :: MS : mf$ ,  $M : m :: IS : iS$ ; and  $S : f :: Im : iM$ . That is, if two Bodies, moving equably, describe equal Spaces in equal Times; 1. Their Momenta will be in a Ratio compounded of the Masses and the Spaces. 2. Their Masses will be in a Ratio compounded of the direct Ratio of the Momenta, and the reciprocal one of the Spaces. 3. The Spaces will be in a Ratio compounded of the direct Ratio of the Momenta, and the reciprocal one of the Masses.

The Laws of MOTIONS uniformly accelerated and retarded.

Def. By an accelerated Motion, we mean such a one as continually receives fresh Accessions of Velocity; and it is said to be uniformly accelerated, when in equal Times its Accessions of Velocity are equal. See ACCELERATION.

By a retarded Motion, is understood such a one, whose Velocity continually decreases; and it is said to be uniform-

ly retarded, when its Decrease is continually proportional to the Time. See RETARDATION.

Axiom. A Body once at rest, will never move, unless some other Body put it in Motion; and when once in Motion, it will continue for ever to move, with the same Velocity, and in the same Direction, unless it be forced from its State by some other Cause: This is evident from that fundamental Axiom in Philosophy, That there is nothing without a sufficient Cause.

Cor. 1. A Body therefore moved by one only Impulse, must proceed in a right Line.

Cor. 2. If then it be carry'd in a Curve, it must be acted on by a double Power; one, whereby it would proceed in a right Line; another, whereby it is continually drawn out of it.

Axiom 1. If the Action and Re-action of two (unelastic) Bodies be equal, there will no Motion ensue; but the Bodies after Collision, will remain at rest by each other.

Axiom 2. If a moving Body be impell'd in the Direction of its Motion, it will be accelerated; if by a resisting Force, it will be retarded. Heavy Bodies descend with an accelerated Motion.

Theor. X. If a Body move with an uniform Velocity; the Spaces will be in a duplicate Ratio of the Times.

Dem. For let the Velocity acquir'd in the Time  $t$  be  $v$ , then will the Velocity acquir'd in the Time  $2t = 2v$ , in the Time  $3t = 3v$ , &c. and the Spaces corresponding to those Times,  $t$ ,  $2t$ ,  $3t$ , &c. will be as  $t^2$ ,  $4t^2$ ,  $9t^2$ , &c. (by Theor. 2.) The Spaces therefore are as  $1.4.9.$  &c. And the Times as  $1.2.3.$  &c. that is, the Spaces are in a duplicate Ratio of the Times. Q. E. D.

Cor. In a Motion uniformly accelerated, the Times are in a sub-duplicate Ratio of the Spaces.

Theor. XI. The Spaces pass'd over by a Body uniformly accelerated, increase, in equal Times, according to the unequal Numbers  $1.3.5.7.$  &c.

Dem. If the Times, wherein a moving Body equably accelerated, proceeds, be as  $1.2.3.4.5.$  &c. the Space pass'd over in one Moment, will be as  $1$ , in 2 Moments as  $4$ , in 3 as  $9$ , in 4 as  $16$ , in 5 as  $25$ , &c. (Theor. 10.) If therefore you subtract the Space pass'd over in one Moment, viz. 1. from that pass'd over in two Moments, 4. there will remain the Space corresponding to the second Minute, viz. 3. In the same manner may be found the Space pass'd over in the third Minute,  $9 - 4 = 5$ . The Space corresponding to the fourth Minute,  $16 - 9 = 7$ ; and so of the rest. The Space of the first Minute therefore is as  $1$ , that of the second as  $3$ , that of the third as  $5$ , of the fourth as  $7$ , of the fifth as  $9$ , &c. Therefore the Spaces pass'd over by a Body, moving with an uniformly accelerated Motion, in equal Times increase according to the unequal Numbers,  $1.3.5.7.9.$  &c. Q. E. D.

Theor. XII. The Spaces passed over by a Body equably accelerated, are in a duplicate Ratio of the Velocities.

Dem. For supposing the Velocities to be  $V$  and  $v$ , the Times  $T$  and  $t$ , the Spaces  $S$  and  $s$ ; then will  $V : v :: T : t$ . Wherefore, since  $S : s :: T^2 : t^2$ , (Theor. 10.)  $S : s :: V^2 : v^2$ .

Corol. Wherefore in a Motion uniformly accelerated, the Velocities are in a subduplicate Ratio of the Spaces.

Theor. XIII. Heavy Bodies descend with an uniformly accelerated Motion, in a Medium void of Resistance; if the Spaces be not very great.

Dem. Since heavy Bodies descend with one accelerated Velocity, the Power of Gravity must continually impel them. But the Power of Gravity is found the same at all Distances from the Earth where the Experiment can be made. Therefore heavy Bodies must be driven downwards in the same manner in equal times. If then, in the first Moment of Time, they be impell'd with the Velocity  $v$ , they will be impell'd with the same Velocity  $v$  in the second Moment, and with the same in the 3d, 4th, &c. Moments. Now the Medium being supposed void of all Resistance, (by Hypoth.) they will still retain the Velocity they acquire; and by reason of their equal fresh Acquisitions every Minute, they will descend with a Motion uniformly accelerated. Q. E. D. See GRAVITY.

Cor. 1. The Spaces of Descent therefore, are in a duplicate Ratio of their Times, and also of their Velocities, (Theor. 10, 12.) and increase according to the uneven Numbers  $1.3.5.7.9.$  &c. (Theor. 11.)

Cor. 2. The Times, and likewise the Velocities, are in a subduplicate Ratio of the Spaces, (Theor. 10, 13.)

Schol. In supposing heavy Bodies to move thro' a Medium void of Resistance, we exclude, at once, all manner of Impediments, under what Name soever they be call'd, or from whatsoever Cause they proceed; and among the rest, that Motion, wherewith the Earth revolving on its Axis, carries with it heavy Bodies during the time of their fall; tho' this is not sensible at any moderate distance.

Schol. It was Galileus who first discover'd the Law of the Descent of heavy Bodies; and that too by Reasoning; tho'



tho' he afterwards confirm'd it by Experiments. These he repeated again and again, and still found the Spaces pass'd over as the Squares of the Times: But it must be observed, that the Spaces are not to be taken in the Length, but the Height of the Plane, as will be shewn hereafter. See DESCENT.

The same Experiments were try'd, tho' in a different manner, by Ricciolus and Grimaldus, who let fall several stony Balls of the same Bulk and Weight, 8 Ounces each, from various Altitudes; measuring the Times of Descent by the Vibrations of a Pendulum. The Result of their Experiments is seen in the following Table.

| Vibrations. | Time. | Space at the End of the Time. |            |
|-------------|-------|-------------------------------|------------|
|             |       | Rom. Feet.                    | Rom. Feet. |
| 5           | 0     | 50                            | 10         |
| 10          | 1     | 40                            | 30         |
| 15          | 2     | 30                            | 50         |
| 20          | 3     | 20                            | 70         |
| 25          | 4     | 10                            | 90         |
| 6           | 1     | 0                             | 15         |
| 12          | 2     | 0                             | 45         |
| 18          | 3     | 0                             | 75         |
| 24          | 4     | 0                             | 105        |

*Theor. XIV.* If a heavy Body fall thro' a Medium void of Resistance, and from a Height not very great; the Space it passes over is subduple of that which it would pass over in the same time, with the Velocity it has acquir'd at the end of its fall.

*Dem.* Let the right Line AB (Tab. MECHANICS, Fig. 31.) represent the whole Time of a heavy Body's Descent; and let this be divided into any Number of equal Parts; to the Abscisses AP, AQ, AS, AB, draw the right Lines PM, QI, SH, BC, which may be as the Velocities acquired, in those Times, in the Descent. Since then AP: AQ::PM:QI, AP:AS::PM:SH, &c. (Eucl. VI. 2.) If then the Altitude of the Triangle ABC be conceiv'd to be divided into equal Parts infinitely small; the Motion being uniform in a Moment of Time infinitely small; the little Area PpMm = Pp.PM as the Space pass'd over in the little Moment of Time Pp. (*Theor. 2.*) Therefore the Space pass'd over in the Time AB, will be as the Sum of all the little Areas, i. e. as the Triangle ABC. But the Space that would be described in the same Time AB with the uniform Velocity BC, being as the Rectangle ABCD, (*Theor. 2.*) it will be to the other Space as 1 to 2. (Eucl. I. 41.)

*Cor.* The Space therefore pass'd over in half the Time AB, with the Velocity BC, is equal to the Space which the heavy Body passes over from a State of Rest in the whole Time AB.

*Problem 1.* The Time wherein a heavy Body falls from any given Altitude being given; to determine the Spaces it passes over in each part of that Time.

*Resol.* Let the given Altitude be =  $a$ , the Time =  $t$ , the Space pass'd over in any part of that Time  $x$ . Then by *Cor.* of *Theor. 13.*

$$t : x :: t^2 : a$$

$$t^2 x = a$$

$$x = a : t^2$$

The Space therefore pass'd over in the first part of Time is  $a : t^2$ , and therefore that pass'd over in the second part of Time =  $3a : t^2$ ; that pass'd over in the third part =  $5a : t^2$ , &c. (*Ibid.*)

*E. gr.* In the above-mentioned Experiments of Ricciolus, the Ball descended 240 Feet in four Seconds. The Space therefore pass'd in the first Second =  $240 : 16 = 15$ ; that in the next Second =  $15.3 = 45$ ; that in the third =  $15.5 = 75$ , &c.

*Prob. 2.* The Time of a heavy Body's Descent in a Medium void of Resistance thro' any given Space, being given, to determine the Time wherein it will pass over another given Space, in the same Medium.

*Resol. and Dem.* Since the Spaces are as the Squares of the Times, (*Theor. 13.*) to the Space the heavy Body moves in the given Time, the Space required in the Question, and the Square of the given Time, seek a fourth Proportional; this will be the Square of the Time required: Its square Root therefore being extracted, will yield the Time required. *E. gr.* In Ricciolus's Experiments the Ball fell 240 Feet in 4 Minutes; 'tis demanded then how much Time it will take up in falling 135 Feet? This Time will be found =  $\sqrt{(135 : 16 : : 240)} = \sqrt{(135 : 15)} \sqrt{9} = 3$ .

*Prob. 3.* The Space a Body falls in any given Time in a Medium void of Resistance being given, to determine the Space it will fall, in any other given Interval of Time.

*Resol. and Dem.* Since the Spaces are as the Squares of the Times, (*Theor. 13.*) find a fourth Proportional to the Square of the Time wherein the Body falls thro' the given Space, the Square of the Time wherein it is to fall thro' the Space required, and the Space required; this fourth Proportional will be the Space required.

*E. gr.* Suppose a Ball to fall 290 Feet in four Minutes time; and 'tis inquir'd what time it will spend in falling 135 Feet? The Answer will be found =  $\sqrt{(135 : 15)} \sqrt{3} = 3$ .

*Theor. XV.* If a Body proceed with a Motion uniformly retarded, it will pass over half the Space which it would describe in the same time by an equable Motion.

*Dem.* Suppose the given Time divided into any Number of equal Parts; and draw the right Lines BC, SH, QI, PM thereto, which are to be as the Velocities corresponding to the Parts of Time o, BS, BQ, BP, BA; so as letting fall the Perpendiculars HE, IF, MG, the right Lines CE, EF, CG, CB may be as the Velocities lost in the Times HE, FI, GM, AB; that is, BS, BQ, BP, BA. Since CE:CF::EH:FI, CG:CB::GM:BA, (*Theor. 13.*) ABC will be a Triangle, (*Eucl. III. 17.*) If Bb, therefore, be a Moment of Time infinitely small, its Motion will be uniform; and, therefore, the Space described by the moving Body will be as the little Area BbC (*Theor. 2.*) The Space therefore described in the Time is as the Triangle ABC, viz. as the Sum of all the little Areas BbC. Now the Space described by the Body moving uniformly with the Velocity BC in the Time AB, is as the Rectangle ABCD, (*Theor. 3.*) therefore the former is half of this. (*Eucl. I. 41.*) Q. E. D.

*Theor. XVI.* The Spaces described by a Motion uniformly retarded, in equal Times, decrease according to the unequal Numbers 7, 5, 3, 1.

*Dem.* Suppose the moving Body in the first Instant of Time to pass over seven Feet; I say, that in the second if it be equally retarded, it will pass over 5; in the third 3; and in the fourth 1. For let the equal Parts of the Axis of the Triangle BS, SQ, QP, PA (same Fig.) be as the Times; the Semi-ordinates BC, SH, QI, PM as the Velocities at the beginning of any Time; the Trapezia BSHC, SQIH, QPMI, and the Triangle PAM as the Spaces described in those times, as it appears they will be from *Theor. 16.* Let then BC = 4 and BS = SQ = QP = PA = 1. Then will SH = 3, QI = 2, PM = 1, (*Theor. 13.*) BSHC =  $(4 + 3) \cdot 1 : 2 = \frac{7}{2}$ , SQIH =  $(3 + 2) \cdot 1 : 2 = \frac{5}{2}$ , QPMI =  $(2 + 1) \cdot 1 : 2 = \frac{3}{2}$ , PAM =  $\frac{1}{2}$ . Consequently the Spaces described in equal Times are as  $\frac{7}{2}, \frac{5}{2}, \frac{3}{2}, \frac{1}{2}$ , that is as 7, 5, 3, 1. Q. E. D.

For the Cause, &c. of the Acceleration of MOTION, see GRAVITY and ACCELERATION.

For the Cause, &c. of Retardation, see RESISTANCE and RETARDATION.

#### Laws of the Communication of MOTION.

The Laws wherein Motion is communicated by the Collision and Percussion of Bodies are very different, as the Bodies are either Elastic or Unelastic, and as the Direction of the Stroke is oblique or direct.

What relates to the Collision of Bodies not Elastic, when the Stroke or Shock is direct, will come under the following Laws.

*Theor. XVII.* A moving Body striking against a Body at rest, will communicate Motion thereto, and both will proceed in the direction of the first; and the Momentum, or Quantity of Motion in the two, will be the same after the Stroke, as in the single one before it.

*Dem.* For 'tis the Action of the first that gives the latter all the Motion it has; and 'tis the Reaction of the latter that takes off any part of the Motion of the first. Now, as Action and Reaction are always equal, the Momentum acquir'd by the one must be just equal to that lost by the other; so that there is neither loss nor gain from the Stroke.

*Corol.* The Velocity after the Stroke is found by multiplying the Mass of the first Body by its Velocity before the Stroke, and dividing the Product by the Mass of the second Body.

*Corol.* Hence if a Body in Motion strike on another moving in the same direction, but more slowly, both will continue their Motion in their first Direction; and the Momenta, or Sum of Motion will be the same after as before the Stroke.

*Corol.* If two equal Bodies move against each other with equal Velocities, after the Stroke they will both remain at Rest.

Simple MOTION is that produced from some one Power.

Compound MOTION is that produced by several conspiring Powers: Powers being said to conspire, when the Direction of the one is not opposite to that of the other; as when the Radius of a Circle is imagined to whirl round on



on its Centre, and a Point in the same Radius is at the same time supposed impell'd straight along it.

*Corol.* All Curvilinear Motion, therefore, is Compound.

*(Cor. 1. of Axiom 1.)*

*Theor. XVIII.* If a moving Body A (*Fig. 32.*) be acted on by a double Power; the one according to the Direction AB, the other according to AC; with the Motion compounded thereof, it will describe the Diagonal of a Parallelogram ND; whose Sides AB and AC it would have described in the same time with each of the respective Powers apart.

*Dem.* If the Body A were only acted on by the Force impress'd along AB; in the first instant of Time it would be in some Point of the right Line AB as in H, and so in the Line HL parallel to AC; if it were only acted on by the Power A impress'd in the Direction AC, it would in the same Instant of time be in some Point of the Line AC as in I, and so in the Line IL parallel to AB. But since the Directions of the Powers are not opposite to each other, neither of 'em can impede the other; and therefore the Body in the same instant of Time will arrive both at the Point HL and at IL; and will consequently be in the Point L, where the two meet. In the same manner it appears that if KM and MG be drawn parallel to AB and AC, the Body in the second Instant of Time will be in M, and at length in D. *Q. E. D.*

*Cor. 1.* Since about every right Line as AD, a Parallelogram as ABCD, may be constructed by making two equal Triangles ACD and ABD, on one common Base AD; every rectilinear Motion, when it may be of service for the Demonstration, may be resolved into a compound one.

*Cor. 2.* But as the Proportion of the Sides AC and CD may be various, so also may the right Line AD be described by a Motion compounded various ways; and therefore the same rectilinear Motion may be resolved into various compound Motions.

*Cor. 3.* Hence if a moveable Body be drawn by three several Powers according to the Directions BA, AD, and AC, (*Fig. 33.*) two of which taken together are equivalent to the third; they will be to each other as the right Lines BD, DA, DC, parallel to their Directions; that is, reciprocally as the Sines of the Angles included between the Lines of their Directions, and the Line of Direction of the third: DB being to AD as the Sine of the Angle BAD to the Sine of the Angle ABD.

*Theor. XIX.* In an equable compound Motion, the Velocity produced by the conspiring Powers, is to the Velocity of each of the two apart, as the Diagonal AD (*Fig. penult.*) of the Parallelogram ABCD, in the Direction of whose Sides they act, to either of those Sides AB or AC.

*Dem.* For in the same time that one of the Powers would carry it over the Side of the Parallelogram AB, and the other over AC separately, join'd together they carry it over the Diagonal AD. The Diagonal AD therefore is the Space described by the conspiring Powers in the same Time: but in an equable Motion the Velocities in the same Time are as the Spaces; the Velocities therefore arising from the conspiring Forces are to the Velocity arising from either Force, as AD to AB or AC. *Q. E. D.*

*Cor. 1.* The conspiring Forces therefore being given; i. e. the Ratio of the Velocities being given, by the Lines AB and AC given in magnitude, and the Direction thro' those Lines being given in Position, or by the Angle of Direction; the Celerity and Direction of the oblique Motion is given; because the Diagonal is given both in Magnitude and Position.

*Cor. 2.* The oblique Motion however being given, the simple ones are not, *vice versa*, given; because the same oblique Motion may be compounded of various simple ones.

*Theor. XX.* In a compound Motion produced by the same Forces, the Velocity is greater if the Angle of Direction be less; and less, if this be greater.

*Dem.* Let the greater Angle of Direction be BAC, (*Fig. 34.*) the less FAC; since the Powers are supposed the same, AC will be common to each Parallelogram AFCE and BACD and besides AB = AE. Now 'tis evident that on the footing of the greater Angle, the Diagonal AD is described; and on the footing of the less Angle, AE; and both in the same time, by reason AB = AE. The Velocities therefore are as AD to AE: Wherefore since AD is less than AE, the Velocity on the foot of the greater Angle is less than on that of the less Angle. *Q. E. D.*

*Cor.* Since the Legs AC and CE, with the included Angle, being given, the Angle CEA, and thence, also, AE is found; the Velocity of the conspiring Powers, and the Angle of Direction, in any particular Case, being given; the Velocity of the compound Motion, and consequently the Ratio of the Velocities produced by the same Powers under different Angles of Directions, may be determined.

For the particular Laws of MOTION arising from the Collision of Bodies both Elastic and Unelastic, and that where the Directions are both perpendicular and oblique, see PERCUSSION.

For Circular MOTION, and the Laws of Projectiles, see CENTRAL Forces, and PROJECTILE.

For the MOTION of Pendulums, and the Laws of Oscillation, see PENDULUM and OSCILLATION.

Perpetual MOTION: See PERPETUAL Motion.

The celebrated Problem of a perpetual Motion, consists in the inventing of a Machine; which has the Principle of its Motion within itself. M. de la Hire has demonstrated the Impossibility of any such Machine, and finds that it amounts to this, *viz.* to find a Body which is both heavier, and lighter at the same time; or a Body which is heavier than itself. See MACHINE.

Animal MOTION, is that whereby the Situation, Figure, Magnitude, &c. of the Parts, Members, &c. of Animals are changed.

Under these Motions come all the Animal Functions, as Respiration, Circulation of the Blood, Excretion, Walking, &c. See FUNCTION.

Animal Motions are usually divided into two Species, *viz.* Spontaneous, and Natural.

Spontaneous, or Muscular MOTION, is that perform'd by means of the Muscles, at the Command of the Will; hence also call'd Voluntary Motion. See Muscular MOTION.

Natural, or Involuntary MOTION, is that effected without such Command of the Will; by the mere Mechanism of the Parts.

Such is the Motion of the Heart, and Pulse; the Peristaltic Motion of the Intestines, &c. See HEART, &c.

Intestine MOTION, an Agitation of the Particles, whereof a Body consists. See INTESTINE; see also FERMENTATION, EFFERVESCENCE, &c.

Some Philosophers will have every Body, and every Particle of a Body, in continual Motion. For Fluids, 'tis the Definition they give of such Bodies, *viz.* that their Parts are in continual Motion. See FLUIDITY.

And as to Solids, they infer the like Motion from the Effluvia continually emitted thro' their Pores. See EFFLUVIA.

Hence they describe Intestine Motion, to be a Motion of the internal, and smaller Parts of Matter, continually excited by some external, latent Agent, which of itself is insensible, and only discovers itself by its Effects; appointed by Nature for the great Instrument of the Changes in Bodies.

MOTION, in Astronomy, is peculiarly apply'd to the orderly Courses of the heavenly Bodies. See SUN, PLANET, COMET, &c.

The Motion of the Earth, from West to East, is now generally granted among Astronomers: See it proved under the Article EARTH.

The Motions of the Celestial Luminaries are of two Kinds, Diurnal or Common; and Secondary or Proper.

Diurnal or Primary MOTION, is that wherewith all the heavenly Bodies, and the whole mundane Sphere, appears to revolve every day round the Earth, from East to West. See DIURNAL.

This is also call'd the Motion of the Primum Mobile, and the Common Motion; to distinguish it from that proper to each Planet, &c. 'Tis about the various Phænomena resulting from this Motion, that Astronomy is chiefly employ'd. See ASTRONOMY.

Secondary or Proper MOTION, is that wherewith a Star, Planet, or the like, advances a certain Space every day from West towards East. See MOBILE.

See the several Motions of each Luminary, with the Irregularities, &c. thereof, under its proper Article; EARTH, MOON, STAR, &c.

MOTION of Trepidation. See TREPIDATION and LIBRATION.

MOTION, in Music, is the manner of beating the Measure, to hasten or slacken the Time of the Pronunciation of the Words, or Notes. See MEASURE and TIME.

The Motion, in Songs compos'd in double Time, differs from those in triple Time. 'Tis the Motion that distinguishes Courants and Sarabands, from Gavots, Boreas, Chacones, &c.

MOTION is also used among Mechanics, for the Inside of a Watch, &c. more commonly call'd Movement. See MOVEMENT.

MOTIONS, in War, are the Marches, Counter-marches, &c. an Army makes in the changing of its Post.

The great Skill of a General consists in discovering the Enemies Motions, and concealing his own. Nothing is more dangerous, than to make great Motions before a powerful Enemy, ready to come to Blows.

MOTION, or Emotion, in Rhetoric, &c. See PASSION.

MOTORII, MOTORII Nerves, the third Pair of Nerves, serving for the Motion of the Eye. See NERVE.

This Pair is united into one near their Insertion into the Brain; by which means, when one Eye is moved towards any Object, the other is directed towards the same. See EYE.



**MOTOS**, a Piece of *Lint*, or Linnen Cloth, teaz'd like Wool, to be put into Ulcers, to stop the Flux of Blood, &c.

**MOTRIX**, something that has the Power or Faculty of Moving. See *VIS MOTRIX*, *FACULTY*, &c.

**MOTTO**, an Italian Term, literally signifying Word or Saying; used in Arms, Devices, &c. See *ARMS* and *DEVICE*.

The *Motto* of an Armoury, is a short Sentence, or Diction carry'd in a Scroll generally over, sometimes under the Arms; sometimes alluding to the Name of the Bearer, sometimes to the Bearing, and sometimes to neither.

The *Motto*, or Word, says *Guillim*, is an external Ornament annex'd to Coat-Armour; being the Invention or Conceit of the Bearer, succinctly and significantly express'd usually in three, or four Words, which are set in some Scroll or Compartment, plac'd at the foot of the Escutcheon.

As the *Motto* holds the lowest Place in Arms; so it is the last in Blazoning. In strictness, it should express something intended in the Achievement; but Custom has now receiv'd whatsoever Fancy of the Deviser. See *BLAZON*.

The Use of *Motto's* is very antient; History, both sacred and profane, furnishing Instances thereof. Our Ancestors made choice of *Motto's* to express their predominant Passions, as of Piety, Love, War, &c. or some extraordinary Adventure befallen them: Most of which, from some such Original, have become hereditary in divers Families.

The *Motto's* of the Royal Family of England, are, *Dieu & mon Droit*, God and my Right; of the Royal Family of Bourbon, *Esperance*, Hope; of the Order of the Garter, *Honi soit qui mal y pense*, Shame be to him that Evil thinks; of the Duke of Norfolk, *Sola Virtus invicta*; of the Duke of Bedford, *Che sara sara*; of the Duke of Devonshire, *Cavendo tutus*, alluding to the Family's Name *Cavendish*; of the Duke of Kingston, *Pie repone te*, alluding to the Name *Pierpoint*; of the Earl of Radnor, *Que supra*, alluding to the three Stars in his Arms; of the Earl of Abingdon, *Virtus ariete fortior*, alluding to the three battering Rams bore in the Arms; of *Fortescue* Lord Clinton, *Forte scutum salus Ducum*.

The *Motto* of a Device, is also call'd the *Soul* of the Device. See *DEVICE*.

**MOVEABLE**, something susceptible of Motion; or that is dispos'd to be mov'd. See *MOTION*.

Thus a Sphere is said to be the most moveable of all Bodies, i.e. the easiest to move. A Door is moveable on its Hinges: The Magnetical Needle, on a Pin, or Pivort, &c.

*Moveable* is frequently used in Contradistinction to *Fixed*. See *FIXED*.

**MOVEABLE Feasts**, are such as are not always held on the same Day of the Year, or Month; tho they be, on the same Day of the Week. See *FEAST*.

Thus, *Easter* is a moveable Feast; being always held on the first Sunday after the full Moon following the 21st of March; which is moveable between the 1st of March, and the 18th of April. See *EASTER*.

All the other moveable Feasts follow *Easter*, i.e. keep their Distance from it; so that they are fix'd with respect thereto.

Such are *Septuagesima*, *Sexagesima*, *Ash-Wednesday*, *Ascension-Day*, *Pentecost*, *Trinity-Sunday*, &c. Which see under their proper Articles.

**MOVEABLES**, or **MOVEABLE Goods**, by the Civilians call'd *Bona MOBILIA*, are such as are capable of being remov'd from one Place to another; or which may be conceal'd or perverted; as not being fix'd to the Ground, &c.

In England, we have two Kinds of Effects, *Moveable* and *Immoveable*; the *Moveable* are Ready Money, Merchandizes, Bonds, Book-Debts, Cattel, Household Instruments, &c. that are not fasten'd either with Iron or Nail, nor seal'd in the Plaster, but may be transported without either Fraction or Deterioration.

In the Customary Laws, we say *Moveables* follow the Person, and his proper Habitation; *Moveables* follow the Body, &c. which Words have different Meanings in different Countries.

Sometimes they signify, that *Moveables* go according to the Custom of the Place where is the Habitation of the Deceas'd, tho he die in another Place; sometimes they signify, that *Moveables* follow the Custom of the Place where the Defunct died.

**MOVEMENT**, *Motion*, a Term frequently used in the same Sense with *Automation*.

The most usual Movements are *Watches* and *Clocks*: The first are such as shew the Parts of Time; the second such as publish it. See *WATCH* and *CLOCK*.

In its popular Use, among us, *Movement* signifies all the curious Parts of a Watch, Clock, or other curious Engine, which move, and, by that Motion, carry on the Design of the Instrument.

The Movement of a Clock, or Watch, is the Inside; or that Part which measures the Time, strikes, &c. exclusive of the Frame, Case, Dial-Plate, &c.

The Parts common to both of these Movements are, The *Main-Spring*, with its Appurtenances; lying in the Spring-Box, and in the middle thereof lapping about the Spring-Arbor, to which one end of it is fasten'd. At top of the Spring-Arbor is the *Endless Screw*, and its Wheel; but in Spring-Clocks, this is a Ratchet-Wheel with a Click, that stops it. That which the main Spring draws, and round which the Chain or String is wrapped, is the *Fusy*: This is ordinarily taper; in large Works going with Weights, it is cylindrical, and call'd the *Barrel*. The small Teeth at the bottom of the Fusy or Barrel, which stop it in winding up, is call'd the *Ratchet*; and that which stops it when wound up, and is for that end driven up by the Spring, the *Garde-gut*. The *Wheels* are various; the Parts of a Wheel, are the *Hoop* or *Rim*; the *Teeth*, the *Cross*, and the *Collet* or Piece of Brass solder'd on the Arbor or Spindle, whereon the Wheel is rivetted. The little Wheels playing in the Teeth of the larger, are call'd *Pinions*; and their Teeth, which are 4, 5, 6, 8, &c. are call'd *Lever*; the Ends of the Spindle are call'd *Pivots*; and the gutter'd Wheel, with Iron Spikes at bottom, wherein the Line of ordinary Clocks runs, the *Pully*. We need not say any thing of the *Hand*, *Screws*, *Wedges*, *Stops*, &c. See *WHEEL*, *PIVOT*, &c.

*Theory of Calculating the Numbers for MOVEMENTS.*

1. It is to be observ'd, that a Wheel divided by its Pinion, shews how many Turns the Pinion has to one Turn of the Wheel.

2. That from the Fusy to the Balance, the Wheels drive the Pinions; consequently the Pinions run faster, or make more Revolutions than the Wheels; but 'tis the contrary from the great Wheel to the Dial-Wheel.

3. That the Wheels and Pinions we write down either as Vulgar Fractions, or in the way of Division in the common Arithmeric; v.g. a Wheel of 60 moving a Pinion of 5, is wrote either  $\frac{60}{5}$ , or better 5)60. And the number of Turns the Pinion has in one Turn of the Wheel, as a Quotient, thus, 5)60(12. A whole Movement may be wrote, as in the adjoining Scheme; where the uppermost Number expresses the Pinion of Report 4, the Dial-Wheel 36, and the Turns of the Pin 9; the second, the Pinion, and Great-Wheel; the third, the second Wheel, &c. the fourth, the Contrat Wheel; and the last, 17, the Crown-Wheel.

Hence, 4. From the Number of Turns any Pinion makes in one Turn of the Wheel it works in, may be determin'd the Number of Turns a Wheel or Pinion has at any greater Distance, viz by multiplying together the Quotients; the Produce whereof is the Number of Turns. Thus,

Suppose the Wheels and Pinions as in the Case adjoining; 11 multiply'd by 9, gives 99, the Number of Turns of the second Pinion 5, in one Turn of the Wheel 55, which runs concentrical, or on the same Spindle with the Pinion 5. Again, 99 multiply'd by 8, gives 792, the Number of Turns the last Pinion has in one Turn of the first Wheel 5.

Hence we proceed to find, not only the Turns, but the Number of Beats of the Balance in the Time of those Turns. For having found the Number of Turns the Crown-Wheel has in one Turn of the Wheel sought, those Turns multiply'd by its Notches, give half the Number of Beats, in that one Turn of the Wheel. Suppose, v.g. as in the last Case, the Crown-Wheel to have 720 Turns, to 1 of the first Wheel; this Number multiply'd by 15, the Notches in the Crown-Wheel, produces 10800; half the Number of Strokes of the Balance in one Turn of the first Wheel.

The general Division of a Movement, is into the Clock and Watch-Parts. See *CLOCK-Work* and *WATCH-Work*.

**MOVER**, or *first Mover*. See *MOBILE*.

*Perpetual Mover*. See *PERPETUAL Motion*.

**MOULD**, in the Mechanic Arts, &c. a Cavity artfully cut, with design to give its Form, or Impression to some softer Matter apply'd therein.

*Moulds* are Instruments of great Use in Sculpture, Foundry, &c. See *SCULPTURE*, *FOUNDRY*, &c.

The Workmen employ'd in melting the Mineral or Metallic Glebe dug out of Mines, have each their several Mould, to receive the melted Metal as it comes out of the Furnace; but different according to the diversity of Metals and Works. In Gold-Mines, they have *Moulds* for Ingots. In Silver-Mines for Bars. In Copper and Lead-Mines for Pigs or Salmons: In Tin-Mines for Pigs and Ingots. And in Iron-Mines for Sows, Chimney-Backs, Anvils, Caldrons, Pots, and other large Utensils and Merchandises of Iron, which are here cast, as it were, at first hand. See *GOLD*, *SILVER*, *LEAD*, *TIN*, *IRON*, &c.



The *Founders of large Works*, as Statues, Bells, Guns, and other brazen Works, have *Moulds* of Wax; supported within side by what they call a *Core*, and cover'd without side with a Cap or Case. 'Tis in the Space which the Wax took up, which is now melted to leave it free, that the liquid Metal runs, and the Work is form'd; being carried thither thro' a great Number of little Canals which cover the whole *Mould*. See **FOUNDRERY**.

The *Moulds of Coiners* are Frames full of Sand, wherein the Plates of Metal are cast that are to serve for the striking of Species of Gold or Silver. See **COINAGE**.

*Moulds of Founders of small Works* are like the Frames of Coiners. 'Tis in these Frames, which are likewise fill'd with Sand, that their several Works are fashion'd; into which, when the two Frames whereof the *Mould* is composed, are rejoin'd, the melted Brass is run. See **FOUNDRERY**.

*Moulds of Letter-Founders* are partly of Steel, and partly Wood: The Wood, properly speaking, serves only to cover the real *Mould* which is within, and to prevent the Workman who holds it in his Hand, from being incommoded by the impression of the Heat of the melted Metal. Only one Letter or Type can be form'd at once in each *Mould*. See **Letter-FOUNDRERY**.

*Moulds in the Manufacture of Paper*, are little Tables composed of several Brads or Iron Wires tied to each other by another Wire still finer. Each *Mould* is of the bigness of the Sheet of Paper to be made, and has a Rim or Ledge of Wood to which the Wires are fasten'd. These *Moulds* are more usually call'd *Forms*. See **PAPER**.

The *Furnalists, Furnace, and Crucible Makers* also make use of *Moulds* for a part of their Works, especially Crucibles. They are made of Wood, of the same form with the Crucibles; that is in Form of a truncated Cone. They have Handles of Wood to hold, and turn 'em with, when being cover'd with the Earth, the Workman has a mind to round or flatten his Vessel. See **FURNALISTS**.

*Moulds for Leaden Bullets*, are little Iron Pinchers, each of whose Branches terminates in a Hemispherical Concave, which when shut, form an entire Sphere. In the Lips or Sides where the Branches meet, is a little Jet or Hole, thro' which the melted Lead is convey'd.

The *Glasiers* have two kinds of *Moulds*, both serving to cast their Lead. In the one they cast the Lead into long Rods or Canes fit to be drawn thro' the Vice, and the Grooves formed therein. This they sometimes call *Ingot-Mould*.

In the other they *Mould* those little Pieces of Lead a Line thick, and two Lines broad, fasten'd to the Iron-Bars. These may be also cast in the Vice; which see, see also **GLASIERY**.

The *Goldsmiths* use the Bones of the Cuttle-Fish to make *Moulds* for their small Works; which they do by pressing the Pattern between two Bones, and leaving a Jet or Hole to convey their Silver thro' after the Pattern has been taken out.

*Mould*, among *Masons*, a Piece of hard Wood or Iron, hollowed within side, answerable to the Contours of the Mouldings or Cornishes, &c. to be form'd. This is otherwise call'd *Calliber*.

*Moulds* among *Plumbers*, the Tables whereon they cast their Sheets of Lead. These they sometimes call simply *Tables*. Besides these, they have other real *Moulds* wherewith they cast Pipes without Soldering. See both the one and the other under **PLUMBERY**.

*Moulds* among *Glass-Grinders*, are Wooden-Frames whereon they make the Tubes wherewith they fit their Perispectives, Telescopes, and other Optic Machines. These *Moulds* are Cylinders, of a Length and Diameter according to the Use they are to be apply'd to, but always thicker at one end than the other, to facilitate the sliding. The Tubes made on these *Moulds* are of two kinds; the one simply Paste-Board and Paper; the other of thin Leaves of Wood join'd to the Paste-Board. To make of these Tubes to draw out, only the last or innermost is form'd on the *Mould*; each Tube made afterwards serving as a *Mould* to that which is to go over it; but without taking out the *Mould* from the first. See **TUBE**.

*Moulds* used in *Basket-Making* are very simple, consisting ordinarily of a Willow or Osier turn'd or bent into an Oval, Circle, Square, or other Figure, according to the Baskets, Panniers, Hampers, Hots, and other Utensils intended. On these *Moulds* they make, or more properly measure all their work; and accordingly have 'em of all Sizes, Shapes, &c.

*Moulds* among *Tallow-Chandlers* are of two kinds: The first for the common dipp'd Candles, being the Vessel wherein the melted Tallow is disposed, and the Wick dipp'd. This is of Wood of a triangular Form, and supported on one of its Angles, so that it has an opening of near a Foot a-top. The other used in the Fabric of *Mould Candles*, is of Brass, Pewter, or Tin: Here each Candle has its several *Mould*. See each under **CANDLE**.

*Mould* among *Gold-Beaters*, a certain Number of Leaves of Velom, or pieces of Guts, cut square, of a certain size, and laid over one another, between which they put the Leaves of Gold and Silver which they beat on the Marble with the Hammer. They have four kinds of *Moulds*; two whereof are of Velom, and two of Gut. The smallest of those of Velom consists of forty or fifty Leaves, the largest contains an hundred. For the others, each contains five hundred Leaves.

The *Moulds* have all their several Cases, consisting of two pieces of Parchment, serving to keep the Leaves of the *Mould* in their Place; and prevent their being disorder'd with beating. See **GOLD-BEATING**.

*Mould-Candles*, see **Mould-CANDLE**.

*Mould*, in Agriculture, &c. a kind of Soil; call'd also *Loam* and natural Earth. See **SOIL** and **LOAM**.

The best *Mould* for the Gardeners Purposes, according to Mr. Evelyn, is that of a blackish grey Colour; according to Mr. Switzer, that of a lively Chestnut, or Hazle Colour, which cuts like Butter, and does not stick obstinately, but is short, tolerably light, breaking into small Clods, may be temper'd without crusting or chapping in dry Weather, or turning to Mortar in wet.

Next to Chestnut, are the dark Greys, and Russet. The light and dark Ash-Colours are naught, being those commonly found on heathy Ground. The yellowish red is worst of all.

**MOULDINESS**, a Term apply'd to solid Things that corrupt in the Air, from some hidden Principle of Humidity therein; and whose Corruption shews itself by a certain white Down, or Beard on their Surface.

This *Mouldiness*, when view'd with a Microscope, affords a curious Spectacle; being a kind of Meadow out of which arise Herbs and Flowers, some only in the bud, others full blown, and others decay'd; each having its little Root, Stalk, and other Parts: The Figure whereof may be seen in *Hook's Micrographia*. The same thing may be observ'd of the *Mouldiness* that gathers on the Surface of liquid Bodies.

Mr. Bradley observ'd this *Mouldiness* in a Melon very accurately; and found the Vegetation of these little Plants exceedingly quick. Each Plant had its Seeds in great Abundance, which did not seem to be three Hours e'er they began to shoot up, and in six Hours more the Plant was compleat and mature, and the Seed ready to fall. When the Fruit had been cover'd with a *Mould* for six Days, its vegetative Quality began to abate, and was intirely gone in two Days more; then came on a Putrefaction, and the fleshy Parts of the Melon yielded nothing else but a stinking Water, which began to have a gentle Motion in its Surface, and in two days time Maggots appear'd, which in six more laid themselves up in their Bags, where they continu'd four days; and then came out Flies.

**MOULDING**, any thing cast in a *Mould*, or that seems to have been so; tho' in reality it were cut with the Chissel, or the Ax.

**MOULDINGS**, or *Ornaments*, in Architecture, are Projections beyond the Naked of a Wall, Column, Wainscot, &c. the Assemblage whereof forms *Cornishes, Door-Cases*, and other Pieces of Architecture. See **ORNAMENT**.

Some *Mouldings* are crowned with a Fillet; others are without, as the Doucine, Talon, Ovolo, Torus, Scotia, Astragal, Gula, Corona, &c. See each under its proper Article.

Again, some are adorned with Sculpture, either hollow'd, or in Relievo.

*Mouldings* are in Architecture what Letters are in Writing. By the various Dispositions and Combinations of *Mouldings*, may be made an infinite Number of different Profiles for all sorts of Orders and Compositions, Regular and Irregular; and yet all the kinds of *Mouldings* may be reduced to three, viz. *Square*; *Round*; and *Mixed*, i. e. composed of the other two.

For this Reason, those who invented the *Gothic* Architecture, resolving to recede from these perfect Figures, and affecting to use others less perfect, to distinguish their Architecture from the Antique, introduced a new Set of whimsical *Mouldings* and *Ornaments*. See **GOTHIC**, **GROTESQUE**, &c.

Regular *Mouldings* are either large, as *Doucines, Ovols, Gulas, Talons, Torus's, Scotias*, &c. or small, as *Fillets, Astragals, Conges*, &c. which see in their places, **DOUCINE**, **OVOLO**, **ASTRAGAL**, **FILLET**, &c.

**MOULINET** is a French Term properly signifying a little Mill; being a diminutive of *Moulin*, Mill.

It is used in Mechanics to signify a Roller, which being crossed with two Levers, is usually apply'd to Cranes, Capstans, and other sorts of Engines of the like nature, to draw Cords, and heave up Stones, Timber, &c. See **CAPSTAN**, &c.

**MOULINET** is also a kind of Turn-Style, or Wooden-Cross, which turns horizontally upon a Stake fixed in the Ground; usually placed in the Passages to keep out



Horses, and to oblige Passengers to go and come one by one.

These *Moulinets* are often set near the Out-works of Fortified Places at the side of the Barriers, thro' which People pass on foot.

MOULTING, in Natural History, see MOLTING.

MOUND, a Term used for a Bank, Rampart, or other Fence; particularly of Earth.

MOUND, in Heraldry, is a Ball or Globe with a Cross upon it, such as our Kings are usually drawn with, holding it in their left Hand, as they do the Scepter in the Right. See GLOBE.

MOUNT, Mons, an Elevation of Earth, call'd also Mountain. See MOUNTAIN.

The Words *Mount* and *Mountain* are Synonymous; but the former is scarce ever used in Prose, unless when accompanied with some proper Name, as *Mount Aetna*, *Mount Gibel*, *Mount Libanon*, *Mount Sinai*, *Mount Atlas*, *Mount Parnassus*, &c.

In Gardening, *Mount* is sometimes also used for a Walk raised on the side of the Garden above the Level of the rest of the Plot.

*Mounts of Piety*, are certain Funds or Establishments in Italy, where Money is lent out on some small Security. We had also *Mounts of Piety* in England, raised by Contribution for the Benefit of People ruin'd by the Extortions of the Jews.

MOUNTAIN, Mons, MOUNT, a Part of the Earth rising to a considerable Height above the Level of the Surface thereof. See EARTH.

The Origin of *Mountains* is variously assigned by Philosophers: Some will have 'em co-eval with the World, and created along with it.

Others, among whom Dr. Burnet, will have 'em to take their Rise from the Deluge; urging, that the extreme Irregularity and Disorder visible in 'em, plainly shews they don't come immediately out of the hand of God, but are the Wrecks of the Old World broken into the Abyss.

Others again, alledge from History, that the Roots of many Hills being eaten away, the Hills themselves have subsided, and sunk into Plains: Whence they conclude, that where the Corruption is natural, the Generation is so too.

This, indeed, appears pretty evident, that some *Mountains* must have been generated gradually, and have grown up in Process of Time, from the Sea-Shells, &c. found in many of 'em; which may be accounted for from a violent Wind blowing the Sand, &c. into huge Heaps, which are afterwards made into a Mass by the Rain, &c. Some among the Divines tell us, that the Earth was created perfectly even; and that when God separated the Water from the Land, he dug Channels in the Earth; and the Earth scoop'd out, he threw up in *Mountains*: but whether the *Mountains* be sufficient to fill all the Channels of the Ocean, let them look to it.

The Uses of *Mountains* are almost infinite; we shall only mention two or three. 1. They serve as Skreens to keep off the Cold and nipping Blasts of the Northern and Eastern Winds. 2. They serve for the Production of a great Number of Vegetables and Minerals, which are not found in any other Soil. 3. The long Ridges and Chains of lofty and topping *Mountains* being generally found to run from East to West, serve to stop the Evagation of the Vapours towards the Poles, without which they would all run from the Hot Countreys, and leave 'em destitute of Rain.

Mr. Ray adds, that they condense those Vapours, like Alembic-Heads, into Clouds, and so by a kind of external Distillation, give Original to Springs and Rivers; and by amassing, cooling, and constipating them, turn them into Rain, and by that means render the fervid Regions of the torrid Zone habitable. See SPRINGS, &c.

In History we have Instances of *Mountains* travelling a considerable Distance, particularly *Hucker-Marzel-Hill*, if I misremember not, in *Hertfordshire*, which is said to have made a considerable Journey.

To measure the Height of a *Mountain*, see ALTITUDE, &c.

Tho there is another way used by Dr. Halley in the Measure of *Snowdon-Hill* in *Wales*, by means of a Barometer, the different Heights of whose Mercury at the Top and Bottom of the *Mountain*, give its perpendicular Altitude, accounting 82 Feet perpendicular Ascent, for every Inch varied in the Height of the Mercury. See LEVELLING.

MOUNTAINS in the Moon, see MOON.

MOUNTING the Guard, Trencher, Breach, &c. denotes the going upon Duty; being upon Guard, in the Trenches; running to the Breach, &c. See GUARD, TRENCH, &c.

MOUNTING a Cannon, Mortar, &c. is the setting it on its Carriage; or the raising its Mouth. See CANNON, MORTAR, CARRIAGE, &c.

MOUNTING in Manufactures, something serving to raise or set off a Work.

Thus the Frame or Border and its Dependence, makes the Mounting of a Looking-Glass.

The Fust, or But, the Mounting of a Musquet, Carabine, &c.

The Hilt, &c. the Mounting of a Sword.

MOUNTING of a Fan, the Sticks which serve to open and shut it, whether they be of Wood, Ivory, Tortoise-shell, Whale-Bone, Indian-Cane, &c. See FAN.

MOURNING, a particular Dress, or Habit wore, to signify Grief, on some melancholy Occasion.

The Modes of Mourning are various in various Countries; as are also the Colours that obtain for that End.

In Europe, the ordinary Colour for Mourning is Black; in China, White; in Turkey, Blue, or Violet; in Egypt, Yellow; in Ethiopia, Brown.

The antient Spartan and Roman Ladies mourn'd in White; and the same Colour obtain'd formerly in Castile on the Death of their Princes. Herrera observes, that the last time it was used, was in 1498, at the Death of Prince John. Kings and Cardinals mourn in Purple.

Each People have their Reasons for the particular Colour of their Mourning: White is suppos'd to denote Purity; Yellow, that Death is the End of human Hopes, in regard Leaves when they fall, and Flowers when they fade, become Yellow. Brown denotes the Earth, whither the Dead return. Black, the Privation of Life, as being the Privation of Light. Blue expresses the Happiness which 'tis hoped the Deceased does enjoy; and Purple, or Violet, Sorrow on the one side, and Hope on the other; as being a Mixture of Black and Blue.

MOUTH, in Anatomy, a part of the human Face, consisting of the Lips, the Gums, the Inside of the Cheeks, and the Palate. See FACE, LIPS, GUMS, &c.

All these Parts are lined with a glandulous Coat, which is continu'd over the whole inner Surface of the Mouth, and all its Parts, the Teeth excepted.

From the Glands of this Coat, thro innumerable little excretory Ducts, is separated a kind of Salival Juice, which serves to keep the Mouth, and all its Parts, moist, smooth, and slippery. See SALIVA.

On the hind part of the Palate, perpendicularly over the Rima of the Larynx, hangs a round, soft, smooth Body, like the End of a Child's Finger, form'd by the Duplication of the Membrane of the Palate, and call'd the Uvula, which is moved by two Muscles, call'd *Sphenostaphilinus* and *Prerygostaphilinus*; and suspended by as many Ligaments. See UVULA.

Under the Membrane of the Palate, are a great number of Glands pretty conspicuous in the fore-part, like Grains of Millet; whose excretory Ducts piercing the Membrane, open into the Mouth: but towards the hind-part they lie much thicker, and about the Root of the Uvula are gather'd so close to one another, that they seem to form one large conglomerate Gland; which is therefore, by Verbeeyn, call'd *Glandula conglomerata Palatina*. See PALATE.

The Gums are, as it were, the Ligaments of the Teeth; which see under GENCIVA.

Besides the proper Parts of the Mouth, there are in and about it others, highly serviceable and necessary thereto.

Among which are the Glands; the most considerable whereof are the Parotides, the Glandulae Maxillares, the Sublinguales, and the Tonsils or Amygdalae; which see in their respective Places. See PAROTIDES, &c.

These are the Salival Organs, whence springs all that Liquor we call the Spitte, which flows into the Mouth by the respective Ducts, after its Separation from the Blood in the Bodies of the Glands: As the Demand of Spitte is greater in Actions of the lower Jaw, i. e. in Mastication, Deglutition, much Talking, &c. so does the Disposition of these Salival Ducts favour that Discharge on those Occasions.

Mr. Derham observes the Mouth, in the several Species, to be nicely adapted to the Uses of such a Part; well sized and shaped for the catching of Prey, for the gathering and receiving Food, the Formation of Speech, &c.

In some Creatures it is wide and large, in some little and narrow; in some with a deep Incisure up into the Head, for the better catching and holding of Prey, and more easy Commination of hard, large, and troublesome Food; in others with a shorter Incisure, for the gathering and holding of herbaceous Food.

In Insects it is very notable; in some forcipated to catch, hold and tear the Prey; in some aculeated, to pierce and wound Animals, and suck their Blood; in others strongly ridg'd with Jaws and Teeth, to gnaw and scrape out their Food, carry Burdens, perforate the Earth, nay, the hardest Wood, and even Stones themselves, for Houses and Nests for their Young.

Nor is it less remarkable in Birds, being neatly shaped for piercing the Air, hard and horny, to supply the want of Teeth; hooked in the rapacious Kind, to catch and hold their



their Prey; long and slender, in those who have their Food to grope for in moorish Places; and broad and long, in those that search it in muddy Places. See BILL.

MOUTH is used in the Courts of Princes, for what relates to their Eating and Drinking.

Hence *Officers of the Mouth, Yeomen of the Mouth, &c.*

*Daviler* defines *Mouth*, an Apartment compos'd of several Rooms, as Offices, Kitchens, &c. where the Meat intended for the first Tables, is dress'd by itself. At Court this is call'd the *King's Mouth*.

MOUTH, in the Manage, is used for the Sensibility a Horse has in that part, where the Bits are apply'd.

Opening, or Shutting the MOUTH, of a Cardinal, is a Ceremony used in the Consistory at Rome; wherein the Pope shuts a new-elected Cardinal's Mouth, so as he may not speak at all, even tho' the Pope should speak to him; and remains in the mean time depriv'd of all Voice, both active and passive, till the polling of another Consistory, when the Pope opens the Mouth again, making a little Harangue, to teach him how to speak, and comport himself in the Consistory. See CARDINAL.

MOXA, a sort of Cotton, or downy Substance, brought from China, and by some said to grow on the lower part of the Mugwort-Leaf.

It is not known for any medicinal Efficacy, but what common Report mentions of its curing the Gout, by burning it upon the Part; yet People have not Faith enough to try it this way: and if they had, in all likelihood, any other Caustic would do as well, and for the same reason.

MOYENAU, in Fortification, is a small flat Bastion, commonly plac'd in the middle of an over-long Curtain; where the Bastions at the Extremities are not well defended from the small Shot, by reason of their Distance: This Work is proper for lodging a Body of Musqueteers, to fire upon the Enemy from all sides.

MUCILAGE, in Pharmacy, &c. a thick, viscous Juice; so call'd, as resembling Snot, or the Mucus of the Nose. See MUCUS.

It is prepar'd from Roots, and Seeds pounded in a Mortar, and infused in hot Water, and strained thro' a Cloth.

The Seeds chiefly used for this purpose, are those of Althæa, Mallows, Symphytum, &c.

Mucilages enter the Composition of several Plaisters; they sometimes are also made of Gums and Fruits, as Figs, Quinces, Izing-Glass, &c.

MUCILAGE is also a thick, pituitous Matter, evacuated with the Urine in the Gravel, and Dysuria.

MUCILAGINOUS Glands, a very numerous Set of Glands in the Joints, first taken notice of, to any purpose, by Dr. Havers, in his *Osteology*.

He observes, that there are two sorts; some small, next a-kin to milliary Glands, being Glandules plac'd all upon the Surface of the Membranes, which lie over the Articulations.

The other sort are conglomerated, or many Glandules collected, and planted one upon another, so as to make a Bulk, and appear conspicuously. In some of the Joints, there are several of them; in others, there is a single one.

As to the Structure of these large Glands; they consist of small Vesicles, which are not gather'd together into several Lobes, or Bags of Glandules, but are dispos'd upon several Membranes lying over one another, of which Membranes there are several in every one of these Glands, which appear evidently in those who are hydropical. They have their Blood-Vessels, as other Glands, but their Veins have a particular Texture, in their Course, for retarding the Return of the Blood from the Glands, that the mucilaginous Liquor, which is not separated with the greatest Expedition, may have time to be separated; which is the Contrivance, wherever a thick Fluid is to be secern'd. See ANIMAL Secretion.

The large mucilaginous Glands are variously situated; some in a Sinus form'd in the Joint, others stand near, or over-against the Interstice, between the articulated Bones: but in general, they are so plac'd, as to be squeez'd gently, and lightly press'd in the Inflection or Extension of the Joint, in order to yield a Quantity of Mucilage, proportionate to the Motion of the Part, and the present Occasion, without any Injury.

The Design of all those Glands is to separate a mucilaginous kind of Liquor, that serves principally to lubricate the Joints, or to make them slippery. It serves likewise to preserve the Ends of the articulated Bones from Attrition and Heating: But all this it doth, in conjunction with the medullary Oil; with which, together, is made a Composition admirably well fitted for those Ends: for the Mucilage adds to the Lubricity of the Oil, and the Oil preserves the Mucilage from growing too thick and viscous.

The Doctor observes the same Glands to lie between the Muscles and Tendons; and supposes that there is the same Mixture of an oily and mucilaginous Substance; the one

being that Fat, which is found between the Muscles, and is supply'd by the *Glandule Adiposæ*; and the other separated by the *mucilaginous Glandules*, of which the common Membrane of the Muscles is every where full. This Mixture in the Interstices of the Muscles, lubricates them and their Tendons, and preserves them from shrinking, and growing rigid and dry.

MUCRO Cords, or Apex, in Anatomy, the lower pointed End of the Heart; thus call'd from *Micro* the Point of a Spear, &c. See HEART.

Hence *macronated* is apply'd to whatever tends to, or terminates in a Point, like that of a Spear; as *Macronatum Os*, &c. See ENSIFORMIS Cartilago.

MUCOUS Glands, are three Glands which empty themselves into the Urethra; so call'd by the first Discoverer, Mr. Cowper, from the Tenacity of the Liquor which they separate.

The two first discover'd of these, are about the bigness a French Bean, of a depress'd oval Figure, and a yellowish Colour, like the *Prostates*, being on each side the Bulb of the cavernous Body of the Urethra, a little above it. Their excretory Ducts, spring from this internal Surface, next the inner Membrane of the Urethra; into which they open a little lower by two distinct Orifices, just below its bending under the *Offa Pubis in Perineo*, where they discharge a transparent viscous Liquor. The third mucous Gland, is a small, conglobate, yellowish Gland, like the former, but somewhat less, situate above the Angle of Flexure of the Urethra, under the *Offa Pubis*, in the *Perineum*, near the *Anus*. It has two excretory Ducts, which enter the Urethra obliquely, a quarter of an Inch below the two former; and discharge a Liquor like the former, both in Colour and Consistence. See URETHRA.

MUCUS of the Joints, is a mucilaginous Liquor, separated by its proper Glands, conveniently plac'd in the Interstices of the Bones, where those Glands are gently press'd by the Motion of the Parts: it serves to make the Extremities of the Bones or Joints slip more easily. See BONE.

Mucus of the Urethra, a viscous transparent Liquor, serving to line and lubricate the Parts, that the Seed may slip more freely, without adhering. It comes from Glands lately discover'd by Mr. Cowper, about the Penis, and is that, which in Women is commonly mistaken for the Semen. See PENIS, SEED, &c.

Mucus of the Nostrils, is separated by its proper Glands, plac'd in the internal Membrane of those Parts. It serves to moisten, lubricate, and defend the Olfactory Nerves; which being extremely soft and naked, would, without such Provision, be soon spoil'd. See NOSE, &c.

MUFFY, see MURPHY.

MUGGLETONIANS, a Religious Sect, which arose in England, about the Year 1657; denominated from their Leader *Lodwick Muggleton*, a Journey-man Taylor.

*Muggleton*, with his Associate *Reeves*, set up for great Prophets; and pretended to an absolute Power of saving and damning whom they pleas'd: Giving out, that they were the two last Witnesses of God, that should appear before the End of the World.

MUID, a large Measure, in use among the French, for dry Commodities; as Corn, Pulse, Salt, Lime, Coals, &c. See MEASURE.

The Muid is no real Vessel used as a Measure; but an Estimation of several other Measures, as the Septier, Mine, Minor, Bushel, &c.

At Paris, the Muid of Wheat, Pulse, and the like, is composed of twelve Septiers, each Septier making two Mines, the Mine two Minors, the Minor three Bushels, the Bushel four Quarts, or sixteen Litrons, each Litron 36 cubic Inches, exceeding our Pint by 1 1/2 cubic Inch.

The Muid of Oats is double that of Wheat, tho' composed, like that, of 12 Septiers; but each Septier contains 24 Bushels.

The Muid of Charcoal contains 20 Mines, Sacks, or Loads, each Mine two Minors, each Minor eight Bushels, each Bushel four Quarts, &c.

Muid is also one of the nine Casks, or regular Vessels used in France, to put Wine and other Liquors in.

The Muid of Wine divided into two *Demi-Muids*, four *Quarter-Muids*, and eight *Half Quarter-Muids*, contains 36 Septiers, each Septier 8 Pints, Paris Measure; so that the Muid contains 288 Pints. See MEASURE.

MULCT, a Penalty, or Fine of Money. See FINE, AMERCIAMENT, &c.

MULATTO, or MULAT, a Name given, in the Indies, to those who are begotten by a Negro Man on an Indian Woman; or an Indian Man on a Negro Woman.

Those begotten of a Spanish Woman and an Indian Man, are call'd *Melis*; and those begotten of a Savage by a *Melis*, are call'd *Jambos*.

These are all very different in Colour, and in their Hair.

The Word comes from *Mulat*, or *Mula*, Mule; begotten of two different Species.

MULE,



**MULE**, in Natural History, a Beast generated between an Ass and a Mare ; or between a Horse and a She-Ass.

*Mules* are a sort of Monsters ; and, therefore, don't propagate their kind. See **MONSTER**.

And yet the Antients mention a sort of *Mules* that were prolific, in *Phrygia*, *Syria*, *Cappadocia*, and *Africa*. Witness *Aristotle*, *Hist. Animal.* L. VI. c. 36. *Varro de Re Rustica*, Lib. II. c. 1. *Columella*, L. VII. c. 36. *Theophrastus*, and, after him, *Pliny*, L. VIII. c. 44. *Steno*, examining the Testicles of a *Mule*, found Eggs therein, with a sort of Placenta about 'em ; which persuaded him that *Mules* might engender without any Miracle.

The *Roman Ladies* had Equipages drawn by *Mules* ; as appears from the Medals of *Julia* and *Agrippina*. And at this day, in *Spain* the Coaches of the Nobility, and even Princes, are usually drawn by no other than *Mules*. We are assured that *M. Thuanus*, first President of Parliament, had the fourth Coach in *France*, in 1585 ; till which time every body rid to Court, Parliament, &c. on *Mules*. See **COACH**.

**MULES**, among Gardeners, a sort of vegetable Monsters produced by putting the *Farina fecundans* of one Species of Plant into the *Pistil* or *Utricle* of another. See **GENERATION of Plants**.

The *Carnation* and *Sweet-William* being somewhat alike in their Parts, particularly their Flowers ; the *Farina* of the one will impregnate the other ; and the Seed so enliven'd will produce a Plant differing from either. An Instance of this we have in *Mr. Fairchild's Garden at Hoxton* ; where a Plant is seen neither *Sweet-William*, nor *Carnation*, but resembling both equally ; which was raised from the Seed of a *Carnation* that had been impregnated by the *Farina* of the *Sweet-William*. These Couplings being not unlike those of the *Mare* with the *Ass*, which produce the *Mule* ; the same Name is given 'em ; and they are like the others, unable to multiply their Species.

This gives us a hint for altering the Property and Taste of any Fruit, by impregnating one Tree with the *Farina* of another of the same Class ; e. g. a *Codling* with a *Pearmain*, which will occasion the *Codling* so impregnated to last a longer time than usual, and be of a sharper Taste. Or if the *Winter-Fruits* be fecundated with the Dust of the *Summer-Seeds*, they will decay before their usual time. And from this accidental Coupling of the *Farina* of one with the other, it is that in an Orchard where there is variety of Apples, even the Fruit gather'd from the same Tree differ in their Flavour, and in the Season of Maturity. 'Tis from the same accidental Coupling that proceeds the numberless Varieties of Fruits and Flowers rais'd every Day from Seed. See **FARINA** and **SEED**.

**MULIEBRIA**, a Term sometimes used to signify the Privities of Women ; or so much as is otherwise call'd, *Cun-nus*. See **PUDENDUM**, **CUNNUS**, &c.

**MULIER**, a Term in Law, seeming to be a corruption of the *Latin Melior*, or the *French Meilleur*, better ; and signifying the lawful Issue born in Wedlock.

Tho, according to *Glanville*, the lawful Issue is rather call'd *Mulier* than *Melior*, because begotten on *Mulieres*, and not of *Concubine* : For he calls such Issue *filios Mulieratos* ; opposing them to *Bastards*.

Agreeable to which, *Breton* has *frere Mulier*, i. e. the Brother begotten of the Wife ; in opposition to *frere Bastard*.

The like seems to obtain in *Scotland*. For *Skene* says, that *Mulieratus filius* is a lawful Son begot of a lawful Wife. If a Man have a Son by a Woman before Marriage, which is a *Bastard* and *Illegitimate* ; and he after marries the Mother of the *Bastard*, and they have another Son ; this second Son is call'd *Mulier*, and is lawful, and shall be Heir to his Father. We sometimes also find 'em with these Additions, *Bastard eigne*, and *Mulier puijne*.

**MULIER** was also antiently used as an Addition, some say for a Wife ; others for a Woman born in lawful Wedlock. The former sense is confirmed by *Sir Edward Coke*, who says, that antiently *Mulier* was taken for a Wife, and sometimes for a Widow. *Inst. Fol.* 434.

**MULLET**, in Heraldry, a Star of five Points ; as in the Figure adjoining.

The *Mullet* is usually the difference, or distinguishing Mark for the fourth Son, or third Brother, or House. See **DIFFERENCE**.

Tho it is often also borne as Coat-Armour : As here ;

Ruby on a Chief Pearl, two *Mullets* Diamond ; being the Coat of the famous Lord *Perulam*, first *Sir Francis Bacon*.

The *Heralds* hold that the *Mullet* represents a falling Star ; others, with more probability, take it for the Rowel of a Spur, call'd by

the *French Molette*. Whence some Authors will have it pierced.

When it has six Points, it is not call'd a *Mullet*, but a *Star*. See **STAR**.

**MULLET**, or **MOLETTE**, a Stone flat and even at bottom, but round a-top ; used for Grinding of Matters on a Marble. The Apothecaries use *Mullets* to prepare many of their Ingredients ; Painters for their Colours, either dry or in Oil. *Mullet* is also an Instrument used by the Glass-Grinders ; being a Piece of Wood, to one end whereof is cemented the Glass to be ground, whether Convex in a Basin, or Concave in a Sphere or Bowl. The *Mullet* is ordinarily about six Inches long, turn'd round ; the Cement they use is composed of Ashes and Pitch.

**MULSUM**, or **MULSE**, is a Liquor made with Honey and Water. See **HYDROMEL**.

**MULTA**, or **MULTURA Episcopi**, a Fine, or final Satisfaction antiently given the King by the Bishops, that they might have Power to make their last Wills ; and that they might have the Probate of other Mens, and the granting of Administrations.

**MULTANGULAR**, any Figure, or Body which hath many Angles, or pointed Corners. See **ANGLE**.

**MULTILATERAL**, in Geometry, is apply'd to those Figures that have more than four Sides or Angles.

**MULTINOMIAL** Roots in Mathematics, are such as are composed of many Names, Parts, or Members, as  $a + b + c + d$ , &c. See **ROOT**.

For the Method of raising an infinite *Multinomial* to any given Power, or of extracting any given Root out of such a Power ; see a Method of *M. de Moivre* in *Philos. Transact.*

**MULTIPLE**, **MULTIPLEX**, in Arithmetic, a Number which comprehends some other Number several times. See **NUMBER**.

Thus 6 is a *Multiple* of 2 ; or, which is the same, 2 is a quota part of 6 ; 2 being contained in 6 three times. And thus 12 is a *Multiple* of 6, 4, 3 ; and comprehends the 1st twice, the 2d thrice, the 3d four times, &c.

**MULTIPLE** Ratio, or Proportion, is that which is between such Numbers.

If the lesser Term of a Ratio be an Aliquot Part of the greater ; the Ratio of the greater to the less is call'd *Multiple* : And that of the less to the greater *Sub-multiple*. See **RATIO**.

A *Sub-multiple* Number is that contained in the *Multiple*. Thus the Number 1, 2, and 3 are *Sub-multiples* of 6 and 9.

Duple, Triple, &c. Ratios ; as also Sub-duples, Subtriples, &c. are so many Species of *Multiple* and *Sub-multiple* Ratios. See **DUPLE**, **TRIPLE**, &c.

**MULTIPLICAND**, in Arithmetic, is one of the Factors in the Rule of Multiplication ; being that Number given to be multiplied by another call'd the *Multiplicator*, or *Multiplier*. See **MULTIPLICATOR**.

**MULTIPLICATOR**, in Arithmetic, a Number multiplied by another call'd the *Multiplicand*. See **MULTIPLICAND**.

The largest Number is ordinarily made the *Multiplicand*, and placed above the smaller, or *Multiplicator* ; but the result is the same which soever of the Numbers be made *Multiplicand* or *Multiplicator* ; 4 times 5, and 5 times 4 making the same Sum. See **MULTIPLICATION**.

**MULTIPLICATION**, the Act of *Multiplying* or Increasing the Number of any thing. See **MULTIPLYING**.

Thus we say the *Multiplication* of the Loaves in the *Widderness*.

The *Romanists* hold a real *Multiplication* of the Body of Jesus Christ in the Eucharist ; so that every Communicant has a whole Body, &c.

It is ordained and established, that none from henceforth shall use to *multiply* Gold or Silver, nor use the Craft of *Multiplication* ; and if any the same do, he shall incur the Pain of Felony. *Stat. 5 Hen. 4.*

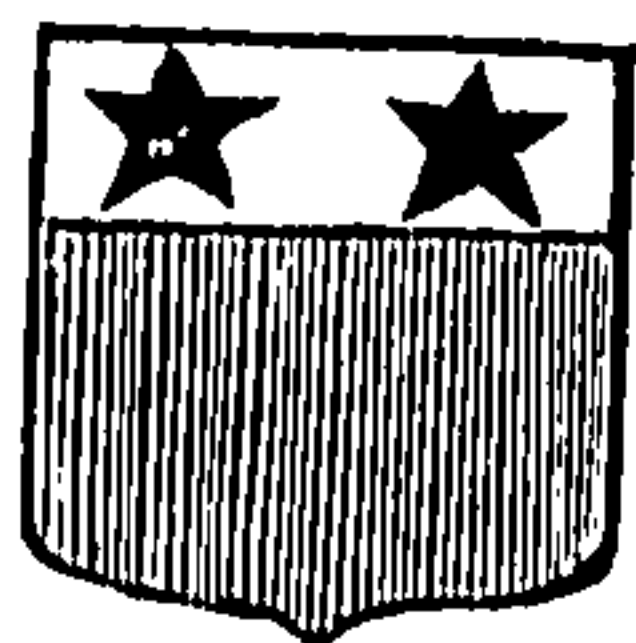
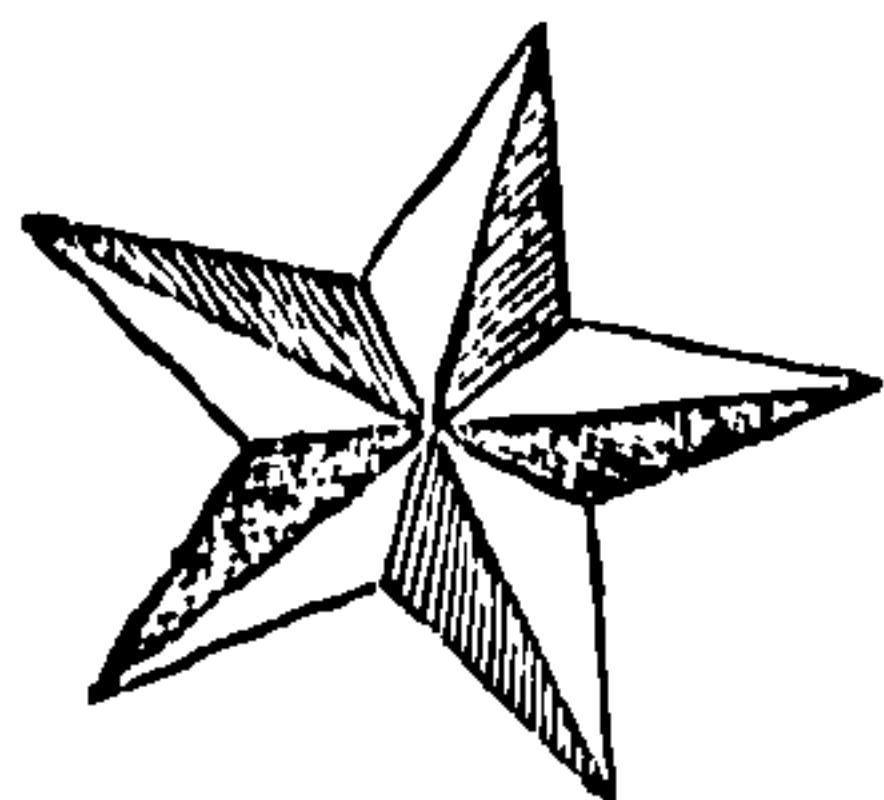
This Statute was made on Presumption that some Persons skilful in Chymistry, could *multiply* or augment those Metals by Elixirs, or other Ingredients ; and change other Metals into very Gold and Silver. Under *Henry VI.* Letters Patent were granted to certain Persons (who undertook to perform the same, and to find the *Philosopher's Stone*) to free them from the Penalty in the said Statute.

**MULTIPLICATION**, in Arithmetic, the Act or Art of *multiplying* one Number by another, to find the Product. See **PRODUCT**.

*Multiplication*, the third Rule in Arithmetic, consists in the finding of some third Number, out of two others given ; wherein, one of the given Numbers is contained as often as Unity is in the other.

Or *Multiplication* is the finding what will be the Sum of any Number added to itself, or repeated as often as there are Units in another : So that *Multiplication* of Numbers is a compendious kind of Addition. See **ADDITION**.

Thus





Thus the *Multiplication* of 4 by 5 makes 20, *i.e.* four times five amount to twenty; which Algebraists express thus,  $4 \times 5 = 20$ . See CHARACTER.

In *Multiplication*, the first Factor, *i.e.* the Number to be multiplied, or *Multiplicand*, is placed over that whereby it is to be multiplied; (see MULTIPPLICAND) and the Factum or *Product*, under both. An Example or two will make the Process of *Multiplication* easy. — Suppose I would know the Sum of 269 multiplied by 8, or 8 times 269.

Operation.

|                    |       |       |       |      |
|--------------------|-------|-------|-------|------|
| Multiplicand       | _____ | _____ | _____ | 269  |
| Multiplier         | _____ | _____ | _____ | 8    |
| Factum, or Product | _____ | _____ | _____ | 2152 |

Explication.

The Factors being disposed, and a Line drawn underneath, (as in the Example) I begin with the Multiplier thus; 8 times 9 make 72, set down 2, and carry 7 tens, as in Addition; then 8 times 6 make 48, and 7 I carried, 55; set down 5, and carry 5; lastly, 8 times 2 make 16, and with 5 I carried 21, which I put down: so as coming to number the several Figures placed in order, 2, 1, 5, 2, I find the Product to be two thousand one hundred fifty two. See NUMERATION.

Now supposing the Factors to express things of different Species, *viz.* the Multiplicand Men, or Yards, and the Multiplier Pounds; the Product will be of the same Species with the Multiplier.

Thus the Product of 269 Men or Yards multiplied by 8 Pounds or Pence, is 2157 Pounds or Pence; so many of these going to the 269 at the Rate of 8 apiece. Hence the vast Use of *Multiplication* in Commerce, &c.

If the Multiplier consists of more than one Figure, the whole Multiplicand is to be added to itself, first, as often as the right-hand Figure of the Multiplier shews, then as often as the next Figure of the Multiplier shews, and so on. Thus  $421 \times 23$  is equal to  $421 \times 3$  and also  $421 \times 20$ . The Product arising from each Figure of the Multiplier, multiplied into the whole Multiplicand, is to be placed by itself in such a manner, that the first or right-hand Figure thereof may stand under that Figure of the Multiplier from which the said Product arises. For Instance;

|                                       |       |       |       |      |
|---------------------------------------|-------|-------|-------|------|
| Multiplicand                          | _____ | _____ | _____ | 421  |
| Multiplier                            | _____ | _____ | _____ | 23   |
| Particular Product of $421 \times 3$  | _____ | _____ | _____ | 1263 |
| Particular Product of $421 \times 20$ | _____ | _____ | _____ | 842  |
| The Total Product                     | _____ | _____ | _____ | 9683 |

This Disposition of the right-hand Figure of each Product, follows from the first general Rule; the right-hand Figure of each Product being always of the same Denomination with that Figure of the Multiplier from which it arises.

Thus in the Example, the Figure 2 in the Product 842, is of the Denomination of tens, as well as the Figure 2 in the Multiplier. For  $1 \times 20$  (that is the 2 of 23) = 20, or 2 put in the Place of tens, or second Place. Hence, if either of the Factors have one or more Cyphers on the right-hand, the *Multiplication* may be performed without regarding the Cyphers, till the Product of the other Figures be found: To which they are to be then affix'd on the right. And if the Multiplier have Cyphers intermixed, they need not to be regarded at all. Instances of each follow.

|                                     |          |
|-------------------------------------|----------|
| 12   358   1   24   8013            |          |
| 10   6   10   30   5006             |          |
| 120   2148000   100   72000   48078 |          |
|                                     | 40065    |
|                                     | 40113078 |

Thus much for an Idea of *Multiplication*, where the Multiplier consists wholly of Integers; in the Praxis whereof is supposed the Learner is apprized of the Product of any of the nine Digits multiplied by one another, easily learnt from the common Table, (see TABLE) or otherwise.

Note, This *Multiplication* is render'd still easier, and more expeditious by the use of certain Ruds, whereon are mark'd the several Progressions of Digits in the Table, and which give the several Multiples of any Sum by inspection, call'd *Nepair's Bones*; the Description and Use whereof see under the head *Nepair's Bones*.

Where the Multiplier is not composed wholly of Integers; as it frequently happens in Business, where Pounds are accompanied with Shillings and Pence; Yards with Feet and Inches; the Methods of Procedure are as follow:

*First Method*, Suppose I have bought 37 Ells of Cloth at 13 l. 16 s. 6 d. per Ell, and would know the Amount of the whole, — I first multiply 37 Ells by 13 l. in the common Method of *Multiplication* by Integers, leaving the two Products without adding 'em up; then multiply the same 37 Ells by 16 s. leaving, in like manner, the two Products without adding 'em. Lastly, I multiply the same 37 by the 6 d. the Product whereof is 222 d. which divided by 12, (see DIVISION) gives 16 s. 6 d. and this added to the Products of the 16 s. the Sum will be 610 s. 6 d. the Amount of 37 Ells at 16 s. 6 d. the Ell. Lastly, the 610 s. 6 d. are reduced into Pounds by dividing 'em by 20: (see REDUCTION) upon adding the whole, the Amount of 37 Ells at 13 l. 16 s. 6 d. will be found as in the following

Operation.

| 37 Ells<br>At 13 Pounds. | 37 Ells<br>At 16 Shillings. | 37 Ells<br>At 6 Pence. |
|--------------------------|-----------------------------|------------------------|
| 111                      | 222                         | 222                    |
| 57                       | 37                          |                        |
| 50 10 6                  | 18 6                        |                        |
| Product 511 10 6         | 610 6                       |                        |

*Second Method*. Suppose the same Question; reduce the 13 l. 16 s. into Shillings, the Amount will be 276 s. reduce 276 s. into Pence, adding 6, the Amount will be 3318 d. Multiply the 37 Ells by 3318, the Amount will be 122766 d. which divided by 125 and the Quotient 10230 s. 6 d. reduced into Pounds by cutting off the last Figure on the right, and taking half of those on the left, yields 511 l. 10 s. 6 d. the Price of the 37 Ells, as before.

Tho by these two Methods any *Multiplications* of this kind may be effected, yet the Operations being long, we shall add a third much shorter, by *Aliquot* and *Aliquant* Parts: Observing by the way, that Aliquot Parts of any thing are those contained several times therein, and which divide 'em without any remainder; and that Aliquant Parts are other Parts of the same thing composed of several Aliquot Parts: Both as in the following Table.

Aliquot Parts of a Pound of 20 s.

- 10 s. make half of 20 s.
- 5 s. a fourth.
- 4 s. a fifth.
- 2 s. a tenth.
- 1 s. a twentieth.
- 6 s. 8 d. a third.
- 3 s. 4 d. a sixth.
- 2 s. 6 d. an Eighth.
- 1 s. 8 d. a twelfth.
- 1 s. 4 d. a fifteenth.
- 1 s. 3 d. a sixteenth.
- 10 d. a twenty-fourth.
- 5 d. a forty-eighth.

Aliquant Parts of a Pound of 20 s.

- 3 s. an Aliquant Part compos'd of a 10th and a 20th.
- 6 s. of a 5th and a 10th.
- 7 s. of a 4th and a 10th.
- 8 s. of two 5ths.
- 9 s. of a 4th and a 5th.
- 11 s. of a half and a 20th.
- 12 s. of a half and a 10th.
- 13 s. of a half, a 10th and 20th.
- 14 s. of a half and a 5th.
- 15 s. of a half and a 4th.
- 16 s. of a half, a 5th, and 10th.
- 17 s. of a half, a 4th, and 10th.
- 18 s. of a half and two 5ths.
- 19 s. of a half, a 4th, and 5th.

To Multiply by Aliquot Parts is nothing else in effect but to divide a Number by 3, 4, 5, &c. which is effected by taking a 3d, 4th, or 5th, &c. from the Number to be multiplied.

*Example*. To Multiply, *v.g.* by 6 s. 8 d. Suppose I have 347 Ells of Ribbon at 6 s. 8 d. per Ell.

Operation.

|              |       |       |                   |
|--------------|-------|-------|-------------------|
| Multiplicand | _____ | _____ | 347 Ells.         |
| Multiplier   | _____ | _____ | 6 s. 8 d.         |
| Product      | _____ | _____ | 115 l. 13 s. 4 d. |

The Question being Stated; take the Multiplier, which according to the Table of Aliquot Parts is the third; and say, the third of 3 is 1, set down 1; the third of 4 is 1, set down 1, remains 1, that is, one ten, which added to 7, makes 17; then the third of 17 is 5; remains 2 Units, *i.e.* two thirds, or 13 s. 4 d. which place after the Pounds. Upon numbering the Figures 1, 1, and 5, Integers, and 13 s. 4 d. the Aliquot Part remaining, I find the Sum 115 l. 13 s. 4 d.

*For Multiplication by Aliquant Parts*: Suppose I would multiply by the Aliquant Part 19 s. I first take for 10 s. half the Multiplicand; then for 5, which is the 4th; and, lastly,



lastly, for 4, which is the 5th. The Products of the three Aliquot Parts that compose the Aliquant Part, being added together, the Sum will be the total Product of the *Multiplication*, as in the following Example; which may serve as a Model for *Multiplication* by any Aliquant Part that may occur.

|              |   |                           |  |
|--------------|---|---------------------------|--|
|              |   | Operation.                |  |
| Multiplicand | — | 356 Ells.                 |  |
| Multiplier   | — | 19 s.                     |  |
|              |   | 178 l. for ten Shillings. |  |
|              |   | 89 l. for five Shillings. |  |
|              |   | 71 l. for four Shillings. |  |
| Product      | — | 338 l. 4 s.               |  |

The Proof of *Multiplication*, is, by dividing the Product, or Factum, by the first Factor, or Multiplicand; if the Quotient be equal to the second Factor, or Multiplier, the Operation is just.

Cross *MULTIPLICATION*, otherwise call'd Duodecimal Arithmetic, is a very expeditious Method of Multiplying things of several Species, or Denominations, by others likewise of different Species, &c. *E. gr.* Shillings and Pence by Shillings and Pence; Feet and Inches by Feet and Inches, much used in Measuring, &c. The Method is thus.

Suppose 5 Feet 3 Inches to be multiplied by 2 Feet 4 Inches; say, 2 times 5 Feet is 10 Feet, and 2 times 3 is 6 Inches: Again, 4 times 5 is 20 Inches, or 1 Foot 8 Inches, and 4 times 3 is 12 Parts, or one Inch; the whole Sum makes 12 Feet 3 Inches.

In the same manner may you manage Shillings and Pence, &c.

*MULTIPLICATION*, in Geometry, or in Lines, is effected by supposing a Line *ab* (Tab. GEOMET. Fig. 9.) called the *Describent*, moving perpendicularly along another *b c*.

For by this means the *Describent* forms the Rectangle *a d c b*; and if it be divided together with the *Dirigent* into any Number of equal Parts, will by its Motion describe as many little Rectangles as the Units in the *Describent* and *Dirigent* will produce when multiply'd into one another; viz. 21. See *DESCRIBENT*, &c.

For when the Line *ab* hath moved over one part of *a d*, it will by its three parts have described the three little Rectangles in the first Column; when it comes to 2, it will have described three more. And this is the Reason why *Multiplication* in the Latin Tongue is usually expressed by the Word *ducta*, drawn: (and from hence also comes *Product*) as if *a b* were multiply'd by *b c*, they say *a b ducta in b c*, because the *Describent* is led, as it were, or carried along in an erect Posture upon the *Dirigent*, and by that means describes the Rectangle; so that the Rectangle and *Product* are all one in Geometry.

Now as in all *Multiplication* Unity is to one Factor as the other is to the Product, *Multiplication* in Lines may be performed thus:

Let *a b* (Fig. 10.) be to be multiply'd by *a d*: make any Angle at pleasure; on one of the Legs set off *a u* = to Unity; and on the same Leg set off *u d*, the Multiplier (3); then set the Multiplicand *a b* (2) from *a* on the other Leg of the Angle; draw *u b*, and parallel to it through *d*, draw *d c*, (6). I say, *d c* or 6, is the Product: for *a u :: a d :: a b :: b c*.

*MULTIPLICATION* of Plants, see *FOECUNDITY* of Plants.

*MULTIPLYING*, the producing of one's like. See *PRODUCTION*.

Mankind multiply'd at a prodigious Rate before the Flood, (see *PEOPLING*.) Rabbits, Fish, and most Insects multiply incredibly. The single Milt of a Cod, examin'd with M. Leeuwenboeck's Microscope, was found to contain more Ova than there are Animals on the Face of the Earth. See *INSECT*, &c.

M. Dodart has several Discourses on the Multiplication of Plants in the *Memoirs of the Royal Academy of Sciences*. He has examin'd the Beech-Tree particularly with this view, and found it to surpass all Imagination. See *FOECUNDITY*.

*MULTIPLYING*, in Arithmetic, is the finding a Number which contains the *Multiplicand* as often as there are Units in the *Multiplier*. See *MULTIPLICAND*, &c.

The Rule of Three consists in *Multiplying* the third Term by the second, and dividing the Product by the first. See *RULE* of Three.

*MULTIPLYING GLASS*, a Lens, or Glass in which Objects appear increased in Number. See *LENS*.

A *Multiplying-Glass*, call'd also *Polyhedron*, is a Glass form'd or ground into several Planes, or Faces, making Angles with one another; through which the Rays of

Light issuing from the same Point undergo different Refractions, so as to enter the Eye from every Surface in a different Direction; as if they came from several Points.

And thus the same Point is seen in several imaginary Foci; and therefore appears *Multiply'd*. See *REFRACTION*.

For the Phenomena and Laws of *MULTIPLYING-GLASS*, see *POLYHEDRON*.

*MULTISILIQUEOUS* Plants, are the same with *Corniculate* Plants, viz. those which, after each Flower, have divers distinct, slender, and frequently crooked *Siliques*, or Pods, wherein their Seed is contain'd; and which when they ripen, open of themselves, and let the Seeds drop. See *CORNICULATE* and *SEMINATION*.

To this Class belong the Bears-Foot, Columbines, House-Leek, Marigolds, &c.

*MULTITUDE*, *MULTITUDO*, an Assemblage, or Collection of a great Number of Things, or Persons; or, more strictly, *Multitude* is the Abstract whereby things are said to be many.

In which Sense *Multitude* may be consider'd as Number. See *NUMBER*.

*Multitude* is oppos'd to Unity. See *UNITY*.

In Law, some will have *Multitude* to imply at least ten Persons; but Sir Edw. Coke says, he could never find it restrain'd by the common Law to any certain Number, but always left to the Discretion of the Judges.

A *MULTO Fortiori*, or *a minore ad majus*, is an Argument often used by *Littleton*. The force of it is thus: If it be so in a Feoffment passing a new Right; much more is it for the Restitution of an antient Right. *Coke on Littleton*, fol. 253.

*MULTUM*, in Arithmetic, If A be one, B one, C one, Done, &c. And B, C, and D be not the same with A; A, B, C, and D are *Multa*, or *Plura*, many. *Wolfius*.

*MUM*, a very wholesome Drink, the Receipt of which, as recorded in the Town-House of *Bromwich*, the Place of most Note for this Liquor, is as follows:

Take 63 Gallons of Water that has been boiled to the Consumption of a third part; brew it with seven Bushels of Wheaten-Malt, one Bushel of Oat-Malt, and one Bushel of ground Beans; when it is turn'd, let not the Hogshead be too full at first, and as soon as it begins to work, put into it of the inner Rind of Fir 3 Pounds, Tops of Fir and Birch 1 Pound, Carduus Benedictus 3 Handfuls, Flower of Rosa Solis, one Handful or two, Burnet, Betony, Marjoram, Avens, Penny-Royal, wild Thyme, of each a Handful and a half; of Elder-Flowers, two Handfuls or more; Seeds of Cardamum bruised 30 Ounces, Barberries bruised one Ounce; put the Herbs and Seeds into the Vessel when the Liquor has wrought a while, and after they are added, let the Liquor work over the Vessels as little as may be, then fill it up: at last, when it is stop'd, put into the Hogshead ten new-laid Eggs unbroken or crack'd, stop it up close, and drink it at two Years end.

Our English Brewers use Cardamum, Ginger, and Saffrafs instead of the inner Rind of Fir; and add Walnut-Rinds, Madder, Red Sanders, and Alecampane.

*MUMMY*, *MUMIA*, a Carcass, or Body embalmed or dried in the manner of the antient Egyptians. See *EMBALMING*.

The Preparation of *Mummy* is of so old a standing, that it was in use in Egypt before the time of Moses. The Coffin in which the *Mummy* is contain'd is of Sycamore-Wood, which is found to keep sound for the Space of 3000 Years; but it is very different from our Sycamore.

*Mummy* is said to have been first brought into use in Medicine by the Malice of a Jewish Physician, who wrote that Flesh thus Embalmed was good for the Cure of divers Diseases, and particularly Bruises, to prevent the Blood's gathering and coagulating. The Turks prevent the Export of *Mummy* into Europe as much as possible.

Properly speaking, *Mummy* is not the Flesh of the Deceased, but the Composition wherewith it is embalmed; but in common use *Mummy* is also used for the Body.

There are two kinds of Bodies call'd by the Term *Mummy*.

The first are only Carcasses, dried by the Heat of the Sun, and by that means kept from Putrefaction; frequently found in the dry Sands of Lybia. Some say, they are the Bodies of deceased People buried there on purpose to keep 'em entire without Embalming; others that they are the Carcasses of Travellers, &c. over-whelm'd with Clouds of Sand rais'd by the Hurricanes frequent in those Desarts. Be that as it will, these *Mummies* are of no use in Medicine, and are only preserv'd as Curiosities.

The second kind of *Mummies* are Bodies taken out of the Pits, or Catacombs near Cairo, wherein the Egyptians deposited their Dead after Embalming.

'Tis this makes the *Mummy* so much valued, and to which such extraordinary Virtues are ascribed.



'Tis said, that all the *Mummy* sold in the Shops, whether brought from *Venice* or *Lyons*, or even directly from the *Levant* by *Alexandria*, is factitious, and the Work of certain *Jews*, who knowing the Value the *Europeans* set on the *Egyptian Mummy*, counterfeit it by drying Carcasses in Ovens, after having prepared 'em with Dust of Myrrh, Caballin Aloes, *Jewish Pitch*, black Pitch, and other coarse or unwholesome Drugs.

The *French Charletans*, it seems, have likewise got the Art of preparing *Mummies*. Their Method is simple enough: Out of the Carcass of a Person hang'd, they take the Brain and Entrails, dry the rest in an Oven, steeping it in Pitch, and other Drugs. And this they sell for right *Egyptian Mummy*.

*Paracelsus* has a very curious Treatise of *Mummies*, wherein he shows the Abuses thereof; and makes it appear that they can never be of any real medicinal use.

*Matthioli* is of the same Opinion, after *Serapion*. Both these Authorstake even the *Egyptian Mummies* to be no more than Bodies embalmed with *Pissasphaltum*.

**MUMMY**, *Mumia*, is particularly used for the Liqueur, or Juice oozing from human Bodies Aromatized and Embalmed; gather'd in the Sepulchres. This is the *Mummy* chiefly spoke of among the antient Writers.

**MUMMY** is also a Medicinal Drug, or a viscous Composition partaking of Bitumen and Pitch found in the Mountains and Forests of *Arabia*, and other hot Countreys of the East.

*Dioscorides* speaks of a *Mummy* found on the Sea-Coasts near *Epidaurus*, brought thither by the Torrents from the *Ceraunian* Mountains, and there dried by the Sun into huge heaps.

It smells like Bitumen mixt with Pitch. The People thereabouts call it *mineral Wax*. In *Latin*, or rather *Greek*, it is call'd *Pissasphaltus*. See **PISSASPHALTUS**.

*Menage*, after *Bochart*, derives the Word *Mummy* from the *Arabic Mumia*; of *Mum*, Wax. *Salmasius* from *Amomo*, a kind of Perfume. See **AMOMUM**.

The others hold, that in the *Arabic* Tongue, the Word *Mumia* signifies a Body Embalmed, or Aromatized.

**MUMMY** is also used by some Physicians for I know not what implanted Spirit, found chiefly in Carcasses, when the infused Spirit is fled.

The infused Spirit is sometimes also call'd *Mummy* in living Subjects; and both the one and the other are supposed to serve in Transplantation.

A Plant, for instance, bringing this *Mumia* from one Subject to another, the *Mumia* joins and unites itself immediately, and closes with the *Mumia* or Spirit of the new Subject; and from this Union arises a natural and common Inclination between the two Subjects.

And on this Principle they account for Sympathetic or Magnetic Cures. See **SYMPATHETIC**, **MAGNETIC**, &c.

**MUMMY** is also used among Gardeners for a sort of Wax used in the Planting and Grafting of Trees. See **GRAFFING Wax**.

*Agricola* directs the Preparation thereof as follows: Take one Pound of common black Pitch, and a quarter of a Pound of common Turpentine; put 'em together in an Earthen-Pot, and set 'em on the fire in the open Air, having something in your Hand to cover and quench it in time; the Matter to be thus alternately lighted and quench'd till all the nitrous and volatile Parts be evaporated. To this a little common Wax to be added; and the Composition to be set by for use.

To apply it in the dressing of the Roots of Trees, melt it, and dip in the two ends of the Pieces of Root one after another; then put 'em in Water, and plant 'em in the Earth, the small end downward, so that the larger may appear a little way out of the Earth, and so have the benefit of the Air; then press the Earth hard down upon 'em that they may not receive too much wet. See **PLANTING**.

**MUNDICK**, a *Marchasite*, or Mineral Glebe, found in the Tin Mines, sometimes white, sometimes yellow, and at other times green. See **MARCHASITE**.

It is frequently call'd *Maxy*; and appears to be nothing else but a kind of Sulphur; Fire alone being found to separate it from the Tin, in which case it evaporates into Smoke. See **TIN**.

The *Mundick Ore* is easily distinguish'd by its brown, sad-colour'd Glittering, and by its discolouring the Fingers. Some say it feeds the Tin, and yet allow that where there is much *Mundick*, there is little or no Tin.

**MUNDIFICATIVES**, in Medicine, *Cleanfers*; Medicines, or Unguents, that deterge, and dry, and thus cleanse Ulcers of two kinds of Matter, viz. Pus and Sanies. See **ULCER**.

The chief Ingredients in these Unguents, are Gentian, Aristolochia, Enula Campana, and Vulnerary Herbs. See **DETERGENT**.

**MUNDUS**, *World*. See **WORLD**.

**MUNICIPAL**, a Term in the *Roman* Law, signifying the having the Rights and Privileges of *Roman* Citizens.

This Title the *Romans* frequently bestow'd on foreign

Cities and People; and in effect, it was little more than a Title.

**MUNICIPAL** Cities, **MUNICIPIA**, according to *Mariana*, came somewhat short of the Privileges of the Colonies. See **COLONIES**.

They had no Suffrages or Votes at *Rome*. They were left to be govern'd by their own Laws and Magistrates.

'Tis true, some few *Municipal* Cities, by particular Merit, &c. obtain'd the Liberty of Votes; which occasion'd that receiv'd Distinction of *Municipium sine Suffragio*, & *Municipium cum Suffragio*.

They were so call'd, because *Muneris hujus honorarii participes*; but by *Munus honorarium*, was meant no more than the bare Appellation of a *Roman*, whereby they were privileged to fight in a Legion, as Denizens; and not in auxiliary Bands, as Associates. See **CITIZEN**.

The first who had the Honour, were the *Cervites*.

**MUNICIPAL**, among us, is now understood of the Customary Laws that obtain in any particular City, or Province; and which have no Authority in the neighbouring Places. See **CUSTOM**.

**MUNICIPAL** Officers, are those elected to defend the Interests of Cities, their Rights and Privileges, and to maintain Order and Policy; as Mayors, Sheriffs, Consuls, Bailiffs, &c. See **OFFICE**.

In *Spain*, the *Municipal* Offices are bought. In *England*, they come by Election.

**MUNIMENTS**, or **MINIMENTS**, the Evidences or Writings, whereby a Man is enabled to defend the Title of his Estate. See **MUNIMENT-HOUSE**.

*Wangford* says, the word *Muniment* includes all manner of Evidence.

**MUNIMENT-HOUSE**, a little, strong Apartment in Cathedral and Collegiate Churches, Castles, Colleges, or the like, destined for keeping the Seal, Evidences, Charters, &c. of such Church, College, &c. call'd *Muniments*, or *Miniments*.

The Word is form'd of the *Latin Munio*, I defend.

**MUNIMINA**, the Grants, or Charters of Kings and Princes to Churches; so call'd, because *cum eis muniantur* against all those who would deprive them of those Privileges.

**MUNIONS**, in Architecture, are the short upright Posts or Bars that divide the several Lights in a Window-Frame. See **WINDOW**.

**MUNITION**, or **AMMUNITION**, the Provisions wherewith any Place is furnished in order for defence; or wherewith a Vessel is stock'd for a Voyage; or that follow a Camp for its Subsistence. See **AMMUNITION**.

**MUNITION-BREAD** is the proportion of Bread distributed every day to the Soldiers of a Garrison or Army. Each Officer is allow'd so many Rations of *Munition-Bread*. See **RATION**.

**MUPHTI**, or **MUFTI**, the Chief, or Patriarch of the *Mahometan* Religion, residing at *Constantinople*. See **MAHOMETANS**.

The *Muphti* is the sovereign Interpreter of the *Alcoran*, and decides all Questions of the Law. See **ALCORAN**, &c.

He takes place of the *Bashaws*; and his Authority is often terrible to the Grand Signior himself. 'Tis he girds on the Sword to the Grand Signior's side; which Ceremony answers to the Coronation of our Kings.

**MURAGE**, **MURAGIUM**, in our Customs, a reasonable Toll to be taken of every Cart or Horse coming laden into a City or Town for the Building or Repairing the Walls thereof.

**MURAL**, something belonging to a Wall; which the *Latins* call *Murus*. See **WALL**.

**MURAL** Crown, among the antient *Romans*, was a kind of Crown indented a-top, like the Battlements of a Wall. See **CROWN**.

The *Mural-Crown* was the Reward of those who first mounted the Walls of the Enemy; whence it was also call'd *Corona obsidionalis*.

**MURAL** Arch is a Wall, or walled Arch placed exactly in the Plane of the Meridian, i. e. upon the Meridian-Line; for the fixing of a large Quadrant, Sextant, or other Instrument, to observe the Meridian Altitudes, &c. of the heavenly Bodies. See **MERIDIAN-LINE** and **MERIDIAN-ALTITUDE**.

*Tycho de Brahe* was the first who used a *Mural-Arch* in his Observations; after him Mr. *Hamstead*, de la Hire, &c. used the same means. See **OBSERVATIONS**.

**MURENGERS**, two Officers of great Antiquity in the City of *Chester*, being two of the Principal Aldermen chos yearly to see the Walls kept in good Repair, and to receive certain Toll and Custom for the Maintenance thereof.

**MURING**, the Walling, or raising the Walls of a Building. See **WALL** and **WALLING**.

**MURRAIN**, *Gargle*, a Mortality, or contagious Disease among Beasts. See **MORTALITY**.

*Murrains* are occasion'd various ways, but principally by a hot, dry Season; or rather by a general Putrefaction of the



the Air, which begets an Inflammation in the Blood, and a Swelling in the Throat, which soon proves Mortal, and is communicated from one to another.

The Symptoms are generally a hanging down and swelling of the Head, rattling in the Throat, short Breath, Palpitation of the Heart, Staggering, abundance of Gum in the Eyes, &c. Breath hot, and Tongue shining.

The most remarkable *Murrain* we hear of, is that mentioned in the *Philos. Transf.* which spread itself through *Switzerland, Germany, into Poland, &c.*

The Contagion seem'd to propagate itself in form of a blue Milt, which fell on the Grass where the Cattel grazed, insomuch that whole Herds return'd home sick, and being very dull, and forbearing their Food, most of 'em died away in twenty four Hours time. On dissection were found large corrupted Splens, sphaelous and corroded Tongues, &c. Those People who manag'd them without a due regard to their own Health, were infected by 'em, and died like the Beasts.

Some imagine it had its Rise from noxious Vapours thrown out of the Earth in three distinct Earthquakes perceiv'd in the Neighbourhood of the Place where it began: Tho Dr. *Stare* rather thinks it owing to Swarms of volatile Insects. The Antidote for the Sound, and the Medicine for the Sick were the same, viz. Equal Parts of Soot, Gun-Powder, Brimstone, and Salt, with as much Water as would wash it down, a Spoonful in a Dose.

MURREY, in Heraldry, a purple Colour, call'd also *Sanguin*. See SANGUIN.

MURDER, *Homicide*, the Act of killing another with Violence, Injustice, and Effusion of Blood. See HOMICIDE.

Among the number of popular Errors, is the Notion which has obtain'd, that the dead Body would bleed in the Presence, or upon the Touch of the Murderer.

The Crime of *Murder* is punish'd with Death in almost all Nations. See PUNISHMENT.

In our Law, *Murder* has a peculiar import, so as to denote a wilful and felonious killing another upon premeditated Malice, whether secretly or openly; and whether *English* Man or Foreigner, living under the King's Protection.

This premeditated Malice, which makes the Essence of *Murder*, is twofold; 1. *Express*, where it may be evidently proved that there was ill-will. 2. When one killeth another suddenly, he having nothing to defend himself, as going over a stile, or the like. For in such a Case, or when a Man killeth a mere Stranger, the Law presumeth he had Malice against him, or else that he would not do it without any manner of Provocation.

The Word is form'd from the Saxon *Morth*, which some will have to signify a violent Death; whence the barbarous Latin *Mordrum* and *Mordrum*. Sometimes the Saxons express'd it by a Word which imply'd a deadly Work. In the French it is call'd *Meurtre*, in Spanish *Meurtre*, and in English *Murder*.

The Word was used long before the Reign of K. *Canutus*; tho it does not appear that the Saxon *Morth* signifies a violent Death, but Death in general.

Formerly, indeed, *Murder* was restrained to a clandestine killing. Thus, *Mordritus homo antiquitus dicebatur, cujus Interfector nesciebatur ubicumque vel quomodocumque esset Inventus. Nunc adjunctum est, licet sciatur quis Mordrum fecerit, homicidium per prodicionem*. Leges Hen. I.

*Arthurum Nepotem propriis manibus per prodicionem Interfecit, pessimo Mortis genere quod Angli Mordrum appellant.* Matth. Paris, An. 1216.

Self-MURDER, is otherwise call'd *Suicide*. See SUICIDE.

MURDERERS, or MURDERING-Pieces, are small Pieces of Ordnance, either of Brass or Iron, having Chambers, (that is, Charges made of Brass or Iron) put in at their Breeches. See ORDNANCE.

They are mostly used at Sea at the Bulk-Heads of the Fore-Castle, Half-Deck, &c. in order to clear the Decks when an Enemy boards the Ship.

MUSCADINE, a rich white Wine, of the Growth of *Provence, Languedoc, Ciudad, &c.* See WINE.

The way of making *Muscadine* at *Frontignac* is as follows: They let the *Muscadine* Grapes grow half dry on the Vine; as soon as they are gathered, they tread and press them immediately, and tunn up the Liquor, without letting it stand, and work in the Fat; the Lee occasioning its goodness.

The Word, as well as the Liquor, is French. Some fetch its Original from *Musk*, the Wine being supposed to have a little of the smell of that Perfume; others from *Muscus*, a Fly, because the Flies are extremely fond of its Grapes; as the Latins had their *Unum Apianum*, so call'd ab *Apibus*, from the Bees which fed on it.

MUSCLE, *Musculus*, in Anatomy, a fleshy, fibrous Part of the Body of an Animal, destined to be the Organ of Motion. See MOTION.

The *Muscle* is a bundle of thin, parallel Plates; and is divided into a great number of Fasciculi, or little *Muscles*,

each inclosed in its proper Membrane, from the internal Surface whereof, pass an infinite number of transverse Filaments, which intersect the *Muscle* into several distinct Areas, fill'd with their respective Fasciculi of Fibres. See FIBRE.

A *Muscle* is usually divided into three Parts, the Head, the Tail, and the Belly.

The Head and Tail, which are also call'd *Tendons*, are the two extremes of the *Muscle*; whereof the first is fix'd to the stable part, and the latter to the part intended to be moved. See TENDON.

The Venter or Belly is the body of the *Muscle*, being a thick, fleshy part, into which are inserted Arteries and Nerves, and out of which issue Veins and Lymphaducts.

All these parts of a *Muscle*, the Belly and the Tendons, are composed of the same Fibres: Their only difference consists in this, that the Fibres of the Tendons are more closely and firmly bound together than those of the Belly, which are more loose. Hence in the Belly there is room for a sufficient Quantity of Blood to give 'em an Appearance of Redness; and the Whiteness of the Tendons only proceeds from the Blood's being in some measure excluded by the tightness of their Contexture. The difference then between the Belly and the Tendons seems to be the same that is between a Skin of Thread, and a Cord made of the same Thread.

All the *Muscles* act by having their Bellies inflated or swell'd; for by that means they are shorten'd, so as to draw, or press the solid Bodies to which they are fasten'd, according to the direction of their Fibres. All the difficulty then in Muscular Motion, is, to assign their Fabric, and the Cause of their swelling.

Every simple *Muscle*, then, consists of one fleshy Belly, and two Tendons; but may be again divided into others similar, tho less; and those again into others still less, yet still similar to the great one: Which division may be carried on to a degree of Subtlety that exceeds all Imagination; tho 'tis reasonable to think it must have an end. That last, therefore, being similar to the first, must, in like manner, have its Belly and Tendons; and this is what we ordinarily call a Muscular Fibre, in an Assemblage or Union of several whereof, a *Muscle*, properly so call'd, consists.

Some take the Muscular Fibres to be Productions of the Arteries and Veins, or the Capillaries of those Vessels insculcated with, and continued to each other; by the intumescence of whose Contents, the Extremities are drawn nearer each other, and by consequence, the Bone to which the moveable part is fixed, approximated to the other. But that they are, in truth, neither Venous, nor Arterious, nor Lymphatic Vessels, is evident from the last Observation. Whether they are Vesicular; or whether they only consist of single Threads, may be still a Question.

Dr. *Boerhaave*, from a consideration that the Nerves enter every *Muscle* along with its Veins and Arteries, and that there laying aside their outer Integument, they are so distributed thro the whole Body of the *Muscle*, as that no one Point can be assigned wherein a part of 'em is not found; that those Nerves terminate here; and that in other parts of the Body the Extremities of the Nerves are expanded, as it were, into Membranes; concludes, that the Muscular Fibres are nothing else but extremely slender Expansions of the Nerves stript of their Integument, hollow within, and of the Figure of a *Muscle*, and full of a Spirit communicated by the Nerve from its Origin in the Brain or Cerebellum, by the continual Action of the Heart. See NERVE.

Of these Fibres united, are form'd Fasciculi or Bundles; which, again, have each their several Membrane, wherein they are involved, and kept distinct from others. This Membrane is extremely slender and porous within, full of Oil, which is accumulated in time of Rest and spent in Motion, furnished by the Arteries; and this Oil, in conjunction with a smooth mucous Juice secreted by small mucilaginous Glands, interspersed among these Fasciculi, serves to lubricate the parts, and preserve the Fasciculi from fretting on each other.

Now, besides the Nerves, there are Arteries also carried into the *Muscles*, and those in such abundance, and of such contexture, that a Man might be inclined to think the whole Body of the *Muscle* composed of 'em. These are principally distributed among the Fasciculi, and the Membranes that separate 'em, and perhaps also in the external Surface of each *Fibrilla*, where they terminate in reticular Plexus's, or Folds, in little oily Secretories, small Lymphatics, and perhaps in hollow *Fibrille* like Nerves; which *Fibrille* may again either terminate in the Cavity of the Nervous Muscular Fibres, or make others like 'em. This, at least, is clear, that every Branch of an Artery in the *Muscles* has its corresponding little Vein, which united to the other, increases its Bulk; whence the Blood-Vessels of the *Muscles* are also Lymphatics.

Of two such *Muscles* as have been described, fasten'd in opposite Situations to each other, most of the *Muscles*, we know of, consist.



It has been already observed, that the Tendon of a *Muscle* consists of the same Number of Fibres with the *Muscle* itself; with this difference, that the Cavity of the muscular Fibres diminishes, and losing of their former Diameter, form one compact, hard, tough, dry, narrow Body, which is but little vascular: From what has been said then, it appears, that the Redness of a *Muscle* is owing to the Blood; and its Bulk to the Fulness of the Arteries, Veins, oily Cells, and Lymphatics. Hence we see, why in old Age, Leanness, and Consumptions, Atrophies, constant Heat, and hard Labour, their Redness as well as Bulk are so diminished; and yet in old Age, Leanness, &c. the Motion remains. This may be effected, when the *Muscles* have no Redness left; as appears in Insects, whose Flesh is not perceivable.

The Fibres, Fasciculi, Arteries, and Nerves may be separated from each other in a live or a dead Body, without breaking. They are always in a degree of Tension, and endued with a contractive Force; so that when cut asunder, the Ends fly back from each other; and then they become shorter, their Bulk is lessen'd, and they contract themselves into a wavy undulating kind of Surface, and throw off their proper Juices. Hence it appears they are always in a state of Violence, are ever opposing their Elongation, ever endeavouring to shorten themselves, but more in a live Body than a dead one; and therefore require Antagonists. 2. If the Cerebrum be strongly compress'd, or have any violent Contusion; if it be suppurated, obstructed, or torn, the voluntary Action of all the *Muscles* immediately ceases, as well as all Sense and Memory; however the spontaneous Action of the *Muscles* in the Heart, Lungs, the *Viscera*, and Vital Parts, remains. 3. These same Alterations being made in the Cerebellum, the Action of the Heart, Lungs, and Life itself, ceases; when yet the Vermicular Motion continues a long time after in the Ventricle and Intestines. 4. The Nerve of any *Muscle* being compress'd, tied up, corrupted, or cut, all the Motion of that *Muscle*, both Vital and Voluntary, immediately ceases; and if a nervous Trunk sending Branches to several *Muscles*, be thus bound up, cut, &c. they are all affected in the same manner. 5. The same things being done in any part of the spinal Marrow, the Action of all the *Muscles* whose Nerves arise from the part affected, is destroy'd: And, 6. The same things being done to the Artery which carries Blood to one or more *Muscles*, the Effect is the same. 7. The Tendon of a *Muscle* in Action does not undergo any sensible Alteration, but the Belly shortens, becomes hard, pale, swollen, protuberant; the Tendons are approached nearer, and the more moveable part fasten'd to the Tendon, is drawn towards the other less moveable; which Action of a *Muscle* is call'd its *Contraction*, which is much greater and stronger than that inherent Contraction observed under the first Phenomenon; and therefore is not natural, but superadded. 8. The Tendon of a *Muscle* not in Action, is still the same; but the Belly softer, redder, laxer, longer, and flatter; and this state of a *Muscle* is call'd its *Relaxation*, tho it is usually owing to the contrary Action of its Antagonist; for that being frustrated, the Contraction of the other continues, as not being balanced by the Action of an Antagonist. 9. If one Antagonist remain at Rest while the other is in Action, the Member in that case will be bent; if both act at the same time, it will be fix'd and immoveable; if neither act, it will be indifferent, and ready to be moved whither the least excess shall carry it. 10. All these Changes mentioned in the 7th, 8th, and 9th Articles, are performed in the smallest Moment of Time, and in the whole *Muscle* at once; so that they can pass and repass reciprocally without leaving any Trace in the Body behind them. 11. By injecting warm Water into the Artery of a quiescent *Muscle*, even that of a dead Carcass; its Contraction is restored; and that long after Death. 12. The Bulk of a *Muscle* is increased rather than diminished by every Experiment of its Contraction. 13. A Limb being bent, by some external force, against the Will, the Flexor *Muscle* of that Member assumes a state of Contraction, as if it acted by its proper Motion; tho not altogether so strenuously. 14. The Will remaining indifferent, all the voluntary *Muscles*, and all their Vessels are equally full, and moved by the Blood and Spirits equally convey'd to 'em, and that throughout the whole Body at once.

For the Application of this Structure of the *MUSCLES*, in accounting for the great Phenomenon of Muscular Motion, see *MUSCULAR MOTION*.

As the Muscular Fibres, or, which comes to the same, the Fasciculi of Muscular Fibres, have not always the same Situation with regard to each other, nor run in the same direction, but sometimes run parallel to themselves and their Tendons; and are sometimes disposed obliquely both to their Tendons and to each other; hence there arises two different kinds of *Muscles*.

The one Direct and Parallel, which some call *Simple Muscles*.

The other Inclined, or Oblique; call'd *Compound Muscles*.

Under the first of these kinds are included several other Species; for, first, Either the fleshy Fibres run strait from one Extreme to the other, as in the *Sartorius*, &c. or are turn'd into a Circle, as in the *Sphincters* of the Bladder, and Anus; or twisted into a Spiral, as in the *Oesophagus*: And hence they come to be call'd *Recti*, *Orbiculares*, and *Spirales*. See *RECTI*, *ORBICULARES*, &c.

The second kind also includes various Species, according to the various Angles which the oblique Fibres make with the Tendons; some inclining equally to each Tendon, so as to form a Rhombus, or acute angled Parallelogram with 'em, the *Muscles* are hence call'd *Rhomboidales*; others rising from two parallel Tendons, are inserted obliquely into one common Tendon, as in the *Biceps* of the Hand; others, lastly, arising from the Periphery of the Circle, concur in a Centre, and form *Muscles* call'd *Radiales*. See *RHOMBOIDES*, *RADIALIS*, &c.

There are divers Species, and Divisions of *Muscles*.

Some Authors distinguish them into *Muscles of Voluntary*, and of *Involuntary* or *Natural* or *Necessary Motion*.

The *Muscles of Involuntary*, or *Necessary Motion*, have their contracting and extending Powers within themselves, and have no Antagonist; such are the Heart and Lungs supposed to be. See *HEART* and *LUNGS*.

The *Muscles of Voluntary Motion*, which we more peculiarly denominate *Muscles*, and which are those we have here chiefly regard to, have each of 'em their Antagonist *Muscles*, which act alternately in a contrary Direction; the one being stretched and extended, while the other is contracted at the Motion of the Will. See *MOTION*.

The *Muscles* have also different Names from their different Actions, Situations, Forms, &c. Those which serve to move the same Members contrary ways, are call'd *Antagonists*; and those that concur to the same Action, *Fellows*, or *Pairs*. See *ANTAGONIST*, &c.

*Digastrics* are those which have two Bellies; *Trigastrics* those with three. See *DIGASTRIC*.

*Sphincters* are those destined to shut several Apertures and Passages in the Body; as the *Muscle* at the Neck of the Bladder, and that of the Anus, which have the same Effect with the String of a Purse to close those Parts. See *SPHINCTER*.

Some *Muscles* have two or three Heads, call'd *Biceps* and *Triceps*. See *BICEPS*, *TRICEPS*, &c.

We call *Elevators* those which lift up or raise the Parts; *Depressors* those which move 'em downwards. See *ELEVATOR*, &c.

*Flexors* those who bend 'em; *Extensors* those which stretch 'em out; *Adductors* those which move the Parts inwards; *Abductors* those which move 'em outwards; *Rotators* those which move 'em round. See *FLEXOR*, *EXTENSOR*, *ABDUCTOR*, *ADDUCTOR*, *ROTATOR*, &c.

The *Muscles* have also different Names from their different Figure; some resembling a Bar; some a Lizard; and some a Turbet: Some are Triangular, others Square, others Scalenous, others Pentagonal, others Pyramidal, Round, &c. Whence come the Names of *Deltoides*, *Rhomboides*, *Scalenous*, *Trapezius*, &c. See *DELTOIDES*, *SCALENUS*, *TRAPEZIUS*, &c.

Anatomists are not agreed on the Number of *Muscles* in the human Body; some reckon 529; some 446; and others only 435. The Calculus, according to these last, is as follows:

Two of the Forehead; two of the Occiput; six of the Eye-Lids; twelve of the Eyes; seven of the Nose; eight of the external Ear; four of the internal Ear; thirteen of the Lips; eight of the Tongue; four of the Palate; fourteen of the Larynx; seven of the Pharynx; ten of the *Os Hyoides*; twelve of the Under-Jaw; fourteen of the Head; eight of the Neck; eight of the *Omoplates*; eighteen of the Arms; twelve of the Elbows; eight of the Radii; twelve of the *Carpi*; fortyeight of the Fingers; fifty seven of use in Respiration; six of the Loins; ten of the *Abdomen*; two of the Testicles; one of the Bladder; four of the Penis; four of the Anus; thirty of the Thighs; twenty two of the Legs; eighteen of the Feet; forty four of the Toes. The following Table of the Names and Offices of the several *Muscles* in the Body, is extracted from Dr. Keil.

#### A TABLE of the MUSCLES from Dr. Keil.

*Frontales*, they pull the Skin of the Forehead upwards.

*Occipitales*, pull the Skin of the Hind-head upwards.

*Atollens* } *Auricularum*.

*Deprimens* }

*Internus Malleoli*, distends the *Tympanum*.

*Externus Malleoli*, relaxes the *Tympanum*.

*Obliquus Malleoli*.

*Musculus Stapedis*, moves the Stirrup.

*Corrugator Supercilii*.

*Levator Palpebrae superioris*, lifts up the upper Eye-Lid.

*Orbicularis Palpebrarum*, shuts both Eye-Lids.



*Attollens*  
*Deprimens* } *Oculorum.*  
*Abductor*  
*Adductor*  
*Obliquus major*, pulls the Eye forwards, and obliquely downwards.  
*Obliquus minor*, pulls the Eye forwards, and obliquely upwards.  
*Attollens*  
*Dilatans* } *Nares.*  
*Deprimens*  
*Incisivus*, pulls the upper Lip upwards.  
*Triangularis*, pulls it downwards.  
*Caninus*  
*Elevator Labii inferioris* } pull the lower Lip upwards.  
*Quadratus*, pulleth it downwards.  
*Zygomaticus*, draws both Lips obliquely to either side.  
*Orbicularis*, draws both Lips together.  
*Buccinator*, thrusts the Meat between our Teeth.  
*Temporalis* } pull the Jaw upwards.  
*Masseter*  
*Pterigoideus internus*, draws the Jaw to either side.  
*Pterigoideus externus*, draws the Jaw forwards.  
*Quadratus*, pulleth the Jaw and the Cheeks downwards.  
*Digastricus*, pulleth the Jaw downwards.  
*Peristaphilinus Internus*, pulls the Uvula forwards.  
*Peristaphilinus Externus*, pulls the Uvula backwards.  
*Styloglossus*, draws the Tongue upwards.  
*Genioglossus*, pulls it out of the Mouth.  
*Ceratoglossus*, pulls it into the Mouth.  
*Geniohyoideus*, pulls the *Os Hyoides* and Tongue upwards and forwards  
*Sternohyoideus*, pulls the *Os Hyoides* downwards.  
*Milohyoideus*, pulls it obliquely upwards.  
*Coracohyoideus*, pulls it obliquely downwards.  
*Stylohyoideus*, pulls it to either side, and somewhat upwards.  
*Stylopharyngeus*, pulleth up, and dilateth the *Pharynx*.  
*Oesophagus*, streightens the *Pharynx*.  
*Sternothyroideus*, pulls the *Thyroides* downwards.  
*Hyothyroideus*, pulls the *Thyroides* upwards.  
*Cricothyroideus*.  
*Cricothyroideus Posticus*.  
*Cricothyroideus Lateralis*.  
*Thyroarytenoideus*, dilates the *Glottis*.  
*Arytenoideus*, contracts the *Glottis*.  
*Splenius* } move the Head backwards.  
*Complexus*  
*Rectus major* } nod the Head backwards.  
*Rectus minor*  
*Obliquus inferior* } perform the Semi-circular Motion of the  
*Obliquus superior* } Head.  
*Mastoidæus*  
*Rectus internus major* } nod the Head forwards.  
*Rectus internus minor*  
*Rectus Lateralis*, nods the Head to one side.  
*Intercostales interni & externi*  
*Subclavius* } pull the Ribs upwards in In-  
*Serratus Anticus major* } spiration.  
*Serratus Posticus superior*  
*Triangularis*  
*Serratus Posticus inferior* } make the Motion of the Ribs down-  
*Sacro-lumbaris* } ward in Expiration the swifter.  
*Diaphragma*, used in Inspiration and Expiration.  
*Obliquus externus* } compress the Parts contained in the lower  
*Obliquus internus* } Belly; assist the Motion of the Ribs  
*Transversalis* } downwards in Expiration; and help  
*Rectus* } to bend the Vertebrae of the Loins for-  
*Pyramidalis* } wards.  
*Longissimus Dorsi*, keeps the Body erect.  
*Transversalis Dorsi*, moves the Body obliquely backwards.  
*Interspinalis*, draws the acute Processes near one another.  
*Quadratus Lumborum*, draws the Vertebrae of the Loins to one side.  
*Longus* } bend the Vertebrae of the Neck.  
*Scalenus*  
*Psoas parvus*, helps to bend the Vertebrae of the Loins.  
*Cremaster*, draws up the Testicles in the Act of Generation.  
*Erectores Penis*.  
*Transversalis Penis*.  
*Acceleratores Urine*.  
*Erectores Clitoridis*.  
*Sphincter Vesicae*, contracts the Neck of the Bladder, [that the Urine may not run continually.  
*Levatores Ani*, draw up the Anus.  
*Sphincter Ani*, shuts the Anus.  
*Serratus Anticus minor*, draws the Shoulder-Blade forwards.  
*Trapezius*, moves it upwards, backwards, and downwards.  
*Rhomboides*, pulls it backwards.  
*Elevator Scapulae*, pulls the Shoulder-Blade upwards.  
*Deltoides*  
*Supra-Spinatus* } lift the Arm upwards.  
*Coracobrachialis*

*Teres major*  
*Latissimus Dorsi* } pull the Arm downwards  
*Pectoralis*, moves the Arm forwards.  
*Infra Spinatus*  
*Transversalis* } draw the Arm backwards.  
*Subscapularis*  
*Biceps*  
*Brachialis internus* } bend the Fore-Arm.  
*Longus*  
*Brevis*  
*Brachialis externus* } extend the Fore-Arm.  
*Anconeus*  
*Rotundus* } perform the Motion of Pronation, or turn the  
*Quadratus* } Palm of the Hand downwards.  
*Longus* } perform the Motion of Supination, or turn the Palm  
*Brevis* } of the Hand upwards.  
*Cubitalis internus* } bend the Wrist.  
*Radialis internus*  
*Cubitalis externus* } extend the Wrist.  
*Radialis externus*  
*Palmaris*, helps the Hand to grasp any thing closely.  
*Palmaris Brevis*, makes the Palm of the Hand concave.  
*Sublimis* } bend the Fingers.  
*Profundus*  
*Extensor Digitorum Communis*.  
*Lumbricales*, assist in bending the first Joint of the Fingers.  
*Interossei interni*, draw the Fingers to the Thumb.  
*Interossei externi*, draw the Fingers from the Thumb.  
*Flexor Pollicis longus*.  
*Flexor Pollicis brevis*.  
*Extensor primi*.  
*Secundi*.  
*Tertii Internodii Pollicis*.  
*Tenar*, draws the Thumb from the Fingers.  
*Antitenar*, draws the Thumb to the Fingers.  
*Abductor Indicis*.  
*Extensor Indicis*.  
*Hypothenar*, draws the little Finger from the rest.  
*Extensor Aricularis*.  
*Psoas*  
*Iliacus* } bend the Thigh.  
*Pectineus*  
*Gluteus major* } extend the Thigh.  
*Gluteus medius*  
*Gluteus minor*  
*Triceps*, pulls the Thigh inwards.  
*Pyriformis*  
*Gemini* } they move the Thigh outwards.  
*Quadratus*  
*Obturator internus* } help to move the Thigh obliquely, and  
*Obturator externus* } circularly.  
*Seminervosus*  
*Semimembranosus* } bend the Leg.  
*Biceps*  
*Gracilis*  
*Rectus*  
*Vastus externus* } extend the Leg.  
*Vastus internus*  
*Cruureus*  
*Sartorius*, makes the Legs cross one another.  
*Popliteus*, turns the Leg somewhat inwards.  
*Membranosus*, turns it a little outwards.  
*Tibialis Anticus* } bend the Foot.  
*Peroneus Anticus*  
*Gastrocnemii* } extend the Foot.  
*Soleus*  
*Plantaris*  
*Tibialis Posticus*, moves the Foot inwards.  
*Peroneus Posticus*, moves the Foot outwards.  
*Profundus*  
*Sublimis* } bend the four lesser Toes.  
*Lumbricalis*  
*Longus* } extend the four lesser Toes.  
*Brevis*  
*Flexor Pollicis*.  
*Extensor Pollicis*.  
*Tenar*, draws the great Toe from the rest.  
*Antitenar*, draws it to the rest.  
*Flexor Pollicis Longus*.  
*Brevis*.  
*Abductor Minimi Digiti* } draw the Toes toward the great Toe.  
*Interossei interni*  
*Interossei externi*, draw them from the great Toe.  
*Transversalis*, brings all the Toes close to one another.

The word *Muscle* is derived from the Greek *μῦς*, or the Latin *Mus*, a Mouse; on account of the Resemblance it is supposed to bear to a skin'd Mouse. The *Latins* also call it *Lacertus*. *Steno*, and other later Authors, reckon the Heart among the number of *Muscles*, in regard its Composition and



and Action don't differ in any thing from those of other Muscles.

**MUSCULAR**, or **MUSCULOUS**, something that relates to the Muscles; or that partakes of the nature thereof. See **MUSCLE**.

In this sense we say, *Muscular Fibre, Muscular Coat, Muscular Flesh, Muscular Veins, Muscular Arteries, &c.*

**MUSCULAR Fibres** are the fine Threads, or **Fibres**, already described, whereof the Body of Muscles is composed. See **MUSCLE**.

Anatomists are exceedingly divided as to the nature of these Fibres. Some will have 'em Blood-Vessels, *viz.* Veins, and Arteries; others Nerves, &c. See **ARTERY**, **NERVE**, &c.

Some restrain *Muscular Fibres* to the longitudinal red, call'd also *Fleshy Fibres*: The transverse, and spiral Ramifications wherewith the former are bound about, they call *Nervous Fibres*. See **FIBRE**.

Dr. Morgan endeavours to prove, that all the Fibres that enter the Structure and Composition of a Muscle, are endued with an intrinsic Elasticity, Spring, or Power of contracting and restoring themselves, as a given Weight or Force, by which they may be stretch'd; and that this Elasticity, or contractive restitutive Power being a natural inherent Property of the Fibres themselves, does not depend on the Mixture, Rarefaction, or Effervescence of any Fluids or Humours whatsoever. See **MUSCULAR Motion**.

**MUSCULAR Membrane**, or *Membrana MUSCULOSA*, a Membrane supposed to invest the whole Body, immediately under the Adipose Membrane; call'd also *Panniculus Carnosus*, and *Membrana Musculorum Communis*. See **PANNICULUS Carnosus**.

**MUSCULAR Arteries**, are two Arteries proceeding from the Subclavians, and distributed among the *Hind-Muscles* of the Neck; as also to the Arteries of the Loins. See **ARTERY**. They are divided into *Upper* and *Under*.

The *Upper-Musculars* proceed from the large Artery, and lose 'emelves in the Flesh.

The *Under-Musculars* are Branches of the inner Iliac Arteries.

The Name is also given to two Arteries of the Thigh, the one call'd the *Internal-Muscular*, as being distributed among the inner Muscles of the Thigh; the other the *External-Muscular*, because it proceeds to the outer Part.

**MUSCULAR-Veins**, is also a Name given to several Veins; two whereof come from the Skin and the *Hind-Muscles* of the Thigh, and terminate in the Subclavians. See **VEIN**.

There are three others also call'd *Musculars*, and distinguish'd into *Upper*, *Middle*, and *Under*; the first terminates in the Trunk of the *Vena Cava*, the two others open into the external Iliac Vein.

**MUSCULAR Flesh**. See **Muscular FLESH**.

**MUSCULAR Motion**, is the same with voluntary or spontaneous Motion; thus call'd, because effected by means of the Contraction and Dilatation of the Muscles. See **MOTION**, **MUSCLE**, &c.

The Mechanism of a Muscle we have deliver'd at large; but how this Mechanism is employ'd to produce Motion in Animals, is matter of endless doubt.

The generality of Writers suppose the Belly of the Muscle to be swell'd, and thus its Extremities brought nearer; and consequently the Parts it is fixed to, moved.

The Structure of a Muscle we have shewn to be such as renders it capable of being swell'd and contracted, and by that means of having its Extremities brought nearer each other, which is its proper Action: But how the Contraction is effected, is the Point in dispute.

The generality of Authors account for it from the Influx of some Fluid into the Muscular Fibres: Others solve it from the natural Elasticity of those Fibres.

The Retainers to a Fluid, again, are divided as to the particular Fluid employ'd for this purpose.

From the Structure and Phenomena of the Muscles above laid down, we may gather the Properties of the hidden Cause that moves the Muscles; *viz.* 1<sup>st</sup>, That it may either be present or absent in a Muscle; and therefore, 2<sup>dly</sup>, May enter into it, and go out again: *i. e.* 3<sup>dly</sup>, It is derived to it from some other Place, and passes from it elsewhere. And, 4<sup>thly</sup>, All this, by an instantaneous Direction of the Will. 5<sup>thly</sup>, And in the same Moment of Time, wherein the Muscle is contracted, must pass from within outwards to every Point of the Surface of the Muscle; that is, 6<sup>thly</sup>, it must be at once equally distributed throughout the whole Belly of the Muscle: And therefore, 7<sup>thly</sup>, fill and dilate the Membranes of the Fibres, change 'em out of an oblong into a more spherical Figure, lengthen their less Diameter, and diminish their longer, and so draw the Tendons nearer each other. Lastly, that it must have its Rise from the Cerebrum and Cerebellum, the Origin of the Nerves and be strong enough to overcome those Obstacles which here strongly resist it. To conclude then, it must be a most

fluid, subtle, active Body, and be apply'd with some Energy within the Muscle.

Now all the Fluids in the Body that have any Pretensions to these Properties, that are any way qualified to produce the Phenomena above, or that have been alledged as the Cause of Muscular Motion, are the *Animal Spirits*, (or, as our later Writers call it, the *Nervous Juice*) and the *Blood*: but as each of these singly scarce appears adequate to the Effect, hence Authors have supposed 'em to mix in the Muscles, and each to contribute to the Action of the other. But the Animal Spirits seem to have the greatest number of Advocates, tho' their Existence was never yet fully prov'd; besides that the manner of their Action, as assign'd by Authors, seems to be arbitrary and precarious.

Some, with the great Dr. Willis, make the Tendons a Receptacle for the Spirits, which are rais'd at the Instigation of the Will, and sent thence into the Belly of the Muscle, where meeting with the active Particles of the Blood, they ferment, and cause an Intumescence, and so contract the Muscle.

Others, amongst whom Des Cartes and his Followers, allow no Receptacle for 'em but the Brain, send 'em thence thro' the Nerves like Lightning at every Summons of the Will; because they can't allow the Tendons to be a proper Lodgment, on account of the Closeness of their Contexture, nor can believe that the Animal Spirits should remain there unactive.

Others, among whom M. du Verney, imagine this Intumescence may be without Fermentation by the Animal Spirit, and a Juice from the Arteries running into the Tendons and Fleshy Fibres, and extending them, as Ropes, &c. swell in moist Weather.

Dr. Chirac, and others, maintain, that every Muscular Fibre, besides its Vein, Artery, and Nerve, has also from Space to Space, several little Cavities, or Pores of an oblong Figure, when the Muscle is slack or flaccid; but the Blood circulating thro' the Muscle, is continually depositing into those Pores a sulphurous Recrement, abounding with Alkaline Salts, which meeting with the Spirits that flow by the Nerves into those same oval Pores, their Nitro-Aerial Particles ferment, with the saline ones of the Sulphurous Recrement, and, by a kind of Explosion, so distend the Pores, as to change the long oval Figure into a round one; and thus the Muscle is contracted.

Borelli takes the Fibres of a Muscle to consist of a Chain of divers Rhombus's or Lozenges, whose Areas are enlarged or contracted as the Nervous Juice, with the Lympha and Blood, are let into, or forced out of 'em, at the Instance of the Soul.

Dr. Croon supposes every Fleshy Fibre to consist of a Chain of little Bladders, or Globules, communicating with each other; into which the nutritious Juice, and one or two more Liquors entering, do, by means of the natural Heat, make an Effervescence; by which the Body of the Muscle is extended, &c.

Dr. Cheyne takes the small Fibrille of the Muscles to be so many slender elastic Canals, bound about by small transverse parallel Threads, which divide the hollow Fibrille into so many elastic Cysts or Vesicle, which are orbicular, being formed of two concave Segments of a Sphere; into every one of which Vesicle, an Artery, Vein, and Nerve enter; the two first to carry and bring back the Blood, the last to carry thither the *Liquidum Nervosum*, or Nervous Juice, which mingling in the Vesicle with the Blood, does, by its acid pointed Particles, prick and break the Globules of the Blood, so as to let out the imprisoned elastic Air (contained in the Globules) into those little Vesicle; whereby the elastic Cells of the Fibres will be blown up, and thereby their Longitudinal Diameters from Cell to Cell strained; and this must contract the Length of the whole Fibre, and so move that Organ to which one of the Tendons is fix'd.

Dr. Keil, not contented with this Theory, sets up another, wherein the same Structure of the Muscle is supposed, and the same Fluids; *viz.* the Blood and Nervous Juice, the Agents or Instruments of Contraction: but instead of the pungent Particles of the Nervous Juice piercing the Globules of Blood, and setting at liberty the imprison'd elastic Air, he accounts for the Whole from the Doctrine of Attraction.

He endeavours to shew, that the Distension of the Vesicles of the Fibres is not owing to their being fill'd with a greater Quantity of Blood and Animal Spirits than before their Contraction; but to a Rarefaction arising from the Mixture of those two Fluids, by means whereof they come to possess a greater Space.

To account for this Rarefaction of the Blood and Spirits in the Vesicles of the Muscular Fibres, he supposes a small Globule of Air between the Particles of a Fluid, which Particles have a strong attractive Force, whereby they endeavour to come together: By pressing every way equally on



on the Globule of Air, they will hinder its escape from between them. But the Force whereby they endeavour to come together being vastly greater than that of Gravity, the Globule of Air must be considerably condensed; but the Force of Elasticity being proportional to that of its Condensation, the Force wherewith the airy Globule endeavours to expand itself, will likewise be vastly great; so that if the *Nifus* of the Particles of the Fluid to come together should be taken off, the Air between 'em would expand itself with a considerable Force. Now, if upon the mixing of another Fluid, the Particles of the first Fluid should be more strongly attracted to the Particles of this other Fluid, than they were before to one another, their *Nifus* to one another would then cease, and give the inclosed Globule of Air liberty to expand itself; so that the whole Fluid will take up a greater Space than it did before: But when the Particles of the two Globules come to be united together, they will again inclose the Globule of Air that lies between them, and, by their mutual Attraction, soon bring it to its former State of Condensation.

Now, that the Blood contains a great number of Globules of Air, is evident from the great Quantity it yields in the Air-Pump; and that the Particles of the Blood have a strong attractive Force, cannot well be deny'd. Upon the meeting, then, of these two Fluids in the Vesicles of the Fibres, the Nervous Juice, consisting of smaller Particles than the Blood, must, from what Sir I. Newton has proved of the Rays of Light, attract the Particles whereof they are composed more strongly than those do one another; and consequently the *Nifus* of those Particles to one another ceasing, the condensed Globule of Air will expand itself with a considerable Force; whereby each Vesicle of the Fibre will be distended, and consequently, therefore, shorten'd; i. e. the whole *Muscle* will be contracted: but when the Particles of the Globule of Blood are well mixed with the Nervous Fluid, they will both together inclose the Globule of Air again, and compress it into as small a Space as it was before: And thus the Contraction of the *Muscle* must immediately cease, till fresh Blood and Spirits, still succeeding one another, continue the Inflation of the Vesicles. But when a *Muscle* has been strongly attracted for some time, the Quantity of Spirits spent being more than can be prepared in the Space of Time by the Glands which supply its Nerves, the Inflation of the Vesicles must fall, and the *Muscle* grow feeble and weak. And thus that ingenious Author conceives the Vesicles to be distended without any Ebullition or Effervescence; and their Distension to cease without any Precipitation, or flying-off of the Aerial Globules thro' the Pores of the *Muscles*.

He proceeds to shew how artfully the Mechanism of the Fibres is contrived for Contraction. 'Tis a known Experiment, that a Bladder blown up and distended as to its Capacity, but contracted as to Length, will raise a Weight to some determined Height. Two Bladders, therefore, thus blown up, and communicating with each other, he argues, will raise the Weight double the Height, and three Bladders thrice the Height, &c. So that if there were a String of Bladders join'd together, of equal Bulk, and like Figures, the Space thro' which the Weight would rise, would be proportionable to the Number of Bladders, i. e. to the Length of the String. Now each Fibre of a *Muscle* consisting of an infinite Number of small Vesicles, resembles a String of Bladders; so that the Contraction of the *Muscle* is always proportionable to the Length of its Fibres.

Farther, the Vesicles whereof the Fibres consist being very small, tho' one large Bladder might raise a Weight as high as several small ones, yet the Quantity of elastic Fluid used in the Inflation will in that case be much greater than where the Weight is rais'd by a String of small ones.

For, supposing two Bladders of similar Figures, but the Diameter of the one triple that of the other; then will the one require twenty-seven times the Quantity of elastic Fluid to expand it that the other does, and will also expand to twenty-seven times the Space; and yet three of the less Bladders join'd together, (he goes on) will raise the Weight to the same Height that the bigger one does; but with nine times less Expence of elastic Fluid, and take up but a ninth part of the Space. By diminishing, therefore, the Bigness of the Vesicles, and increasing their Number, the Force required to distend them, and the Distension itself, may be diminished in any given proportion, and come at last to be insensible. Suppose a Bladder, v. g. of a determinate Bigness, can raise a Weight a Foot; a hundred Bladders, whose Diameters are each a hundredth Part of the former, being blown up, will raise the Weight to the same Height; but the Force required to inflate them, and the Swelling of all put together, will be ten thousand times less than the large one.

Again, if a Weight of a determined Bigness can be rais'd to a certain Height by a Bladder, or one String of Bladders, to which the Weight is tied; twice that Weight may be rais'd by two such Bladders, or Strings; thrice by three, &c. and, consequently, the Weight a *Muscle* can raise, will be always as the Number of its Fibres, i. e. as its Thickness, supposing the Distension of the Vesicles equal, and the absolute Strength of one *Muscle* to that of another, as their Bulks.

Dr. Boerhaave finding all the Requisites before laid down, for the Action of the Muscles in the nervous Juice, or animal Spirits, and in no other Fluid in the Body, thinks it needless to have recourse to a Mixture of several Liquors where one will do; and therefore makes no scruple to attribute the whole Business to it alone. The manner of Action he conceives thus.

Suppose the Spirit, from any Cause, to be moved more swiftly from the Origin of some one Nerve, than thro the rest; the influx will here be greater into the *Muscular* Fibre open to this Nerve than into another: This will therefore be more dilated; and the other Phenomena, mentioned above, will succeed. The same Cause continuing, the Effect will be increased, so that in a Moment of Time, the whole will be swell'd up; and while the same Determination lasts, will remain contracted: And this obtaining in an infinite number of *Fibrille* at once, the whole *Muscle* will be inflated. Hence it necessarily follows, that as the Celerity is increased in one Nerve, the Motion will be less in another; this therefore being relax'd, the Effort in contraction will be the stronger. For which Reason, all the turgid Fibres of a *Muscle* will compress the intermediate Spaces and Blood with a great Force; whence the Veins will be emptied, and the Arteries being compressed, will repel the grosser, that is, the red parts of the Blood, but will drive the more subtile parts by the Force of the Heart and their own, into the most minute Canals; and thus the Cruor being expell'd, the whole Body of the *Muscle* will be found to act by a subtile Humour concurring from the Nerves and Arteries.

Thus are all the Phenomena accounted for; without any other Assumption than an accelerating Force in the Origin of the Nerves; which is common to all Hypotheses, and which can't be traced any further.

All other Hypotheses, therefore, Boerhaave absolutely rejects; nor makes the least account of Galen's incorporeal Power inflating the Muscles; the nitrous Spirit of the Nerves mixing with the Oil of the Blood, and so rarifying it; the acid Parts of the nervous Juice mixing with the alcalious ones of the Blood; the Ebullition of the Air, and the arterious Juice; and the increase or diminution of attractive Force of the minute Corpuscles of the Humours, as repugnant to Sense, Experience, the Laws of Matter, and of Mixture, and to the Phenomena of the Muscles.

Dr. Astruc has gone a good way towards proving the nervous Juice alone concern'd in *Muscular Motion*; and that the Blood has no share in it; by the following Experiment, which he tried several times with the same success.

Cutting open the *Abdomen* of a live Dog, and removing the Intestines out of the way, he bound up the *Aorta* where it divaricates into the *Iliac* Arteries, with a Thread, so as to constrict each *Iliac* and the *Hypogastric* Artery very closely; then sewing up the *Epigastric* Muscles, he found the Sensation and Motion still as brisk and vivid in the Dog's *Posterior*, as before. So that when once set at liberty, he stood on all four, and walk'd with his usual Ease and Firmness; tho it is certain there could not be one drop of Blood convey'd to those hind parts.

Astruc, however, differs from Boerhaave in the manner wherein this nervous Juice acts; nor will allow that Celerity, wherewith the Muscles act at the Command of the Will, to be owing to the Velocity of the Juice sent thro the Nerve, but to an Impression given to one extremity of the Thread, and communicated thro all the intermediate Parts to the other Extremity; supposing the Nerves in their natural State to be turgid, and full of Spirits; so that if the Extremity in the Sensory be ever so little press'd by the Accession of any new Spirit, as much will be instantly expell'd at the other Extreme, and *vice versa*; a small Impression given to the outer Extremity of the Nerve will immediately move the other Extremity open to the Sensory, so that part of it will drop out: Which accounts for Sensation, as well as *Muscular Motion*.

Lastly, Dr. Lower and Mr. Cooper, and after them, Dr. Morgan, the latest Writer on the Subject, setting aside all adventitious Fluids, account for *Muscular Motion* from the intrinsic Elasticity of the nervous *Fibrille* contracting and restoring themselves against the stretching Force of the Circulating Blood.

This System, Morgan endeavours to evince from the following Considerations:



1. All the Vessels in an Animal, consisting of flexible, distensible Fibres, are in a state of Tension; i. e. are both stretch'd transversely and longitudinally by their contained Fluids: Thus, e. gr. let a Vein, or Artery be cut, and the opposite Sides of the Vessel will contract, and come nearly to a contact about the Axis; while the two ends receding both ways, leave a Chasm, which shews that the Vessel, while in its natural State, was distended both ways; and, consequently, that Contraction in all their Dimensions, is the natural intrinsic Action of the Vessels or Fibres.

And the same might be deduced, *a priori*, from the Growth of Animals; for by the increased Quantity of the accumulated Blood, the Vessels must necessarily be enlarged every way. Now, against this distending Power of the Fluids, the solid Muscular *Fibrillæ* continually exert a contractive, or restitutive Force, by which they are kept in their proper State of Tension.

2. That this contractive Power of the Muscular Fibres is a natural intrinsic Property of the Fibres themselves, and does not depend on any Mixture, or mutual Action of Fluids, is evident from hence, that these Fibres retain the same Property, after they are taken out of the Body and dried; as we see in Thongs, Cat-gut, and other such like Cords or Strings cut out of the Muscular Coats and Skins of Animals, which may be stretched out to a considerable length beyond their natural State; and when the stretching Force or Weight is taken off, they will immediately contract again by their native Spring.

3. While a Muscle contracts, the Blood is squeezed out, and during its state of Contraction, it is more hard and solid than before; that is, it contains less Blood when contracted, than when stretch'd; which shews, that the Contraction cannot be by the addition of another Fluid from the Nerves mixing with the Blood in the Muscles.

4. No such Fluid in the Nerves could ever be found, as being mixed with the Blood, would occasion such Fermentation or Expansion. But supposing the Muscular Cells thus inflated, no such effect could follow as shortning the Muscle in length, and swelling it in thickness: But the Consequence must be, that the Muscle would be lengthned as well as thickned; that is, it must increase its Dimensions proportionably every way, which is the proper Action of the Fluids on the Solids.

If then it be said, that these Bladders, when the Muscle is stretched, are drawn into oblong Spheroids: and when inflated by the mixture of the nervous Fluid, reduced to a spherical Figure; by which means their Axes are shortened, and their conjugate Diameters enlarged: 'Tis answer'd, that those small Vesicles are soft, flexible, distensible, and equally yielding every way; and since an included expansive Fluid must press its containing Vessels equally yielding every way, and equally expansive; a Vessel, notwithstanding such Distension, must retain its natural Figure, and be equally stretch'd in all Directions.

Again, since the Blood circulates freely thro these Muscular Cells, it is plain, that as soon as they begin to inflate, it must be immediately push'd forward with an increased Velocity in the Course of its Circulation, which must prevent any such Inflation in the Muscles. Before these Vesicles, therefore, can be distended in the manner suppos'd, the Exit of the Fluid must be hindred; that is, the Circulation must be stop'd. If any one doubt of this, let him try whether he can blow up a Bladder, or other Vessel, that is open at both ends, and where the expansive Fluid has as free an Egress as Ingress.

Thus much premised, the natural Action of a Muscle will be easily explain'd. From its Structure, it follows, that on the Contraction of its transverse and spiral Fibres, which are the Ramifications of the Nerves, the longitudinal, red, and fleshy Fibres, or Blood-Vessels, which constitute the Body of the Muscle, must be squeezed and drawn together, as being compell'd to follow the Motion of these elastic Cords; by which means the Blood-Vessels being compress'd, must be forced, with some Impetuosity, thro the Muscle, and propell'd forward in the Course of its Circulation.

Now if the Blood should hereupon stop, and return no more to the Muscle, 'tis plain the Muscle must for ever remain in this contracted State, as its proper and natural State of Quiescence to which it tends, and where it would rest: But the Blood having receiv'd a fresh Impetus by the Contraction, and returning upon the Muscle in the Course of its Circulation, again rushes into the Blood-Vessels, which being enlarged in all their Dimensions by the Force of the returning Blood, the transverse and spiral nervous Fibres must be hereby stretch'd, and the Muscle extended; by this means the Blood-Vessels being brought to their natural extent, and consequently the distending Force of the Blood ceasing, the contractive Power of the Nerves will in that State begin to act again, and restore themselves with the same Force by which they were extended, till the returning Blood re-enters the Muscle, and stretches it again.

MUSÆUM, was originally used to signify a Place in the Palace of *Alexandria*, which took up at least a fourth part of the City; so call'd as being destin'd and set apart to the *Muses*, and the Sciences. See *MUSE*.

Here were lodged and entertained a great number of learned Men, who were divided into Companies or Colleges, according to the Sciences or Sects whereof they were Professors.

To each House or College, was allotted a handsome Revenue.

This Establishment is attributed to *Ptolemy Philadelphus*, who here fixed his Library. See *LIBRARY*.

Hence the word *Museum* has pass'd into a general Denomination, and is now apply'd to any Place set apart as a Repository of Things that have some immediate Relation to the Arts or the *Muses*, whence the Word first took its Rise. See *REPOSITORY*, &c.

The *MUSEUM* at *Oxford*, call'd the *Ashmolean MUSEUM*, is a noble Pile erected at the Expence of the University, for the promoting and carrying on several Parts of curious and useful Learning. It was begun in 1679, and finished in 1683; at which time, a valuable Collection of Curiosities was presented to the University by *Elias Ashmole Esq*; and the same day there repositied, and afterwards digested and put in a just order by *Dr. Plott*, who was constituted first Keeper of the *Museum*.

Divers considerable Accessions have been since made to the *Museum*; as of Hieroglyphics, and other *Egyptian* Antiquities by *Dr. Huntington*; of an entire Mummy by *Mr. Goodyear*; of a Cabinet of natural Rarities by *Dr. Lister*; as also of divers *Roman* Antiquities, Altars, Medals, Lamps, &c.

Over the Entrance of the *Museum* is this Inscription;

MUSEUM ASHMOLEANUM, SCHOLA NATURALIS HISTORIÆ, OFFICINA CHYMICA.

MUSES, Fabulous Divinities of the antient Heathens, who were supposed to preside over the Arts, and Sciences:

The Antients admitted nine *Muses*, and made them the Daughters of *Jupiter* and *Mnemosyne*, or Memory.

At first, indeed, their Number was but three, viz. *Melere*, *Mneme*, and *Aade*; *Greek* Words signifying Memory, Singing, and Meditation. But a certain Sculptor of *Sicyon* having Orders to make three Statues of the three *Muses* for the Temple of *Apollo*, and mistaking his Instructions, made three several Statues of each *Muse*; these however were found so beautiful, that they were all set up in the Temple, and from that time they began to reckon nine *Muses*: To whom *Hesiod* afterwards gave Names; viz. *Calliope*, *Clio*, *Erato*, *Thalia*, *Melpomene*, *Terpsichore*, *Euterpe*, *Polhymnia*, and *Urania*.

Each of these were supposed to preside over their respective Art; *Calliope* over Heroic Poetry; *Clio* over History; *Melpomene* over Tragedy; *Thalia* over Comedy; *Euterpe* over Wind-Music; *Urania* over Astronomy; *Terpsichore* over the Harp; *Erato* the Lute; *Polhymnia* Rhetoric.

They are painted Young, Handsome, and Modest, agreeably dress'd and crown'd with Flowers. Their usual Abodes were about Mount *Helicon* in *Boeotia*, and Mount *Parnassus* in the *Phocide*. Their Business was to celebrate the Victories of the Gods, and to inspire and assist the Poets; and hence the Custom of Invoking their Aid at the beginning of a Poem. See *INVOCATION*.

It must not, however, be imagined, that the Deities thus invoked, are consider'd even by the antient Poets themselves as Divine Persons, from whom they expect any real Help. Under the Name of *Muse* they wish for the Genius of Poetry, and all the Conditions and Circumstances necessary for a happy Execution of their Undertaking.

They are mere Allegories and Manners of expressing themselves poetically; as when they make Gods of Sleep, of Fame, of Revenge, and other natural and moral things. See *GOD*.

Accordingly, the *Muses* are of all Ages, Countries, and even of all Religions. There are Christian as well as Heathen *Muses*, *Latin*, *Greek*, *English*, *French*, &c. There are also new *Muses*, which appear every day in favour of those who, disdaining things too trite and common, chuse to strike out of the Road.

When *Virgil* wrote his *Eclogues*, he invoked the *Sicilian Muse*, because he imitated *Theocritus*; and the *Sicilian* Poet having succeeded; the *Roman* begg'd for a Genius as happy as that of this Islander.

The *Muses* of the Poet *Lucretius* had never inspired any Person before him. 'Tis plain, from the Doctrine of his Book, what kind of Divinity it was he invoked. He addresses himself to *Venus*, but at the same time tells us, that none of the Gods trouble themselves with human Affairs. His *Muses* therefore must of necessity be mere Allegories.



The Word *Muse*, according to *Phornutus*, is derived from the Greek *μῦσας*, which signifies the same with *ζῆλον*, to search. Others derive it from *ἰσολογον*, similar, or alike; all the Sciences being bound and united together. *Eusebius* derives it from *μύω*, to initiate, to instruct. *Plato* and *Scaliger* from *μαῖωσας*, *obstetricare*, because to them are attributed the Invention of the Arts; and 'tis they who produced them. Lastly, *Heinsius* and *Vossius* derive it from the Hebrew *מוסר* *Musar*, Science, *Disciplina*.

The *Muses* are call'd by various Names; *Camene*, *Heli-coniades*, *Parnassides*, *Aonides*, *Pierides*, *Pegafides*, *Aganippides*, *Thespiades*, *Libetrides*, and *Castalides*.

**MUSHROOM**, or **MUSHROON**, in Natural History, a Plant, of a Form and Structure very different from that of all other Plants; having neither Seeds, nor Flowers, that have ever yet been discover'd. See **PLANT**, **SEED**, &c.

There are various kinds of *Mushrooms*; and the Vulgar call by this Name all that come under the general Head of *Fungus*'s. See **FUNGUS**.

They are all used with some suspicion, tho' some are more harmless, as well as more delicious than others. Those used among us, are *Mushroom of the Wood*, call'd *Morils*, and of the Meadows, call'd *Champignons*, which are gathered in Autumn, and esteemed for their Whiteness above, their Vermilion underneath, and the Sweetness of their Smell.

Mr. *Bradley* mentions a hundred kinds of *Mushrooms*, which he has seen in *England*; besides those very numerous small ones, which constitute the Mouldiness of Liquors, Fruits, &c. which last are such quick Growers, that they arrive at perfection in less than 12 Hours. See **MOULDINESS**.

The *Fungoides* only differs from a *Mushroom* in its external Form; the *Coralloides* are of the same Species, tho' of a different Name, as being branch'd like Coral; and *Truffles* come under the same kind. See **CORALLOIDES**, **TRUFFLES**, &c.

*Matthioli* mentions *Mushrooms* which weigh'd 30 Pounds each, and were as yellow as Gold. *Fer. Imperatus* tells us he saw some which weigh'd above a hundred Pounds; and, to add no more, the *Journal des Savans* furnishes us with an account of some growing on the Frontiers of *Hungary* which were a full Chariot Load.

The Origin and Production of this Plant has extremely puzzled the Botanists. How a Plant should be produced without a Seed, is a Mystery; and yet the best Microscopes are not able to discover any appearance of a Seed; and the manner of cultivating this Plant, seems to make it still more probable that it has not any.

M. *Tournefort* gives a very curious Account of their Culture, in the *Memoirs of the French Academy*, the Substance of which we shall here present the Reader withal.

All the Secret of bringing up *Mushrooms* speedily and in abundance, consists in ranging Balls of Horse-Dung about the bigness of the Fist, in Lines, at the distance of about three Feet from each other, and at the depth of one Foot under Ground, and covering these over with Mould, and that again with Horse-Dung.

If this be done in *April*; in the beginning of *August* the pieces of Dung will begin to whiten, and grow mouldy, being strew'd all over with little Hairs, or fine white Threads, branch'd, and woven about the Straws whereof the Dung is compos'd. The Dung now loses its former excrementitious Smell, and spreads an admirable Odour of *Mushrooms*.

According to all Appearance these white Threads are no other than the open'd Seeds or Buds of *Mushrooms*, which Seeds were before inclos'd in the Dung, but in so small a compass, that they could not be perceiv'd till after they had shot themselves into little Hairs. By degrees the Extremity of these Hairs grows round into a kind of Button, which swelling by little and little, at length opens itself into a *Mushroom*, whereof the lower part is a kind of Pedicle bearded in the place where it enters the Ground, and at the other end loaden with a kind of roundish Capital or Head, in manner of a Calotte, which expands itself without producing either Grains or Flowers that are sensible; the bottom is spread with *Lamina*, which proceeding from the Centre to the Circumference, may be call'd the Leaves of the *Mushroom*.

At the foot of each *Mushroom* are found an infinite number of little ones not bigger than the Head of a Pin, when the others are at their growth. The Buds of the *Mushrooms*, or the white Hairs of the Dung, preserve themselves a long time without rotting, if kept dry; and if laid again on the Ground, will produce.

*Mushrooms*, then, are nothing else but the Produce of what we call the Mouldiness of Horse-Dung: But what Analogy is there between these two things? Or how should so artful and delicate a Structure as this of a Plant result from the mere fortuitous Concourse of a few Juices, differently agitated?

It seems past doubt then, that *Mushrooms*, like all other Plants, have their Origin in Seeds: Now we know that the Seeds of Plants cannot vegetate every where; there are first required certain Juices proper to penetrate their Coats, to excite a Fermentation; and to join themselves to the little parts thereof, and increase them. Hence arises that infinite Diversity of Places, wherein different Species of this Plant are produced. There are some which will only grow on some other particular Plants, whose Trunk, Bark, or Roots, alone have the Juices proper for them.

What M. *Tournefort* mentions from Mess. *Lemery* and *Mery*, is still more surprizing: There is a Species of *Mushrooms* which grow on the Fillets and Bandages apply'd to the Fractures, &c. of the Patients in the *Hotel-Dieu*. After which, it will not be at all surprizing that Horse-Dung prepared in the manner M. *Tournefort* mentions, should be a Soil or Matrix capable of making common *Mushrooms* grow.

Hence it seems to follow, that the Seeds of *Mushrooms* should be spread in an infinite number of Places where they do not vegetate, and in a word throughout the whole Earth; and the same may be said of a great number of other Plants.

It must be own'd, the Imagination is shock'd at such a prodigious Multitude of different Seeds, thrown every where at random, and in many Places to no purpose; but a little Reasoning will put the Matter of Fact past doubt.

*Dioscorides* tells us, he was assured that Pieces of the Bark of the Poplar-Tree being laid in the Ground over Horse-Dung, there would grow out of them very good *Mushrooms*. *Ruel* says, that by boring the Trunk of a white Poplar-Tree near the Root, and washing it with Leven steep'd in Water, *Mushrooms* spring out of it, as it were, instantly. He adds, that the Hillocks produce several kinds of *Mushrooms*, if the Stubble be burnt on 'em in the rainy Season.

M. *Tournefort* tells us, on his own Knowledge, that where the Stubble is burnt in *Provence*, *Languedoc*, and the Islands of the *Archipelago*, there arise great Quantities of black Poppies in the first Autumnal Rains, which disappear the Year following; so that they are never found but on burnt Lands. And we know that after the Burning of *London*, the Ground as far as the Fire reach'd, shot up with vast Quantities of *Erysimum Latifolium Majus Glabrum*. One of the chief Reasons, if not the only one, why Mountains produce Plants different from the Plains or Valleys; Places become fenny, from the same Places when they were dry; is the difference in the nutritious Juices found in those Places. Without this, how shall we account for the Origin of Mistletoe or *Hypocystus*, which are never known to grow in the Earth, at least without adhering to some other Plant; the one growing on Trees, the other to the Root of the *Cystus*? Why do the Ivy and Vine of *Canada*, the Pellitory, Polypody, the Species of Capillaries, grow only on the Trunks of Trees, on Walls, and in the Clefts of Rocks, unless it be that the Juices of those Places are the best adapted to them?

These and other incontestable Facts prove plainly both the vast Multitude of Seeds dispersed every where, and the Necessity of certain Circumstances to make 'em vegetate.

If to this Speculation on the invisible Seeds of Plants, we join that of the invisible Eggs of Insects, which must be allow'd equal thereto, the Earth will be found full of an inconceivable Infinity of Animals and Vegetables, perfectly form'd, and designed, as it were, in Miniature, and only waiting for certain favourable Circumstances to enable them to make their Appearance in large. How rich then mult the Hand be, that has sown with so much Profusion?

We have been the more particular on this Head, on account of the Oddness of the Phenomena; and because what is here said of *Mushrooms* will give light into the Generation of all other Vegetables, &c. whose Seeds are yet undiscovered.

Dr. *Lifter*, indeed, thinks he has found out the Seeds of *Mushrooms*. He instances particularly in the *Fungus Porosus*, *Crassus magnus* L. B. the Texture of whose Gills is like a Paper prick'd full of Pin-holes. These Gills, he makes no doubt, are the very Flower and Seed of this Plant; when it is ripe, the Gills are easily separable from the rest of the Head, each Seed being distinct from other, and having its Impression in the Head of the *Mushroom*, just as the Seed of an Artichoke hath in the bottom of it; the bigger end of the Seed is full and round, and they are dispos'd in a spiral Order like those of the Artichoke: And the same he thinks of all other *Mushrooms*, however differently figured. If it happens that these, when sown, prove sterile, and don't produce their Kind, it is no wonder; there being whole Genus's of Plants that come up, and flower, and seed, yet their Seed was never known to produce Plants of their Kind, being no more than a barren volatile Dust, as all the Orchides, or Bee-Flowers.



**MUSIC**, the Science of Sound, consider'd as capable of producing Melody, or Harmony: or, the Art of disposing and conducting Sounds, consider'd as grave and acute; and of proportioning them among themselves, and separating them by just Intervals, pleasing to the Sense. See **SOUND**.

Mr. *Malcolm* better defines *Musica*, a Science that teaches how Sounds under certain Measures of Tune, and Time, may be produc'd, and so order'd or dispos'd, as either in Consonance (*i. e.* joint Sounding) or Succession, or both, as they may raise agreeable Sensations.

From this Definition, the Science naturally divides itself into two general Parts, *Speculative* and *Practical*.

The first, the Knowledge of the *Materia Musica*, or how to produce Sounds in such Relations of Tune, and Time, as shall be agreeable in Consonance, or Succession, or both: By which, we don't mean the actual Production of these Sounds by an Instrument or Voice, which is merely the mechanical or effective Part; but the Knowledge of the various Relations of Tune and Time, which are the Principles, out of which the Pleasure sought derives. See **TUNE**.

The 2d, How these Principles are to be apply'd; or how Sounds, in the Relations they bear to *Musica* (as those are determin'd in the first part) may be order'd, and variously put together in Succession and Consonance, so as to answer the End: And this we call the Art of *Composition*, which is properly the practical Part of *Musica*. See **COMPOSITION**.

Some add a third Branch, *viz.* the Knowledge of *Instruments*; but as this depends altogether on the first, and is only an Application or Expression of it, it cannot come regularly under the Definition, and consequently is no part of the Division of the Science.

The first Branch, which is the contemplative Part, divides itself into these two, *viz.* the Knowledge of the Relations and Measures of Time, and the Doctrine of Time itself.

The former is properly what the Antients call'd *Harmonica*, or the Doctrine of Harmony in Sounds, as containing an Explication of the Grounds, with the various Measures and Degrees of the Agreement of Sounds, in respect of their Tune. See **HARMONICA**.

The latter is what they call'd *Rythmica*, because it treats of the Numbers of Sounds or Notes with respect to Time; containing an Explication of the Measures of long and short, or swift and slow, in the Succession of Sounds. See **RYTHMICA**.

The second Branch, which is the practical part, as naturally divides into two parts, answering to the parts of the first.

That which answers to the *Harmonica*, the Antients call'd *Melopoia*, because it contains the Rules of making Songs, with respect to Tune, and Harmony of Sounds; tho we have no reason to think the Antients had any thing like Composition in Parts. See **MELOPOEIA**.

That which answers to the *Rythmica*, they call'd *Rythmopoia*, containing Rules for the Application of the Numbers and Time. See **RYTHMOPOEIA**.

We find a strange Diversity in the antient Writers, as to the Nature, Office, Extent, Division, &c. of *Musica*.

The Name is suppos'd originally form'd from *Musa*, Muse; the Muses being suppos'd to be the Inventors thereof. *Kircher*, however, will have it take its Name from an Egyptian Word, as supposing its Restoration after the Flood to have begun there, by reason of the Reeds, &c. on the Banks of the Nile. *Hesychius* tells us, the *Athenians* gave the Name *Musica* to every Art.

*Hermes Trismegistus* defines *Musica* to be the Knowledge of the Order of all things; which is also the Doctrine of the *Pythagorean* School, and of the *Platonists*, who teach, that every thing in the Universe is *Musica*.

Agreeable to which wide Sense, some divide *Musica* into *Divine* and *Mundane*.

The first respecting the Order and Harmony that obtains among the Celestial Minds; the other, the Relations and Order of every thing else in the Universe. *Plato*, however, by the *Divine Musica*, understands that which exists in the Divine Mind, *viz.* those Archetypal Ideas of Order and Symmetry, according to which God formed all things: And as this Order exists in the Mundane Creatures, he calls it *Mundane Musica*.

Which last Species they again subdivided into four, *viz.*

1. *Elementary Musica*, or the Harmony of the Elements of Things.

2. *Celestial Musica*, or the *Musica* of the Spheres; comprehending the Order and Proportions in the Magnitudes, Distances and Motions of the heavenly Bodies, and the Harmony of the Sounds resulting from those Motions.

3. *Human Musica*, which consists chiefly in the Harmony of the Faculties of the human Soul, and its various Passions; and is also consider'd in the Proportion, Temperament and mutual Dependence of the Parts of the Body.

4. What, in the proper and limited sense of the Word, is call'd *Musica*; which has for its Object, Motion, consider'd

as under certain regular Measures and Proportions, by which it affects the Senses in an agreeable manner.

Now as Motion belongs to Bodies, and as Sound is the Effect of Motion, and cannot be without it, but all Motion does not produce Sound; hence this last Branch of *Musica* became subdivided.

Where the Motion is without Sound, or as 'tis only the Object of Sight, it was either call'd *Musica Orchestra* or *Saltatoria*, which contains the Rules for the regular Motions of Dancing; or *Musica Hypocritica*, which respects the Motion and Gestures of the Pantomimes.

When the Motion is perceiv'd only by the Ear, *i. e.* when Sound is the Object of *Musica*, there were three Species; *viz.* *Harmonica*, which considers the Differences and Proportions with respect to Grave and Acute; *Rythmica*, which respects the Proportion of the Sounds as to Time, or the Swiftness and Slowness of their Successions; and *Metrica*, which belongs properly to the Poets, and respects the Art of making Verses.

*Aristides Quintilianus*, *Bacchius*, and other antient Writers, define *Musica* the Knowledge of Singing, and of the Things belonging thereto; which he calls the Motions of the Voice and Body: as if the Singing itself consisted only in the different Tones of the Voice.

The same Author, considering *Musica* in the largest sense of the Word, divides it into *Contemplative* and *Active*. The first, he says, is either *Natural* or *Artificial*. The *Natural* is either *Arithmetical*, because it considers the Proportion of Numbers; or *Physical*, which examines the Order of the Things of Nature.

The artificial he divides, as above, into *Harmonica*, *Rythmica*, *Metrica*.

The active, which is the Application of the artificial, is either *Enuntiative* (as in Oratory;) *Organical* (or Instrumental Performance;) *Odical* (for Voice and singing of Psalms;) *Hypocritical*, in the Motions of the Pantomimes. To which some add *Hydraulical*, tho' in reality no more than a Species of the *Organical*; in which, Water is used, for the producing or modifying of Sound.

*Porphyry* makes another Division of *Musica*, taking it in the limited Sense, as having Motion both dumb and sonorous for its Object; and without distinguishing the Speculative and Practical, he makes its Parts these six, *viz.* *Rythmica*, for the Motions of Dancing; *Metrica*, for the Cadence and Recitation; *Organica*, for the Practice of Instruments; *Poetica*, for the Numbers and Feet of Verses; *Hypocritica*, for the Gestures of the Pantomimes; and *Harmonica*, for Singing.

The *Musical Faculties*, as they call them, are *Melopoia*, which gives Rules for the Tones of the Voice or Instrument; *Rythmopoia*, for Motions; and *Poesis*, for making Verses.

*Musica* appears to have been one of the most antient of Arts. And of all others, *Vocal Musica* must undoubtedly have been the first Kind. For Man had not only the various Tones of his own Voice to make his Observations on, before any other Art or Instrument was found out, but had the various natural Strains of Birds, to give him occasion to improve his own Voice, and the Modulations of Sounds it was capable of.

Of many antient Authors who agree in this Conjecture, we shall only mention *Lucretius*, who says,

*At Liquidas Avium Voces imitauer Ore,  
Ante fuit multo quam levia Carmina Cantu,  
Concelebrare Homines possent, Auresque juvare.*

The first Invention of string'd Instruments he ascribes to the Observation of the Winds whistling in the hollow Reeds.

As for other kind of Instruments, there were so many Occasions for Chords or Strings, that Men could not be long in observing their various Sounds, which might give Rise to string'd Instruments. See **CHORD**.

And for the pulsatile Instruments, as Drums and Cymbals, they might arise from the Observation of the hollow Noise of concave Bodies.

*Plutarch*, in one place, ascribes the first Invention of *Musica* to the God *Apollo*, and in another to *Amphion*, the Son of *Jupiter* and *Antiope*. This last, however, is pretty generally allow'd to have been the first who brought *Musica* into Greece, and to have been the Inventor of the *Lyre*. The Time he lived in, is not agreed upon. See **LYRA**.

To him succeeded *Chiron*, the Demi-God; *Demodocus*; *Hermes Trismegistus*; *Olympus*; *Orpheus*, whom some make the first Introducer of *Musica* into Greece, and the Inventor of the *Lyra*; *Phemius*; *Terpander*, who was Contemporary with *Lycurgus*, and set his Laws to *Musica*. To him some attribute the first Institution of Musical Modes, and the Invention of the *Lyre*; *Thales*; and *Thamyris*, who is said to have been the first Inventor of Instrumental *Musica* without Singing.

These



These were the eminent Musicians before *Homer's* Time. Others of a later Date, were *Lafus Hermionensis*, *Melinipides*, *Philoxenus*, *Timotheus*, *Phrynnis*, *Epigonius*, *Lyfander*, *Simmicus*, and *Diodorus*; who were all considerable Improvers of Music. *Lafus* is said to have been the first Author who wrote on Music in the Time of *Darius Hystaspes*; *Epigonius* invented an Instrument of forty Strings, call'd the *Epigonium*. *Simmicus* also invented an Instrument, call'd *Simmicum*, of thirty-five Strings. *Diodorus* improv'd the *Tibia*, by adding new Holes; and *Timotheus* the *Lyre*, by adding a new String; for which he was fined by the *Lacedaemonians*.

As the Accounts we have of the Inventors of Musical Instruments among the Antients, are very obscure; so are also the Accounts what those Instruments were; we scarce knowing any thing of them besides the bare Name.

The general Division of Instruments, is into *Stringed Instruments*, *Wind Instruments*, and the *Pulsatile Kind*. Of *Stringed Instruments*, we hear of the *Lyra* or *Cythara*, the *Psalterium*, *Trigon*, *Sambuca*, *Pectis*, *Magadis*, *Barbiton*, *Testudo*, *Epigonium*, *Simmicum*, and *Pandura*, which were all struck with the Hand, or a *Plectrum*; and which see in their Places.

Of *Wind Instruments*, we hear of the *Tibia*, *Fistula*, *Hydraulic Organs*, *Tuba*, *Cornua*, and *Lituus*.

The *Pulsatile Instruments*, were the *Tympanum*, *Cymbalum*, *Crepitaculum*, *Tintinnabulum*, *Crotalum*, and *Sistrum*; which see.

Music has even been in the highest Esteem in all Ages, and among all People. Nor could Authors express their Opinion of it strongly enough, but by inculcating, that it was used in Heaven, and was one of the principal Entertainments of the Gods, and the Souls of the Blessed.

The Effects ascribed to it by the Antients, are almost miraculous; by means hereof, Diseases are said to have been cured, Unchastity corrected, Seditions quell'd, Passions rais'd and calm'd, and even Madness occasion'd. *Athenaeus* assures us, that antiently all Laws Divine and Civil, Exhortations to Virtue, the Knowledge of Divine and Human Things, Lives and Actions of illustrious Men, were written in Verse, and publickly sung by a Chorus to the Sound of Instruments; which was found the most effectual means to impress Morality, and a right Sense of Duty on the Mind.

Music made a great part of the Discipline of the antient *Pythagoreans*, and was used by them to draw over the Mind to laudable Actions, and settle in it a passionate Love of Virtue. It being their Doctrine, that the Soul itself consists of Harmony; and therefore by Music, they pretended to revive the primitive Harmony of its Faculties. By this primitive Harmony, they meant that which, according to their Dogma, was in the Soul, in its pre-existent State in Heaven. See *Pythagorean*.

*Dr. Wallis* has endeavour'd to account for the surprising Effects ascribed to the antient Music; and charges them principally on the Novelty of the Art, and the Hyperbola's of the antient Writers: Nor does he doubt but the modern Music, *ceteris paribus*, would produce Effects at least as considerable as the antient. The truth is, we can match most of the antient Stories of this kind in the modern Histories. If *Timotheus* could excite *Alexander's* Fury with the *Phrygian* Sound, and sooth him into Indolence with the *Lydian*; a more modern Musician is said to have driven *Eric* King of *Denmark* into such a Rage, as to kill his best Servants. *Dr. Nierwint* tells us of an *Italian*, who by varying his Music from brisk to solemn, and so *vice versa*, could move the Soul, so as to cause Distraction and Madness. And *Dr. South* has founded his Poem, call'd *Musica Incantans*, on an Instance he knew of the same thing.

Music, however, is not only found to exert its Force on the Affections, but on the Parts of the Body also; witness the *Gasean* Knight, mention'd by *Mr. Boyle*, who could not contain his Water at the playing of a Bag-pipe; the Woman, mention'd by the same Author, who would burst out in Tears at the hearing of a certain Tune, with which other People were but little affected: To say nothing of the trite Story of the *Tarantula*. We have an Instance in the History of the *French Academy*, of a Musician's being cured of a violent Fever, by a little Concert occasionally play'd in his Room.

Nor are our Minds and Bodies alone affected with Sounds, but even inanimate Bodies. *Kircher* tells us of a large Stone, that would tremble at the Sound of one particular Organ-pipe; and *Morhoff* mentions one *Petter*, a *Dutch man*, who could break Rummer-Glasses with the Tone of his Voice. *Mersenne* also tells us of a particular Part of a Pavement, that would shake and tremble, as if the Earth would open, when the Organs play'd. *Mr. Boyle* adds, that Seats will tremble at the Sound of Organs; that he has felt his Hat do so under his Hand, at certain Notes both of Organs and Discourse; and that he was well inform'd, every well built Vault would answer some determinate Note.

There is a great Dispute among the Learned, whether the Antients or Moderns best understood and practis'd Music: Some maintaining that the antient Art of Music, by which such wonderful Effects were perform'd, is quite lost; and others, that the true Science of Harmony is now arriv'd to much greater Perfection, than was known or practis'd among the Antients.

This Point is no other way to be determined, but by comparing the Principles and Practice of the one with those of the other.

As to the Theory or Principles of Harmonics, 'tis certain we understand it better than they; because we know all that they knew, and have improved considerably on their Foundations. The great Dispute then lies on the Practice.

With regard to this, it may be observ'd, that among the Antients, Music, in the most limited Sense of the Word, included Harmony, Rhythm, and Verse; and consisted of Verses sung by one or more Voices alternately; or in Choirs, sometimes with the Sound of Instruments, and sometimes by Voices only.

Their Musical Faculties, we have already observed, were *Melopœia*, *Rhythmopœia*, and *Pœsis*. The first whereof may be consider'd under two Heads, viz. *Melody* and *Symphony*. As to the latter, it contains nothing but what relates to the Conduct of a single Voice, or making what we call *Melody*. Nor do they appear to have ever thought of the Concert, or Harmony of Parts. This then was no part of the antient Practice, but entirely a modern Invention, to which we are beholden to *Guido Aretinus*, a *Benedictine* Friar. We would not, however, be understood to mean, that the Antients never join'd more Voices or Instruments than one together in the same Symphony; but that they never join'd several Voices, so as that each had a distinct and proper Melody, which made among them a Succession of various Concords, and were not in every Note Unisons, or at the same Distance from each other as Octaves. This last indeed agrees to the general Definition of the Word *Symphonia*; yet 'tis plain that in such Cases, there is but one Song, and all the Voices perform the same individual Melody. But when the Parts differ, not by the Tension of the whole, but by the different Relations of the successive Notes, this is the modern Art, which requires so peculiar a Genius, and on which account the modern Music has much the advantage of the antient. For further satisfaction on the Subject, see *Kircher*, *Perrault*, *Dr. Wallis*, *Mr. Malcolm*, and others; who unanimously agree, that after all the pains they have taken to know the true State of the antient Music, they could not find the least reason to think there was any such thing in their Days as Music in Parts. See *SYMPHONY*, *SYNAULIA*, &c.

The antient Musical Notes are very mysterious and perplexed: *Boetius* and *Gregory the Great* first put 'em into a more easy and obvious Method. It was in the Year 1234, that *Guido Aretine*, a *Benedictine* of *Aretium* in *Tuscany*, first introduced the Use of a Staff with five Lines, on which, with the Spaces, he marked his Notes by setting a Point up and down upon 'em, to denote the Rise and Fall of the Voice; tho *Kircher* mentions this Artifice to have been in use before *Guido's* Time. See *NOTE*, *STAFF*, &c.

Another Contrivance of *Guido's* was to apply the six Musical Syllables *ut, re, mi, fa, sol, la*, which he took out of the *Latin Hymn*,

|                 |                 |
|-----------------|-----------------|
| UT queant Laxis | REsonare fibris |
| Mira Gestorum   | FAMuli tuorum   |
| SOLve polluti   | LABii reatum.   |
| O Pater Alme.   |                 |

Beside his Notes of Music, by which, according to *Kircher*, he distinguished the Tones, or Modes, and the Seats of the Semi-tones, he also invented the Scale, and several Musical Instruments, call'd *Polyplectra*, as Spinets and Harpsicords. See *NOTE*, *GAMUT*, &c.

The next considerable Improvement was in 1350, when *Joannes de Muris*, Doctor at *Paris*, invented the different Figures of Notes, which express the Times, or Length of every Note, at least their true relative Proportions to one another, now call'd *Longs*, *Breves*, *Semi-breves*, *Crotchets*, *Quavers*, &c.

The most antient Writer of Music, we have already observed, was *Lafus Hermionensis*; but his Work, as well as those of many others both *Greek* and *Roman*, are lost. *Aristoxenus*, Disciple of *Aristotle*, is the eldest Author extant on the Subject; after him came *Euclid*, Author of the *Elements*: *Aristides Quintilianus* wrote after *Cicero's* time. *Mypius* stands next; after him *Gaudentius* the Philosopher, and *Nicomachus* the *Pythagorean*, and *Bacchius*. Of which seven *Greek* Authors, we have a fair Copy, with a Translation and Notes, by *Meibomius*. *Ptolemy*, the celebrated Mathematician, wrote in *Greek* of the Principles of Harmonics, about the time of the Emperor *Antoninus Pius*. This Author keeps a Medium between the *Pythagoreans* and *Alexandrians*.



*He was succeeded at a good distance by Manuel Bryennius.*

Of the *Latins* we have *Boethius*, who wrote in the time of *Theodoric the Goth*, and one *Cassiodorus*; about the same time *Martianus*, and *St. Augustin* not far remote. Of the *Moderns* are *Zarlino*, *Salinas*, *Vincenzo Galileo*, *Doni*, *Kircher*, *Mersenne*, *Paran*, *de Caux*, *Perrault*, *Wallis*, *Des Cartes*, *Holdsworth*, *Malcolm*, &c.

MUSICAL Sound, }  
MUSICAL String, } See { SOUND.  
MUSICAL Faculties, } CHORD.  
MUSICAL Notes, } MUSIC.  
MUSK, a kind of Perfume, of a very strong Scent; only agreeable when moderated by the Mixture of some other Perfume. See PERFUME.

It is found in a kind of Bag, or Tumour growing about the bigness of a Hen's Egg under the Belly towards the genital Parts of a wild Beast of the same Name; and appears to be nothing else but a kind of bilious Blood there congealed, and almost corrupted.

The Animal is pretty common in the Kingdoms of *Bourbon*, *Tonquin*, and some other, as *Cochin China*, &c. But the most esteemed are those in the Kingdom of *Tibet*.

They inhabit the Woods and Forests, where the Natives hunt 'em down: when the Beast is kill'd, they cut out the Bladder under the Belly, separate the coagulated Blood, and dry it in the Sun, where it is reduced into a light friable Substance almost of the nature of a Powder, of a dusky reddish Colour; and acquires a very strong and disagreeable Smell. It is then tied up again in Vessels, and exported to other Countreys; and this is the *Musk* which we use.

What the Antients have wrote of it, is fabulous, viz. that it comes from the Testicles of a Castor, which, to stop the pursuit of the Hunter, castrates itself. The occasion of their Error may be owing to this, that among the *Indians* the *Musk* Animal goes by the name of *Castor*.

*Musk* is in considerable use among the Perfumers and Confectioners; tho much less now than formerly. It is supposed to fortify the Heart and Brain; and is good against Deatness; but is little used in Medicine, as being apt to occasion the Vapours.

The Word comes from the *Arabic* *Moscha*, *Musk*: whence was form'd the common *Greek* *μοσχον*.

MUSKET, or MUSQUET, a Fire-Arm bore on the Shoulder, and used in War; to be fired by the Application of a lighted Match. See FIRE-ARM.

The length of the *Musket* is fixed to three Feet eight Inches from the Muzzle to the Touch-Pan, and its Bore is to be such as may receive a Ball of 22 to 24 in a Pound.

*Muskets* were antiently bore in the Field by the Infantry; at present they are little used save in the Defence of Places.

MUSKET-TOON, a little *Musquet*, shorter, tho thicker than the ordinary *Musquet*.

It is fired by the collision of a Steel and Flint in the Lock; whereas the *Musquet* is fired by a Match. Its Bore is a 38th part of its Length; and carries five Ounces of Iron, or seven and a half of Lead, with an equal Quantity of Powder.

MUSSLIN, MUSLIN, or MOUSSELIN, a fine Cloth, wholly of Cotton; so call'd as not being even, but having a downy Nap on its Surface resembling Moss, which the *French* call'd *Mouffe*.

There are various kinds of *Muslins* brought from the *East-Indies*, chiefly *Bengall*; *Betelles*, *Tarnatans*, *Mallemolles*, *Tanjels*, *Terindames*, *Doreas*, &c.

MUST, sweet Wine, newly pressed from the Grape; or the new Liquor press'd from the Fruits before it has work'd or fermented. See WINE.

MUSTARD, a Preparation of a Grain of that Name, ground or beaten up with Vinegar, or the *Must* of Wine; whence its Name.

MUSTARD-SEED, in *Latin* *Sinapi*, gives the Denomination to a Species of Topical Medicines call'd *Sinapijms*. See SINAPISM.

*Mustard-Seed* is also used in preparing Chagrine. See CHAGRINE.

MUSTER, a Review of Military Forces, in order to take account of their Numbers, Condition, Accoutrements, Arms, &c.

The Word is form'd of the *French* *Moustre*, Specimen. See REVIEW.

MUSTER of Record (*Stat. 18 Hen. 6.*) is to be enrolled in the Number of the King's Soldiers. See ROLL.

MUSTER-Master General, or Master of the King's MUSTERS, is an Officer in an Army, who takes account of every Regiment, their Number, Horses, Arms, &c.

MUSTER-Rolls, are Lists of the Soldiers in every Troop, Company, Regiment, &c.

MUSULMAN, a Title by which the *Mahometans* distinguish themselves; signifying, in their Language, True

Believer, or Orthodox. In *Arabic* they call it *Maslem*, *Mosleman*, and *Mosolmam*. See MAHOMETAN.

The Name was first given the *Sarazens*; as is observed by *Leunclavius*. There are two kinds of *Mussulmen*, very averse to each other; the one call'd *Sonni*, and the other *Chay*. The *Sonni* follow the Interpretation of the *Alcoran* given by *Omer*; and the *Chay* are Followers of *Haly*. The Subjects of the King of *Persia* are *Chay*; and those of the Grand Signor, *Sonni*.

Some Authors will have it, that *Mussulman* signifies *Saved*, that is, Predestinated; and that the *Mahometans* give themselves the Appellation, as believing themselves all Predestinate.

*Martinius* is more particular as to the Origin of the Name, he derives it from the *Arabic* *مخلص* *Musalam*, *Saved*, taken out of Danger; and observes, that the *Mahometans* establishing their Religion by Fire and Sword, massacred all those who would not embrace it, and granted Life to all that did, calling them *Mussulmans*; i. e. *Erepti à periculo*, whence the Word, in course of Time, became the distinguishing Title of all those of that Sect, who have affixed to it the signification of *True Believer*.

MUSULMANISM, see MAHOMETANISM.

MUTATION, the Act of Changing: or, sometimes the Change itself. See CHANGE and PERMUTATION.

'Tis one of the Laws of Nature, that the *Mutation* of Motion is ever proportional to the moving Force impress'd. See NATURE.

MUTATION, in the antient Music, signifies the Changes, or Alterations that happen in the Order of the Sounds which compose the Melody.

*Aristoxenus* says it is, as it were, a kind of Passion in the Order of the Melody. See MELODY.

The Changes are, first, in the *Genera*; when the Song begins in one, as the *Chromatic*, and passes into another, as the *Diatonic*. Secondly, In the *Sytem*; as when the Song passes out of one *Tetrachord*, as *Meson*, into another, as *Diazeugmenon*; or more generally, when it passes from a high place of the Scale to a lower, or contrarily, i. e. part of it is sung high, and part low. Thirdly, In the *Mode* or *Tone*, as when the Song begins in one, as the *Doric*; and passes into another, as the *Lydian*. Fourthly, In the *Melopœia*, that is, when the Song changes the very Air, so as from Gay and Sprightly, to become Soft and Languishing; or from a Manner that expresses one Passion or Subject, to the Expression of some other.

MUTE, in Grammar, a Letter which is not sounded, or heard in the Pronunciation; or a Letter which yields no Sound of itself and without a Vowel. See LETTER.

The Consonants are ordinarily distinguished into *Mutes* and *Liquids*, or half Vowels. See CONSONANT.

The *Mutes* in the *English* Alphabet are Eleven, viz. B, C, D, G, H, K, P, Q, T. They are call'd *Mutes* because a Liquid can't be sounded in the same Syllable before them, as *rho*; but a *Mute* may be pronounced in the same Syllable before a Liquid, as *pro*. See LIQUID.

MUTE, Dumb, a Person that cannot speak, or has not the use of Speech. See DUMBNESS.

*Mutes* and *Dwarfs* make their Fortune in the Grand Signor's Seraglio. The *Mutes* serve as Executioners to take off Persons of the first Rank.

MUTE, in Law, he that stands Dumb, or Speechless.

A Prisoner may stand *Mute* two manner of ways; 1. When he speaks not at all: In which Case it is enquired, whether he stand *Mute* of Malice, or by the Act of God: If by the latter, then the Judge, *ex Officio*, ought to enquire whether he be the same Person; and of all other Pleas, which he might have pleaded if he had not stood *Mute*. 2. He is said to be *Mute* when he pleads not Guilty, or does not directly answer, or will not put himself upon the Enquest to be tried.

MUTILATION, the retrenching, or cutting away of any Member of the Body.

The use of the Word is also extended to Statues and Buildings, where any part is wanting, or the Projecture of any Member is broke off.

MUTILATION is sometimes understood in a more immediate manner for *Castration*. See CASTRATION.

MUTUAL, a relative Term, denoting something that is reciprocal between two or more Persons. See RECIPROCAL.

Thus we say *Mutual Assistance*, *Mutual Aversion*, &c.

There are *Mutual*, or reciprocal Duties, Offices, &c, between Superiors, and Inferiors; the King and his Subjects; the Master and his Servants, &c.

*Vangelas* makes a Distinction between *Mutual* and *Reciprocal*. *Mutual*, according to him, is understood of what is between two only; and *Reciprocal* of what is between more than two. But this Decision is little regarded in common use.



A **MUTUAL Testament** is that made by two Persons leaving their Effects reciprocally to the Survivor.

**MUTULE, MUTULUS**, in Architecture, an Ornament, otherwise call'd *Modillion*. See **MODILLION**.

The only difference between *Mutule* and *Modillion* consists in this, that the former is used in speaking of the *Doric* Order, and the latter in the *Corinthian*. See **DORIC**, &c.

The *Mutules* in the *Doric* answer to the *Triglyphs*; whence some make *Guttæ*, or Drops to hang. See **GUTTÆ**.

**MUTUUM**, in the Civil Law, is a Loan simply so call'd; or a Contract introduced by the Law of Nations, whereby a thing consisting in Weight, as suppose Bullion; in Number, as Money; or in Measure, as Corn, Timber, Wine, &c. is given to another, upon Condition that he shall return another thing of the same Quantity, Nature, and Value on demand.

This, therefore is a Contract without Reward: So that where Use or Interest arise, there must be some particular Article in the Contract whereon it is founded.

**MUZZLE** of a Gun, is strictly the Moulding or Circle which incompasses, and strengthens the Mouth of it.

**MYLOGLOSSUM**, in Anatomy, a Pair of Muscles thus call'd, because arising about the backside of the *Molares*, or Grinding-Teeth, and inserted into the Ligament of the Tongue; helping to pull it upwards. See **TONGUE**.

These are the same with what Mr. *Cowper* calls *Styloglossum*. See **STYLOGLOSSUM**.

**MYLOHYOIDEUM**, in Anatomy, a broad, but short Muscle lying immediately under the *Breenter* Muscle of the Jaw, and which springing from the lower Margin on each side the under Jaw, is inserted into the Basis of the *Os Hyoides*. See **HYOIDES**.

Besides the common Use ascribed to this Muscle, which is to move the *Hyoides*, the Tongue, and the Larynx both upwards, inwards, and side-ways; its Series of transverse Fibres have a further use when it is at rest; and that is to compress the Glands under the Tongue, and by that means promote the discharge of Saliva into the Mouth from the lower salival Ducts. Whence it is we use this Muscle when we want Saliva in the Mouth.

**MYOCEPHALE**, in Anatomy, a little part of the *Tunica Uvea*; so call'd, as resembling the Head of a Fly. See **UVEA**.

The Word is form'd of the *Greek* *μύα* Fly, and *κεφαλή* Head.

**MYOLOGY**, in Anatomy, a Description of the Muscles; or the Knowledge of what relates to the Muscles. See **MUSCLE**.

Anatomy is divided into *Osteology*, *Myology*, &c. See **ANATOMY**.

The Word is form'd of *μῦς*, *μῦς*, a Muscle, and *λογία*, Discourse.

**MYOMANCY**, a kind of Divination, or Method of foretelling Events by means of Mice. See **DIVINATION**.

Some Authors hold *Myomancy* one of the most ancient Kinds of Divination; and think it is on this account that *Isaiah*, lvi. 17. reckons Mice among the abominable things of the Idolaters. But beside that it is not certain that the Hebrew Word *מִיָּמָה* used by the Prophet, signifies a Mouse; 'tis evident it is not Divination by that Animal, be it what it will, is here spoke of; but the eating it.

**MYOPES**, Persons who are short-sighted; or, as we popularly call it, *Near-sighted*. See **SIGHT**.

*Myopes* are properly such as see remote Objects confusedly, and near ones distinctly. See **MYOPIA**.

The defect of *Myopes* is not in the Optic Nerve, the Pupil, or the like; but in the Form of the Crystalline, or the distance of the Retina from the same. The Crystalline being rounder, or more convex than ordinary, the Rays will be render'd more Convergent than ordinary in passing thro the same (see **REFRACTION**); by this means they will be brought to meet, or concur at the less distance from the Crystalline; so that if the Retina be at its usual distance, they will concur e'er they reach it. 'Tis the too great nearness, then, of the Retina to the Crystalline, that constitutes the *Myopia*.

*Myopes* have their Sight very durable; and rarely come to need Spectacles. See **SPECTACLES**.

Those who labour under the opposite Defect, are call'd *Tresbytes*. See **PRESBYTIA**.

The Word is form'd of *μύα*, Fly; by reason remote Objects appear to them like Flies; or, perhaps, by reason the same Conformation of the Eye is observed in Flies.

**MYOPIA**, *Short-sightedness*, a Confusion or Obscurity of Sight, when directed to remote Objects. See **VISION**, **SIGHT**, &c.

The *Myopia* is owing to the too great Convexity of the Ball of the Eye, and particularly of the Crystalline; whence it happens that the visual Rays concur before they reach the Retina. See **MYOPES**.

For this Reason, to see an Object distinctly, they must either apply it close to the Eye; or use a concave Glass. See **CONCAVE**.

The *Myopia* wears off by time, the Eye growing flatter and flatter as Persons draw towards old Age. See **EYE**.

**MYOTOMIA**, from *μῦς* *Musculus*, a Muscle, and *τομή* *seco*, to cut; is a Dissection of the Muscles.

**MYRIAD**, the Number of Ten Thousand.

Whence *Myriarcha*, a Captain, or Commander of Ten Thousand Men.

**MYRMECIA**, in Medicine, a kind of Wart growing on the Palm of the Hand, and Soal of the Foot; hard, and less than those call'd *Thymi*: they have also deeper Roots, and are more painful. They are usually broad at bottom, and narrow at top.

**MYRMIDONS, MYRMIDONES**, in Antiquity, a People of *Theffaly*, fabled to have arose from Ants, or Pismires, upon a Prayer put up to that purpose by King *Iacus* to *Jupiter*, after his Kingdom had been dispeopled by a severe Pestilence.

In *Homer*, and *Virgil*, the *Myrmidons* are *Achilles's* Soldiers.

**MYRMILLO**, a kind of Gladiator in ancient *Rome*; call'd also *Murmilio*. See **GLADIATOR**.

*Turnebus* derives the Name from the *Myrmidons*.

**MYRABOLANS**, a kind of Medicinal Fruit, brought from the *Indies*; much more used in the *Arabic* than the *Greek* Pharmacy; and more among the Antients than the Moderns; and still more abroad than in *England*.

There are five kinds of *Myrabolans*: The first call'd *Citrine*, of a yellowish red, hard, oblong, and the size of an Olive. The second call'd *black*, or *Indian Myrabolan*, the bigness of an Acorn wrinkled, without Stone. The third, *Chebulæ Myrabolans*, the size of a Date, of a yellowish brown, pointed at the end. The fourth *Emblies*, round, rough, the size of a Gall, of a dark brown. The last call'd *Bellerics*, hard, yellow, round, the size of an ordinary *Prune* less angular than the rest.

*Myrabolans* of each kind are slightly Purgative, and Astringent.

The Word comes from the *Greek* *μύρον* *Unguent*, and *βαλαν* *Acorn*; as being in form of Acorns, and used in Medicine.

**MYRRH**, a kind of Gum, or Resin issuing, by Incision, and sometimes spontaneously, from the Trunk, and larger Branches of a Tree growing in *Arabia*, *Egypt*, and especially *Abyssinia*. See **GUM**.

Authors are not agreed about the Tree which produces this Gum: 'Tis true, they all make it small, and thorny; but disagree about the Form of its Leaves.

The Incisions are made twice a Year, and the *Myrrh* oozing out is received on Rush-Mats, disposed underneath.

The Druggists sell two kinds of *Myrrh*, viz. *Myrrh in Tears*, which they call *Stacte*; the other *Ungulata*, or *Nail'd*.

Of the first kind, the best is in bright yellow, transparent Drops, friable, light, of a strong disagreeable smell: But this is very rare; and most of that in use is the *Nail'd Myrrh*, so call'd from little white Spots observed thereon, much like those on the Nails of the Fingers. The best is in little Masses, or Tears, red, and transparent; which, when broke, contain a kind of unctuous Liqueur, the most precious part of the *Myrrh*, and the real *Stacte* of the Antients. See **STACTE**.

This Gum enters a great number of Medicinal Compositions. Its Bitterness renders it good for the Stomach, and against Worms; 'tis chew'd to prevent Infection from contagious Diseases. Dr. *Quincy* says it is excellent to cleanse and strengthen the Womb, and against tickling Rheums; a good Detergent; and as such much added externally in Unguents for the Healing of Wounds; and makes the principal Ingredient used in Embalming. The Chymists draw from it Oils, Spirits, Tinctures, &c. to which they attribute extraordinary Virtues.

The Word comes from *μύρον*, I run, or trickle.

The Antients had Vessels of a kind of *Myrrh*, call'd *Vasa Myrrhina*, *Myrrhina Potula*, &c. Some say they were made of what we now call *Agat*, others of *Onyx*, others of *Coralline*, and others of a Gum congealed and condensed.

**MYRTIFORMES Caruncule**, in Anatomy, little Caruncles, or fleshy Knots adjoining to, or rather in the Place of the *Hymen* in Women. See **CARUNCLE**.

They are about the bigness of Myrtle-Berries, whence they take their Name; and are supposed by some to be largest in *Maida*, and by degrees to grow less thro the use of *Venery*.

Others, and with more probability, derive them from the broken Membrane of the *Hymen*, whose Fragments shrink up, they take them to be. See **HYMEN**.



**MYRTLE, MYRTLES, the Berries, or Fruit of a Shrub** well known under the Name of *Myrtle*, growing common in *Spain*, especially in the Mountains of *Laserra Morena*, &c.

There are two kinds of *Myrtle*, Male and Female; the latter whereof produces the best Berries, and in the greatest Quantity.

The Fruit is at first green, but becomes black insensibly within; it is a white Seed in form of a Crescent, solid, hard, and of an astringent Taste; while the Fruit continues on the Trees, 'tis succulent and smooth, and only becomes acid and wrinkled, because dried in the Sun for the convenience of Carriage.

They are much used in Medicine, especially in *France*, where they prepare Oils, Syrups, &c. from 'em.

The Perfumers likewise use 'em in their Perfumes, and draw an Essence from 'em. The German Dyers make a blue Colour from 'em. In *England* the Leaves and Branches are used for Tanning of Leather.

**MYSTERY, MYSTERIUM**, something secret, or hidden; impossible, or difficult to be comprehended.

The Word is primarily used in speaking of certain Truths revealed in Scripture, into the understanding whereof human Reason cannot penetrate: Such are the Doctrine of the Trinity, the Incarnation, &c. See **TRINITY**, &c.

The Word comes from the Greek *μυστηριον*; and that, according to some Etymologists, from *μύω* *Claudo*, *taceo*, I shut, I am silent, and *σους*, Mouth; but then whence comes the *r*? Must the *m* of *σους* be converted into an *r*? The Word, then, is derived with more Propriety from the Hebrew *סוד* *Sator*, to hide, whence is form'd *סודים* *Mistar*, a hidden thing.

We have an Epitome of the Mysteries of Faith, or the Mysteries of Christianity, in the Symbols, or Creeds, compiled by the Apostles, the Council of Nice, and St. Athanasius. See **CREED**.

In all these, mention is made of the Mystery of the Trinity; the Mysteries of the Incarnation of the Son of God, his Death and Passion, and his Descent into Hell for the Redemption of Mankind. Of his Resurrection the third Day, his Ascension to Heaven, his sitting at the right Hand of God, and his coming again to judge the World. Of the Divinity, and Co-equality of the Holy Ghost with the Father and the Son: Of the Unity of the Church: Of the Community of Saints; the participation of the Sacraments; and the general Resurrection.

These are the principal Mysteries of Faith; which the Church declares necessary to be known and believ'd, in order to Salvation.

From the earliest Ages there have been particular Festivals instituted by the Church in honour of these Mysteries; to return Thanks to God for having revealed them, and to oblige the Ministers and Pastors to instruct the People therein. See **FEASTS**.

Such are the Feast of the Mystery of the Incarnation, call'd also *Christmas*; those of the Circumcision, Passion, Resurrection, &c. See **INCARNATION**, **CIRCUMCISION**, **EASTER**, **EPIPHANY**, &c.

The Heathens too had their Mysteries: The Egyptian Priests concealed the Mysteries of their Religion and Philosophy under Hieroglyphics. See **HIEROGLYPHIC**.

Those who revealed the Mysteries of the *Bona Dea* were severely punished; and none were trusted with them but those formerly initiated, and sworn to secrecy.

But these were not call'd Mysteries, as being incomprehensible, or raised above the ken of Reason; but because they were covered, and disguised under Types, and Figures, to raise the greater Veneration in the People.

The Mysteries of Paganism were celebrated in Grotto's, fitter to conceal Crimes than to hold religious Mysteries in.

In Scripture-Language, the Term *Mystery* is used with some Latitude. He that reveals Secrets, (or Mysteries) makes known to thee what shall come to pass; *Dan. ii. 29.* There is a God in Heaven that reveals Mysteries, *ib. v. 28.*

In which Places, *Mystery* is any thing not to be known without Divine Revelation.

We speak the Wisdom of God in a *Mystery*, which God had resolved before all Ages to reveal for our Glory, *1 Cor. ii. 7.* We are to be accounted (says St. Paul) as Ministers of Jesus Christ, and Dispensers of the Mysteries of God, *1 Cor. iv. 1.* Tho' I understand all Mysteries, and have the Knowledge of all Things, if I have not Charity, I am nothing, *1 Cor. xiii. 2.* Behold I shew you a *Mystery*, *1 Cor. xv. 51.* By reading my Epistle, you may understand my Knowledge in the *Mystery* of Christ; *ad Ephef. iii. 4.* And in the following Verses he adds, that this *Mystery* is, that the Jews are Fellow-Heirs, and make but one Body with the Jews, being Sharers with them in the Promises of God

in the Gospel. Holding the *Mystery* of the Faith in a pure Conscience, *1 Tim. iii. 9.* When the seventh Angel begins to sound his Trumpet, the *Mystery* of God shall be finish'd, as he has declared to his Servants the Prophets, *Revel. x. 7.*

In all which Passages, the Word *Mystery* is taken for the secret hidden Things, which God has discover'd by his Ministers the Prophets, Jesus Christ, and the Apostles.

**MYSTICAL, MYSTIC**, something Allegorical, or *Mysterious*. See **MYSTERY**, **ALLEGORY**, &c.

The Commentators on the Scriptures, besides a literal, find also a *mystical* and a moral Meaning.

The Bible, they contend, is a Book written both within side, and without side. Within side, with regard to the *mystical*, internal, sublime, and hidden Sense; and without side with regard to the literal and grammatical Sense, immediately express'd by the words.

In effect several of the ancient Fathers, and Doctors of the Church, understand the Books mentioned in *Ezech. ii. 9.* and in the *Apocalypse. v. 1.* which were wrote both within side and without, of the Scriptures.

The literal and *mystical* Sense they think are here fairly intimated.

The Sense of Scripture, say they, is either that immediately signified by the Words and Expressions in the common use of Language: or it is mediate, sublime, typical, and *mystical*; wherein the things themselves signified, are made to signify still other and further things, according to the particular Design, and Intention of God, and the Prophets and Apostles inspired by him. See **TYPICAL**.

The literal Sense they again divide into literal *Proper*, which is contained in the Words taken simply and properly:

And literal *Metaphorical*, where the Words are to be understood in a figurative and metaphorical Sense; as where the Right-Eye is commanded to be pluck'd out, &c. Wherever the proper literal Sense contains any thing absurd or indecent, there recourse must be had to the literal *Metaphorical*.

All Scripture has a true literal Sense, but not always a *Mystical* one. We must always understand it in the literal Sense, when it speaks immediately of any of the Laws of Nature, of Charity, of doing Good, when it gives us Instructions for the Conduct of Life, for the Regulating our Manners, when it relates any Matter of Fact, or any Point of History.

The same Passage of Scripture has sometimes several literal Senses, express'd and signified immediately by the Words taken in their proper and their figurative Sense, and which appear to have been all intended by the inspir'd Person who spoke them, as having been so understood by others of them. As those Words in *Psal. ii. Thou art my Son; this day have I begotten thee*; which St. Paul understands according to the strict Letter in *Heb. i.* of the Generation of Jesus Christ in time: And in *Acts xiii. 33.* he takes them in a metaphorical Sense, and applies them to our Saviour's Resurrection. Thus in *Hosea xi. 1.* the Words of the Prophecy, *I have called my Son out of Egypt*, are understood literally of the Children of Israel whom God brought out of Egypt under the Conduct of Moses; and yet in *Matth. ii. 15.* they are understood metaphorically of Jesus Christ. See **PROPHECY**.

The *Mystical* Sense of Scripture is that which the things express'd by the Words signify further; or it is a second Signification, and Expression signified by the first; this second being express'd immediately by the first, and mediately by the Words themselves. Writers allow of three kinds of *Mystical* Sense in the Word of God: The first corresponding to Faith, and call'd *Allegorical*; the second to Hope, call'd *Anagogical*; and the third to Charity, call'd the *Tropological* Sense.

The four Senses, and their Applications are included in the *Latin* Distich,

*Litera gesta docet, quid credas Allegoria,  
Moralis quid agas, quo tendas Anagogia.*

Sometimes the same Word in Scripture is taken in all the four Senses. Thus the word *Jerusalem* literally signifies the Capital of *Judea*; Allegorically, the Church Militant; Tropologically and Morally, a Believer; and Anagogically, Heaven.

So, that Passage in *Genesis*, *Let there be Light, and there was Light*; signifies, according to the Letter, Corporeal Light; by Allegory, the Messiah; in the Tropological Sense, Grace; and Anagogically, the Light of Glory.

**MYSTICS, MYSTICI**, a kind of Religious Sect, distinguished by their professing pure, sublime, and perfect Devotion, with an intire disinterested Love of God, free of all



all selfish Considerations. See PIETISTS, MOLINOSISTS, &c.

The *Mystics*, to excuse their fanatic Extasies, and atrocious Extravagancies, alledge that Passage of *St. Paul* ; *The Spirit prays in us by Sighs and Groans that are unutterable*. Now, if the Spirit, say they, pray in us ; we must resign ourselves to its Motions, and be sway'd, and guided by its Impulse, by remaining in a State of mere Inaction. See QUIETISM:

Passive Contemplation is that State of Perfection to which the *Mystics* all aspire. See CONTEMPLATION.

MYSTIC Theology, is a refined and sublime kind of Divinity, profess'd by the *Mystics*. It consists in a Knowledge of God, and Divine things, not acquir'd in the common way, but infused immediately by God, and which has the Effect to move the Soul in an easy, calm, devout, affective manner ; to unite it intimately to God ; to illumine the Understanding, and warm and enliven the Will in an extraordinary manner.

Among the Writings attributed to *Dionysius the Areopagite*, is a Discourse of *Mythic Theology*. Several others have wrote on the same Subject, both Antients and Moderns.

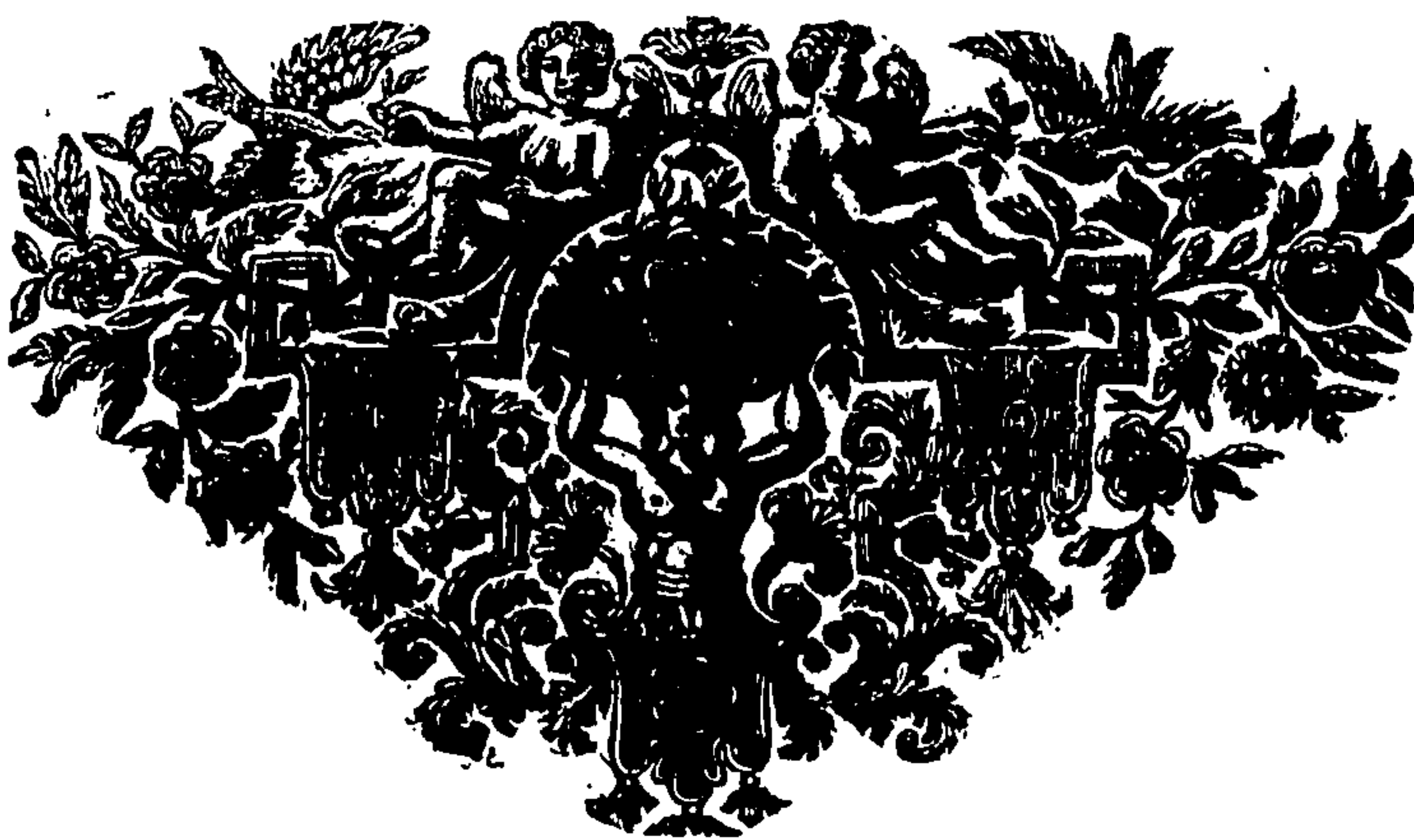
MYTHOLOGY, the History of the fabulous Gods, and Heroes of Antiquity ; and the Explanation of their Mysteries, of their Religion, their Fables, and Metamorphoses. See GODS, FABLES, METAMORPHOSES, &c.

*Natalis Comes* has wrote a *Mythology*.

The Word is *Greek*, and signifies a Discourse or Description of Fables ; from *μῦθος* *Fabula*, and *λογος* *Sermo*, Discourse.

MYURUS, in Medicine, a Pulse which is continually weakening by insensible Degrees ; so that the second Beat is fainter than the first ; the third than the second, &c. See PULSE.

The Word is formed of the *Greek* *μῦς*, like a *Mouse's* Tail ; which is compounded of *μῦς*, *Mouse*, and *ὀψὲς*, *Tail* ; the Diminution of the Pulse being supposed like that of the thickness of the Tail of that Animal, which grows less from the Root to the Tip.





N.

N,

A Liquid Consonant, and the 13th Letter of the Greek, Latin, English, &c. Alphabets. See LETTER and ALPHABET.

The N is a *d*, pass'd thro' the Nose; so that when the Nose is stopped by a Cold, or the like, 'tis usual to pronounce *d* for *n*. M. l'Abbe de Dangeau observes, that in the French, the *n* is frequently a meer Nasal Vowel, without any thing of the Sound of a Consonant in it. He calls it the *Sclazonic Vowel*.

The Hebrews call their N *Nun*, which signifies *Son*, as being supposed the Offspring of M; partly on account of the resemblance of Sound, and partly on that of the Figure. Thus from the M, by omitting the last Column, is form'd N: and thus from the Capital N, by omitting the first Column, is form'd the Greek Minuscule *v*. Hence for *Biennius*, &c. the Latins frequently use *Bimius*, &c. And the Greek *v* at the end of a Word, they convert into an *m*; as *φάρμακον*, *Pharmacum*, &c.

N before *p*, *b*, and *m*, they change into *m*, and frequently into *l* and *r*, as *in-ludo*, *illudo*; *in-rigo*, *irrigo*, &c. In which they agree with the Hebrews, who, in lieu of *Nun*, frequently double the following Consonant; and the Greeks, who do the same, as when for *Manlius*, they write *μανλιος*, &c.

The Greeks also, before *κ*, *γ*, *χ*, *ν*, changed the *ν* into *γ*: in which they were followed by the ancient Romans, who for *Angulus* wrote *Aggulus*; for *anceps*, *agceps*, &c.

The Latins retrench the *n* from Greek Nouns ending in *ων*; as *λεων*, *Leo*; *δρακων*, *Draco*. On the contrary, the Greeks add it to the Latin ones ending in *o*; as *κατων*.

N, among the Antients, was a Numeral Letter, signifying 900; according to the Verse in *Baronius*,

*N, quoque Nongintos numero designat habendos.*

And when a Line was struck over it, *N̄*, Nine Thousand.

Among the ancient Lawyers, N. L. stood for *Non Liquet*, i. e. the Cause is not clear enough to pass Sentence upon.

N<sup>o</sup>, in Commerce, &c. is used as an Abbreviation of *Numero*, *Number*. Thus also in Medicine, *Caryophyllorum*, N<sup>o</sup> vi. signifies six Cloves.

NABONASSAR, in Chronology. The *Æra* of NABONASSAR is famous. We know but little of the History of the Man; only that he was King of *Babylon*, and was also call'd *Belesus*; tho' some will have him the *Baladan* mention'd in *Isaiah xxxix. 1.* and *2 Kings xx. 12.* Some even conjecture that he was a *Mede*; and that he was set on the Throne by the *Babylonians*, upon their rising and shaking off the Subjection of the *Medes*.

The Beginning of this Prince's Reign is of great Importance in Chronology; by reason *Ptolemy* assures us, there were Astronomical Observations made by the *Chaldeans* from *Nabonassar* to his Time: and *Ptolemy*, and the other Astronomers, account their Years from that Epoch.

From the Observations quoted by *Ptolemy*, it follows, that the first Year of this *Æra* is the 747th Year before Jesus Christ; and the 3967th of the *Julian Period*. See EPOCH.

The Years of this Epoch are *Egyptian Years*, of 365 Days each; commencing on the 26th of February, and reckon'd, according to the Computation of Astronomers, from Noon. See YEAR.

NADIR, in Astronomy, the Point opposite to the Zenith; i. e. that Point directly under our feet; or a Point in a right Line drawn from our Feet thro' the Center of the Earth, and terminating in the Under-Hemisphere. See ZENITH.

The Zenith and Nadir are the two Poles of the Horizon, each 90° distant from it, consequently each in the Meridian. See HORIZON.

The Word *Nadir* is pure Arabic.

The Sun's Nadir, is the Axis of the Cone projected by the Shadow of the Earth; thus call'd, in regard that Axis being prolonged, gives a Point in the Ecliptic diametrically opposite to the Sun.

NÆVI, in the Animal Oeconomy, Marks made on the *Fetus* by the Imagination of the Mother, in longing for any thing.

See these accounted for under the Article MONSTER. See also FORTUS and IMAGINATION.

NAIANT, or NATANT, that is, *Swimming*; a Term in Heraldry, used in the blazoning of Fishes, when drawn in an Horizontal Posture, Fess-wise, or transversely, a-cross the Escutcheon; that being their *Swimming Posture*. See FISHES.

NAIDS, or NAIDES, a sort of Heathen Divinities, supposed to preside over Fountains and Rivers. See GOD. *Strabo* says, the *Naiads* were Priestesses of *Bacchus*.

The Word comes from the Greek *ναειν*, to glide, or *ναειν*, to abide, inhabit.

NAILING of Cannon, the driving of a Nail, or Iron Spike, by force, into the Touch-hole of a Piece of Artillery; so as to render it useless to the Enemy. See CANON.

NAILS, in the Animal Body, a kind of horny Excrecences, growing over the Ends of the Fingers and Toes of Men, and several other Animals; much of the same nature with the Hoofs of others. Hoofs being nothing else but a Number of small Husks, answering to so many *Papillæ* of the Skin; it may be concluded, that Nails are no more but the Covers, or Sheaths of the *Papillæ Pyramidales* of the Skin, on the Extremities of the Fingers and Toes, which dry, harden, and lie upon one another. See PAPILLÆ.

Their Use is to defend the Ends of the Fingers in handling any hard and rugged Bodies; that Part being exceedingly sensible, by reason of the great Number of Nerves which terminate here for the Sensation of Feeling. See FEELING.

The Nails are form'd, and grow after the same manner as the rest of the Body; their Nourishment they receive from their Roots, as is easily observable from the white Specks sometimes seen on them, and which constantly recede from the Root.

The Romans were very curious in the Cutting of their Nails, and had it done by Artills, who made an Employment of it.

The Chinese Doctors and Litterati pique themselves on the excessive Length of their Nails. *F. le Compte* says, some of them wear Nails near as long as their Fingers. See CIRCUMCISION.

NAILS in Building, &c. are little Metalline Members, serving to bind or fasten the Parts together, &c.

The several Kinds of Nails are very numerous. As *Back* and *Bottom Nails*; made with flat Shanks to hold fast, and not open the Wood: *Clamp Nails*, those proper to fasten the Clamps in Buildings, &c. *Clasp Nails*, whose Heads clasping and sticking into the Wood, render the Work smooth, so as to admit a Plane over it: They are of two Kinds, viz. long, proper for fine Buildings of Fir, &c. and strong, fit for Oak, and other hard Wood. *Clench Nails*, those used by Boat, Barge, &c. Builders; proper for boarded Buildings, that are to be taken down, because they will drive without splitting, and draw without breaking. *Clout Nails*, those ordinarily used for nailing on of Clouts to Axle-Trees. *Deck Nails*, those proper for fastning of Decks in Ships, doubling of Shipping, and Floors laid with Planks. *Dog Nails*, proper for fastening of Hinges to Doors, &c. *Flat Points* are of two kinds, viz. Longs, much used in Shipping, and proper where there is occasion to draw, and hold fast, yet no necessity of Clenching. *Joist Nails*, those commonly used to nail thin Plates of Iron to Wood. *Lead Nails*, used to nail Lead, Leather and Canvas to hard Wood. *Port Nails*, commonly used to nail Hinges to the Ports of Ships. *Pound Nails*, are four-square in the Shank; much used in Norfolk, Suffolk and Essex, tho' scarce elsewhere, except for paling. *Ribbing Nails*, used to fasten the Ribbing, to keep the Ribs of Ships in their place in Building. *Rose Nails*, are drawn four-square in the Shank, and commonly in a round Tool. *Rother Nails*, chiefly used to fasten Rother-Irons to Ships. *Round-head Nails*, proper to fasten in Hinges, or other Uses, where a neat Head is required. *Scupper Nails*, much used to fasten Leather and Canvas to Wood. *Sharp Nails*, much used, especially in the West-Indies, made with sharp Points, and flat Shanks. *Sheathing Nails*, used to fasten Sheathing-Boards to Ships: the Rule for their Length, is to have them full three times as long as the Board is thick. *Square Nails*, of the same Shape as Sharp Nails, chiefly used for hard Woods. *Tacks*, the smallest of Nails, are to fasten Paper to Wood; *Middling*, for Wool-Cards and Oars; *Larger*, for Upholsterers, and Pumps.

In Lathing, 500 Nails are ordinarily allowed to a Bundle of five-foot Laths. In Flooring, 200, i. e. 240 are allowed for a Square of Flooring.

Nails are said to be toughened, when too brittle, by heating them in a Fire-Shovel, and putting some Tallow or Grease among them.

NAIL is also a sort of Long Measure, chiefly used in the Commerce of Cloths; containing the 16th Part of a Yard. See YARD and MEASURE.



**NAIRANGIA**, a kind of Divination, in use among the *Arabs*, drawn from several *Phænomena* of the Sun and Moon. See **DIVINATION**.

The Word is form'd from the *Arabic Nairan*, the Plural of *Nair*, Light.

**NAISSANT**, in Heraldry, is applied to a Lion, or other Animal, shewing only the Head, Shoulders, Fore-feet, and Legs, with the Tip of the Tail; the rest of the Body lying hid under the Shield, or some Charge, or Ordinary thereon; from which it appears to be issuing or arising.

*Naissant* differs from *Issuant*, in that the Animal in the former Case issues out at the middle, and in the latter, at the bottom, of the Shield or Charge. See **ISSUANT**.

*F. Menestrier* says, *Naissant* is only used for Animals, which shew the bare Head as arising out of the Extremity of the Chief, or from above the Fesse.

**NAKED**, in Architecture. The **NAKED** of a Wall, &c. is the Surface, or Plain, from whence the Projectures arise; or which serves as a Ground to the Projectures. See **PROJECTURE**.

Thus, we say, a Pilaster ought to exceed the *Naked* of the Wall by so many Inches; and that the Foliages of a Capital ought to answer to the *Naked* of the Column. See **COLUMN**, &c.

**NAKED Fire**, is a Term used by the Chymists for an *Open Fire*; or one where the containing Vessel is immediately exposed to the Fire. See **FIRE** and **HEAT**.

**NAKED Seeds**, in Botany, are such Seeds of Plants as are not inclosed in any Pod, or Case. See **PLANT** and **SEED**.

**NAM**, or **NAAM**, in Law, the taking, or distraining another Man's moveable Goods. This is either lawful, or unlawful.

*Lawful Naam*, is a reasonable Distress, proportionable to the Value of the Thing distrained for; and was anciently call'd either *Vif* or *Mort*, as it was made of quick or dead Chattel.

*Lawful Naam*, is so either by the Common Law, as when a Man takes another's Beasts doing damage in his Ground; or by a Man's particular Fact, as by reason of some Contract, &c. And hence *Namation*, the Act of distraining, or taking a Distress. See **DISTRESS**.

In *Scotland*, the Word is particularly used for *Impounding*.

**NAME**, a Word, whereby Men have agreed to express some Idea; or which serves to design, or express a Thing, or Subject spoken of. See **WORD**.

This the Grammarians usually call a *Noun*, tho' their *Noun* is not of quite so much Extent as our *Name*. See **NOUN**.

*Seneca*, Lib. II. de *Beneficiis*, observes that there are a great Number of Things which have no Name; and which, therefore, we are forced to call by other borrowed Names. *Ingens est*, says he, *Rerum Copia sine Nomine quas cum propriis Appellationibus signare non possumus, alienis Accommodatis utimur*: Which shews why in the Course of this Dictionary, we frequently give very different Senses to the same Word.

It was *Adam* that first gave Things their Names, *Gen. ii. 19. Formatus, igitur, Dominus Deus, de humo cunctis Animantibus Terræ, & Universis Volatilibus Cæli, & omnibus Bestiis Terræ, adduxit ea ad Adam, ut videret quid doceret Ea; omne enim quod vocavit Adam Anima Viventis ipsum est Nomen ejus. Ver. 20. Appellavitq; Adam Nominibus suis cuncta Animantia, & unive-rsa Volatilia Cæli, & omnes Pestes Terræ.*

Names are distinguished into Proper and Appellative.

*Proper Names*, are those which represent some individual Thing, or Person, so as to distinguish it from all other Things of the same Species: as *Socrates*, which represents a certain Philosopher.

*Appellative*, or *General Names*, are those which signify common Ideas; or which are common to several Individuals of the same Species, as *Horse*, *Animal*, *Man*, *Oak*, &c.

*Proper Names* are either call'd *Christian*, as being given at Baptism, or *Surnames*: the first, imposed for distinction of Persons; answering to the *Roman Prenomen*. See **PRENOMEN**.

The second for the Distinction of Families, answering to the *Nomen* of the *Romans*, and the *Patronymicum* of the *Greeks*. See **SIRNAME**.

Originally every Person had but one Name; as among the *Jews*, *Adam*, &c. among the *Egyptians*, *Isis*; among the *Chaldees*, *Ninus*; the *Medes*, *Astages*; the *Greeks*, *Diomedes*; the *Romans*, *Romulus*; the *Gauls*, *Dixitacus*; the *German*, *Arminius*; the *Britains*, *Cassibelan*; the *English*, *Hengist*, &c. And thus of other Nations, except the Savages of Mount *Atlas*, whom *Pliny* and *Marcellinus* represent as *Anonymi*, nameless.

The *Jews* gave the Name at the Circumcision, viz. eight Days after the Birth: The *Romans* to Females the same Day, to Males the ninth; at which time they held a Feast, call'd *Nominatio*.

Since Christianity has obtained, most Nations have followed the *Jews*, baptizing, and giving the Name the eighth Day after the Birth; except our *English* Ancestors, who,

till of late, baptized, and gave the Name on the Birth-Day.

The first Imposition of Names was founded on different Views, among different People; the most common was to mark the good Wishes of the Parents, or to intitle the Children to the good Fortune a happy Name seem'd to promise: Hence *Victor*, *Castor*, *Faustus*, *Statorius*, *Probus*, &c.

Accordingly we find such Names, by *Cicero* call'd *Bona Nomina*, and by *Tacitus*, *Fausta Nomina*, were still first enrolled, and ranged in the *Roman* Mutters; first called to serve at the first Sacrifices in the Foundation of Colonies, &c. And, on the contrary, *Livy* calls *Atrius Umber*, *abominandi ominis Nomen*: And *Plautus*, on occasion of a Person named *Lyco*, i. e. *Greedy Wolf*, says;

*Vosmet nunc facite conjecturam cæterum  
Quid id sit hominis, cui Lyco nomen fiet.*

Hence, *Plato* recommends it to Men to be careful in giving happy Names; and the *Pythagoreans* taught expressly, that the Minds, Actions, and Successes of Men were according to their Names, Genius, and Fate. Thus, *Panormitan*, ex bono Nomine oritur bona Præsumptio; and the common Proverb, *Bonum Nomen bonum Omen*: And hence the Foundation of the *Onomantia*. See **ONOMANTIA**.

Hence *Camden* takes it for granted, that the Names, in all Nations and Languages, are significative, and not simple Sounds, for meer distinction sake. This holds not only among the *Jews*, *Greeks*, *Latins*, &c. but even the *Turks*; among whom, *Abdalla* signifies *God's Servant*; *Soliman*, *Peaceable*; *Mahomet*, *Glorified*, &c. And the Savages of *Hispaniola*, and throughout *America*, who, in their Languages, name their Children *Glistening Light*, *Sun-Bright*, *Fine Gold*, &c. And they of *Congo* by the Names of Precious Stones, Flowers, &c.

To suppose Names given without any Meaning, however, by the Alteration of Languages, their Signification may be lost, that learned Author thinks, is to reproach our Ancestors; and that contrary to the sense of all ancient Writers. Thus *Porphyry* notes, that the *Barbarous Names*, as he calls them, were very emphatical, and very concise: And accordingly, it was esteemed a Duty to be *φειδύμενος*, or *fui Nominis Homines*: as *Severus*, *Proteus*, and *Aurelius*, are called *fui Nominis Imperatores*.

And it was the usual way of giving Names, to wish the Children might discharge their Names: Thus when *Guthraur*, King of *France*, named *Clotharius* at the Font, he said, *Crescat Puer, & hujus sit Nominis Executor*.

The ancient *Britains*, the same Author adds, generally took their Names from Colours, because they painted themselves; which are now lost, or remain hid among the *Welsh*: When they were subdued by the *Romans*, they took *Roman Names*; some of which still remain, corrupted; tho' the greatest part are become extinct, upon the Admission of the *English-Saxons*, who introduced the *German Names*, as *Cudda*, *Penda*, *Oswald*, *Edward*, &c. The *Danes*, too, brought with them their Names; as *Suave*, *Harrold*, *Knute*, &c. And the *Normans*, at the Conquest, brought in other *German Names*, as originally using the *German Tongue*; such as *Robert*, *William*, *Richard*, *Henry*, *Hueb*, &c. after the same manner as the *Greek Names*, *Alpasi*, *Boethius*, *Symmachus*, &c. were introduced into *Italy*, upon the Division of the Empire. After the Conquest, our Nation, which had ever been averse to foreign Names, as deeming them unlucky, began to take *Hebrew Names*; as *Murder*, *David*, *Sampson*, &c.

The various Names anciently, or at present obtaining among us, from what Language or People soever borrowed, are explained by *Camden* in his *Remains*.

As to the Period when Names began to be multiplied, and *Surnames* introduced, &c. See **SIRNAME**.

Of late Years, it has obtained among us, to give *Surnames* for *Christian Names*; which some dislike, on account of the Confusion it may introduce. *Camden* relates it as an Opinion, that the Practice first began in the Time of *Edward VI.* by such as would be Godfathers, when they were more than half Fathers. Upon which, some were persuaded to change their Names at Confirmation; which, it seems, is usual in other Countries. Thus, two Sons of *Henry II.* of *France*, christen'd *Alexander* and *Hercules*, changed them at Confirmation into *Henry* and *Francis*.

In Monasteries, the Religious assume such Names at their Admittance; to shew they are about to lead a new Life, and have renounced the World, their Family, and even their Name: v. g. *Sister Mary of the Incarnation*, *Mother Henry of the Holy Sacrament*, &c.

The Popes also change their Name at their Exaltation to the Pontificate; a Custom first introduced by *Pope Sergius*, whose Name, till then, as *Platin* informs us, was *Swines-head*. But *Baronius* refers it to *Pope Sergius*, and *Onuphrius* to *John XII.* or *XIII.* who, at the same time, adds a different reason for it from that of *Platin*, viz. that



was done in Imitation of St. Peter and St. Paul, who were first called *Simon* and *Saul*. Indeed Pope Marcellus, of late, refused to change his Name.

In Italy, 'tis frequent to join the Name of some Saint, in a kind of Devotion, to the Christian Name; as *Joannes Baptista Spinosa*, &c.

Among the Antients, those deified by the Heathen Consecrations, had new Names given them; as *Romulus* was called *Quirinus*; *Melicertus*, *Portunus*, &c. See CONSECRATION.

New Names were also given in Adoptions, and sometimes by Testament; thus *L. Æmilius*, adopted by *Scipio*, took the Name of *Scipio Africanus*; and thus *Augustus*, who was first called *Thureon*, took the Name *Octavian* by Testament. See ADOPTION.

Names were also changed at Enfranchisements into new Cities. Thus *Lucumo*, at his first being made free of Rome, took the Name, *Lucius Tarquinius Priscus*, &c. and Slaves, when made free, usually assumed their Masters Names. See FREEDOM, SLAVE, &c.

Those called to the Equestrian Order, if they had base Names, were always new named, *Nomine Ingenuorum veterum; Romanorum*. And among the Primitive Christians, it was the Practice to change the Names of the Catechumens: thus the Renegado *Lucianus*, till his Baptism, was called *Lucius*.

Of the NAME, a Phrase, or Diction frequent among Historians and Genealogists, to denote Persons of the same Quality, and Name. 'Tis near nine hundred Years since the Emperors of the West first began to distinguish themselves in this manner by their Number; and in the *Italia Sacra* of Ughellus, we meet with a Charter of the Emperor *Louis le Debonnaire*, Anno 818. wherein he styles himself the First of the Name. *Le Elanc* mentions a Charter of the Year 1084. wherein the Emperor *Henry III.* styles himself King of Italy, the Fourth of the Name; and Emperor, the Third of the Name.

Some French Writers observe, that in a Manuscript preserved in the King's Library, their *Louis XI.* is only stiled the Ninth of the Name; *Louis the Debonnaire*, and *Louis the Stammerer*, not being then reckon'd in the Number, by reason they were Emperors, as well as Kings of France: On which Footing, the present King, instead of the Fifteenth, should only be the Thirteenth of the Name.

NAMIUM Veritum, in our Law-Books, an unjust taking of the Cattle of another, and driving them to an unlawful Place, pretending Damages done by them. In such Case, the Owner of the Cattle may demand Satisfaction for the Injury, which is call'd *Placitum de Namio Verito*.

NAPE, is used for the hind-part of the Neck; by reason of the soft short Hair growing thereon, like the Nap of a Cloth. See NECK.

NAPHTA, or NAPTHA, a kind of liquid Sulphur or Bitumen, very soft, and inflammable, exuding out of the Earth in several Places in Chaldaea; particularly the Place where stood the antient Babylon; and still found in several Provinces of Italy and France, particularly in *Auvergne*, and near *Ragusa*. See SULPHUR and BITUMEN.

That of France is soft and black, like liquid Pitch, and of a fetid Smell; that of Italy is a kind of Petrol, or a clear Oil, of various Colours, oozing out of a Rock, situate on a Mountain in the Dutchy of Modena. See PETROL.

Naphta is esteemed penetrating, resolute, and vulnerary; but its Vertues are little known in Medicine: its chief Use is in Lamps, &c. on account of its Inflammability.

The Turks call the Naphta, *Carab Sakiz*, black Mastic, to distinguish it from Pitch. *Vossius* has an express Treatise on Naphta, Antient and Modern: He says, 'tis a Flower of Bitumen, of more force than any other Bitumen.

The Word, in the original Chaldaee, signifies *stillare*, to ooze, or drop; *Naphta*, according to *Pliny*, running like a kind of Bitumen.

NAPIERS, or NEPERS Bones. See NEPERS Bones.

NARCOTICS, in Medicine, Opiates, or Medicines, that excite Drowsiness and Sleep. See OPIATES.

Narcotics act, by calming and diminishing the Motion of the Blood and Spirits.

Authors are of various Opinions, as to the Manner wherein Narcotics operate. The Antients tell us, 'tis by their being cold in nature. *Emmeller*, after *Willis*, takes the Animal Spirits to be composed of a fluid volatile Salt; and thinks they are dissolved by the Mixtures of Sulphurs and Oils, wherewith Narcotics abound. *M. Andry's* Opinion is, that the Salt of Narcotics, dissolves in any Liquor wherewith, and that their ramous Branches becoming thus disengaged from the Salts, are embarrassed among one another, and thus stop the Course of the Blood and Spirits. Lastly, others think, that Narcotics close the Orifices of the Nerves and thus block up the Passage of the Spirits.

*Linder*, in his Treatise de Venenis, thinks, that the Operation of Narcotics is not the same in all; Drowsiness being

being producible from a great Variety of different Causes. See SLEEP.

The Word comes from the Greek *ναρκοτικός*, of *ναρκοσις*, Drowsiness.

NARRATION, in Oratory and History, a Recital, or Rehearsal of a Fact as it happen'd, or as it is supposed to have happen'd.

This is of two kinds, either Simple and Historical; as where the Auditor or Reader is supposed to hear or read of a Transaction at second hand: or Artificial and Fabulous, as where their Imaginations are raised, and the Action, as it were, re-acted before them.

The Narration, according to the Writers of Rhetoric, makes the second part of a just Speech, or Harangue; viz. that immediately following the *Exordium*. See ORATION. It makes the whole of a History; abating for the occasional Reflections, Episodes, and Digressions. See HISTORY.

*Cicero* requires four Virtues in a Narration, viz. Perspicuity, Probability, Brevity, and Sweetness.

The Narration is rendred perspicuous, by observing the Order of Time, by using none but proper and known Terms, and by reciting the Action uninterruptedly.

It is rendred probable, by the Credibility of the Narrator; by the Simplicity and Openness of the Narration, by avoiding nothing far remote from the common Sense and Opinion of Mankind, and by a precise Detail of Circumstances.

It is rendred brief, by taking it up no higher than is just necessary; nor fetching it back, as that impertinent Author in *Horace*, *Qui Geminio Bellum Trojanum orditur ab ovo*: And by avoiding trivial Circumstances.

Lastly, it is rendred sweet, by using smooth, numerous, and well-sounding Words; by arranging them, so as to avoid any Hiatus, or Clashing. By the Greatness, Novelty, and Unexpectedness of the Things related; and by enriching it with Tropes and Figures; as frequent Admirations, Exclamations, Interrogations, Expectations, Suspences, surprising Events; by Grief, Joy, Fear, &c. See TROPE.

NARRATION, in Poetry, is used particularly for the Action, or Event, that makes the Subject of an Epic Poem. See ACTION.

*F. Bossu* observes, that the Actions in Poetry are equally susceptible of the two kinds of Oratorical Narration; and that each constitutes a particular Species of Poetry.

Those under the Artificial, or Active Form, are now call'd Dramatic. See DRAMA.

And those only related by the Poet, who here personates an Historian, are call'd Epic. See EPOPEA.

In the Drama, the Narration is the whole of the Piece; in the Epopea, 'tis only a Part, tho' in effect it is the principal Part, and the Body of the Poem. 'Tis preceded by the Proposition and Invocation, which *Bossu* calls the *Preludes*; and is frequently interrupted by the Poet's speaking in Person, demanding Pardon, Favour, &c. See INVOCATION, &c.

The Narration includes the whole Action, Episodical, with all its Circumstances and its Ornaments. See EPISODE.

'Tis in this Part that the Action is to be begun, carried on, and ended. 'Tis this, is to shew the Causes of all that is related: in this the Difficulties are to be proposed and resolved, and the Persons, both human and divine, are here to shew their Interests, their Manners, and their Qualities, by their Actions and their Discourse: and all this is to be described with the Beauty, the Majesty, and Force of Verse, Stile, Sentiments, Comparison, and other Ornaments proper to the Subject in general, and to each thing in particular.

The Qualities of the Epic Narration are, that it be agreeable, probable, moving, surprising, and active.

*Horace* speaks of the *Utile* and *Dulce* as on the same Footing. *Bossu* looks on the *Utile* as an essential Property; and the *Dulce* as no more than an additional Quality.

NASAL, something belonging to the Nose, *Najus*. As the Nose-Piece of a Helmet, &c.

NASAL, in Grammar, &c. a Term applied to those Sounds, or Letters, in whose Formation, the Nose is the principal Organ; and particularly where the Sound form'd is passed thro the Nose. See LETTER.

In most English Words, the Sounds expressed by the Characters *an*, *en*, *in*, *on*, *un*, are simple Sounds; and proper Nasal Vowels.

NASALIA, in Medicine, a sort of Remedies to be taken by the Nose; call'd also *Errhines*. See ERRHINES.

NASI Or, in Anatomy, a thin Bone, making the upper Part of the Nose. See NOSE.

NATALIS, NATALIS Dies, or NATALITIUM, properly signify a Man's Birth-Day.

The Word was first used among the Heathens, to signify the Feast held on the Anniversary of the Birth of an Emperor; whence it came, in time, to signify any sort of Feast. And accordingly, in the *Isylli*, we meet with *Natalis Solis*, *Natalis*



**Natalis Invisi, &c.** The Primitive Christians, finding it thus established, used it in the same manner; and hence we meet in the ancient Martyrologists with *Natalis Calycis*, for the Feast of the Supper, or *Maunday-Thursday*. *Natalis Carbedra*, for the Pontificate of St. Peter: The *Natalis*, or *Natalitium* of such a Church, for the Feast of the Dedication.

The Word *Genethlion* is used by the Greeks in the same sense as *Natalis*, or *Natalitium*, among the Latins.

The *Ludi Natalitii*, Natal Games, were Games introduced on the Anniversaries of the Birth-Days of their great Men.

The Natal Ring, *Annulus Natalitius*, was a Ring only wore on the Birth-Day.

**NATES**, in Anatomy, a Term expressing those two fleshy Parts of the Body, popularly called the *Hips*, or *Buttocks*.

**NATES Cerebri**, are two Circular Protuberances of the Brain, situate on the back-side of the *Medulla Oblongata*, near the *Cerebellum*. See **BRAIN**.

**NATION**, a Collective Term, used for a considerable People, inhabiting a certain Extent of Ground, enclosed within certain Limits, and under the same Government.

Each Nation has its particular Character: 'Tis proverbially said, Light as a *Frenchman*, Waggish and Silly as an *Italian*, Grave as a *Spaniard*, Wicked and Unlucky as an *Englishman*, Pierce as a *Scotchman*, Drunken as a *German*, Idle as an *Irishman*, Deceitful as a *Greek*, &c.

**NATION** is also used in some Universities, for a certain Distinction of the Scholars, or Professors of Colleges: Thus the Faculty of *Paris* consists of four Nations; viz. that of *France*, that of *Normandy*, that of *Picardy*, and that of *Germany*; which are again, excepting that of *Normandy*, distinguished into Tribes; each Tribe has its Deacon.

The *German Nation* comprehends all foreign Nations, *English*, *Italian*, &c. When the *Procureur* of the *French Nation* speaks in publick, his Stile is, *Honoranda Gallorum Natio*. He of *Picardy* says, *Fidelissima Picardorum Natio*. He of *Normandy*, *Veneranda Normannorum Natio*. He of the *Nation of Germany*, *Constantissima Germanorum Natio*.

**NATIONAL Synod**. See **SYNOD**.

**NATIVE**, is applied to a Person consider'd as born in a certain Place; or deriving his Origin therefrom.

The more accurate Writers distinguish between a *Native* of a Place, and being born therein. *Born* signifies no more than the having been there produced, or brought into the World, whether that were the proper Country, or Habitation of the Parents, or whether they were there only by accident, as Strangers, &c. Whereas *Native* refers to the proper Mansion, or Residence of the Parents and the Family; and where the Person has his Education. And hence a Person may be a *Native* of one Place, and born at another. Thus Jesus Christ is call'd a *Nazarite*, and *Galilean*, as a *Native*; tho' he were born at *Bethlehem* in *Juda*.

**NATIVE**, **NATIVUS**, in our ancient Law-Books, signified a Person who was born a Slave; by which he differ'd from one who had sold himself, or became a Slave by his own Deed.—*Servos enim alios Bondos dicimus alios Nativos, alios Villanos. Ponds sunt qui passionis Vinculo se adstrinxerunt. De Nativis, infra. Villani sunt qui Glebe ascripti Villam colunt Dominicam, nec exire licet sine Domini Licentia.* Spelman.

**NATIVÆ Tenentes**, in our old Law-Books, are Tenants who hold *Native Land*; i. e. Land subject to the Services of *Natives*. Spelman.

**NATIVI de Stipite**, were Villains or Bond-men by Birth or Family.—There were also *Nativi Conventionarii*, who were Villains by Contract or Covenant. *Servi enim alii natura, alii facti, alii emptione, alii redemptione, alii sua vel alterius donatione.* LL. Hen. I. cap. 76. In *Cornwall* it was a Custom, that if a Freeman married *Nativam*, and brought her *ad Liberum Tenementum & Liberum Thorum*, and had two Daughters, one of them was free, and the other a Villain. *Bracton Lib. 4.*

**NATIVITY**, *Natal-Day*, or the Day of one's Birth.

The Term is chiefly used in speaking of Saints, &c. The *Nativity* of St. John Baptist, &c. When we say absolutely the *Nativity*, it is understood of that of Jesus Christ, or the Feast of Christmas. See **FEAST**.

'Tis commonly held, that Pope *Telesphorus* was the first who decreed the Feast of the *Nativity* to be held on the 25th of December. John, Archbishop of *Nice*, in an Epistle upon the *Nativity* of Jesus Christ, relates, that at the instance of St. Cyril of Jerusalem, Pope Julius procured a strict Inquiry to be made into the Day of our Saviour's *Nativity*; which being found to be on the 25th of December, they began thenceforth to celebrate the Feast on that Day. See **CHRISTMAS**.

In ancient Law-Books, *Nativity*, *Nativitas*, signifies Bondage, or Servitude.

**NATIVITY**, in Astrology, the same with *Horoscope*. See **HOROSCOPE**.

*Castig the Nativity*, or by Calculation seeing to know how long the Queen should live, &c. was made *Felony*. An. 23 Eliz. c. 2.

**NATRON**, or **ANATRON**, in Natural History, a kind of black, greyish Salt, taken out of a Lake of stagnant Water, in the Territory of *Terrana* in *Egypt*. See **SALT**.

'Tis much of the nature of *Nitre*, whence it is called *Egyptian Nitre*, and is even supposed to be the proper *Nitre* of the Antients. See **NITRE**.

'Tis a popular Error, that all Bones or Stones thrown into this Lake, are by degrees converted into *Natron*. It makes a great Ebullition, when mixed with Acids; whence it is ranked as of the Alkali Kind.

'Tis used in the Whitening of Linnen; but burns them, if not corrected by a Mixture of Ashes. See **WHITENING**.

The *Natron* of *Egypt*, as described by *Pliny*, *Matthioli*, and *Agricola*, is an Alkali Salt perforated in manner of a Sponge, and of a Lixivial Taste.

Its Principles, Dr. Leigh takes to be chiefly two; viz. a Sea-Salt, and an Urinous Salt. The first, he takes it for granted, it receives from the Earth; the second, from the Air.

Dr. Huntington, who was on the spot, says the *Natron* is thought to rise from the bottom of the Lake; where, by the Heat of the Sun, it is condensed, and hardened into the Form we see it in: But his Opinion is, that 'tis rather separated by the Sun from the Water.

M. de la Chambre adds, that three or four Days before the Nile begins to overflow, there falls a certain Dew, of a fermentative Virtue, inasmuch as to leaven a Paste exposed to it, and that at the same time the *Natron* rises.

*Hippocrates*, *Galen*, *Matthioli*, *Dioscorides*, &c. mention it as of use in Physic; and M. de Clos is even of opinion, that all the Mineral Waters of *France* are impregnated with this kind of *Nitre*; and that 'tis hence they derive their Medicinal Virtues.

It is of singular Efficacy in fertilizing of Ground; which Dr. Leigh accounts for, by supposing its volatile Particles heated by some subterraneous Fire, or by the Warmth of the Sun; and thus readily made to ascend up the minute Tubes of Plants, and carry with them the Juices of the Earth.

*Pliny* derives the Invention of Glass from some of this *Natron* accidentally melted down into the Sand, where it run into Streams of Glass. See **GLASS**.

This *Nitre* is distinguished from Salt Peter, by its fermenting with Acids, which Salt Peter will not do; by its volatile Spirit, its lixivial Smell, by the clammy insipid Substance it yields, &c. It agrees with Salt Peter, in that, by dropping Spirit of Sulphur upon it, it shoots into pyramidal Crystals. Dr. Leigh thinks it comes nearer a *Sal Armoniac* than Salt Peter. See **SALT PETER**.

Dr. Lister conjectures, that most of the Salt Water of the Lakes of *Egypt*, having pass'd thro' the Bodies of those vast Animals wherewith they are stocked, as *Crocodiles*, *Hippopotami*, &c. must of consequence be rendered Urinous, or Salino-Urinous; which is a Composition of *Sal Armoniac*. See **SAL ARMONIAC**.

**NATTA**, or **NATA**, or **NASA**, or **NAFTA**, in Medicine, a Tumor arising in several Parts of the Body.

*Blancard* defines it, a large, soft, reddish, painful Tumor, arising usually on the Back, sometimes on the Shoulders: Its Root is very small, yet it grows so prodigiously, that it sometimes equals a Melon, or Gourd.

*Natae*, or, as some call them, *Nates*, oftentimes appear on the Neck, much after the manner of *Talpe*. See **TALPEA**.

They are of the Oedematous Kind, and are to be extirpated by Incision, and their Return prevented by red precipitate, Vitriol, or burnt Allom strew'd on the Place.

*Bartholine* mentions a Lady, who cured herself of a *Nata*, by biting it off.

**NATURAL**, something concerning Nature, belonging to Nature, arising from a Principle of Nature, or conformable to the ordinary Course and Order of Nature. See **NATURE**.

When a Stone falls downwards, we vulgarly say it does it by a *Natural Motion*; but if it be thrown upwards, its Motion is said to be violent. So Water suspended in a sucking Pump, is said to be out of its *Natural Place*: Cures wrought by Medicines, are *Natural Operations*; but the miraculous ones wrought by Christ, *Supernatural*. See **SUPERNATURAL**, &c.

**NATURAL Children**, are those born out of lawful Wedlock. See **BASTARD**.

**NATURAL Horizon**, is the sensible or physical Horizon. See **HORIZON**.

**NATURAL Law**. See **LAW OF NATURE**.

**NATURAL Day**, } See { DAY.

**NATURAL Year**, } See { YEAR.



# TAB. NATURAL HISTORY.

Page 61

Fig. 1. & 2. Death Watch

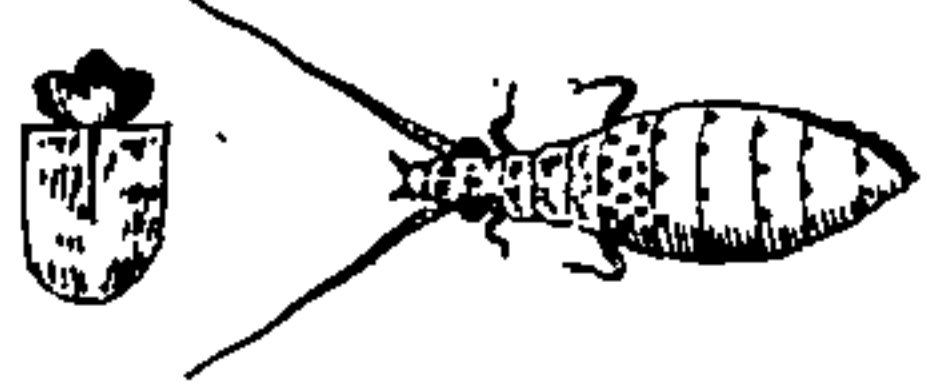


Fig. 3. Feather

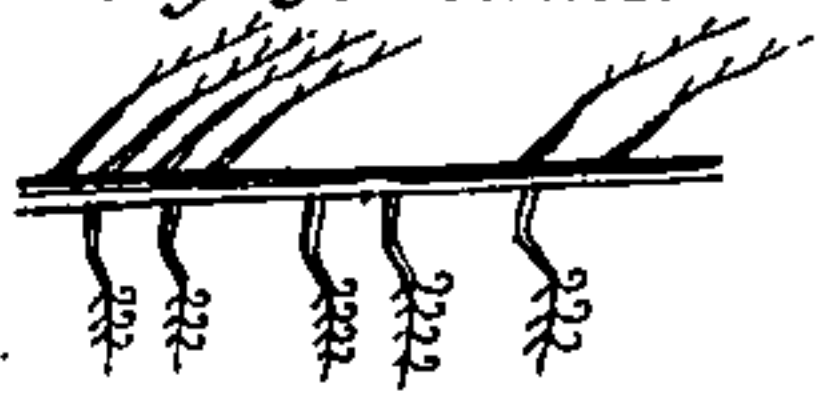


Fig. 4. Feather



Fig. 5. Feather



Fig. 6. Ductility



Fig. 7. Ductility

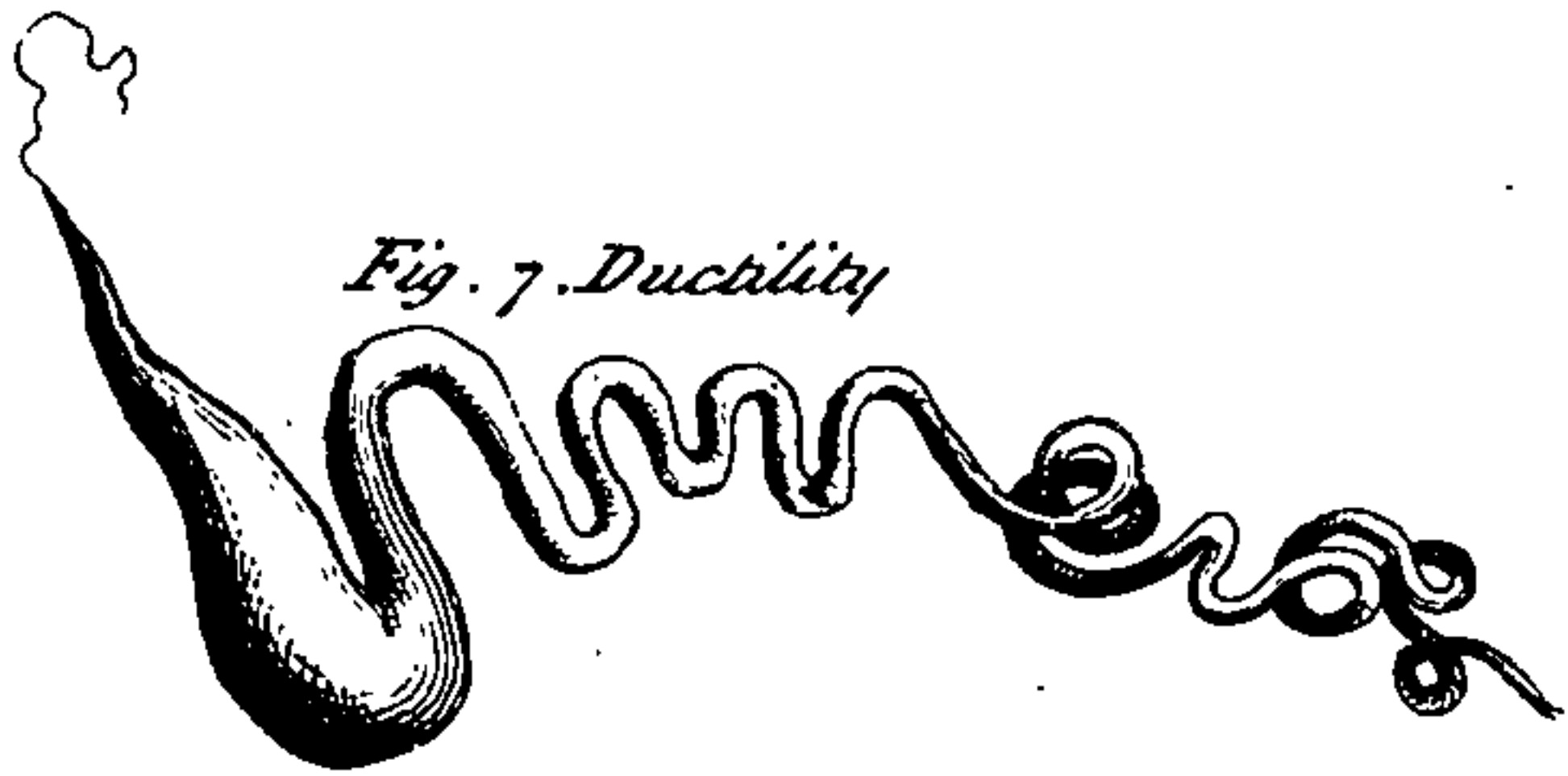


Fig. 8. Ductility



Fig. 9. Torpedo



Fig. 10. Gin-Seng



Fig. 11. Voice

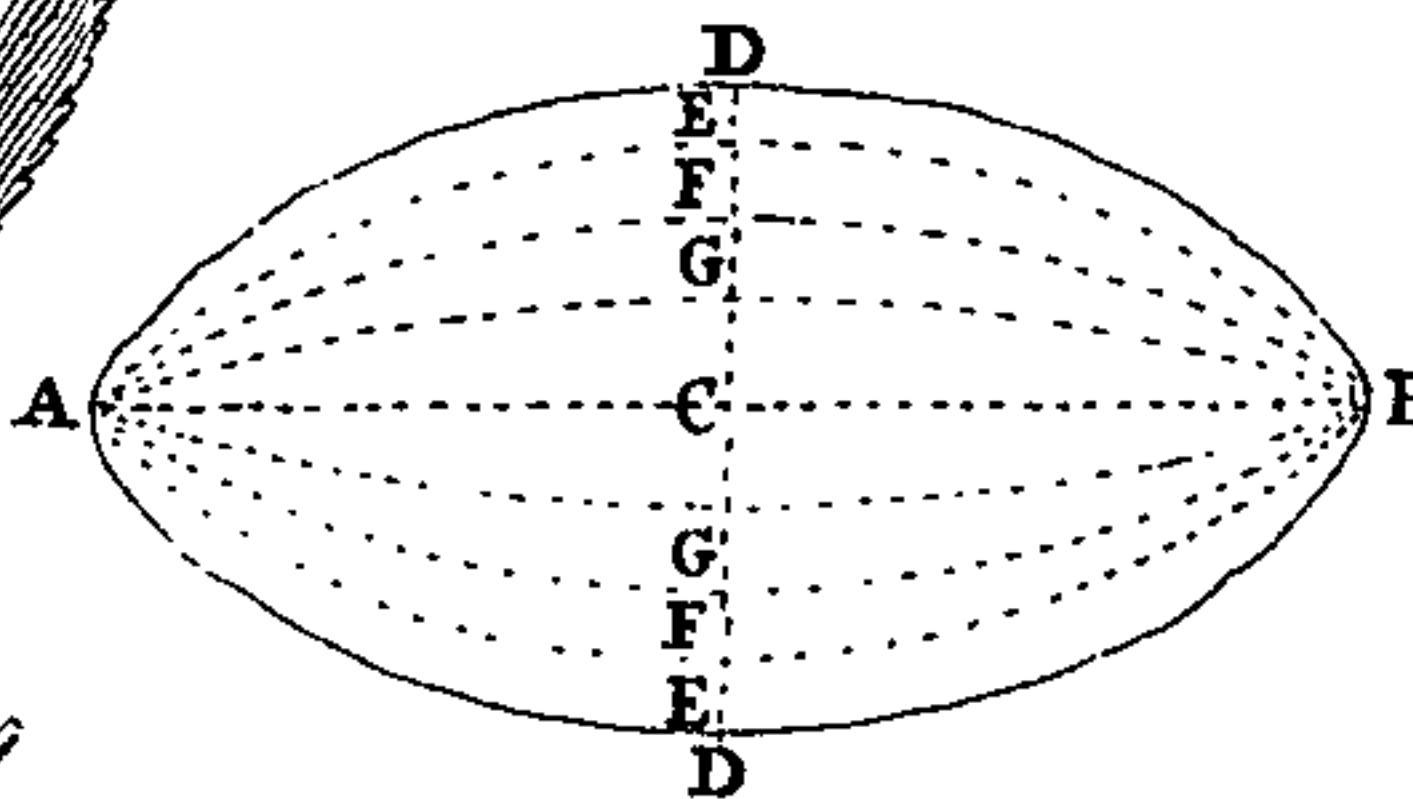


Fig. 12. Trochites



Fig. 12. Trochites

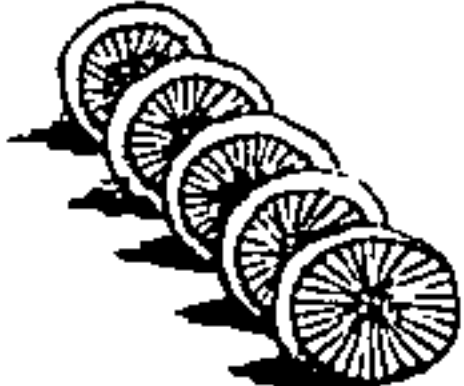


Fig. 12. Trochites



Fig. 13. 14. 15. Plant

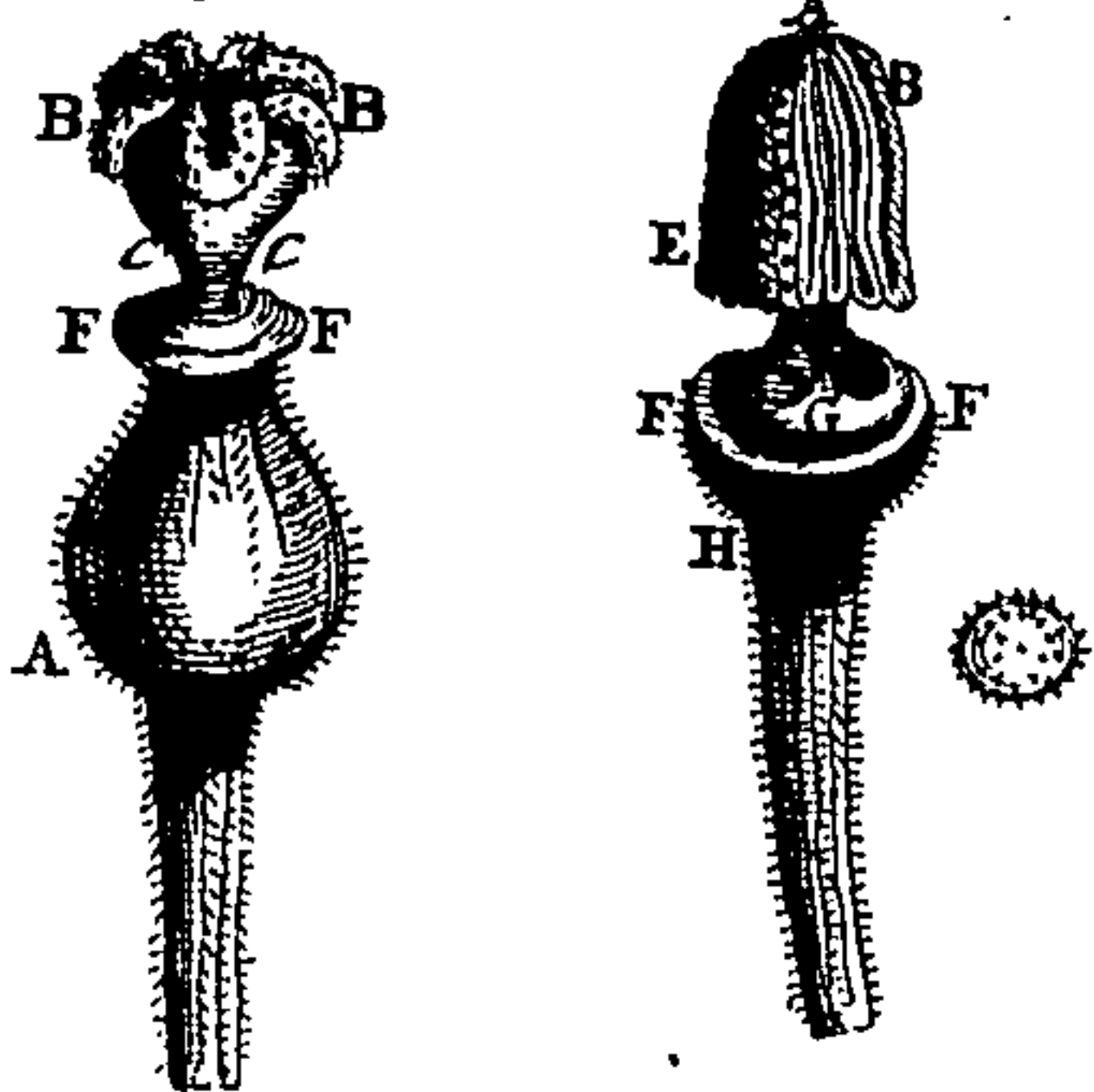
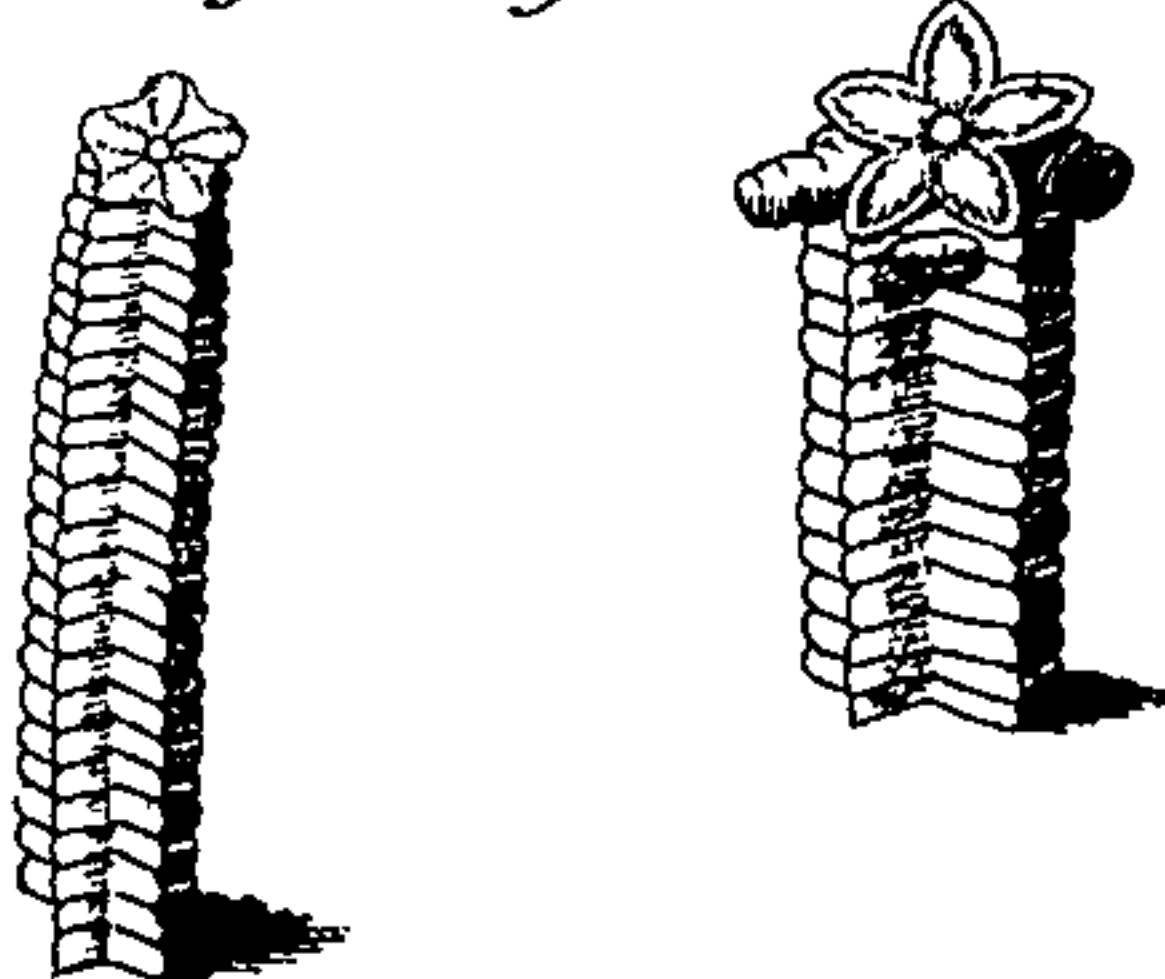
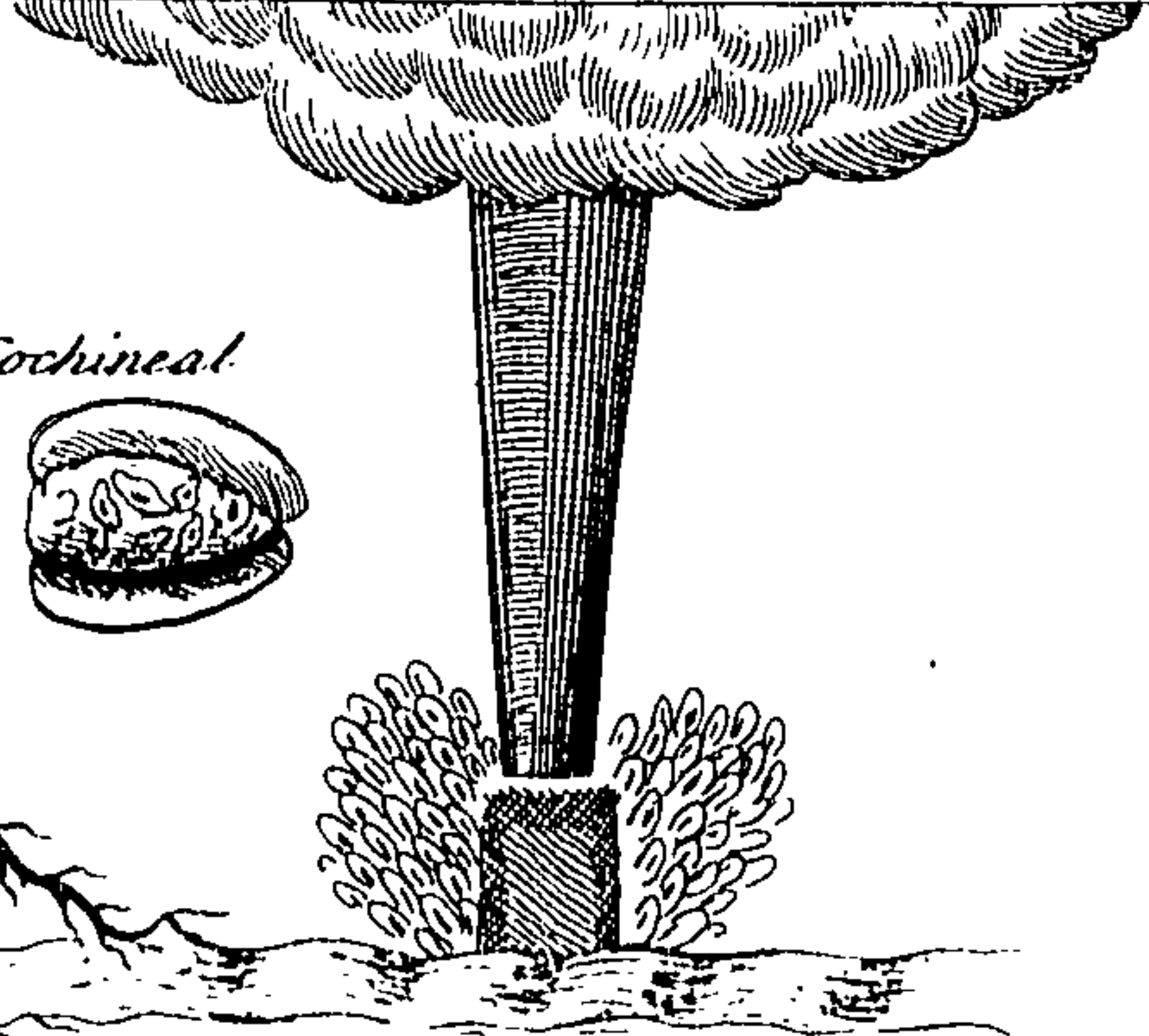


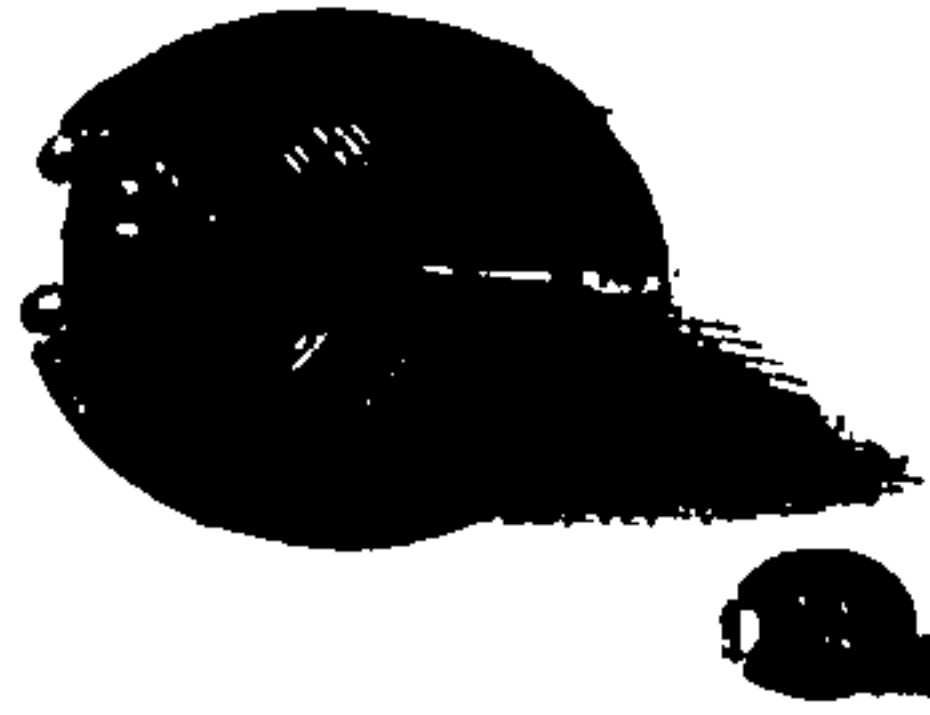
Fig. 14. Astroites



Spout



Cochineal



Cochineal



Sting



Sting



Hair



Hair



J. Van der Grinten



**NATURAL Faculty**, is that Power, arising from the Blood's Circulation, which is conspicuous in all the Secretions performed within the Body; that Secretion alone excepted, which is made at the Origin of the Nerves. See FACULTY.

**NATURAL Functions**, in the Animal Oeconomy, are those Actions whereby things taken into the Body, are changed, and assimilated, so as to become Parts of our Body. See FUNCTION.

These are the Actions of the *Viscera*, the Vessels that receive, retain, move, change, mix, secern, apply, excern, and spend the Humours of the Body. See DIGESTION, NUTRITION, &c.

**NATURAL Inclinations**, are those Tendencies, or Motions of the Mind, towards things seemingly good, which are common, in a greater or less degree, to all Mankind.

*Natural Inclination*, according to F. Mallebranch, is the same thing with regard to Minds, that Motion is with regard to Bodies; and as all the Varieties in the Material World arise from the several Motions of Bodies, so do all those of the Intellectual World from Inclinations; and as all Motions are the Results of Impressions immediately communicated by the Finger of the Creator; so all Inclinations are certainly nothing else but continual Impressions of the Will of the Creator, on that of the Creature; and must therefore of necessity be agreeable to his; and therefore can naturally have no principal End, but his Glory; nor any secondary one, but their own Preservation, and that of others; both still with regard to his Will who gave them Being.

Now, as, properly speaking, there is but one Love in God, viz. that of himself; so he only impresses one Love or Desire in us, which is that of Good in the general. 'Tis this general Love, or Desire, is the Principle of all our particular ones; as, in effect, 'tis the Will itself: The Will being defined to be a continual Impression of the Author of Nature, which carries the Mind of Man to Good in general. See WILL.

But the Impression towards Good in the general, doth not only proceed from God, but also all our Inclinations to particular Goods; as, v. g. Self-preservation, &c. See PASSION.

**NATURAL History**, a Description of any of the Natural Products of the Earth, Water, or Air; v. g. Beasts, Birds, Fishes, Metals, Minerals, and Fossils; together with such extraordinary Phenomena, as at any time appear in the Material World; such as Meteors, and Monsters, &c. See HISTORY.

Beside *General Natural History*, as those of Pliny, &c. there are *Particular ones*; and that of two kinds: The first, those which only consider one kind of Things, such as the *History of Shells*, of Dr. Lister; of *Fishes*, of Willoughby; that of *Birds*, of the same; that of *Plants*, of Ray, or Rolfincus; those of *Insects*, of Swammerdam, and Mouffet; that of *Animals*, of Gesner; that of *Fossils*, of Lockmund, &c.

The second, those which consider the several kinds of natural Things found in particular Countreys, or Provinces; as the *Natural History of Dauphine*, by Chorier; the *Natural History of the Antilles*, by F. Tertre, and M. Lottillieres; those of *Oxfordshire and Staffordshire*, by Dr. Plot; that of *Lancashire*, by Leigh; of *Northamptonshire*, by Morton; and that of the same County, expected from Mr. Bridges; that of the *Western Islands*, by Martin, &c.

**NATURAL Philosophy**, that Science which considers the Powers of Nature, the Properties of Natural Bodies, and their mutual Action on one another; otherwise call'd *Physica*. See PHYSICS.

**NATURAL Magic** is that which only makes use of natural Causes. See MAGIC.

**NATURAL Cause**, see CAUSE.

**NATURAL**, in Heraldry, is used where Animals, Fruits, Flowers, &c. are blazon'd with the Colours they naturally have, tho different from the common Colours of Heraldry; and this is to prevent the Armories being accus'd of Falsity, when blazon'd with the Names of Colours unknown in Heraldry.

**NATURAL**, in Music, is used variously. Sometimes, it is taken for *Diatonic*; and sometimes for *Physical*, in which latter Sense, *Natural Music* is that performed by Natural Organs, i. e. Vocal Music, in contradistinction to Artificial, or Instrumental.

**NATURAL Harmony** is that produced by the Natural, and Essential Chords of the Mode. See HARMONY.

**NATURAL Note** is used in opposition to *Flat* and *Sharp Notes*, which are call'd Artificial Notes. See NOTE, SCALE, &c.

**NATURAL** is also used for something coming immediately out of the hands of Nature, in opposition to *Falsitious*, or *Artificial*, which signifies something wrought by Art.

Bishop Wilkins observes, that there appears a world of difference between *Natural* and *Artificial Things* when view'd with Microscopes; the first ever shews adorn'd with

all imaginable Elegance and Beauty; the latter, tho the most curious in the World, infinitely rude and unhewn: The finest Needle appears a rough Bar of Iron; and the most accurate Engraving or Embossment, as if done with a Mattock or Trowel.

**NATURALIST**, a Person who has studied Nature, and is well versed in Natural Bodies, especially in what relates to Metals, Minerals, Stones, Vegetables, and Animals.

Aristotle, Aelian, Pliny, Solinus, and Theophrastus were the greatest Naturalists among the Antients; but they fell into abundance of Errors, which have been corrected by the happy Industry of the Moderns. Aldrovandus is the most Copious and Compleat of the modern Naturalists; his Work is in seventeen Volumes in Folio.

**NATURALIZATION**, in Law, the Act of Naturalizing any one, or of putting any Foreigner into the Condition of a natural-born Subject, and entitling him to the Rights and Privileges thereof. See DENIZEN.

In France, Naturalization is the King's Prerogative; in England 'tis only done by Act of Parliament. In France, Swiss, Savoyards, and Scots, need not any Naturalization, being reputed *Regnicoles*, or Natives.

**NATURALS**, *Res Naturales*, in Medicine: In every Animal, howsoever sick and diseased, there is still remaining some degree of Life, and Strength; and the Causes and Effects of each: These are call'd *Naturals*, *Natural things*, *things according to Nature*; and sometimes barely *Nature*; in contradistinction to *Non-Naturals*, which see.

**NATURE**, *Natura*, *quæ*, is a Term very variously used. Aristotle has a whole Chapter wrote expressly to enumerate the various Acceptations of the Greek Word *quæ*, render'd in English, *Nature*; and among Latin Writers, the different Acceptations are so many, that a certain Author reckons up fourteen or fifteen. Mr. Boyle, in a precise Treatise of the vulgarly receiv'd Notion of Nature, gives us eight principal ones.

**NATURE**, then, is used for the System of the World; the Machine of the Universe, or the Assemblage of all created Beings.

In this Sense we say, the *Author of Nature*; the Sun is call'd the *Eye of Nature*, because he illumines the Universe, and the *Father of Nature*, because he warms the Earth, and makes it fruitful. And thus we say of the Phœnix, or a Chimæra, that there is no such thing in Nature.

Instead of the word *Nature* in this Sense, Mr. Boyle, to avoid Ambiguity, and Abuse of the Word, proposes to have *World*, or *Universe* substituted. See WORLD.

**NATURE**, in a more confined Sense, comprehends the several kinds of Beings, Created and Incrated; Spiritual and Corporeal. See ENS.

In this Sense, we say, *Human Nature*, meaning all Men together that possess the same Spiritual, Reasonable Soul. *Angelical Nature*; the *Divine Nature*, &c.

And in this Sense, the School Divines say, *Natura Naturans*, & *Natura Naturata*, speaking of God, who is the *Natura Naturans*, as giving Being and Nature to all others; in opposition to the Creatures, who are the *Natura Naturata*, as receiving their Nature.

**NATURE**, in a still more restrained Sense, is used for the Essence of a thing; or that which the Schoolmen call the *Quiddity* thereof, that is, the Attribute which makes it what it is.

In this Sense, the Cartesians say, 'tis the Nature of the Soul to think.

And here the word Essence, Mr. Boyle would have obtained, in lieu of Nature. See ESSENCE.

**NATURE** is particularly used for the establish'd Order, and Course of material Things, the Series of Second Causes, or the Laws which God has imposed on the Motions impress'd by him. See CAUSE.

In this Sense it is we say, *Physics* is the Study of Nature. Nature makes the Night succeed the Day; Nature has made Respiration necessary to Life, &c.

Thus S. Thomas defines Nature a kind of divine Art, given to Beings, which carries them to the End they are determined for: In effect, Nature, in this Sense, is nothing else but that Concatenation of Causes and Effects, or that Order and Oeconomy which God has established in the Parts of his Creation.

In this Sense too we say, that Miracles are Effects above the Powers of Nature: So Art forces or surpasses Nature, by means of Machines, and moving Powers, by reason they produce Effects which exceed what we find in the common Course of Things. See MIRACLE, &c.

**NATURE**, again, is taken for an Aggregate of Powers belonging to any Body, especially a living one.

In this sense Physicians say, that Nature is strong, weak, or spent; or, that in such a Disease, Nature left to herself, will perform the Cure.

**NATURE**, still more strictly, is used for the Action of Providence, the Principle of all things; or, that spiritual Being which is diffused throughout the Creation, and



moves and acts in all Bodies, and gives them certain Properties, and procures certain Effects. See PROVIDENCE.

In this, which Mr. Boyle considers as the most usual Sense, Nature is nothing else but God, acting himself, and according to certain Laws he himself has fix'd. See GOD.

This seems pretty agreeable to the Opinion of many of the Antients, who made Nature the God of the Universe, the *To Παν*, who presides over, and governs all; tho others own'd this an imaginary Being, and by Nature meant no more than the Qualities, or Vertues which God has given his Creatures, and which their Poets and Orators took occasion of personifying.

F. Mallebranch says, the Nature so much talk'd of in the Schools is fit for nothing but to lead us back to Idolatry; the antient Heathens hereby understanding something, which, without being God, acts continually throughout the Universe. Thus the Idol Nature must be an actual Principle, which, with the concurrence of God, is the next and immediate Cause of all the Changes which befall Matter. Which seems to fall in with the Opinion of the *Anima Mundi*; as if Nature were a Substitute of God, or a collateral Cause with God, or a middle Being between God and created Things. See ANIMA MUNDI.

Aristotle defines Nature, *Principium & Causa motus & ejus in quo est primo per se & non per accedens*. A Definition so obscure, that none of his Commentators, with all their Glosses, have been able to render it intelligible.

This Principle, which the *Peripatetics* call'd Nature, they supposed to act necessarily; and was therefore destitute of Knowledge or Liberty. See NECESSITY.

Thus also the Stoics conceived Nature as a certain Spirit or Virtue diffused throughout the Universe, which gave every thing its Motion, so that all must be dragg'd away by the invariable Order of a blind Nature, and an inevitable Necessity. See FATE.

In speaking of the Action of Nature, no more is to be understood, but that Bodies act on one another, in a manner agreeable to the general Laws of Motion which the Creator has established.

In this lies the Mystery of that great Word, which is only a compendious way of expressing the Action of all Bodies: But the Mechanism of Bodies, would, perhaps, better express what is here meant by Nature. See MECHANISM.

Some, Mr. Boyle observes, will have the Nature of a thing to be only the Law that it receives from the Creator, and according to which it acts on all Occasions. But this is an improper, and figurative Expression.

The same Author proposes a Notion of Nature as more fit than any yet given to pass for the principal one of Nature; with regard to which many Axioms and Expressions relating to that Word, may be conveniently understood. In order to this, he distinguishes between General and Particular Nature.

General Nature he defines the Aggregate of the Bodies that make up the World in its present State, consider'd as a Principle by virtue whereof they act and suffer according to the Laws of Motion prescribed by the Author of things.

Particular Nature of any Subordinate or Individual consists in the general Nature apply'd to a distinct Portion of the Universe. Or it is a Convention of the Mechanical Properties (as Magnitude, Figure, Order, Situation, and Local Motion) of Parts convenient and sufficient to constitute of, or entitle to, its particular Species or Denominations, the particular Body they make up; the Concourse of all these being consider'd as the Principle of Motion, Rest, &c.

Laws of NATURE, are Axioms, or general Laws, and Rules of Motion, and Rest observed by natural Bodies in their Actions on one another; and in all the Changes which befall them in their Natural State. See LAW.

The Laws of Nature, and of Motion, are, in effect, the same; Custom, indeed, has made some difference, and we find Authors call the particular Cases of Motion, *Laws of Motion*; which see under MOTION; the more General, or Catholic ones, and those from which, as from Axioms, the others are deduced, they call *Laws of Nature*.

Of these, Sir Isaac Newton has established three.

#### Laws of NATURE.

1. Every Body perseveres in the same State, either of Rest, or uniform rectilinear Motion; except so far as it is forced to change that State by some foreign Force.

Thus Projectiles persevere in their Motions, except so far as they are retarded by the Resistance of the Air, and the Cause of Gravity; and thus a Top, whose Parts by their Cohesion, are continually drawing one another out of their rectilinear Motion, only ceases to run round because resisted by the Air, and the Friction of the Plane whereon it moves. And thus the larger Bodies of the Planets and Comets preserve their progressive and circular Motions a long time undiminished in Regions void of all

sensible Resistance. See *Vis Inertia*, RESISTANCE, and MEDIUM.

2. The Change of Motion is ever proportional to the moving Force whereby it is effected, and in the Direction of the Right Line wherein that Force is impress'd.

If a certain Force produce a certain Motion; a double Force will produce double the Motion; a triple Force triple the Motion, whether it be impress'd all at once, or successively, and by degrees. And this Motion (since it is ever directed to the same Point with the generating Force) if the Body were in Motion before, is either to be added to it, as if the Motions conspire; or subtracted from it, as where contrary; or added obliquely, as where oblique; and is compounded with it, according to the Determinations of each.

3. Reaction is always contrary and equal to Action; or the Actions of two Bodies upon one another are always mutually equal, and directed contrary ways.

Whatever presses, or pulls another, is equally press'd or pull'd thereby. Thus, if I press a Stone with my Finger, the Finger is equally press'd by the Stone. If a Horse draw a Weight by a Rope, the Horse is equally drawn back towards the Weight; for the Rope being equally stretch'd each way, will with an equal Endeavour to relax itself, drive the Horse toward the Stone, and the Stone towards the Horse, and will hinder the Progress of the one, as much as it promotes that of the other.

Again, if any Body by striking on another, do in any manner change its Motion, it will, itself, by means of the other, undergo an equal Change in its own Motion, by reason of the Equality of the Pressure.

In these Actions the Changes are equal; not those, we mean, of the Velocities, but those of the Motions, the Bodies being supposed free of any other Impediments. For the Changes of Velocities, which are likewise made contrary ways, in as much as the Motions are equally changed, are reciprocally proportional to the Bodies. See REACTION.

This Law also obtains in Attractions. See ATTRACTION.

NATURE, in Prosody: A Syllable is said to be long or short by Nature, to signify that it is so without any Rule of Grammar, to render it so by Position, or otherwise.

NAVAL, something relating to Ships, or Navigation. See SHIP and NAVIGATION.

In this sense we sometimes say, *Naval Strength*, a *Naval Combat*, &c.

NAVAL Crown, *Corona Navalis*, among the antient Romans, a Crown adorn'd with Figures of Prows of Ships, confer'd on Persons who in Sea-Engagements first boarded the Enemy's Vessel. See CROWN.

Tho A. Gellius seems to speak generally, where he says, the *Naval Crown* was adorn'd with Prows of Ships; Lipsius distinguishes two kinds of *Naval Crowns*: The one he calls *Simple*, the other *Rostrata*.

The first he supposes plain, and given to the common Soldiers, &c. The latter much more Glorious, adorn'd with Prows of Ships, and only given to Generals, or Admirals, who had gain'd some important Victory at Sea.

NAVE, in Architecture, *Navis Ecclesie*, the Body of a Church; or the Place where the People are disposed; reaching from the Rail or Balluster of the Choir to the chief Door. The Antient Greeks call'd it *Pronaos*. See CHURCH.

The Nave of a Church belongs to the Parishioners; 'tis they are to repair it, &c.

Baldus derives the Word from the Greek *ναός*, Temple; which Salmasius brings from *ναύς*, *ναῦς*, Ship; by reason the Vault or Roof of a Church bears resemblance to a Ship.

NAVEL, a Part in the middle of the Belly, by Anatomists call'd *Umbilicus*. See UMBILICUS.

NAVEL-String, by Anatomists call'd *Lunulus Umbilicalis*. See FUNICULUS.

NAVICULARE Os, in Anatomy, the third Bone in the Foot, between the *Astragalus*, and the *Ossa Cuneiformia*, thus call'd from *Navis*, a Ship, to which it bears some Resemblance; for which reason likewise it is sometimes call'd *Cymbiforme*, from *Cymba*, a Boat, and *Scaphoides*, from a Greek Word of the like import. See FOOT.

It has behind it a large Sinus, which receives the fore convex Head of the first Bone, and before it, is convex; 'tis distinguished into three Heads, which are received into the Sinus's of the *Ossa Cuneiformia*.

NAVIGATION, the Art, or Act of Sailing; or of conducting a Vessel from one Place to another, the safest and most commodious way.

This Art, in the full Latitude of the Word, comprehends three parts; viz. First, the Art of constructing and building Ships. (see SHIP.) Second, the loading of Ships. (see BURDEN.) And, Third, the Direction and Government of



of the Ship; which is in a peculiar Sense call'd *Navigation*, or *Sailing*. See *SAILING*.

In this restrained Sense of the Word, *Navigation* is either *Improper*, or *Proper*.

The first, usually call'd *Coasting*, is where the Ports are on the same, or a very neighbouring Coast; and where the Vessel is seldom out of sight of Land, or out of reach of Sounding. See *COASTING*.

In this, little else is required, but an Acquaintance with the Lands, the Compass, and Sounding-Line; each of which see in its Place, *COMPASS* and *SOUNDING*.

The latter is where the Voyage is long, and out in the main Ocean. In this, besides the Requisites in the former, are likewise required the use of *Mercator's Chart*, *Azimuth*, and *Amplitude Compasses*, *Log-Line*, and other Instruments for Celestial Observations, as *Quadrants*, *Forestaffs*, &c. See each Instrument, &c. in its Place.

*Navigation* turns principally on four things; two whereof being known, the rest are easily found from them by the Tables, Scales, and Charts.

These four things are, the Difference in Latitude, Difference in Longitude, the Reckoning or Distance, and the Course or Rumb of the Wind.

The Latitudes are easily found, and with sufficient Accuracy. See *LATITUDE*.

Nor is there any thing wanting to the Perfection of *Navigation*, but to determine the *Longitude*.

The Mathematicians of many Ages have applied themselves with the utmost Affiduity to supply this grand *Defideratum*, but hitherto in vain; notwithstanding the magnificent Rewards of several Princes and States to the Discoverer.

For the various Methods that now occasionally obtain at Sea, see *LONGITUDE*.

The *Course* and *Distance*, we have already observed, are had by the *Log-Line*, or dead Reckoning, and the Compass.

The Poets refer the Invention of the Art of *Navigation* to *Neptune*, some to *Bacchus*, others to *Hercules*, others to *Jason*, others to *Janus*, who is said to have made the first Ship. See *SHIP*. Historians to the *Aeginetes*, the *Phenicians*, *Tyrrians*, and the antient Inhabitants of *Britain*.

Some will have it, the first hint was taken from the flight of the Kite; others, as *Oppian de Piscibus*, Lib. I. from the Fish call'd *Nautelus*. Others ascribe it to Accident: But Scripture refers the Origin of so useful an Invention to God himself, who gave the first Specimen thereof in the Ark built by *Noah* under his Direction. For the Raillery the good Man underwent on account of his Enterprize, shews evidently enough, the World was then ignorant of any thing like *Navigation*, and that they even thought it impossible.

However, History represents the *Phenicians*, especially those of their Capital *Tyre*, as the first *Navigators*; being urged to seek a foreign Commerce by the Narrowness and Poverty of the Slip of Ground they possess'd along the Coasts; by the Conveniency of two or three good Ports; and by their natural Genius to Traffic.

Accordingly, *Lebanon*, and the other neighbouring Mountains furnishing them with excellent Wood for Ship-building, in a short time they were Masters of a numerous Fleet, which constantly hazarding new *Navigations*, and settling new Trades, they soon arrived at an incredible Pitch of Opulency and Populoufness: insomuch as to be in a Condition to send out Colonies; the Principal of which was that of *Carthage*, which keeping up their *Phenician* Spirit of Commerce, in time not only equal'd *Tyre* itself, but vastly surpass'd it; sending their Merchant-Fleets thro' *Hercules's Pillars*, now the Straights of *Gibraltar*, along the Western Coasts of *Africa* and *Europe*; and even, if we believe some Authors, to *America* itself, the Discovery whereof so many Ages afterwards, has been so glorious to the *Spaniards*. See *COMMERCE*.

*Tyre*, whose immense Riches and Power are represented in such lofty Terms both in sacred and profane Authors, being destroy'd by *Alexander the Great*; its *Navigation* and Commerce were transfer'd by the Conqueror to *Alexandria*, a new City, admirably situated for those purposes, propos'd for the Capital of the Empire of *Asia*, which *Alexander* then meditated: And thus arose the *Navigation* of the *Egyptians*, which was afterwards so cultivated by the *Ptolemys*, that *Tyre* and *Carthage* (which last, after having a long time disputed Empire with the *Romans*, was at length subdued) were quite forgot.

*Egypt* being reduced into a *Roman* Province after the Battel of *Actium*, its Trade and *Navigation* fell into the hands of *Augustus*; in whose time *Alexandria* was only inferior to *Rome*, and the Magazines of the Capital of the World wholly supplied with Merchandises from the Capital of *Egypt*.

At length, *Alexandria* itself underwent the Fate of *Tyre* and *Carthage*; being surpriz'd by the *Saracens*, who, in spite of the Emperor *Heraclius*, overspread the Northern Coasts of *Africa*, &c. whence the Merchants being driven,

*Alexandria* has ever since been in a languishing State, tho' still it have a considerable Part of the Commerce of the Christian Merchants, trading to the *Levant*.

The Fall of *Rome*, and its Empire, drew along with it, not only that of Learning, and the polite Arts, but that of *Navigation*; the *Barbarians*, into whose hands it fell, contenting themselves with the Spoils of the Industry of their Predecessors.

But no sooner were the more Brave among those Nations well settled in their new Provinces, some in *Gaul*, as the *Franks*; others in *Spain*, as the *Goths*; and others in *Italy*, as the *Lombards*; but they began to learn the Advantages of *Navigation* and Commerce, and the Method of managing them, from the People they had subdued; and this with so much success, that in a little time some of them became able to give new Lessons, and set on foot new Institutions for its Advantage.

Thus it is to the *Lombards* we usually ascribe the Invention and Use of *Banks*, *Book-keeping*, *Exchange*, and *Rechange*, &c. See *BANK*, *EXCHANGE*, &c.

It does not appear which of the *European* People, after the Settlement of their new Masters, first took themselves to *Navigation* and Commerce; some think it began with the *French*, tho' the *Italians* seem to have the justest Title to it; and are accordingly ordinarily look'd on as the Restorers hereof, as well as of the politer Arts, which had been banished together, from the time the Empire was torn asunder.

'Tis the People of *Italy* then, especially, and particularly those of *Venice* and *Genoa*, who have the Glory of this Restoration; and it is to their advantageous Situation for *Navigation*, they in great measure owe their Glory.

In the bottom of the *Adriatic* were a great number of marshy Islands, only separated by narrow Channels, but those well screen'd, and almost inaccessible, the Residence of some Fishermen, who here supported themselves by a little Trade of Fish and Salt, which they found in some of these Islands. Thither, then, the *Veneti*, a People Inhabiting that part of *Italy* along the Coasts of the Gulph, retir'd, when *Alaric* King of the *Goths*, and afterwards *Atila* King of the *Huns*, ravaged *Italy*.

These new Islanders, little meaning that this was to be their fixed Residence, did not think of composing any Body Politic; but each of the seventy two Islands of this little *Archipelago*, continued a long time under its several Masters, and each made a distinct Common-wealth: When their Commerce was become considerable enough to give Jealousy to their Neighbours, they began to think of Uniting into a Body. And it was this Union, first begun in the sixth Century, but not completed till the Eighth, that laid the sure Foundation of the future Grandeur of the State of *Venice*.

From the time of this Union, their Fleets of Merchant-Men were sent to all the Parts of the *Mediterranean*, and at last to those of *Egypt*, particularly *Cairo*; a new City, built by the *Saracen* Princes on the Eastern Banks of the *Nile*; where they traded for their Spices, and other Products of the *Indies*.

Thus they flourish'd, increas'd their Commerce, their *Navigation*, and their Conquests on the *Terra firma*, till the famous League of *Cambray* in 1508, when a number of jealous Princes conspir'd to their Ruin; which was the more easily effected by the Diminution of their *East-India* Commerce, which the *Portuguese* had got a part of, and the *French* another.

*Genoa*, which had apply'd itself to *Navigation* at the same time with *Venice*, and that with equal success, was a long time a dangerous Rival, disputed with it the Empire of the Sea, and shared with it the Trade to *Egypt*, and other Parts both of the East and West.

Jealousy soon began to break out, and the two Republics coming to blows, 'twas three Centuries almost continued War, e'er the Superiority was ascertain'd; when towards the end of the fourteenth Century, the fatal Battel of *Chioza* ended the noble Strife: The *Genoese*, who till then had usually the Advantage, having now lost all; and the *Venetians* almost become desperate, at one happy Blow, beyond all Expectation, secur'd to themselves the Empire of the Sea, and Superiority in Commerce.

About the same time that *Navigation* was retriev'd in the Southern Parts of *Europe*, a new Society of Merchants was form'd in the North, which not only carried Commerce to the greatest Perfection it was capable of till the Discovery of the one and other *India*, but also form'd a new Scheme of Laws for the Regulation thereof, which still obtain under the Name of *Use and Custom of the Sea*.

This Society is that famous Association of the *Hans Towns*, commonly supposed to have begun about the Year 1164. See *HANS TOWNS*.

The modern State of *Navigation* in *England*, *Holland*, *France*, *Spain*, *Portugal*, &c. is too popular to need a particular Detail. See *COMMERCE* and *COMPANY*.



We shall only add, that in examining the Reasons of Commerce's passing successively from the *Venetians, Genoese, and Hans-Towns*, to the *Portuguese and Spaniards*; and from those again to the *English and Dutch*; it may be established as a Maxim, That the Relation of Commerce and Navigation, or, if we may be allow'd to say it, their Union, is so intimate, that the Fall of the one, inevitably draws after it the other; and that they will always either flourish or dwindle together.

Hence so many Laws, Ordinances, Statutes, &c. for its Regulation; and hence particularly that celebrated *Act of Navigation*, which an eminent Author calls the *Palladium*, or tutelary Deity of the Commerce of *England*; which is too important not to be here mentioned; as it is the standing Rule, not only of the *English* among themselves, but also of other Nations with whom they traffic.

*Act of English Navigation*, is a Statute whereby the Parliament of *England* have settled every thing relating to Navigation and Commerce.

Till this Act, all Nations were at liberty to import all kinds of Merchandizes, whether of their own Growth, or loaden elsewhere, and that on their own Vessels.

*Cromwell* first perceiving the Prejudice this Liberty did to the *English* Commerce, which was now almost wholly in the hands of Foreigners, chiefly the *Dutch*, whom he hated; animated the *English*, by several Acts of his Parliaments, to resume their Trade into their own hands; and particularly passed an Act prohibiting the *Dutch* from importing any Merchandizes, except those of their own Growth or Manufacture, which were very few.

Upon the Restoration, the first Parliament *Charles II.* call'd, distinguishing, in *Cromwell*, the Politician from the Parricide, condemn'd the Memory of the one, and follow'd the Plan of the other with regard to Navigation and Commerce; by passing that celebrated *Bill or Act of Navigation*, which still subsists in its full Latitude, and its antient Vigour. Its Date is the 23d of September 1660. Its chief Articles follow.

1. That no Merchandizes shall be imported or exported to or from any of the *English* Colonies in *Asia, Africa, or America*, but on Vessels built within the Dominions of *England*, or really belonging to *Englishmen*, and whose Masters, and at least three fourths of the Crew are of that Nation, on pain of Forfeiture of the Goods and Vessel.
2. That no Person born out of the Subjection of *England*, or not naturaliz'd, shall exercise any Commerce in those Colonies for himself, or others.
3. That no Merchandizes of the Growth of *Asia or America*, shall be imported into any of the Dominions of *England* on any other than *English* Vessels.
4. That none of the Commodities of *Europe* shall be imported into *England* by any other Vessels than those of the Parts, Countries, and States where the Commodities grow, or are manufactured.
5. That all Kinds of Fish, and Train-Oils not fish'd by *English* Vessels, imported into *England*, shall pay double Duties.
6. That the Commerce from Port to Port in *England* and *Ireland* shall be carried on wholly by *English* Vessels and Merchants.
7. That none but *English* Vessels shall reap the Benefit of the Diminutions made, or to be made in the Customs.
8. All foreign Vessels are prohibited importing into *England* and *Ireland* any of the Commodities of *Muscovy*, or even any Malls, or other Woods, foreign Salt, Pitch, Rosin, Hemp, Raisins, Prunes, Oils of Olive, any kind of Corn, or Grain, Sugars, Ashes and Soap, Wine, Vinegar, Brandy, Currants, and other Commodities the Product of the *Turkish* States, except Vessels built in the Places where the Commodities grow or are manufactured, or where 'tis usual to take them up; and unless the Master and three fourths of the Crew be Natives of the Country where they are loaden.
9. That to prevent all false Declarations to favour the Entry of foreign Goods, all those mention'd in the last Article shall be deem'd to belong to Strangers that are not brought in Vessels of the Quality mention'd in the first Article; and as such shall pay the Duties used to be paid by other Commodities.
10. That to prevent Frauds in buying and disguising foreign Vessels, the Proprietors shall take an Oath that they really belong to them, and that no Foreigner has any part in them.
11. That *English* Vessels, or reputed *English*, may import into the Dominions of *England*, any Merchandizes of the *Levant*, tho not taken up in the Places where they grow, or are manufactured. Provided it be in some Part of the *Mediterranean* beyond the Straights of *Gibraltar*. And the same is understood of Commodities brought from the *East-Indies*; provided they be taken up in some Port beyond the Cape of *Good-Hope*: And those from the *Ca-*

*naries*, and other Colonies of *Spain*; and the *Azores*, and other Colonies of *Portugal*, which are allow'd to be ship'd, the one in *Spanish* Ports, the other in *Portuguese*.

12. These Penalties, Prohibitions, and Confiscations not to extend to Goods taken from the Enemies of *England*, nor to Fish caught by the *Scots*, or their Corn, and Salt, which may be imported into *England* by the *Scotch* Vessels.

5. Five Shillings per Ton Duty is imposed on every *French* Vessel arriving in any Port of *England*, so long (and even three Months longer) as 50 Sols per Ton lies on the *English* Vessels in *France*.

Lastly, That Sugars, Tobacco, and other Commodities of the Growth of the *English* Colonies, shall not be imported into any other Part of *Europe*, but the Dominions of *England*. And that Vessels going out of the Ports of the same Crown for the *English* Colonies, shall give 100*l.* Security, if under one hundred Tons, and 200*l.* if above, e'er they depart, that they will import their Cargo into some Port in the said Dominions; and the like, e'er they quit those Colonies, that they will land their whole Cargo in *England*.

NAVIS, *Argo Navis*, or the Ship *Argo* in Astronomy, a Constellation of the Southern Hemisphere. See ARGO.

NAUMACHIA, NAUMACHY, a Spectacle, or Shew, among the antient Romans, representing a Sea-Fight.

The Word is also used for a Circus inclosed with Seats and Porticos; the Pit whereof, serving as an Arena, was fill'd with Water for the exhibiting of Sea-Fights. See CIRCUS.

There were several of these *Naumachias* at Rome; three built by *Augustus*, one by *Claudius*, and another by *Domitian*. *Nero's Naumachia* serv'd for the Reverse of his Medals.

The Word comes from the Greek *vais*, Vessel, and *pu-gna*, fight.

NAUSEA, in Medicine, a Retching, or Propensity and Endeavour to Vomit; arising from a Loathing of Food, excited by some viscus Humour that irritates the Stomach, and urges it thus to discharge itself; or a *Nausea* is when the thoughts or sight of proper Food create a Sickness in the Stomach, or a Tendency to Vomit.

The usual Causes of a *Nausea*, and *Anorexia*, are hard Drinking, great Heat, a Fever, Consumptions, Laxness of the Stomach occasion'd by Tea, &c. Narcotics, as Tobacco, Passions of the Mind, Suppression of Evacuations inducing a Plethora, foul Stomach, tenacious Humours lodg'd therein, &c.

*Boerhaave* defines a *Nausea* Anatomically, to be a retrograde Spasmodic Motion of the Muscular Fibres of the *Oesophagus*, Stomach, and Intestines; attended with Convulsions of the Abdominal Muscles, and the *Septum transversum*. See VOMITING.

*Nausea* and Vomiting only differ from one another, as more or less Violent. The *Nausea* is properly the Effort the Stomach makes to Vomit, which has not always the Effect.

The Word is Latin, form'd from the Greek *naus*, of *vais*, Navis, Ship: In regard, People, at the beginning of their Voyages, are usually inclined to Vomiting.

NAUTICAL Planisphere, a Description of the Terrestrial Globe upon a Plane, for the use of Mariners. See PLANISPHERE and Sea-CHART.

NAUTICAL Chart, see Sea-CHART.

NAUTICAL Compass, the Sea-Compass, see COMPASS.

NAUTICUS, in Anatomy, a Muscle; call'd also *Tibialis Posterior*. See TIBIALIS.

NAUTILUS, in Natural History, a petrified Shell, found in the Earth; in other respects like those found in the Sea, or in Rivers. See FOSSIL, PETREFACTION, SHELL, and STONE.

NAVY, the Fleet, or Shipping, of a Prince, or State. See FLEET.

The Direction of the *Navy Royal* of *England* is in the Lord High-Admiral, and under him in the Principal Officers and Commissioners, who all hold their Places by Patent. See ADMIRAL.

Principal Officers of the *Navy* are four, viz. The Treasurer, whose Business is to receive Moneys out of the Exchequer, and to pay all the Charges of the *Navy*, by Warrant from the Principal Officers. The Comptroller, who attends, and comptrolls all Payment of Wages, is to know the Rates of Stores, to Examine and Audit all Accounts, &c. The Surveyor, who is to know the State of all Stores, and to supply'd, to estimate Repairs, charge Boatwains, &c. with what Stores they receive; and at the End of each Voyage, to State and Audit Accounts. And lastly, The Clerk of the Acts, whose Business is to Record all Orders, Contracts, Bills, Warrants, &c.

Commissioners of the *Navy*, are five. The first Executes that Part of the Comptroller's Duty which relates to the Victuallers Accounts. The second, another Part of the said Comptroller's Duty relating to the Accounts of the Store-keepers of the Yards. The third has the Direction of the



**Navy** at the Port of *Portsmouth*. The fourth has the same at *Chatham*. And the fifth at *Plymouth*.

The *Navy* was antiently *Victualled* by Contract ; but the *Victualling* is now under Commissioners, who keep their Office on *Tower-Hill*. See *VICTUALLING-Office*.

The ordinary Expence of the *Navy* in a Year of Peace, continuing in Harbour, is so well regulated, that it amounts to scarce 130000 *l. per Annum*.

The number of Ships and Vessels in the *Navy*, as it stood in the Year 1710, are 7 First-Rates, 13 Second-Rates, 48 Third-Rates, 65 Fourth-Rates, 68 Fifth-Rates, 40 Sixth-Rates, 5 Fire-Ships, 7 Bomb-Vessels, 18 Yachts, 1 Advice-Boat, 2 Brigantines, 7 Sloops, 4 Store-Ships, 13 Hulks, 26 Hoys, 2 Smacks. See *RATE*.

**NAZAREATE**, the State and Condition of a *Nazarite*, or *Nazarean* among the *Jews*. See *NAZARITE*.

The *Nazareate* was a Separation from the rest of Mankind ; particularly in three things ; 1. In that the Persons devoted hereto drank no Wine. 2. In that they did not shave their Hair. 3. In avoiding the Touch of dead People, which they held a Defilement.

The *Nazareate* was of two Kinds, the one Temporary, the other for Life. The *Rabbins* enquire what the Term of the Temporary *Nazareate* was, and determine it by the *Cabbala* ; for since, in Scripture, *Numbers* vi. 5. where 'tis said, *Domino sanatus erit*, the Hebrew Verb, נָזַר *erit*, consists of four Letters ; the first and third whereof taken as numeral Letters, do each make 10, and the rest each 5, all together 30 ; the Term of the *Nazareate*, say they, was 30 Days. See *CABBALA*.

**NAZARITE**, or *NAZARENE*, in the Old Testament, is used for a Person distinguished and separated from the rest, by something extraordinary, either his Sanctity, Dignity, or some Vow.

In the Book of *Numbers*, ch. vi. we find the Vow of a *Nazarite* described ; i. e. the Vow whereby a Man or Woman separate themselves to the Lord ; and the Conditions, or Effects thereof as to Abstinence, &c. See *NAZAREATE*.

The Word comes from the Hebrew נָזַר *Nazar*, to distinguish, separate ; in which it differs from *Nazarean*, an Inhabitant of the Country call'd *Nazareth*, which comes from נֶזֶר *Nazar*, or *Netzer*, to save, preserve.

**NAZARITES**, or *NAZARENES*, were likewise a Kind of Sectaries in the Church, in the first Ages thereof.

S. *Epiphanius* tells us the *Nazareans* were the same with the *Jews* in every thing relating to the Doctrine and Ceremonies of the Old Testament ; and only differ'd from them in this, that they added Christianity thereto, professing to believe that Jesus Christ was the Messiah.

There were two Kinds of *Nazarites*, the one *Pure*, who kept the Law of *Moses* and Christianity together ; the other, real *Ebionites*. See *EBIONITES*.

Ecclesiastical Writers tell us, that St. *Matthew* preached the Gospel to the *Jews* at *Jerusalem*, and the rest of *Palestine*, in their own Language ; and that accordingly they had his Gospel written in the Hebrew of that Time. And S. *Epiphanius* adds, that this Gospel was preserved entire among the *Nazareans* ; only he doubts whether they might not have retrench'd the Genealogy of Jesus Christ, which was not in the Copy of the *Ebionites*. S. *Jerome*, who translated it out of Hebrew into Greek and Latin, says, A great many People took the Hebrew Gospel used by the *Nazareans* and *Ebionites*, to be the Original of S. *Matthew*.

Hence *Baronius* in his *Annals* says, if the *Vulgate Latin* Version were to be reform'd, it should rather be done by the Hebrew Original, than by the Greek ; which is but a Copy.

*Casaubon* treats this Opinion of *Baronius* as impious, as not being able to conceive how the Authority of the Greek Version should depend on a Text quite lost. He adds, That it was never used by any but the *Nazareans*, *Ebionites*, and some other Heretics ; and that it was full of Fables, as having been alter'd and corrupted by those Heretics.

**NEALING**, or rather *ANNEALING*, a Term used for the Preparing of several Matters by heating or baking them in an Oven, or the like.

**NEALING** of *Glass*, is the baking of *Glass* to dry, harden, and give it the due Consistence, after it has been blown, and fashion'd into the proper Works. See *GLASS*.

This is usually perform'd in a kind of Tower, call'd the *Liter*, built over the Melting-Furnace. See *FURNACE*.

**NEALING** of *Glass* is also used for the Art of Staining *Glass* with Metal Colours. See *PAINTING on Glass*.

**NEALING** of *Steel*, is the heating it in the Fire to a blood-red Heat ; and then taking it out, and letting it cool gently of itself. See *STEEL*.

This is done to make it softer, in order to Engrave or Punch upon it. See *TEMPERING*.

**NEAP-TIDES**, the Tides in the 2d and 4th Quarters of the Moon ; which are low Tides, in respect of the Spring-Tides. See *TIDES*.

**NEAT-WEIGHT**, the Weight of a Commodity without the Cask, Bag, or Case. See *WEIGHT*.

**NEBULOUS**, *Cloudy*, in Astronomy, a Term apply'd to certain of the fix'd Stars, which shew a dull, hazy Light, and are less than those of the sixth Magnitude, and so scarce visible to the naked Eye, to which, at best, they only appear like little dusky Specks or Clouds.

Through a moderate Telescope, these *Nebulous Stars* plainly appear to be Congeries or Clusters of several little Stars. See *STAR*.

In the *Nebulous Star* call'd *Præsepe*, in the Breast of *Cancer*, there are reckon'd 36 little Stars ; three of which, Mr. *Flamsteed* gives us in his Catalogue. See *CANCER*.

In the *Nebulous Star* of *Orion* are reckon'd 21. F. *le Compte* adds, that in the *Pleiades* are 40 ; 12 in the Star in the middle of *Orion's Sword* ; in the extent of two Degrees of the same Constellation, 500 ; and 2500 in the whole Constellation. See *ORION*.

**NEBULY**, *NEBULE*, or *NEBULOUS*, in Heraldry, a Term used when a Coat is charged with several little Figures, in form of Clouds, running within one another ; or when the Out-line of a Bordure, Ordinary, &c. is indented or waved, after the manner in the adjoining Figure.



**NECESSARY**, in a Philosophical Sense, that which cannot but be, or cannot be otherwise. See *NECESSITY*.

The Schoolmen make a great many Kinds, or Divisions hereof : As,

**NECESSARY** in *Causing* : when there is a Cause from which an Effect must necessarily follow. **NECESSARY** in *Predicating*. And, **NECESSARY** in *Being*.

There is also a *Logical NECESSARY* : *Physical NECESSARY* : *Metaphysical*, and *Moral NECESSARIES*.

**NECESSITY**, what is done by a *necessary Cause*, or by an irresistible Power ; in opposition to *Liberty*. See *LIBERTY* and *POWER*.

*Necessity* is usually confounded with *Constraint* ; yet, in God, the *Necessity* of being Good is not any *Constraint*, but a *Perfection*. In effect, *Necessity*, according to *Roche-faucault*, differs from *Constraint* in this, that the former is join'd with the Pleasure and Inclination of the Will, to which *Constraint* is contrary.

*Simplicius*, from *Plato* and *Epietetus*, distinguishes two Kinds of *Necessity* ; the one *Violent* or *Coactive*, which is opposite to *Liberty* ; the other *Spontaneous* or *Voluntary*, very consistent with it ; for this, adds he, it is that *necessitates* all things to act according to their Nature, as being con-natural to them ; since αὐτοκίνητον, a thing that moves itself, must of *Necessity* be moved according to its own Nature, i. e. the Will : That is, since it is τὸ αὐτοκίνητον, a Self-mover, it must necessarily move according to its own Nature, i. e. spontaneously.

This Distinction is admitted by many of the Divines, particularly S. *Augustine*, who urges it against the *Pelagians*, as is shewn by *Jansenius*.

The Schools distinguish a *Physical Necessity*, and a *Moral Necessity* ; a *Simple*, *Absolute Necessity*, and a *Relative* one.

A *Physical NECESSITY* is the want of a Principle, or of the natural Means necessary to act, which is otherwise call'd a *Physical* or *Natural Impotence*. See *IMPOTENCE*.

A *Moral NECESSITY*, or *Impotence*, is only a great Difficulty, such as that arising from a long Habit, a strong Inclination, or violent Passion.

A *Simple*, or *Absolute NECESSITY*, is that which has no dependance on any State, or Conjuncture, or any particular Situation of things, but is found every where, and in all the Circumstances in which the Agent can be supposed.

Such is in a blind Man the *Necessity* he is under of not distinguishing Colours.

*Relative NECESSITY*, is that which places him in a real Incapacity of acting, or not acting in those Circumstances, and that Situation he is found in ; tho in other Circumstances, and another State of things, he might act, or not act.

Such, in the Opinion of the *Jansenists*, is the *Necessity* of doing Evil in a Man, who, with a violent Passion, has only a feeble Grace to resist it ; or the *Necessity* of doing well in a Man, who having Grace of seven or eight Degrees of Strength, has only Concupiscence of two or three Degrees to withstand.

All these Kinds of *Necessity* are opposite to *Liberty* ; since even in the last, 'tis as impossible for the Man to act, or not act, as if he were in a State of *Absolute*, *Simple*, and *Physical Necessity*.

The Schoolmen admit other Species of *Necessity* ; *Antecedent*, *Concomitant*, *Consequent*, &c.

*Antecedent NECESSITY*, is that arising from an antecedent Cause,



Cause, necessarily operating. Such is the *Necessity* of the Sun's Rising to-morrow Morning.

*Concomitant NECESSITY* arises from an antecedent and necessary Cause, but depends on the Circumstances of the Effect; the Effect all the while being free. Thus 'tis necessary *Peter* should sit, supposing he is sitting.

**NECK**, a Part in the human Body, and in that of several other Animals, between the Head and the Trunk of the Body. See **BODY**.

All Animals have *Necks* except those without Lungs and Voice, as Fishes and Frogs.

The upper Part before is call'd the *Throat*; and the lower Part the *Pomum Adami*. The Hole between the two *Clavicles* is call'd the *Jugulum*, by the Greeks *σθην*, Murther; it being very easy to kill in this Part. The hind Part of the Neck is call'd *Cervix*; and the Hole between the first and second *Vertebra*, the *Nape*; that underneath, *Epomis*.

Its lateral Parts commence from the bottom of the Ears, and are call'd *Parotides*.

The inner Parts of the Neck are seven *Vertebrae*, the *Trachea*, *Larynx*, *Jugular Veins*, *Carotid Arteries*, the *Intercostal Nerve*, that of the eighth Pair, with the *Recurrent*, and several Muscles. See each Part under its proper Article.

The *NECKS* of *Quadrupeds*, Mr. *Derbam* observes, are always equal to the Length of their Legs; to enable them to reach the Ground for their Food, without stooping the Body. See **QUADRUPED** and **LEG**.

Indeed, the Elephant is an Exception from the Rule; its Neck is very short; but then it has a peculiar Provision by a *Proboscis*, or *Trunk*. See **PROBOSCIS**.

Another thing remarkable in the *Necks* of *Graminivorous Quadrupeds*, is a strong, tendinous and insensible *Aponewrosis*, or *Ligament*, braced from the Head to the middle of the Back; by means whereof they are enabled constantly to hold down the Head, tho' very heavy, to gather their Food without Pain or Labour.

**NECROLOGY**, a Book, antiently kept in Churches and Monasteries; wherein were register'd the Benefactors to the same, the Time of their Deaths, and the Days of their Commemoration; as also the Deaths of the Priors, Abbots, Religious Canons, &c.

This was otherwise call'd *Calendar*, and *Obituary*. See **CALENDAR**, &c.

The Word comes from the Greek *νεκρός*, *Mors*, Death, and *λόγος*.

**NECROMANCY**, the Art, or Act of communicating with Devils, and doing surprising Feats by their Assistance; particularly calling up the Dead: From *νεκρός*, Death, and *μαντεία*, *Enchantment*. See **MAGIC**, **SORCERY**, &c.

**NECROSIS**, in Medicine, a compleat Mortification of any part; call'd also *Sideratio* and *Sphacelus*. See **SPHACELUS**, &c.

The Word is Greek, *νεκρός*, where it has the same Signification.

**NECTAR**, among the antient Poets, the Drink of the fabulous Deities of Antiquity.

**NEEDLE**, a very familiar little Instrument, or Utensil, made of Steel, pointed at one end, and pierced at the other; used in Sewing, Embroidery, Tapisstry-Work, &c.

Needles make a very considerable Article in Commerce; and the Consumption thereof is almost incredible. The Sizes are from N<sup>o</sup> 1, the largest; to N<sup>o</sup> 25, the smallest.

There is scarce any Commodity cheaper than *Needles*; which will appear something extraordinary to the Reader, after he has been shewn the infinite Number of Operations they undergo e'er brought to Perfection.

#### Manufacture of NEEDLES.

German and Hungary Steel is of most repute for *Needles*. The first thing, is to pass it thro' a Coal-fire, and under a Hammer, to bring it out of its square Figure into a Cylindrical one. This done, 'tis drawn thro' a large Hole of a Wire-drawing Iron; return'd into the Fire, and drawn thro' a second Hole of the Iron, smaller than the first; and thus successively from Hole to Hole, till it have acquir'd the degree of Fineness requir'd for that Species of *Needles*; observing every time it is to be drawn, that it be greas'd over with Lard to render it the more manageable. See **WIRE-DRAWING**.

The Steel thus reduced into a fine Wire, is cut in Pieces of the length of the *Needles* intended. These Pieces are flatted at one end on the Anvil, in order to form the Head and Eye. They are then put in the Fire, to soften 'em further, and thence taken out, and pierc'd at each extreme of the flat Part, on the Anvil, by force of a Punchion of well temper'd Steel, and laid on a leaden Block, to bring out, with another Punchion, the little Pieces of Steel remaining in the Heads.

The Corners are then filed off the Squares of the Heads, and a little Cavity filed on each side the flat of the Head. This done, the Point is form'd with a File; and the whole filed over. They are then laid to heat red-hot, on a long flat, narrow Iron, crooked at one end, in a Charcoal-fire; and when taken out thence, are thrown into a Basin of cold Water to harden. On this Operation, a good deal depends; too much heat burns 'em; and too little leaves 'em soft; the Medium is only to be learnt by Experience.

When harden'd, they are laid in an Iron-Peel, on a Fire more or less brisk, in proportion to the Thickness of the *Needles*, taking care to move 'em from time to time; this serves to temper 'em, and take off their Brittleness; Care, here, too, must be taken of the degree of Heat.

They are then streightned one after another with the Hammer; the Coldness of the Water used in hardning 'em having twisted the greatest part of 'em.

The next Process is the Polishing. To do this, they take twelve or fifteen Thousand *Needles*, and range 'em in little Heaps against each other on a Piece of new Buckram, sprinkled with Emery Dust. The *Needles* thus disposed, Emery Dust is thrown over 'em, which is again sprinkled over with Oil of Olives. At last, the whole is made up into a Roll, well bound at both ends.

This Roll is then laid on a Polishing Table, and over it a thick Plank loaden with Stones, which two Men work backwards and forwards a day and half, or two days successively. By which means, the Roll thus continually agitated by the Weight and Motion of the Plank over it, the *Needles* within side being rubb'd against each other with the Oil and Emery, are insensibly polished.

In Germany, instead of Hands, they polish with Water-Mills.

After Polishing, they are taken out, and the Filth wash'd off 'em with hot Water and Soap: then wiped in hot Bran a little moisten'd, placed, with the *Needles*, in a round Box suspended in the Air by a Cord, which is kept stirring till the Bran and the *Needles* be dry. The *Needles* thus wiped in two or three different Brans, are taken out and put in wooden Vessels to have the good separated from those whose Points or Eyes have been broke either in polishing or wiping; the Points are then all turn'd the same way, and smooth'd with an Emery-stone turn'd with a Wheel.

This Operation finishes 'em; and there remains nothing but to make 'em into Packets of two hundred and fifty each.

*Chirurgeons NEEDLES*, are crooked, and their Points triangular. They are of different Sizes, and bear different Names according to the Purposes they are used for.

The largest are *Needles for Amputation*; the next, *Needles for Wounds*; the finest, *Needles for Sutures*. They have others very short and flat, for Tendons; others, still shorter, and the Eye placed in the middle, for the tying together of Vessels, &c. See **SUTURE**, &c.

*Magnetical NEEDLE*, in Navigation, &c. a Needle touch'd with a Load-stone, and suspended on a Pivot or Centre, on which, playing at liberty, it directs itself to certain Points in, or under the Horizon. See **MAGNET**.

*Magnetical Needles* are of two Kinds, viz. *Horizontal* and *Inclinator*.

*Horizontal NEEDLES*, are those equally balanced on each side the Pivot which sustains 'em; and which, playing Horizontally, with their two extremes point out the North and South Points of the Horizon. For their Application and Use, see **COMPASS**.

*Construction of an Horizontal NEEDLE*. A Piece of pure Steel is provided, of a length not exceeding six Inches, lest its Weight impede its Volubility; very thin, to take its Verticity the better; not perforated with any Holes, &c. for Ornament sake, which prevent the equable diffusion of the Magnetic Virtue.

A Perforation is made in the middle of its Length, and a brass Cap or Head solder'd on, whose inner Cavity is Conical, so as to play freely on a Stile or Pivot, headed with a fine Steel Point.

The North Point of the *Needle* in our Hemisphere is made a little lighter than the Southern, the Touch always destroying the Balance, if well adjusted before, and rendering the North End heavier than the South, and thus occasioning the *Needle* to dip. See **DIPPING-NEEDLE**.

Now to give the *Needle* its Verticity, or directive Faculty, 'tis to be rubb'd leisurely on each Pole of a Magnet, from the South Pole towards the North; first beginning with the Northern End, and going back at each repeated rub, towards the South. A Rub in a contrary Direction takes away the Power communicated by the former. See **POLE** and **TOUCHING**.

If after Touching, the *Needle* be out of its Equilibrium, something must be filed off from the heavier Side, till it balance evenly.

Needle



*Needles in Sea-Compasses* are usually made in a Rhomboidal, or oblong Form. See their Structure under the Article COMPASS.

A *Needle*, on Occasion, may be prepared without touching it on a Load-stone: For a fine Steel *Needle*, gently laid on the Water, or delicately suspended in the Air, will direct itself to the North and South.

Thus, also, a *Needle* heated in the Fire, and cooled again, in the Direction of the Meridian, or even only in an erect Situation, acquires the same Faculty. See MAGNETISM, POLE, &c.

The *Needle* is not found to point precisely to the North, except in very few Places; but deviates from it, more or less, in different Places, and that too at different Times; which Deviation is call'd the

*Declination of the NEEDLE*, the Variation of the Horizontal *Needle* from the Meridian; or the Angle it makes with the Meridian, when freely suspended in a Horizontal Plane. See DECLINATION.

*Inclinary, or Dipping-Needle*, see DIPPING-Needle.

*NEEP-Tides*, see NEAP-Tide.

A Ship is said to be *Beneeped* when she wants Water to bear her off the Ground.

NEFASTUS, a Latin Term. The Romans used the Term *Dies Nefasti*, for those Days wherein it was not allow'd to administer Justice, or hold Courts; nor for the Pretor to pronounce the three solemn Words or *Formula's* of the Law, *do, dico, addico*, I give, I appoint, I adjudge. See FASTUS.

These Days were distinguish'd in the Calendar by the Letter N, or by N. P. *Nefastus Primo*; as when the Day was only *Nefastus*, for the first Part thereof. See DAY.

NEGATION, in Logic, an Act whereby the Mind separates one Idea from another; or affirms the one is different from the other. As, the Soul is not the Body.

NEGATIVE, a Term that denies, or implies a Denial, of any thing.

Logicians, &c. say, A *Negative* cannot be proved but by converting it into an Affirmative.

NEGATIVE Heretics, in the Language of the Inquisition, are those, who being accused of Heresy, by Witnesses, whose Evidence they don't deny, still keep on the *Negation*, make open Profession of the Catholic Doctrine, and declare their abhorrence of Heresy.

There are also *Negative Schisms*, and *Positive* ones. In the *Negative*, 'tis sufficient to reject the Errors of a Church without separating from it, or setting up a distinct Society.

NEGATIVE Pains, the Laws whereby certain Persons are excluded from Honours, Dignities, &c. without inflicting any direct and positive Pains.

NEGATIVE Quantities, in Algebra, those affected with the Sign —. See QUANTITY.

*Negative Quantities*, are the Effects of positive ones; where Positive end, there *Negative* ones commence. See POSITIVE.

NEGATIVE Pregnant, in Law, a *Negative* which implies or brings forth an Affirmative: As if a Man being impleaded to have done a thing on such a Day, and in such a Place, denies he did it, *Modo & forma declarata*; which implies nevertheless that he did it in some sort.

NEGATIVELY, NEGATIVE, in the School-Philosophy, is variously used in contradistinction to Positively. See POSITIVELY.

NEGRO'S, a Kind of Slaves, which make a considerable Article in the modern Commerce.

The *Negro's*, properly call'd *Blacks*, or *Moors*, are a People of Africa, whose Country extends on each side the River Niger, and is call'd *Nigritia*: Tho, whether the People communicated their Name to the River, &c. or received it therefrom, is not easily determined.

The Origin of *Negro's*, and the Cause of that remarkable Difference in Complexion from the rest of Mankind, has much perplex'd the Naturalists; nor has any thing satisfactory been yet offer'd on that head. See BLACKS.

They are brought from Guinea, and other Coasts of Africa, and sent into the Colonies in America, to cultivate Sugar, Tobacco, Indigo, &c.

This Commerce, which is scarce defensible on the foot either of Religion, or Humanity, is now carried on by all the Nations that have Settlements in the West-Indies; particularly the English, Dutch, Spaniards, and Portuguese; the Spaniards, indeed, have few *Negro's* at first hand, but have always treated with other Nations, to furnish them therewith: Thus they were formerly furnished by the Company of the Grilles, established at Genoa; since by the *Affiliata in France*; and since the Peace of Utrecht, by the *English South-Sea Company*. See ASSIENTA and COMPANY.

The best *Negro's* are brought from Cape Verd, Angola, Senegal, the Kingdom of Joloffes, that of Galland, *Damel*, the River Gambia, &c.

A *Negro* between 17 or 18 and 30 Years of Age, was anciently only valued at about 45 s. in the Commodities pro-

per for that Country, which are Brandies, Iron, Linnen, Paper, Brass-Pots, Basons, &c. But their Value is now much enhanced, and it is seldom they meet with a good *Negro* for five Pounds. They frequently give seven or eight.

There are various ways of procuring them: Some, to avoid Famine, sell themselves, their Wives and Children, to their Princes, or great Men, who have wherewithall to subsist them. Others are made Prisoners in War; and great numbers seiz'd in Excursions, made for that very purpose by the petty Princes upon one another's Territories; in which 'tis usual to sweep away all both Old and Young, Male and Female.

The *Negro's* make a frequent Practice of surprizing one another while the *European Vessels* are at Anchor, and dragging those they have thus caught to 'em, and selling them in spite of themselves; and 'tis no extraordinary thing to see the Son sell, after this manner, his Father or Mother, and the Father his own Children, for a few Bottles of Brandy, or a Bar of Iron.

As soon as the Ship has its Complement, it immediately makes off; the poor Wretches, while yet in sight of their Country, falling into such deep Grief and Despair in the Passage, that a great part of 'em languish, fall into Sickness, and die: others of 'em dispatch themselves, by refusing any Food; others by stopping their Breath, in a manner peculiar to themselves, by turning and folding their Tongue, which immediately strangles them; others dash out their Brains against the Ship; and others jump over board.

The only sure means to preserve 'em, is to have some Musical Instrument play to 'em, be it ever so mean. But this excessive Love for their Country abates as they get further off.

At their arrival in the Colonies, each *Negro* is sold for 38 or 40 Pounds. They make the chief Riches of the Inhabitants of the Islands, &c. A Man, v. g. who has twelve *Negroes*, is esteem'd a rich Man.

NEIF, NAF, *Nativa*, in our antient Customs, a Bond-Woman, or She-Villain. See NATIVUS.

Antiently, Lords of Manors sold, gave, or assigned their *Neifs* and *Natives*. See SLAVE, VILLAIN, &c.

*Writ of NEIFTY*, is an antient Writ whereby the Lord claim'd such a Woman for his *Neif*.

NE injuste Vexes, a Writ which lies for a Tenant against the Lord forbidding him to distrain on the Tenant, who has formerly prejudiced himself by doing or paying more than he needed.

NEMÆAN Games, one of the four kinds of Games, or Combats, celebrated among the antient Greeks. See GAMES.

Some say, they were instituted by Hercules, on occasion of his killing the *Nemean Lion*; and that it was on that account they had their Name, as also the Place of Celebration, the Forest of *Nemea*.

Others relate, That the seven Chiefs sent to Thebes, under the Conduct of Polynices, being extremely pinch'd in their Journey with Thirst, met with *Hypsipyle* of Lemnos, who had in her Arms *Opheltes* Son of *Lycorgus*, Priest of Jupiter, and *Eurydice*. They begging her to shew 'em some Water, she laid the Child down on the Grass, and conducted 'em to a Well. In her Absence, a venomous Serpent kill'd the Child; upon which the Nurse, out of an excess of Grief, grew desperate. The Chiefs, at their return with her, kill'd the Serpent, buried the young *Opheltes*, and to divert *Hypsipyle*, instituted the *Nemean Games*.

*Pausanias* refers the Institution thereof to *Adrastus*, and the Restoration thereof to his Descendants.

Lastly, Hercules, on his Victory over the *Nemean Lion*, augmented the Games, and consecrated them to Jupiter *Nemeus*. *Ælian* says, 'Twas indeed the seven Chiefs going to the Siege of Thebes, that instituted them; but adds, that 'twas in favour of *Pronætes*.

They were open'd with Sacrificing to *Nemean Jove*, appointing him a Priest, and proposing Rewards for such as should be Victors in the Games.

They were held every three Years, in the Month call'd *Panemos* by the Corinthians, and *Boedromion* by the Athenians.

The Argians were the Judges, and sat clothed in black, to express the Origin of the Games. As they were instituted by Warriors, none at first were admitted to 'em but Military Men, and the Games themselves were only Equestrian and Gymnic; at length they were open to the People, and other Kinds introduced.

The Conquerors were crown'd with Olive, till the time of the War with the Medes; when, a Blow they receiv'd in that War, occasion'd them to change the Olive for Smal-lage, a funeral Plant. Tho others maintain, that the Crown was originally Smal-lage, on account of the Death of *Opheltes*, otherwise call'd *Archemorus*; this Plant being supposed to have receiv'd the Blood which run from the Wound made by the Serpent.



**NEMINE** *Contradicente*, i. e. *None contradicting it*, a Term chiefly used in Parliament, when any Matter is carried with universal Consent.

**NENIA**, or **NENIA**, in the antient Poetry, a kind of Verses sung at the Obsequies of the Dead. See **OBSEQUIES**.

Authors represent them as sorry Compositions, sung by hired Women-Mourners. The first Rise of these *Nenia* is ascribed to the *Phrygians*.

The Word comes from the Greek *νενία*, on which Scaliger observes that it should be wrote in *Latin Nenia*, not *Nenia*.

*Guichart* notes *Nenia* to have antiently been the Name of a Song to lull Children a-sleep, and conjectures it to come from the Hebrew *נִין* *Nin*, Child.

In the Heathen Antiquity, the Goddess of Tears and Funerals was call'd *Nenia*, whom some suppose to have given that Name to the Funeral-Song; and others to have taken her Name from it. Some will have the one, and some the other, form'd from the Sound or Voice of those that weep.

**NEOMENIA**, in the Schools, &c. a Term used for the New Moon. See **MOON**.

Some say, the Jews reckon'd two kinds of *Neomenia*, or New Moons; the first on the Day of her Conjunction with the Sun; the second on that of her Apparition, or *Phasis*; and add, that they celebrated two Passovers, by reason of the uncertainty which of these Days it should be held on.

*F. Hardouin*, on the contrary, maintains, they had no other *Neomenia* but that of the Moon's Conjunction with the Sun; which it was easy to ascertain by Astronomical Calculation: whereas the other was liable to Mistakes; the Moon sometimes not shewing herself till four or five days after her Conjunction. See **PASSOVER**.

**NEOPHYTES**, **ΝΕΟΦΥΤΑΙ**, i. e. *New Plants*, in the Primitive Church, were new Christians; or the Heathens newly converted to the Faith.

The Fathers never discover'd the Mysteries of their Religion to the *Neophytes*.

The Term is still apply'd to the Converts which the Missionaries make among the Infidels. The *Japoneſe Neophytes* in the latter end of the 16th, and beginning of the 17th Century, are said to have shewn Prodiges of Courage and Faith, equal to any in the Primitive Church.

The Word has formerly been likewise used for New Priests, or those first admitted into Orders; and sometimes for the Novices in Monasteries.

Originally the Word signifies a *new Plant*, being form'd of the Greek *νέος*, new, and *ποιέω*, I produce, q. d. newly born; Baptism, whereby they commenced *Neophytes*, being a kind of new Birth.

**NEPENTHE**, in Pharmacy, a Name given to an Opiate, or *Laudanum*, by *Theo. Swingerus*, from the great Opinion he had of its giving Ease in all manner of Pain; the Word importing as much, from the Privative, *νῆ*, non, or *absque*, without; and *πένθος*, *Luctus*, Sorrow.

The *Nepenthe* mention'd in antient Authors, was a Plant, now unknown. *Homer* says, it was a Plant of *Egypt*; and adds, that *Helena* made use of it to charm her Hosts, and make 'em forget their Pains.

Some Authors say, it was the Plant we call *Helenium*, and others *Ænopia*. *M. Petit* has a Dissertation on the antient *Nepenthe*.

**NEPER's**, **NAIFER's**, or **NAPIER's Bones**, an Instrument, whereby Multiplication and Division of large Numbers are much facilitated and expedited; so call'd from its Inventor *J. Neper*, Baron of *Merchiston* in *Scotland*.

#### Construction of NEPER's Bones.

Five Rods, Plates, or *Lamellæ*, are provided of Wood, Metal, Horn, Pastboard, or other Matter, (Tab. **ALGEBRA**, Fig. 1.) of an oblong Form, and divided each into nine little Squares; each of which is resolved into two Triangles by Diagonals.

In these little Squares are wrote the Numbers of Multiplication Table; in such manner as that the Units, or right-hand Figures, are found in the right-hand Triangle; and the Tens or the left-hand Figures, in the left-hand Triangle: As in the Figure.

#### Use of NEPER's Bones in Multiplication.

To multiply any given Number by another; dispose the *Lamellæ* in such manner, as that the top Figures may exhibit the Multiplicand; and to these, on the left-hand, join the *Lamellæ* of Units; in which seek the right-hand Figure of the Multiplier; and the Numbers corresponding thereto, in the Squares of the other *Lamellæ*, write out, by adding the several Numbers occurring in the same Rhomb together, and their Sums. After the same manner write out the Numbers corresponding to the other Figures of the Multiplier; let them be disposed under one another as in the common Multiplication; and lastly, add the several Numbers into one Sum.

For Example. Suppose the Multiplicand 5978, and the Multiplier 937. From the outermost Triangle on the right-hand (Tab. **ALGEBRA**, Fig. 2.) which corresponds to the right-hand Figure of the Multiplier 7, write out the Figure 6, placing it under the Line. In the next Rhomb, towards the left, add 9 and 5; their Sum being 14, write the right-hand Figure, viz. 4, against 6; carrying the left-hand Figure, 1, to 4 and 3, which are found in the next Rhomb. The Sum 8, join to the 46, already put down: after the same manner, in the last Rhomb, add 6 and 5, the latter Figure of the Sum 11, put down as before, and carry 1 to the 3 found in the left-hand Triangle; the Sum 4 join as before on the left of 1846: Thus will you have the *Factum* of 7 into 5978; and after the same manner will you have the *Factum* of the Multiplicand, into the other Figures of the Multiplier: The whole added together gives the whole Product.

5978  
937  
-----  
41846  
17934  
53802  
-----  
5602186

#### Use of NEPER's Bones in Division.

Dispose the *Lamellæ* so, as that the uppermost Figures may exhibit the Divisor; to these, on the left-hand, join the *Lamellæ* of Units. Descend under the Divisor, till you meet those Figures of the Dividend, wherein 'tis first requir'd, how oft the Divisor is found, or at least the next less Number, which is to be subtracted from the Dividend; the Number corresponding to this, in the Place of Units, write down for a Quotient. By determining the other parts of the Quotient after the same manner, the Division will be completed.

For Example. Suppose the Dividend 5601386, and the Divisor 5978; since it is first asked how oft 5978 is found in 56013, descend under the Divisor, (Tab. **ARITH.** Fig. .) till in the lowest Series you find the Number 53802, approaching nearest to 56013; the former whereof is to be subtracted out of the latter, and the Figure 9 corresponding thereto in the *Lamellæ* of Units write down for the Quotient. To the Remainder 2211, join the following Figure of the Divisor 8; and the Number 17934 being found, as before, to be the next less Number thereto, the corresponding Number in the *Lamellæ* of Units, 3, is to be wrote down for the Quotient; and the Subtraction to be continued as before. After the same manner the third and last Figure of the Quotient will be found to be 7; and the whole 937.

5978)5601386(937  
53802  
-----  
22118  
17934  
-----  
41846  
41846  
-----  
00000

**NEPHEW**, a Term relative to Uncle and Aunt, signifying a Brother or Sister's Son; who, according to the Civil Law, is in the third Degree of Consanguinity; and according to the Canon Law, in the second. See **AGNATION** and **COGNATION**.

The Word is form'd from the *Latin Nepos*; which in the corrupt Ages of that Language signified the same thing.

**NEPHRITES**, or **NEPHRITICUS Dolor**, in Medicine, a Name given to a painful Disease occasion'd by the Stone or Gravel in the Kidneys. See **STONE**.

The Word is borrow'd from the Greek *νεφρῖτις*, Disease of the Reins; from *νεφρῖς*, Rein. See **KIDNEY**.

The Greeks give the Name *νεφρῖτις*, to the first Vertebra of the Loins, from its neighbourhood to the Kidneys. See **VERTEBRA**.

**NEPHRITIC**, something that relates to the Kidneys. See **KIDNEY**.

The Word is form'd of the Greek *νεφρῖτις*, Rein, Kidney. **NEPHRITIC Colic**, is a Colic or Pain arising from a Stone or Gravel in the Reins, &c.

This is the most cruel of all Colics. See **COLIC**.

**NEPHRITICS**, Medicines proper for Diseases of the Kidneys, particularly the Stone. See **STONE**, &c.

Such particularly are the Roots of *Althæa*, *Dog's Grass*, *Sparagras*, *Sago*, *Pellitory of the Wall*, *Mallows*, *Pimpernella*, *red Chich-Peas*, *Peach-Kernels*, *Turpentine*, &c. See **LITHONTHRIPTIC**.

**NEPHRITICUM Lignum**, a kind of Medicinal Wood growing in *New Spain*, chiefly in the Kingdom of *Mexico*; call'd by the *Indians*, *Coatl Tiapalcypashy*, as being sovereign against *Nephritic Pains*. See **WOOD**.

It must be chosen well clear'd of its Bark and Rind; it is of a bitter Taste, and a reddish yellow Colour; but when infused in cold Water, gives it a sky-blue Tincture, when view'd by a false Light, and a gold Colour, by a true one: A little of any Acid being mixed with the Tincture, both Colours disappear, but a little Oil of *Tartar* restores its sky-blue. See **COLOUR**.

Some substitute *Ebony*, and others red *Brasil Wood* for *Lignum Nephriticum*, but the Deceit becomes apparent by infusing it in Water.

NEPHR-



**NEPHRITICUS Lapis**, a precious Stone, so call'd from its extraordinary Virtues against the Stone and Gravel in the Kidneys. See **STONE**.

'Tis a kind of Jasper, of a greyish Colour, mix'd with a little blue, sometimes white and black; and only differs from Jasper, in its being harder, and always without any thing of red.

'Tis brought chiefly from *New Spain*, where it is sometimes found in Pieces large enough to make moderate Cups. There is some likewise found in *Old Spain* and *Bohemia*.

This Stone is very dear, by reason of the wonderful Virtues ascribed to it. A Cup made of it was sold for 1600 Crowns in the time of the Emperor *Rudolphus II.*

The best for Medicinal Use is of a bluish grey, fat and unctuous, as *Talc of Venice*.

The *Indians of New Spain*, who first discover'd its use, and taught it the *Europeans*, wear it hung about their Neck, after having cut it in various Figures, chiefly Beaks of Birds: Whence some *Charletans* take occasion to counterfeit it, by cutting *Jada*, and other Stones, into like Figures; and sell it at great Prices to those who have an Opinion of its *Nephritic Faculty*.

**NEPOTISM**, a Term used in *Italy*, in speaking of the Authority which the Pope's Nephews, i. e. his Bastards, have in the Administration of Affairs, and in the Care the Popes take to raise and enrich them.

Many of the Popes have endeavoured to reform the Abuses of *Nepotism*, but hitherto in vain. *Leti* has wrote expressly on the Subject, *Il Nepotismo*.

**NEPTUNALIA**, Feasts held among the Antients in honour of *Neptune*.

The *Neptunalia* differ'd from the *Consualia*, in that the latter were Feasts of *Neptune*, consider'd as presiding over Horses and the Manage. See **CONSUALIA**.

Whereas the former were Feasts of *Neptune* in the general, and not consider'd under any particular Quality. They were celebrated on the 10th of the Calends of *August*.

**NEREIDS**, or **NEREIDES**, Fabulous Deities of the Antients, supposed to inhabit the Sea. See **GOD**.

The *Nereids* were fifty in number; all the Sons of *Nep-tune* by the Nymph *Doris*. Their Name and Genealogies are described by *Hesiod*.

**NERVE**, in Anatomy, a round, white, long Body, like a Cord, composed of several Threads, or Fibres; deriving its Origin from the Brain, or the Spinal Marrow; and distributed throughout all the Parts of the Body; serving for the Conveyance of a Juice call'd *Animal Spirits*, for the performance of Sensation and Motion. See **SENSATION**, **MUSCULAR Motion**, &c.

For the Origin of the Nerves: From every Point of the Cortex of the Brain, there arise minute medullary Fibres; which, in their Progress uniting together, at length become sensible, and thus constitute the *Medulla* of the Brain, and the Spine. See **CORTEX**, **MEDULLA**, &c.

Hence they are continued, and in their farther Progress, become distinguish'd or separated by Coats which are detach'd to them from the *Dura* and *Pia Mater*, into several distinct *Fasciculi*, or *Nerves*; resembling, in the Position of their component *Fibrille*, so many Horses Tails, wrapp'd up in a double Tunic. See **FIBRE**.

'Tis probable that the medullary Fibres of the *Cerebellum*, rising up towards the fore-parts of the *Medulla Oblongata*, do, part of them, join the *Nerves* arising thence, but so as still to retain their different Origin, Progress, and Functions. The rest of the Fibres of the *Cerebellum* are so mix'd with those of the Brain, as that there is, perhaps, no part of the whole *Medulla Oblongata*, or *Spinalis*, where there are not found Fibres of each kind; and thus, to constitute the Body of each *Nerve*, both kinds of Fibres contribute; tho the end and effect of each be quite different. See **CEREBEL**, &c.

The *Nerves* thus form'd, and sent from the *Medulla Oblongata* and *Spinalis* while within the *Cranium*, are ten Pair; tho very improperly so accounted; inasmuch as most of them do in reality consist of several distinct, very large *Nerves*.

From the Spinal Marrow, continued without the *Cranium*, there arise, after the like manner, thirty Pair, to which may be added another Pair sent from the *Vertebrae* of the Neck, augmented in its Progress by Branches from the second and third Pair, and at last join'd to the eighth Pair.

All these, while within the *Medulla*, are pulposus; as soon as they quit it, they acquire a Sheath, or Case, wherewith being defended, they proceed to the *Dura Mater*, which is perforated into an open *Vagina*, reaching as far as the *Foramina* of the *Cranium*, destin'd for the transmission of *Nerves*; where the nine first Pair, and the *Accessory Pair*, assuming this *Vagina*, or Case, pass safely out of the *Cranium*.

The other thirty and one Pair descend thro' Spaces between the Commissures of the *Apophyses* of the *Vertebrae*; whence, firm, hard, and well cloath'd as they are, they are dispersed thro' all, even the smallest Points of the solid Parts of the Body yet known. See **SOLID**.

The Coats, or Covers of these *Nerves* are every where invested with Blood-Vessels, Lymphatics, and other Vesicles of a very tight Texture, which serve to collect, strengthen, and contract the *Fibrille*; and from which many of the Phenomena of the *Nerves*, and of Diseases, are accountable.

As soon as the last Extremities of the *Nerves* are about to enter the Parts to which they belong, they again lay aside their Coats, and become expanded either into a kind of thin *Membranula*, or into a soft Pulp. See **MEMBRANE** and **FLESH**.

Now, upon considering first, That the whole vascular *Medulla* of the Brain goes to the constituting of the *Fibrille* of the *Nerves*; nay, is wholly continued into, and ends in them; Secondly, That upon compression, tearing, dispersion, putrefaction, &c. of the *Medulla* of the Brain, all the Actions used to be perform'd by the *Nerves* arising thence, are immediately abolished, even tho the *Nerves* continue entire and untouch'd; Thirdly, That the *Nerves* themselves are every where found lax, pendulous, crooked, retrograde, and oblique, yet effect Motion and Sensation almost instantaneously; Fourthly, That when close bound or compress'd, tho in all other respects entire, they lose all their Faculty in those Parts between the Ligature and the Extremes to which they tend, without losing any in those Parts between the Ligature and the *Medulla* of the Brain, or *Cerebellum*: it evidently appears, that the nervous *Fibrille* do continually take up a Humour or Juice from the *Medulla* of the Brain, and transmit it by so many distinct Canals to every Point of the whole Body; and by means hereof alone perform all their Functions in Sensation, Muscular Motion, &c. See **SENSATION** and **MUSCLE**.

Which Humour is what we popularly call *Animal Spirits*, or the *Nervous Juice*. See **ANIMAL Spirit**.

Nor does there appear any Probability in that Opinion maintain'd by some; viz. That the *Nerves* perform all their Action by the Vibration of a tense *Fibrilla*; which is inconsistent with the nature of a soft, pulposus, flaccid, crooked, wavy *Nerve*, and with that nice distinctness wherewith the Objects of our Senses are represented, and Muscular Motions perform'd.

Now, after the same manner as the Arterial Blood is perpetually carried into all the Parts of the Body furnish'd with those Vessels; so we conceive a Juice prepar'd in the Cortex of the Brain and *Cerebellum*, convey'd thence every Moment thro' the *Nerves* to every Point of the solid Body. The smallness of the Vessels in the Cortex, as exhibited in *Ruyssch's Injections*, which yet are only Arterious, and therefore incredibly thicker than the last Emissary derived thence, shew how slender these hollow *Nervous Stamina* must be. But the great Bulk of the Brain compared with the exceeding Smallness of each *Fibrilla*, shews, that their number must be great beyond the limits of all Imagination.

And again, the great Quantity of Juice constantly brought hither, and violently agitated, will occasion a constant Plenitude, Openness, and Action of these little Canals.

But, as fresh Juice is every moment prepared, and the last is continually protruding the former; as soon as it has done its last Office, it seems to be driven out of the last Filaments into the smallest Lymphatic *Venule*, born about the Glands, and elsewhere; thence into the Lymphatics somewhat larger; and again from these to the common Lymphatic Vessels with the Valves of Veins, and at length into the Veins and the Heart; and thus like the other Juices of the Body, does it make its Circuit round the Body. See **CIRCULATION of the Spirits**.

Upon the whole, if we consider the great Bulk of the Brain, *Cerebellum*, *Medulla Oblongata*, and *Medulla Spinalis*, with regard to the Bulk of the rest of the Solids of the Body; the great number of *Nerves* distributed hence throughout the whole Body; that the Brain and *Carina*, that is the Spinal Marrow, are the Basis in an Embryo, whence, according to the great *Malpighi*, the other parts are afterwards form'd; and lastly, that there is scarce any part of a Body, but what feels or moves; it will appear very probable, that all the solid parts of the Body are wove out of nervous Fibres, and consist wholly of 'em. See **STAMEN**.

The Antients only allow'd of seven Pairs or Conjugations of *Nerves*, proceeding from the Brain; which, with their Functions, they comprised in these two Latin Verses:

*Optica prima, oculos movet altera, tertia gustat,  
Quartaq; quinta audit, sexta est, septima linguae.*

But the Moderns, as before observ'd, reckon ten, which are as follow.

*NERVUS of the Brain, or Cerebrum.*

*Olfactory NERVES*, *Par Olfactorium*, or the Olfactory Pair, arises in the fore-part of the Brain, just below the *O. Frontis*; these being pretty thick near the *O. Cerebrum*, and there



there call'd *Processus Papillares*, which Dr. Drake takes to be a properer Name in that Place, than that of *Nerves*; they appearing rather Productions of the *Medulla Oblongata*, whence the *Olfactory Nerves* arise, than distinct *Nerves*. As soon as they have made their way thro' the *Os Cribrosum*, they are distributed throughout the Membranes of the Nose. Their Use is in the Sensation of Smelling. See SMELLING.

**Optic NERVES.** These pass the Skull thro' two Perforations in its Basis, a little above the *Sella Equina*, and are thence convey'd to the Tunics of the Eye; whereof, the *Retina*, supposed to receive the Objects of Vision, is an Extension of the inner or medullary part alone. See VISION and RETINA.

**NERVES that move the Eyes; Oculorum Motorii**, arise from the Crura of the *Medulla Oblongata*, near the Annular Protuberance; whence they march out between two Branches of the Cervical Artery; and passing out of the Skull at an irregular oblong hole, immediately under the former, are spent on those Muscles of the Eyes call'd *Attolent*, *Depri-*  
*ment*, *Adducens*, and *Obliquus inferior*; except some small Fibres spent in the Muscles of the upper *Palpebra*. See EYE.

**Pathetic NERVES**, arise behind the *Testes*, and passing out of the Skull at the same Foramen with the former Pair, spend themselves wholly on the *Trochlear Muscle*.

**Fifth Pair of NERVES**, the largest of all those coming from the Brain, has its use as well as distribution more extensive; serving both for Sense and Motion, for Touch and Taste. It sends Branches not only to the Eyes, Nose, Palate, Tongue, Teeth, and most parts of the Mouth and Face, but also to the Breast, lower Venter, *Præcordia*, &c. by means of the Intercostals, which are partly composed of Branches of this Nerve; whence arises a Consent or Sympathy between the several Parts of the Body. See CONSENT of Parts.

It arises from the Annular Protuberance, near the *Processus Cerebelli*, and is at its Origin very large, but before its egress from the *Dura Mater* is divided into two Branches, each consisting of innumerable nervous Fibres, whereof those of one Branch are pretty tough and firm; the other soft and lax. A little beyond the *Sella*, it forms a *Plexus* call'd *Ganglioformis*, near which, each Nerve is divided into an interior and posterior Branch.

The *Anterior* or *Fore-Branch*, after a few Twigs sent to the *Dura Mater*, enters the Receptacle on each side the *Sella*; whence it sends off one or two Twigs to the Intercostal; and as soon as it emerges thence, is again subdivided into three nearly equal Branches. The uppermost passing the *Foramen Lacerum* into the Orbit of the Eye, is immediately subdivided into three less Branches; the first of which, after sending Twigs to the *Tunica Adnata*, *Glandula Lacrymalis*, the Muscles that draw up the Nose, and the orbicular Muscles, running over the Muscle which draws up the upper Eye-lid, is spent on the Muscles of the Forehead, and the common Integuments of the forepart of the Head.

The *second Branch* running under the *Pathetics* and *Motorii*, is divided into two; whereof the outer and smaller sends off several *Fibrille* into the Fat that envelopes the Optic Nerve; and joining with others from the third Pair, forms a sort of *Plexus* on the Trunk of the Optic Nerve; whence *Fibrille* are detach'd into the *Musculus Deprimens*, *Adducens*, and the *Tunica Sclerotica*. The inner and bigger Slip is subdivided into four Twigs; the first running over the Optic Nerve, enters the *Sclerotica*, and is spent in that Membrane. The second, returning into the Skull by a peculiar Perforation, pierces the *Dura Mater*, and, sometimes turning back again, passes out of the Skull thro' one of the Holes of the *Cribriforme*, and is distributed into the interior Membrane of the Nose. The third Twig is spent partly on the Eye-lids and their orbicular Muscles, the external Integument of the Nose, and the Muscles which draw it upwards. The fourth is distributed by several Twigs into the Eye-lids and orbicular Muscles. The third Slip of the upper Branch is spent on the *Glandula Innominate* and *Tunica Adnata*.

The *less inferior Branch*, e'er it leave the Skull, enters the Orbit of the Eye, and running along the outside of the *Musculus Abducens*, goes out again at a little Perforation peculiar to it; after which it divides into several Fibres, some of which go to the Integuments of the Cheeks; the rest to the Muscles that raise the upper Lip. As soon as it quits the Skull at the third Foramen, it is subdivided into three little Branches, the first of which, after some Twigs bestow'd on the *Masseter*, the Teguments of the Face, the Gums, and upper Teeth; enters a peculiar Sinus of the Bone making the lower part of the Orbit, and goes out at a Hole particular to it; after which it divides into several *Fibrille* which go to the Teguments of the Face, the upper Lip, the Muscle that draws the lower part of the Nose laterally, and the inner Muscle of the Nose.

The *second, small Branch* running downwards behind the Ducts which go from the Nose to the Fauces, is divided

into two; the upper whereof is distributed by many Twigs into the *Membrana Pituitaria*. The lower, passing a peculiar Hole on the hind and lateral part of the Bone of the Palate, is distributed into that spongy Flesh that lines the Palate, and the tough Membrane that covers it.

The *third little Branch* is spent on that part of the *Membrana Pituitaria* that lines the Fauces upon the Uvula and Muscles thereabouts, and upon the Tonsils.

The *greater or posterior Branch*, after sending a few Twigs to the *Dura Mater*, passes the Skull thro' the fifth Foramen; and having sent off some Twigs to the *Buccinator*, *Masseter*, and the Muscles of the lower Jaw, is divided into three considerable Branches.

The *first* passes to the Root of the Tongue, and thence proceeding forwards, sends several Branches to the Maxillary Glands. It sends others along the inner Substance of the Tongue, which end in Capillaries at its Extremity, and joining every where with the Branches of the ninth Pair, serve both the Muscles and Papillary Glands, and contribute to the Taste, as well as the Motion of the Tongue.

The *second, or middle Branch*, after distributing a Twig into the Maxillary Glands, and the Muscles *Styloglossus*, and *Myloglossus*, enters the hollow of the lower Jaw, along which it runs accompanied with Branches of the Carotid Arteries and little Veins, which return to the internal Jugulars; and besides sending off a Twig to each Tooth, with the Membranes of the foresaid Vessels, contributes to form a Membrane which lines the whole Sinus. At the fourth Grinder it divides into two; the less whereof runs to the joining of the Jaw; the bigger, passing out at a peculiar Perforation, is divided into several Fibres, which are disposed into the Muscles of the lower Lip and Chin.

The *third or exterior Branch*, is spent on the parotid Glands.

**Sixth Pair of NERVES**, or the *Gustatorii*, rise from the Medullary Tracts of the *Centrum Ovale*, below the annular Process, and proceeding forwards, enters the same Receptacle, or Sinus of the Skull, on the side of the *Sella*, as the fifth Pair does; whence sending off a Twig to join those of the fifth Pair, in their passage to the Intercostals, it goes out of the Skull at the same Hole with the *Motorii Oculorum*, and ends in the abducent Muscles of the Eye; sending withal some Twigs to the Tongue. See TONGUE.

The *Seventh Pair*, or *Auditory NERVES*, arising from the medullary Tract of the fourth Ventricle, and passing out of the Skull thro' a Hole of the *Os Petrosum*, divides into two Branches, or *Portions*, a *hard* and a *soft* one. The *hard* entering a little Sinus in the upper part of the Bone that constitutes the Barrel of the Ear; sends off a Twig which distributes itself into the *Dura Mater*, except some small Twigs which go to the Membrane that lines the Ear, to the internal Muscles that line the Ear, and the fine Membrane that clothes the inside of the Cavity of the *Apophysis Mamillaris*. After this, the hard Branch sends off two other Twigs, one to the eighth Pair, the other to the *Tympanum*, whose Chord it forms; whence creeping over the *Malleolus*, it goes out of the Ear, and sends a Ramification to the Tongue.

The same *hard Branch*, coming out of the *Processus Mamillaris*, sends some Twigs to the *Masseter*, and others to the Glands about the Ear; where it divides into two other Ramifications; the interior bestowed on the Glands, the Cheek, and the upper Lips, the rest on the lower *Palpebra*, and the external part of the Face. The exterior Ramification, bestowing some *Fibrille* on the Glands, out of which it issues, divides into two; the upper distributed into the *Quadratus* and outer parts of the under Lip; the lower spent on the Integuments of the fore and lateral part of the Neck, lower Jaw, and the *Massoidal Muscle*.

The *soft and larger Portion* of this Pair divides into three Ramifications, the upper whereof passes a small Foramen into the *Concha*, where expanding, it forms a fine Membrane which lines its inner Surface. The second and third Ramifications are also spent on the inner parts of the *Concha* and semicircular Ducts, which they furnish with Membranes, the immediate Organs of Hearing. See HEARING.

**Eighth Pair of NERVES**, or the *Par Vagum*, springs from the *Medulla Oblongata*, a little above the *Olivaria Corpora*, and passes out of the Skull thro' the same Perforations with the lateral Sinus's of the *Dura Mater*.

This, in its progress, is join'd by the *Par Accessorium*, and a little further by a Twig of the hard part of the seventh Pair, and at the second Vertebra of the Neck by the Nerves that issue from the Cervical Marrow; and detaches several Twigs to the Muscles of the *Larynx*, *Gula*, Neck, &c. particularly the *Ganglioform Plexus*, form'd by its Union with a Branch of the Intercostal. Hence descending to the Thorax, it makes another *Plexus* under the *Clavicula*, whence arises the *Recurrent Nerve* on the right side, as on the left it has its Rise from the Trunk of the Nerve itself. The right Recurrent is reflected at the Axillary Artery, the left at the descending Branch of the *Aorta*; each running aside the



*Trachea*, impart some Twigs to it, and terminate in the Muscles of the *Larynx*. Their Use is in the Formation and Modulation of the Voice. See VOICE.

Against the Origin of the *Aorta* it sends off a Branch towards the Heart; which dividing into two, the lesser twists about the Pulmonary Vein; the bigger proceeds to the *Pericardium*, and Heart, after having sent off a Twig, which with others from the Intercostals, make the *Plexus Cardiacus superior*: proceeding still further, it sends out several Ramifications, which, meeting together, make the *Plexus Pneumonicus*, whence arise Fibres that constrict the Vessels and Vesicles of the Lungs. In its Passage downwards, it distributes several Branches to the *Oesophagus*, along which it runs.

About the lower *Vertebrae* of the Neck, the Trunk divides into two Branches, the external and internal, communicating all along by several Ramifications, and at length reuniting. The rest of this Pair joins with the Intercostals in the formation of several *Plexus's* in the lower Venter, and in them seems to terminate. See PLEXUS.

Along with these, and wrapp'd up in the same Coat from the *Dura Mater*, passes the

*Accessory NERVE*, or *Par Accessorium*. It has its Origin from the *Medulla* contain'd in the *Vertebrae* of the Neck. Soon after its return out of the Skull, it leaves the *Par Vagus* again, and is distributed into the Muscles of the Neck and Shoulders.

*Intercostal NERVES*, consist of nervous Filaments derived partly from the Brain, viz. Branches of the fifth and sixth Pair; and partly from the Spinal Marrow, by those Branches they receive from the *Vertebral Nerves*.

In each Trunk of these Nerves, e'er it arrives at the Thorax, are two *Cervical Plexus's*, the upper whereof receives a Branch from each Trunk of the *Par Vagus*; the under sends out several Ramifications to the *Oesophagus* and *Aspera Arteria*, and particularly a large one to the recurrent Nerve. From the same *Plexus* descend two other Ramifications to the *Cardiac Plexus*; which are join'd a little lower by a third, from which the *Intercostal Nerve* descending to the Clavicles, divides into two, and embraces and constricts the subclavian Artery; thence entering the Thorax, it receives three or four Twigs from the upper *Vertebral Nerve*, together with which it constitutes the *Intercostal Plexus*; and thence descending along the sides of the *Vertebrae*, and receiving a nervous Twig from each of them to the *Os Sacrum*, and entering the *Abdomen*, it forms several considerable *Plexus's*, viz. the *Lienaris*, *Hepaticus*, the two *Renales*, *Mesentericus magnus*, and two little ones in the *Pelvis*. See PLEXUS.

*Ninth Pair of NERVES*, *Motorii Linguae*, arise from the middle of the *Centrum Ovale*, by three or four small Twigs, and go out of the Skull near the Process of the *Occiput*; and send their Branches to the Tongue.

They may be likewise call'd *Gustatorii*, as they contribute, together with the Branches of the fifth and sixth Pair, to the Sensation of Tasting. See TASTING.

*Tenth Pair of NERVES*, arise by two or three Branches from the *Medulla oblongata*, just below the *Corpora Pyramidalia* and *Olivaria*, or rather, at the beginning of the *Medulla Spinalis*; whence reflecting a little backwards, it goes out of the Skull between the first *Vertebra* of the Neck, and the Process of the *Occiput*.

It is spent on the external Muscles of the Head and Ears. See EAR, &c.

*NERVES from the Spinal Marrow.*

The *Spinal NERVES*, (i. e. those springing from the *Medulla* after its egress out of the Skull, where it lays aside the name *Oblongata*, and assumes that of *Spinalis*) are thirty Pair: Of which, some are reckoned as belonging to the Neck, as having their Origin thence, and call'd *Cervical Nerves*; others to the *Dorsum*, or Back, and call'd *Dorsal Nerves*; others to the Loins, call'd *Lumbal Nerves*, and the rest to the *Os Sacrum*.

*Cervical NERVES*. Of these there are seven Pair: The first Pair arise between the first and second *Vertebra* of the Neck, and, contrary to the rest, come out before and behind; whereas the other six Pair come out laterally from the Junctures of the *Vertebrae*, thro particular Perforations near the transverse Processes. They go to the Muscles of the Head and Ear.

The second Pair contributes the main Branch towards the formation of the *Diaphragmatic Nerves*, which, according to *Vieussens*, spring only from the fourth and sixth Pair.

The three last Pair of the Neck joining with the two first of the *Dorsum*, or Thorax, make the *Brachial Nerves*.

All the *Cervical Nerves* send innumerable Branches to the Muscles, and other parts of the Head, Neck, and Shoulders.

*Dorsal NERVES* are in number twelve. These, excepting what the two upper pair contribute to the *Brachial*

*Nerves*, are generally distributed into the Intercostal and Abdominal Muscles, the *Pleura* and external parts of the Thorax.

*Lumbal NERVES*, are five Pair: The first of which sends two Branches to the lower side of the Diaphragm. The second some Twigs to the Genital Parts, and others, as well as the three following, to give the first Roots to the *Crural Nerves*. The rest of the Branches of the *Lumbal Nerves* are distributed into the Muscles of the Loins and adjacent Parts.

*NERVES of the Os Sacrum*, are six Pair; the first three or four Pair whereof are bestow'd wholly on the *Crural Nerves*; the rest on the Muscles of the *Anus*, *Vesica*, and Genital Parts.

*Brachial NERVES*, are the Offspring, partly of the *Cervicals*, and partly of the *Dorsals*. These, after the several Branches whereof they are composed have been variously complicated and united, run but a little way in a Trunk e'er they divide again into several Branches, variously distributed into the Muscles of the Skin and Arms.

*Diaphragmatic NERVES*, are likewise the Offspring of the *Cervicals*. These, after joining in a Trunk, run thro the *Mediastinum* undivided, till they arrive near the Diaphragm, into which they send off several Branches; some into the Muscular, others into the Tendinous part of it.

*Crural NERVES*, consist of an Union of six or seven Pair, viz. the three last of the *Lumbal*, and three or four first of the *Os Sacrum*. These, after having spent their upper Branches on the Muscles of the Thigh and Skin, as far as the Knee, proceed in a Trunk downwards, which sends its Branches to the Extremities of the Toes, supplying as it goes, the Muscles and Skin of the Leg and Foot. This is the largest and firmest nervous Trunk in the Body.

*NERVES*, in Botany, are long, tough, Strings running either a-cross, or length-wise of the Leaves of Plants. See LEAVES.

*NERVES*, in Architecture, are the Mouldings of the Projecting-Arches of Vaults; or those arising from the Branches of Ogives, and crossing each other diagonally in Gothic Vaults, serving to separate the Pendentives. See VAULT, OGIVE, &c.

*NERVOSA Corpora*, in Anatomy. See CAVERNOSA Corpora.

*NERVOUS Spirit*, or *Juice*, is a pure, subtile, volatile Humour, better known by the Name of *Animal Spirit*; secreted from the Arterious Blood in the Cortical Part of the Brain, collected in the *Medulla Oblongata*, and thence driven, by the force of the Heart, into the Cavities of the Nerves; to be convey'd by them throughout the Body, for the Purposes of Sensation and Animal Motion. See SPIRIT.

NEST, see NIDUS.

*NESTORIANS*, a Sect of ancient Heretics; still, as 'tis said, subsisting in some parts of the *Levant*.

They take their Name from *Nestorius*, who, of a Monk, became a Priest, and a celebrated Preacher, and was at length, after the Death of *Sisinnius* in 428, rais'd by *Theodosius* to the See of *Constantinople*.

At first he shew'd a world of Zeal against Heresy in his Sermons before the Emperor; but at length taking the liberty to say, that he found in Scripture, that *Mary was the Mother of Jesus*, but that he no where found, that *Mary was the Mother of God*, his Auditory was shock'd, and a great part of 'em retir'd from his Communion.

His Writings were soon spread thro *Syria* and *Egypt*, where he made many Converts, notwithstanding the vigorous Opposition of *St. Cyril*.

His distinguishing Tenet was, that there are two Persons in *Jesus Christ*; and that the Virgin was not his Mother as God, but only as Man.

The Doctrine was condemn'd in the Council of *Ephesus*, at which assisted above 200 Bishops; and *Nestorius* was anathematiz'd and deposed from his See.

*Nestorius* was not the Author of this Error; but borrow'd it at *Antioch*, where he had studied. *Theodorus Mopsuestanus* had taught the same before him.

'Tis something difficult to determine whether or no the *Chaldee Christians*, who still profess *Nestorianism*, have precisely the same Sentiments with *Nestorius*, whom they still esteem as their Patriarch. They have made several Reunions with the *Romish Church*, but none of 'em have subsisted long. The most considerable was that under the Pontificate of *Paul V*.

Till the time of Pope *Julius III*, they acknowledg'd none but one Patriarch, who assumed the Quality of Patriarch of *Babylon*; but a division arising among 'em, the Patriarchate became divided, at least for a Time; and a new Patriarch was appointed by that Pope, who made his Residence at *Caremata* in *Mesopotamia*; whose Successor, however, unable to withstand the Power of the Patriarch of *Babylon*, was obliged to retire within the Confines of *Persia*. Thus Matters



Matters stood till the Pontificate of *Paul V.* under whom there was a solemn Re-union with the *Romish Church*, whom their Patriarch solemnly own'd for the Mother, &c. of all Churches; sending his Ministers to *Rome* to negotiate the Union, and composing an Explication of the Articles of Religion, where their Disputes with the *Romish Church* were represented as only verbal, &c.

**NET**, **NEAT**, in Commerce, something pure, and unadulterated with any foreign Mixture.

Thus, Wine is said to be *Net* when not falsify'd or balderdash'd; and Coffee, Rice, Pepper, &c. are *Net*, when the Filth and Ordures are separated from them.

A Diamond is said to be *Net* when it has no Stains or Flaws; a Crystal, when transparent throughout.

**NET** is also used for what remains after the Tare has been taken out of the Weight of any Merchandize; i. e. when it is weigh'd clear of all Package. See **TARE**.

Thus we say, a Barrel of *Cochineal* weighs 450 Pounds; the Tare is 50 Pounds, and there remains *Net* 400 Pounds.

**NET-PRODUCE**, a Term used to express what any Commodity has yielded, all Tare and Charges deducted.

The Merchants sometimes use the *Italian Words*, *Netto procedido*, for *Net-PRODUCE*.

**NET-Masonry**, see **MASONRY**.

**NETE Hyperboleon**, in the antient Music, the name of the highest and most acute of the Chords of the Lyre, or the antient Scale, or Diagramma. See **DIAGRAMMA**.

It answer'd to the *A, mi, la*, of the third Octave of the Organ, or the modern System.

The Word is compos'd of the *Greek νητε* and *υπερβολων*, i. e. *The last of the highest Chords*.

**NETE Diazeugmenon**, in the Antient Music, was one of the Chords of the Lyre, or System of the Antients. See **DIAGRAMMA**.

It answers to the *E, si, mi*, of the third Octave of the Organ, or modern System.

The Word comes from the *Greek νητε* and *διαzeugμενον*, *last of the separate ones*; where is understood the word *Chord*.

**NETE Synemmenon**, in the Antient Music, the Name of the highest Chord of a Tetrachord of the *Greek System*, added to make the *b soft* fall between the *Mese* and *Paramese*, i. e. between *la* and *si*. See **DIAGRAMMA**.

This Chord had the same Sound with the *Paranete Diazeugmenon*, or our *la* by *b mollis*.

The Word comes from the *Greek νητε* and *συνεμμενον*, *the last of those added*; where is understood the word *Chord*.

**NEURITICS**, or **NERVINES**, in Medicine, Remedies proper for Diseases of the Nerves, and Joints.

Such are Betony, Lavender, Rosemary, Sage, Laurel, Marjoram, and other among the Cephalics.

The Word is form'd from the *Greek νευρος*, *Nervous*. Hence also

**NEUROGRAPHIA**, in Anatomy, a Description of the Nerves. See **NERVE**.

*Raim. Vireusens*, a Physician of *Montpellier*, has an excellent Treatise in *Latin*, under the Title *Neurographia Universalis*, where he shews, that there are more Ramifications of the Nerves in the Skin, than in the Muscles, and all the other parts. See **SKIN**.

*Duncan*, another Physician of the same Place, has a Treatise call'd *Neurographia Rationalis*.

*Neurographia* is something more general than

**NEUROLOGY**, which implies a Discourse of the Nerves; in as much as the former may be understood, not only of Discourses on the Nerves, but also of Figures and Engravings, representing them; whereas the latter is restrained to discoursing alone.

**NEUTER**, a Person free or indifferent, who has espoused neither Party, and is neither Friend nor Foe.

Thus we say a Judge is to be *Neuter* in the Causes he judges; and thus, we say, in Questions, where Reason appears *Neuter*, a Man must ever incline to the Side of the Unhappy.

**NEUTER**, in Grammar, is used for a sort of Gender of Nouns which are neither Masculine, nor Feminine. See **GENDER**.

The *Latins* have three kinds or Genders, Masculine, Feminine, and *Neuter*. In *English*, and other modern Tongues, there is no such thing as *Neuter Nouns*. See **NOUN**.

**Verbs NEUTER**, by some Grammarians call'd *Intransitive Verbs*, are those that govern nothing, and that are neither active nor passive. See **VERB**.

When the Action express'd by the Verb has no Object to fall upon, but the Verb alone supplies the whole Idea of the Action, the Verb is said to be *Neuter*; as *I sleep, thou sleepest, he sleeps, we walk, ye run, they stand still*.

Some divide *Verbs Neuter* into, 1<sup>st</sup>, Such as don't signify any Action, but a Quality; as *albet*, it is white; or a Situation; as *sedet*, he sits; or have some relation to Place, as

*adest*, he is present; or some other State or Attribute, as *regnat*, he rules, &c.

And, 2<sup>dly</sup>, those that do signify Actions, tho' those such as don't pass into any Subject different from the Actor; as *to dine, to sup, to play, &c.*

But this latter kind sometimes cease to be *Neuter*, and commence active; especially in *Greek* and *Latin*, when a Subject is given them; as *vivere vitam, ambulare viam, pugnare pugnam*. Thus the old *French Poets* say, *son tourment*; the *English*, *to sigh his Woes*, &c.

But this is observed only to obtain where something particular is to be express'd, not contain'd in the Verb; as *vivere vitam beatam*, to live a happy Life; *pugnare bonam pugnam*, to fight a good fight, &c.

According to the *Abbot de Dangeau*, *Verbs Neuter* may be divided into *active* and *passive*; the first those that form their Tenses in *English* by the auxiliary Verb *to have*; in *French* by *avoir*. The second those that form them in *English* with the Verb *to be*; in *French*, *etre*.

Thus, *to sleep* and *to yawn*, *dormir* and *etourner*, are *Neuters active*. *To come*, and *to arrive*, are *Neuters passive*.

The same Author subdivides each Kind into several Branches. See **VERB**.

**NEUTRALITY**, the State of a Person or Thing that is *Neuter*. See **NEUTER**.

**NEUTRAL Salts**, among Chymists, are a sort of intermediate Salts between Acids and Alcalies; partaking of the nature of both. See **SALT**, **ACID**, and **ALCALY**.

Mr. Boyle also gives the Appellation *Neutral* to a sort of Spirits, differing in divers Qualities both from Vinous, Acid, and Urinous Spirits. These he also calls *Anonymous* and *Adiaphorous* Spirits. See **ADIAPHOROUS**.

**NEWEL**, in Architecture, the upright Post, which a Pair of Winding-Stairs turn about; or that part of the Stair-Case which sustains the Steps. See **STAIR**.

The *Newel* is a Cylinder of Stone, which bears on the Ground, and is form'd by the ends of the Steps of the Winding-Stairs.

There are also *Newels* of Wood, which are pieces of Wood placed perpendicularly, receiving the Tenants of the Steps of Wooden-Stairs into their Mortices, and wherein are fitted the Shafts and Rests of the Stair-Case, and the Flights of each Story.

**NEW-MOON**, that State of the Moon a little before, and a little after her Conjunction with the Sun. See **MOON** and **CONJUNCTION**.

**NEWTONIAN Philosophy**, the Doctrine of the Universe, and particularly of the heavenly Bodies; their Laws, Affections, &c. as deliver'd by Sir Isaac Newton. See **PHILOSOPHY**.

The Term *Newtonian Philosophy*, is apply'd very differently; whence divers confused Notions relating thereto.

Some Authors, under this *Philosophy*, include all the Corpuscular Philosophy consider'd as it now stands corrected and reform'd by the Discoveries and Improvements made in several parts thereof, by Sir I. Newton. In this sense it is that *Gravesande* calls his *Elements of Physics*, *Introductio ad Philosophiam Newtonianam*.

And in this sense the *Newtonian* is the same with the *New Philosophy*, and stands contradistinguish'd to the *Cartesian*, the *Peripatetic*, and the antient *Corpuscular*. See **CORPUSCULAR**, **PERIPATETIC**, **CARTESIAN**, &c.

Others, by *Newtonian Philosophy*, mean the Method or Order which Sir I. Newton observes in philosophizing; viz. the Reasoning, and drawing of Conclusions directly from Phenomena, exclusive of all previous Hypotheses; the beginning from simple Principles; deducing the first Powers and Laws of Nature from a few select Phenomena, and then applying those Laws, &c. to account for other things. To this Purpose, the same *Gravesande* explains himself in his *Institut. Newton. Philos.*

And in this sense, the *Newtonian Philosophy* is the same with the *Experimental Philosophy*; and stands opposed to the Antient *Corpuscular*. See **EXPERIMENTAL**, &c.

Others, by *Newtonian Philosophy*, mean that wherein Physical Bodies are consider'd Mathematically; and where Geometry and Mechanics are apply'd to the Solution of Phenomena: In which sense, the *Newtonian* is the same with the *Mechanical* and *Mathematical Philosophy*. See **Mechanical**.

Others, again, by *Newtonian Philosophy*, understand that part of Physical Knowledge, which Sir I. Newton has handled, improved, and demonstrated, in his *Principia*.

Others, lastly, by *Newtonian Philosophy*, mean, the new Principles which Sir I. Newton has brought into Philosophy; the new System founded thereon; and the new Solution of Phenomena thence deduced; or that which characterizes, and distinguishes his Philosophy from all others. Which is the sense wherein we shall here chiefly consider it.

As to the History of this *Philosophy*, we have but little to say: It was first made public in the Year 1686, by the Author.



Author, then a Fellow of Trinity-College, Cambridge; and in the Year 1713, republished with considerable Improvements. Several other Authors have since attempted to make it plainer; by setting aside many of the more sublime Mathematical Researches, and substituting either more obvious Reasonings, or Experiments, in lieu thereof; particularly *Whiston* in his *Prælect. Phys. Mathemat.* and *Gravesande* in *Element. & Instit.*

Notwithstanding the great Merit of this Philosophy, and the universal Reception it has met with at home, it gains ground very slowly abroad; *Newtonianism* has scarce two or three Adherents in a Nation; but *Cartesianism*, *Huygenianism*, and *Leibnitzianism* remain still in possession.

The *Philosophy* itself is laid down chiefly in the third Book of the *Principia*. The two preceding Books are taken up in preparing the way, and laying down such Principles of Mathematicks as have the most relation to *Philosophy*: Such are the Laws and Conditions of Powers. And these, to render them less dry and geometrical, the Author illustrates by *Scholias* in *Philosophy*, relating chiefly to the Density and Resistance of Bodies, the Motion of Light, and Sounds, a Vacuum, &c.

In the third Book he proceeds to the *Philosophy* itself; and from the same Principles deduces the Structure of the Universe; and the Powers of Gravity, whereby Bodies tend towards the Sun and Planets; and from these Powers, the Motions of the Planets and Comets, the Theory of the Moon and the Tides.

This Book, which he calls *de Mundi Systemate*, he tells us, was first wrote in the popular way: But considering, that such as are unacquainted with the said Principles, would not conceive the Force of the Consequences, nor be induced to lay aside their antient Prejudices; for this Reason, and to prevent the thing from being in continual Dispute; he digested the Sum of that Book into Propositions, in the Mathematical manner; so as it might only come to be read by such as had first consider'd the Principles. Not that it is necessary, a Man should master them all. Many of them, even the first-rate Mathematicians, would find a Difficulty in getting over. 'Tis enough to have read the Definitions, Laws of Motion, and the three first Sections of the first Book; after which, the Author himself directs us to pass on to the Book *de Systemate Mundi*.

The several Articles of this *Philosophy*, are deliver'd under their respective Heads in this Dictionary; as SUN, MOON, PLANET, COMET, EARTH, AIR, CENTRIPETAL Force, RESISTANCE, MEDIUM, MATTER, SPACE, ELASTICITY, &c. A general Idea, or Abstract of the Whole, we shall here gratify the Reader withal; to shew in what Relation the several Parts stand to each other.

The great Principle on which the whole *Philosophy* is founded, is the *Power of Gravity*. This Principle is not new: *Kepler*, long ago, hinted it in his *Introduct. ad Mor. Martis*. He even discovered some of the Properties thereof, and their Effects in the Motions of the primary Planets: But the Glory of bringing it to a Physical Demonstration was reserved to the *English Philosopher*. See GRAVITY.

His Proof of the Principle from Phenomena; together with the Application of the same Principle to the various other Appearances of Nature, or the deducing those Appearances from that Principle, constitute the *Newtonian System*; which, drawn in Miniature, will stand thus.

I. The Phenomena are, 1. That the Satellites of *Jupiter* do, by Radii drawn to the Center of the Planet, describe Areas proportional to their Times; and that their Periodical Times are in a sesquuplicate Ratio of their Distances from its Centre: in which all Observations of all Astronomers agree. 2. The same Phenomenon holds of the Satellites of *Saturn*, with regard to *Saturn*; and of the Moon with regard to the Earth. 3. The periodical Times of the primary Planets about the Sun, are in a sesquuplicate Ratio of their mean distances from the Sun. But, 4. The primary Planets do not describe Areas any way proportional to their periodical Times, about the Earth; as being sometimes seen Stationary, and sometimes Retrograde with regard thereto. See SATELLITES, PERIODS, &c.

II. The Powers whereby the Satellites of *Jupiter* are constantly drawn out of their rectilinear Course, and retain'd in their Orbits, do respect the Center of *Jupiter*, and are reciprocally as the Squares of their distances from the same Centre. 2. The same holds of the Satellites of *Saturn* with regard to *Saturn*; of the Moon with regard to the Earth: And of the primary Planets with regard to the Sun. See CENTRIPETAL Force.

III. The Moon gravitates towards the Earth, and by the Power of that Gravity is retain'd in her Orbit: And the same holds of the other Satellites with respect to their primary Planets; and of the Primaries with respect to the Sun. See MOON.

As to the Moon, the Proposition is thus proved: The Moon's mean distance is 60 Semidiameters of the Earth; her Period, with regard to the fix'd Stars, is 27 Days, 7

Hours, 43 Minutes; and the Earth's Circumference 123249600 Paris Feet. Now, supposing the Moon to have lost all its Motion, and to be let drop to the Earth, with the Power which retains her in her Orbit; in the space of one Minute she will fall  $15\frac{1}{2}$  Paris Feet; the Arch she describes in her mean Motion at the distance of 60 Semidiameters of the Earth being the versed Sine of  $15\frac{1}{2}$  Paris Feet. Hence, as the Power as it approaches the Earth, increases in a duplicate Ratio of the distance inversely; so, as at the Surface of the Earth, 'tis  $60 \times 60$  greater than the Moon: A Body falling with that Force in our Region must, in a Minute's time, describe the space of  $60 \times 60 \times 15\frac{1}{2}$  Paris Feet; and  $15\frac{1}{2}$  Paris Feet in the space of one Second.

But this is the Rate at which Bodies fall, by their Gravity, at the Surface of our Earth; as *Huygens* has demonstrated, by Experiments with Pendulums. Consequently, the Power whereby the Moon is retain'd in her Orbit, is the very same we call Gravity: For if they were different, a Body falling with both Powers together, would descend with double the Velocity, and in a Second of Time describe  $30\frac{1}{2}$  Feet. See DESCENT of Bodies.

As to the other secondary Planets, their Phenomena with respect to their primary ones, being of the same kind with those of the Moon about the Earth; 'tis argued, by Analogy, they depend on the same Causes: It being a Rule or Axiom all Philosophers agree to, That Effects of the same kind, have the same Causes. Again, Attraction is always mutual, i. e. the Reaction is equal to the Action. Consequently, the primary Planets gravitate towards their secondary ones; the Earth towards the Moon, and the Sun towards 'em all. And this Gravity, with regard to each several Planet, is reciprocally as the Square of its distance from its Centre of Gravity. See ATTRACTION, REACTION, &c.

IV. All Bodies gravitate towards all the Planets; and their Weights towards any one Planet, at equal distances from the Centre of the Planet, are proportional to the Quantity of Matter in each.

For the Law of the Descent of heavy Bodies towards the Earth, setting aside their unequal Retardation from the Resistance of the Air, is this; that all Bodies fall equal spaces in equal times: But the nature of Gravity or Weight, no doubt, is the same on the other Planets, as on the Earth. See WEIGHT.

Suppose, e. gr. such Bodies raised to the Surface of the Moon, and together with the Moon deprived at once of all Progressive Motion, and drop'd towards the Earth: 'Tis shewn, that in equal Times they will describe equal Spaces with the Moon; and, therefore, that their Quantity of Matter is to that of the Moon, as their Weights to its Weight.

Add, that since *Jupiter's* Satellites revolve in times that are in a sesquuplicate Ratio of their distances from the Centre of *Jupiter*, and consequently at equal distances from *Jupiter* their accelerating Gravities are equal; therefore, falling equal Altitudes in equal Times, they will describe equal Spaces: just as in heavy Bodies on our Earth. And the same Argument will hold of the primary Planets with regard to the Sun. And the Powers whereby unequal Bodies are equally accelerated, are as the Bodies; i. e. the Weights are as the Quantities of Matter in the Planets. And the Weights of the primary and secondary Planets towards the Sun, are as the Quantities of Matter in the Planets and Satellites.

And hence are several Corollaries drawn relating to the Weights of Bodies on the Surface of the Earth, Magnetism, and the Existence of a Vacuum. Which see under the Articles VACUUM, WEIGHT, and MAGNETISM.

V. Gravity extends itself towards all Bodies, and is in proportion to the Quantity of Matter in each.

That all the Planets gravitate towards each other, has been already shewn; likewise, that the Gravity towards any one consider'd apart, is reciprocally as the Squares of its Distance from the Centre of the Planet: Consequently, Gravity is proportional to the Matter therein. Further, As all the Parts of any Planet, A, gravitate towards another Planet, B; and the Gravity of any part is to the Gravity of the whole, as the Matter of the part to the Matter of the whole; and Reaction equal to Action: The Planet B will gravitate towards all the Parts of the Planet A; and its Gravity towards any part, will be to its Gravity towards the whole, as the Matter of the part to the Matter of the whole.

Hence, we derive Methods of finding and comparing the Weights of Bodies towards different Planets; of finding the Quantity of Matter in the several Planets; and their Densities: Since the Weights of equal Bodies revolving about Planets, are as the Diameters of their Orbits directly, and as the Squares of the Periodical Times, inversely; and the Weights at any distance from the Centre of the Planet are greater or less in a duplicate Ratio of their distances, inversely: And since the Quantities of Matter



in the Planets are as their Powers at equal distances from their Centres: And, lastly, since the Weights of equal and homogeneous Bodies towards homogeneous Spheres, are, at the Surfaces of the Spheres, as the Diameters of those Spheres; and, consequently, the Densities of heterogeneous Bodies are as the Weights at the Diameters of the Spheres. See DENSITY.

VI. The common Centre of Gravity of the Sun, and all the Planets, is at rest: And the Sun, tho' always in Motion; yet never recedes far from the common Center of all the Planets.

For, the Matter in the Sun being to that in *Jupiter* as 1033 to 1; and *Jupiter's* distance from the Sun to the Semi-diameter of the Sun in a Ratio somewhat bigger; the common Center of Gravity of *Jupiter* and the Sun, will be a Point a little without the Sun's Surface. And by the same means the common Centre of *Saturn* and the Sun will be a Point a little within the Sun's Surface: And the common Centre of the Earth, and all the Planets will be scarce one Diameter of the Sun distant from the Centre thereof. But the Centre is always at rest: Therefore, tho' the Sun will have a Motion this and that way, according to the various Situations of the Planets, yet it can never recede far from the Centre. So that the common Centre of Gravity of the Earth, Sun, and Planets may be esteem'd the Centre of the whole World. See SUN and CENTRE.

VII. The Planets move in Ellipses that have their Foci in the Centre of the Sun; and describe Areas proportional to their Times.

This we have already laid down *a posteriori*, as a Phenomenon: And now, that the Principle of the heavenly Motions is shewn, we deduce it therefrom *a priori*. Thus: Since the Weights of the Planets towards the Sun are reciprocally as the Squares of their distances from the Centre of the Sun; if the Sun were at rest, and the other Planets did not act on each other; their Orbits would be Elliptical, having the Sun in their common Umbilicus; and would describe Areas proportional to the Times: But the mutual Actions of the Planets are very small, and may be well thrown aside. Therefore, &c. See PLANET and ORBIT.

Indeed, the Action of *Jupiter* on *Saturn* is of some consequence; and hence, according to the different Situations and Distances of those two Planets, their Orbits will be a little disturbed. See DISTURBING Force.

The Sun's Orbit too, is sensibly disturbed by the Action of the Moon: And the common Centre of the two describes an Ellipsis round the Sun placed in the Umbilicus; and with a Radius drawn to the Centre of the Sun, describes Areas proportional to the Times. See EARTH and SATURN.

VIII. The Aphelia and Nodes of the Planets are at rest. Excepting for some inconsiderable Irregularities arising from the Actions of the revolving Planets and Comets.—Consequently, as the fix'd Stars retain their Position to the Aphelia and Nodes; they, too, are at rest. See NONE, STAR, &c.

IX. The Axis, or Polar Diameter of the Planets, is less than the Equatorial Diameter.

The Planets, had they no diurnal Rotation, would be Spheres; as having an equal Gravity on every side: But by this Rotation, the Parts receding from the Axis, endeavour to rise towards the Equator, which, if the Matter they consist of be fluid, will be affected very sensibly. Accordingly *Jupiter*, whose Density is found not much to exceed that of Water on our Globe, is observed by the Astronomers to be considerably less between the Poles, than from East to West. And on the same Principle, unless our Earth were higher at the Equator than towards the Poles, the Sea would rise under the Equator, and overflow all near it. See SPHEROID.

But this Figure of the Earth, Sir *Is. Newton* proves likewise *a posteriori*; from the Oscillations of Pendulums being slower, and smaller, in the Equatorial, than the Polar Parts of the Globe. See PENDULUM.

X. All the Moon's Motions, and all the Inequalities in those Motions, follow from these Principles: E. gr. Her unequal Velocity, and that of her Nodes, and Apogee in the Syzygies and Quadratures; the differences in her Eccentricity, and her Variation, &c. See MOON, QUADRATURE, SYZYG, &c.

XI. From the Inequalities in the Lunar Motions, we can deduce the several Inequalities in the Motions of the Satellites. See SATELLITES.

XII. From these Principles, particularly the Action of the Sun and Moon upon the Earth, it follows, that we must have Tides; or that the Sea must swell and subside twice every Day. See TIDES.

XIII. Hence likewise follows, the whole Theory of Comets; as, that they are above the Region of the Moon, and in the Planetary Spaces; that they shine by the Sun's Light reflected from them; that they move in Conic Sections, whose Umbilici are in the Centre of the Sun;

and by Radii drawn to the Sun, describe Areas proportional to the Times; that the Orbits, or Trajectories, are very nearly Parabolas; that their Bodies are solid, compact, &c. like those of the Planets, and must therefore acquire an immense heat in their *Peribelia*; that their Tails are Exhalations arising from them, and encompassing them like Atmospheres. See COMET.

The Objections rais'd against this Philosophy, are chiefly against the Principle Gravity; which some condemn as an occult Quality, and others as a miraculous, and prater-natural Cause; neither of which have longer any room in sound Philosophy. Others, again, set it aside, as destroying the Notion of Vortices; and others, as supposing a Vacuum. But these are all abundantly obviated under the Articles GRAVITY, ATTRACTION, VORTEX, VACUUM, QUALITY, &c.

NEXUS of Matter, see COHESION.

NICHE, in Architecture, a Cavity, or Sinking, in the Thickness of a Wall; to place a Figure, or Statue in. See STATUE.

The larger Niches serve for Groups of Figures; the small ones for single Statues, sometimes only for Busts.

The Word comes from the Italian *Nicchia*, Sea-Shell; in regard the Statue is here inclosed as in a Shell; or, perhaps, by reason of the Shell wherewith the Top of some of them is adorn'd.

Great Care must be taken to proportion the Niches to the Figures; and that the Pedestals of the Figures be proportion'd to the Niches.

Round NICHE, is that whose Plan and Circumference are Circular.

Square NICHE, That where they are Square.

Angular NICHE, That form'd in a Corner of the Building.

Ground NICHE, That which, instead of bearing on a Massive, has its Rise from the Ground; as the Niches of the Portico of the Pantheon at Rome: These are otherwise call'd Tribunals. See TRIBUNAL.

Niches are sometimes made with Rustic-work, sometimes with Shell-work, and sometimes of Crail'd, or Arbor-work.

NICHOLAITANS, or NICOLAITANS, one of the most ancient Sects in the Christian Church. It had its Name from *Nicholas*, a Person ordain'd a Deacon of the Church of *Jerusalem* together with *St. Stephen*.

The distinguishing Tenet of the *Nicholaitans*, as represented by Ecclesiastical Historians, is, that all Married Women should be common; to take away all occasion of Jealousy.

Other Authors tax *Nicholas* with other Impurities; but *Clement Alexandrinus* imputes them all to his Disciples, who, he says, abused their Master's Words. *Nicholas*, it seems, having a very beautiful Wife, was suspected by the Apostles as jealous of her, and as being a lascivious Man.

To remove this suspicion, he call'd his Wife; and to shew he was not at all attach'd to her, offer'd any of them the liberty of espousing her. This is confirm'd by *Eusebius*, who adds, that *Nicholas* never had more than one Wife.

Other things charg'd on the *Nicholaitans*, are, That they made no scruple of eating Meats offer'd to Idols: That they maintain'd that the Father of Jesus Christ was not the Creator: That some of them adored one *Barbelo*, who inhabited the eighth Heaven, and who proceeded from the Father, and was the Mother of *Jaldabaoth*; or, according to others, of *Sabaoth*, who had forcibly taken possession of the seventh Heaven. Others of them gave the Name *Pronikos* to the Mother of the heavenly Powers; but all ascribe infamous Actions to her, and with her authorize their own Impurities. Others shew'd Books, and pretended Revelations under the Name of *Jaldabaoth*.

*Irenaeus* and *Epiphanius* relate these and other Extravagancies; and represent the *Nicholaitans* as Authors of the Sect of Gnostics. See Gnostics.

*Cocceius*, *Hoffman*, *Pitringa*, and *Mainus*, take the Name *Nicholaitan* to be coin'd, to signify a Man addicted to Pleasure and Debauchery; adding, that it has nothing to do with *Nicholas* one of the seven Deacons. And, as the Doctrine of the *Nicholaitans* is mention'd in the *Apocalypse*, immediately after mention made of *Balaam*, and his Doctrine, they compare the two Names *Balaam* and *Nicholas*, which, in their Originals, the one in Greek, the other Hebrew, have nearly the same signification, viz. Prince, or Master of the People.

*Mainus* adds, 'twas probable enough the *Nicholaitans* might value themselves on being the Disciples of one of the seven Deacons; but that it was without any ground: notwithstanding what the Antients, ever too credulous, have represented to the contrary.

NICOTIANA, or Herba Nicotiana, a Term given to Tobacco; from *Nicot* the French Ambassador at the Court of Portugal, who first sent it into France in 1560, and gave it his



his own Name; as he himself tells us in his Dictionary.

See TOBACCO.

**NICTITATING Membrane**, in Anatomy, a thin Membrane which covers the Eyes of several Creatures, and shelters them from Dust, or too much Light; yet is so thin, that they can see indifferently well through it. See EYE.

The *Nictitating Membrane* is chiefly found in the Bird and Fish Kind. See BIRD and FISH.

This Membrane in the Eagle's Eye, is remarkably close and firm, inasmuch as to be accounted as a second Eye-lid; And hence that remarkable Firmness of the Eagle's Sight in viewing the Sun. See EAGLE.

**NIDUS**, Nest, a Depository, wherein certain Animals, Fowls particularly, Insects, and Reptiles lodge their Eggs, for Incubation; and wherein, when hatch'd, they nurse their Young till they become able to shift for themselves.

The Word is *Latin*, and supposed to be derived from *Nidor*, strong, or ill Smell; in regard the Nests of Animals usually stink.

Mr. *Derham* says, he has often wonder'd how Wasps, Hornets, and other Insects that gather dry Materials (as the Dust of Wood scraped off for that purpose) should find a proper Matter to cement and glue their Combs, and line their Cells; but he adds, That in all probability 'tis in their own Bodies: as in the *Tinea Vestivora*, the Cad-Worm, &c.

*Geodart* observes of his *Eruca* that fed on Leaves, that it made its Cell on Leaves glued together with its own Spittle.

**NIECE**, a Term relative to Uncle and Aunt, signifying Brother or Sister's Daughter; which, in the Civil Law, is the third Degree of Consanguinity, and in the Canon Law, the second. See AGNATI and COGNATI.

**NIENT** Comprize, in Law, an Exception taken to a Petition as unjust; because the thing desired is not in that Act, or Deed whereon the Petition is grounded.

Thus, a Person desires of the Court to be put in Possession formerly adjudg'd to him among other Lands: The adverse Party pleads that this Petition is not to be granted, by reason tho the Petitioner had a Judgment for certain Lands and Houses, yet this House is not comprized therein.

**NIEPE**, NEPE, or NEEP Tides, are those Tides which happen when the Moon is in the middle of the second and last Quarters. See TIDE.

The *Niepe-Tides* are opposite to the Spring-Tides; and as the highest of the Spring-Tides is three Days after the Full or Change, so the lowest of the *Niepe* is four Days before the Full or Change; on which occasion the Seamen say, That it is deep *Niep*.

When a Ship wants Water, so that she cannot get out of the Harbour, off the Ground, or out of the Dock, the Seamen say, She is *Nieped*.

**NIGHT**, that Part of a Natural Day, during which the Sun is underneath the Horizon. See DAY.

Or *Night*, is that Space of Time wherein the Sun is out of our Hemisphere.

Under the Equator, the Nights are always equal to the Days. Under the Poles, the Night holds half the Year.

The ancient Gauls and Germans divided their Time not by Days, but Nights; as appears from Tacitus and Caesar. And the People of Iceland and the Arabs, do the same at this day. The same is observed of our Saxon Ancestors.

Thus, in the Council of Cloveshoe, Anno 824, we read, *Ibi finita est proscripta contentione coram Episcopo post 30 Noctes, illum Juramentum ad Westminster deductum est*. Whence our Custom of saying, Seven-night, fort-night, &c.

**NIGHT-Mare**, a popular Name for a Disease by the Greek Physicians call'd *Epibiales*, and the Latins, *Incubus*; to which People lying a-sleep on their Backs, and having their Stomach charg'd with heavy Food difficult of Digestion, are very liable. See INCUBUS.

The Disease makes the sleeping Patient appear as if oppress'd with a huge Weight on the Breast; whence he ordinarily imagines some Spectre or Fantom stopping his Breath.

The Disease does not arise, as was antiently imagined, from gross Vapours filling the Ventricles of the Brain; but rather from a too great repletion of the Stomach which prevents the Motion of the Diaphragm, and, of consequence, the Dilatation of the Breast necessary to Respiration.

Others take it to be produced by a Convulsion of the Muscles of Respiration. See EPIBIALES.

*Estmuller* observes, That the Arabs call this Disease a Nocturnal Epilepsy; since upon its prevailing much, it degenerates into an Epilepsy; and is in effect the Prodromus hereof in young People, as in old ones of an Apoplexy.

**NIHIL**, *NIHILUM*, Nothing; among the School Philosophers, is what has no real Effect, and is only conceived negatively, and denominated by a Negative. See ESSERE.

**NIHIL** *Capiat per Billam*, or *per Breve*, is a Form used when Judgment is given against the Plaintiff, so as to bar his Action, or overthrow his Writ.

**NIHIL Dicit**, is a failing to put in an Answer to the Plaintiff's Plea by the Day assign'd.

**NIHIL Album**, see POMPHYLAX.

**NIHILS**, or *NICHILS*, Issues, which the Sheriff that is opposed says are nothing worth, and Illeivable; for the Insufficiency of the Parties that should pay them.

*Clerk of the NICHILS*, *Nihilorum Clericus*, is an Officer of the Exchequer who makes a Roll of the Sums which are *Nichil'd* by the Sheriff. See EXCHEQUER.

**NILOMETRE**, an Instrument used among the Antients, to measure the height of the Water of the Nile, in its over-flowings. See OVERFLOWING.

In the French King's Library is an Arabic Treatise on *Nilometres*, entitled *Neili fi alnal al Nil*; wherein are described all the over-flowings of the Nile from the 1st Year of the Hegira to the 875th.

*Herodotus* mentions a Column erected in a Point of the Island Delta, to serve as a Nilometre: And there is still one of the same kind in a Mosque of the same Place.

As all the Riches of Egypt arise from the over-flowing of the Nile, the Egyptians used to supplicate them at the hands of their *Serapis*, and committed the most execrable Crimes, as Actions, forsooth, of Religion, to obtain the Favour. This occasion'd *Constantine* expressly to prohibit these Sacrifices, &c. and to order the Nilometre to be removed into the Church; whereas till that time it had been in the Temple of *Serapis*. *Julian* the Apostate, had it replaced in the Temple, where it continued till the Time of the Great Theodosius. See on the Subject of Nilometres, the *Acta Eruditorum Lipsii*, Anno 1686.

The Word comes from the Greek *νῆλος*, Nile, (and that from *νῆα* *ἰλός*, New Mud; or, as others will have it, from *νῆα*, I flow, and *ἰλός*, muddy) and *μέτρον*, Measure.

The Greeks ordinarily call'd the Nilometre, *Niloscope*.

**NIMBIS**, in Antiquity, a Term signifying a Circle, observed on certain Medals, around the Heads of some Emperors; answering to the Circles of Light, or *Aureole*, placed around the Images of Saints.

The *Nimbis* is seen on the Medals of *Maurice*, *Phocas*, and others, even of the upper Empire.

**NIMETULAHITE**, a kind of Religious among the Turks; so call'd from *Nimetulabi* their Initiator.

When a Turk would be admitted into the Order, he is to shut himself up close in a Chamber forty Days, tied down to four Ounces of Food per Day. The term expired, the *Nimetulabites* take him by the Hand, and lead him a Moorish Dance accompanied with an infinity of ridiculous Actions, or Gestures; till the violence of the Exercise, with his former Regimen, throw him down on the Ground. This Fall is construed an Extasy, during which he is supposed to have a Vision.

The *Nimetulabites* meet every Monday in the Night-time, and sing Hymns to God, &c.

**NIPPLE**, see BREASTS.

**NISI Prius**, in Law, a Writ Judicial, which lieth in Cases, where the Jury being impanel'd, and returned before the Justices, one of the Parties requests to have such Writ, for the Ease of the Country, whereby to will the Sheriff to cause the Inquest to come before the Justices in the same Country.

It is call'd a Writ of the *Nisi Prius*, and its Effect is, that the Sheriff is hereby commanded to bring to Westminster the Men impanel'd at a certain Day, or before the Justices of the next Assizes, *Nisi die Lunae apud talem Locum prius venerint*, &c.

**NITRE**, in Natural History, a sort of Salt, thus call'd by the Antients; by the Moderns, more usually, *Salpêtre*. See SALTPETRE.

Naturalists differ as to the Point whether our *Salpêtre* be the Nitre of the Antients. G. C. *Scheubner* has a particular Treatise on the Subject, *de Nitro tum veterum tum nostro Commentarius*.

Most other Authors hold the ancient Nitre to be Mineral or Fossil; whereas our *Saltpetre* is Artificial. *Scrapion* says, their Mines of Nitre were like those of common Salt, and that it was form'd out of running Water congeal'd in its Progress into a sort of Stone. He adds, That their Nitre was of four kinds, distinguish'd by the Countries whence it came; viz. the Armenian; Roman; African; call'd *Aphronitre*, and by *Avicenna*, *Baurach*; and the Egyptian, which was the most famous, giving Name to all the rest; itself denominated from *Nitra*, a Province in Egypt, where it was found in great abundance. He assures us, too, that their Nitre was of divers Colours, viz. white, red, and livid; that some was cavernous, like a Sponge; others close and compact; others transparent like Glass; and others scaly.

*Scheubner* gives a different Account: The Antients, he observes, distinguish'd between *Nitron*, Nitre, *Αερονίτρον*, *Aphronitre*, and *Απερς νίτρον*, *Spuma Nitri*, or Scum of Nitre.



He adds, That *Agricola*, &c. is mistaken in asserting that there were antiently Mines in *Lydia*, *Magnesia*, *Caria*, &c. out of which *Nitre* was dug like Stones out of a Quarry: And that the *Nitre* used by the Antients was brought out of several Countries mentioned by *Pliny*, *L. xxxi. c. 10.* A Lake in *Macedonia*, whose Waters were *Nitrous*, and in the middle whereof, however, was a Spring of fresh Water, furnish'd the greatest Quantity, and the best: It was call'd *Cal-lustricum* from a neighbouring Cape in the Gulf of *Theffalonia*, and was form'd like a Crust on the Surface of the Water during the Dog-days. The Waters of the Lake *Ascanius* in *Bithynia*, and those of certain Springs near *Chalcis*, were sweet and potable towards the Surface, yet *nitrous* at bottom.

There was also *Nitre* gather'd on the Ground near *Philippi*, in *Thrace*; but it was little, and of no great value.

The Valleys of *Media* also furnish'd some. And there were *Nitre*-Pits in *Egypt*, as there are Salt-Pits among us. See *NATRON* and *NITRIAN Waters*.

The chief Virtue the Antients ascribe to their *Nitre*, is, that of drying, deterging, and attenuating; and, as such, it was used in Ulcers, Disorders of the Eyes, the Itch, the Bite of Serpents, Gout, &c. They also took it inwardly to resolve and attenuate viscid Humours: But its cooling Quality, whereof the modern Physicians make so much use, they were unacquainted withall.

'Tis excellent in Diseases of the Heart, accompanied with a propensity to vomit.

Abundance of our Physicians are full of the Notion of a *volatile Nitre* abounding in the Air; and a world of Phenomena they account for from the Operation of the Particles thereof. See *AIR*.

That the Atmosphere abounds with Saline Particles, is most certain; for being filled continually with Effluvia from the Earth and Sea, it must needs have from both a great Quantity of Saline Corpuscles; and these will be of different Kinds, according to the Variety of those Salts from whence they are derived. See *SALT*.

But why these should be mostly supposed of a *Nitrous* nature, is not so easy to prove; for Saltpetre is by no means found in greater Quantity than the other Salts, especially common Salt; nor is it of a much more volatile Nature than they, nor capable of being raised more easily, or by a lesser heat. But since Soot, and that which produces it, Smoak, is found to abound very much with a truly volatile Salt; and since such a kind of Salt is produced frequently by the Putrefaction of Animal and Vegetable Bodies, 'tis probable the Air may abound with Salts of this kind, among many other decomposed ones of different Natures and Names. See *ATMOSPHERE*, &c.

*Spirit of NITRE*, see *SPIRIT*.

**NOBILIARY**, a Collection, or Historical Account of the Noble Families of a Province, or Nation.

*Chorier* has published a *Nobiliary* of *Dauphine*; and *Caumartin*, another of *Provence*. The Germans are particularly careful of their *Nobiliaries*, to keep up the Purity of their Families.

**NOBILISSIMUS**, in Antiquity, a Title, or Quality given to the Princes of the Imperial Family. See *TITLE*.

*F. Doucine* advances, That the Title *Nobilissimus* was first given under the Emperor *Justin*; yet we find the Title, *Nobilis Caesar*, or *Nob. C.* that is, *Nobilissimus Caesar*, on Medals long before that Time, even as early as *Trajan*. So that even *M. Tillemont* is mistaken where he says, The Quality of *Nobilissimus* is not to be found in History before the Time of *Constantine the Great*, who first gave it to his two Brothers; after which it was attributed to such of the Emperor's Children as were not *Cæsars*.

*Tristan* adds, That the *Cæsars* bore the Title of *Nobilissimi* in all Ages; but that the *Nobilissimare* first became a distinct independent Dignity in the Time of *Constantine the Great*.

**NOBILITY**, a Quality that dignifies, or renders a Thing Noble; particularly, that raises a Person possess'd thereof above a Peasant, or Commoner. See *NOBLE*.

In *England*, indeed, but no where else, the Term *Nobility* is restrain'd to Degrees of Dignity above Knighthood. See *KNIGHT*.

Some refer the Origin of *Nobility* in *Europe* to the *Gorbs*; who, after they had seiz'd a Part of *Europe*, rewarded their Captains with Titles of Honour, and call'd them *Nobles*, *Nobiles*, to distinguish them from the common People.

*Nobility*, in *England*, is only confer'd by the King, and that by Patent; in virtue whereof, it becomes Hereditary. In other Countries there are other ways of acquiring it.

Thus, in *France*, *v. gr.* there are several Offices which convey perfect *Nobility*, and such as descends to Posterity. Such are all Offices of the Crown, those of *Counsellor of Estate*, &c.

Others they have which only communicate an Accessory, or Personal *Nobility*, which dies with the Person. Thus, a

*Counsellor in Parliament* enjoys all the Rights and Exemptions of *Nobility*; yet his Son is never reputed Noble; unless there have been a Succession of them, and both Father and Grandfather have been Noble; which they call *Patre & Avo Consulibus*.

They have a third Kind of *Nobility*, call'd *Nobility of the Bell, de la Cloche*; which is what the Mayors and Sheriffs of certain Cities, as *Lions*, *Bourges*, *Rochel*, *Poitiers*, &c. acquire in virtue of their Magistracy.

The *Nobility* of *England* is call'd the *Peerage* of *England*. See *PEERAGE*.

Its Degrees are only five, *viz.* That of a *Duke*, *Marquis*, *Earl* or *Count*, *Viscount*, and *Baron*. See each Degree under its proper Article, *DUKE*, *MARQUISS*, &c.

The Privileges of the *English Nobility* are very considerable: They are all esteem'd as the King's Hereditary Counsellors; and are privileged from all Arrests, unless for Treason, Felony, breach of Peace, Condemnation in Parliament, and Contempt of the King. No Supplicative can be granted against them; no *Capias*, or *Exigent*, sued against them for Action of Debt, or Trespas; no *Essoigne* lies against them: In Criminal Cases, they are only to be tried by a Jury of Peers, who are not put to their Oath; but their Verdict upon their Honour suffices. In their Absence they are allow'd a Proxy to Vote for them; and in all Places of Trust are allow'd to constitute Deputies, by reason of the Necessity the Law supposes them under of attending the King's Person.

*Guilim* observes, That if an Appeal of Murther or Felony be sued by a Commoner, against a Peer, he shall be tried by Commoners, not Peers.

No Peer may go out of the Kingdom without the King's leave: If any have leave, he is to return upon the King's Writ, or to forfeit Goods and Chattels.

*Anton. Matthæus* observes, That *Nobility* among the Romans was a quite different thing from what it is among us. The Nobles of the Romans were either those rais'd to the Magistrature, or descended from Magistrates: There was no such thing as *Nobility* by Patent.

*Bartoli* says, That Doctors, after they have held a Chair in an University for twenty Years, became Noble; and are entitl'd to all the Rights of Counts. See *COUNT*.

But this Claim is not admitted at Court, &c. tho *Bartoli's* Sentiments be back'd with those of several other Authors, particularly *Chassaneus* in his *Consuetudin. Burgundie*; *Boyer sur la Coutume de Berry*; *Faber de Dig. def. &c.* which last, however, restrains *Bartoli's* Rule to Doctors in Law, and Princes Physicians. See *DOCTOR*.

By an Edict of the French King, in 1669, 'tis declared, That Trade shall not derogate from *Nobility*, provided the Person don't sell by retail. See *COMMERCE*.

In *Bretagne*, by antient Custom, a Noble loses nothing by Trading even in retail: But he reassumes all his Rights as soon as he ceases Traffic; his *Nobility* having slept all the time.

In *Germany*, a Woman not Noble by Birth doth not become *v. gr.* a Countess, or Baroness, by marrying a Count, or Baron. A Lady of the higher Degree, indeed, becomes a Princess by marrying a Prince; but this doth not hold of a Lady of the lower *Nobility*. See *MARRIAGE*.

On the Coast of *Malabar*, Children are only capable of being Noble by the Mother's side; it being allow'd them to take as many Husbands as they please, and to quit them when they think good.

**NOBLE**, a Person who has a Privilege which raises him above a Commoner, or Peasant; either by Birth, by Office, or by Patent from his Prince. See *NOBILITY*.

In *England*, the word *Noble* is of a narrower import, than in other Countries, being confined to Persons above the Degree of Knights; whereas, abroad, it comprehends not only Knights, but also what we simply call *Gentlemen*. See *KNIGHT*, *GENTLEMAN*, &c.

The Nobles of *England* are also call'd *Patres Regni*, as being *Nobilitate Patres*, tho *Gradu Impares*. See *PEER*.

The Word comes from the *Latin*, *Nobilis*, form'd from the antient *Nescibilis*, distinguishable, remarkable.

The *Venetian Noblesse* is famous: 'Tis in this that the Sovereignty of the State resides. It is divided into three Classes: The first only comprehends 24 Families.

The second includes the Descendants of all those who were wrote in the golden Book, in 1289, and destined to govern the State, which then began to be Aristocratic.

The third consists of such as have bought the Dignity of *Noble Venetians*.

This last Class is only admitted to the inferior Employments. The two former, to all indifferently.

The Title of *Noble Venetians* is sometimes also given to foreign Kings, Princes, &c.

**NORLE**, or *Rose Noble*, a Money of Account containing 6 s. 8 d. See *MONNY*.



The *Noble* was antiently a real Coin, under the Denomination of *Noble*, or *Rose Noble*. See COIN.

Authors observe, that there has not been any Piece of Gold or Silver of this Name, coin'd with us, since 9 H. V. They were first coin'd by *Edw. III.* in 1334.

The *Noble* contain'd 80 d. the same with the present Money of Account: Its half was call'd *Obolus*, containing 40 d. its fourth part the *Quadrance*, or Farthing in those days, 20 d.

**NOCTAMBULI**, a Term of equal import with *Somnambuli*, applied to Persons who have a Habit of rising, and walking about in their Sleep. See SLEEP.

The Word is a compound of the *Latin* *Nox*, Night, and *ambulo*, I walk.

*Skenkius*, *Horstius*, *Clauderus*, and *Hildanus*, who have wrote of Sleep, give us divers unhappy Histories of such *Noctambuli*.

The Disorder consists in this, that the proper Organs of Muscular Motion are at liberty, while the Organs destined for Sensation are bound up, or in a State of Inaction. See MUSCULAR Motion and SENSATION.

To conceive the Cause, it is to be observ'd, that the Laws of the Union of the Soul and Body, are such, as that certain Ideas follow upon certain Motions of the Fibres of the Brain; and certain Motions of those Fibres upon certain Ideas. Now, by much thinking on any one thing, the Fibres acquire some permanent Situation, which gives a freer Passage to the Spirits towards a certain part of the Body than ordinary. If then the Animal Spirits become too copious, or too much agitated, or consist of parts too solid; they throw themselves into the Passages they find the most open, glide into the Nerves and Muscles corresponding to those Passages, and there produce the Motions proper to those Muscles.

Accordingly, the Body rises and walks; tho the Soul be excluded from thinking on the Objects that use to employ it on such occasions.

The *Bilious*, according to *Horstius*; the *Melancholic*, according to *Salus*; and the *Sanguine*, according to *Libavius*, are the most subject to those *nocturnal* Vagaries.

The Remedies are all such things as temper the Agitation of the Spirits, and relax the Fibres; as Bleeding, and all Coolers, either internally or externally: *Aperitives* too, have a good effect; but the best Remedy is Cold-Bathing.

**NOCTILUCA**, among Naturalists, a Species of Phosphorus, so call'd because it shines in the Night, and without any Light being thrown on it; as that made of Urine, &c. by which it is distinguished from the other Species of Phosphorus, which, e'er they shine, must be exposed to the Sun-Beams; such as is the *Bolonian-Stone*, &c. See PHOSPHORUS and BOLONIAN-Stone.

*Mr. Boyle*, in a particular Treatise on the Subject, gives an Account of three *Noctiluca*. The first, invented by *Krafft*, he calls the *Consistent*, or *Gumous Noctiluca*, as being of a Texture not unlike that of a Cherry-Gum. This, on account of its uninterrupted Action, is, by the *Germans*, call'd the *Constant Noctiluca*; among us it is now known under the denomination of *solid Phosphorus*.

The second, *Liquid*, invented by the said *Krafft*; being only a Dissolution of the former in a convenient Liquor. The third Kind was prepared by *Mr. Boyle* himself; and of a different Nature from both the other; for, it would not shine of itself, like either of them, but required the Contact of the Air (tho not any external Rays or Heat) to make it produce Light, which would be very durable, in a well-stopp'd Vessel. Add, that it was not the Body that shone, but an Exhalation, or Effluvium mix'd with the Air; on which accounts, the Inventor gives it the Denomination of the *Aerial Noctiluca*.

The same *Mr. Boyle*, afterwards, prepared another sort; which, from the little pellucid Fragments, or Crystals therein, he denominates the *Icy Noctiluca*.

**NOCTURNAL**, something that relates to *Night*, *Nox*; in contradistinction to *Diurnal*. See NIGHT and DIURNAL.

In this sense we say, *Nocturnal Assemblies*; *Nocturnal Pollutions*, &c. See POLLUTIONS, &c.

*Nocturnal Pains*, a frequent Concomitant of Venereal Disorders, which can only be palliated with Narcoticks: nothing but a Mercurial Course, or a long continued use of Diet-Drinks can entirely remove them.

**NOCTURNAL Arch**, in Astronomy, the Arch of a Circle described by the Sun, or a Star, in the Night.

*Semi-Nocturnal Arch of the Sun*, is that Portion of a Circle he passes over between our Meridian, and the Point of the Horizon wherein he rises; or, between the Point of the Horizon where he sets, and our Meridian.

**NOCTURNAL**, is particularly used for a *Star-Dial*, or an Instrument used to determine the Hour of the Night;

chiefly at Sea, from the Altitude, or Depression of some of the Stars about the Pole. See DIAL.

There are *Nocturnals* of various Contrivances; some of them Projections of the Sphere: Those ordinarily used are adapted either to the Pole Star, or the two Stars in *Ursa minor*, call'd the Guards.

#### Construction of the NOCTURNAL.

The Instrument consists of two Circular Plates, (Tab. NAVIGATION, Fig. 13.) applied on each other. The greater, which has a Handle to hold the Instrument, is about  $2\frac{1}{2}$  Inches Diameter, and is divided into 12 Parts, agreeing to the 12 Months; and each Month subdivided into every fifth Day: And so as that the middle of the Handle corresponds to that Day of the Year, wherein the Star here regarded has the same right Ascension with the Sun.

If the Instrument be fitted for two Stars, the Handle is made moveable. The upper left Circle is divided into 24 equal Parts, for the 24 Hours of the Day, and each Hour subdivided into Quarters, as in the Figure. These 24 Hours are noted by 24 Teeth; to be told in the Night. Those at the Hours 12, are distinguished by their length. In the Centre of the two circular Plates, is adjusted a long Index A, moveable upon the upper Plate. And the three Pieces, viz. the two Circles and Index, are join'd by a Rivet which is pierced thro the Centre, with a Hole two Inches in Diameter for the Star to be observ'd thro.

#### Use of the NOCTURNAL.

Turn the upper Plate till the longest Tooth mark'd 12, be against the Day of the Month on the under Plate; then bringing the Instrument near the Eye, suspend it by the Handle, with the Plane nearly parallel to the Equinoctial; and viewing the Pole-Star thro the Hole of the Centre, turn the Index about, till, by the Edge coming from the Centre, you see the bright Star or Guard of the little Bear; if the Instrument be fitted to that Star; and that Tooth of the upper Circle, that is under the edge of the Index, is at the Hour of the Night on the edge of the Hour-Circle, which may be known without a Light, by accounting the Teeth from the longest, which is for the Hour 12.

**NODATED Hyperbola**, a kind of Hyperbola, which, in turning round, crosses itself. See CURVE and HYPERBOLA.

**NODE**, *Nodus*, in Chirurgery, a Tumour arising on the Bones, usually proceeding from some Venereal Cause. See TUMOR and BONE.

It seems generated of a thick, cold, viscid Humour, which is often found very difficult to resolve.

They frequently apply to it a leaden Plate cover'd with Mercury. The Cure is first attempted by *Emplastr. de Ranis cum Mercurio*; which failing, some Mercurial Unguent is now and then rubb'd on them; and afterwards Mercurial Plaisters made of *Cinnabar*, &c. applied.

Some Physicians call it *Exostosis*; others give the Name *Nodus* to all Tumors arising on the Joints, and Nerves.

**NODE**, *Nodus*, is also used for the Tumors, or Protuberances arising on the Joints of old Gouty People; call'd also *Tophi*. See TOPHUS.

They are supposed to be form'd of a thick, crude, heavy, viscid indigested Matter; mix'd with a hot, sharp, bilious Juice, the grosser and more terrestrial Part whereof being detain'd, grows into a stony sort of Concretion. See GOUT.

**NODES**, in Astronomy, the two Points wherein the Orbit of a Planet intersects the Ecliptic. See ORBIT and ECLIPTIC.

Such are the two Points C and D, (Tab. ASTRON. Fig. 35.) whereof the Node C, where the Planet ascends Northwards above the Plane of the Ecliptic, is call'd the *Ascending Node*, the *Northward Node*, and the *Head of the Dragon*; and thus mark'd  $\Omega$ . The other Node D, where the Planet descends to the South, is call'd the *Descending Node*, the *Southward Node*, or the *Dragon's Tail*; thus mark'd  $\varpi$ . See DRAGON'S Head and Tail, &c.

The right Line D C, wherein the two Circles intersect, is call'd the *Line of the Nodes*. See LINE.

It appears from Observation, that the Line of the Nodes of all the Planets constantly changes its Place, and shifts its Situation in consequentia; i. e. from East to West, contrary to the Order of the Signs.

Thus, by a retrograde Motion, the Line of the Moon's Nodes finishes its Circuit in 19 Years; in which time, after having receded from any Point of the Ecliptic, it returns to the same. See MOON.

When the Moon is in the Nodes, she is also in the Ecliptic, viz. twice in each Period; when she is at her greatest



greatest distance from the *Nodes*. viz. in the Points E, F, she is said to be in her Limits. See LIMIT.

The Moon must be in one of the *Nodes* when there is an Eclipse, either of the Sun or Moon. See ECLIPSE, PLANET, &c.

NODE, in Dialling, is sometimes used for the Style, Index, or Gnomon of a Dial. See GNOMON.

Sometimes it is also used for a Hole in the Ceiling of a Room, or in the Window, for the making of a Dial on the Floor, Wall, or the like.

NODUS, or Knot, see KNOT.

NODUS in Poetry, &c. see INTRIGUE.

NODULUS, in Pharmacy, a Bag of Medicinal Ingredients put into Beer or Wine, the Tincture whereof the Patient is to take.

NOETIANS, a Sect of ancient Heretics, Disciples of Noetius, an *Epheſian*, the Master of Sabellius.

They only allowed of one Person in the Godhead; viz. the Father; and accordingly taught, that 'twas God the Father that suffered: An Error, says *Epiphanius*, who wrote an hundred Years after Noetius, never heard of before; tho' 'tis certain there had been other *Patristians* in the Church before him. See PATRISTIAN.

Being reprehended by his Superiors, Noetius made them this Answer: *What harm have I done? I adore one only God; I own none but him. He was born, suffered, and is dead.*

NOLI me tangere, in Medicine, a kind of Cancer, or a malignant Eruption in the Face, occasioned by an extremely sharp, corrosive Humour. 'Tis said to be very dangerous touching it; for, frequently, in endeavouring to cure it, 'tis irritated the more, and the Patient's Death hastened.

Hence its Name, which literally signifies, *don't touch me.*

NOLI me tangere, is chiefly used among us for an external Ulcer in the *Alæ* of the Nose; proceeding often from a Venereal Cause, tho' sometimes the Effect of a Scrophulous Constitution. See ULCER.

It does not always confine itself to the *Alæ*, but will spread and corrode the very Substance of the Nose. The Cure is difficult, especially when it arises from a bad Constitution.

The Botanists also describe a Plant under this denomination, which it derives from a singular Property it has, of darting out its Seed when ripe, upon the first approach of the Hand to touch its Pods. See SEMINATION.

NOMADES, a Name given, in Antiquity, to several Nations or People, whose whole Occupation was to feed and tend their Flocks; and who had no fix'd Place of Abode, but were constantly shifting, according to the Conveniences of Pasturage.

The most celebrated among the *Nomades* were those of Africa, who inhabited between Zengitania to the East, and Mauritania to the West.

*Salust* says, they were a Colony of *Persians* brought into Africa with *Hercules*.

The *Nomades* of Asia inhabited the Coasts of the *Caspian*-Sea.

The *Nomades* of Scythia were, and still are, the Inhabitants of Little Tartary.

The Word comes from the Greek *νέμω*, I feed.

NOMANCY, the Art of divining the Fates of Persons by means of the Letters that form their Names. See NAME.

Nomancy is more usually call'd Onomancy. See ONOMANCY.

The Word is a Compound of the Latin, *Nomen*, Name, and *μαντεία*, Divination.

Nomancy, or, as it should rather be call'd, Nominomancy, or Onomatomancy, seems to be nothing else but the Cabalistic Gematria. See CABBALA.

NOMARCHA, in Antiquity. Egypt was antiently divided into several Regions, or Quarters, call'd *Noma's*, from the Greek *νόμος*, taken in the Sense of a Division; and the Officer who had the Administration of each *Noma* from the King, was call'd *Nomarcha*, from *νόμος*, and *ἀρχή* Command.

NOMBRIL Point, in Heraldry, is the next below the Fess-Point; or the very Centre of the Escutcheon. Supposing the Escutcheon divided into two equal Parts below the Fess; the first of these Divisions is the *Nombril*; and the lower the *Base*. See POINT and ESCUTCHEON.

NOME, or NAME, in Algebra, is any Quantity with a Sign prefixed or added to it, whereby it is connected with some other Quantity; upon which the whole becomes a Binomial, or Trinomial, &c. See QUANTITY.

Thus  $a + b$  is a Binomial, whose Names are  $a$  and  $b$ ; and  $a + b + c$  a Trinomial, whose Names are  $a$ ,  $b$ , and  $c$ , &c. See BINOMIAL, TRINOMIAL.

NOMENCLATOR, among the Romans, was usually a Slave, who attended Persons that stood Candidates for

Offices, and prompted them the Names of all the Citizens they met, that they might solicit them, and call them by their Names; which among that People, was the highest piece of Civility. See CANDIDATE.

The *Nomenclator* was also call'd *Protocollus*.

NOMENCLATOR of the Roman Church, was an Officer, whose Business was to call the Persons whom the Pope invited to Dinner. He also listen'd to those who demanded Audience; in the same manner as those now retain'd by the Cardinals, call'd *Auditors*.

NOMENCLATURE, a Catalogue of several of the more usual Words in any Language, with their Significations; compiled in order to facilitate the Use of such Words to those who are to learn the Tongue.

We have Latin, Greek, French, &c. *Nomenclatures*.

NOMINA Villarum, an Account of the Names of all the Villages, and the Possessors thereof, in each County, drawn up by the several Sheriffs, at the Instance of King *Edw. I.* and return'd by them into the Exchequer; where it is still preserved.

NOMINALS, or NOMINALISTS, a Sect of School-Philosophers, the Disciples and Followers of *Ockham*, an English Cordelier in the 14th Century.

The *Nominalists* were great dealers in Words; whence they were vulgarly denominated *Word-sellers*.

They had the denomination *Nominalist*, because, in opposition to the *Realists*, they maintain'd, that Words, not Things, were the Object of Dialectics. See REALISTS, &c.

This Sect had its first Rise towards the end of the 11th Century, and pretended to follow *Porphiry* and *Aristotle*; but it was not till *Ockham's* time that they bore this Name.

The *Nominals* were the Founders of the University of *Leipſic*: There are many yet abroad, who pique themselves on being *Nominals*.

The *Nominals*, with the *Stoics*, admit the formal Conceptions, or Ideas of Things, as the Subject and Foundation of Universality; but to this they add Names, which represent and signify, after the same univocal manner, and without any distinction, a great variety of single things alike in Genus and Species.

Whence it is they are call'd *Nominals*; as pretending, that to become Learned, 'tis not enough to have just Ideas of things, but 'tis likewise required to know the proper Names of the Genera and Species of Things, and to be able to express them clearly and precisely, without Confusion, or Equivocation.

NOMINATION, the Action of Naming, and appointing a Person for some Function, Employ, or Benefice.

The Word is chiefly used for the Right of Presenting to a Benefice, &c. See BENEFICE, &c.

In Common Law, however, there is a difference between Nomination, and Presentation; the former being properly a Power which a Man has, by virtue of a Manor, or otherwise, to appoint, or name a Clerk to a Patron of a Benefice, to be by him presented to the Ordinary. See PRESENTATION and COLLATION.

NOMINATIVE, in Grammar, the first Case of Nouns which are declinable. See CASE.

The simple Position, or laying down of a Noun, or Name, is call'd the *Nominative Case*; yet is it not so properly a Case, as the Matter or Ground whence the other Cases are to be form'd, by the several Changes and Inflections given to this first Termination. See NOUN.

Its chief use is to be placed in Discourse before all Verbs, as the Subject of the Proposition, or Affirmation; as, *Dominus regit me*, the Lord governs me; *Deus exaudit me*, God hearkens me.

NOMINATOR, he who names, or presents a Person to an Office, or Benefice.

Hence *Nominee*, the Person named or presented.

*Errard* observes, there are some Customs where the *Nominator* is responsible for the Solvability of the *Nominee*.

NOMOCANON, a Collection of Canons, and of Imperial Laws, relating or conformable thereto. See CANON.

The first *Nomocanon* was made by *Johannes Scholasticus* in 554.

*Photius*, Patriarch of Constantinople in 883, compiled another *Nomocanon*, or Collection of the Civil Laws with the Canons: This is the most celebrated. *Balsamon* made a Commentary on it in 1180.

NOMOCANON, is also a Collection of the ancient Canons of the Apostles, Councils, and Fathers, without any regard to Imperial Constitutions; such is that published by *M. Cotelier*.

NOMOCANON again, is sometimes used for a Penitential Book of the Greeks.

The Word is composed of the Greek *νόμος*, Law, and *κανών*, Canon, Rule.



**NON-Ability**, in Law, an Exception taken against the Plaintiff, or Defendant, upon some Cause, why he cannot commence a Suit in Law; as *Præmunire*, Outlawry, Profess'd in Religion, Excommunicate, or a Stranger born.

This last holds only in Actions real, and mixed; and not in personal, except he be both a Stranger and an Enemy. The Civilians say, that such Man hath not *Personam standi in judicio*.

**NON admittas**, or *Ne admittas*, a Writ which lies for the Plaintiff in a *Quare Impedit*, or him that has Action of *Darre in Presentment* depending in the Common-Bench, and fears the Bishop will admit the Clerk of the Defendant during the Suit between them.

**NON-Appearence**, a Default in not Appearing in a Court of Judicature. See **APPEARANCE**.

**NON-Claim**, in Law, the omission, or neglect of him who ought to challenge his Right within a time limited. See **CLAIM**.

By such neglect, he is either barr'd of his Right; as at this day, upon *Non-claim* within five Years after a time, and Right to him accrued; or of his Entry by Descent, for want of *Claim* within five Years after the Disseisin.

**NON Molestando**, a Writ which lies for him who is molested contrary to the King's Protection granted him.

**NON Omittas**, a Writ which lies where the Sheriff having deliver'd a former Writ to a Bailiff of a Franchise in which the Party it is to be served on, dwells; and the Bailiff having neglected to do it: Upon the Sheriff's returning, that he deliver'd it to the Bailiff; this second Writ shall be directed to the Sheriff, charging him to execute the King's Command himself.

**NON Ponendo in Affsis**, & *Juratis*, a Writ granted on divers Occasions to Men for the freeing them from serving on Affizes and Juries; as by reason of Old Age, &c. See **JURY**, &c.

**NON Procedendo ad Assisam Rege inconsulto**, a Writ to stop the Trial of a Cause appertaining to one who is in the King's Service, &c. till the King's Pleasure be further known.

**NON sane Memoriae**, or *Non sane Memoriae*, is an Exception taken to an Act declared by the Plaintiff or Demandant to be done at a time when the Party that did it was Mad, or not in his Wits; as to a last Will, &c. See **NON Compos**.

**NON sum Informatus**, see **INFORMATUS non sum**.

**NON-Residence**, in Law, is applied to such Spiritual Persons as are not resident on, but do absent themselves, for one Month together, or two at several times of the Year, from their Benefices. See **BENEFICE**.

Regularly, Personal Residence is required of Ecclesiastical Persons upon their Cures. See **RESIDENCE**.

**NON-Residentia pro Clericis Regis**, is a Writ directed to the Ordinary, charging him not to molest a Clerk employ'd in the King's Service, on account of his *Non-Residence*.

**NON-Suit**, in Law, a Renunciation of the Suit, by the Plaintiff or Demandant; most commonly upon the discovery of some Error, or Defect, when the Matter is so far proceeded in, as that the Jury is ready at the Bar, to deliver their Verdict.

The Civilians term it *Litis renunciationem*.

**NON Compos mentis**, a Phrase denoting a Person not to be of sound Memory, or Understanding.

Of this, in common Law, there are said to be four Kinds: First, an Idiot born; Secondly, He that by Accident loseth his Memory and Understanding; Thirdly, a Lunatic, that has *Lucida intervalla*, sometimes has Understanding, and sometimes not; Fourthly, He that by his own act, for a time, depriveth himself of his right Senses, as a Drunkard: But this last kind shall give no Privilege to him or his Heirs.

A Descent takes away the Entry of an Idiot, tho the want of Understanding were perpetual.

**NON obstante**, notwithstanding, in Law, a Term, or Clause usual in Statutes and Patents. All Grants of such Pensions, and every Non obstante therein contained, shall be void. Henry III. took up the Clause *Non obstante*, (first introduced by the Pope) in his Grants.

**Non-obstancy**, in the Romish Canon Laws, makes the third part of the Provisions of the Court of Rome; beginning with *Non obstantibus*; and comprizing Absolutions of Censures, Rehabilitations, and necessary Dispensations, for the Enjoyment of Benefices. None inferior to the Pope can use the Clause *Non obstante*.

**Non Term**, the Time of Vacation between Term and Term. See **VACATION**.

It was antiently call'd the *Times or Days of the King's Peace*, See **PEACE of God and the Church**.

Among the Romans it was call'd *Feria*, or *Dies Nefasti*. See **FERIA** and **NEFASTI**.

**NON est factum**, in Law, an Answer to a Declaration, whereby a Man denieth that to be his Deed whereupon he is impleaded,

**NON est Culpabilis**, He is not Guilty, in Law, the general Plea to an Action of Trespafs, whereby the Defendant absolutely denies the Fact charg'd on him by the Plaintiff; whereas in other special Answers, the Defendant grants the Fact to be done, but alledges some Reasons in his Defence, why he lawfully might do it.

As this is the general Answer in an Action of Trespafs, i. e. a Criminal Action civilly prosecuted; so is it in all Actions criminally follow'd, either at the Suit of the King, or others, wherein the Defendant denies the Crime objected to him.

**NON Plevin**, *Non plevina*, a Default in not Replevying of Land in due time.

Hengam writes, That the Defendant should be sure to replevy his Lands seiz'd by the King, within fifteen Days. And that if he neglects, then, at the Instance of the Plaintiff at the next Court-Day, he shall lose his Seisin, *sicm per defaultam post defaultam*.

By Stat. 9 Edw. 3. it was enacted, That no Person should thenceforward lose his Land because of *Non Plevin*.

**NON-Tenure**, an Exception to a Count, whereby the Party urges, that he holdeth not the Land mentioned in the Count, or at least some part of it.

*West* distinguishes *Non-Tenure* into *General* and *Special*. The first, where one denies himself ever to have been Tenant to the Land in question. The second, where he only alledges that he was not Tenant the Day whereon the Writ was purchased.

**NON liquet**, it does not appear: A Verdict given by a Jury, when a Matter is to be defer'd to another Day of Trial. See **VERDICT**.

The same Phrase was used among the Romans; after hearing the Cause, such of the Judges as thought it not sufficiently clear to pronounce upon, cast a Ballot into the Urn with the two Letters *N L*, for *Non Liquet*.

**NON-Entity**, *Nihil*, or *Nothing*, is whatever has no real Being, and is only conceived Negatively, or only claims a negative Denomination. See **ESSE**, **ESSENCE**, &c.

**NON-Naturals**, in Medicine, *Res Non Naturales*, are the Causes and Effects of Diseases, whether near or remote. See **DISEASE**.

Physicians have digested all the Causes of Diseases into six Classes, which they call the six *Non-naturals*. These are,

1. Air. 2. Meat and Drink, 3. Motion and Rest. 4. The Passions of the Mind. 5. Excretions and Retentions. 6. Sleep and Waking. See each under its proper Article, **AIR**, **MEAT**, **DRINK**, &c.

They are thus call'd, because by their use or abuse they become either Good, *Naturals*, or Evil, *Contrà-naturals*.

But the Division, in effect, is of no great use; the Causes of Diseases being much more commodiously laid down otherwise. See **DISEASE**.

**NONÆ** and *Decime* were Payments antiently made to the Church by those who were Tenants of their Farms.

The *Nonæ* were the Rent or Duty claim'd for things belonging to Husbandry; the *Decime* were claim'd in Right of the Church. See **DECIME**.

**NONAGE**, in Law, an Incapacity of doing certain things from a want of Age. See **AGE**.

The Term of *Nonage* is different, with regard to different things. In Matters of Inheritance, a Man is in his *Nonage* till twenty-one Years; for Marriage till fourteen, &c. See **MINORITY**.

**NONAGESIMAL**, in Astronomy, the 90th Degree of the Ecliptic, reckon'd from its Eastern Point. See **ECLIPTIC**.

The Altitude of the *Nonagesimal* is equal to the Angle of the Ecliptic, and passes thro the Poles thereof: Whence the Altitude of the *Nonagesimal*, under a given Elevation of the Pole, is easily found.

If the Altitude of the *Nonagesimal* be subtracted from 90°, the Remainder is the Distance of the *Nonagesimal* from the Vertex.

**NONAGIUM**, in Law, the ninth part of moveable Goods; antiently paid in nature of a *Mortuary*; being claim'd by the Clergy upon the Death of those of their Parish. See **MORTUARY**.

At first it was a third Part of the Goods, and was call'd *Terragium*; till by a Bull of Clement VI. it was reduced to a Ninth.

**NONAGON**, a Figure having nine Angles and Sides. See **POLYGON**.

**NONCONFORMISTS**, the Name of a Religious Sect, or rather of a number of Sects, in England.

The Term was antiently confin'd to the *Puritans*, or rigid *Calvinists*; at present it extends to all who Dissent from the established Church, the *Romanists* alone excepted. See **DISSIDENT**.

The Word had its Rise from a Declaration of King Charles I. who appointed that all the Churches of England and



and Scotland should have the same Ceremonies and Discipline ; the Acquiescence wherein, or Dissenting from which, determined Conformity, and Nonconformity.

**NONCUPATIVE**, in the Schools, a Term used to express something that is only nominal, or has no Existence but in Name.

*Felix of Urgel* maintain'd, that Jesus Christ, as Man, was only God *Noncupatively*, i. e. only by Name. *Alcuin*, in his Answer to *Felix*, maintains, that 'tis to fall into Nestorianism to distinguish two Sons of God in Jesus Christ, the one Natural, the other Adoptive ; and two Gods, the one Real, the other *Nuncupative*.

**NONCUPATIVE**, or *Nuncupative Will*, in Law, a last Will or Testament only made verbally, or *viva voce*, and not put in Writing. See **WILL** and **TESTAMENT**.

**NONES**, *Nonæ*, in the Roman Calendar, the fifth Day of the Months *January, February, April, June, August, September, November, and December* ; and the seventh of *March, May, July, and October* : These four last Months having six Days before the *Nones*, and the others only four. See **CALEND**.

The Word apparently has its Rise hence, that the Day of the *Nones* was nine Days before the Ides, and might be call'd *Nono-Idus*. See **IDES**.

*March, May, July, and August* had six Days in their *Nones* ; by reason these alone in the antient Constitution of the Year by *Numa*, had 31 days apiece ; the rest having only 29, and *February* 30. But when *Cæsar* reform'd the Year, and made other Months contain 31 Days, he did not likewise allot them six Days of *Nones*. See **CALENDAR**, **YEAR**, **MONTH**, &c.

**NONE**, is also one of the seven Canonical Hours, in the *Romish Church*.

*None* is the last of the lesser Hours that comes before *Vesper* ; and answers to three a-clock in the Afternoon. See **VESPER**.

The single Office, and that for the Dead, end at *Nones*, which *Father Rosweyd* observes, was antiently the Hour for the breaking up of the *Synaxis*, or usual Meetings at Church of the Primitive Christians.

The Hour of *Nones* was also the usual time for taking the Repast on Fast-days ; tho some would keep the Fast till Night. See **FAST**.

**NONUS** *Humeri Placentini*, in Anatomy, a Muscle, call'd also *Rotundus minor*. See **ROTUNDUS**.

**NORMAL** Line, in Geometry, is used for a perpendicular Line. See **PERPENDICULAR**.

**NORROY**, or *North Roy*, i. e. Northern King ; the Title of the third of the three Kings at Arms, or Provincial Heralds. See **KING** at Arms, and **HERALD**.

His Jurisdiction lies on the North side of *Trent*, whence his Name ; as *Clarencieux*, on the South. See **CLARENCIEUX**.

**NORTH**, in Cosmography, one of the Cardinal Points of the Horizon, being that Intersection of the Horizon and Meridian nearest the *North-Pole*. See **CARDINAL** Point and **HORIZON**.

**NORTH-STAR**, the last in the Tail of the little Bear ; call'd also the *Pole-Star*. See **POLE-STAR**.

|                    |       |           |
|--------------------|-------|-----------|
| NORTH Wind,        | } See | WIND.     |
| NORTH Pole,        |       | POLE.     |
| NORTH Sea,         |       | SEA.      |
| NORTH Sea Company, |       | COMPANY.  |
| NORTH Wall,        |       | WALL.     |
| NORTH Dial, &c.    |       | DIAL, &c. |

**NORTH East**, a Rhumb, or Point, in the middle between the East, and the North. See **RHUMB** and **POINT**.

**NORTH West**, is a Point or Rhumb in the middle between the North and West. See **WEST**, &c.

**NORTH North East**, *North East and by East*, are Subdivisions of the Compass between the North and East. See **WIND**.

**NORTHERN Signs**, are those six on the North side of the Equator. See **SIGN**.

**NORTHERN Light**, or *Aurora Borealis*, see **AURORA** **BORCALIS**.

**NORTHERN Aspect** or *Exposure*, see **EXPOSURE**.

**NORTHING**, in Navigation, the difference of Latitude a Ship makes in sailing towards the North Pole. See **SAILING**, **LATITUDE**, &c.

**NOSE**, the external Organ of Smelling ; or that Part in Men, rais'd in the middle of the Face. See **FACE**.

The Nose is usually divided by Anatomists into external and internal ; a division of very little service.

It is farther subdivided into several Parts which make up its external Figure : Whereof the first is the *Dorsum*, or Ridge, running along the whole length of it ; one part whereof, about the middle, more prominent than the rest, is call'd the *Spine* ; and the Extreme, which in many is turn'd round, the *Orbiculus* : The Sides are call'd the *Alæ* or *Pennæ*.

The Teguments of the Nose are common to the rest of the Face. Under these appear the Muscles of the Nose,

which are three Pair, viz. the *Elevatores Alæ Nasi*, serving to pull the *Alæ* upwards, and turn them outwards ; the *Dilatores Alæ Nasi*, which draw them from each other, and widen the external Apertures of the Nostrils ; and the *Constrictores Alæ Nasi*, which draw them downwards nearer each other ; and at the same time the upper Lip also downwards. See each Muscle described under its proper head, **ELEVATORES Alæ Nasi**, &c.

The Frame of the Nose is chiefly supported by two Bones, which end in Cartilages, of a triangular Figure ; and are divided in the middle by a third, call'd *Septum*, into two Partitions, call'd the *Nares*, or *Nostrils*.

This *Septum* likewise ends in a Cartilage ; by means of which Cartilages, the lower part of the Nose is render'd moveable, which the upper, being perfectly osseous, is not. The Cartilages of the *Alæ* are tied to the other by Ligaments, which loose Connexion renders them moveable.

The Bones of the Nose are either *Proper*, or *Common*. The first of the *Proper*, are the two external ones that constitute the *Dorsum*, and are join'd to the *Os frontis*, the fourth Bone of the upper Jaw, and to each other, usually *per harmoniam*. See **DORSUM** **NASI**.

In the Concave of the Arch of these two Bones, at their Union internally, is placed the bony part of the *Septum*. Its upper part joins the *Os Ethmoides* ; but in Adults is continued so as the *Ethmoides*, and its Process, call'd *Crista Galli*, appear of a piece with the *Septum*. The *Septum* is thinnest in the middle, and divides the right Nostril from the left ; tho its Position is seldom perpendicular. It is capp'd with another thin Bone, from its Figure call'd *Vomer Aratri*, and is join'd to the fourth Bone of the upper Jaw, and to the *Os Palati*. See **SEPTUM**.

The other proper Bones are the *Turbinata*, or *Spongiosa*, two of which are usually found in each Nostril, sometimes three, one over the other. The middlemost, when there are three, is so placed as to shelter the Perforation of the *Antrum maxillæ superioris* into the Nostril, and prevents the sudden rushing in of Air from the Nostril into the *Antrum*. They are all very porous, and turn'd, not unlike the Shell *Concha Veneris*. In Quadrupeds, these Bones are very numerous. See **SPONGIOSA**.

The common Bones of the Nose are such as make Fences for the *Foramina Narium*, and help to compose the Parts adjacent. The largest of these is the fourth Bone of the upper Jaw, which has the greatest share in framing the *Foramina*. See **JAW**.

These fourth Bones, with the *Septum* and *Os turbinata*, chiefly frame the internal Parts of the *Foramina*. In the upper part, a Portion of the *Os frontis*, the inside of the *Os Unguis*, the *Os Cribrosum*, with part of the *Sphenoides* ; and backwards towards the Fauces, the *Os Palati*, help to compose the *Foramina*.

Beside the Cavities circumscribed by the Bones now mentioned, the *Foramina* have several collateral Cavities that open into them : The largest is that call'd *Antrum Genæ* ; by Dr. *Higmore*, *Antrum maxillæ superioris*, framed in the fourth Bone of the upper Jaw, near two Inches long, and an Inch broad ; the bony Parts of which, with the *Sphenoides*, make the *Foramen lacerum externum*. Its lower Surface makes a thin Covering to all the Roots of the *Molares*, and *Canini* ; which frequently upon drawing a Tooth, to which it sticks, is taken along with it, whereby this Cavity is open'd into the *Alveolus*, and consequently into the Mouth.

All these Cavities of the Nose and Cheek, as also the *Os turbinata*, *Septum*, &c. are invest'd with a Membrane furnish'd with large Arteries from the *Carotides* ; and Veins, which empty themselves into the Jugulars ; and Nerves, from the fifth Pair, as well as the *Olfactory Nerves*.

In this Membrane are a great number of small Glands, placed very near each other, from whence flows all that *Pituita*, commonly discharg'd at the Nostrils.

By means of this Mucus or *Pituita* is the Membrane kept soft, and defended from the Injuries of extraneous Bodies, especially those of the Air, which must pass this way in Inspiration when the Mouth is shut. See **MUCUS**.

By this means, the *Olfactory Nerves*, here diffused, are render'd capable of the Perception of odoriferous Effluvia ; which the dryness of the Part would be apt to destroy. See **SMELLING**.

Besides this use of the Nose, which is the principal Nature has made it, as it were, a *Diverticulum* to the Eyes ; there being a considerable Passage into each Nostril that empties itself under the middle *Os turbinatum*, arising from two Apertures call'd *Puncta Lacrymalia*, at the great Canthus.

By this way, the superfluous Moisture of the Eyes is carried off, which would otherwise incommode the Cheeks ; as in effect it does, when those Parts are affected with any disorder ; as in the *Ægyptops*, and *Fistula Lacrymalis*. See **FISTULA**, &c.

The Diseases to which the Nose is subject, are a *Coryza*, *Ozena*, *Polypus*, *Sarcoma*, and *Noli me tangere*, beside Sneezing, and a loss of Smelling. See each in its Place.



*Amb. Paree* in his 23d Book, mentions an *Italian Chirurgeon*, who had the Art of restoring lost *Noses*, or making them come again after they were cut off. His Method was to make an Aperture in his Patient's Arm, and there to engraft the mutilated *Nose*; the Arm being bound up for 24 days, the *Nose* took Root in the Wound, and glued itself with the Flesh of the Arm, and grew to its Bulk; which done, he cut off the Flesh of the Arm, and fashion'd the *Nose* to his liking, apply'd it in its place, and heal'd the Wounds at leisure.

This Operation we see burlesqu'd in *Hudibras*: So learned *Taliacotius*, &c. and also in the *Acta Eruditorum Lipsii*, Anno M.DC.LXXXII.

*Hagarup*, a Dane, maintains, that the *Nose* is in some measure fitted for an Organ of Sight, and that a Man may see thro' it; grounding his Opinion on the Authority of *Smerius*, who in his 5th Book of *Medicinal Miscellanies*, relates of his own Knowledge, that a Youth, quite blind in other respects, could see the Light, and was able to discern the Whiteness of Flowers by the *Nose*.

But, for our part, we should rather account for these Sensations from the Faculties of feeling and smelling, than those of seeing: Not but there is a very great Resemblance between the various Organs of Sense, enough to give ground to the Opinion, that they only differ as more or less delicate; for which reason we don't absolutely reject the Instance given by *Grimaldi*, of a Man who could distinguish Colours by his feeling.

The Nerves, whose Texture and Constitution, for any thing we know, is the same throughout the whole Body, are confessedly the Vehicles of all Sensations from without; and those are all deposited in the same Sensory, whether they be brought from the Eye, the Ear, the *Nose*, &c. and that singular Apparatus, observable in each Organ, seems rather intended for the *Bene esse*, than the *Esse* of that Sense; rather to stop and detain the transient Effluvia, to collect them where too scanty, disperse them where too copious, soften them where too rude, and break their force where too violent, and by this means to proportion them to the several degrees of Fineness, Tension, &c. of the Nerves of the respective Organs, in order to render the Sensations adequate to the ends; than to produce them. See SENSATION.

In *Tartary*, the greatest Beauties are those who have the least *Noses*. *Rubruqus* mentions the Wife of the Great *Ginghis-can*, the Mother of *Tamerlane*, as a celebrated Beauty, because she had only two Holes for a *Nose*. In most other Countreys, *China* excepted, great *Noses* are in honour.

The *Crim-Tartars* break the *Noses* of their Children while young, as thinking it a great piece of Folly to have their *Noses* stand before their Eyes.

**NOSOLOGY**, a Discourse, or Treatise, of Diseases. See DISEASE.

The Word is compounded of *voros*, Malady, Disease, and *λογια*. Hence,

**NOSOCOMIUM**, an Hospital, or Infirmary, for the Reception of the Diseased. See HOSPITAL, LAZAR, &c.

**NOSTRILS**, *Nares*, the two Apertures or Cavities of the *Nose*, thro' which the Air passes, and which serve to convey Odours, and to carry off the *Pituita* separated in the *Sinus* of the Base of the *Cranium*. See NOSE.

The *Nostrils* are separated by a Cartilage, and lined with a very sensible Membrane. See SMELLING.

*Cicero* observes, that the Situation of the *Nostrils* so near the Mouth, is very convenient; as the judging of the Smells of Meats and Drinks, is a great part of their Office: he adds, that their erect Position argues the Creator's Wisdom, in regard all Odours rise from below upwards. See ODOUR.

**NOT Guilty**, see *Non est Culpabilis*.

**NOTARICON**, the third Part, or Species of the *Jewish Cabbala*. See CABBALA.

*Rabbi Nathan*, in his great *Aruck*, says, that *Notaricon* is when a single Letter is taken for the Sign of a Thing, i. e. for a whole Name. He adds, that the Word comes from the *Latin* *Notarius*, a Person who writes in Notes, or Short-Hand. *R. Elias Levita* gives the same Account in his *Thebeites*, except that in lieu of one Letter for a Word, he mentions two or three.

But after all, neither the one nor the other is alone sufficient: For as a single Letter frequently makes a Word; so in *Notaricon*, a whole Word sometimes stands for a single Letter.

There are therefore two principal Kinds of *Notaricon*: The first is, when by *Apheresis*, or *Apocope*, the first or last Letters of several Words are join'd to make a single Word or Phrase; which therefore is of two kinds, the one Initial, the other Final; and each is done several Ways, viz. either by taking the Letters the common way, or backwards. Tho, there is also a third kind made, as the *Rabbins* call it, by Leaps, i. e. by leaping over some Letters.

The first of these Kinds, which the *Rabbins* call *Rasche Theboib*, appears very antient; and is supposed by some, well versed in the *Hebrew*, to have took its Origin from the *Psalms*, and other Places of Scripture, proceeding alphabetically, i. e. the first Verse beginning with א, the first Letter of the Alphabet; the second with ב, the second Letter, &c. See an Instance of this first Kind of *Notaricon* under the Head *MACHABEE*.

The second Kind is also very common, and call'd *Sophe Theboib*, i. e. the End of Words. For instance, by telling the last Letters of the Words, משה שמו מרלי, *Mibi quoddam nomen est. Quoddam?* they find the Name of God *Jebovah*. This is still more puerile, when they take the Letters backwards.

The third Kind is more modern, more gross, and perplexed. Here a Letter gives a whole Word, instead of a Word's only giving a Letter; so that a Word shall furnish a whole Phrase.

Thus, for an example; in the first Word of *Genesis*, אֶרֶץ, In the Beginning, is found he created the Heaven and the Earth, the Sea, the Abyss, &c.

**NOTARY**, a Scribe, or Scrivener; or one who takes Notes, and short Draughts of Contracts, or other Instruments. See NOTE.

**NOTARY**, *Notarius*, among the *Romans*, was a Name common to all who wrote under the Direction of others, or who received, and kept Sentences, and Contracts.

From the 44th Novel of *Justinian*, it appears, that Contracts were first wrote in Notes, or Abbreviations, by the *Notaries* or Clerks of the *Tabelliones*; and were not yet obligatory. Afterwards they were wrote at length by the *Tabellio* himself, then sign'd and seal'd. See *TABELLIO*.

**NOTARY**, is particularly used for an Officer, who draws, and keeps Notes and Minutes of Contracts, Obligations, and other Instruments, passed before him, and delivers out authentic Copies, &c. thereof.

*Ragueau* distinguishes between *Notarii*, *Notaries* and *Tabelliones*: *Notaries*, he says, in several Cities, are only to receive and pass the Minutes of Contracts, and to deliver them to the Parties in brief; being obliged to carry them to the *Tabelliones* to be kept, and to have engrossed Copies delivered out to the Parties.

He adds, that the *Notaries* were antiently Clerks of the *Tabelliones*; and that separating, by degrees, from their Masters, they at length erected Offices of their own: and at last took place of the *Tabelliones*, who were suppress'd.

They had their Name *Notarii* from *Nota*; because antiently they wrote in Notes, or Short-hand.

**NOTARIES** are now little used among us, except in Mercantile Affairs; tho' in *France* they still subsist in their Legal Capacity. The *Notaries* of the *Chatelet* are called the King's Counsellors, and Note-Keepers.

Those among us, are called *Notaries Public*; and have the drawing, passing, keeping, issuing, &c. of all the Deeds, Contracts, Charter-parties, &c. in the Mercantile World. In their Books are also register'd Protests, Remonstrances, &c.

In the first Ages of the Church, there were *Ecclesiastical Notaries*, whose Office was to collect and preserve the Acts of the Martyrs. They were supposed to have been first instituted by *St. Clement*. Their Number was seven, and they were disposed in the seven Quarters or Regions of *Rome*.

*Pope Fabian*, judging the Short-hand of the *Notaries* too obscure for common Use, added seven Sub-deacons to 'em, to transcribe at length what the *Notaries* drew in short.

At length these *Notaries* were laid aside, and two other Kinds establish'd in their stead, viz. *Apostolical Notaries*, and *Episcopal Notaries*; whose Business lies in Spiritual and Beneficiary Instruments.

**NOTATION**, in Arithmetic, the Art of Characterizing Numbers, or of designing them by proper Figures. See CHARACTER.

The Choice of Arithmetical Characters is arbitrary: Hence, in various Nations, they are various. But perhaps there are none so commodious as those commonly used in *Europe*, usually said to have been invented by the *Arabs*, and thence call'd *Arabic Characters*; tho' *Dr. Wallis* observes, that *Alepedi*, an *Arab*, refers the Invention to the *Indians*. See NUMERAL CHARACTER.

The *Greeks*, *Hebrews*, and other Eastern Nations, as also the *Romans*, express'd Numbers by the Letters of their common Alphabet. See LITERAL CHARACTER.

**NOTATION**, in Algebra, is the representing of Quantities by Letters of the Alphabet; or calling them by those Names. See QUANTITY, CHARACTER, &c.

**NOTE Materna**, Mother's Spots. See *NEVUS*.

**NOTE**, *Nota*, a Mark made in a Book or Writing, where there occurs something remarkable, and worthy of particular Notice.

**NOTE**, is also used for an Observation, or Explication of some Passage in an Author, added in the Margin, at the bottom of the Page, or elsewhere, by an Editor.



In this sense, *Note* stands contra-distinguished to *Text*. See *TEXT*.

The *Notes* make the principal Differences in the Editions of *Classic*, &c. Authors. We have *Virgil*, *Horace*, *Terence*, &c. with *Ruæus's Notes*, the *Dauphin's Notes*, *Dacier's Notes*, *Lentley's Notes*, *Hare's Notes*; with *Notis Variorum*, &c. See *VARIORUM*.

*NOTE* is also a minute, or short Writing, containing some Article of Business. In this sense we say, a *Promissory Note*, a *Note under hand*, a *Bank Note*, &c. See *PROMISSORY*, *BANK*, &c.

To *Note a Bill*, is when a Public Notary goes to be a Witness, or take notice that a Merchant will not accept or pay it. See *BILL*.

*NOTE of a Fine*, is a Brief of a Fine made by the Chirographer, before it be ingrossed. See *FINE* and *CHIROGRAPHER*.

*NOTE* is also used for a Character, or Abbreviature, serving to denote, or express something in a little compass. See *CHARACTER*, *SYMBOL*, *ABBREVIATURE*, and *NOTATION*.

The antient Notaries wrote all in *Notes*, or Short-hand; whence they were sometimes denominated *Cursores*, *Quia notis Cursum verba expediebant*. See *NOTARY*.

*NOTES* in Music, are Characters which mark the Tones, i. e. the Elevations, and Fallings of the Voice; and the swiftness, or slowness of its Motions. See *SOUND*.

In the general, under *Notes* are comprehended all the Signs, or Characters used in Music, for the making Harmony of Sounds. See *CHARACTER*.

But, in Propriety, the Word only implies the Marks which denote the degree of Gravity, or Acuteness, to be given each Sound. See *GRAVITY*.

The *Greeks* used the common Letters of their Alphabet for musical *Notes*; and in regard more *Notes* were needed than they had Letters, the defect was supply'd by the different Situation of the Letters, viz. by placing of them upright, inverted, &c. and by cutting off, or doubling some Strokes.

Thus the same Letter *Pi*, express'd different *Notes* in all the following forms,  $\Pi$ ,  $\Pi$ ,  $\sqcap$ ,  $\sqcup$ ,  $\Gamma$ ,  $\Gamma$ . For every several *Mode* they had 18 Signs.

Now, *Alipius* gives us Signs for 15 different *Modes*, which with the differences of the *Genera*, and the distinction between Voice and Instrument, Mr. *Malcolm* observes, makes in all 1620 *Notes*. Not that they had so many distinct Characters; but the same Character has different Significations, on different Occasions. Thus  $\phi$  in the *Diatonic Genus* is *Lycanos Hypaton* of the *Lydian Mode*; and *Hypate meson* of the *Phrygian*.

The *Latins*, in the time of *Boetius*, had eased themselves of so needless a Burthen; and only used the first 15 Letters of their Alphabet for *Notes*. These, Pope *Gregory* considering that the Octave was the same in effect with the first, and that the order was the same in the upper and lower Octave of the Gamut, reduced to seven; which were to be repeated in a different Character.

At length, in the 11th Century, a *Benedictine*, one *Guido Aretin*, in lieu of the Letters, substituted the six Syllables *ut, re, mi, fa, sol, la*; placing them on different Lines, and marking them with Points. Lastly, it was thought proper to add *Notes* likewise in the Spaces. See *GAMUT*.

Of the seven musical *Notes*, *ut, re, mi, fa, sol, la, si*, the first six are ascribed to *Aretine*, who is said to have invented them at *Pomposa* in the Dutchy of *Ferrara*. The seventh, viz. *si*, was added, according to some, by *Vander Puten*; according to others, by *Le Maire*. It serves very good purposes, in avoiding the difficulty of the Divisions remaining in *Guido's Scale*.

Indeed *Vossius* won't allow *Guido* the Honour of inventing any of them; but shews that the *Egyptians* had used them long before him; in which he is confirmed by the Testimony of *Halicarnassens*: However, common Fame ascribes to him not only the *Notes*, but also the Lines, Letters, or Clefs, Flats, and Sharps.

The *Notes ut, re, mi*, &c. he is said to have taken from a Hymn in the Vespers of S. J. *Baptist*, *Ut queant laxis resonare fibris*, &c. See *MUSIC*.

Hitherto the *Notes* only served to express the Degrees of Tune; they were all of equal value as to time; till about the Year 1330, *John de Meurs*, a Doctor of *Paris*, gave different Figures to the different Points, to express the Quantity of Time each was to be dwelt upon.

There are three things to be consider'd in these *Notes*. 1. The Quantity, i. e. the size and figure of the head. 2. The Quality, i. e. the Colour of the head, whether it be white or black, full or open. 3. The Properties, as the *Italians* express themselves, viz. whether the Note is accompanied with a Virgula, or Comma, or not. It must likewise be consider'd whether the *Notes* be separate and distinct, or bound together.

The several musical *Notes*, are, the *Large*, which contains 8 Measures, tho *Mersennius* makes it 12. (see its Figure under *CHARACTER*;) the *Long*, containing 4 Measures; the *Breve*, containing 2; the *Semibreve*, containing 1; the *Minim*  $\frac{1}{2}$ ; the *Crochet*  $\frac{1}{4}$ ; the *Quaver*  $\frac{1}{8}$ ; the *Semiquaver*  $\frac{1}{16}$ ; and the *Demisemiquaver*  $\frac{1}{32}$ .

Usually we only distinguish six principal *Notes*, represented by as many different Characters, viz. the *Semibreve*, equal to two Minims; the *Minim*, equal to two Crochets; the *Crochet*, equal to two Quavers; the *Quaver*, equal to two Demiquavers; and the *Semiquaver*, equal to two Demisemiquavers. See each under its proper Article, *SEMIBREVE*, *MINIM*, *CROCHET*, &c.

The Mathematicians compute, that one may make 720 Changes, or Varieties with six *Notes*, without ever repeating the same twice; and that of the *Notes* of each Octave, one may make 40320 different Tunes, or Songs. See *CHANGE*, *COMBINATION*, &c.

*NOTHING*, *Nihil*, *Nihilum*, or *Non Ens*, see *NIHIL*.

The Schoolmen distinguish between *Nothing* taken strictly, which is what is impossible, or implies a Contradiction; and *Nothing* taken more generally: which is both possible, and impossible while in a State of possibility. See *POSSIBLE*.

Again, they distinguish *Nothing* into *Negative*, which is the absence of Reality in any Subject; and *Privative*, which is the absence of Reality in a Subject capable thereof, or wherein it ought to be found.

*NOTHUS*, a Latin Term, properly signifying *Bastard*, or a Person of spurious Birth. See *BASTARD*.

Hence it is apply'd figuratively by Physicians, &c. to such Diseases as tho, in respect of a Similitude of Symptoms, &c. they have the same Denomination as some others; yet are of different Origin, Seat, or the like, from the same. See *EMPYEMA*, &c.

*NOTHUS*, is sometimes also used for the back part of the Chest.

*NOTHÆ Costæ*, in Anatomy, the five lowest Ribs on each side; call'd *Bastard*, or *Spurious Ribs*, in regard they don't join with the Breast-Bone as the other Ribs do, nor are they, as the others are, bony, but cartilaginous. See *RIBS*.

*NOTION*, in Logic, an Idea, or Representation of any thing, in the Mind. See *IDEA*.

M. *Leibnitz* is very accurate in the Distinction of *Notions*, in the *Atta Erudit. Leipf. Anno 1684*.

A clear *NOTION*, he defines to be such a one as suffices us to recollect the Object; v. gr. that a given Figure is reckon'd in the number of Triangles.

An obscure *NOTION*, is that which doth not suffice to recollect the Object; such, v. gr. is that of a Plant, which upon seeing, you are in doubt whether or no it be the same you had seen elsewhere, and which is call'd by this or that Name.

Distinct *NOTION* is that wherein you are able to assign the very Marks, or Characters by which you recollect the thing; v. gr. That a Circle is a Figure terminated with a curve Line returning into itself, the several Points whereof are equally distant from one and the same intermediate Point.

A confused *NOTION* is that wherein you are not able to assign the Marks or Characters whereby you recollect the Object; tho it be resolvable into them. Such, v. gr. is the *Notion* of red Colour.

An adequate *NOTION*, that wherein you have distinct *Notions* of the Marks or Characters whereof it is composed; such, v. gr. is the *Notion* of a Circle above instanced, where you have distinct *Notions* of the Curve returning into itself, of the intermediate Point, and of the equal Distance and Termination.

An inadequate *NOTION*, that wherein you have only a confused *Notion* of Characters that enter a distinct one.

Some confused *Notions* are admitted into Mathematics; viz. such whose resolution is of no great Consequence to any Demonstrations.

Thus, *Euclid* does not resolve the *Notion* of Equalities, tho it enter the *Notion* of an equilateral Triangle, a Rhombus, &c. inasmuch as the Propositions for whose Demonstration it should be used, are easily granted without such a detail; as, v. gr. that things equal to the same third, are equal to one another, &c. But no *Notions* are admitted into the Number of Mathematical Definitions, except distinct ones, and those too as adequate as possible, or as occasion requires. See *DEFINITION*.

The Schoolmen distinguish *Notions* into *formal*, and *objective*; and each of these they subdivido into *first*, and *second*.

A *first formal NOTION*, is the Knowledge we have of any thing according to what it is, or has in itself; as the Knowledge of Fire, *quatenus* Fire; of a light Body, *quatenus* light, &c.



*First objective* NOTION, is the thing itself known, according to what it is, or has in itself; as the Fire known as Fire, &c.

*Second formal* NOTION, is the Knowledge of a thing according to what it receives from the Understanding; as, of Fire, that it is the Subject; and not the Predicate.

*Second objective* NOTION, is what agrees to the thing by means of the Operation of the Intellect, or what it receives from the Intellect.

*Common* NOTIONS, call'd also *Prænotions*, *προλήψεις*, and *κοιναι εννοιαι*, are certain Principles supposed to be innate, and which therefore are self-evident, i. e. appear, or are known by their own Light, without the Intervention of any Medium, or Proof; being impress'd, as it were, by the Finger of God; to serve as the Foundations of all our Conclusions in the Sciences, which are to be demonstrated hereby. See *Innate* IDEA.

These *common* Notions, consider'd as the Foundations of Sciences, are call'd *Axioms*. See *AXIOM*.

They are call'd *common*, not as if so actually and necessarily perceived by every Person, that no body could be ignorant of, or deny them; but because they are judged to be true, and certain by all Persons of sound Reason. For the same Reason as we say, *Such a Food is wholesome*; not that it is so to all Men, but to all that are of a sound Body, and Constitution. *Aristot. Topic. c. 4.*

There are two kinds of *common* Notions, viz. *Theoretical*, which lay the Ground-works for Speculation; such are, Every thing either is, or is not; nothing can be made by itself; the whole is greater than a part; equal things being added to equal, the Sums are equal: And *Practical*, which lay the Foundation for Honesty, and good Morals; such are, God is to be loved and worshipped; our Parents to be honoured; to give every body their due; to do as we would be done by. —

Some Philosophers, however, and those of best Note, deny the Reality of any Innate, or *Common* Notions; urging, that the Mind does not need any actual Notions to prepare it to think, but that an innate Faculty of Thinking may suffice; as appears in an Infant, from its perception of Pain, Taste, Colour, &c. They add, that the common Organs of Sense, if they have but Objects presented to them, and the Faculty we have of reflecting on, and variously combining or ordering the Ideas received thereby, are sufficient to furnish us with all the Stock of Knowledge we have. See *KNOWLEDGE*.

NOTITIA, NOTICE, a Term used for something that has come under the Knowledge of a Person. Hence *Notification*, the Action of giving Notice, &c.

NOTITIA is also used as the Title of certain Books composed for giving a particular Knowledge of the Places, Roads, &c. of a Province or Kingdom, Diocese, &c. as appears by the *Notitia Imperii*, &c.

M. Valois has given a *Notitia Galliarum*, which is a Collection of the several Names the Cities and Provinces of that Kingdom have bore at different times.

The *Notitiæ Dignitatum Imperii*, both Eastern and Western, are of the utmost use both in the Roman and in Ecclesiastical History; yet are they of little Service, at least to young People, without good Notes; such are those of *Pincirollus*, &c. And unless the Text, which is strangely corrupted and mutilated, be supplied.

NOTORIOUS, something known, manifest, and publick.

Hence *Arts Notoria*, a Chimerical Science or Art, whereby it is pretended a Person may arrive at the Knowledge of all Things, all Sciences, &c. And that by Infusion, without any Labour, or Trouble, beside that of making a few Ceremonies.

NOTRE Dame, Our Lady, a Term frequently used for the Holy Virgin.

Hence Feasts of Notre Dame; the Office of Notre Dame; Congregations, Nunneries, Orders of Notre Dame. See *VIRGIN*.

NOVALE, in our ancient Customs, Land newly plowed, and converted into Tillage; and which had not been till'd within the Memory of Man, before.

—*Quod Novale semel fuit, semper erit Novale quoad decimarum retentionem vel solutionem.* What was once *Novale*, will ever remain so, as to the paying, or non-paying of Tythes. Thus, *Excepta decima Novalium cujusdam Terræ quam de novo excoluerunt.* Pat. 6 Edw. 3. See *FRUITFUL*.

NOVALE is sometimes also used for fallow Land, i. e. Land which has been plowed for two Years, and rests, or lies fallow one more; or that lies fallow every other Year. See *FALLOW*.

NOVATIANS, a Sect of ancient Heretics, so called from Novatus, an African Bishop; and Novatian a Priest of Rome.

Novatian first separated himself from the Communion of Pope Cornelius, on pretence of his being too easy in admitting

to Repentance those who had fallen off in times of Persecution.

Novatus coming to Rome, join'd himself to the Faction of Novatian: and both maintain'd, That there was no other admission into the Church but by the Repentance in Baptism; grounding their Opinion on that of St. Paul: 'Tis impossible for those once enlightened, and who have tasted the heavenly Gift, if they fall away, to retrieve themselves by Repentances.

Not that they denied but a Person fallen into any Sin, how grievous soever, might obtain Pardon by Repentance; for they themselves recommended Repentance in the strongest Terms. But their Doctrine was, That the Church had it not in its power to receive Sinners into its Communion; as having no way of remitting Sins but by Baptism, which, once received, could not be repeated.

In process of Time, the Novatians softened and moderated the Rigour of their Master Doctrine; and only refused Absolution to very great Sinners.

The two Leaders were proscribed; and declared Heretics, not for excluding Penitents from Communion; but for denying that the Church had a Power of remitting Sins.

The Novatians were also call'd *Cathareti*, from *καθαρις*, pure, q. d. Puritans.

NOVATION, or *Innovation*, in the Civil Law, a change, or alteration of an Obligation, whereby it becomes extinguished, or annihilated.

Thus when an Obligation is discharged without receiving any Money; but a simple Promise is accepted in its stead; this occasions a *Novation*.

There are two kinds of *Novations*; the one voluntary, the other necessary and constrained.

Necessary NOVATION is that made in consequence of a Sentence, or Decree of Justice.

Voluntary NOVATION is made three ways, viz. by changing the Cause of the Obligation without the Intervention of any other Person; by changing the nature of the Obligation; and by Delegation, as when the Debtor makes over a Debt to the Creditor for his Satisfaction.

In all these Cases there is a will to *Innovate*: Accordingly *Justinian* says, *Voluntate non Lege novandum.*

NOVEL, New; see *ROMANCE*.

NOVEL, in Jurisprudence, a Term used for the Constitutions of several Emperors, viz. *Justin*, *Tiberius*, *Leo*, and particularly *Justinian*. See *CONSTITUTION* and *LAW*.

Most of *Justinian's* Novels were originally Greek; and afterwards, translated into Latin. Their Number 165, comprized in nine Collections, or Chapters. See *CIVIL LAW*.

They had their name *Novel*, either from their making a great Alteration in the Face of the antient Law; or, as *Cujas* rather thinks, because made on new Cases, not yet consider'd, and after the revival of the Code, compiled by order of the Emperor.

Wherever *Accursus* speaks of *Novels*, he means those published in Greek by *Justinian*; the Latin Version of them made in the time of *Bulgarus*, he calls *Authenticæ*, by reason of its Exactness and Fidelity. See *AUTHENTICS*.

NOVEL Assignment, in an Action of Trespas, is an Assignment of Time, Place, or such like, in a Declaration, more particularly than it was in the Writ.

NOVEL Disseisin, see *ASSIZE of Novel Disseisin*.

NOVEMBER, the eleventh Month in the Year; but the ninth in the Year of *Romulus*; whence its Name. See *MONTH*.

NOVENDIAL, or *Novendial*, in Antiquity, a Sacrifice among the Romans, held on occasion of any Prodigy's appearing to menace them with ill Fortune. See *SACRIFICE*.

It had its Name from the Term of its Celebration, viz. *Novem dies*, Nine Days.

NOVEMSILES, in Mythology, a Species of Gods worshipped among the antient Romans.

The *Dii Novemsiles*, were the Gods of the Sabines; adopted by *Romulus*, and a Temple built to them in consequence of a Vow by King *Tatius*.

Some Antiquaries take the Name to have been given to those which were last placed among the Number of the Gods; as *Hercules*, *Vesta*, *Sanctity*, *Fortune*, &c.

NOVEMVIR, a Magistrate of Athens, in the Number of the Nine.

The *Novemvirs* were the chief Magistrates of the City: Their Office only held for one Year. Their Chief was call'd *Archon*, whose Name was recorded in the Athenian Feasts; as, at Rome, that of the Consuls. See *ARCHON*.

The second bore the Title of King, the third that of *Polemarcha*, i. e. Chief of the Troops, and the remaining six, *Thesmotetes*.

NOVICE, a Person not yet skill'd or experienced in an Art or Profession.



In the antient Roman Militia, *Novicii*, or *Novitii*, were the young raw Soldiers, distinguished by this Appellation from the Veterans. See VETERAN.

In the antient Orders of Knighthood, there were *Novices*; or Clerks in Arms, who went thro a kind of Apprenticeship e'er they were admitted Knights. See KNIGHT.

NOVICE is particularly used in Monasteries for a Religious yet in his, or her Year of Probation, and who has not made the Vows. See NOVICIATE.

In some Convents the Subprior has the Direction of the *Novices*. In Nunneries, the *Novices* wear a white Veil; the rest a black one.

A *Novice* is not esteemed dead in Law, but is capable of Inheriting till the time of actual Profession; nor can his Benefices be given away, during the Year of Probation, without his consent.

The Council of Trent prohibits a *Novice* from assigning over his Benefices till two Months before the Expiration of his Year of Probation; and he may even resume them if the Profession be null.

A *Novice* is not allow'd to make any Donation to his Superior, by reason of the Dependence he is under.

*Novices* may either quit the Convent during their *Noviciate*, or may be turn'd off by the Convent.

NOVICIATE, a Year of Probation, appointed for the Trial of Religious, whether or no they have a Vocation, and the necessary Qualities for living in the Rule; the Observation whereof they are to bind themselves to by Vow. See PROBATION.

The *Noviciate* lasts a Year at least; in some Houses more. 'Tis esteem'd the Bed of the Civil Death of a *Novice*, who expires to the World by Profession. See VOW and PROFESSION.

NOVICIATE is also used for the Houses, or Places where *Novices* are instructed.

In this sense, the *Noviciate* is frequently a Cloister separated from the grand Dormitory.

NOUN, *Nomen*, in Grammar, a Name, or a Word that expresses the Subject spoke of; or expresses a Subject whereof something is, or may be, affirmed; as *Man*, *Food*, *Whiteness*, *Henry*, &c. See WORD and NAME.

A *Noun*, therefore, in Language, answers to an Idea in Logic. See IDEA.

The generality of Subjects spoke of have particular Names; yet there are others, which, without being attach'd to the same particular Subject, are yet real *Nouns*.

Thus, beside the particular Name, which each Person bears, and whereby others denote him, he gives himself another when he speaks of himself; as *I* and *My Self*.

'Tis only the more particular Names that in Grammar have retain'd the Quality of *Nouns*; the more general ones are call'd Pronouns. See PRONOUN.

*Nouns*, again, are to be view'd in another Light, viz. as divided into *Nouns Substantive*, and *Nouns Adjective*.

They are call'd *Substantives* when the Objects they design are consider'd simply, in themselves, and without any regard to their Qualities. See SUBSTANTIVE.

They are call'd *Adjectives* when their Objects are consider'd as clothed with any Qualities. See ADJECTIVE.

Thus, when I say simply the *Heart*, the word *Heart* is call'd a *Noun Substantive*; inasmuch as it does not express any of its Qualities: But if I say, the *generous Heart*, or the *perfidious Heart*, I then consider the *Heart* as accompanied with the Quality *generous*, or the Quality *perfidious*. For this reason, the Words *generous* and *perfidious* are call'd *Nouns Adjectives*, because they add a Quality to the Object.

But in effect the Object is alone design'd by the *Nouns Substantives*; which in this view are alone the proper *Nouns*.

*Adjectives*, at bottom, are only Modificatives of *Nouns*; tho in one view they may be consider'd as *Nouns*; viz. as they don't so much represent a Quality or Circumstance of the Object, as the Object itself, clothed with that Quality or Circumstance. Nor must it be omitted, that a *Noun Adjective* frequently becomes a *Substantive*: For as its nature is to express the Quality of an Object, if that Quality happen to be the Object itself spoke of, then, according to our first Definition, it becomes a *Substantive*.

Thus, if I say a *good Intention*, the word *good* is here an *Adjective*, representing the Intention as clothed with the Quality of Goodness; but if I say *the Good is to be chosen*, 'tis evident that *Good* is here the Subject spoke of, and of consequence is a *Noun Substantive*. Nor are there Cases wanting wherein *Nouns Substantive* become *Adjectives*.

'Tis true, in the common use of Grammar, *Nouns* that are really *Adjectives*, are not reckon'd as such; none being esteem'd as such, but those which without any, or at least any considerable change in their Inflection and Termination, are join'd indifferently to *Nouns Substantives* of different Genders.

*Nouns* are again divided into *Proper* and *Appellative*.

*Nouns Proper* are those which express a particular Thing or Person, so as to distinguish it from all other Things of the same Kind; as *Socrates*. See PROPER.

*Nouns Appellative*, are those common to several Individuals of the same Kind, as *Man*, *Angel*, &c. See APPELLATIVE.

NOURISHMENT, see NUTRITION.

NOWED, *Nowée*, i. e. *Knotted*, in Heraldry, is applied to the Tails of such Creatures as are very long, and sometimes represented in Coat-Armour as if tied up in a Knot.

NUBECULA, *little Cloud*, in Medicine, a Term sometimes used for a Disease in the Eye, wherein Objects appear as thro a Cloud, or Mist.

The *Nubecula* seems to arise from certain gross Particles detain'd in the Pores of the *Cornea*, or swimming in the aqueous Humour, and thus intercepting the Rays of Light.

NUBECULA is also used for a Matter, in form of a Cloud, suspended in the middle of the Urine. This they sometimes also call *Chaorema*. See URINE.

NUCHA, the hinder Part, or Nape of the Neck; call'd also *Cervix*. See CERVIX.

NUCHTHEMERON, see DAY.

NUCIFEROUS, from *Nux*, a Nut, and *fero*, to bear; Botanists call all Trees thus, which bear Nuts.

NUCKIANÆ *Glandule*, in Anatomy, a Number of small Glands situate in that part of the Skull wherein the Orbits of the Eyes are, between the abducent Muscle of the Eye, and the upper part of the *Os Jugale*. See GLAND and CRANIUM.

They were thus denominated from their Inventor Dr. *Nuck*.

The same Author gave his Name to a Salivary Duct, *Ductus Nuckianus*. See SALIVARY, &c.

NUCLEUS, a Latin Word, literally denoting the Kernel of a Nut, or Stone-Fruit; or, more strictly the edible Part contained within the Skin of the Kernel. See FRUIT.

Botanists use it in a larger sense, for any Fruit or Seed contained within a Husk or Shell.

*Hewelius*, and some other Astronomers, use the Word *Nucleus* for the Body of a Comet, which others call its Head, in contradistinction to its Tail, or Beard. See COMET.

Some also apply the Term *Nucleus* to the Central-Parts of the Earth, and other Planets; as supposing them to be loose from the exterior Part, which they consider as a Cortex or Shell. See MAGNETISM.

NUCLEUS, in Architecture, is the middle Part of the Flooring of the Antients; consisting of Cement which they put betwixt a Lay, or Bed of Pebbles, cemented with Mortar made of Lime and Sand.

NUDE Contract, *Nudum Pactum*, a bare Contract, or Promise of a Thing without any Consideration: *Ex quo*, say the Lawyers, *non oritur actio*. See CONTRACT and COVENANT.

NUDE Matter, see MATTER.

NUDITIES, in Painting, and Sculpture, those Parts of a human Figure not cover'd with any Drapery; or the Parts where the Carnations appear. See CARNATION.

NUEL, or rather *Newel* of a Stair-Case, see NEWEL a STAIR-Case.

NULLITY, the Quality of a thing *null*, i. e. void, a of no effect; by reason of something contrary to Law, to Custom, or to Form.

There are two kinds of *Nullities* to invalidate a Contract, Title, &c. viz. *de facto*, and *de jure*. The former where the thing commences *Null ipso facto*, as soon as the thing is proved: In the latter, the Act does not immediately become *Null*, but a handle is given thereby to have it intirely annulled or set aside. See DE FACTO, &c.

NUMBER, in Arithmetic, a Collection, or Assemblage of several Units. See UNIT.

*Stevinus* chuses to define *Number* to be that whereby the Quantity of any thing is express'd. Agreeably to which, Sir I. Newton conceives *Number* to consist, not in a Multitude of Units, as *Euclid* defines it, but in the abstract Ratio of a Quantity of any kind to another Quantity of the same kind which is accounted as Unity. And on this view he divides *Number* into three Kinds, viz. *Integers*, *Fractions*, and *Surds*. See each under its proper Article, INTEGER, FRACTION, and SURD.

*Wolfius* defines *Number* to be something which refers to Unity as one right Line refers to another. Thus, assuming a right Line for Unity, a *Number* may likewise be expressed by a right Line.

A less general Definition of *Number*, that Author thinks won't comprehend the several kinds of whole *Numbers*, *Fractions*, *Rationals*, and *Surds*.

The Schoolmen, keeping to *Euclid's* Definition, hold *Number* to consist of Matter and Form: The Matter is the things number'd; e. gr. Coins: The Form, the Idea whereby



whereby comparing the several Pieces, we bring them into one Sum, as ten : So that *Number* depends altogether on the Mind of the Person that *numbers* ; whence changing the Idea at pleasure, an hundred Men shall only be call'd one, or it shall be two, or four, &c.

Hence, say they, the Form of a *Number*, is not any thing added to the things *number'd* ; for the Idea is a mere Mode of the Mind, not any thing superadded to the things. And hence, tho' there may be some Efficacy in *Number*, consider'd with respect to the Matter, as when we say, *A triple Rope is not easily broke* ; yet there is none in respect to Form : For what Alteration should my Idea make ? And hence the Folly of the Philosophy of *Numbers*.

The same Philosophers call *Number* a *discrete Quantity* : *Quantity*, as it admits of more and less ; and *discrete*, since the several Units it consists of are not united, but remain distinct.

For the Manner of designing, or characterizing *Numbers*, see NOTATION.

For that of expressing or reading those already characteriz'd, see NUMERATION.

Mathematicians, considering *Number* under a great many Circumstances, different Relations, and Accidents, make many Kinds of *Numbers*.

A *determinate NUMBER*, is that refer'd to some given Unit ; as a Ternary, or three ; which is what we properly call a *Number*.

An *indeterminate NUMBER*, that refer'd to Unity in the general ; which is what we call *Quantity*. See QUANTITY.

*Homogeneous NUMBERS*, are those refer'd to the same Unit.

*Heterogeneous NUMBERS*, those refer'd to different ones. For every *Number* supposes some determinate Unit, which is determined by the Notion to which we have regard in *Numbering*. E.g. 'tis a distinguishing Property of a Sphere, that the several Points of its Surface are equidistant from its Centre : If then, this be laid down as a Note of Unity, all Bodies to which it agrees will have the nature of Unity ; and are the same Units, *quatenus* contain'd under this Notion. But if Spheres be distinguished, e. gr. with regard to the Matter they are composed of ; then those which before were the same Units, commence different. Thus, six golden Spheres and three golden Spheres are *homogeneous Numbers* among themselves ; and three brass Spheres and four silver ones, are *heterogeneous Numbers*.

*Whole NUMBERS*, call'd also *natural Numbers*, and *Integers*, or simply *Numbers*, are all the various Assemblages of Unity, or the Ideas we have of several Multitudes ; or, according to *Wolffius*, all those which, in the manner of expressing, refer to Unity, as a Whole does to a Part.

*Broken NUMBERS*, or *Fractions*, are those consisting of several parts of Unity, or those which refer to Unity as a Part to the Whole. See FRACTION.

*Rational NUMBER*, is that commensurable with Unity.—*Rational whole Number*, is that whereof Unity is an *Aliquot* part.—*Rational broken Number*, that equal to some *Aliquot* part or parts of Unity.—*Rational mixt Number*, that consisting of a whole *Number* and a broken one, or of Unity and a Fraction. See FRACTION.

*Irrational NUMBER*, or *Surd*, a *Number* incommensurable with Unity. See SURD.

*Even NUMBER*, that which may be divided into two equal parts, or without Remainder or Fraction ; as 4, 6, 8, 10, &c. The Sum, as also the Difference, and the *Faßum*, or Produce of any *Number* of even *Numbers*, is always an even *Number*.

An even *Number* multiply'd by an even *Number*, produces an evenly even *Number*.

An even *Number* is said to be *evenly even*, when it may be measur'd or divided without any Remainder by another even *Number*.

Thus, twice four being eight, eight is an evenly even *Number*.

A *Number* is said to be *unevenly even*, when it may be equally divided by an uneven *Number* ; as 20, which may be divided by 5.

*Uneven NUMBER*, that which exceeds an even *Number* at least by Unity ; or which cannot be divided into two equal Parts. Such are 3, 5, 9, 11, &c.

The Sum, or the Difference, of two uneven *Numbers*, makes an even *Number* ; but the *Faßum* of two makes an uneven one.

If an even *Number* be added to an uneven one, or if the one be subtracted from the other ; in the former Case, the Sum, in the latter the Difference, is an uneven *Number*. But the *Faßum* of an even and an uneven *Number*, is even.

The Sum of any even *Number* of uneven *Numbers*, is an even *Number* ; and the Sum of any uneven *Number* of uneven *Numbers*, is an uneven *Number*.

*Primitive or prime NUMBER*, is that which is only divisible by Unity ; as, 2, 3, 5, 7, 11, &c.

*Prime NUMBERS* among themselves, are those which have no common Measure beside Unity ; as 12 and 19.

*Compound NUMBER*, is that divisible by some other *Number* besides Unity ; as 8, divisible by 4, and by 2.

*Compound NUMBERS* among themselves, those which have some common Measure beside Unity ; as 12 and 15.

*Perfect NUMBER*, that whose *Aliquot* Parts added together, make the whole *Number* ; as 6, 28, &c. The *Aliquot* Parts of 6, being 3, 2, and 1 = 6. And those of 28, being 14, 7, 4, 2, 1, which together make 28.

*Imperfect NUMBERS*, those whose *Aliquot* Parts added together, make either more or less than the Whole, whereof they are Parts.

*Imperfect Numbers*, are distinguish'd into *Abundant* and *Defective*.

*Abundant NUMBERS*, are those whose *Aliquot* Parts added together, make more than the *Number* whereof they are Parts ; as 12, whose *Aliquot* Parts, 6, 4, 3, 2, 1, make 16.

*Defective NUMBERS*, are those whose *Aliquot* Parts added together, make less than the *Number* whole Parts they are ; as 16, whose *Aliquot* Parts, 8, 4, 2, and 1, only make 15.

*Plane NUMBER*, that arising from the Multiplication of two *Numbers* ; ex. gr. 6, which is the Product of 3 multiply'd by 2. The *Numbers* which thus multiply'd produce a *Plane Number*, as here, 2 and 6, are call'd the *Sides* of the Plane.

*Square NUMBER*, the Product of any *Number* multiply'd by itself ; thus 4, the *Faßum* of 2, by 2, is a *square Number*. See SQUARE.

Every *square Number* added to its Root, makes an even *Number*.

*Cubic NUMBER*, the Product of a *square Number*, multiply'd by its Root ; ex. gr. 8, the Product of the *square Number* 4, multiply'd by its Root 2. See CUBE.

All *Cubic Numbers*, whose Root is less than 6, v. g. 8, 27, 64, 125, being divided by 6, the Remainder is their Root itself. Thus 8 being divided by 6, 2, the Remainder of the Division, is the Cube Root of 8. For the *Cubic Numbers* beyond 125 ; 216, the Cube of 6, divided by 6, leaves no Remainder ; 343, the Cube of 7, leaves a Remainder 1, which added to 6, gives the Cube Root of 343. And 512, the Cube of 8, divided by 6, leaves 2, which added to 6, makes the Cube Root of 512. So that the Remainders of the Divisions of the Cubes above 216, divided by 6, being added to 6, always give the Root of the *Cubic Number* divided ; till that Remainder be 5, and of consequence 11 the Cube Root of the *Number* divided : But the *Cubic Number* above this, being divided by 6, there remains nothing, the Cube Root being 12. Thus, if you continue to divide the higher Cubes by 6, you must not add the Remainder of the Division to 6, but to 12, the first Multiple of 6 ; and thus coming to the Cube of 18, the Remainder of the Division must not be added to 6, nor to 12, but to 18 : and thus *in infinitum*.

Monf. de la Hire, from considering this Property of the *Number* 6, with regard to *Cubic Numbers*, found that all other *Numbers* rais'd to any Power whatsoever, had each their Divisor, which had the same effect with regard to them, that 6 has with regard to Cubes. And the general Rule he has discover'd, is this : If the Exponent of the Power of a *Number* be even, i. e. if that Power be rais'd to the 2d, 4th, 6th, &c. Power, it must be divided by 2 ; and the Remainder, if there be any, added to 2, or to a Multiple of 2, gives the Root of the *Number* corresponding to its Power, i. e. the 2d or 6th Root, &c. But if the Exponent of the Power of the *Number* be uneven, i. e. if it be rais'd to the 3d, 5th, 7th, &c. Power, the Duple of that Exponent will be the Divisor which shall have the Property here requir'd.

*Polygonous NUMBERS*, the Sums of Arithmetical Progressions, beginning with Unity. These, where the Difference of Terms is 1, are call'd *Triangular Numbers* ; where 2, *square Numbers* ; where 3, *Pentagonal Numbers* ; where 4, *Hexagonal Numbers* ; where 5, *Heptagonal*, &c. See POLYGON.

*Pyramidal NUMBERS*. The Sums of Polygonous *Numbers*, collected after the same manner as the Polygons themselves are gather'd out of Arithmetical Progressions, are call'd *first Pyramidal Numbers*.

The Sums of the first *Pyramidals*, are call'd *second Pyramidals*. The Sums of the second *Pyramidals*, are call'd *third Pyramidals*, &c.

In particular, they are call'd *Triangular Pyramidal Numbers*, if they arise out of *Triangular Numbers*. *First Pentagonal Pyramidals*, if they arise out of *Pentagons*, &c. See PYRAMID.

*Cardinal NUMBERS*, those which express the Quantity of Units ; as 1, 2, &c.

*Ordinal NUMBERS*, those which express the Order or Rank ; as 1st, 2d, 3d, &c.

*Golden NUMBER*, in Chronology, a Period of 19 Years, invented by Meton the Athenian ; at the end whereof, the same Lunations return in the same Days, tho' not precisely in the same Hour and Minute of the Day. See PERIOD and LUNATION.



Hence this Period, call'd by the *Greeks Enneadecaeteris*, is not perfectly just; there being a *Proemptosis*, or Leap, at the end of each 312 Years, i. e. in that time, the Lunations fall out a Day sooner than the *Golden Number* expresses them. See *PROEMPTOSIS*.

This, among other things, was what engag'd Pope Gregory XIII. to reform the Calendar, to throw out the *Golden Number*, and substitute the Cycle of Epacts instead of it. For the Use of the *Golden Number*, which, in the *Julian Calendar*, serves to find the New Moons, only serves in the *Gregorian* to find the Cycle of Epacts. See *EPACT*; see also *CYCLE*, and *CALENDAR*.

This Number is said to have had its Name, *Golden*, from the Greatness of its Use; or because the *Athenians* receiv'd it with so much Applause, that they had it wrote in the publick Market in Letters of Gold.

M. *Cassini* defines the *Golden Number* after a new manner. He says, 'tis the Number of Years elaps'd since that which had the New Moon on its first Day; as that of the Year 1500, whose *Golden Number* was 0; which he takes for his Epocha. See *METONIC*.

NUMBER, in Grammar, is a Modification of Nouns, Verbs, &c. to accommodate them to the Varieties in their Objects, consider'd with regard to Number. See *NOUN*, &c.

Nouns or Names agreeing to several Things, may be consider'd either as apply'd to one of those Things singularly, or to a Number of them; and those either consider'd as several, or as united. To distinguish these Cases, two Numbers have been invented, the *Singular* and *Plural*.

When a Noun indicates an Object consider'd as single, or alone, or a number of them consider'd as united together, 'tis said to be of the *Singular Number*; as a Tree, a Troop, a Temple. See *SINGULAR*.

When it indicates several Objects, and those as distinct, it is of the *Plural Number*; as Trees, Temples. Thus when I speak of myself, as making part of several others, instead of *I*, I say *We*, &c. See *PLURAL*.

The *Greeks* have a third Number, which they call the *Dual Number*, as signifying two. The *Hebrews* have something like it; but then it only takes place when the Words signify a thing double either by Nature, as the Hands, the Eyes, &c. or by Art, as Scissars, Tongs, &c.

As to Common and Appellative Names, they seem all naturally to require a *Plural Number*, yet are there several which have none; as the Names of Gold, Steel, &c.

The Difference of Numbers in Nouns is express'd by a Difference of Termination or Ending.

In *English*, the *Singular* is usually converted into *Plural*, by adding *s*; as Tree, Trees; Hand, Hands, &c. Where the Pronunciation requires it, as when the *Singular* ends in *s*, or *x*, *ß*, or *ch*, 'tis usually done by the Addition of *es* instead of *s*.

The *Plurals* of Adjectives, tho' vary'd from the *Singulars* in most other Languages; yet in *English* are generally the same. See *VERB*.

NUMBERS, in Poetry, Oratory, Music, &c. are certain Measures, Proportions, or Cadences, which render an Air, Verse, or Period, agreeable to the Ear. See *VERSE*, *MEASURE*, &c.

Poetical and Prosaic Numbers, are somewhat different: Poetical NUMBERS consist in a certain Harmony, in the Order, Quantities, &c. of the Feet and Syllables; which make the Piece musical to the Ear, and fit it for Singing; for which all the Verses of the Antients were intended. 'Tis of these Numbers *Virgil* speaks in his IVth Eclogue.

—Numeros memini si verba tenerem.

And again, in the VIth Eclogue:

Tum vero in Numerum Faunosq; Ferasq; videres  
Ludere—

The Numbers are what constitute the Air and Character of a Verse; and denominate it smooth, or soft, or low, or rough, or rapid, or sonorous. The following Lines of *Milton* furnish an Instance of soft easy Numbers.

Then feed on Thoughts, which voluntary move  
Harmonious Numbers; as the tuneful Bird  
Sings darkling, and in shadowiest covert hid,  
Tunes her Nocturnal Note:—

How different from the Numbers of these:

Arms meet with Arms, Fauchcons with Fauchcons clash,  
And Sparks of Fire, struck out from Armour, flash.  
But when loud Surges lash the sounding Shore,  
The hoarse rough Verse should like the Torrent roar.

Rhetorical or Prosaic NUMBERS, are a sort of simple unaffected Harmony, less glaring than that of Verse; yet

such as is perceiv'd, and affects the Mind with Pleasure. The Numbers are that by which the Style is said to be easy, free, round, flowing, &c. See *STYLE*.

A fine Instance of Numbers we have in that Passage of *Tully* for *Marcellus*: *Nulla est tanta vis, tantaq; copia que non ferro ac viribus debilitari frangiq; possit.* All the Beauty of which would be entirely lost to any tolerable Ear, if the Numbers were a little inverted, thus: *Nulla est vis tanta, & copia tanta que non possit debilitari frangiq; viribus & ferro.*

Numbers are a Thing absolutely necessary in all Writing, and even all Speech. Hence *Aristotle*, *Tully*, *Quintilian*, &c. lay down abundance of Rules as to the best manner of intermixing *Dactyls*, *Spondees*, *Anapests*, *Iambus's*, *Choraeic* and *Dichoraeic Molossus's*, &c. in order to have the Numbers perfect.

The Substance of what they have done, is reducible to what follows: 1. The Style becomes numerous, by the alternate Disposition and Temperature of long and short Syllables; so, as that the Multitude of short ones neither render it too hasty, nor that of long ones too slow and languid.

Thus, *Tully* to *Cesar*: *Domuisti Gentes immanitate barbaros; multitudine innumerabiles, locis infinitas, omni copiarum genere abundantes, &c.*

Sometimes, indeed, long or short Syllables are designedly thrown together, without any such Mixture; to paint the Celerity or Slowness of a Thing by that of the Numbers; as,

Quadrupedante putrem sonitu quatit ungula campum.  
Æneid. l. 8.  
Luctantes Ventos, Tempestatesq; Sonoras.  
Id. l. 1.

2. The The Style becomes numerous by the intermixing of Words of one, two, and more Syllables; e. gr. *Vivis & vivis non ad deponendam sed ad confirmandam audaciam.* Whereas the too frequent repetition of Monosyllables renders the Style pitiful, and grating; e. gr. *Hac in Re nos hic non feret.*

3. It contributes greatly to the numerousness of a Period, to have it closed by magnificent and well sounding Words; as, *Qui locus quietis ac tranquillitatis plenissimu fore videbatur, in eo maxime molestiarum, & turbulentissime tempestates extiterunt.*

4. The Numbers depend not only on the nobleness of the Words in the Clause, but of those in the whole tenor of the Period; as in the fine Oration of *Cicero* for *Fonte us*, Brother of one of the Vestal Maids. *Noline pati, Judices, aras Deorum immortalium, Vestaque matris, quotidianis Virginum Lamentationibus de Vestro Judicio commoveri.*

5. To have the Period flow easily and equably, the harsh concurrence of Letters and Words is to be studiously avoided, particularly the frequent meeting of rough Consonants; as *Ars studiorum, Rex Xerxes*: The beginning the first Syllable of a Word with the last of the preceding; as, *Rei mihi inwise sum*: The frequent repetition of the same Letter or Syllable; as in that Verse of *Ennius*, *Africa terribili tremit horrida terra tumultu*: And the frequent use of like-ending Words; as *Amatrices, Adjutrices, Prestigiatrices fuerunt.*

Lastly, The utmost Care is to be taken, lest in aiming at Oratorical Numbers, you fall into Poetical ones; and instead of Prose, write Verse; which even *Cicero* himself is sometimes guilty of; witness, *Cum loquitur tanti fletus geminusque fiebant.* See *VERSE*.

NUMERAL Letters, those Letters of the Alphabet, which are generally used for Figures; as I, V, X, C, D.

NUMERAL Characters. See *CHARACTER*.

NUMERALS, in Grammar, are those Words which express Numbers; as Six, Eight, Ten, &c. See *ORDINALS*.

NUMERATION, in Arithmetic, the Art of valuing, pronouncing, or reading, any Number, or Series of Numbers. See *NUMBER*.

The Characters whereby Numbers are ordinarily express'd, are the nine following ones, viz. 1, 2, 3, 4, 5, 6, 7, 8, 9. It being the Law of the common Numeration, that when you are arrived at ten, you begin again, and repeat as before; only expressing the Number of Tens.

*Weigelius*, indeed, shews how to number without going beyond a Quaternary, i. e. by beginning to repeat at each Fourth. And *Leibnitz*, in what he calls his *Binary Arithmetic*, begins to repeat at every Second; only using two Characters, 1 and 0. But these are rather Matters of Curiosity than Use. See *BINARY Arithmetic*.

That the nine Numerical Notes may express not only Units, but also Tens or Decads, Hundreds or Centuries, Thousands, &c. they have a local Value given them; so, as that when either alone, or when placed in the right-hand place, they denote Units; in the second place, Tens; in the third, Hundreds; in the fourth, Thousands. See *NOTATION*, &c.



Now, To express any written Number, or assign the proper Value to each Character; Divide the proposed Number by Comma's into Classes, allowing three Characters in each Class; beginning at the right-hand. Over the right-hand Figure of the third Class, add a small Mark or transverse Line; over the right-hand Figure of the fifth Class, add two Marks or transverse Lines; over that of the seventh, three, &c. The Number to the left of the first Comma, expresses by Thousands; that which has over it the first transverse Line, expresses by Millions; that with two, by Billions; that with three, by Trillions, &c. Lastly, the left-hand Character of each Class, expresses by Hundreds; the middle one, by Tens; and the right-hand one, by Units. Thus will the Numeration be effected.

E. gr. The following Numbers, 2<sup>m</sup>, 125, 473<sup>m</sup>, 613, 578<sup>m</sup>, 432, 597. is thus express'd or read: Two Trillions, one hundred twenty Millions of Billions, four hundred seventy three Billions, six hundred thirteen Thousands of Millions, and five hundred seventy eight Millions, four hundred and thirty two thousand, five Hundred and ninety seven.

**NUMERATOR**, in Arithmetic, a Term used in speaking of Fractions. It signifies the Number that denotes the Parts of the Integer, and is placed over the little Bar, which separates it from the under Number, call'd the *Denominator*, which shews into how many Parts the Integer is divided. See **DENOMINATOR**.

Thus, v. g.  $\frac{7}{10}$  expresses seven Tenths; where 7 is the Numerator, and 10 the Denominator. See **FRACTION**.

**NUMERICAL**, something that relates to Number.

**NUMERICAL Algebra**, is that which makes use of Numbers instead of Letters of the Alphabet. See **ALGEBRA**.

**NUMERICAL Difference**, is the difference whereby one Individual is distinguished from another. See **INDIVIDUAL**.

Hence a thing is said to be Numerically the same, *idem Numero* or *numericè*, when it is the same in the strictest Sense of the Word. See **UNITY** and **IDENTITY**.

**NUMERO**, in Commerce, &c. a Term prefixed to any Number of things; marked, or abbreviated thus, N<sup>o</sup>.

*De NUMERO*, i. e. by Tale, is used in antient Authors for the payment, e. gr. of a Pound in a certain Number of Pieces, e. gr. 20 Shillings; in contradistinction to a *Libra pennis*, or Pound weighed out. See **POUND**.

**NUMISMATOGRAPHIA**, a Greek Term used for the Description and Knowledge of antient Medals and Coins, whether of Gold, Silver, or Brass. See **MEDAL** and **COIN**.

*Fulvius Ursinus*, Augustine Bishop of Terracona, *Erizzo* a noble Venetian, and *Sambucus* a Polish Gentleman, have all been successful in the *Numismatographia*: Nor must the more modern Authors on the same Subject be omitted; viz. the two *Mezzabarba's*, *Patin*, *Spanheim*, *Hardouin*, *Mörel*, *Vallant*, *Jobert*, *Baudelot*, *Beger*, and among ourselves, *Evelyn*.

**NUMMUS**, a Piece of antient Roman Money; whereof there were two Kinds: the one Gold, the other Silver. See **MONEY**.

The Gold Nummus, call'd *Stater* and *Aureus*, weigh'd two Drachms, and was worth, according to *Budæus's* Computation, about 16 s. Sterling.

The Silver Nummus was just the Roman *Denarius*, which weigh'd one Drachm. See **COIN**.

The Jewish Nummus was their Shekel. See **SHEKEL**.

**NUN**, **NONNE**, an old Word, antiently used for a Female Religious; and still retain'd in that sense in our Language; and in other Languages, particularly the French; but by way of Ridicule and Burlesque. See **RELIGIOUS**.

Hence also *Nunnery*, a Monastery of Female Religious. See **MONASTERY**.

The Word comes from *Nonna*, *Nonnana*, or *Nonnanis*; all Latin Terms, first used for Penitents, then for Religious.

*Borel* derives it from *Nonni*, or *Nonne*, which in Italian signifies Grandfathers, or Grandmothers. And adds, that it was apply'd by way of Honour to the Woman, as that of Father to the Man, Religious. See **FATHER**.

**NUNDINAL**, a Name which the Romans gave to the eight first Letters of the Alphabet, used in their Calendar. See **LETTER**.

This Series of eight Letters, A, B, C, D, E, F, G, H, is placed and repeated successively from the first to the last Day of the Year; one of these always express'd the Market-Days, or the Assemblies call'd *Nundine*, quasi *Novendine*, because they returned every nine Days.

The Country People, after working eight Days successively, came to Town the ninth, to sell their several Commodities, and to inform themselves of what related to Religion and Government.

Thus the *Nundinal* Day being under the Letter A, on the 1<sup>st</sup>, 9<sup>th</sup>, 17<sup>th</sup>, and 25<sup>th</sup> Days of January, &c. the Letter D will be the *Nundinal* Letter of the Year following.

These *Nundinals* bear a good deal of resemblance to the Dominical Letters; which return every eight Days, as the *Nundinals* did every nine. See **DOMINICAL Letter**.

**NUNTIO**, an Ambassador from the Pope, to some Catholic Prince or State; or a Person who attends, on the Pope's behalf, at an Assembly of several Ambassadors. See **EMBASSADOR**.

The Word *Nuntio* has the same Import with *Embassador*, but is restrain'd in its Use to the Embassadors of Popes alone; as that of *Internuntio* is to his Envoy Extraordinary.

*Brantom* informs us, that when he first came to Court, the *Nuntio* had only the Title of *Embassador*.

The *Nuntio* has a Jurisdiction, and may delegate Judges in all the States he resides, except in France, where he has no Authority but that of a simple Embassador.

**NUPER Obit**, in Law, a Writ which lies for a Co-heir, being deforced by her Co-partner, of Lands or Tenements, whereof their common Father or Ancestor died seized in Fee Simple.

If the Ancestor died seized in Fee Tail, the Co-heir deforced shall have a *Formedon*. See **FORMEDON**.

**NUPTIAL**, something that relates to Marriage. See **MARRIAGE**.

**NURSERY**, in Gardening, is generally used in the same sense as *Seminary*, viz. for a Seed-plot for the raising of young Trees, or Plants. See **SEMINARY**.

Some Authors, however, make a difference between the two; holding *Nursery*, properly, not to be a place wherein Plants are sown; but a place for the reception and rearing of young Plants, which are removed, or transplanted thither from the Seminary, &c.

Mr. *Lawrence* recommends the having several *Nurseries*, for the several Kinds of Trees: One for tall Standards; viz. Apples, Ashes, Elms, Limes, Oaks, Pears, Sycamores, &c. Another for *Dwarfs*, viz. such as are intended for Apricocks, Cherries, Peaches, Plumbs, &c. And a third for *Ever-Greens*.

The *Nursery* for Standards should be in a rich, light Soil; sown, with the proper Seeds, in October, or November. For Apples and Pears, Crab- and Wild-Pear Kernels, are to be preferred for Stocks: Elms and Limes are to be raised from planted Suckers: Walnuts to be sown with the green Shell upon 'em, to preserve them from Mice. This *Nursery*, if it be well managed and weeded for two Years, the Crabs and Pears will be fit for Grafting and Inoculating the third Year. See **ORCHARD**.

Firs and Pines are to be raised from those little Seeds, taken out of their large Apples.

The *Nursery* for Dwarfs does best by itself, that it may not be over-top'd by taller Trees. Stones of Apricocks and Peaches are not proper to raise those Trees; but in lieu thereof, sow the Stones of the Pear-Plumb, *Muskel* or *Bonum Magnum* Plumb; which prove better and more lasting than the former. For Stocks for all sorts of Cherries, black Cherry-Stones do best. See **STOCK**.

Mr. *Mortimer* directs all Stone Fruit to be sown quickly after gathering; for that if they be kept, they will be two Years e'er they come up. Add, that if they have not all the Moisture of the Winter to rot the Shells, the Kernel will scarce come up at all.

To furnish the *Nursery* of Ever-Greens, the several sorts of Seeds or Berries, as Yew, Holly, Juniper, &c. are to be put in so many distinct Pots or Boxes, with fine Mould over them, and thus buried for a year; after which, they are to be taken out and sown.

If they were to be sown when gather'd like other Seeds, they would not come up the first year, nor grow so kindly.

**NUSANCE**, in Law, is used not only for a thing done to the annoyance of another in his Fee Lands or Tenements; but also the Assize or Writ lying for the same.

The Writ of *Nusance*, *de Nocumento*, is either simply *de Nocumento*, or *de parvo Nocumento*.

*Martwood* makes three Kinds of *Nusances* in the Forest; the first, *Common Nusance*; the second, *Special Nusance*; the third, *General Nusance*.

Writs of *Nusances* are now popularly term'd *Trespases*, and Actions upon the Case. See **TRESPASS**, &c.

The Word is derived from the French *Nure*, to hurt.

**NUT**, *Nux*, a sort of Fruit, inclosed in a hard Cortex or Shell. See **FRUIT**.

Of these we have divers Kinds; small Nuts, Filberds, Chestnuts, Walnuts, &c. See **FILBERD** and **NUX**.

**NUTATION**, in Astronomy, a kind of Trepidation, or tremulous Motion of the Axis of the Earth; whereby, in each annual Revolution, it is twice inclined to the Ecliptic; and as often returns to its former Position. See **EARTH**.

That the Moon has a like Motion, is shewn by Sir *Is. Newton*, in the first Book of his *Principia*; but he observes withal, that this Motion must be very small; and scarce sensible. See **MOTION** and **AXIS**.

**NUTMEG**, a kind of Aromatic Nut, or Spice, brought from the East Indies; whereof there are two Kinds, Male and Female. See **SPICE**.

The



The *Female* is that chiefly used among us; its Form is round, its Smell agreeable, and its Taste hot and pungent.

The *Male* is a wild Nut, of a longish Form, and without either Taste or Smell; yet sometimes put off, while yet in the Pod, for the Female.

The *Nutmegs* are enclosed in three different Covers: The first, thin, reddish, of an agreeable Smell and aromatic Taste, call'd *Mace*; by others, tho' improperly, *Flower of Nutmeg*. This wraps up the Shell, and opens in proportion as the Pod grows. The Shell, which makes the second Cover, is hard, thin, and blackish. Under this, is a greenish Film of no use; and in this is found the *Nutmeg*, which is properly the Kernel of the Fruit. Every *Nutmeg* has a little Hole in it, which some ignorantly take for a Defect.

The best *Nutmegs* are those gather'd in *April*. They must be chosen heavy, of a whitish brown Colour, well marbled without side, reddish within, having a fat unctuous Humour, and an agreeable Smell.

As to the *Mace*, it must be chosen in large Leaves of a high Colour, like the *Nutmeg* in Taste and Smell. See *MACE*.

*Nutmegs* confited green, are excellent to fortify the Stomach, and restore the natural Heat. They are particularly esteem'd Carminative. The Powder, *Duke*, esteem'd a Sovereign against Rheums, is only *Nutmeg* pulverized with Sugar, and a little Cinnamon.

*Nutmegs*, by Distillation, or Expression, yield an Oil, said to have wonderful Virtues.

The whole Commerce of *Nutmegs* is in the hands of the *Dutch East-India Company*.

The *Nutmeg-Tree* is propagated after a particular manner. *Tavernier* tells us, that the Birds devouring the *Nutmeg* when ripe, give it back whole by Stool; and that thus falling down to the Ground, besmear'd with a viscous Matter, it takes Root, and produces a Tree. See *MISLETO*.

**NUTRITION**, in the Animal Oeconomy, the Accession or Apposition of new Parts in the Body, similar to those it already consisted of; either for its Augmentation, or for the Reparation of such as are wore off.

By the continual Motion of the Fluids in the minute Vessels of the Body, and the Actions of the Muscles, &c. small Parcels are of necessity wore off from the Solids, become mix'd with the Fluids, move with them, and are at length eliminated and exhaled thro' the Pores. See *PORE* and *SOLID*.

And at the same time, the Fluids, diminish'd as they are by a constant Attrition, apply to the Orifices of the perspiring Vessels, and vanish out of the Body. See *PERSPIRATION*.

Hence the Animal Body, by the very Condition of its Frame, becomes soon liable to Destruction.

To preserve Life, therefore, 'tis necessary that a Restitution be made to the Juices and Solids of the Body; equal, and similar to those lost in those Motions; which is what we call the Action of *Nutrition*.

Now the lost Juices are easily supply'd by Meat, Drink, Air, &c. taken into the Stomach, digested, converted into Chyle, then into Blood, and thence secreted by the proper Ducts, and carry'd by the Action of the Body, to the proper Receptacles; after the manner laid down under the Articles *DIGESTION*, *CHYLIFICATION*, *SANGUIFICATION*, and *SECRETION*.

But the *Nutrition* of the solid Parts is much more obscure. This indeed has proved the Subject of infinite Doubts and Differences among Authors; nor had we any rational or satisfactory Account of the same, till that of the accurate *Boerhaave*, whose Doctrine is as follows.

Every solid Part of the Body consists of other lesser ones, in all respects like the larger; Vessels, *v. g.* of Vesicles, and those of others still smaller; Bones of *Officles*, &c. Which Structure goes beyond all Limits of Sense, however assisted by Art; as appears by the Experiments and Observations of *Malpighi*, *Ruyfch*, *Leeuwenhoeck*, and *Hook*. Yet is it scarce possible this Division and Subdivision should be infinite, as that of Foods and Juices is.

Again, it appears from Microscopes, Injections, small Wounds, Exsiccations, &c. that the solid Parts of the Body are very small, compared with the Fluids; and it is almost demonstrable from considering the Rise, and Generation, of the Vessels, and the Resolution of the greater Vessels into their smaller constituent ones, that all the solid Mass in the Body is constructed of mere Nerves, as its Elements. See *NERVE*, *STAMEN*, &c.

And in effect, all this Mass, an incredibly small Particle only excepted, at first arose out of what was a very small Colliquament, much like the nervous Juice itself; as is abundantly shown by the great *Malpighi* in his two Treatises on incubated Eggs. For neither does the White of the Egg nourish, till, by means of the Incubation, it have pass'd innumerable degrees of Fluidity, from its first Thickness to that exceeding Subtility wherein it terminates. But

even then, the Liquor thus given to the Embryo, is exceedingly thick, in comparison with what it is to be when converted into its Vessels and Viscera.

Now the first tender Solids arising from this subtile Humour, do again pass infinite intermediate Degrees, e'er they arrive at their utmost State and Consistence; as is shewn by *Malpighi* in Eggs, and by *Ruyfch* in Embrio's and Fetus's. Hence, therefore, it follows, that the Solids, in their first Formation out of the Liquids whence they arise, only differ from 'em in Rest, Cohesion, and Figure. Therefore such a Particle, now in its fluid State, will become a part of the Solid to be form'd out of it, as soon as there happens to be a Power to effect its Cohesion with the other solid Parts; howsoever that Cohesion is effected.

This Cohesion is easily produced in a Fibre already form'd, if there happen to be a proper Cavity in the Solid, left open by some lost Particle, and at the same time a Particle in the Fluid, answerable thereto in Bulk, Figure, and Nature; and lastly, a Power wherewithal to intrude it into that Place, or accommodate it thereto. Thus will arise a real *Nutrition* of the Solids in the minute Vessels, by whose Union the large ones are form'd; that is, in the Nerves, or in Vessels similar thereto. Which being impracticable by any other Liquid than that brought into these Vessels; it appears very evident that the nervous Juice, at least a Juice perfectly like it, is the immediate Matter of *Nutrition*: Whence *Nutrition* appears one of the last and most perfect Actions in the Body; since to have this laudable, all the precedent Actions must of necessity have been so. See *SPIRIT*.

The Chyle therefore, which some make the immediate Matter of *Nutrition*, is, indeed, fitted to fill the larger Vessels, but cannot nourish or restore them. This, when attenuated, chang'd, more intimately mix'd in the Lungs by means of Respiration, and thus fitted for the Passage of certain Vessels, is, indeed, rendred fitter, yet far from being quite fit, to be the Matter of *Nutrition*. See *CHYLE*.

But, by the repeated Action of the Lungs, the Viscera, Vessels, &c. there is form'd out of this Humour, a soft, tenacious, plastic, insipid Serum, which thickening by the Fire, becomes perfectly like the White of an Egg. This Fluid, therefore, has in it all the Conditions found in that from whence, by sure Experience, we know all the solid Parts of an Animal, arise, by meer Incubation. It is therefore a step nearer, but is not yet quite disposed for Nutriment. Much less is the Cruor, or red, globular Part of the Blood so. Neither are yet fitted to enter the Vessels; yet both the one and other are, by different Authors, made the *Nutritive Juice*. See *BLOOD*, *SERUM*, and *CRUOR*.

But as the Heat of Incubation, so the Action of the Viscera and Vessels, on the Serum, introduces various Changes therein; till at length a part of it be rendred subtile enough for the Purpose required. This, when exhausted, is instantly repaired: and thus we have the true immediate Matter of *Nutrition*.

But this same Humour losing too many of its oily Parts, by many repeated Circulations, is rendred too sharp; and being likewise strip'd of its most liquid Parts, from the same Cause, becomes too dense; and is thus rendred unfit for this Secretion. Hence the necessity of new Chyle, and new Food, to keep up *Nutrition*.

The Matter of *Nutrition* thus ascertain'd; the Manner wherein, and the Cause whereby it is effected, are as follow. A Juice being driven directly thro' a full, conic or cylindric, elastic or rigid Canal; if its Course be from a wider to a narrower Part, or if it have any thing to oppose its Motion, will endeavour to stretch the Sides of its Canal according to the Axis of its Length. This must be the Case, every where in the Body, except, perhaps, in the Veins and Receptacles. By this *Nisus*, or Endeavour, how weak soever, continually repeated, the Vessels will be insensibly lengthen'd out; and in lengthning, will be made more and more slender. Hence the last Extremities of the Vessels, which in Man are extremely small, are continually stretch'd and rendred less and less coherent, *i. e.* still nearer and nearer to Dissolution; and thus at length will they cohere so weakly, as scarce to differ from Fluids.

While such Motion goes on, therefore, and the Propulsion is continued, there will, of necessity, happen these two things: First, the outmost Particles of the minutest Tubes being torn off, will again be converted into a kind of Humour, what part of the Body soever they stick in. Secondly, the smallest Particles, which by their Union composed the slenderest *Fibrille*, will be so separated from each other, as to leave open Interstices in those Places, where, before, they cohered. Both these Effects will be produced at all times, and in all parts of the Body, so long as Life continues; especially where Nature is strong, and the Actions of the Body violent. But the same Humour whereby these Effects are produced, containing abundance of Particles similar to those thus separated and lost, conveys and applies them to those Interstices, by that very *Impetus* whereby it en-



endeavours to distend the Canals; and thus intercepted, at length, it forms, adapts, and fastens them, so as to adhere in the same manner as the former.

The Matter, Preparation, Application, Energy of Motion, still remaining the same; what from time to time is lost, is thus presently restored; and the Solids continue in the same State as before, *i. e.* they are perpetually *nourish'd*, and supply'd, and preserv'd.

In this the Creator's Wisdom is very conspicuous; in that the same Power which inevitably destroys, does repair again at the same time, and by the same Action; and that the greater the Loss is, the more copious is the Supply: and lastly, that those Parts, first spent in the Action of the Body, are the first restored.

Further, 'tis evident that the newer, the more tender, and the nearer the moving Cause these Vessels are, the more easily will they be lengthen'd, distended, destroy'd and repair'd: Our Bodies, therefore, the nearer to their Origin, the more do they grow. For, the Action still continuing, the greater Vessels become more extended by their Fluid; and at the same time the smaller, whereof the Membranes or Coats of the larger are composed, are compress'd, dried, and at last concreted, and grow up; whence arises a Firmness, indeed, of the Fibres, but a Loss of the Vesicles.

Thus what were, formerly, Vessels, commence mere hard Ligaments; and thus the Fluids once fix'd, the several Vessels coalesce: from the Concurrence of these Causes arise the Strength, Hardness, Rigidity, and Thickness of the solid Parts.

Hence, the Number of Vessels is greatest in Embryo's, and as Age comes on, sensibly diminishes; and hence it is that their Weakness constantly declines, and their Strength and Firmness increases. In young People, therefore, the Quantity of Humours is redundant, and greatly exceeds the Solids: In old Men, the Solids exceed the Fluids. And hence we see the Reason, Manner, and Appearance of Growth, State, Declension, and at length of Death from pure old Age. See DEATH.

A Person who considers this Account, and compares it with what is actually observable in the Body, will find every Circumstance to obtain: Thus the whole *Cuticula* is every where, and at all times, constantly desquamating, peeling off, and again renewing; and thus the Hair, Nails, Teeth, continually rubb'd, torn, and wore off, come again; Parts taken off from the Vessels, and the Bones, soon grow again. And the Sordes, or Filth, rubb'd off from the Extremities of the Vessels, when examin'd by a Microscope, or diluted and view'd in Water, appear plainly to consist both of solid and fluid Parts; and those carry'd off by Washing, Shaving, &c. are the same.

Hence, too, we see that a general Increase of the Bulk of the Body, with regard to Habit, as in fat, fleshy, brawny Persons, does not arise from any Increase of the Solids, but by their Extension into larger Cavities, crowded with stagnant Humours. And hence Fatness becomes hurtful, as it loads, weakens, and suffocates. See FATNESS.

Whence arises a very considerable Distinction between *Nutrition* and *Repletion*; to which a Physician must have especial regard: the one strengthening and condensing the Vessels, the other weakening, loosening, and extending the same. See PLENITUDE.

Hence, lastly, we see why the Fabric of the Solids is not destroy'd by the contain'd Fluids; how our Machine comes to subsist so long; why, when a Nerve is corrupted, the *Nutrition* of that part it belongs to, ceases; and why the same obtains in an Artery: Why in an Embryo there are no Solids, in a *Fetus* very few, in old Men a great deal; and why even the Nerves, Tendons, Arteries, and Receptacles, become first Cartilaginous, then Bony.

*NUTRITION of Plants.* See VEGETATION, SAP, CIRCULATION, &c.

*NUTRITION*, in Pharmacy, a kind of Preparation, consisting in the gradual Mixture of Liquors of different Natures, by stirring them together till they have acquired a thick Consistence; as in making *Butter of Saturn*, or *Unguentum Nutritum*.

*NUTRITIOUS Juice.* See NUTRITION.

*NUTRITIVE Faculty.* See FACULTY.

*NUTRITUM*, a desiccative, cooling, Unguent, prepared by the Agitation and *Nutrition* of some Preparation of Lead, with Oil and Vinegar, or the Juice of *Solanum*, in a Mortar. See UNGUENT.

*NUX Vomica*, the Fruit, or, as some will have it, the Stone of the Fruit of a Tree, growing in several Parts of *Egypt*, or in the Islands *Timor* and *Ceylon*.

It is round and flat, of a grey Mouse-colour without, and various Colours within; sometimes yellow, sometimes white, sometimes brown. The largest, whitest, newest, and cleanest, are the best.

This Drug is an assured Poison for all Animals except Men. See POISON.

On the contrary, *Hermannus*, Botanic Professor at *Leyden*, who has wrote expressly on it, says that those of *Timor* and *Ceylon* are excellent Sudorifics, and to be rank'd among Diuretic Medicines.

*Nux Galla.* See GALLS.

*Nux Indica*, the Fruit of the Tree call'd *Cacao*. See CACAO.

*NYCTAGES*, a Religious Sect, distinguish'd by their inveighing against the Practice of waking in the Night to sing the Praises of God; in regard, said they, the Night was made for Rest.

The Word comes from the Greek *νύξ*, Night.

*NYCTALOPIA*, or *Nocturna Cecitas*, a Disease of the Eyes, which prevents their seeing, when the Sun is set, and the Light begins to diminish. See BLINDNESS. *Celsus* calls it *Imbecillitas Oculorum*.

Others will have the *Nyctalopia* to be properly a Disease, that prevents the seeing by Day, not by Night: which is the sense *Hippocrates* uses it in; and in which sense it is suppos'd owing to the Spirits being too much dissipated in the Day, but collected by Night. See SIGHT.

However, in the general, any Disease which prevents the seeing at any particular time, when others see, is call'd *Nyctalopia*.

*Boerhaave* says, the *Nyctalopia* consists in this, that the *Uvea* is immovable, and at the same time very open.

The Word comes from the Greek *νύξ*, Night, and *αλωπεξ*, Fox; this Animal being said to see less by Day than Night.

In the *Philosophical Transactions*, we have an Instance of a *Nyctalopia*, or *Nocturna Cecitas*, in a Youth of twenty Years of Age; who had been affected with it as long as he could remember. Dr. *Parham* assures us, he had a good Sight all Day, and distinguish'd Objects at all Distances as well as any body; but when Twilight once came, he was quite blind, and saw nothing at all; nor could make scarce any use either of Fire, Candle, or Glasses. Yet his Eyes, upon Examination, shew'd nothing at all amiss; nor had he any Vertigo, or other Disease of the Head. The Cloudiness, as he himself told the Doctor, used to come gradually on him like a Mist, as Day-light declined. He always saw alike in all Aspects of the Moon, felt no Pain by Fire or Candle-light, and was the same in Summer as Winter.

Dr. *Briggs* accounts for the Case thus: "As Vapours are raised in great quantity during the Day-time; which being condensed by the Coldness of the Evening, fall again, and render the Air, near the Earth, the thicker: So, perhaps, the Humours in the Eyes of this Youth may be affected; and, in the Evening, rendered grosser, and more turbid. As we see in Urines, which frequently grow clear, or turbid, as Heat or Cold is apply'd to them. By such Thickness or Spissitude of the Humours, the Rays being either reflected, or too much refracted, do not reach the *Retina*, or at least strike it too feebly."

*NYCTELIA*, *Orgya*, or Feasts in honour of *Bacchus*; so call'd, because held in the Night time. See ORGYA.

A great part of the Ceremony consisted in running thro' the Streets, with Bottle and Glass in hand, drinking: but there was no Impurity unpractis'd in them.

The *Athenians* celebrated the *Nyctelia* every three Years, at the beginning of the Spring.

*NYMPH*, *NYMPHA*, in Mythology, a sort of Heathen Divinity, supposed to preside over Waters, Rivers, and Fountains. See GODDESS.

Some extend the Word further, and comprize under it the Goddesses of the Fountains, Forests, and Trees; call'd particularly *Oreades*, *Dryades*, and *Hamadryades*.

*Meursius* is of opinion, the *Greeks* borrow'd their Notion of these Divinities from the *Phenicians*; for *Nymphæ* in their Language signifying Soul, the *Greeks* imagin'd, that the Souls of the ancient Inhabitants of *Greece* were become *Nymphs*. Particularly the Souls of those who had inhabited the Woods, were call'd *Dryades*; those who had inhabited the Mountains, *Oreades*; those who had dwelt on the Sea-Coasts, *Nereades*; and lastly, those who had their Place of Abode near Rivers, or Fountains, *Naidæ*. See DRYADES, OREADES, &c.

The Word *Nymph*, according to some other Authors, comes from the Greek *νύμφη*, a Bride, or Woman newly marry'd; and was apply'd to these Deities, because represented under the Figure of young Maids.

Others derive *Nymph* from *Lympha*, Water; in regard of their inhabiting near the Waters.

*NYMPHA*, among Naturalists, a Term sometimes used for the little Skin wherewith Insects are enclosed, both while they are in the Egg, and after they have undergone an apparent Transformation. See INSECT.

Others use the Word *Nympha* for the Change itself of the *Eruca*, or Worm, into a flying Animal, after having laid aside its former Skin; which, as *Swammerdam* shews, is not effected by any proper Transformation, but by simple Accretion, or Growth of the Parts, whence the Skin



is by degrees stretched, and at last bursts; as is the Case, likewise, in Chickens and Frogs. But the generality of Authors use *Nymphæ* for the Insects themselves, while they have yet only the Form of Worms or Maggots.

The Word properly signifies *Bride*, or *new-married Woman*; it being now, when it has laid aside its former Skin, that it begins to shew all its Parts distinctly. In this Change it loses its Motion for a while, as when in the Egg; so that these Insects are twice in their *Nymphæ* State; first, in the Egg, which is their first *Nymphæ*; and again in this Change, which is their second.

The only difference between them consists in this, that in the latter the Members appear more distinctly. *Swammerdam* calls this latter *Nymphæ Aurea* or *Aurelia*, and *Chrysalis*; and the other simply *Nymphæ*. The *Nymphæ* are otherwise distinguish'd into *Nymphæ Animal Vermiformis*, and *Vermiculus Oviformis*.

The Eggs of Bees first change into Maggots; these Maggots, inclos'd in their *Alveoli* or Cells, are transform'd into *Aureliæ* or *Nymphæ*, and twelve Days afterwards come out Bees.

NYMPHÆ, or ALÆ, in Anatomy, are two soft, spongy, red Bodies, descending from the Top of the *Clitoris* to the Sides of the urinary Passage; thus reaching to about the middle of the Orifice of the *Vagina*: where they grow less and less, till they disappear. See CLITORIS, &c.

Their Breadth is uncertain, usually in Maids half a finger: sometimes they are larger, and are capable of being distended to a great degree; so as to hang a good way out of the Body: whence, in some, these, as well as the *Clitoris*, have been forced to be cut. See NYMPHOTOMIA.

The Use of the *Nymphæ* is, by swelling in the Act of Coition, to embrace the *Penis*, and by their Sensibility to affect the Woman, and mutually invite to Procreation. See GENERATION.

Their Substance is very spongy, compos'd of Membranes, and Vessels loosely cohering, and therefore distensible.

NYMPHÆUM, among the Antients, a public Hall, or Building, magnificently adorn'd and dispos'd for Banqueting and Entertainment; where those who wanted Conveniences at home, held their Marriage-Fests, &c.

Some Authors rather take the antient *Nymphæum* for a Grotto, adorn'd with Statues, Jets, and other Ornaments; and that it had its Name, by Corruption, from *Lymphæum*, of *Lymphæ*, Water: In which sense it must have been a public Bath.

The Word comes from the Greek *νύμφη*, Spouse.

NYMPHOMANIA, in Medicine, the same with *Furor Uterinus*. See UTERINUS.

NYMPHOTOMIA, in Surgery, a Retrenchment or Cutting off part of the *Nymphæ*, when they are so large and tumid, as to prevent the Consummation of Marriage, or render it very difficult. See NYMPHÆ.

The *Egyptians*, *Galen* observes, frequently practis'd the *Nymphotomia*; but in our Parts of the World, it is rarely found necessary.

When it happens to be so, the Casuists give their Judgment, that the Woman is oblig'd to undergo it.

The *Nymphotomia* is properly the Circumcision of Women. See CIRCUMCISION.





## O.

**O**, The fourteenth Letter of the Alphabet; and the fourth Vowel. See LETTER and VOWEL. The Grammarians call it a close Vowel; because pronounced in shutting the Mouth.

Among the *Latins*, the O bore so great an Affinity with the U, that they frequently confounded them; writing *Consol*, and pronouncing *Consul*. See *Gruter's Inscript.*

Thus, also, they wrote *Aequom* for *Æquum*, *Aorelius* for *Aurelius*, *Compasquos*, *Duomvir*, &c.

The *Greeks* had two O's, viz. *Omicron*, o, and *Omega* ω; the first pronounced on the tip of the Lips, with a sharper Sound; the second in the middle of the Mouth, with a fuller Sound, equal to oo in our Language. The long and short Pronunciation of our O are an Equivalent to the two Greek ones; the first as in obey; the second as in suppose.

O, among the *Antients*, was a Numerical Letter, signifying Eleven; as in the Verse,

*O Numerum gestat qui nunc undecimus extat.*

When a Dash was added at top, as Ō, it signify'd eleven Millions.

Among the *Irish*, the Letter O at the beginning of the Name of a Family, is a Character of Dignity, annexed to great Houses. Thus in the History of *Ireland*, we frequently meet with the O Neals, O Carrols, &c. considerable Houses in that Island.

*Cambden* observes, that 'tis the Custom of the Lords of *Ireland*, to prefix an O to their Names, to distinguish them from the Commonalty.

A Majuscule O, in Music, is a Note call'd by us *Semibreve*; by the *Italians*, *Circulo*; making what they call *Tempo perfetto*. See NOTE.

The *Antients* used O as a Mark of triple Time; from a Notion that the Ternary, or Number 3, was the most perfect of Numbers, and therefore properly express'd by a Circle, the most perfect of Figures.

ON, in the Exchequer. As soon as a Sheriff enters a Person into his Account for Issues, Amerciaments, and mean Profits; the Practice is to mark on his Head ON, which signifies, *Oneratur nisi habeat sufficientem Exonerationem*: and immediately he becomes the King's Debtor, and a Debet is set on his Head.

Upon this the Parties become Debtors to the Sheriff, and are discharg'd to the King. See SHERIFF.

OAK-Balls, OAK-Apples, or OAK-Cones, in Natural History, a kind of Galls, or Excrescencies arising out of the Oak.

For their Generation and Use, see GALLS.

OAKHAM, OAKAM, or OAKUM, in the Sea-Language, denotes the Matter of old Ropes untwitted, and pull'd out again into loose Hemp, like Hurds of Flax, to be used in the Calking of Ships. See CALKING.

OAR, or rather ORR, in Natural History, the Mineral Glebe, or Earth dug out of Mines, to be purify'd, and the Metalline Parts procured, and separated from the same. See MINE and METAL.

The Oar is frequently call'd the Mineral; and among the *Antients*, *Marchasite*; tho' the *Moderns* affix another Idea to that Name. See MINERAL and MARCHASITE.

OAR, in Navigation, an Instrument whereby a Boat, Barge, Galley, &c. is row'd, or advanc'd along the Water. See ROWING; see also BOAT, GALLEY, &c.

In a Vessel with Oars, the Water is to be consider'd as the Point of Support, or *Fulcrum*; the Oar as a Lever; the Boat as the Burden to be moved, and the Rower's Hand the moving Power. See LEVER.

The Burden is to be consider'd as apply'd to that Point of the Lever, where the Oar rests on the Boat: The greater therefore the Distance of the Hand from that Point, and the less the Distance of the Water from that Point, the greater Effect will the Oar have.

OARISTUS, or OARYSTUS, a Term in the Greek Poetry, signifying a Dialogue betwixt a Husband and his Wife; such as that in the VIth Book of the *Iliad*, between *Hector* and *Andromache*.

*Scaliger* observes, that the *Oaristus*, properly, is not any particular little Poem, or any entire Piece of Poetry; but a part of a great one. He adds, that the Passage now cited in *Homer*, is the only proper *Oaristus* extant in the ancient Poets.

OATH, *Jus-jurandum*, is usually defined a Religious Assertion, or Asseveration; wherein a Person invokes the Almighty, renounces all Claim to his Mercy, or even calls for the Divine Vengeance upon himself, if he speak falsely.

Some *Civilians* look on this Definition as too lax, since it may agree to Perjury; and would have this essential to an Oath, that the thing affirm'd be true. But this is arbitrary. See PERJURY.

An Oath is esteem'd a kind of Civil Medium, between the Person that gives it, and him to whom it is given; whereby some Controversy, or other Matter, which could not otherwise be determin'd, is brought to an Issue.

Its Form, and the Ceremonies it is attended withal, are arbitrary, and various, in various Countries.

The Oaths we make to God are call'd Vows, and in some Cases Sacraments. See VOW and SACRAMENT.

OATH, in a Legal Sense, is a solemn Action, whereby God is call'd to witness the Truth of an Affirmation given before one or more Persons, impower'd to receive the same.

Legal Oaths end with, *So help me God*; antiently with, *So help me God at his Holy Dome*, i. e. Judgment. See DOMESDAY.

Our Law-Books say, this Oath is call'd a Corporal Oath; because the Party, when he swears, touches the Gospels with his right Hand. But in some old Customs of *Anjou* and *Main*, it appears that Corporal Oath was a simple Affirmation, or Vow of Faith and Fidelity, made by a Vassal who was no Liege, by lifting up his Hand; in contradiction to that made by a Liege Vassal, by laying his Hand on the Gospel. See HOMAGE, FEALTY, VASSAL, &c.

An Oath is call'd *Canonica Purgatio*, because allow'd by the Canons; to distinguish it from *Vulgares Purgationes*, viz. by Battle, Fire Ordeal, &c. which the Church always disallow'd. See PURGATION, ORDEAL, COMBAT, DUEL, CHAMPION, &c.

In small Matters, which the Plaintiff could not prove, or if he could, if his Proof were set aside, the Defendant might purge himself by his own Oath; which was call'd *Jurare propria Manu*.

But in Matters of more weight, he was to bring other credible Persons, usually of the same Quality with the Plaintiff, to swear that they believed the Defendant had sworn the Truth.

These were call'd *Sacramentales*; and their Number was greater or less, according to the Quality of the Defendant, and the Nature of the Thing in question. Hence, *Jurare duodecima Manu*.

OATH is also used for a solemn Promise faithfully to execute or observe something. Tryals in Common Law depend on Twelve, or Twenty-four Men, who take their Oaths to declare the Truth, as it shall appear to them. See JURY.

In this sense we say State Oaths; the Oath of Supremacy, Oath of Allegiance, Oath of Abjuration. See ALLEGIANCE, SUPREMACY, &c.

At the meeting of a new Parliament, the Commons, all, take the Oaths of Allegiance, Supremacy, and Abjuration. See PARLIAMENT.

Kings and Princes swear to the Performance of the Treaties they make: Tho, antiently, they did not swear of themselves; but others swore in their Name.

Thus in a Treaty in 1177, between the Emperor *Frederic Barbarossa*, Roger King of *Sicily*, Pope *Alexander III.* and the Cities of *Lombardy*; the Count de *Dieffe*, by the Emperor's Order, swore, upon the Soul of that Monarch, that he would faithfully observe the Peace; and, at the same time, *Romuald* Archbishop of *Salerno*, and Count *Roger*, swore, on the Gospel, that when the Emperor's Messengers should arrive in *Sicily*, King *Roger* should procure some of his Lords to swear for him.

OAZY, or OARY Ground; so the Seamen call soft, slimy, or muddy Ground.

OBEDIENCE, OBEDIENTIA, Canonical OBEDIENCE. See CANONICAL.

*Obedientia*, in our antient Customs, was used in the general, for every thing that was enjoyn'd the Monks by the Abbot.

In a more restrain'd sense, *Obedientia* was used for the Farms which belong'd to the Abbey, to which the Monks were sent *vi ejusdem Obedientie*, either to look after the Farms, or collect the Rents.

Hence, also, those Rents themselves were call'd *Obedientie*.

OBELISK, *Obeliscus*, a quadrangular Pyramid, very slender, and high; rais'd as an Ornament, in some public Place, to shew some Stone of enormous Size, and frequently charg'd



charg'd with Inscriptions and Hieroglyphics. See MONUMENT.

The difference between *Obelisks* and *Pyramids*, according to some, consists in this, that the latter have large Bases, and the former very small ones.

The *Cardan* makes the difference to consist in this, that *Obelisks* are to be all of a piece, or consist of a single Stone, and *Pyramids* of several. See PYRAMID.

The Proportions of the Height and Thickness are nearly the same in all *Obelisks*; that is, their Height is nine, or nine and a half, sometimes ten times their Thickness; and their Thickness, or Diameter at-top is never less than half, nor greater than three-fourths of that at bottom.

This kind of Monument appears very antient; and we are told was first made use of to transmit to Posterity the principal Precepts of Philosophy, which were engraven in hieroglyphical Characters hereon.

In After-times they were used to immortalize the Actions of Heroes, and the Memory of Persons beloved.

The first *Obelisk* we know of, was that raised by *Ramises*, King of *Egypt*, in the time of the *Trojan War*. It was 40 Cubits high, and, according to *Herodotus*, employ'd 20000 Men in the Building. *Phius*, another King of *Egypt*, raised one of 45 Cubits; and *Ptolemy Philadelphus* another of 88 Cubits, in memory of *Arfinoe*.

*Augustus* erected one at *Rome* in the *Campus Martius*, which serv'd to mark the Hours on a horizontal Dial drawn on the Pavement. See DIAL.

*F. Kircher* reckons up 14 *Obelisks* celebrated above the rest, viz. that of *Alexandria*, that of the *Barberins*, those of *Constantinople*, of the *Mons Esquilinus*, of the *Campus Flaminius*, of *Florence*, of *Heliopolis*, of *Ludovisio*, of *S. Mabur*, of the *Medici*, of the *Vatican*, of *M. Caelius*, and that of *Pamphila*.

The *Egyptian* Priests call'd *Obelisks* the *Sun's Fingers*, because serving as *Styles*, or *Gnomons* to mark the Hours on the Ground. The *Arabs* still call them *Pharaob's Needles*: whence the *Italians* call them *Aguglia*; and the *French*, *Aiguilles*.

*Borel* derives the Word from the Greek *ὀβελος*, a Broach, Spindle, Point, or a kind of long Javelin.

*Pliny* says, the *Egyptians* cut their *Obelisks* in form of Sun-Beams; and that in the *Phœnician* Language, the word *Obelisk* signifies Ray.

**OBELISK**, in Grammar, is a Character, in form of a Dagger (†) serving to refer the Reader to some Note, or other Matter in the Margin. See CHARACTER.

**OBELUS**, in Antiquity, is a little Line, or Stroke, like a Needle; whence its Name, *obelos*, Needle.

The Word is chiefly used in speaking of *Origen's Hexapla*; wherein he distinguishes, with an Asterisk, or Star, the Supplements he makes to the Text of the *Septuagint*, where it falls short of the *Hebrew* meaning; and with an *Obelus*, or little Line (—) those Places where the *Septuagint* had any thing not in the *Hebrew*. See HEXAPLA.

*St. Jerom* says, the *Obelus* was only used in those Places where something was to be retrench'd from the *Septuagint*, as superfluous; and the Asterisk in those that were defective.

These Marks frequently occur in antient Manuscripts. Usually the *Obelus* is accompanied with two Dots; the one above, the other underneath, as (÷); and the Asterisk, a *St. Andrew's Cross*, canton'd with four Points.

**OBEITY**, Fatness, in Medicine, the State of a Person too much charg'd with Fat, and Flesh; otherwise call'd *Corpulency*. See FAT.

*Etmuller* defines it to be such an increase both of the Venter and Limbs, as impedes the Actions of the Body, especially Motion and Respiration.

*Obesity*, *Boerhaave* observes, does not consist in the Solids of the Body being increased, but by their being distended to a greater Pitch by the abundance of Humours collected in them. See SOLID, &c.

Hence, *Obesity* occasions several Diseases; usually *Apoplexies*.

It was held infamous among the *Lacedemonians*. History tells us of a *Spaniard* who had been so exceedingly Fat, that when he became lean again, his Skin would make several turns or folds quite around him. *Senmertus* mentions a Man that weigh'd 600 Pounds.

*Etmuller* affirms, that there is no better Remedy against *Obesity* than *Acetum Scilliticum*. *Borel* recommends the Chewing of Tobacco; which *Etmuller* dissuades, lest it induce a Consumption.

**OBJECT**, in Philosophy, something apprehended, or presented to the Mind, by Sensation, or by Imagination. See SENSATION and IMAGINATION.

Or, **OBJECT** is something that affects us by its Presence; or something that moves the Eye, Ear, or some of the other Organs of Sense; or, at least, is represented to us by the Imagination.

Thus, Ideas are the immediate Objects of the Mind in thinking: Bodies, their Relations, Attributes, &c. the mediate.

The word *Object* is derived from the *Latin*, *Objicere*, to present to, to set before; which is composed of *ob* and *jacio*, I lie against. Whence the School-Philosophers define it to be that about which a Power, Act, or Habit, is employ'd. Thus, Good is the *Object* of the Will; Truth of the Understanding: So, Colour is the *Object* of Sight; Sound of Hearing, &c. See OBJECTIVE.

There are several Conditions requisite to an *Object* of Sense; as, that it be *Material*; that it be within a certain distance, of a competent extent, its sensible Qualities sufficiently intense, &c.

'Tis the *Object* that reflects or emits the Rays of Light which occasion Vision. *Objects* of themselves are invisible; we only seem to perceive them because the different Texture of their Surface, disposing them to reflect differently colour'd Rays, occasion in us several Sensations of Colour, &c. which we attribute to them. See COLOUR, VISION, &c.

The *Objects* of the Eye, or of Vision, are painted on the Retina; tho not erect, but inverted, according to the Laws of Optics. This is easily shewn from *Cartes's* Experiment of laying bare the vitreous Humour on the back part of the Eye; and clapping over it a bit of white Paper, or the Skin of an Egg, and then placing the fore-part of the Eye to the Hole of a darkned Room.

By this means is had a pretty Landskip of the *Objects* abroad, painted invertedly on the back of the Eye. See RETINA.

How, in this Case, the *Objects* which are painted inverted should be seen erect, is matter of Controversy. See SEEING.

The Schoolmen distinguish *Objects* into *next*, *proxima*, which are those the Power, or Habit is immediately employ'd on; in which sense, Colour is the *next Object* of Sight: And *remote*, which are those only perceiv'd by means of the former; in which sense, the Wall is the *remote Object* of Sight, since we only see it by means of its Colour, &c.

Hence it appears that there is a sort of subordination of *Objects*. But, note, that a *next Object*, with regard to a *remote* one, is properly a Subject, not an *Object*. See SUBJECT.

They also distinguish **OBJECTS** *per se*, which are what properly move or affect our Senses; and these are the sensible Qualities: And *Objects per Accidens*, which are Substances, and only affect us by being invested with sensible Qualities. See QUALITY and SUBSTANCE.

Again, they distinguish between *Common OBJECTS*, which are such as affect divers Senses, as are Motion, Figure, &c. And *Proper OBJECTS*, which only affect one. See SENSE.

*Object-Glass* of a Telescope, or Microscope, is the Glass placed at that end of the Tube which is next the *Object*. See TELESCOPE, MICROSCOPE, and GLASS.

To prove the Regularity and Goodness of an *Object-Glass*.

Strike two concentric Lines on a Paper, the one having its diameter the same with the Breadth of the *Object-Glass*; the other half that Diameter: Divide the inner Circumference into six equal parts, and making six fine small Holes therein with a Needle; cover one side of the Glass with this Paper. Then exposing it to the Sun, receive the Rays that pass thro these six Holes, on a Plane, at a just distance from the Glass; and by withdrawing or approaching this Plane, from or to the Glass, we shall find whether the Rays that pass thro these six Holes, unite exactly together at any distance from the Glass; if they do, we may be assured of the Regularity of the Glass; that is, of its just Form; and at the same time we obtain exactly the Glass's Focal Length.

Indeed, there is scarce any better way of proving the Excellency of an *Object-Glass*, than by placing it in a Tube, and trying it with small Eye-Glasses at several distant *Objects*; for that *Object-Glass* that represents *Objects* the brightest, and most distinct, that bears the greatest Aperture, and most convex, and concave Eye-Glass, without colouring or haziness, is the best.

To prove whether *Object-Glasses* be well center'd.

Hold the Glass at a due distance from the Eye; and observe the two reflected Images of a Candle; where those Images unite or coalesce, there is the true Centre. If this be in the middle, or Central-Point of the Glass, 'tis truly centred.

**ONJECT** is also used for the Matter of an Art or Science; or that about which it is employ'd: in which Sense, the Word coincides with *Subject*. See SUBJECT, &c.

The School-Philosophers distinguish divers kinds of *Objects* in the same Science, viz.

*Material ONJECT*, which is the thing itself that is consider'd, or treated of: And thus it is the human Body is the *Object* of Medicine,



**Formal OBJECT**, is the manner of considering it : And thus the same human Body consider'd with a view to the healing it, is the *Formal Object* of Medicine.

**OBJECTUM quod complexum**, of an Art, is the aggregative Whole ; or a Collection of all the objective Conclusions, or Consequences found in the Science. *Objectum quod incomplexum*, is a Collection of all the Subjects of the objective Conclusions. Thus, *Therefore Air is elastic*, is the jective Object of one Branch of Physics ; and *Air* itself, or the Subject of the Conclusion, the incomplex Object of the same Branch.

**OBJECTUM quo Complexum**, is a Collection of all the objective Antecedents of the Science. *Objectum quo incomplexum*, is a Collection of all the Mediums, or Arguments contain'd in those Antecedents, and whereby those Conclusions are proved.

In these Cases the *Object* is said to be *complex*, inasmuch as it includes both an Affirmation and Negation ; and *incomplex*, as it includes neither : *Quod*, as being that which (*quod*) is shewn in the Science ; and *quo*, as being that whereby (*quo*), the Conclusions therein are proved.

They have here, also, an *Object per se*, and *per accidens* ; *Objectum adequatum*, and *inadequatum* ; *Attributionis*, and *Attributum*.

**OBJECTION**, in Reasoning, something urged to overthrow an Opinion ; or, a Difficulty raised against an Allegation, or Proposition of a Person we are disputing withall.

The answering of *Objections* comes under that Branch of Oratory, or that Part of an Oration call'd the *Confirmation*, or *Confutation*. See **CONFIRMATION** and **CONFUTATION**.

**OBJECTIVE**, *Objectivus*, is used in the Schools in speaking of a thing which exists no otherwise than as an Object known. The *Esse*, or Existence of such thing is said to be *Objective*. Others call it *Ratio Objectiva*. See **OBJECT**.

The Word is also used for the Power or Faculty by which any thing becomes intelligible ; and for the Act itself, whereby any thing is presented to the Mind, and known.

Hence a thing is said to exist **OBJECTIVELY**, *Objectivè*, when it exists no otherwise than in being known ; or in being an Object of the Mind. See **EXISTENCE**.

This, some will have to be a real *Esse* ; others deny it. See **ESSE**.

**OBIT**, in our antient Customs, was a funeral Solemnity, or an Office for the Dead ; commonly performed when the Corps lay uninterr'd in the Church.

**OBIT** is also an Anniversary-Office, or Mass, held yearly in the *Romish* Church, on a certain day, in Memory of a Person deceased. See **MASS** and **ANNIVERSARY**.

One of the most antient *Obits* in *Europe*, is that of King *Childebert*, founded in the Abby of *St. Germain Desprez* ; and said on the Eve of *St. Thomas's* Day.

The Tenure of *Obit*, or Chantry Lands held of the Subjects, is decreed to be extinct with us, by *Stat. 1 Edw. 6*. See **TENURE**, **SERVICE**, &c.

**OBITUARY**, a Register, wherein are wrote the Names of the Dead, and the Days of their Burial. See **REGISTER**.

These in some Places are call'd *Mortuaries*. See **MORTUARY**.

The Term is sometimes also used for a Book containing the Foundation, or Institution of the several *Obits* ; but this is more frequently call'd *Martyrology*. See **MARTYROLOGY**.

**OBLATA** properly signifies things given, or offer'd, particularly to the King, by any of his Subjects. See **OFFERING**.

In the Exchequer, *Oblata* signifies old Debts ; brought, as it were, together, from preceding Years, and put to the present Sheriffs Charge.

These are thus call'd, by reason the *Oblata*, or Offerings were so strictly look'd to in the Reigns of King *John* and *Henry III.* that they were enter'd into the Fine-Roll, under the Term *Oblata*, and if not paid, put in charge to the Sheriff.

**OBLATI**, antiently, were secular Persons, who resign'd themselves, and their Estates to some Monastery, and were admitted as Lay-Brothers. See **LAY-BROTHER**.

There were some of these *Oblati*, properly call'd *Donati*, who gave their Persons, their Families, and Effects ; and even enter'd into a kind of Servitude themselves and their Descendants. They were admitted by putting the Bell-Ropes of the Church around their Necks, and, as a Mark of Servitude, a few Pence on their Heads.

These *Donati* took Religious Habits, but those different from the Monks.

In the Archives of the Abby of *St. Paul de Verdun*, is a Permission given in 1360, to a Man of that Abby to marry a Wife, on condition, that of the Children arising from the Marriage, one half should belong to the Abby in quality of *Oblati* ; the other half to the Bishop. This kind of

*Oblati* are said to have taken their first Rise in the Eleventh Century.

In the earlier Times, those only were call'd *Oblati* whom their Parents engaged from their Infancy to the Monastic Life. Those who embraced it themselves, when at an Age capable of Choice, were call'd *Converts*.

The *Oblati* made no Profession, yet kept the Celibate, lived in Obedience to the Superiors, and did the drudgery of the Monastery ; yet they differ'd from Servants ; who were allow'd to marry. The *Oblati* and *Donati* were Servants of Devotion, as the others were of Condition.

*Helyot* says, the *Oblati* differ'd from *Converts* ; inasmuch as the latter made the Profession, and wore the Habit.

**OBLATI** were also in *France* a kind of Lay-Monks, antiently placed by the King in all the Abbeyes and Priories in his Nomination ; to whom the Religious were obliged to give a Monk's Allowance, on account of their ringing the Bells, and sweeping the Church and the Court.

These Places were usually fill'd with lame Soldiers and Invalids, some of whom had Pensions or Benefices without any Duty ; but these *Oblati*, with their Pensions, have since been all removed to the Hotel of the Invalids at *Paris*.

**OBLATIONS**, **OFFERINGS**, properly denote *Sacrifices*, or things offer'd to God. See **SACRIFICE**.

In the Canon Law, *Oblations* are defined to be any thing offer'd, by godly Christians, to God and the Church, *i. e.* to the Priests, whether they be moveable or immoveable.

*Oblations* were antiently of various kinds, *viz.* *Oblationes Altaris*, which the Priests had for saying Mass ; *Oblationes Defunctorum*, given by the last Wills of the Faithful to the Church ; *Oblationes Mortuorum*, those given by the Relations of the Dead, at Burials ; *Oblationes Penitentium*, those given by Penitents ; and *Oblationes Pentecostales*. See **PENTECOSTALES**.

Till the fourth Century, the Church had no other fixed Revenues, nor any other means of Subsistence, but *Oblations*. See **TYTHE**.

**OBLIGATION**, an Act whereby a Person engages, or binds himself, or is bound by another, to do something ; as to pay a Sum of Money, to be Surety for any one, &c.

The Acceptance of a Bill of Exchange is a kind of *Obligation*. See **BILL**.

The exacting of Interest on a Sum due by a simple *Obligation*, is accounted *Usury*. See **USURY**.

All *Obligations* arise from Contracts, or *quasi* Contracts ; from Crimes, or *quasi* Crimes ; and in the *Roman* Law, were either *Civil*, or *Pretorian* ; *i. e.* either approved by the Civil Law, or introduced by the Prætor.

There are three kinds of *Obligations* ; *Natural*, *Civil*, and *Mixed*.

*Natural* **OBLIGATIONS** are founded on the mere Bond of natural Equity, without any Civil Necessity, and without producing any Action of Constraint : Such is the *Obligation* of a Minor.

*Civil* **OBLIGATION**, is that supported on Civil Authority alone, and which induces a Constraint, without any Principle or Foundation in natural Equity : Such is the *Obligation* of a Man condemn'd unjustly.

Lastly, a *mixed* **OBLIGATION**, or an *Obligation* both *Natural* and *Civil*, is that which being founded in natural Equity, is further confirm'd and enforced by Civil Authority.

There are *Personal Obligations*, *Hypothecary Obligations*, *Obligations of Goods*, others by Body, *Obligations* solidary, others for a Part or Portion.

**OBLIGATION**, in a more strict Sense, is an Instrument, or Bond, containing a Penalty with a Condition annexed, for payment of Money at a certain time ; or for Performance of Covenants, &c.

A Bill is commonly without a Penalty, and without Condition ; yet a Bill may be *obligatory*. See *Coke on Littl.*

Till the Conquest, Writings were render'd *Obligatory* by certain Marks of Gold Crosses, &c. The *Normans* first introduced the Custom of making Bills and *Obligations* with a Print or Seal in Wax set to every one's Signer, attested by three Witnesses. See **SIGNATURE**, **SEAL**, &c.

**OBLIQUATION**, in Catoptricks. *Caubetus* of *Obligation*, is a right Line drawn perpendicular to a Mirror, in the Point of Incidence, or Reflexion of a Ray. See **CATHETUS**, **MIRROR**, &c.

**OBLIQUE**, in Geometry, something *a-flant*, *in-direct* ; or that deviates from the Perpendicular. See **PERPENDICULAR**.

*OBLIQUE Angle*, in Geometry, is an Angle that is either acute, or obtuse ; *i. e.* any Angle, except a right Angle. See **ANGLE**.

*OBLIQUE-angled Triangle*, is that whose Angles are *Oblique*, *i. e.* either obtuse or acute. See **TRIANGLE**.

*OBLIQUE Line*, a Line which falling on another, makes an *oblique Angle*. See **LINE**.



A Line falling *obliquely* on another, makes the Angle on one side obtuse, and that on the other, acute.

**OBLIQUE Plains**, in Dialling, are such as decline from the Zenith, or incline toward the Horizon. See **DIAL-Plain**.

The **Obliquity**, or **Quantity**, of this Inclination, or Reclination, is easily found by a Quadrant; it being an Arch of some Azimuth, or vertical Circle, intercepted between the Vertex of the Place and of that Plane.

This Azimuth, or vertical Circle, is always perpendicular to the Plane. See **DIALLING**.

**OBLIQUE Percussion**, is that wherein the Direction of the striking Body, is not perpendicular to the Body struck; or is not in a Line with its Center of Gravity. See **PERCUSSION**.

The Ratio an *oblique* Stroke bears to a perpendicular one, is demonstrated to be as the Sine of the Angle of Incidence to the Radius.

**OBLIQUE Powers**. See **POWERS**.

**OBLIQUE Projection**, in Mechanicks, is that where a Body is impell'd in a Line of Direction, which makes an *oblique* Angle with the Horizontal Line. See **PROJECTION**.

**OBLIQUE Sphere**, in Geometry, is that whose Horizon cuts the Equator *obliquely*; and one of whose Poles is rais'd above the Horizon, equal to the Latitude of the Place. See **SPHERE**.

'Tis this Obliquity that occasions the Inequality of Days and Nights. See **NIGHT** and **DAY**.

Those who live under an *oblique* Sphere (as we, and all those in the temperate Zone, do) never have their Days and Nights equal; except in the Equinoxes. See **EQUINOX**.

**OBLIQUE Ascension**, in Astronomy, an Arch of the Equator intercepted between the first Point of *Aries*, and that Point of the Equator which risest together with a Star, &c. in an *oblique* Sphere. See **ASCENSION**.

The *oblique* Ascension is numbred from West to East; and is more or less according to the different Obliquity of the Sphere.

**OBLIQUE Descension**, an Arch of the Equator, intercepted between the first Point of *Aries*, and that Point of the Equator, which sets with a Star, &c. in an *oblique* Sphere; and reckon'd from West to East. See **DESCENSION**.

The Difference between the right and *oblique* Ascension, is call'd the *Ascensional Difference*. See **ASCENSIONAL**.

To find the **OBLIQUE Ascension and Descension by the Globe**. See **GLOBE**.

**OBLIQUE Sailing**, in Navigation, is when the Ship is in some intermediate Rhumb, between the four Cardinal Points; and thus makes an *oblique* Angle with the Meridian, and continually changes both its Latitude and Longitude. See **RHUMB**.

*Oblique Sailing* is of three Kinds; viz. *Plain Sailing*, *Mercator's Sailing*, and *Great Circle Sailing*. See **SAILING**.

The Seamen also call the Application of the Method of calculating the Parts of *oblique* plane Triangles, in order to find the Distance of a Ship from any Cape, Head-Land, &c. *Oblique Sailing*.

**OBLIQUE**, *Obliquus*, in Anatomy, is used, substantively, for several Muscles of the Head and Eye; particularly, the

**OBLIQUUS Capitis Major**, or *Par OBLIQUUM Inferius*, the sixth Muscle of the Head; so call'd, because serving to turn the Head aside: tho' it has neither its Origin nor Insertion in the Head. See **HEAD**.

It rises fleshy from the external Parts of the Spine of the second *Vertebra* of the Neck, and swelling into a fleshy Belly, runs *obliquely* to the transverse Process of the first *Vertebra*.

This some rank among the Muscles of the Neck. See **NECK**.

**OBLIQUUS Capitis Superior**, or *Minor*, the seventh Muscle of the Head, which springing fleshy from the transverse Processes of the second *Vertebra* of the Neck, and ascending *obliquely*, is inserted laterally into the *Occiput*.

Others will have its Origin to be in the *Occiput*, where the common Opinion places its Insertion; its Insertion they make in the transverse Processes of the first *Vertebra*, near that of the same Side.

The two *oblique* Muscles, by pulling the transverse Process, give the Head a semi-circular Motion. See **VERTEBRA**.

**OBLIQUUS Oculi Superior**, or *Major*, the fifth Muscle of the Eye. See **EYE**.

It has its Origin in the upper part of the Orbit; whence tending upwards towards the inward *Cantus* of the Eye, it passes thro' a Cartilage on the Bone of the Forehead, call'd *Trochlea*; whence also the Muscle itself is call'd *Trochlearis*; thence it is reflected to its Termination in the *Sclerotica*, on the back part of the Ball of the Eye.

When this Muscle acts, that part of the Ball of the Eye is drawn downwards towards the *Trochlea*, whereby the Pupil is directed downwards, towards the lesser *Cantus*, and at the same time the whole Ball of the Eye somewhat outwards.

**OBLIQUUS Oculi Inferior**, or *Minor*, rises from the external Margin of the lower part of the Orbit, near the inner *Cantus*; whence rising towards the outward *Cantus*, it terminates near the other.

It draws the Ball of the Eye outwards, and turns its Pupil upward, contrary to the former.

**OBLIQUUS Descendens**, or *Declivis*, a very broad Pair of Muscles of the Abdomen, each covering one half thereof, and part of the Thorax; so call'd from the *oblique* Course of its Fibres. It arises from the two last true Ribs and five spurious ones; and is indented with the *Serratus Major Anticus* by five or six Digitations, each whereof receives a Nerve from the Interstices of the Rib: It springs likewise from the Margin of the *Ilium*; and ends in a broad Tendon in the *Linea Alba*.

Besides the ordinary Use ascribed to it by all Anatomists, which is to compress the Intestines and Bladder; *Cowper* and *Glisson* attribute to it another, which is to turn the Trunk of the Body without moving the Feet.

**OBLIQUUS Ascendens**, or *Acclivis*, lies under the lower part of the former; running with a Course just contrary, from the lower part upwards. Its fleshy Fibres have their Origin from the Edge of the *Ilium*, and end at the spurious Ribs. It terminates with a large double Tendon in the *Linea Alba*; the upper part whereof creeping over the *Musculus Rectus*; and the other creeping under it, and joining together at the *Linea Alba*; do, as it were, sheath the *Rectus*.

Its Use is to shut and compress the Belly, as also the Cavity of the Thorax in Respiration; and it assists, with its Antagonists, the *Descendens*, in turning the Body without moving the Legs.

**OBLIQUUS Auris**, lies in the external Part of the Canal of the Aqueduct; whence passing upwards and backwards, it enters the *Tympanum*, by a very *oblique* Sinuosity immediately above the Bony Circle, to which the *Tympanum* is fix'd; and is inserted into the slender Process of the *Malleus*.

**OBLIQUE Cases**, in Grammar, are all the Cases of the Declensions of Nouns, besides the Nominative. See **CASE**.

**OBLIQUITY**, that which denominates a Thing *oblique*. See **OBLIQUE**.

The *Obliquity of the Sphere*, is the Cause of the Inequality of Seasons, of Nights and Days. See **SEASON**, &c.

**OBLIQUITY of the Ecliptic**, is the Angle which the Ecliptic makes with the Equator. See **ECLIPTIC**.

Mess. *Cassini* and *de la Hire*, make the *Obliquity* of the Ecliptic, by their Observations,  $23^{\circ}, 29'$ . M. *le Chevalier de Louville*, from later Observations, makes it  $23^{\circ}, 28', 41''$ .

The same Author, giving the History of the several Determinations of this *Obliquity*, by all Astronomers in all Ages, observes, that it constantly diminishes; and thence takes occasion to suspect, that the real *Obliquity* of the Ecliptic itself may have been diminish'd since the time of the antient Astronomers.

He goes so far, as even to fix the Proportion of the Diminution, which he makes to be at the rate of half a Minute in fifty Years. According to an antient Tradition among the *Egyptians*, mention'd by *Herodotus*, the Ecliptic was formerly perpendicular to the Equator.

The Libration of the Sphere makes some Alterations in the *Obliquity* of the Ecliptic; so that *Wolffius* reckons a great *Obliquity* of  $23^{\circ}, 53'$ ; a mean *Obliquity* of  $23^{\circ}, 41'$ ; and a small one of  $23^{\circ}, 30'$ .

**OBLONG**, in Geometry, a Figure longer than it is broad. See **FIGURE**.

Thus, a Rectangle, or Parallelogram, is an *Oblong*; see **PARALLELOGRAM**: and an Ellipsis an *Oblong*; see **ELLIPSIS**.

**OBOLATA Terra**, in our antient Law-Books, is a certain Quantity of Land, which some Authors fix at half an Acre; tho' others make it but half a Perch. *Thomasius* says, that *Obolum Terra* contains ten Feet in length, and five in breadth. See **FARDINGDEAL**.

**OBOLUS**, an antient Silver Money, of *Atheni*, the sixth part of a Drachma; worth somewhat more than our Penny. See **DRACHMA**; see also **COIN**.

The Word comes from the Greek *ὀβελος*, of *ὀβελος*, Needle; either because it bore the Impression of a Needle; or because, according to *Eustachius*, it was in form thereof. But those now in the Cabinets of Antiquaries, are round.

**OBOLUS** was also used among our Ancestors for half a Noble, or Florin; where the Noble was esteem'd as the Penny; and its quarter part a Farthing.



In effect, in the old Histories and Accounts of Coins, we are to understand, by the Word *Denarius*, the whole Coin, be it Angel, Rial, &c. by the *Obolus* its half; and by *Quadrans* its fourth Part. See *MONEY*.

**OBOLUS**, in Medicine, is used for a Weight of ten Grains; or half a Scruple. *Du Cange* says it weighs three Carats, or four Grains of Wheat: Others divide the *Obolus* into six *Areolæ*; and the *Areola* into seven Minutes. Others divide it into three *Siliquæ*, each *Siliqua* into four Grains, and each Grain into a Lentil and half. See *GRAIN*, &c.

Among the *Sicilians*, *Obolus* was the Weight of a Pound.

**OBREPTITIOUS**, a Quality of a Letter Patent, or other Instrument bearing some Favour, Title, or Concession; denoting it obtain'd of a Superior by Surprise, or by concealing from him the Truth, which was necessary to have been express'd, to render it valid.

In this sense the Word stands opposed to *Surreptitious*, where some Falshood has been express'd, in order to procure it the more easily.

Obreption annuls the Grant, wherever found.

By the Canon Law, a Person demanding a Benefice, without expressing those he is already possess'd of, forfeits, &c. by the *Obreption*.

**OBRINES**, an Order of Knights instituted in the XIIIth Century, by *Conrade Duke of Mazovia and Cujavia*; whom some Authors also call *Duke of Poland*.

He first gave them the Name of *Knights of Jesus Christ*. Their first Grand Master was *Bruno*. Their chief End was to defend the Country from the *Prussians*, who were yet Idolaters, and committed great Cruelties.

*Duke Conrade* putting them in possession of *Fort Obrin*; they hence took a new Name: and it was agreed between them, that whatever Lands they conquer'd from the *Prussians*, should be equally divided with him.

But the *Prussians* blocking up the Fort, so that none of the Knights could get out; the Order became useless, and was soon suppress'd. Upon this, *Conrade* call'd in the *Teutonic Knights*. See *TEUTONIC Order*.

**OBSCURA Camera**. See *CAMERA obscura*.

**OBSCURA Clare**. See *CLARO obscura*.

**OBSCURE**, something that is dark, or that only admits a little Light. See *LIGHT* and *SHADOW*.

**OBSCURE** is also used in a figurative sense, for a thing that is not clear, express, and intelligible; that one does not fully apprehend; or that may be construed in divers Senses.

**CLEAR Notion, or Idea**. See *NOTION* and *IDEA*.

**OBSCURITY**, that which denominates a Thing *obscure*.

*Obscurity* is a Fault that may either be in the Perception, or Diction.

*Obscurity in the Perception*, arises chiefly hence, that we do not conceive Things as they are, or as we find them; but as we judge them to be, e'er we know them: so that our Judgment precedes our Knowledge, and is made the Rule, or Standard, of our Conceptions. Whereas Nature and Reason direct, that Things should be judged of according as they are known; and that they are to be known, not as they are in themselves, but only in such manner as God was pleas'd to have them known.

*Obscurity in the Diction*, may arise, first, from the Ambiguity of the Sense; secondly, from the Figures or Ornaments of Rhetoric; thirdly, from the Novelty, or Obsolescence of the Words.

**OBSECRATION**, in Rhetoric, a Figure whereby the Orator implores the Assistance of some God, or Man. See *FIGURE*.

This Figure *Cicero* makes admirable use of, for *K. Deiotarus*; to *Cæsar*——*Per Dexteram te istam oro, quam Regi Deiotaro hospes, hospitii porrexisti: Istam inquam dexteram non tam in bellis & in præliis, quam in promissis & fidem firmiorem.*

Thus *Virgil*:

*Quod te per Cæli jucundum lumen & Auras  
Per Genitorem oro, per Spem surgentis Iuli  
Eripe me his invisile malis*——

**OBSEQUIES**, *Funeral Solemnities*, or Ceremonies performed at the Burials of eminent Personages. See *FUNERAL*.

The Word is derived from the *Latin Obsequium*, Obedience; these *Obsequies* being the last Devoirs we can render to the Deceased.

**OBSERVANCE**, literally denotes the Act of observing a Rule, Law, or Ceremony.

Hence the Term is sometimes also used for a Rule, Statute, or Ordonnance to be observ'd.

**OBSERVANCE, OBSERVANTIA**, is particularly understood, in a Monastic Sense, of a Community of Religious, who are tied to the perpetual Observation of the same Rule. In which sense the Word coincides with *Congregation*, or *Order*. See *ORDER*, &c.

The *Cordeliers* denominate themselves the *Religious of the Observance*; the great and the lesser *Observance*. See *CORDELIERS*.

Among the *Bernardines*, there are Monks of the strict *Observance*, who eat nothing but Fish. See *BERNARDINE*.

**OBSERVANTINES**, Religious *Cordeliers* of the *Observance*. In *Spain*, there are bare-footed *Observantines*.

**OBSERVATION**, in the Sea-language: The Seamen call an *Observation* the taking the Sun's, or any Star's Meridian Altitude, in order thereby to find their Latitude. See *MERIDIAN-Altitude*.

For the Method of making an *Observation*, see *LATITUDE*.

The finding of a Latitude from the Meridian-Altitude observed, they call *working of an Observation*.

**OBSERVATIONS** in Astronomy, see *CELESTIAL Observations*.

**OBSERVATORY**, a Place destined for observing the Heavenly Bodies; or, a Building usually in form of a Tower, raised on some Eminence, for making of Astronomical Observations.

The more celebrated *Observatories*, are, 1. The *Greenwich Observatory*, built in 1676, by Order of King *Charles II.* at the solicitation of *Sir Jonas Moor* and *Sir Christopher Wren*; and furnished with the most accurate Instruments by the same; particularly a noble Sextant of 7 Feet Radius, with Telescope-Sights.

The Person to whom the Province of Observing was first committed, was *Mr. J. Flamsteed*; a Man, who, as *Dr. Halley* expresses it, seem'd born for the Employment. For the space of fourteen Years, with unwearied Pains he watch'd the Motions of the Planets; chiefly those of the Moon, as was given him in charge; that a new Theory of that Planet, exhibiting all her Irregularities, being found, the Longitude might thence be determin'd.

In the Year 1690, having provided himself of a Mural Arch of 7 feet Diameter, well fix'd in the Plane of the Meridian, he began to verify his Catalogue of the fixed Stars, which hitherto depended altogether on the Distances measured with the Sextant, after a new and very different Manner, viz. by taking the Meridian-Altitudes, and the Moments of Culmination, or the right Ascension and Declination.

This Instrument he was so pleas'd with, that he laid the use of the Sextant almost wholly aside. Thus was the Astronomer Royal employ'd for thirty Years; in the Course of which Time, nothing had appear'd in public, worthy so much Expence and Preparation: So that the Observer seem'd rather to have been employ'd for his own sake, and that of a few Friends, than for the Public; tho it was notorious, the Observations that had been made were very numerous, and the Papers swell'd to a great Bulk.

This occasion'd *Prince George of Denmark*, in the Year 1704, to appoint certain Members of the *Royal Society*, viz. the Honourable *Fr. Roberts*, *Sir C. Wren*, *Sir I. Newton*, *Dr. Gregory*, and *Dr. Arbuthnot*, to inspect *Flamsteed's* Papers, and chuse out of them such as they should think fit for the Press; purposing to print them at his own Expence: But the Patron of the Work dying, e'er the Impression was half finished, it lay still for some time; till at length it was resum'd by order of *Queen Anne*; and the Care of the Press committed to *Dr. Arbuthnot*; and that of Correcting, and supplying the Copy, to *Dr. Halley*.

Such was the Rise and Progress of the *Historia Cælestis*; the principal Part whereof is the Catalogue of fixed Stars, call'd also the *Greenwich Catalogue*. See *CATALOGUE*.

The *Greenwich Observatory* is found by very accurate Observation to lie in 51° 28', 30'', North Latitude.

2. The *Paris Observatory* built by the late *Louis XIV.* in the *Fauxbourg St. Jacques*.

It is a very singular, but withall a very magnificent Building; the Design of *M. Perrault*. 'Tis 80 feet high, and a-top is a Terras. 'Tis here *M. de la Hire* has been employ'd.

The Difference in Longitude between this and the *Greenwich Observatory* is 2°, 20' West.

In it is a Cave, or Cellar, 170 feet descent, for Experiments that are to be made far from the Sun, &c. particularly such as relate to Congelations, Refrigerations, Indurations, Conservations, &c.

3. *Tycho Brahe's Observatory* was in the little Island *Hæen*, or *Scarlet Island*; between the Coasts of *Schonen* and *Zeland*, in the *Baltic*.

It was erected and furnished with Instruments at his own Expence; and call'd by him *Uraniburg*.

Here he spent twenty Years in observing the Stars. The Result is his Catalogue. See *CATALOGUE*.

*Mr. Gordon*, in *Phil. Trans.* observes, that this was none of the fittest Places for some kind of Observations, particularly the Risings and Settings; as lying too low, and being land-lock'd



lock'd on all the Points of the Compass but three ; and the Land-Horizon exceedingly rugged and uneven.

4. *Pekin Observatory.* Father *Le Compté* describes a very magnificent *Observatory* erected and furnished by the late Emperor of *China*, in his Capital, at the Intercession of some Jesuit Missionaries, chiefly Father *Venbjeft*, whom he made his chief Observer.

The Instruments are exceedingly large ; but the Divisions less Accurate, and the Contrivance, in some respects, less Commodious than those of the *Europeans*. The chief are an Armillary, Zodiacal Sphere of 6 *Paris* feet Diameter, an Equinoctial Sphere 6 feet Diameter, an Azimuthal Horizon 6 feet Diameter, a large Quadrant 6 feet Radius, a Sextant 8 feet Radius, and a Celestial Globe 6 feet Diameter.

**OBSESSION**, the Action of being beset by an Evil Spirit ; which, without entering the Body, torments, and, as it were, besieges the Person without : In which it differs from *Possession*. See *POSSESSION*.

The Marks of *Obsession*, according to some, are a being hoisted into the Air, and thrown violently down without being hurt ; speaking Languages never learnt ; having an Aversion to all Acts and Offices of Religion, &c.

Some Physicians look on all Cases of *Obsession* as Natural, and curable by natural Medicines, particularly an Unguent call'd *Unguentum Carriobteri*, with Purgatives, or Vomitives.

Of this Opinion is Doctor *Gabriel Clauder*, Member of the *Leopoldine Academy* ; which he strengthens with the Testimony of *Fromannus*, in his Treatise *de Fascinationibus* ; *Gansius de Coralliis*, who observes, that it has been confess'd by many Witches and Sorcerers, that the Plant *Millepertuis*, *Hypericon*, and other Simples, &c. incommode them terribly, and prevent their Operations,

He confirms this Sentiment hence, that the Devil in those he thus besets, makes use of the Melancholic Humour or the *atra Bilis*, and the grosser Impurities of the Blood, without always acting immediately of himself. For which he refers to the Books of *Melchior Sebizi* and *Jerom Jordan*, *de Divino in homine* ; and gives the Process of a Cure of a manifest *Obsession* of a Child of a Year old at *Delitschebourg*, three Leagues from *Leipfic*.

**OBSIDIONALIS**, an Epithet the *Romans* gave to a sort of Crown wherewith they honour'd such of their Generals as had delivered a *Roman Army* besieged by the Enemy, and had obliged them to decamp. See *CROWN*.

It was also call'd *Graminea*, because made of Grass, or Herbs found on the Spot, or Soil.

'Twas the Soldiery who bestow'd this Crown ; which, doubtless, was the reason of its not being of a more precious Matter.

The Word comes from the *Latin Obsidio*, Siege.

**OBSTRUCTION**, in Medicine, a lett or stoppage of the Passage of the Humours in the Body of an Animal. See *DISEASE*.

*Obstructions* are supposed to arise from the gross Parts of the Blood, detain'd in the Extremities of the Vessels, and thus blocking them up.

Some Physicians doubt whether there be any such thing as *Obstructions* in the Viscera ; and rather attribute the Inconveniencies usually ascribed to *Obstructions*, to the Acrimnies and Crudities of the Stomach : But their Reasons are not convincing. 'Tis true, *Obstructions* may not perhaps be so frequent as is usually supposed ; and many of the Symptoms ascribed to them, are doubtless owing to Disorders of the Stomach ; but then there's no denying that there are any *Obstructions* at all in the Viscera, &c. *Schirrus's*, and other kinds of Tumours are incontestable Proofs hereof. See *TUMOUR*, *SCHIRRUS*, &c.

*Obstructions* frequently prove the Causes of Dropsies. See *DROPSY*.

**OBTURATOR**, in Anatomy, a Name given to two Muscles of the Thigh ; by reason of their shutting, or covering up the Foramen or Aperture between the *Os Pubis*, and the Hip-Bone.

The *Obturator internus* and *marfupialis* are the two Parts, or Divisions that make the *Gemini*. See *GEMINI* and *MARFUPIALIS*.

The *Obturator externus* arises fleshy from the exterior Margin of the *Os Pubis* and *Ischium*, and is inserted tendinous at the Root of the great Trochanter.

**OBTUSE** literally imports blunt, dull, &c. in opposition to acute, sharp, brisk, &c. See *ACUTE*, &c.

**OBTUSE Angle**, in Geometry, an Angle of more than 90 Degrees, i. e. more than a Quadrant of a Circle ; or an Angle greater than a right Angle. See *ANGLE*.

**OBTUSE-ANGLED Triangle**, is a Triangle one of whose Angles is obtuse. See *TRIANGLE*.

**OBVENTIONS**, *OBVENTIONES*, in our antient Law-Books, signify *Offences*.

Sometimes the Word also signifies Rents, and Revenues properly of Spiritual Livings.

**OCCASIO**, in our antient Law-writers, is taken for a Tribute which the Lord imposes on his Vassals or Tenants. *Propter occasiones bellorum & aliarum Necessitatum.*

And hence *Occasionari* signifies to be charged or loaded with Payments.

**OCCASIONAL Cause**, &c. see *CAUSE*, &c.

**OCCIDENTAL**, a Term used chiefly in respect of Commerce, to distinguish Commodities brought from the West-Indies, i. e. *America*, from those brought from the East-Indies, which are said to be Oriental. See *ORIENTAL*.

In this sense we say, *Occidental Bezoard* ; see *BEZOARD*, *Occidental Pearl* ; see *PEARL*.

**OCCIPITAL**, in Anatomy, a Term applied to the Part of the Occiput, or of the hinder Part of the Head. See *OCCIPUT*.

**OCCIPITAL Bone**, see *OCCIPITIS Os*.

**OCCIPITALES**, or **OCCIPITAL Muscles**, are a Pair of Muscles of the Head, whose Origin is in the same Place with that of the *Frontales*, i. e. in the upper Part of the Head near the Vertex, but which go a quite opposite Course, viz. from before, hindwards, and are inserted into the lower Part of the hairy Scalp, or Skin of the Occiput, which they serve to draw upwards.

Dr. *Drake* observes, that the *Occipitalis* and *Frontalis* are one continued digastric Muscle on each side ; that Part call'd the *Occipitalis*, after a small Ascent, becomes a thin Tendon, and marches over the whole *Bregma*, where it divides ; the one Part going on to the *Os Jugale*, the other, growing fleshy, acquires the Name *Frontalis*. See *FRONTALIS*.

**OCCIPITIS Os**, or *Os proxa*, in Anatomy, the fourth Bone of the Cranium ; so call'd from its situation in the Occiput. See *OCCIPUT*.

'Tis the hardest and thickest of all the Bones of the Cranium. Its Figure is triangular. In new-born Children it is divided into four ; but grows up, and becomes one in time.

It is join'd to the Bones of the *Sinciput*, at the *Lambdoidal Suture* ; as likewise to the *Petrofa*, and *Os Sphenoides* at the *Sphenoidal Suture*.

The Parts of this Bone are either solid, or hollow, i. e. empty. The solid are two Processes, call'd *Coronæ*. The hollow Parts are either *Foramina*, or *Sinus's*.

The *Foramina* are either Common, or Proper : The Common are two, one on each side common with the *Offa Petrofa*, affording a Passage to the Nerves, *Par Fugum*, and to the internal Jugular Veins.

The proper *Foramina* are five : The first is very large, and thro this it is that the spinal Marrow passes. Two others give passage to the Nerves of the Tongue, and the two last an entrance to the cervical Arteries. See *NERVE*, &c.

It has two large *Sinus's* within-side, for the reception of the two Hemispheres of the *Cerebellum*. See *CEREBELLUM*.

On each side the *Foramina* which give Passage to the spinal Marrow, is usually a Process lined with a Cartilage, articulated with the first *Vertebra* of the Neck. In lieu of this, is sometimes only a Prominence of the Bone ; which, or the Process where 'tis found, receives the Insertions of the Muscles of the Head, whereof there are ten, viz. the *Par splenium*, *Par complexum*, *Par rectum majus externum*, *Par rectum minus externum*, *Par obliquum superius*, *Obliquum interius*, *Par Mastoideum*, *Rectum internum majus*, *Rectum internum minus*, and *Rectum laterale* ; each of which see in its proper Place.

**OCCIPUT**, the hinder Part of the Head, or Skull ; or the Part wherein is the *Os Occipitis*. See *HEAD*, *CRANIUM*, &c.

*Scultetus* observes, that the Cauterization of the Occiput is very frequent in many Places.

**OCCULT**, something secret, hidden, or invisible.

The *Occult Sciences* are Magic, Necromancy, Cabbala, &c. See *MAGIC*, &c.

*Agrippa* has several Books of *Occult Philosophy*, full of the vainest, wildest Dreams ; and *Fludd* nine Volumes of the *Cabbala*, or *Occult Science*, wrapt up under Figures, or Hebrew Characters.

Weak Philosophers, when unable to discover the Cause of an Effect, and unwilling to own their Ignorance, say it arises from an occult Virtue, an occult Cause, an occult Quality. See *QUALITY*, &c.

**OCCULT**, in Geometry, is used for a Line that is scarce perceivable, drawn with the Point of the Compasses, or a black-lead Pencil. See *LINE*.

*Occult*, or dry Lines, are used in several Operations ; as the raising of Plans, Designs of Building, Pieces of Perspective, &c. They are to be effaced when the Work is finished.

**GLI OCCULTI**, of *Brescia*, in *Italy*, are the Academists of that City. See *ACADEMY*.



**OCCULTATION**, in Astronomy, the Time a Star, or Planet, is hid from our Sight in an Eclipse. See ECLIPSE. **Circle of perpetual OCCULTATION**, is a Parallel in an oblique Sphere, as far distant from the depressed Pole, as the Pole is from the Equator.

Between this Line and the Pole, all the Stars contain'd, do never rise; but lie constantly hid under the Horizon of the Place.

**OCCUPANCY**, in the Civil Law, is the Possession of such things as at present belong to no private Persons, but, however, are capable to be made so; as by seizing or taking of Spoils in War; of things wild by Nature, as Birds, and Beasts for Game, &c. or by finding things before undiscovered, or truly lost, or lost by their proper Owners.

**OCCUPANT**, in Law. If a Tenant hold Lands, &c. for the Term of another's Life; and such Tenant die first, leaving that other to survive; he that first enters to hold that Term out, is call'd an *Occupant*, by reason his Title comes by the first Occupation.

So if a Tenant for his own Life, grant over his Estate to another; if the Grantee dies, there shall be an *Occupant*.

**OCCUPATION**, in Law, the putting a Man out of his Freehold in time of War.

This is all one with the *Disseisin* in time of Peace; only that the former is deem'd not so great an Offence. See *DISSEISIN*.

The Word is also used for the Holding, Tenure, or Possession; as when it is said, such Land is in the Tenure or Occupation of such a Man, that is, in his Possession. See *POSSESSION*.

**OCCUPATIONS**, in the Statute de Bigamis, are taken for Usurpations upon the King, by using Liberties or Franchises a Person is not entitled to.

As an unjust Entry upon the King into Lands and Tenements, is call'd an *Intrusion*; so an unlawful using of Franchises, is call'd an *Occupation*.

**OCCUPAVIT**, in Law, a Writ that lies for him who is ejected out of his Land, or Tenement in time of War; as a *Nozel Disseisin* lies for one ejected in time of Peace. See *DISSEISIN*.

**OCEAN**, the grand Sea, which encompasses or invests the whole Earth. See EARTH and SEA.

The Ocean is that vast Sea wherein the two grand Continents known to us, the new and old, are inclosed like Islands. See CONTINENT, &c.

By Computation it appears, that the Ocean takes up considerably more of what we know of the terrestrial Globe, than the dry Land. See TERRAQUEOUS-GLOBE.

Dr. Keill computes the Surface of the whole Ocean to be 85490506 Square Miles; so that supposing the Depth of the Ocean at a Medium to be  $\frac{3}{4}$  of a Mile, the Quantity of Water in the whole will be 21372626  $\frac{1}{2}$  Cubic Miles.

Yet Dr. Burnet computes that all the Waters in the Ocean were not sufficient to drown or overflow the dry Land so high as the Scriptures say it was at the Deluge: Seven or eight Oceans, according to him, would scarce have sufficed. See DELUGE.

The Ocean penetrating the Land at several Streights, quits its Name of Ocean, and assumes that of Sea, or Gulf; to which are usually added some Epithet to distinguish it; as *Mediterranean-Sea*, *Persian-Gulf*, &c. See SEA and GULF.

In very narrow Places it is call'd Streights, *Sinus*. See STREIGHT.

The Ocean takes different Names according to the divers Countreys it borders on; as the *British Ocean*, *German Ocean*, &c.

According to *Mary*, the Ocean may be commodiously divided into *Superior*, or Upper; and *Inferior*, or Lower.

The *Upper OCEAN*, which the Antients call'd the *Exterior*, as environing all the known Parts of the World, he subdivides, according to the four Cardinal Points, into the *Northern*, *Southern*, *Eastern*, and *Western*.

The *Northern Ocean*, call'd also *Glacial*, *Frozen*, and *Scythian*, is that Part of the *Upper Ocean* next the North-Pole, bounded on the South with the Arctic-Circle, and the Northern Coasts of Europe and Asia, and on the North with the unknown Lands about the Pole.

'Tis call'd the *Icy*, or *Frozen Ocean*, because those who have attempted a Passage thro it to China, &c. have always been stop'd with the Ice; and *Scythian*, because washing the Coasts of Scythia.

The *Western*, or *Atlantic Ocean*, is that Part of the *Grand Ocean* which washes the Western Coasts of Europe and Africa, extending from the Arctic Circle to the Equinoctial.

*Southern*, or *European Ocean* is that Part reaching from the Equinoctial to the unknown Antarctic Lands.

*Eastern*, or *Indian Ocean*, has its first Name from its Situation to the East; as its latter from India, the chief Country it washes.

It reaches from the Coast of *Ajan* to the Isle *Aux Larrons*, i.e. of *Thieves*.

The *Inferior*, or *American OCEAN*, is that vast Part of the *Grand Ocean* which washes the Coasts of America; unknown, in great measure at least, to the Antients. It is divided into three Parts, viz.

1. The *North Sea*, which washes the Eastern Coasts of America, from the Arctic-Circle to the Tropic of Capricorn.

2. The *Magellanic-Sea*, extending from the Tropic of Capricorn to the *Terra Australis Incognita*.

3. The *South-Sea*, or *Pacific*, which washes the Western Coasts of America to the East, as far as the Isle of *Thieves*; and from South to North from the Tropic of Capricorn to the Land of *Jeffo*.

For the Saltness of the OCEAN, see SALTNESS.

For the Tides observed in the OCEAN, see TIDES.

*Phil. Sachsus*, in 1664, printed a Dissertation entitled, *Oceanus Microcosmicus*, dedicated to *Bartholin*; wherein he shews that there is a circular Motion in the Waters, like that of the Blood in the human Body: That they all come from the Ocean, and return thither again. The Thought is *Solomon's*, *Eccles.* ch. 7. See VAPOUR, SPRING, &c.

The word Ocean comes from the Latin *Oceanus*, of the Greek *Ὠκεανός*, which *Eustathius* fetches from *ὠκεῖν* *vaeiv*, to slide swiftly. Others say, the Greeks borrow'd it from the *Phenicians*, who call'd the Circumference of the Ocean *Og*, from the Hebrew *גג* *Hbog*, Circuit, Ambit.

**OCHLOCRATIA**, a Form of Government, wherein the Populace has the whole Power and Administration in its own hand.

The Word comes from the Greek *ὄχλος*, Multitude, and *κρατος*, Power.

**OCTAGON**, in Geometry, a Figure of eight Sides and eight Angles. See FIGURE and POLYGON.

When all the Sides and Angles are equal, it is call'd a *Regular Octagon*, or an *Octagon* that may be inscribed in a Circle.

**OCTAGON**, in Fortification, is a Place that has eight Bastions. See BASTION.

**OCTAHEDRON**, in Geometry, one of the five Regular Bodies, consisting of eight equal Faces, or eight Equilateral Triangles. See REGULAR Body.

The *Octahedron* may be conceiv'd as consisting of two Pyramids put together at their Bases. See PYRAMID.

Its Solidity therefore is had by multiplying the quadrangular Base of either, by one third of the perpendicular Height of one of them; and then doubling the Product. See SOLIDITY.

The Square of the Side of an *Octahedron* is in a subduple Ratio of the Diameter of the circumscribing Sphere.

**OCTAHETERIDES**, in Chronology, &c. the Space, or Duration of eight Years.

The Word is form'd from the Greek *ὀκταετής*, composed of *ὀκτω*, Eight, and *ἔτος*, Year.

**OCTANT**, or **OCTILE**, in Astronomy, an Aspect, or Position of two Planets, &c. wherein their Places are distant an eighth Part of a Circle, or 45 Degrees, from one another. See ASPECT.

**OCTAPLA**, a Term in the sacred Learning, used for a kind of *Polyglot Bibles*, consisting of eight Columns. See BIBLE and POLYGLOT.

In the 1<sup>st</sup> Column was the Hebrew Text in Hebrew Characters; in the 2<sup>d</sup>, the same Text in Greek Characters; in the 3<sup>d</sup> the Greek Version of *Aquila*; in the 4<sup>th</sup> that of *Symmachus*; in the 5<sup>th</sup>, the *Septuagint*; in the 6<sup>th</sup>, that of *Theodotion*; in the 7<sup>th</sup>, that call'd the fifth; the last was that call'd the sixth.

*Origen* was the Author of the *Octapla*, as well as of the *Tetrapla*, and *Hexapla*. See HEXAPLA, &c.

The Word implies something with eight Rows, or Columns.

**OCTATEUCH**, in the sacred Literature, is used for the eight first Books of the Old Testament; viz. *Genesis*, *Exodus*, *Leviticus*, *Numbers*, *Deuteronomy*, *Joshuah*, and *Judges*.

*Procopius* of Gaza, has ten Commentaries on the *Octateuch*.

**OCTAVE**, in Music, an harmonical Interval consisting of 8 Tones, or Degrees of Sound. See INTERVAL and DEGREE.

The most simple Perception the Soul can have of true Sounds, is that of *Unison*; in regard the Vibrations there begin and end together. The next to this is the *Octave*; wherein the more acute Sound makes precisely two Vibrations, while the graver or deeper makes one; and wherein, by consequence, the Vibrations of the two meet at every Vibration of the more grave. See TUNE, GRAVITY, &c.

Hence *Unison* and *Octave* pass almost for the same Concord. See UNISON.

Hence also the Proportion of the Sounds that form the *Octave* are in Numbers, or in Lines, as 2 to 1: so that two Chords or Strings of the same Matter, Thickness, and



**Tension**, one whereof is double the length of the other, produce the *Octave*. See **CHORD**.

The *Octave* is call'd by the Antients *Diapason*; because containing all the simple Tones and Concorde; all of which derive their Sweetness from it, as they arise more or less directly out of it. See **CONCORD**.

To be just, it must contain diatonically 7 Degrees; or Intervals; and consequently 8 Terms, or Sounds, whence its Name, *Octave*.

The *Octave* containing in it all the other simple Concorde, and the Degrees being the Differences of these Concorde; it is evident the Division of the *Octave* comprehends the Division of all the rest. See **SYSTEM**.

By joining, therefore, all the simple Concorde to a common Fundamental, we have the following Series:

$1 : \frac{2}{3} : \frac{4}{3} : \frac{5}{3} : \frac{6}{3} : \frac{7}{3} : \frac{8}{3} : \frac{9}{3}$   
Fund. 3a1, 3d g, 4th, 5th, 6th l, 6th g, 8ve.

Again, the System of *Octave* containing all the original Concorde; and the compound Concorde being the Sum of *Octave*, and some lesser Concord; in order to have a Series to reach beyond an *Octave*, we must continue them in the same Order thro a second *Octave*, as in the first; and so on thro a third and fourth *Octave*. Such a Series is call'd the Scale of Music. See **SCALE**.

Tho the Composition of *Octaves* may be carried on infinitely, yet three or four *Octaves* is the greatest length we go in ordinary Practice. The old Scales went no further than two, or at most three *Octaves*, which is the full compass of an ordinary Voice. And, notwithstanding the Perfection of the *Octave*, yet after the third, the Agreement diminishes very fast; nor do they ever go so far at one Movement, as from one extreme to the other of a double or triple *Octave*; seldom beyond a single *Octave*: Nor is either Voice or Instrument well able to go beyond. To form a fourth *Octave*, if the acuter String be half a Foot, which is but a small Length to give a clear Sound; the longer must be eight Feet. If then we go beyond the fourth *Octave*, either the acute Term will be too short, or the grave one too long.

The *Octave* is not only the greatest Interval of the seven original Concorde, but the first in degree of Perfection. As it is the greatest Interval, all the less are contain'd in it: Indeed, the manner wherein the less Concorde are found in the *Octave*, is somewhat extraordinary; viz. by taking both an harmonical and arithmetical Mean between the Extremes of the *Octave*, and then both an arithmetical and harmonical Mean between each Extreme, and the most distant of the two Means last found; i. e. between the less Extreme and the first arithmetical, and between the greater Extreme and the first harmonical Mean, we have all the lesser Concorde. See **CONCORD**.

Mr. Malcolm observes, that any Wind-Instrument being over-blown, the Sound will rise to an *Octave*, and no other Concord; which he ascribes to the Perfection of the *Octave*, and its being next to Unison.

From this simple and perfect Form of the *Octave*, arises this peculiar Property, that it may be doubled, tripled, &c. and still be Concord; i. e. the Sum of two or more *Octaves* are Concord; tho the more Compound, gradually, the less agreeable. He adds, there is that Agreement between its Extremes, that whatever Sound is Concord to one Extreme of the *Octave*, is so to the other.

*Des Cartes*, from an Observation of the like kind, viz. that the Sound of a Whistle or Organ-Pipe, will rise to an *Octave*, if forcibly blown; concludes, that no Sound is heard, but its acute *Octave* seems someway to echo or re-sound in the Ear.

**OCTAVE**, or **OCTAVIS**, in Law, the 8th day after any Feast, inclusively.

Among the *Romanists*, *Octave* is used for the Space, or Period of 8 Days allow'd for the Celebration of a Feast, or Service in commemoration of some Saint, or on other solemn Occasions.

*Easter*, *Whitsontide*, *S. John Baptist*, *S. Lawrence*, *Epiphany*, the *Dedication*, &c. are celebrated with *Octaves*.

The Office in the *Octave* is semi-double.

**OCTIL**, or **OCTANT**, in Astrology, an Aspect of two Planets when distant from each other by an 8th of the Zodiac, i. e. a Sign and half, or 45°.

**OCTOBER**, is the 8th Month of the Year, in *Romulus's* Calendar; tho the 10th in that of *Numa*, *Julius Caesar*, &c. See **MONTH**, **CALENDAR**, &c.

It hath always retain'd its first Name, in spite of all the different Names the Senate and *Roman* Emperors would have given it: For the Senate order'd this Month should be call'd *Faustinus*, in honour of *Faustina* the Wife of *Antoninus* the Emperor. *Commodus* would have had it bear the Name of *Invictus*; and *Domitian* made it be call'd *Domitianus* according to his own Name.

**OCTOSTYLE**, in the ancient Architecture, the Face of a Building or Ordonnance, containing 8 Columns.

The 8 Columns of the *Octostyle* may either be disposed in a right Line, as in the *Pseudoptere* Temple of *Virginia*, and in the *Pantheon*; or in a Circle, as in the round *Monoptere* Temple of *Apollo Pythius* at *Delphe*, &c.

**OCTO Tales**, see **TALES**.

**OCULARES** *Dentes*, or *Cynodontes*, the Eye-Teeth; see **TEETH**.

**OCULI** *Cancri*, see **CRABS-EYES**.

**OCULI**, Eyes, in Botany, the *Gemma*, or Buds of a Plant just putting forth, or the Knots out of which the Buds arise. See **BUD** and **GERM**; see also **PRUNING**, **EXGRAFTING**, &c.

**OCULUS**, in Anatomy, see **EYE**.

**ODA**, in the *Turkish* *Seraglio*, signifies a *Class*, *Chamber*, or *Order*. See **SERAGLIO**.

The Grand Signor's Pages are divided into five Classes or Chambers, call'd *Oda*. See **PAGE**.

The first, which is the lowest in Dignity, is call'd the *Great*, from the Number of Persons that compose it.

These are the Juniors, who are taught to read, write, and speak the Languages; which are the *Turkish* for this World; the *Arabic* for Paradise; and the *Persian* for Hell, by reason of the Heresy of the People who speak it.

The second is call'd *Little*; where, from the Age of 14 or 15 Years, the Youth are train'd up to Arms, and the Study of such polite Learning as the *Turks* are acquainted withall; viz. Logic, Arithmetic, Geometry, and a little Astrology.

In each of these Chambers, is a Page of the Privy-Chamber who commands them, as the Prefects in the Colleges of the Jesuits.

The third Chamber call'd *Kilar-Oda*, comprehends two hundred Pages; which, beside their other Exercises, are commanded by the *Kilerdgi Bacbi*, for the service of the Buttery and Fruity.

The fourth only consist of twenty-four, which, under the *Kbazineda-Bacbi*, take care of the Treasure in the Grand Signor's Apartment, where they never enter with any Clothes on that have Pockers.

The fifth is call'd *Khas-Oda*, i. e. Privy-Chamber, and consists of forty Pages, which attend the Emperor's Bed-Chamber. The first of this Chamber is call'd *Odi-Bacbi*, the second *Silikar*, &c.

Eight of these Pages keep constant Guard every Night in the Emperor's Bed-Chamber. They are posted in several Places, some nearer him, others farther off, according to their degrees in the Chamber. They are to take care the Light kept constantly in the Chamber, don't glare in his Eyes, and awake him; and if they find him disturb'd with any troublesome Dream, to take care he be awaked by one of the Aga's.

**ODABACHI**, or **ODDOBASSI**, an Officer in the *Turkish* Soldiery, equivalent to a Sergeant, or Corporal among us.

The common Soldiers, and *Janizaries* call'd *Oldachi*, after having serv'd a certain Term of Years, are prefer'd, and made *Biquelars*; and of *Biquelars* in time become *Odabachi's*, i. e. Corporals of Companies, or Chiefs of certain Divisions, whose Number is not fix'd, being sometimes ten, and sometimes twenty.

Their Pay is 6 Doubles per Month, and they are distinguish'd by a large Felt, a foot broad, and above a foot long, hanging on the Back with two long Ostrich Feathers.

**ODE**, in the ancient Poetry, a Song; or Composition proper to be sung, and compos'd for that purpose; the singing usually accompanied with some musical Instrument, chiefly the Lyre; whence the *Ode* became denominated *Lyric*. See **SONG** and **LYRIC**.

*Ode*, in the modern Poetry, is a Lyric Poem, consisting of long and short Verses, distinguish'd into *Stanzas*, or *Strophes*, wherein the same measure is preserved throughout.

The Word comes from the Greek *ὁδὴ*, Singing.

The *Odes* of the Antients, *Vossius* observes, had a regular Return of the same kind of Verse, and the same Quantity of Syllables in the same Place of every similar Verse: "But there is nothing (says he) but confusion of Quantities in the modern *Odes*; so that to follow the natural Quantity of our Syllables, every Stanza will be a different Song."

He should have observ'd, however, that all the ancient *Odes* were not of such kind. But he proceeds: "The Moderns have no regard to the natural Quantity of the Syllables, and have introduced an unnatural and barbarous Variety of long and short Notes, which they apply without any regard to the natural Quantity of the Syllables: so that it is no wonder our vocal Music has no effect." de *Poem. Cantu*. See **VERSE**, **VOCAL MUSIC**, **QUANTITY**, &c.

Among the Antients, *Ode* signified no more than a Song; with us, they are different things. Their *Odes* were generally in honour of their Gods; as many of those of *Pindar*



*Vir and Horace*: sometimes on other Subjects; as those of *Amacreon, Sappho, &c.*  
The *English Odes* are generally composed in praise of Hero's and great Exploits; as those of *Prior, of Welsted, &c.*

The distinguishing Character of the *Ode* is *Sweetness*: The Poet is to sooth the Minds of his Readers by the variety of the Verse, and the delicacy of Words, the beauty of Numbers, and the description of things most delightful in themselves. Variety of Numbers is essential to the *Ode*.

At first, indeed, the Verse of the *Ode* was but of one kind; but for the sake of Pleasure, and the Music to which they were sung, they by degrees so varied the Numbers and Feet, that their Kinds are now almost innumerable. One of the most considerable is the *Pindaric*, distinguish'd by the Boldness and Rapidity of its Flights. See *PINDARIC*.

The antient *Ode* had originally but one *Stanza*, or *Strophe*; but was at last divided into three Parts: The *Strophe*, *Antistrophe*, and *Epode*; the Priests going round the Altar, singing the Praise of the Gods, call'd their first Entrance *Strophe*, i. e. turning to the left; the second, turning to the right, they call'd *Antistrophe*; i. e. returning. And accordingly, the Song, in those different Places, was call'd *Ode* and *Epode*. See *STROPHE* and *ANTISTROPHE*.

Lastly, standing still before the Altar, they sung the remainder; which they also call'd *Epode*. See *EPODE*.

*ODEUM*, among the Antients, was a Place destined for the Rehearsal of the Music to be sung on the Theatre.

*ODEUM* was also used for other Buildings that had no relation to the Theatre: *Pericles* built an *Odeum* at *Athens*, where musical Prizes were contended for. *Pausanias* says, that *Herod the Athenian* built a magnificent *Odeum* for the Sepulchre of his Wife.

The *Latin Writers* also use the Word *Odeum* for the Choir of a Church. Grammarians are exceedingly in the dark about the signification of the Word among the Antients.

*ODIO* & *Asia*, antiently call'd *Breve de bono & malo*, is a Writ sent to the Under-Sheriff, to enquire whether a Man, being committed to Prison on suspicion of Murder, be committed on *Malice*, or *Ill Will*, or upon just suspicion.

*ODONTALGIA*, in Medicine, the *Tooth-Ach*; one of the most common, yet most cruel Pains the Body is subject to. See *TOOTH*.

Its Cause is a sharp Serosity, thrown on the Membrane that lines the Sockets, or *Alveoli* of the Teeth. The Liquor is sometimes so very sharp and corrosive, that it eats away the Teeth by little and little, and makes 'em fall piece-meal.

Its more remote Causes are Sugars, very hot things, and very cold Acids, &c.

The Disease is frequently attended with an Inflammation, or *adematous Tumor* of the Jaw. It is sometimes also owing to a Worm found in the Root of the Tooth.

The *Curiosi Nature*, Decad II. mention an *Odontalgia* cured by a Box on the Ear given the Patient; and add an Instance of Blindness and *Odontalgia* caused by shaving a Man's Beard. The very sight of a Remedy frequently drives away the Pain.

The Word is form'd from the *Greek*  $\delta\omicron\delta\alpha$ , Tooth, and  $\alpha\lambda\gamma\alpha$ , Pain.

*ODONTOIDES*, in Anatomy, an *Apophysis* in the middle of the second *Vertebra*; so call'd from its resemblance to a Tooth. See *VERTEBRA*.

Its Surface is somewhat unequal, that the Ligament which comes out of it and binds it to the *Occiput*, may take the better hold.

It is also encompassed with a solid Ligament, contriv'd on purpose to prevent the spinal Marrow from being compress'd by this *Apophysis*.

The Word is form'd from the *Greek*  $\delta\omicron\delta\alpha$ , Tooth, and  $\mu\omicron\delta\alpha$ , Form.

*ODOR*, or *ODOUR*, see *SMELL*.

*ODORAMENTUM*, in Pharmacy, a Medicine apply'd for the benefit of its smell, whether it be fetid, or agreeable. See *SUPPLEMENTUM*.

Such are frequently used in *Hysteric* and *Hypocondriac* Disorders; e. gr. *Assa fatida*, *Camphor*, &c.

*ODORATION*, see *SMELLING*.

*ODOROUS* and *ODORIFEROUS* Things, are such as exhale a brisk, agreeable Smell, sensible at a distance.

Such are the *Jessamin*, *Rose*, *Tube-Rose*, &c.

*ODYSSEE*, an Epic Poem of *Homer*; wherein he relates the Adventures that beset *Ulysses* in his Return to *Italy* from the Siege of *Troy*. See *EPIC*.

The Design of the *Iliad*, *F. Bossu* observes, is to instruct the States of *Greece* consider'd as united in one Body, or as Parts of the Whole; and that of the *Odyssey*, to instruct those same States, consider'd in their private Capacities. See *ILIAD*.

A State consists of two Parts: The Head which commands, is the first; and the Members that obey, the second. Now, Instructions are required both for the one and the other; but it is possible to have them both convey'd under the same Person.

The Fable, then, of the *Odyssey* is as follows: A Prince had been obliged to quit his Country, and lead an Army of his Subjects upon a foreign Expedition: after having gloriously executed this, he was upon his Return home; but in spite of all his Endeavours, was detained for several Years by Tempests which threw him on several Countreys very different from one another as to Manners, Customs, Polity, &c.

In the Dangers he had to struggle withall, his Companions, neglecting his Advice, all perish, thro their own default. In the mean time, the great Men of his Country, abusing his Absence, commit strange Disorders in his Palace, squander his Treasure, lay Snares for his Son, and will needs force his Wife to chuse a Husband among them; all this from an Opinion he was entirely lost. But at length he returns; and having discover'd himself to his Son, and some others of his Friends who had persisted in their Allegiance, he becomes an Eye-Witness of their Insolence; punishes them as they deserv'd, and restores that Peace and Tranquillity to his Island, which had been banished during his Absence. See *FABLE*.

The Truth or Moral whereon this Fable is founded, is, that a Person's Absence from home, so as that he cannot have an Eye to his Affairs, occasions great Disorders. Accordingly, the Hero's Absence is the principal and most essential Action of the Piece; and takes up the greatest Part of the Poem.

This Poem, *Bossu* adds, is more calculated for the People, than the *Iliad* is, where the Subjects are rather ill used out of the ill Conduct of the Princes, than by their own fault. The great Names of Hero's, *Ulysses*, &c. don't here represent the poorest Peasants less than Princes, *Cæsars*, *Alexanders*, &c. The meanest People are as liable to ruin their Estates and Families by Negligence, &c. as the greatest; and accordingly have as much need of *Homer's* Lectures, and are as capable of profiting by them, as Kings themselves. See *ÆNEID*.

*Gerard Croesus*, a Dutchman, in a Book intitled *OMHPOΣ-EBPAIOΣ*, printed at *Dort* in 1704, endeavours to prove that the Subjects of *Homer's* two Poems are taken from the Scriptures; and that that of the *Odyssey*, in particular, is nothing else but the Adventures of the *Israelites* till the Death of *Moses*; and that the *Odyssey* was composed before the *Iliad*, the Subject whereof is the taking of *Jericho*. What Fancies!

The Word is form'd from the *Greek*  $\delta\omicron\delta\alpha$ , of  $\delta\omicron\delta\alpha\upsilon\delta\epsilon\varsigma$ , *Ulysses*.

*OECONOMICS*, that Part of Moral Philosophy which teaches how to manage the Affairs of a Family, or Community. See *MORALITY* and *OECONOMY*.

*OECONOMUS*, a Person appointed to direct, and manage a vacant Church Revenue, or that of an Hospital or Community.

*OECONOMUS* was also antiently used for a Protector, or Advocate, who defended the Rights and Effects of Churches, Monasteries, &c. See *ADVOCATE* and *AVOUER*.

The Name was also given to a Church Officer who took care of the Buildings and Repairs of the Church, and received and distributed Alms according to the Directions of the Bishop.

In this sense, the sixth Council appoints that every Church have its *Oeconomus*.

*OECONOMY*, the prudent Conduct, or discrete, frugal Management of a Man's Estate, or that of another.

To recommend *Oeconomy*, a modern Author observes, that Land as good as most in *England* is let at 20 s. an Acre per Annum; and sold at 20 Years Purchase, or for 20 Pounds. Now, in an Acre of Land are 43560 square feet, and in 20 Pounds are 4800 Pence: by which dividing 43560, the Quotient will be 9, and 360 remaining; which shews that one Penny will Purchase 9 square feet and almost 13 Inches of Land, viz. a Piece 3 feet long and 3 broad, and something more.

Whence it follows, that two Shillings purchases a Piece of Ground of 216 Feet; viz. 18 feet long, and 12 feet broad; enough to build a pretty House upon, and room for a little Garden.

*Animal OECONOMY*, the first Branch of the Theory of Medicine; or that which explains the Parts of the human Body, their Structure and Use; the Nature and Causes of Life and Health, and the Effects or Phænomena arising from them. See *MEDICINE*.

This is otherwise call'd *Physiology*; and its Objects just enumerated are call'd *Naturals*, or *res secundum Naturam*. See *NATURALS*.

*Legal*, or *Jewish OECONOMY* or *Dispensation*, is the manner



ner wherein God thought good to guide and govern his People under the Ministry of Moses.

This included not only the Political and Ceremonial Laws; but also the Moral Law, inasmuch as it pronounced a Curse on all those who did not fulfil it perfectly.

*Evangelical*, or *Christian Oeconomy* or *Dispensation*, is used in opposition to the Legal; and comprehends all that relates to the Covenant of Grace, which God has made with Men by Jesus Christ.

**OECUMENICAL**, signifies as much as *General*, or *Universal*.

The Word is form'd of the Greek *οικουμενικος*, of *οικουμένη*, the habitable Earth; or, the whole Earth.

In this sense we say, an *Oecumenical Council*, or *Synod*; meaning one at which the whole Christian Church assisted, or were invited to. See **COUNCIL**.

*Du Cange* observes, that many of the Patriarchs of *Constantinople*, assumed to themselves the Quality and Denomination of *Oecumenical Patriarchs*; particularly *John the Faster* in 590, and *Cyril* his Successor.

*Gregory the Great* of *Rome*, was exceedingly enraged at it; pretending it was a Title of Pride, and a Character of Antichrist; as supposing the Title *Oecumenic* to imply Universal Bishop, or Bishop of all the World; whereas, in effect, it imply'd no more, than the Quality of Chief of the Eastern Church; in like manner as the first Doctor of the Church of *Constantinople* was call'd *Doct'or Oecumenicus*.

The Title *Oecumenical Bishop* was first offer'd *Leo I.* but he refused it; nor did his Successors accept of it for a long time. The 5th Council of *Constantinople* gave it to *John*, Patriarch of the City; tho some of the *Romanists* pretend that the Emperor *Phocas* gave it, by way of Preference, to the Bishop of *Rome*.

But those of *Constantinople* have preserv'd it; and so late as the Council of *Basil*, that Patriarch used the Title. But *Oecumenical* here is only to be understood as of the Extent of each Patriarch. See **PATRIARCH**.

**OEDEMA**, or **OEDEMATOUS Tumor**, a Tumor which appears whitish, soft, and lax, without any notable change of Colour, Heat, Pain, or Pulsation; and which yields to the Pressure of the Finger so as for some time to retain the Dent or Impression thereof. See **TUMOR**.

The general Cause of *Oedematous Tumors*, is vulgarly supposed to be a *Pituita*, as it is call'd, or a phlegmy Humour in the Body. Contusions, Fractures, Luxations, &c. when of long standing, often give rise to *Oedemas*, especially in Dropsical and Aged Persons; so do irregular Living, want of Exercise, Ruptures, Disorders of the Lymphatics, Defluxions of Humours, Weakness of the Joints, &c.

Its chief Seat is the Legs: In a *Leucophlegmaria*, the whole Body is *Oedematous*. It frequently comes upon other Diseases, especially *Clinics*; and is familiar to Women with Child. 'Tis dangerous when it tends to an Abscess; when it hardens, it becomes schirrous. See **OEDEMATOUS**.

*Hippocrates* uses the word *Oedema* for any Tumor in general.

There are also *Spurious Oedema's*; in which case the pituitous Humour is mix'd with other Humours; whence the Tumor becomes *Erysipelatous*, *Schirrous*, and sometimes *Gypseous*; and hence *Wens*, &c.

The Word comes from the Greek *οιδημα*, whence *οιδημα*, a Tumor contrary to Nature.

**OEDEMATOUS**, in Medicine, something that is of the nature of an *Oedema*; seiz'd, or afflicted with an *Oedema*.

Thus we say an *Oedematous Arm*, *Oedematous Legs*, &c.

The Physicians divide Tumours into *Inflammatory*, *Oedematous*, *Schirrous*, *Scrophulous*, *Cancerous*, &c. See **TUMOR**.

*Oedematous Tumors* seldom, of themselves, prove dangerous, or mortal; but when they are of long continuance, the effect of old Age, or a dropsical Habit; when they grow hard, schirrous, painful, or come to suppurate, the Cure is generally tedious and uncertain. Those which attend Wounds, Fractures, or the like, are less difficult to cure. See **OEDEMA**.

They are easily discuss'd in their first Formation by the external Application of Solutions of Bay-Salt, Nitre, crude Sal Armoniac, &c. in Spanish Wine, Urine, Lime-Water, or other lixivious Fluids; while the Patient submits to a Course of Purgatives, to discharge the Matter repell'd by such Applications.

Under the Class of *Oedematous Tumors*, are ranked *Condylomata*, *Cristæ*, *Rbagades*, *Thymi*, *Talpe* and *Nates*, the *Gargilio* and *Psylidium*. See each under its proper Article, **CONDYLOMA**, **CRISTA**, &c.

**OENELÆUM**, in Pharmacy, a Mixture composed of thick black Wine and Oil of Roses.

In Fractures with Wounds, where the Bone is not bare, *Scutetus* orders that the Compresses, to make them stick, be drench'd with *Oenelæum*, to sooth the Pain, and prevent an Inflammation; and the Bandages to be every day moisten'd

with the same, till the Inflammation be out of all danger.

The Word is form'd from the Greek *οινος*, Wine, and *ελαιον*, Oil.

**OENESTERIA**, in Antiquity, Sacrifices, held by the Youth of *Athens*, before the first time of cutting the Hair, and shaving the Beard.

These Sacrifices were offer'd to *Hercules*; and the Quantity of what was offer'd was regulated by Law.

The Erymology of the Word, which comes from *οινος*, Wine, shews that the Matter thus offer'd was Wine.

**OENOPTES**, a kind of Officer or Censor at *Athens*, who attended at their Feasts, regulated the number of Cups each was to drink, and took care that none drank too much or too little.

Those who would not be kept within the bounds of Temperance, were presented by the *Oenoptes* to the *Areopagus*. They were also call'd *Eyes*, *Oculi*.

**OESOPHAGÆUS**, in Anatomy, one of the Muscles of the *Pharynx*, which it encompasses round like a Ring. See **PHARYNX**.

'Tis single, and serves to squeeze the Aliment down, by closing the *Pharynx* after the manner of a *Sphincter*; whence some call it the *Sphincter Gula*; others call it the *Deglutitor*, or Swallower. See **SPHINCTER**, **DEGLUTITION**, &c.

*Dr. Drake* will have it no more than a Production of the *Pterygopharyngeus*, whose Fibres surround the *Pharynx* from a tendinous Line on the back part of it: Tho *Verbeijen* makes it a distinct Pair.

**OESOPHAGUS**, in Anatomy, the *Gula*, or Gullet; a membranous Pipe or Passage, whereby our Food and Drink is convey'd to the Stomach. See **FOOD**, &c.

The *Oesophagus* descends from the Mouth to the Stomach, between the *Aspera Arteria* and the *Vertebra* of the Neck and Back, in a strait Line, excepting for a little deflection about the fifth *Vertebra* of the *Thorax*, where it turns a little to the right, to make way for the great Artery, which runs along with it to the ninth; where turning again towards the last, it crosses the Artery, and piercing the Diaphragm, ends at the left Orifice of the Stomach. See **STOMACH**.

It consists of several Coats or Membranes, usually reckoned three; tho some make four, others five or six, allowing the *Crusta Villosa* to be one: Which last division, *Dr. Drake* follows as most accurate.

The first Coat is *membranous*, and only design'd for a Covering for the rest; and seems only a continuation of the outward Membrane of the Stomach, derived from the *Peritoneum*, tho some derive it from the *Pleura*, and others from the Diaphragm.

The second is *Muscular*, consisting of strong, fleshy Fibres, like other Muscles; so that it seems to make the Gullet a hollow fistulous Muscle. According to *Steno* and *Willis*, it consists of two Orders of Fibres, going from top to bottom in spiral Lines, contrary to and decussating each other. Which Description is very exact of the Gullet of Ruminants, but not so of that of Men. In Men it consists of two fleshy *Lamellæ*, like two distinct Muscles: The outward composed of strait longitudinal Fibres; the inner of annular Fibres, without any observable Angles. The use of this Coat is to promote Deglutition: The longitudinal Fibres, when in contraction, shortning the *Oesophagus*, and making its Capacity larger to admit of the Matter to be swallow'd; and the annular, on the contrary, contracting the Capacity, and closing behind the descending Aliment, press it downward. So that the two Orders of Fibres seem to act as Antagonist-Muscles to each other. See **DEGLUTITION**.

The next Coat, call'd the *Vascular*, consists of a double Membrane; the outer form'd of irregular Fibres and innumerable Vessels interwoven; the inner, of strait longitudinal Fibres mix'd with little Glands; whence some call it the *Glandulous*. This Membrane adheres closely to another within, call'd the *Nervous-Coat*, which is exceedingly fine, and made up of excessively slender Fibres, variously disposed. It is continued to that which covers the Fauces, Mouth, and Lips; whence it happens, that tickling the bottom of the Fauces by vellicating this Membrane, provokes a retching to Vomit. See **VOMITINO**.

This Membrane is the Organ of Sensation; and in this Part, as some think, is the Seat of Thirst, or the Organ whereby the Appetite of Drinking is excited. See **THIRST**. It is lined inwardly with a villous Crust, which *Dr. Drake* takes to be the excretory Ducts of the Glands, and not unlike the *Cuticula* of the *Cutis*, to defend the subjacent Membrane. In Excoriations, this is sometimes cast out at the Mouth.

The upper opening of the *Oesophagus*, situated at the bottom of the Fauces, is call'd the *Pharynx*. See **PHARYNX**.

**OESYPON**, a kind of fatty Mucilage, of the consistence of an Unguent; of a greyish Colour, and a sickish disagreeable



greaseable smell, drawn from the greasy Wool growing on the Throats and between the Buttocks of Sheep.

This Wool they wash, boil it in Water to scower, let the Lotions or Decoctions stand for some time, and from the top skim off a fatty Substance, which being strain'd thro' a linen Cloth, and set to cool, makes the *Oesypon*, much used externally to resolve, soften, and appease Pain.

The Word is form'd from the Greek *ois*, Sheep; and *onyssus*, to be corrupted; the *Oesypon* being a filthy, and, as it were, corrupted Matter, drawn from Sheep.

**OFFA Alba**, a Name *Van Helmont* gives to the white Coagulum arising from a mixture of the rectify'd Spirit of Wine with Spirit of Urine.

Note, The Spirit of Urine must be distill'd from well fermented Wine; and that must be well dephlegmated, else no *Offa* will arise.

**OFFERTORY**, an Anthem sung, or play'd on the Organ, at the time the People are making an Offering. See **ANTHEM** and **OFFERING**.

Antiently the *Offertory* consisted of a Psalm sung with its Anthem; tho' it is somewhat dubious whether the Psalm was sung entire; St. *Gregory* mentioning, that when it was time, the Pope looking at the Choir who sung it, gave the Sign when they should end.

The Name *Offertory* was also given to the Linen whereon the Offerings were laid. Dr. *Harris* says, 'twas properly a Piece of Silk or fine Linen wherein the Offerings of each Church were wrapp'd up.

**OFFICE**, **OFFICIUM**, in a moral Sense, Duty; or that which Virtue and right Reason directs us to do.

Virtue, according to *Chauvin*, is the Purpose of doing well; the thing which immediately follows, or arises from this Purpose, is Obedience; which same is also denominated *Officium*; so that an Office is the Object of an Obedience to Virtue. See **VIRTUE**.

*Cicero*, in his Discourse of *Offices*, censures *Panetius*, who had wrote before him on the same, for omitting to define the Thing or Subject on which he wrote; yet does he himself fall under the same Censure. He insists much on the Division of *Offices*; but forgets the Definition. In other of his Pieces we find him defining an Office to be an Action which Reason requires to be done: *Quod autem ratione alium sit, id Officium appellamus. De Finib.*

The *Greeks*, he observes, made two Species of *Offices*; *Perfekt*, call'd by them *κατεσκευα*; and *Common*, or indifferent, call'd *καθικον*; which they define so, as, that what is absolutely right, makes a *perfekt Office*; and what we can only give a probable Reason for, an *intermediate Office*. See **REASON**.

**OFFICE**, in a Civil Sense, is the mutual Aid, and Assistance which Men owe to one another.

Benevolence inspires a Man with an Endeavour to do good *Offices* to all Mankind. See **COMMON PLACE**.

**OFFICE** is also a particular Charge, or Trust, whereby a Man is authoriz'd to do something. See **OFFICER**.

*Loysseau* defines it a Dignity attended with a public Function.

The Word is primarily used for those of Judicature and Policy; as the Office of a Secretary of State, of a Justice of Peace, of a Sheriff, &c.

*Offices* are either Venal, or not Venal: *Venal Offices* are those bought with Money. *Venal Offices* are also distinguish'd into two kinds; viz. *Dominial* and *Casual*; *Dominial*, or *Offices in Fee*, are those absolutely torn off and separated from the King's Prerogative, so as not to become Vacant by death, but passing in the nature of a Fee, or Inheritance. See **FREE**.

Of these we have but few Instances among us, which go beyond a first Reversion.

*Casual Offices* are those given for Life, by Patent, Commission, &c. and which become vacant, by the Officer's death, to the King's profit; unless the Officer have before resign'd, or disposed of it.

The Venality of *Offices* is of no long standing. See **VENALITY**.

**OFFICE** is also used for a Place, Apartment, or Board, appointed for the Officers to attend in, for the discharge of their respective *Offices*, or Employments.

Such are the Secretary's Office, the Six Clerks Office, the Paper-Office, Signet-Office, the Prothonnotor's Office, Pipe-Office, King's Silver-Office, Excise-Office, Office of the Ordnance, &c. See each in its Place, **SECRETARY**, **SIX CLERK**, **PAPER**, **SIGNET**, **EXCISE**, **ORDNANCE**, &c.

Of such *Offices*, some are distinguish'd by the Name of Boards, and others of Chambers; as the Board of Green Cloth, &c. See **GREEN CLOTH**, **CHAMBER**, &c.

Where the Inquisition obtains, the Tribunal thereof is call'd the *Holy-Office*. See **INQUISITION**.

In the Canon-Law, *Office* is used for a Benefice which has no Jurisdiction annex'd to it. See **BENEFICE**.

**OFFICE** is also used, in Law, for an Inquisition made to the King's Use of any thing found by Inquisition made *ex Officio*.

Thus to traverse an *Office*, is to traverse an Inquisition taken of *Office* before an Escheator.

To return an *Office*, is to return that which is found by virtue of the *Office*.

In this sense there are two sorts of *Offices* issuing out of the Exchequer by Commission; viz. an *Office* to intitle the King in the thing inquir'd into; and an *Office* of Instruction.

**OFFICE** is also used for Divine Service celebrated in public. See **LITURGY**.

St. *Jerom* is the Person, who, at the Request of Pope *Damasus*, is said to have first distributed the Psalms, Epistles, and Gospels in the Order they are now found in the *Romish Office*. The Popes *Gregory* and *Gelasus* added the Prayers, Responses, and Verses; and St. *Ambrose* the Graduals, Hallelujahs, &c.

In the *Romish Church*, *Office* is particularly used for the manner of performing the *Office*; which varies every Day. Thus they say the *Office* of Sunday; of such a Saint, &c. The *Office* is either single, half double, or double.

Again, *Office* is apply'd to the particular Prayer which is prefer'd in honour of a Saint. When any Person is Canoniz'd, a particular *Office* is at the same time assign'd him out of the common *Office* of the Confessors, the Virgin, or the like. See **SAINT** and **CANONIZATION**.

Thus we say, the *Office* of the Virgin; of the Holy Spirit; of the Passion; the Holy Sacrament, &c. The *Office* of the Dead is rehears'd every day, excepting Feast-days, among the *Carthusians*. The *Office* of the Holy Virgin is also added to the *Office* of the Day, in the Order of *Bernardines*.

**OFFICES**, with regard to Architecture, are all the Lodges and Apartments that serve for the necessary Services and Occasions of a Great House or Palace; particularly those which have a relation to Eating; as Kitchens, Parterres, Brew-Houses, Confectionaries, Fruiteries, Granaries, &c. as also Wood-houses, Equeries, &c. See **HOUSE**, **BUILDING**, &c.

The *Offices* are commonly in the Bassicours; sometimes they are sunk under-ground, and well vaulted, &c.

**OFFICER**, a Person provided of a Charge, or Office. See **OFFICE**.

*Great OFFICERS of the Crown, or State*, are the Lord High Steward, the Lord Chancellor, the Lord High Treasurer, the Lord President of the Council, the Lord Privy-Seal, the Lord Great Chamberlain, the Lord High Constable, the Earl Marshal, and Lord High Admiral. See each under its proper Article, **CHANCELLOR**, **TREASURER**, **MARSHAL**, &c.

**OFFICERS of Justice**, are those who are charg'd with the Administration of Equity and Justice in the Courts thereof. See **COURT**.

*Royal OFFICERS* are those who administer Justice in the King's Name; as the Judges, &c. See **JUDGE**.

*Subaltern OFFICERS*, those who administer Justice in the name of Subjects; such are those who act under the Earl-Marshal, Admiral, &c.

**OFFICERS of Policy**, are those in whom the Government and Direction of the Affairs of a Community are invested; as Mayors, Sheriffs, &c. See **POLICY**.

**OFFICERS of War**, are those who have Command in the Forces.

These are either General, Field, or Subaltern *Officers*.

*General Officers* are such whose Command is not limited to a single Troop, Company, or Regiment; but extends to a whole Body of Forces; such are the General, Lieutenant-Generals, Major-Generals, and Brigadiers. See **GENERAL**, &c.

*Field Officers* are such as have Command over a whole Regiment; such are the *Maitres de Camp*, Colonels, and Majors.

*Subaltern Officers*, are the Lieutenants, Cornets, Ensigns, Sergeants, and Corporals. See each *Officer* under his proper Article, **CAPTAIN**, **COLONEL**, &c.

*Commission OFFICERS* are such as are appointed by the King's Commission; thus call'd in contradistinction to *Half Officers*, or *Warrant Officers*, who are appointed by the Colonel's, or Captain's Warrant.

*Sea-OFFICERS*, or *Officers of the Marine*, are those who have Command in Ships of War.

*Flag-OFFICERS* are the Admirals, Vice-Admirals, and Rear-Admirals. See **FLAG**, **ADMIRAL**, &c.

*OFFICERS of the Household*, are the Lord Steward, Treasurer of the Household, Comptroller, Cofferer, Master, Clerks of the Green-Cloth, &c. The Lord Chamberlain, Vice-Chamberlain, Gentlemen of the Privy and Bed-Chamber, Gentlemen-Ushers, Grooms, Pages, Master of the Wardrobe, of the Ceremonies, &c. The Master of the Horse, Avenor, Equeries, Surveyors, &c. See **HOUSEHOLD**, see also each *Officer* in his proper Article.

*Staff OFFICERS* are such as in the King's Presence bear a white Staff; and at other times, going abroad, have a white Staff borne before them by a Footman bare-headed.



Such are the Lord Steward, Lord Chamberlain, Lord Treasurer, &c.

The white Staff is taken for a Commission ; and at the Death of the King, the Officers break their Staff over the Hearse made for the King's Body, and thereby discharge their inferior Officers.

OFFICIAL, in the Canon-Law, the Bishop's Deputy, or Lieutenant ; or an Ecclesiastical Judge appointed by a Bishop, Chapter, Abbot, &c. See COURT.

Of these there are two Kinds ; the one, as it were, Vicar-General of the Church ; exercising Jurisdiction throughout the whole Diocese, call'd by the Canonists *Officialis Principalis* ; in our Statute-Law the Bishop's Chancellor. See CHANCELLOR.

There is no Appeal from his Court to the Bishop ; his being esteem'd the Bishop's Court. See BISHOP'S COURT.

The other kind, call'd *Officialis Foraneus*, as having his Jurisdiction *foris*, & *extra Civitatem*, is erected by the Bishop when the Diocese is very large ; having a certain Extent of Territory assign'd him, wherein he resides.

This *Official* has but a limited Jurisdiction, tho he have *universitatem Causarum*, and exercise it in the Bishop's Name. Our Statute Laws call him Commissary. See COMMISSARY.

The Bishops, especially those of large Sees, finding themselves oppress'd with a multiplicity of Business ; at first, discharg'd a part of it upon their Archdeacons and Priests ; to whom they gave Commissions revocable at pleasure. These they call'd *Vicarii*, or *Officiales*.

As we don't meet with this Term any where before the Constitutions of *Sextus*, 'tis pretty apparent the Custom had not its Rise till the End of the 13th Century.

In process of Time, the Function was divided into two ; and the Title *Official* given to those with whom the Bishop entrusted the Exercise of litigious Justice ; and that of Vicars General, or Grand Vicars, to those who had the voluntary Jurisdictions.

The Number of *Officials* was soon excessively multiply'd ; and not only Bishops, but Chapters and Archdeacons would have their *Officials*.

The *Officials*, by degrees, had drawn to their Cognizance and Jurisdiction, most of the Civil Causes ; till they were taken out of their hands by Appeals, &c.

OFFICIAL, in Common Law, is a Deputy appointed by an Archdeacon for the executing of his Jurisdiction.

OFFICIALTY, the Court, or Jurisdiction, whereof the *Official* is Head.

The Practice of *Officialties* is now reduced into a little Compass ; and Actions of Promises, and Dissolutions of Marriages, are the principal things transacted therein.

OFFICINAL, in Pharmacy, a Term apply'd to such Medicines, whether Simple or Compound, as the College of Physicians requires to be constantly kept in the Apothecarys Shops, ready to be made up in extemporaneous Prescription. See PRESCRIPTION.

The *officinal Simples* are appointed, among us, by the College of Physicians ; and the manner of making the Compositions directed in their Dispensatory. See DISPENSATORY, COMPOSITION, &c.

The Word is form'd of the *Latin Officina*, Shop.

OFFING, in the Sea-Language, that part of the Sea a good distance from Shore ; where there is deep Water, and no need of a Pilot to conduct the Ship into Port.

Thus if a Ship from Shore be seen sailing out to Seaward, they say she stands for the *Offing* ; and if a Ship having the Shore near her, have another a good way without her, or towards the Sea, they say, that Ship is in the *Offing*.

OFF-SETS, in Gardening, &c. are young Shoots that spring, and grow from Roots that are round, tuberous, or bulbous.

The Word is also used for the loose, outer, brown Skins in Tulips, Onions, &c.

OFF-SETS, in Surveying, are Perpendiculars let fall, and measur'd from the Stationary-Lines, or the Lines between one Station and another, to the Hedge, Fence, or Extremity of the Inclosure. See SURVEYING.

OGEE, or O G, as it is frequently wrote, or OGIVE, in Architecture, a Moulding, consisting of two Members, the one concave, and the other convex ; the same with *Cymatium*. See CYMATIUM.

*Vitruvius* makes each Member a Quadrant of a Circle ; *Scamozzi*, and some others, make them somewhat flatter, and strike them from two equilateral Triangles.

Its Form bears some resemblance to that of an S.

OGIVE is also used for an Arch, or Branch of a Gothic Vault, which, in lieu of being Circular, passes diagonally from one Angle to another, and forms a Cross between the Arches which makes the side of the Square, whereof the Arches are Diagonals. See ARCH and VAULT.

The middle, where the *Ogives* cut or cross each other, is call'd the Key, which is sometimes cut in form of a

Rose, or a *Cul de Lampe*. The Members or Mouldings of the *Ogives* are call'd Nerves, Branches, or Reins ; and the Arches which separate the *Ogives*, double Arches. See VAULT.

OGRESSES, or AGRESSES, in Heraldry, see PEL-LETS.

OIL, a fatty, unctuous, inflammable Matter, drawn from several natural Bodies. See FAT.

The word *Oil* is sometimes apply'd to the Juices which distil naturally from Plants and Trees ; as Balm, &c. but more strictly to those Juices drawn by Expression from Plants, Fruits, Grains, or Seeds ; as *Oil of Olive*, *Nut-Oil*, &c. See EXPRESSION.

The Word is form'd from the *Latin Oleum*, of *Ole*, Olive-Tree, the Fruit whereof abounds in such Juice. See OLIVE.

The Kinds of *Oils*, their Properties, Manners of Expression, &c. are almost infinite : For the generality of them, the Reader is refer'd to the proper Articles ; such as could not be more conveniently inserted, are as follow.

*OIL of Olives*, is the most popular, and most universal of all others ; being that chiefly used in Medicine, in Foods, Salads, and in the Manufactures. See SALAD, &c.

It is drawn from Olives by Presses or Mills made for the purpose. The Fruit is gather'd when at its utmost Maturity in *December* and *January*, as it begins to redden ; when 'tis put under the Mill, as soon as gather'd, it yields that *Oil* so very sweet, and of so charming an Odour, call'd *Virgin-Oil*. But, as the Olives newly gather'd yield but little *Oil*, those who rather regard Quantity than Goodness, leave them on the Ground for some time, e'er they press them.

Neither the Smell nor Taste of this second *Oil* is very agreeable ; tho there is a third Kind still worse, which is the common *Oil* procured by throwing boiling Water on the Pressings, and repressing them more strongly.

The consumption of this *Oil* is incredible ; the South Parts of *France*, *Provence*, *Languedoc*, &c. as also *Candia*, some Parts of *Italy*, &c. yield vast Quantities. Its use every body knows ; it being reputed one of the most universally useful things in the whole World.

*OIL of sweet Almonds*, cold drawn, or without Fire, is prepared various ways. Some peel the Almonds as they pound 'em ; others pound 'em without peeling. Some warm 'em in luke-warm Water ; others in *balneo Mariae* ; some only bruise 'em ; others beat 'em into a Paste. In effect there are as many different ways of preparing this *Oil*, as there are Persons who make it their business to prepare it.

In this diversity, *Pomet* gives us a Method easier and less expensive than any of the rest ; which, it should seem, we cannot do better than follow.

Method of procuring Oil of sweet Almonds by Expression, without Fire.

Take a Pound and a half of peel'd sweet Almonds, new and dry ; after pounding 'em in a Mortar, pass 'em thro' a coarse Sieve, lay 'em in a Hair-Cloth, and put 'em under the Press between two Plates of Copper, Steel, or the like ; press 'em gently ; and when all the unctuous and fluid Part is express'd, you will have a sweet *Oil* without any Sediments, which is scarce avoidable in any of the other manners.

*Palm OIL*, or *Oil of Senegal*, a thick unctuous Liquor, of a yellow Colour, and a Violet-smell ; so call'd because drawn, by Ebullition or by Expression, from the Fruit of a kind of Palm-Tree, growing in several Places of *Africa*, especially in *Senegal*.

The *Africans* use this *Oil* as we do Butter ; and burn it when old. In *Europe* 'tis esteem'd a sovereign Remedy against cold Humours ; and even said to give ease in the Gout. 'Tis sometimes counterfeited with Wax, *Oil of Olives*, *Iris*, and *Turmeric* ; but the Trick is found out either by Air or Fire. The Air alters the Colour of the Genuine, and leaves the Counterfeit unchanged ; and on the contrary, Fire changes the Counterfeit, not the Genuine.

*Oil of Camomile*, an *Oil* made with the Flowers of this Plant steep'd in *Oil of Olives*, and exposed to the Sun in the heat of Summer : Its Colour is blueish ; some add fine Turpentine. It is the most esteem'd when old. 'Tis used for the cure of several kinds of Wounds ; and is reputed a kind of Balm.

*OIL of Petrol*, see NAPHTA.

*OIL of Amber*, see AMBER.

*OIL of Antimony*, or Butter of Antimony, see ANTIMONY.

*OIL of Arsenic*, or Butter of Arsenic, see ARSENIC.

*OIL of Aspic*, or *Spike*, an *Oil* drawn from the Flowers or little Leaves of a Plant of the same Name, growing in the South Parts of *France*, resembling our Lavender. 'Tis of a white Colour, and an aromatic Smell ; and is the only *Oil* dissolvable



diffoluble in *Sandarach*; whence the genuine *Oil* is easily distinguished from the counterfeit, which is *Oil* of Turpentine mix'd with a little *Petrol*. It is used by Painters and Farriers; and is of some use in Medicine, where it makes a part in several *Galenical* Compositions.

*Oil* of Balm, see BALSAM.

*Oil* of Ben, see BEN.

*Oil* of Cacao, see CACAO.

*Oil* of Camphor, see CAMPHOR.

*Oil* of Cinnamon, see CINNAMON.

*Oil* of Castor, see CASTOREUM.

*Oil* of Wax, see WAX.

*Oil* of Cumin, see CUMIN.

*Oil* of Fennel, see FENNEL.

*Oil* of Nutmeg, see NUTMEG.

*Oil* of Guaiacum, see GUAIACUM.

*Oil* of Cloves, see CLOVES.

*Oil* of Lavender, see LAVENDER.

*Oil* of Lentisc, see LENTISCUS.

*Oil* of Lime, see LIME.

*Oil* of Liquid Amber, see BALSAM.

*Oil* of Mace, see NUTMEG.

*Oil* of Millepertuis, see MILLPERTUIS.

*Oil* of Matbiolus, see SCORPION.

*Oil* of Neroli, see ORANGE.

*Oil* of Nuts, see NUT.

*Oil* of Orange, see ORANGE.

*Oil* of black Pitch, see PITCH.

*Oil* of Rosemary, see ROSEMARY.

*Oil* of Sardine, see SARDINE.

*Oil* of Sage, see SAGE.

*Oil* of Cotton, see COTTON.

*Oil* of Sulphur, see SULPHUR.

*Oil* of Turpentine, see TURPENTINE.

*Oil* of Thyme, see THYME.

*Oil* of Tortoise, see TORTOISE.

*Virgin Oil*, is understood of *Oils* express'd from Olives, Nuts, &c. fresh gather'd, without being heated, too much press'd, &c. See *Oil* of Olives.

*Granulated Oil* is that fix'd in little Grains; this is the best, and most esteem'd, especially of *Oils* of Olives.

*Oil* frequently takes new Names from the Drugs mix'd with it; as *Oil* of Roses, which is that mix'd with Roses; *Oil* of *Jasmin*, that perfum'd with *Jasmin*.

*Plato* observes, that *Oil* is destructive to all Plants; and he adds too, to the Life of all Animals, except those of Man, to which it is agreeable, as also to the rest of his Body. He adds further, that 'tis very useful to the external parts of the Body, but hurtful to the internal. *Fernelius* observes that *Oil* softens, moistens, and lubricates the Body, and takes off the sense of Weariness; for which reason the Greeks call it *Acopum*; and renders the Body prompt and agile. *Dioscorides* says it cures Leprosies, &c.

*Oil*, among the Chymists, is the second of the Elements, or Hypostatical Principles; otherwise call'd *Sulphur*. See ELEMENT, PRINCIPLE, and SULPHUR.

All natural Bodies yield *Oil*, either by Distillation; Putrification; or Liquefaction call'd *per Deliquium*: And hence the Chymists will have it a necessary Ingredient in the Composition of all Bodies. They make it the Principle of Odours; and to the Diversities thereof, ascribe all the differences of Bodies in respect of Smells. See SMELL.

All Plants yield a fetid *Oil* at the end of Distillation; but Aromatic ones beside this yield another *Oil*, which rises after the Phlegm, and at the beginning of the Distillation: This they call an *Essential Oil*, because it retains the natural smell of the Plant; whereas the second *Oil*, even that of Aromatic Plants, stinks intolerably. See ESSENTIAL.

*M. Homberg*, from an Observation that Plants which yield the most Acid, yield likewise the most *Oil*; took occasion to think that the Acid might assist the *Oil* to disengage itself from the Body, and to rise in Distillation; which he found to answer in the Experiment. Mineral Acids prov'd to have more force on the *Oils* of Plants, and put 'em in a condition of rising in Distillation, and in greater Quantity by the Action of Fire, than Vegetable ones. Accordingly, whereas the Perfumers find a deal of difficulty in raising essential *Oil* of Roses; and scarce get an Ounce out of an hundred Pounds of the Flower: *M. Homberg*, on his Principle, got at least one third more; viz. by laying the Roses fifteen days in Water impregnated with Spirit of Vitriol, before Distillation.

The Chymists Doctrine of Principles, *Mr. Boyle* shews to be very deficient in the Article *Oils*: For the Characteristic of a Sulphur, or that which denominates a thing such, is Inflammability: Now, there are at least three Substances manifestly different in Consistence, Texture, or both; which, according to that Notion, ought to be refer'd to Sulphurs: For sometimes the inflammable Substance obtain'd from a mix'd Body by means of Fire, appears in form of an *Oil* that will not mix with Water;

sometimes in form of an inflammable Spirit, which will readily unite with that Liquor; and sometimes also in form of a consistent Body almost like common Sulphur. *Produce* of Chym. Prin.

*Dr. Stare* in *Philos. Transact.* gives us a Scheme, or Analysis of *Oils*. He distinguishes *Oils* into Vegetable, Animal, and Mineral.

The Vegetable he divides into *Essential*, and not *Essential*.

The *Essential* again, are either perfect Stillations made by the Analysis of the Chymist's Fire; where the oleaginous Particles are truly separated from all other; as those from the Seeds of Cummin, Fennel, and Dill: or light and ethereal, usually drawn from the Tops of Plants, and specifically lighter than Water, some of 'em than Spirit of Wine; as those from Thyme, Wormwood, Hyssop, Lavender, Rosemary, Penny-royal, Rue, Sage, Savin, &c. Or ponderous, which commonly sink in Water.

Those not *Essential*, are imperfect, or made by Expression; which are decomposed of several parts of the Plants; as of Almonds, Olives, Walnuts, Lime, Rape, &c.

The Animal *Oils* are either those of the solid Parts, as Harts-horn, Human-Skull, Hoofs, &c. Or those of the Fluids, as of Human-Blood.

Lastly, the Mineral *Oils* are those of Amber, Petroleum, Barbadoes Tar, and Bees-Wax.

Of these *Oils*, there are twelve that by a Mixture of compound Spirit of Nitre, make an Ebullition, Explosion, and Flame. Eighteen that make an Ebullition and Explosion without Flame: And four that produce neither. See EBULLITION, FLAME, &c.

*Oil-Bag*, a Vessel in Birds, replete with an unctuous Substance, secreted by one, sometimes two, Glands for the purpose, disposed among the Feathers; which being press'd by the Bill or Head, emits its oily Matter, for the Dressing and Preening the Feathers. See FEATHER and PREENING.

OINTMENT, in Pharmacy and Surgery, &c. See UNGUENT.

OKER, or OCHER, in Natural History, a yellow, dry, fat, soft, fossil Earth; found in Copper and Lead Mines, sometimes in those of Silver, and sometimes in Mines of its own. See EARTH.

Others seem more rightly to refer *Oker* to the Class of Semi-metals, than of Earths. It consists, according to them, of Earth and a Metal, particularly Iron, combined. See SEMI-METAL.

*Mr. Boyle* assures us he has seen a Piece of *Oker* richer in Metal than most Iron-Ores; and which was even render'd magnetical by heating and then cooling it in a perpendicular position. See MAGNET and MAGNETISM.

Some Authors esteem *Oker* proper to promote the melting of Metals, when they are too harsh and brittle; but its chief Use is in Painting.

'Tis only the yellow *Oker* is natural; the red is prepared from the yellow by calcining it in the Fire till it have acquir'd its redness.

The Beds are usually from one hundred fifty to two hundred foot deep; and their thickness from four to eight Inches, between a white Sand which covers them a-top, and a yellow argillous Earth underneath.

The best *Oker* is that of Berry in France. There are several Kinds dug up in England, all bordering on the red; some of them used in polishing Looking-Glasses.

The Word comes from the Greek *ὀχρῶς*, yellow Earth.

*Oker*, in effect, is always impregnated with Iron, and is what generally gives to the Chalybeat Springs their medicinal Virtues; many of which we see, upon standing of the Water, will deposite the *Oker* at the bottom of the Vessel.

OLD AGE, see LONGEVITY.

OLEAGINOUS, something that partakes of the nature of *Oil*; or out of which *Oil* may be express'd. See OIL.

Thus Olives, Nuts, Almonds, &c. are oleaginous Fruits, or Fruits out of which *Oil* is express'd. See FRUIT. Pines, Firs, &c. are oleaginous Woods, yielding Rosin, Turpentine, &c. See ROSIN, &c.

Of all Woods, oleaginous ones burn the best. See FUEL. An oleaginous Urine in malignant Fevers is a sign of Death. See URINE.

OLECRANUM, in Anatomy, an Eminence behind the Bend of the Elbow; being the Part whereon the Arm bears when we rest on the Elbow. See ARM.

This Eminence is nothing else but the posterior Apophysis of the Head of the Ulna, which stays that Bone, and prevents its slipping back; so as to form an acute Angle when the Arm is bent. See ULNA.

The Olecranon is received into the hind Sinus of the lower end of the Humerus; and with the fore Protuberance of the Ulna, which is received into the fore Sinus of the Humerus, forms a perfect Ginglymus, whereby the two Bones move as on a Hinge.



**OLERON-Laws**, or the *Sea-Laws of OLERON*, are a Set of ancient Laws, relating to Maritime Affairs, made by K. Richard I. See **LAW**.

They are thus call'd, because made in the *Oleron*, an Island in the Bay of *Aquitaine*, at the Mouth of the River *Charent*.

**OLFACTORY Nerves**, in Anatomy, the first Pair of Nerves springing out of the *Medulla oblongata*; so call'd as being the immediate Instruments of Smelling. See **SMELLING**.

The Antients call'd them *Processus Papillares*; which Dr. Drake thinks a more suitable Name, till their arrival at the *Os Cribrosum*; in regard they rather appear Productions of the *Medulla oblongata*, than distinct Nerves; against which, their manifest Cavities, and their Communication with the Ventricles, argue. See *MEDULLA oblongata*.

The *Olfactory Nerves* have their Rise just below the *Os frontis*, and are distributed in the Membranes of the Nose. See **NERVE**.

**OLIBANUM**, in Pharmacy, a kind of Gum, or Resin, usually call'd male *Frankincense*. See **INCENSE**.

It has its name *Olibanum*, quasi *oleum Libani*; because distilling in form of an Oil, from a Tree on Mount *Libanon*.

It is brought to us in large white Tears, bordering a little on the yellow; very heavy, of a sharp bitter Taste, and a brisk Smell.

'Tis distinguish'd from the female, or common Incense, by the largeness of the Drops. 'Tis very glutinous, consequently strengthening; and partakes enough of the Turpentine to render it somewhat detergent; 'tis more used in compound strengthening Plaisters, than in inward Compositions.

**OLIGARCHY**, a Form of Government, wherein the Administration is in a few Persons; such are the States of *Venice* and *Genoa*.

The *Oligarchy* amounts to the same thing with an Aristocracy. See **ARISTOCRACY**.

The Word is form'd from the Greek *ολιγ*, few; and *αρχη*, Command, Government.

**OLIO**, or **OGLIO**, a savoury Dish, or Food, composed of a great variety of Ingredients.

The Forms of *Olio's* are various; to give a Notion of the strange Asssemblage, we shall here add one from an approved Author.

Take Rump of Beef, Neat's Tongues boil'd and dry'd, and *Bolonia Sausages*; boil 'em together, and after boiling two Hours, add Mutton, Pork, Venison, and Bacon, cut in bits; as also Turnips, Carrots, Onions, and Cabbage, Borage, Endive, Marigolds, Sorrel, and Spinage; then Spices, as Saffron, Cloves, Mace, Nutmeg, &c. This done, in another Pot put a Turkey or Goose, with Capons, Pheasants, Widgeons, and Ducks, Partridges, Teals, and Stock-doves, Snipes, Quails, and Larks, and boil them in Water and Salt. In a third Vessel, prepare a Sauce of white Wine, strong Broth, Butter, Bottoms of Artichokes and Chestnuts, with Colliflowers, Bread, Marrow, Yolks of Eggs, Mace and Saffron. Lastly, dish the *Olio*, by first laying out the Beef and Veal, then the Venison, Mutton, Tongues, and Sausages, and Roots over all; then the largest Fowls, then the smallest, and lastly pour on the Sauce.

**OLITORY**, a Kitchen-Garden, or a Garden of Herbs, Roots, &c. for Food. See **GARDEN**.

**OLIVARIA Corpora**, in Anatomy, are two Protuberances in the under part of the Brain, placed on each side the *Corpora Pyramidalia*, towards the lower end; having their Name from their Figure, which resembles that of an Olive. See **BRAIN**.

**OLIVE**, a Stone-Fruit, which yields plenty of Oil; the Produce of the Olive-Tree. See **OIL**.

There are three Kinds of *Olives*, frequently sold; different in Size and Goodness; viz. those of *Verona*, which are the best; those of *Spain*; and those of *Provence*.

The *Olives*, while on the Tree, are intolerably bitter, without any thing of that delicious Taste which procures them admittance at the richest Tables. To fit 'em for that, they must be prepared as follows.

#### Manner of Preparing, or Pickling OLIVES.

In the Month of *June* and *July*, long e'er the *Olives* are fit to yield their Oil, they are gather'd, and laid to steep some days in fresh Water; when taken out, they are put in another Water prepared with Barilla, or Kali, with Ashes of Olive-Stones calcined; or at least with Lime.

They are next laid in a Liquor of Water and Salt, with which they are put in those little Barrels, wherein they are brought to us. To give 'em the Flavour, they throw over 'em an Essence usually composed of Cloves, Cinnamon, Coriander, and Fennel. This Essence is a kind of

Secret among those who deal herein; and, in effect, it is in this that all the difficulty of the Preparation lies.

#### Manner of Drawing Oil of OLIVES.

The *Olives* being gather'd, are laid for some time on the Ground to drain, and to ripen further; they are then ground into a Paste with a Mill-stone: The Paste is put in large Frails, and boiling Water poured over them. Lastly, the whole is press'd; by means whereof the Oil is easily separated, and swims a-top of the Water.

**OLIVE-Colour**, is a yellow, mingled with black. The Term is chiefly used in speaking of the Teint of the Complexion. The *Spaniards* and *Indians* are rarely white; generally *Olive-complexion'd*.

**OESTRUM Veneris**, Extasy of Desire, or Love; a Term sometimes given the *Clitoris*, from the lascivious Titillation it is capable of. See *Clitoris*.

**OLYMPIAD**, in Chronology, a Space, or Period of four Years; whereby the *Greeks* reckon'd their Time. See **EPOCHA**.

This Method of Computation had its Rise from the *Olympic Games*, which were celebrated every fourth Year, near the City *Pisa*, or *Olympia*, in *Peloponnesus*. See **OLYMPIC**.

The first *Olympiad* commenced, according to some, in the Year 3938 of the *Julian Period*; the Year from the Creation 3208; the Year before Christ 776; and 23 Years before the Foundation of Rome: Or rather, as others will have it, in the Year of the World, 3251; the Year of the *Julian Period*, 3941; and 23 Years before the Building of Rome.

The *Peloponnesian War* begun on the first Year of the 87th *Olympiad*. *Alexander the Great* died the first Year of the 114th; and Jesus Christ was born the first Year of the 195th *Olympiad*.

The *Olympiads* were also call'd *Anni Iphii*, from *Iphitus*, who instituted, or at least renewed the Solemnity of the *Olympic Games*.

We don't find any Computation by *Olympiads* after the 364th, which ended with the Year of Christ 440.

In a Charter of our K. *Etbelbert*, the Years of his Reign are reckoned by *Olympiads*.

**OLYMPICS**, or **OLYMPIC Games**, were solemn Games, famous among the ancient *Greeks*; instituted, according to some, by *Hercules* in honour of *Jupiter*; and held every 4th Year, or every 49th Month, on the Banks of the *Alpheus*, near *Olympia* a City of *Elis*; to exercise their Youth in five Kinds of Combats. See **GAMES**.

These Games became so considerable, that the *Greeks* made 'em their *Epocha*; distinguishing their Years by the Returns of the *Olympics*. See **OLYMPIAD**.

Those who were Conquerors in them, were so honour'd by their Country-men, that at their Return, a piece of the Wall of the City was pull'd down to give passage to their Chariot. The Prize contended for, was a Crown of Laurel. See **OLYMPIONICS**.

**OLYMPIC Fire**, is sometimes used for the Fire arising from the Sun's Rays collected in the Focus of a Burning-Glass. See **FIRE** and **BURNING-Glass**.

*Gli OLYMPICI*, the Title of the Academists of *Vicenza*, in *Italy*. See **ACADEMY**.

**OLYMPIONICI**, *Olympionics*, in Antiquity, an Appellation given to those who came off Victorious in the *Olympic Games*. See **OLYMPIC**.

The *Olympionics* were infinitely honour'd in their Country, as being esteem'd to have done it immortal Honour. The *Athenians* particularly, were so lavish in their Presents to the *Olympionics* their Country-men, that *Solon* found it necessary to restrain their Liberality by a special Law, which imported that the City should give 500 Drachma's to the *Olympionics*; which amounted to about 58 Ounces of Silver, our Weight. No very considerable Sum.

**OMBRE**, a celebrated Court-Game at Cards; play'd by two, by three, or by five Persons; but generally by three.

In *Ombre* by three, nine Cards are dealt to each Party; the whole *Ombre Pack* being only 40; by reason the Eights, Nines, and Tens are thrown aside: He that wins, must take five Tricks, or four when the other five are divided, so as one have two, and the other three.

The Game of *Ombre* is borrow'd from the *Spaniards*; and requires all the Phlegm and Gravity of that People in the playing. The Name signifies as much as the Game of Man; *Ombre*, or *Flombra*, in *Spanish*, signifying Man, in allusion to the Thought, and Attention requir'd herein. We shall here give an Idea of the Economy thereof.

In *Ombre* by three, after the Cards are dealt, if none of the Parties think their hand strong enough to attempt for the Stake or Game, they all pass; and, after something put down to the former Stake, deal over again. If any will



will attempt for it, he henceforth is call'd the *Ombre*; and the other two become leagued together, like two Partners at Whisk, to defend it against him. Note, each has the refusal of being *Ombre*, according to his Order of Seniority.

There are two ways of his undertaking for the Game: In the first, which is the most usual, after chusing what he will have Trumps, he discards, or lays aside what number of his Cards he pleases, and in their lieu takes an equal Number from the remainder of the Pack; the like do the other two. The other way is, when he dare trust to his own Hand, and therefore declines to discard, or change any Cards, but leaves that to the others; which is call'd playing *sans prendre*: If he gains the Point in this latter Case, he reaps somewhat extraordinary, more than in the first.

If he fail, he is said to be *beasted*; and the Failure is call'd a *Remise*, or *Requeste*; and if one of the Defenders of the Stake win more Tricks than he, he is said to win *Codille*, and takes up the Stake the *Ombre* play'd for: And in both cases, the *Ombre* is to forfeit the Value of the Stake play'd for to the Board.

If the *Ombre* win all the nine Tricks; it is call'd winning the *Vale*, and he reaps doubly; and if he attempt it, and miscarry, he suffers proportionably. The Oversights, and Irregularities committed in the course of the Game, are call'd *Beastes*, and subject the Persons chargeable therewith to Forfeitures.

Lastly, as to the Order and Value of the Cards at *Ombre*, it is to be observ'd, that the Ace of Spades, call'd *Spadille*, is always the first or highest Trump, in whatever Suit the Trump be; the Duce of Trumps, when Trumps is of either of the black Colours; or the Seven, if of the black, is the second Trump, and call'd *Manille*; the Ace of Clubs, call'd *Basto*, the third; and if either of the red Suits be Trump, the Ace of that Suit, call'd *Punto*, the fourth. The rest in the black Suits are valued according to the following Order, *viz.* King, Queen, Knave, Seven, Six, Five, Four, and Three. In the red Suits they follow thus; King, Queen, Knave, Duce, Three, Four, Five, and Six.

The three first, or principal Trumps, are call'd *Matadores*; which have this Privilege, that they are not obliged to attend an inferior Trump when it leads; but for want of another small Trump, the Person may renounce Trumps, and play any other Card. Add, that if the three *Matadores* be in the hands of the *Ombre*, in case he be *beasted*, he is to forfeit for 'em; or, if he gain his Point, he is to have a consideration for 'em; but for nothing less than three. And it must be further noted, that the Trumps immediately succeeding these, *viz.* *Punto*, King, Queen, &c. if they be found in the same hand with the former, are also reputed as *Matadores*, and to be allowed, or forfeited for like the rest: And this as low as the Sequence reaches without interruption.

There are some Varieties in the manner of playing the Game of *Ombre*: Sometimes he who has *Spadille*, is oblig'd to play, let his Game be ever so bad; which is call'd *Force Spadille*. Sometimes, when all have pass'd, a Person undertakes the Game on condition of discarding, and making up his hand e'er he names Trump; which is call'd *Gajeaville*.

In *Ombre by five*, which some even prefer to that by three, as not requiring so much Attention; only eight Cards a-piece are dealt; and five Tricks must be won, otherwise the *Ombre* is *beasted*.

Here the Person who undertakes the Game, after naming the Trump, calls a King to his Assistance; upon which, the Person in whose hand the King is, without discovering himself, is to assist him as a Partner, and to share his Fate. If between both, they can make five Tricks, the *Ombre* wins; and then the auxiliary King shares the Spoil; and *vice versa*.

If the *Ombre* venture the Game without calling in any King; this too is call'd playing *sans prendre*; in which case the other four are all against him, and he must win five Tricks alone, or be *beasted*. The rest is much the same as by three; *mutatis mutandis*.

*Ombre de Soleil*, in Heraldry, *Shadow of the Sun*, is when the Sun is borne in Armoury, so, as that the Eyes, Nose, and Mouth, which at other times are represented, do not appear.

OMELET, a Fricassee, or Preparation of Eggs, with other Ingredients in a Pan; very usual in Spain.

*Menage* derives the Word from the Italian *Ammella*, little Soul; which, he says, that People use for the nice Bits among the Entrails of Fowls, &c. used for Fricassee, as Livers, Hearts, Kidneys, Gizzards, &c. From whence, by resemblance, is form'd *Amelette*, a Fricassee of Eggs: The Tripod derives the Word from *Zua*, together, and *zua*, to dilute, moisten, mix; and M. de la Motte le *Payer* from the French *Oeuf*, Egg, and *malez*, mingled.

The Forms of Omelets are various: A noted Author in this way, prefers the following one. The Eggs being

beaten, are to be season'd with Salt and Pepper, and then fried in Butter made boiling hot: This done, Gravy to be poured on, and the whole strew'd with Chives and Parsley shred small. When one side is fried enough, it is to be turn'd on the other.

There are also *Omelets with Sugar*; *Farced Omelets*; *Omelets the Turkish way*, &c.

OMEN, a Sign, or Indication of something Future, taken from the Mouth of a Person speaking.

*Festus* derives the Word *Omen* from *Oremen*, *quod fit ore*. See AUGURY.

OMEN *Prerogativum*, among the Romans, was the Vote of the first Tribe or Century, in their *Comitia*.

When a Law, &c. was proposed, or an Election to be made, an Urn was brought in to the Priests there present, into which were cast the Names of the Tribes, or Centuries, or *Curiae*; as the *Comitia* were either *Tributa*, or *Centuriata*, or *Curata*. And the Lots being drawn, that Tribe, Century, &c. whose Name came up first, was call'd *Tribus*, or *Centuria Prerogativa*, because their Voices were ask'd first. And so much did the Romans depend on this Prerogative Century, that the rest generally follow'd them. Hence a Person who had the Voices of the Prerogative, was said to have the *Prerogative Omen*.

OMENTUM, in Anatomy, the *Caul*, *Epiploon*, *Rete*, or *Reticulum*, a fat, thin Membrane spread over the Intestines, and following them in all their Sinuities. See INTESTINES.

It reaches from the bottom of the Stomach (to which it is connected) to the Navel, at which it ordinarily terminates; tho in some Subjects it goes further, so as upon a Rupture of the *Peritoneum*, to fall into the *Scrotum*. Besides the Stomach, it is fasten'd to the concave Part of the Liver, the back-side of the *Duodenum*, part of the *Colon*, the Back, and the Spleen; its other Extremity to the small Guts.

Its Form resembles that of a Pouch, or Sachel, which may be inflated with a Blow-pipe to the Capacity of a Gallon.

Its Substance is membranous, consisting of two Leaves, or Coats, between which, and on the Surfaces of which, are innumerable Veins, Arteries, Nerves, and *Vasa Adiposa*, or Fat Vessels, variously interwove, and by their Intersections dividing the Part into a Multitude of little *Arcolae*, resembling the Meshes of a fine Net; whence its Name, *Rete*.

The Fat, in its proper Ducts, running along with the other Vessels, renders these *Arcolae* very obscure; while the intermediate Spaces are fill'd with a transparent Membrane, full of small Holes; so that the whole appears a beautiful kind of Net. Its Arteries come from the *Celiac* and *Mesenterics*, and its Veins run to the *Porta*, and are call'd *Epiploicae*; its Nerves from the Intercostals.

The Fat, here, as in the *Membrana Adiposa*, is either brought by the Ducts into the *Adipose* Cells, or deliver'd from the Cells into the Ducts; for the Fineness of the Vessels, &c. renders their Course exceeding difficult to trace: 'Tis even doubted whether or no they be hollow. *Malpighi*, and many others, incline to the former Opinion; and take the *Omentum* to be nothing else but a large Pouch, full of innumerable little ones, fill'd with Fat; they add, that the *Ductus Adiposi* are real Vessels arising out of the *Omentum*, and spreading themselves, by means of the *Membrana Adiposa*, throughout the whole Body; distributing Fat to every Part, in the same manner as the Arteries distribute Blood. See FAT and *Ductus Adiposi*.

The particular Use of the *Omentum* is to promote the Peristaltic Motion of the Guts, by lubricating them with its oily Substance, which transudes thro' its Pores; and by following them in their Doublings and Windings, to serve as a Bolster to slide upon; and by filling up their Hollows, preventing their being too much distended with Flatulencies, yet giving way to them when replete with Aliment.

The *Omentum* is single in all Animals, excepting Monkeys, in which it is triple or quadruple.

OMOPHIORIUM, a little Cloak, antiently wore by the Bishops, over their Shoulders; thereby to represent the good Shepherd who brings home the stray'd Sheep on his Shoulders.

For this reason it was put off at the opening of the Gospels, because then the true Shepherd Jesus Christ, was supposed present in Person.

Some confound the *Omophorium* with the *Pallium* wore by the Patriarchs; but there was this difference, that the *Pallium* was a long Cloak, of Purple, and was peculiarly reserved for Patriarchs; tho since given to some Bishops by way of distinction. See PALLIUM.

The Word is pure Greek, form'd from *ἔμος*, Shoulder, and *φέρω*, I carry.

OMOPLATE, in Anatomy, is used in the general for the Shoulder; but, particularly for two Bones situate on the hind part of the upper Ribs, one on each side.



These Bones are broad, and especially in the middle; thick in their *Apophyses*; of a triangular Form, concave within, and convex without; and are join'd to the Clavicles and Arms.

The Word comes from the Greek *ομη*, Shoulder, and *πλατος*, broad.

OMPANORATE, the Title bore by the Priests of the Island of *Madagascar*.

These are the School-Masters of the Country, and teach Arabic and Writing. They have several Books, but none of them contain more than some Chapter of the *Alcoran*, and a few physical Recipes.

They are divided into several Orders, bearing some Resemblance to our Ecclesiastical Dignities: As *Ombiasse*, Secretary, or Physician; *Tibon*, Subdeacon; *Mouladzi*, Deacon; *Faquibi*, Priest; *Catibon*, Bishop; *Lamlamaba*, Archbishop; *Ompisiquili*, Prophets or Diviners; *Sababa Calif*, or Chief of the Religion.

The *Ompanorates* deal much in Talismans, and other Charms, which they call *Hitidzi*, and which they sell to the *Grande*s of the Place. They also make little Statues or Images, call'd *Auli*, which they consult as Oracles; and to which they ascribe various Powers; as the making rich, destroying Enemies, &c. They have public Schools, where they teach their Superstitions and Sortileges. The *Ompisiquili* practise Neomancy, and are mostly consulted on Diseases, and the Success of Affairs; resolving all Questions by Figures drawn on a little Table, cover'd with Sand.

OMPHACIN, in Pharmacy, a kind of Oil, pretended to be drawn from Olives while yet green, and sour; but *Pomet* charges it as an Imposture; adding, that Olives yield no Oil at all till perfectly ripe. See OIL and OLIVE.

The Word is derived from the Greek *ομφαξ*, unripe Grape.

OMPHALOCLE, in Medicine, a kind of *Hernia*, or Tumor, in the Navel; arising like other *Hernia*'s from a Relaxation or Rupture of the *Peritonæum*. See *HERNIA*.

Its remoter Causes are violent Strains, loud Cries, abundance of serous Humour, difficult Delivery, &c.

The Word is form'd from the Greek *ομφαλον*, Navel, and *κλειν*, Tumor. 'Tis otherwise call'd *Exomphalus*. See *EXOMPHALUS*.

OMPHALO-Mesenteric, in Anatomy. All *Fætus*'s are wrap'd in at least two Coats, or Membranes; most of them have a third, call'd *Allantoides*, or Urinary. Some, as the Dog, Cat, Hare, &c. have a fourth, which has two Blood-Vessels, viz. a Vein and an Artery, call'd *Omphalo-Mesenterics*, because passing along the String to the Navel, and terminating in the *Mesentery*. See *FOETUS*, *SECUNDINE*, &c.

OMPHALOPTIC, in Optics, a Glass that is convex on both sides, popularly call'd a Convex-Lens. See *CONVEX-LENS*.

ONANIA, and ONANISM, Terms some late Emperics have framed to denote the Crime of Self-pollution; mentioned in Scripture to have been practised by *Onan*, and punished in him with Death. 'Tis the same with what in other places of Scripture, particularly *Levit. ch. xx.* is call'd giving of Seed to *Moloch*; for which the Punishment allotted is stoning to Death. See *POLLUTION*.

ONDEE, in Heraldry, see WAVY.

ONERANDO *pro rata Portionis*, a Writ which lies for a Joint-Tenant, or Tenant in Common, when distrain'd for more Rent than the Proportion of his Land comes to.

ONGLEE, is used by the French Heralds to denote the Talons or Claws of Beasts or Birds, when of Colours different from the Body.

ONIROCRATIA, in Divination, the Art of Expounding Dreams. See *DREAM*, *DIVINATION*, &c.

It appears from several Passages of Scripture, that there was, under the Jewish Dispensation, such a thing as foretelling future Events by Dreams; but then there was a particular Gift, or Revelation required for that purpose.

It should seem hence, that Dreams are really significative, and do forebode something to come; and all that is wanting among us is the *Oniromancy*, the Art of knowing what: yet 'tis the Opinion of many, that Dreams are mere Chimera's; bearing, indeed, some Relation to what has pass'd, but none to what is to come. As to the Case of *Joseph*, 'twas possible for God, who knew all things, to discover to him what was in the Womb of Fate; and to introduce that, he might take the occasion of a Dream: Not but that he might as well have foretold it from any other Accident or Circumstance whatever. Unless God, to give the Matter more weight, should purposely communicate such a Dream to *Pharaoh*, in order to fall in with the popular Notions of Dreams and Divination, which then prevail'd among the *Egyptians*.

The word *Oniromancy* is form'd from the Greek *ονειρον*, Dream, and *μαγία*, I possess.

ONIROCRITIC, a Title given to Interpreters of Dreams, or those who judge of Events from the Circumstances of Dreams.

The Word is form'd from the Greek *ονειρος*, Dream, and *κρισις*, Judgment.

There is no great regard to be had to those Greek Books call'd *Oniromancies*; nor do we know why the Patriarch of *Constantinople* and others should amuse themselves with writing on so pitiful a Subject.

*Rigault* has given us a Collection of the Greek and Latin Works of this kind; one attributed to *Astrampsicus*, another to *Nicephorus* Patriarch of *Constantinople*; to which are added the Treatises of *Artemidorus*, and *Achmet*. But the Books themselves are little else but Reveries; a kind of waking Dreams, to explain and account for sleeping ones.

The Secret of *Oniromancy*, according to them all, consists in the Relation supposed to be between the Dream, and the Thing signify'd; but they are far from keeping to the Relations of Agreement and Similitude; and frequently have recourse to others of Dissimilitude, and Contrariety.

ONIX, or ONYX, in Natural History, a precious Stone, accounted a Species of Opaque Agat. See *PRECIOUS STONE*, *AGAT*, &c.

Its Colours are usually white and black, which appear as distinct as if laid on by Art. There are some brought from *Arabia*, mix'd with a greyish Hue; which, after taking off one Lay or Zone, shew another underneath, of a different Colour. Whence it takes the Name *Memphites* or *Camebuaia*, q. d. another Stone. White Zones or Girdles are essential to an *Onix*.

The Word *Onix*, in the Greek Language, signifies Nail; the Poets making this Stone to have been form'd by the *Parce*, from a Piece of *Venus*'s Nails, cut off by *Cupid* with one of his Arrows.

*Dioscorides* and *Galen* rank *Alabaster* among the number of *Onix*'s; tho' this is very remote from the Sentiment of the Moderns. See *ALABASTER*.

ONKOTOMY, in Chirurgery, the Operation of opening a Tumor, or Abscess; from the Greek *ονκος*, Tumor, and *τομή*, I cut. See *TUMOR*, &c.

ONOMANCY, or NOMANCY, the Art of divining the good or evil Fortune to befall a Man, from the Letters of which is his Name. See *NAME*.

*Onomantia* was a very popular and reputable Practice among the Antients: The *Pythagoreans* taught, that the Minds, Actions and Successes of Men, were according to their Fate, Genius, and Name; and *Plato* himself seems somewhat inclinable to the same Opinion. *Ausonius* expresses it to *Probus*, thus:

Qualem creavit Moribus,  
Iussit vocari Nomine,  
Mundi supremus Arbiter.

Thus he plays with tippling *Meroe*, as tho' her Name told she would drink mere Wine, without Water, or, as he calls it, *Merum Merum*. Thus *Hippolitus* was observed to be torn in pieces by his Coach-Horses, as his Name imported; and thus *Agamemnon* signify'd he should linger long before *Troy*. *Priam*, that he should be redeem'd out of Bondage in his Childhood. Hitherto may be also referred that of *Claudius Rutilius*:

Nominibus certis credam decurrere Mores?  
Moribus aut potius Nomina certa dari?

'Tis a frequent Observation in History, that the greatest Empires and States have been founded and destroy'd by Men of the same Name. Thus *Cyrus*, the Son of *Cambyses*, begun the Persian Monarchy; and *Cyrus*, the Son of *Darius*, ruin'd it. *Darius*, Son of *Hystaspes*, restored it; and again, *Darius*, Son of *Arctanus*, utterly overthrew it. *Philip*, Son of *Aminas*, exceedingly enlarged the Kingdom of *Macedonia*; and *Philip*, Son of *Antigonus*, wholly lost it. *Augustus* was the first Emperor of *Rome*, *Augustulus* the last. *Constantine* first settled the Empire of *Constantinople*; and *Constantine* lost it wholly to the *Turks*.

'Tis an Observation of the like kind, that some Names are constantly unfortunate to Princes: As *Caius* among the *Romans*; *John* in *France*, *England*, and *Scotland*; and *Henry* in *France*.

One of the great Rules of *Onomancy* among the *Pythagoreans*, was, That an even Number of Vowels in a Name signify'd an Imperfection in the left Side of the Man; and an odd Number, in the right. Another Rule was, that those Persons were the most happy, in whose Names the Numeral Letters, added together, made the greatest Sum; for which reason, say they, it was that *Achilles* vanquish'd  *Hector*; the Numeral Letters in the former Name amounting, forsooth, to a greater Number than in the latter.

And it was doubtless from a Principle much of the same kind, that the young *Romans* toasted their Mistresses at their



their Meetings, as often as there were Letters in their Names. Thus *Martial*,

*Navia sex Cyathis, septem Justina bibatur.*

*Rbodeginus* describes a singular kind of *Onomantia*: Thus *Theodotus*, King of the *Goths*, being curious to know the Success of his Wars against the *Romans*; an *Onomantical* Jew order'd him to shut up a Number of Swine in little Jew order'd him to shut up a Number of Swine in little *Styes*, and to give some of them *Roman*, to others, *Gothic* Names, with different Marks to distinguish them; and there to keep them to a certain Day: which being come, upon inspecting the *Styes*, they found those dead, to whom the *Gothic*, and those alive, to whom the *Roman* Names were given: Upon which the Jew foretold the Defeat of the *Goths*.

The Word *Onomantia* is form'd from the Greek *ὄνομα*, Name, and *μαντεία*, Divination. Indeed there is something singular in the Etymology: for, in strictness, *Onomancy* should signify Divination by Asses; from *ov*, *Asinus*, and *μαντεία*. And to signify Divination by Names, it should be *Onomatamancy*.

**ONOMATOPÆA**, in Grammar, &c. a Figure of Speech, whereby Names and Words are form'd to the Resemblance of the Din or Sound made by the Thing signify'd; as *Tricque-Track*, from the Noise the Ladies make at this Game: And from the same Source arises the Buzzing of Bees, the Grunting of Hogs, the Cackling of Hens, the Snoring of People asleep, the Clashing of Arms, &c.

The surest Etymologies are those deduced by the *Onomatopœia*. See **ETYMOLOGY**.

The Word is form'd from the Greek *ὄνομα*, Name, and *ποιῶ*, I make, I feign.

**ONONYCHITES**, something that has the Hoofs, that is, the Feet of an Ass: A Name the Heathens, in the first Century, gave the God of the Christians, because they owned and adored the same God with the Jews. Now 'twas a Notion, (howsoever it had its Rise) as appears from *Cor. Tacitus, Hist. lib. 5. c. 16*. That the *Israelites*, much afflicted with Thirst, were led to a Spring by an Ass going to drink; and that in gratitude for the Benefit, they worshipp'd an Ass; and that the Christians did so likewise. See *Tertull. Apol.*

The Word is form'd from the Greek *ov*, *Ass*, and *ὄνυχ*, Hoof.

**ONTOLOGY**, or **ONTOSOPHY**, the Doctrine, or Knowledge of *Ente*, of Being, in the General, or Abstract. See **ENS**.

*Ontology* coincides with what in the Schools we more usually call *Metaphysics*. See **METAPHYSICKS**.

**ONYCOMANCY**, or as some have it, **ONYMANCY**, a kind of Divination by means of the Nails of the Fingers. See **NAIL**.

The ancient Practice was to rub the Nails of a Youth with Oil and Soor, or Wax; and to hold up the Nails thus rubbed against the Sun. Upon them were supposed to appear Figures or Characters, which shew'd the Thing requir'd.

Hence, our modern Chiromancers call that Branch of their Art, which relates to the Inspection of Nails, *Onychomancy*.

The Word is form'd from the Greek *ὄνυχ*, Nail, and *μαντεία*, Divination.

**OPACITY**, in Philosophy, a Quality of some Bodies, which renders them *Opake*, i. e. impervious to the Rays of Light. See **LIGHT**.

The Term *Opacity* is used in opposition to Transparency. See **TRANSPARENCY**.

*Opacity*, according to the *Cartesians*, consists in this, that the Pores of the Body are not all strait, or directly before each other; or rather, not pervious every way.

But this Doctrine is deficient; for tho' it must be allow'd that to have a Body transparent, its Pores must be straight, or rather, open every way: Yet how it should happen, that not only Glass and Diamonds, but even Water, whose Parts are so very moveable, should have all their Pores open and pervious every way; and at the same time, the finest Paper, or the thinnest Gold Plate, should exclude the Light for want of such Pores, is inconceivable. So that another Cause of *Opacity* must be found.

Now, all Bodies have vastly more Pores or Vacuities, than are necessary for an infinite Number of Rays to find a free Passage thro them in right Lines, without striking on any of the Parts themselves. For since Water is nineteen times lighter, i. e. rarer, than Gold; and yet Gold itself is so very rare, that Magnetic Effluvia pass freely thro' it without any opposition; and Quicksilver is readily receiv'd within its Parts, and even Water itself by Compression, it must have much more Pores than solid Parts: Consequently, Water must have at least forty times as much Vacuity as Solidity. See **PORUS**.

The Cause therefore why some Bodies are *opake*, does not consist in the want of rectilinear Pores, pervious every way; but, either in the unequal Density of the Parts; or in the Magnitude of the Pores, and being either empty, or fill'd with a different Matter; by means whereof the Rays of Light, in their Passage, are arrested by innumerable Refractions and Reflexions; till, falling at length on some solid Part, they become quite extinct, and are utterly absorb'd. See **RAY** and **REFRACTION**.

Hence Cork, Paper, Wood, &c. are *opake*; while Glass, Diamonds, &c. are pellucid. For in the Confines, or joining of Parts alike in Density, such as those of Glass, Water, Diamonds, &c. among themselves; there arises no Refraction or Reflection, by reason of the equal Attraction every way. So that such of the Rays of Light as enter the first Surface, pass straight thro' the Body; excepting such as are lost and absorb'd, by striking on solid Parts. But in the bordering of Parts unequal in Density; such as those of Wood and Paper, both with regard to themselves, and with regard to the Air or empty Space in their larger Pores, the Attraction being unequal, the Reflections and Refractions will be very great; thus the Rays will be unable to pass thro' such Bodies, being continually bandied about, till they become extinct. See **ATTRACTION**, &c.

That this Interruption, or Discontinuity of Parts, is the chief Cause of *Opacity*, Sir *Isaac Newton* argues to appear hence, that all *opake* Bodies immediately begin to be transparent, when their Pores become fill'd with a Substance of equal, or almost equal Density with their Parts: Thus Paper dipt in Water or Oil, the Stone call'd *Oculus Mundi* steep'd in Water, Linnen Cloth dipt in Oil or Vinegar, and other Substances soak'd in such Fluids as will intimately pervade their little Pores, become more transparent than before. On the contrary, the most transparent Substances, by emptying their Pores, or separating their Parts, may be render'd very *opake*: Thus Salts, or wet Paper, or *Oculus Mundi*, by drying; Horn, by scraping; Glass, by pulverizing or flaving; and Water itself, by being beat into Bubbles or Froth, are render'd *Opake*.

Indeed, to render Bodies *opake* and colour'd, their Interstices must not be less than of some determinate Size: For the most *opake* Bodies that are, if their Parts be very minutely divided, as when Metals are divided in Acid Menstruums, become perfectly transparent. See **COLOUR**, **TRANSPARENCY**, &c.

**OPAL**, a precious Stone, of various Colours. See **PRECIOUS Stone**.

In it are seen the Red of the Ruby, the Purple of the Amethyst, the Green of the Emerald; besides Yellow, and sometimes Black and White.

When the Stone is broke, most of these Colours disappear; which shews that they arise by Reflection from one or two principal ones.

Its Form is always either round or oval; its prevailing Colour white. Its Diversity of Colours makes it almost of equal Value with a Saphir or Ruby.

*Tavernier* says, perhaps somewhat too positively, that there are Mines of *Opal* in Turkey. Other Authors, antient and modern, say, *Cyprus*, *Arabia*, *Egypt*, *Bohemia*, and *Hungary*, produce it; whence it is distinguish'd into two kinds, *Oriental* and *Occidental*. 'Tis too soft to bear polishing with Pewter or Lead; so that they are obliged to polish it with *Tripoli*.

*Pliny* among the Antients, and *Porta* and *Albertus Magnus* among the Moderns, are very copious on the Virtues of the *Opal*; forsooth, because it has the Colours of all the other precious Stones, it must have all their Virtues too. The Antients call'd it *Paideros*, from its promoting Love and Good-Will. *Pliny* and *Solinus* mention a Species of *Opal*, call'd *Execontaliba*, which had sixty Colours.

**Artificial OPAL**. In the *Philosoph. Transact.* Mr. *Colepresse* gives us an account of the manner of counterfeiting *Opal*, as practis'd at *Harlem*. He says, the Counterfeit is very lively, and thinks it only perform'd by the Degrees of Heat, which produce the Colours. When the Composition is melted, they take out some on the Point of an Iron Rod, which being cool'd either in the Air or Water, is colourless and pellucid; but being put into the Mouth of the Furnace on the same Rod, and there turn'd by the Hand for a little space, hath its little Bodies so variously posited in various Parts of the same Piece, that the Light falling on them, being variously modify'd thereby, represents the several Colours seen in the natural *Opal*. He adds, the Colours may be destroy'd and restored, according to the various Motions of its Particles by Heat.

**OPALIA**, or **OPICONSIVA**, Feasts celebrated at *Rome*, in honour of the Goddess *Ops*. *Varro* says, they were held three days after the Expiration of the *Saturnalia*.

According to *Macrobius*, they were held the nineteenth of December, which was one of the Days of the *Saturnalia*. He adds,



adds, that these two Feasts were celebrated in the same Month, because *Saturn* and *Ops* were Husband and Wife; and that it was to them we owe the Invention of Corn and Fruits: for which reason, the Feast was not held till the Harvest and Fruit-time were intirely over.

Lastly, he observes, that the Vows offer'd to the Goddesses, were made fitting on the Ground; to shew that she was Earth, the Mother of all things.

OPENING a Vein, see BLEEDING.

OPENING Flank, in Fortification, is that part of the Flank which is cover'd by the Orillon. See FLANK.

OPENING of Trenches, is the first Breaking of Ground by the Besiegers, in order to carry on their Approaches towards a Place. See TRENCH.

OPENING of Gates, in Astrology, is, when one Planet separates from another, and presently applies to a third bearing Rule in a Sign opposite to that ruled by the Planet with which it was join'd.

OPERA, a Dramatic Composition set to Music, and sung on the Stage; accompanied with musical Instruments; and enrich'd with magnificent Dressings, Machines, and other Decorations.

*Bruyere* says, that 'tis essential to the Opera to keep the Mind, the Eyes, and Ears in an Enchantment: *S. Evremond* calls the Opera a chimerical Assemblage of Poetry and Music; where the Poet and Musician each cramp the other.

The Opera we derive from the *Venetians*, among whom 'tis held one of the principal Glories of their Carneval. See COMEDY.

While the *English* and *French* Comic and Tragic Theatres were forming, the *Venetians* invented the Opera: The Abbot *Perrin*, Introductor of Embassadors to *Gaston Duke of Orleans*, was the first who form'd the Design of introducing 'em into *Paris*; and he obtain'd the King's Privilege for the same in 1669. And it was not long e'er it pass'd thence into *England*. The Spectator observes, that the *French* Music agrees with their Accent and Pronunciation, much better than the *English*; and are at the same time better calculated for the gay Humour of that People. See RECITATIVE.

At *Rome* they have a kind of *Spiritual Opera's*, frequent in Lent; consisting of Dialogues, Duos, Trios, Ritornella's, Chorus's, &c. The Subject whereof is taken out of the Scripture, the Life of some Saint, or the like. The *Italians* call 'em *Oratorio*: The Words are frequently *Latin*; and sometimes *Italian*.

OPERATION, in the general, the Act of exerting, or exercising some Power, or Faculty, upon which an Effect follows. See POWER.

The noblest Operation of Man, is that by the Schoolmen call'd Vital, or Immanent, viz. the Operation of the Mind; which, with regard to the Understanding, is threefold; Apprehension or Perception, Discretion or Judgment, and Reasoning or Discourse. See APPREHENSION, JUDGMENT, and DISCOURSE. The directing of these makes the Object of Logic. See LOGIC.

With regard to the Will, the immanent Operations are Willing and Nilling; to which are refer'd Loving and Hating. See WILL.

OPERATION, in Medicine, a methodical Action of the Hand, on the human Body; to re-establish Health. See CHIRURGERY.

Bleeding is a very common, but at the same time a dangerous Operation. See PHLEBOTOMY and BLEEDING.

Trepanning is one of the finest Operations in Chirurgery. See TREPANNING. The *Cæsarian Operation* is the cutting a Woman with Child, and drawing out the Child through one side. See CÆSARIAN.

The other Chirurgical Operations, are Sutures, Tapping, Castrating, Cutting for the Fistula, Amputation, Extirpation, Cupping, &c. See each in its Place in this Work.

OPERATION is particularly used in Medicine, for the Manner wherein any Remedy produces its salutary Effect; or that Series of Actions, mediate and immediate, whereby the remote End is effected. See MEDICINE.

See the Operations of each Kind of Medicines under the proper Heads, SPECIFICS, PURGATIVES, EMETICS, OPIATES, &c.

OPERATIONS, in Chymistry, are the Processes, or Experiments, by means whereof the proper Changes are produced in Bodies, and the Effects of the Art procured. See CHYMISTRY.

Now, the Changes Chymistry produces in Bodies are reducible to two Kinds, viz. an Union of Parts, and a Separation thereof: Thus Chymistry either separates Spirits, Salts, Oils, &c. or compounds 'em together.

A Chymical Operation, then, consists in changing the Situation of the Parts; particularly, either in moving some Parts, but not the Whole, which is call'd separating; or in adding new Parts, which is call'd uniting.

All Chymical Operations, therefore, are reducible to two Kinds, viz. such whereby the Parts of Bodies before join'd

or united, are separated, which the antient Chymists call'd Solution; and such whereby the Parts before dis-joined are combined, or united, call'd Coagulation. See SOLUTION and COAGULATION.

Some, however, object Digestion as a third Species of Operation, not reducible to either of 'em: But *Boerhaave* shews, that it is a Composition of both. See DIGESTION.

Most Chymists, however, look on this Division as scarce accurate and minute enough, and subdivide it into a number of particular, or subordinate Operations; as Calcination, Virification, Distillation, Sublimation, Cobobation, Amalgamation, Fermentation, Putrefaction, &c. See each in its Place, CALCINATION, VIRIFICATION, SUBLIMATION, DISTILLATION, FERMENTATION, &c.

OPERATION, in Theology, is used for the Actions both of the Word, and the Man, in Jesus Christ.

The Orthodox teach, that there are two Operations in Jesus Christ, the one divine, the other human; and not one Theandric Operation, as was the Doctrine of the *Monothelites* and *Monophysites*. See THEANDRIC, &c.

OPERATOR, in Medicine, &c. a Person who operates, or works with the Hand, on the human Body, to preserve, or restore, its Health.

Thus we say Operator for the Stone, meaning a Lithotomist, or a Person who cuts. See LITHOTOMY. Operator for the Eyes, a Person who cures Cataracts, &c. See CATARACT. Operator for the Teeth, a Tooth-Drawer. See TOOTH.

OPHITES, in Natural History, a sort of variegated Marble; otherwise call'd Serpentine. See MARBLE and SERPENTINE.

It is thus call'd from the Greek *opsis*, Serpent; by reason its Spots resemble those of that Animal.

OPHITES is also a Sect of antient Heretics, who sprung out of the *Gnostics*; so call'd from their worshipping the Serpent that seduced *Eve*.

This Serpent, they taught, was instructed thoroughly in all Knowledge; and make it the Father and Author of all the Sciences. On which Principle they built a thousand Chimeras; part of which may be seen in *St. Epiphanius*. See Gnostic.

They said this Serpent was the Christ; that he was very different from Jesus born of the Virgin, into whom, said they, the Christ descended; and that 'twas this Jesus, not the Christ, that suffered. Accordingly, they made all those of their Sect renounce Jesus.

The *Serbians*, or *Serbites*, mentioned by *Theodoret*, were either the same with the *Ophites*, or very little different from them.

OPHIUCHUS, in Astronomy, a Constellation of the Northern Hemisphere; call'd also *Serpentarius*. See SERPENTARIUS.

OPHTHALMIA, or OPTHALMIA, in Medicine, a Disease of the Eyes; properly, an Inflammation of the *Tunica Adnata*, or *Conjunctiva*; accompanied with a redness, heat, and pain. See EYE.

The Ophthalmia is either moist, or dry: In the first, there is a shedding of Tears; in the second, none at all.

It sometimes happens in the Ophthalmia, that the two Eye-lids are so distorted, that the Eye continues constantly open, without being able to shut; which is call'd *χρημασις*; sometimes the Eye-lids are so fasten'd together, that the Eye cannot be open'd, which is call'd *φρημασις*, q. d. closure of things that should be open.

The immediate Cause of the Ophthalmia, is the Blood flowing in too great abundance in the little Vessels of the *Adnata*, so as to stagnate therein, and distend them. The remote Causes are the same with those of other Inflammations.

*Celsus* calls the Ophthalmia, *Lippitudo*, by reason of a Gum sticking to the Eye-lids in this Disease, which the *Latins* call *Lippa*.

In Summer 'tis frequent to have Epidemic Ophthalmia's. Snow apply'd to the afflicted Eye, is reputed a good Remedy for the Ophthalmia: The *Ephemerides* of the *Leopoldine Academy* mention an Ophthalmia cured by applying Cows-dung, while hot, between two linnen Clothes, to the Eye. A Fox's Tongue, and the Fat and Gall of a Viper, are empirical Preservatives against the Ophthalmia.

The Word is form'd from the Greek *ὀφθαλμος*, Eye.

*Piscirru*, and some others, distinguish an external and internal Ophthalmia; the first in the *Adnata*, which is that hitherto spoke of; the second in the *Retina*. The Symptoms or Indications of the latter, are *Muscae volitantes*, Dust seeming to fly in the Air, &c. See MUSCÆ, &c.

This, when inveterate, degenerates, or ends in a *Gutta Serena*, or *Anaurosis*. See GUTTA Serena, &c.

The Cure of Ophthalmia's, according to the modern Practice, depends chiefly on the due repetition of Purgatives. If these fail, recourse is had to Vesicatories, Issues, Setons, &c. Tho' *Piscirru* prefers Bleeding; it being his Observation,



tion, that no Disease requires copious bleeding so much as the *Ophthalmia*.

**OPHTHALMICS**, Medicines proper for Diseases of the Eyes; as *Ophthalmic Waters*, *Ophthalmic Powders*, *Ointments*, &c. See **EYES**.

There is an excellent *Ophthalmic* prepared of Sugar of Saturn.

The fifth Pair of Nerves of the Brain, dividing into three Branches; the first is call'd *Ophthalmic*, because it goes to the Eye: This again subdivides into two Branches, after sending out several Twigs which encompass the Optic Nerves, and are distributed in the *Choroides*. See **NERVE**.

**OPHTHALMOGRAPHIA**, that Branch of Anatomy which considers the Structure and Composition of the Eye; the Use of its Parts, and the principal Effects of Vision. See **EYE**.

Our Countryman, Dr. William Briggs, has published an excellent *Ophthalmographia*, and Plempius another.

The Word is form'd from the Greek *οφθαλμος*, Eye; and *γραφειν*, Description.

**OPHTHALMOSCOPIA**, that Branch of Physiognomy which considers a Person's Eyes; to deduce thence the Knowledge of his Temperament, Humour, and Manners. See **PHYSIOGNOMY**.

**OPIATE**, in Medicine, any Composition wherein Opium is an Ingredient. See **OPIUM**.

The Word is frequently also apply'd to Confections, Antidotes, and Electuaries; tho' some say 'tis only properly applicable to soft Compositions: In which sense it is defined an internal Remedy, variously composed of Powders, Pulps, Liquors, Sugar, or Honey, reduced into a soft Consistence. See **CONFECTION**, **ELECTUARY**, &c.

The *Opiate* of Solomon is a Composition of great Fame, so call'd from one Solomon, a Physician, its Inventor; and first published by Lawrence Joubert.

There are a particular kind of *Opiates*, call'd *Incar natives*, for the Teeth and Gums, made of Alum, Sumach, Lignum Aloes, Myrrh, Mastic, &c. reduced into Powder.

**OPIATES** is also used in the general for all Medicines given with an Intention to procure Sleep; in which sense the Word is of the same Import with Narcotics, Hypnotics, Soporifics, and Pacifics. See **SLEEP**, **NARCOTIC**, **HYPNOTIC**, &c.

The Operation of *Opiates*, or the manner wherein they produce their Effect in the Body, Dr. Quincy thus lays down:

All Pain is a Stimulus on the Part affected, and is attended with Contractions of the pained Membranes, which occasion a greater Afflux than ordinary of the nervous Juice that way: On the other hand, Pleasure, or a delightful Sensation in any part, is accompanied with a smooth Undulation, and easy Reflux of the nervous Juice towards the Brain. This is, as it were, the Entertainment of the Mind; with which being taken up, it doth not determine the Spirits to the Organs of Motion: that is, there is such a Relaxation of the muscular Fibres, and such a Disposition of the nervous Fluid, as is necessary to Sleep. See **PAIN**, &c.

Now, 'tis shewn that an agreeable Sensation produced in the Stomach, together with a distention of its Membranes, is the immediate Cause of that Sleepiness, to which we are inclinable after Eating; the one engaging the Mind, the other acting on the Body. For Pleasure amuses the Soul, and the Fulness of the Vessels in the Brain, checks and hinders, in some measure, the derivation of the nervous Juice into the Organs.

Now, to apply this; a moderate Dose of an *Opiate*, usually transports People with a pleasing Sensation, to that degree, that, as they often express themselves, they are in Heaven; and tho' they do not always sleep, (which proceeds from the presentation of pleasing Images to the Mind so strongly, that, like Dreams, they do over-engage the Fancy, and so interrupt the State of Rest) yet they enjoy so perfect an Indolence and Quiet, that no Happiness in the World can surpass the Charms of so agreeable an Extasy.

Thus we have from these Medicines, but in a far more eminent degree, all those Effects which are observed to follow upon that grateful Sense in the Stomach, which a moderate Fulness produceth. For no Bodies are so fit and able pleasingly to affect our sensible Membranes, as those which consist of volatile Parts, whose Activity is tempered and allay'd by the Smoothness of some which are lubricating and oily; for they lightly rarify the Juices of the Stomach, and cause a pleasant Titillation of its nervous Coat, whereby there is induced an agreeable Plenitude, and the Mind is entertained with Ideas of Satisfaction and Delight.

And thus, we easily see upon what Mechanism the other Virtues of *Opiates* depend; for their easing Pains, checking Evacuations, &c. proceed not only from the Mind's being taken up with a pleasing Sense, whereby it is diverted from a disagreeable one; but all Pain being attended with a Contraction of the Part, the Relaxation of the Fibres, which they cause, eludes and destroys the Force of the Stimulus.

*Opiates* are found to abate immoderate Secretions and Evacuations, which they do by removing that Irritation of the Organs, whereby they are occasion'd. And herein lies the incrassating Quality of those Medicines, in that the twitching Sense upon the Membranes of the Lungs, Bowels, &c. being lessen'd, the sharp Humour is suffer'd to lodge there in a greater Quantity, before it is so troublesome as to be thrown off and expell'd; it being all one as if there were no Irritation of the Part, if the uneasy Sense thereof be not regarded by the Mind. And these Effects will all be heightened by the Mixture of the *Opiate* Particles with the Blood; which is hereupon rarify'd, and distends its Vessels, especially those of the Brain; and this does still, to a greater degree, lessen the Influx of the nervous Fluid to the Parts, by pressing upon the *Tubuli*, or little Canals, through which it is derived. Whence the reason of that Difficulty of breathing, which *Opiates* occasion; this Symptom being inseparable from the Rarefaction of the Blood in the Lungs.

**OPINION**, a probable Belief; or a doubtful, and uncertain Judgment of the Mind. See **BELIEF**.

*Opinion* may be strictly defined the Assent of the Mind to Propositions not evidently true at first sight; nor deduced, by necessary Consequence, from others that are so; but such as carry the Face of Truth. See **TRUTH**, and **ERROR**, also **FAITH**, &c.

The Schools define it, *Affensus Intellectus cum formidine de opposito*; An Assent of the Understanding, with some fear or distrust on the contrary part. Thus the Logicians say, that Demonstration begets Science, or Knowledge; and probable Arguments beget *Opinion*. See **KNOWLEDGE** and **PROBABILITY**.

Wherever the Mind's Acquiescence in a Truth proposed to it, is accompanied with any Doubt, this is what we call an *Opinion*. See **DOUBTING**.

Plato makes *Opinion* a Medium between Knowledge and Ignorance; clearer and more express than Ignorance; yet more obscure and unsatisfying than Knowledge. See **IGNORANCE**.

**OPISTHOTONOS**, in Medicine, a kind of Convulsion, wherein the Body is bent backwards, so as to form, as it were, a Bow; in which sense the Word is used in opposition to *Emprosthotonos*, wherein the Body is bent forwards. See **CONVULSION**.

The *Opisthotonos* arises from a tonic Motion of the Muscles of the posterior Parts of the Body; especially those on the back of the Head.

The Word is compounded of the Greek *οπισθεν*, backward, behind, and *τενειν*, tendere, to stretch, bend.

**OPIUM**, in Pharmacy, &c. a Juice drawn from the Head of the black Poppy, and afterwards inspissated. See **POPPY**.

When the Juice flows of itself, thro' Incisions made in the Poppy Heads, it is properly call'd *Opium*; when drawn by Expression, it assumes the Name of *Meconium*. See **MECONIUM**.

The difference between the Qualities and Virtues of the two Juices, is very considerable: The former is preferable on all accounts; but it is exceeding rare; the *Turks*, among whom it is produced, and who make great use of it, never allowing it to be exported; so that it is the latter that is ordinarily used among us, and sold for *Opium*.

'Tis mostly brought from the *Levant* and *Cairo*; generally very impure; the *Levantine*s, to shorten their Labour, and to have the more Juice, drawing it equally from the Heads and the Leaves of Poppies, by Expression, and then reducing it to the thickness of an Extract by Fire.

It must be chosen dry, the smoothest, and blackest possible, of a drowsy smell, and neither rugged, nor sticky, nor all in a Mass.

'Tis a popular Error, that there is any such thing as *white Opium*; for tho' the Juice as it runs from the Heads of the Poppies be of a Milk-colour, it always becomes of a very deep brown as it thickens. Wherever it is found yellowish or soft, 'tis a sign the Juice has not had Fire enough.

Prepared *Opium* is call'd *Laudanum*; of which there are two Kinds: the one, *Simple*; extracted by means of Rain-Water, and Spirit of Wine: The other *Compound*, call'd *Laudanum Opium*; wherein there enter several other Ingredients. See **LAUDANUM**.

The Uses of *Opium* are to sooth Pain; to excite Sleep, to stop Vomiting and Loosenesses. Its Dose is from half a Grain to two Grains. Some Persons, who have much habituated themselves to it, can take 50 or 60 Grains. Charas says, he has taken 12 Grains himself; and adds, he knew one who made no scruple of 36. And in the *Philos. Trans.* we have an instance of one Mrs. Lovelock, who, in a Fever, in three days time, took 102 Grains.

It raises the Spirits, occasions agreeable Sensations, and has much the same effect with Wine or strong Spirits. The *Turks* ordinarily take to the quantity of a Drachm when they



they go to Battel, or undertake any Affair that requires Vigour and Force.

*Opium* stops, for a time, all Overflowings of Humours, Fluxes, Hemorrhages, &c. probably from the smoothness and roundness of its Parts, which by a kind of Tiltation, oblige the Intestines, and other Vessels to contract themselves. See OPIATES.

*Willis, Sydenham, and Muller* look on *Opium* as a coagulating Poison, which fixes the Spirits in the Nerves. *Wepfer* and *Piscarini*, on the contrary, maintain it to be a hot dissolving Poison, which subtilizes the Blood, exalts and reduces it into Vapours, which bloat up the Arteries; and the bloated Arteries compressing the Veins and Nerves, shut up the Passage of the Spirits. See POISON.

By Analysis, it is found to contain a great deal of volatile Salt.

The Word is form'd from the Greek *οπίος*, Juice.

OPOBALSAMUM, in Pharmacy, a whitish Juice, Gum, or Resin, distilling from the Branches of a Tree call'd *Balsamum*, or the *Balm-Tree*. See BALM.

'Tis whitish, pretty thick, transparent, of a Smell approaching Turpentine, but much more agreeable.

'Tis the same with the celebrated *Balsamum verum*, or Balm of the *Levant*; at least the difference is not visible, nor can Authors fix it. See BALM.

It obtains a Place among the Alexipharmics, and is a good Ingredient in the *Tberiaca Andromachi*, and *Mithridate*; very ill supply'd with the expressed Oil of Mace for a *Succedaneum*, which does not at all come up to the subtilty and activity of its Parts, but is of a much heavier Texture.

This, as all other Balsams, is Suppurative, Deterfiv, and Incarnating, apply'd outwardly to Tumors, Ulcers, or green Wounds. See BALSAM.

OPOPANAX, or OPOPONAX, in Pharmacy, a Gum, yellow without-side, white within, fat, brittle, of an agreeable Taste, and a very strong Smell. See GUM.

The *Latins* call it *Panaces Herculeum*, from *Hercules*, who is suppos'd to have invented it, or rather who first discover'd its specific Virtues. 'Tis one of the three celebrated *Panacea*, or universal Medicines, they attributed such wonderful Virtues to. The two others are the *Asclepium* and *Chironium*; the first found by *Esculapius*, the second by *Chiron*. See PANACEA.

The Gum *Opopanax* flows by Incision from a Plant growing abundantly in *Achaia*, *Beotia*, *Phocis*, and *Macedonia*: while 'tis liquid, 'tis white; but as it dries and hardens, it assumes a beautiful golden yellow.

There are three Kinds imported; that in Tears; that in the Mass; and that counterfeited, or flatted.

The first is the best, and the second is the better, as it has the more Tears; the third is a rank Sophistication, and good for little.

It is little used internally; tho' *Etmuller* ranks it among Cathartics. Its chief Use is in the Cure of Wounds; whence it enters the Composition of the *Unguentum Divinum*, with the *Galbanum*, *Ammoniac*, and *Bdellium*.

The Word is form'd from the Greek *οπίον*, Juice, and *παναξ*, the Name of the Tree which yields it.

OPILATION, in Medicine, the Act of obstructing, or stopping up the Ducts, or Passages of the Body, by evil or peccant Humours. See OBSTRUCTION.

The Word is chiefly used for Obstructions of the lower Belly.

Viscid, heavy Foods, difficult of Digestion, are *opilative*; don't pass off well, but stop in the Mouths of the Vessels.

OPPONENT, a Person who withstands, or opposes another. See OPPOSITION.

The Term is chiefly used in speaking of Scholastic or Academic Disputes or Exercises, where a Person who opposes a Thesis, or impugns it by his Objections, is call'd *Opponent*, Opponent.

OPPOSITES, *Opposita, simply*, among Logicians, are such Things as differ among themselves; so, as not to differ in like manner with some third. By which Circumstance, *Opposites* differ from *Disparates*.

The Schoolmen reckon four Kinds of *Opposites*; viz. *relatively*, *contrarily*, *privatively*, and *contradictorily* *Opposites*. For either, say they, the Opposition is between *Ens* and *Ens*, or between *Ens* and *Non Ens*: If the former, it is either with a dependant *Ens*, which makes a *relative* Opposition, the lowest of all; or an independent one, which is a *contrary* one: If with a *Non Ens*, it is either with a *Non Ens secundum quid*, which is *privative*; or with a *Non Ens simpliciter*, which is the highest Opposition. See RELATIVE, CONTRARY, PRIVATIVE, and CONTRADICTORY.

OPPOSITES, *Opposita, complexly*, are Propositions that clash with each other: As, Man is an Animal; and Man is not an Animal. See OPPOSITION.

OPPOSITE Angles. If a Line ST (Tab. GEOMETRY, Fig. 46.) meet two other Lines, AP and BR, in different

Points A and B, but in the same Direction; the Angles *x* and *y*, as also *z* and *y*, hereby form'd, are call'd *opposite Angles*; particularly, "the external *opposite Angle*, and the internal *opposite Angle* of *y*."

OPPOSITE Cones, or a *double Cone*, two similar Cones, vertically *opposite*, and having the same common Axis. See CONE.

OPPOSITE Sections, are the two Hyperbola's made by a Plane cutting both those Cones.

If a Cone be cut by a Plane through its Vertex, and afterwards by a second Plane parallel to the former; this latter Plane produced thro the *opposite Cone* will there make the *opposite Sections*. See SECTIONS.

OPPOSITION, in Geometry, the Relation of two Things, between which a Line may be drawn perpendicular to both.

OPPOSITION, in Logic, a Quality of Disagreement, between Propositions that have the same Subject, and the same Attribute. See PROPOSITION.

*Opposition*, is said by Logicians to be either Complex, or Incomplex.

*Incomplex*, or *Simple* OPPOSITION, is the Disagreement of two things, which will not suffer each other to be in the same Subject: Thus Heat is opposed to Cold; Sight to Blindness, &c. Which *Opposition* has already been observed to be of four Kinds. See OPPOSITE.

*Complex* OPPOSITION, is defined by *Aristotle* to be the affirming, and denying the same Predicate of the same Subject, not taken equivocally for the same, according to the same, in the same manner, and at the same time: As *Socrates* is learned; and *Socrates* is not learned.

The later Schoolmen, deviating from their Master, define *Opposition* an Affection of the Enunciation, whereby two absolute Propositions, the same Extremes being supposed in the same Order, and Number, and understood, without any ambiguity, of the same thing, oppose each other, either in respect of Quantity, or of Quality; or of both.

According to the former Definition, there are three Species of *Opposition*; *Contrary*, *Subcontrary*, and *Contradictory*: According to the second, a fourth Species is admitted, viz. *Subaltern*.

To know how and wherein, Propositions are opposite, they must be compared in Quantity and Quality, all the ways they can be compared in. If they be opposite in Quality and Quantity; i. e. if the one be Affirmative, and the other Negative; the one Universal, the other Particular, they are said to be *contradictory*; v. gr. No Pleasure is allow'd; some Pleasure is allow'd. See CONTRADICTORY.

If they be only opposite in Quality, and not in Quantity, they are call'd *Contraries*, if Universal; and *Sub-contraries*, if Particular; v. gr. All use of Wine is Evil; no use of Wine is Evil. Some Means of preserving Reputation are allow'd; some Means of preserving Reputation are not allow'd. See CONTRARY, &c.

If the Propositions be only opposite in Quantity, they are call'd *Subalterns*; v. gr. Every Man is liable to Sin; some Man is liable to Sin. But this last is no proper *Opposition*; inasmuch as the universal Proposition always includes the particular one.

Singular Propositions, which can only be opposed in Quality, are reducible to contradictory ones.

The essential Properties of Propositions consider'd with regard to their *Opposition*; are, 1. That of two contradictory Propositions, there is one always true, and another false. 2. Two contrary Propositions can never be both true; but may be both false. 3. Sub contrary Propositions may be all true at the same time; as happens when the Attribute is accidental to the Subject; but when it is essential to it, the one is true, the other false. 4. Subalterns may be either true or false at the same time; or the one may be true, the other false. If the Attribute be essential to the Subject, the subaltern Affirmatives are true, and the Negatives false; but if the Negatives deny the Subject an Attribute incompatible with the Subject, they will be both true. When the Attribute is accidental to the Subject, the universal Subaltern is ordinarily false, and the particular one true.

OPPOSITION, in Rhetoric, a Figure, whereby two things are assembled together, which appeared incompatible; as when *Horace* says, a wife Folly.

In *Bouhours's* Notion, this Figure, which seems to deny what it establishes, and contradicts itself in Appearance, is very Elegant.

OPPOSITION, in Astronomy, is that Aspect, or Situation of two Stars, or Planets, wherein they are diametrically opposite to each other, or 180° a-part. See CONJUNCTION.

When the Moon is diametrically *opposite* to the Sun, so that she shows her whole illumined Face; she is said, with regard to the Sun, to be in *Opposition*; and she is then said to be in her *Full*, and shines all Night long. See PHASES. Eclip.



# Tab. OPTICKS.

Fig. 1. Lens

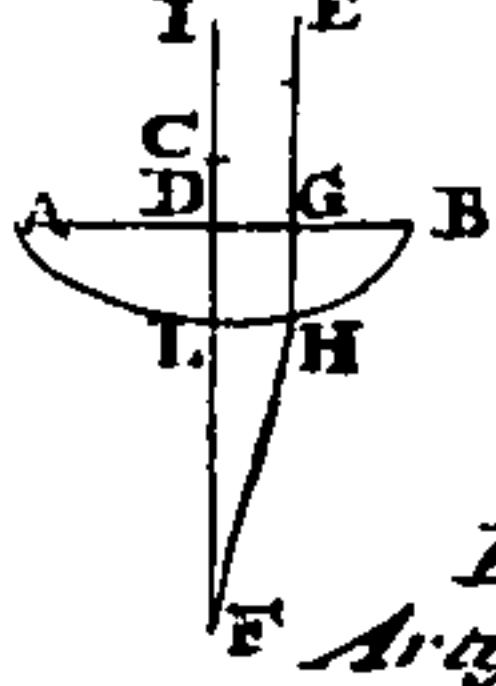


Fig. 2. Lens

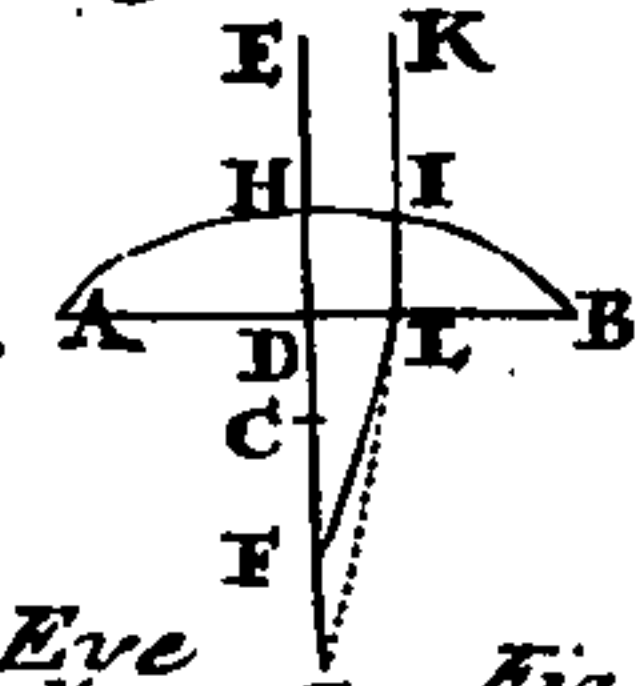


Fig. 3. Lens

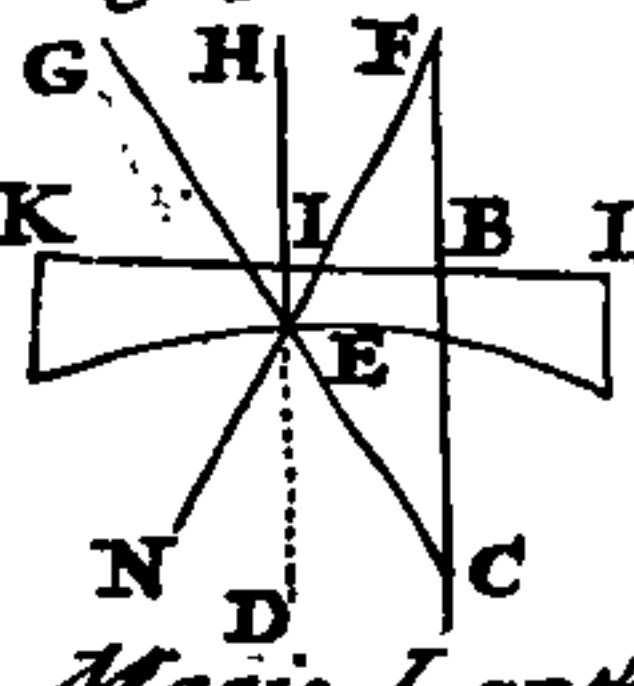


Fig. 4. Lens

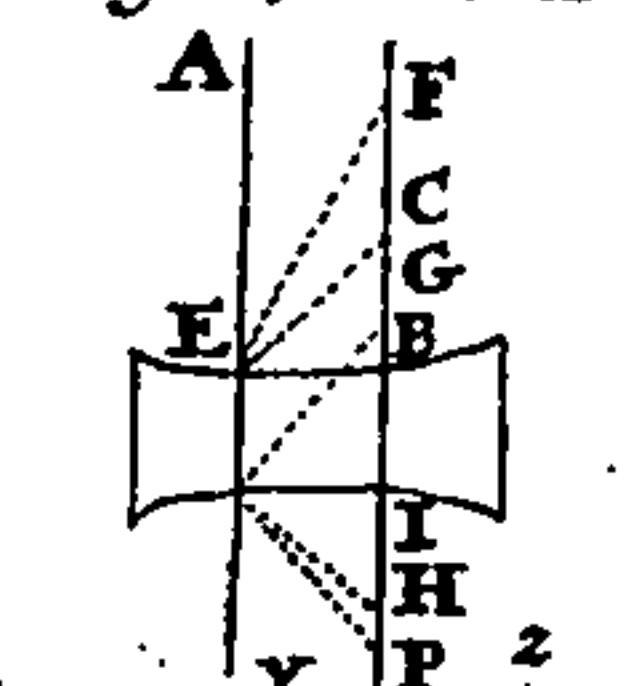


Fig. 5. Colour

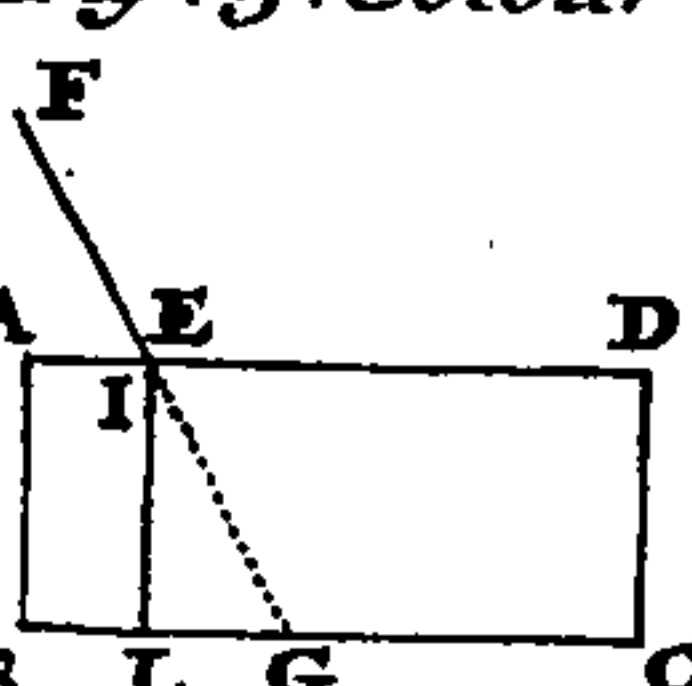


Fig. 6. Colour

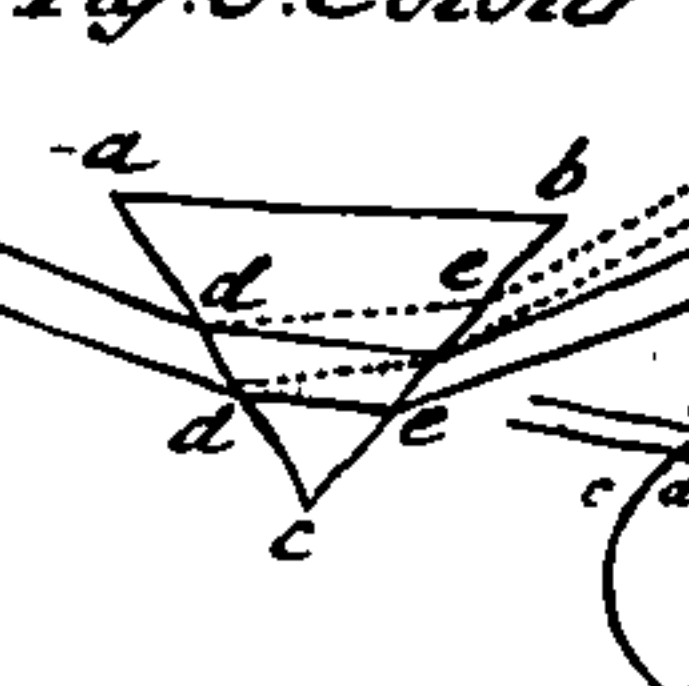


Fig. 9. Colour

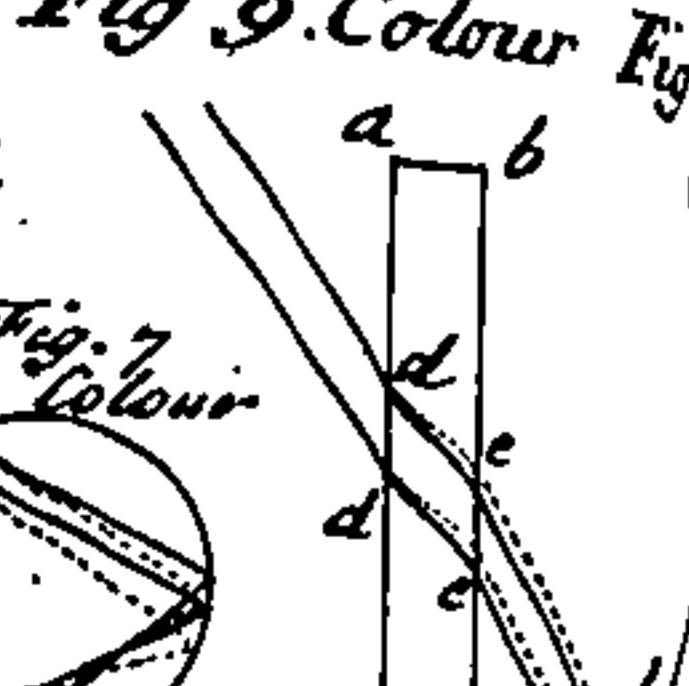


Fig. 9. Artificial Eye

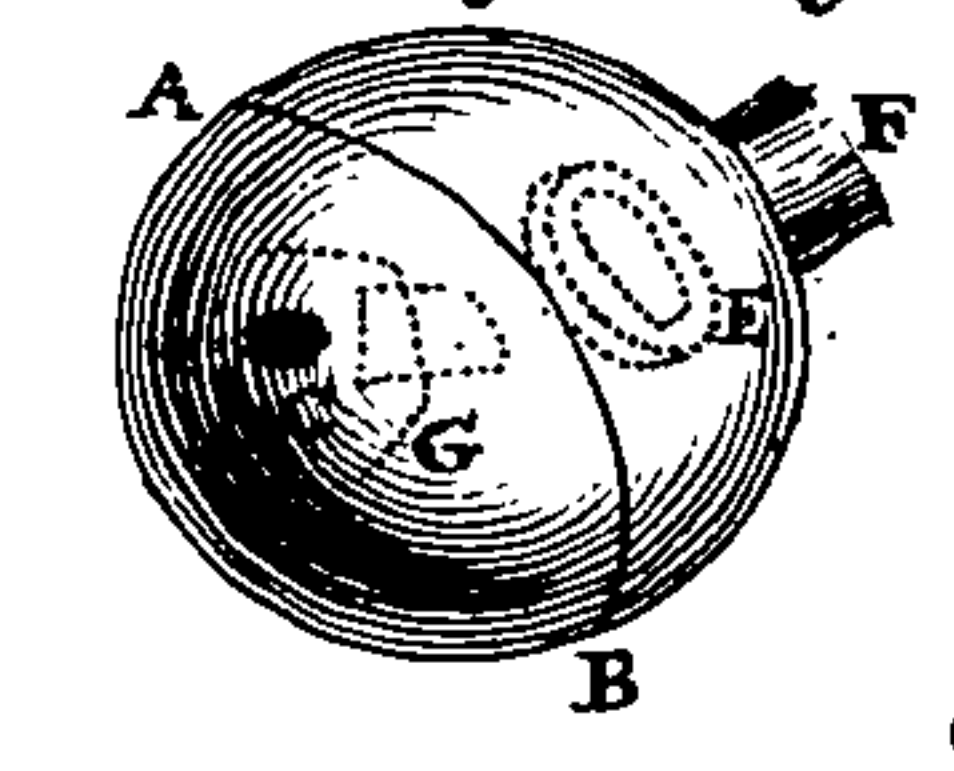




Fig. 47 Rain-bow

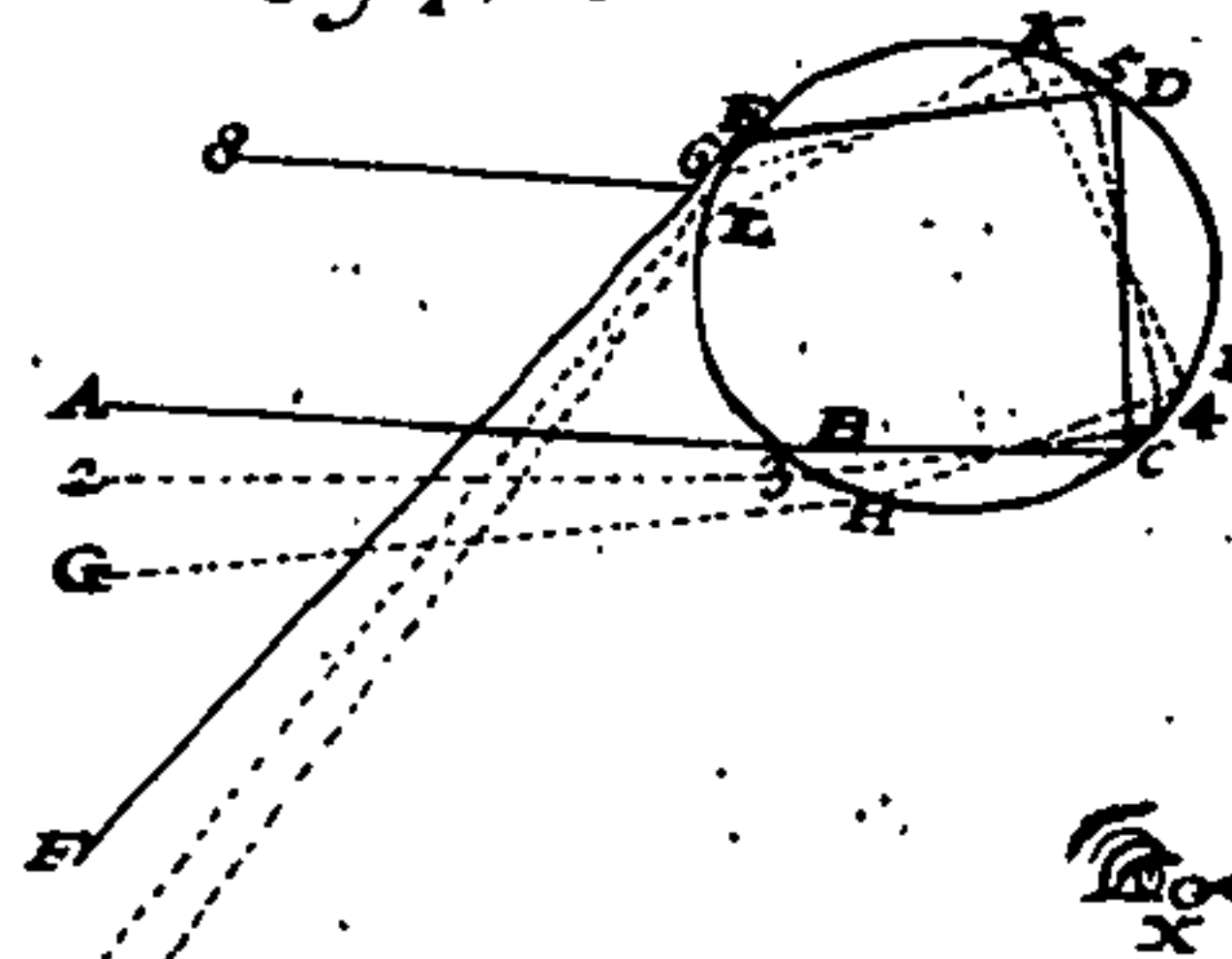


Fig. 48 Rain-bow

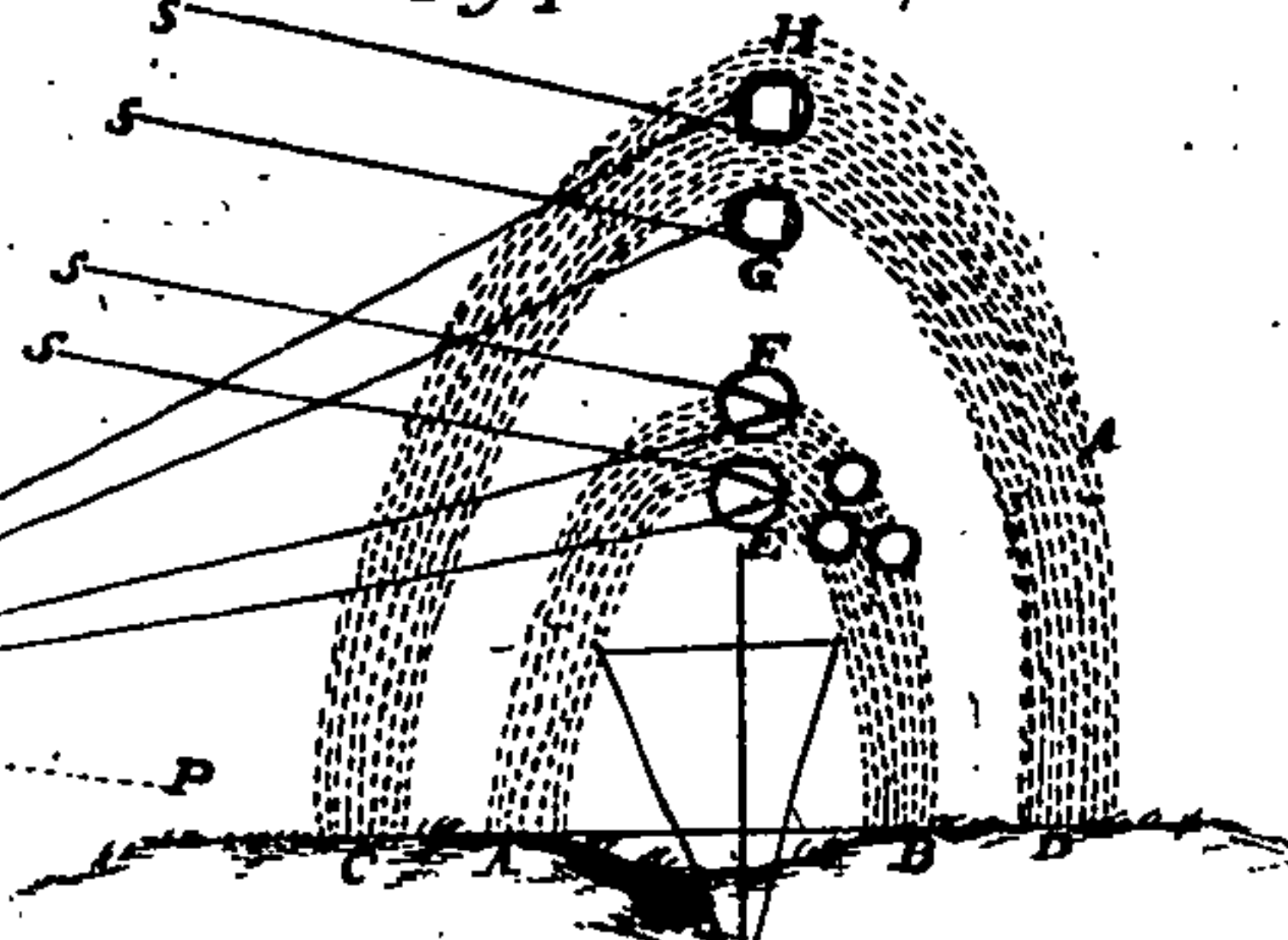


Fig. 49 Rain-bow

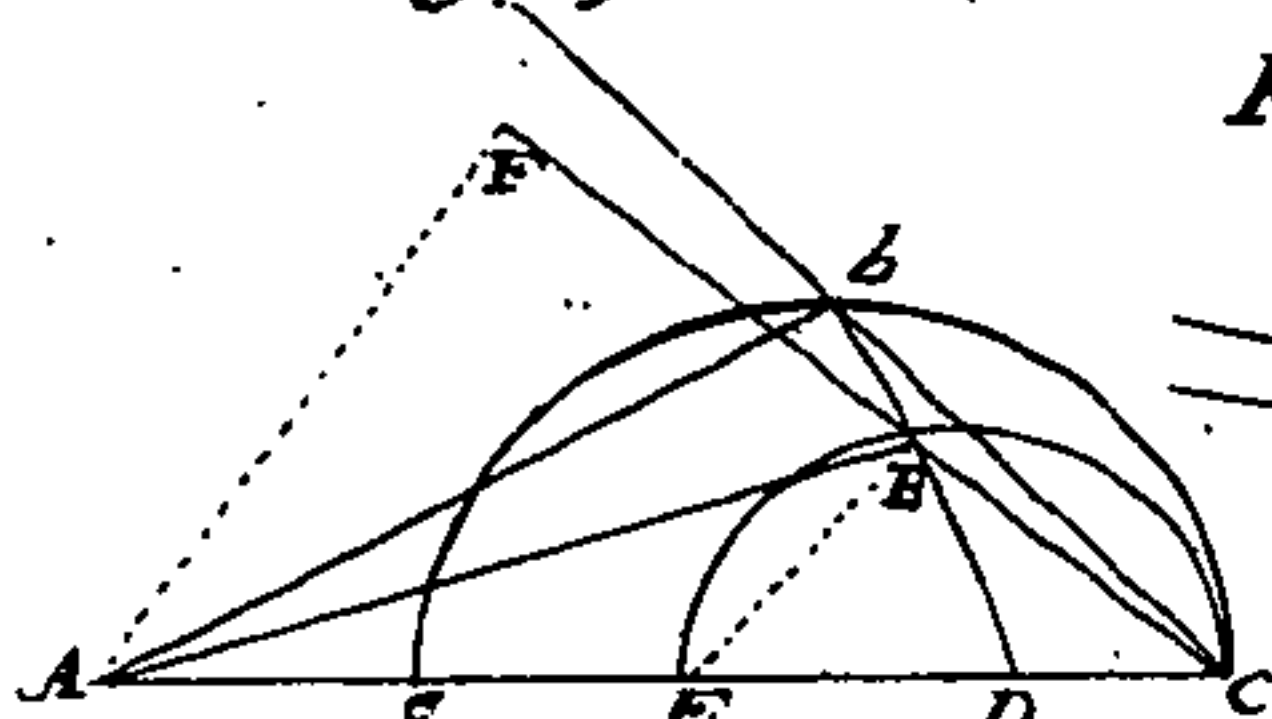


Fig. 50 Prism

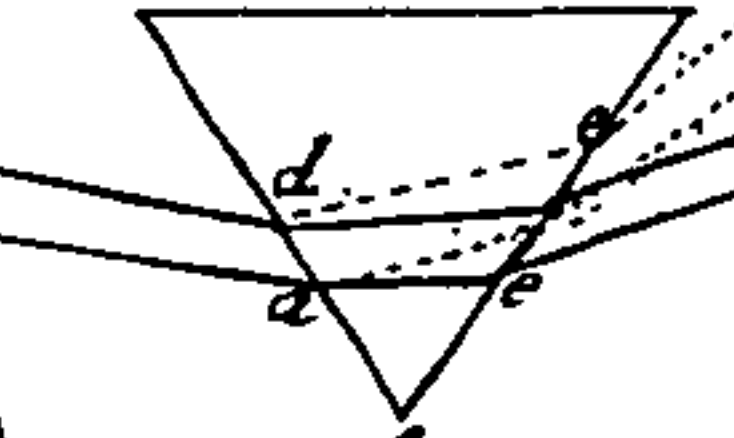


Fig. 51 Visible

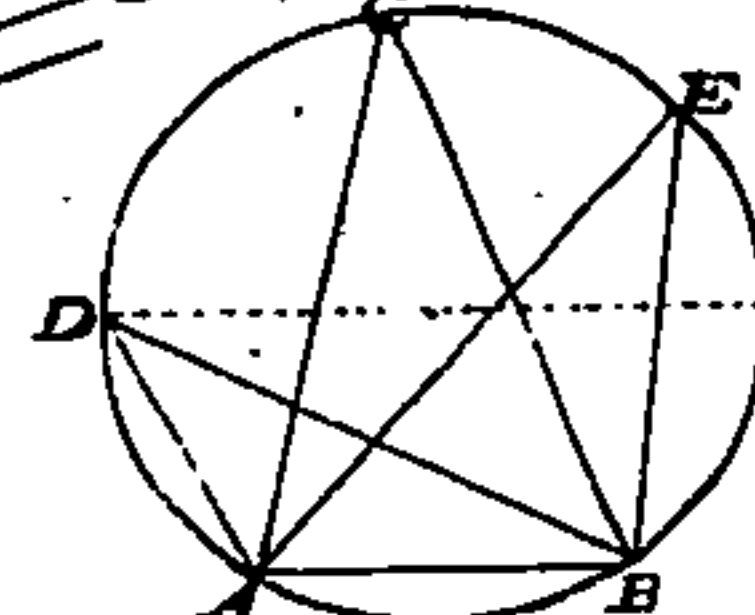


Fig. 52 Visible

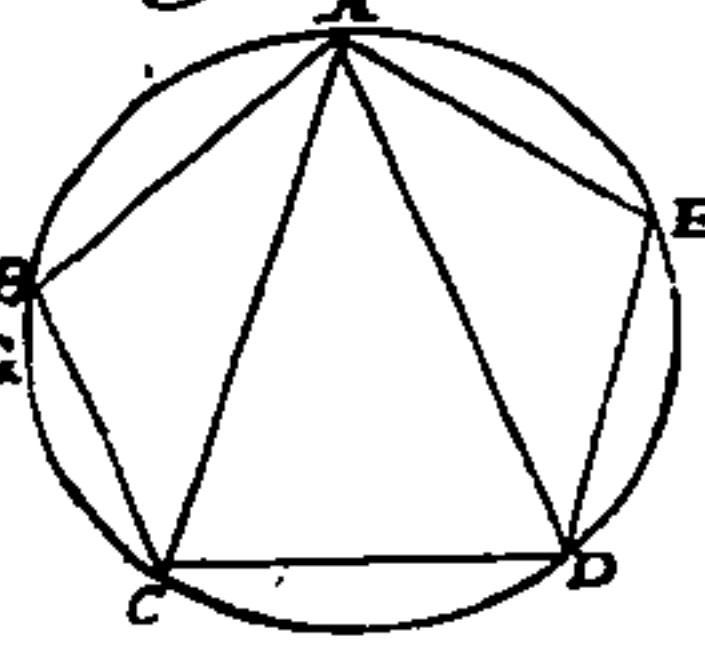


Fig. 53 Vision

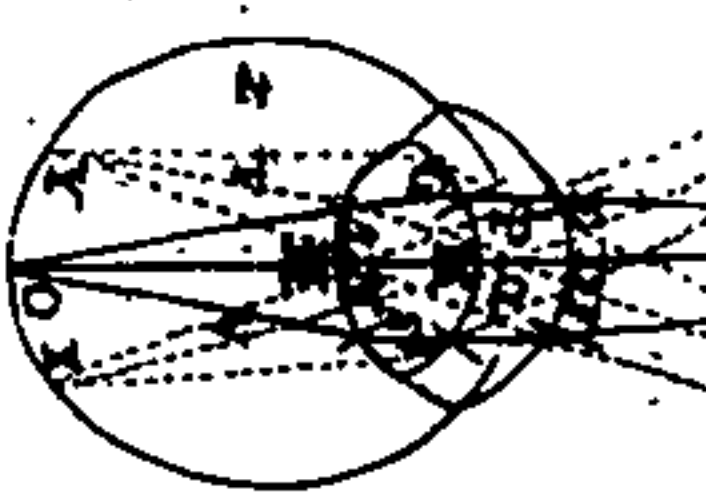


Fig. 54 Reflection

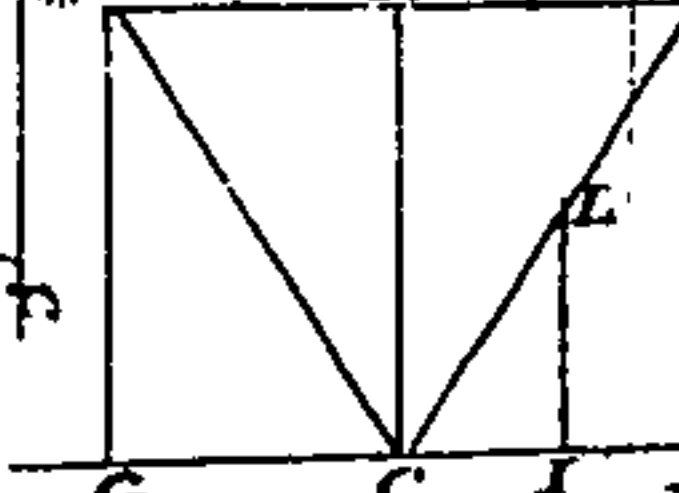


Fig. 55 Reflexibility

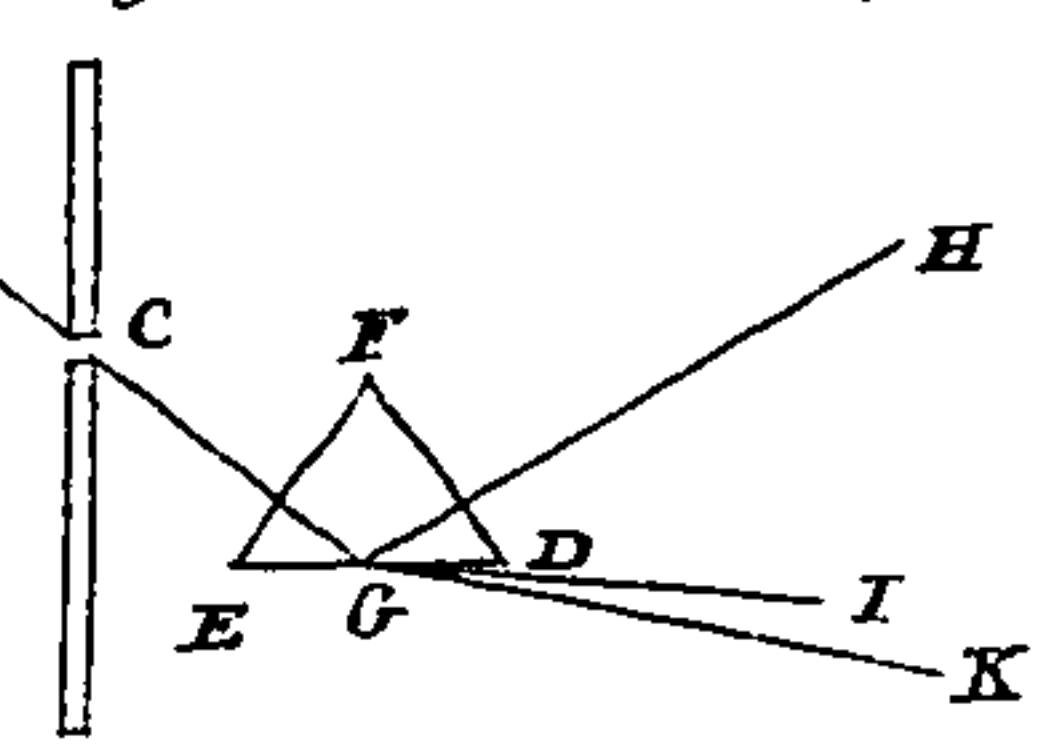


Fig. 56 Refraction

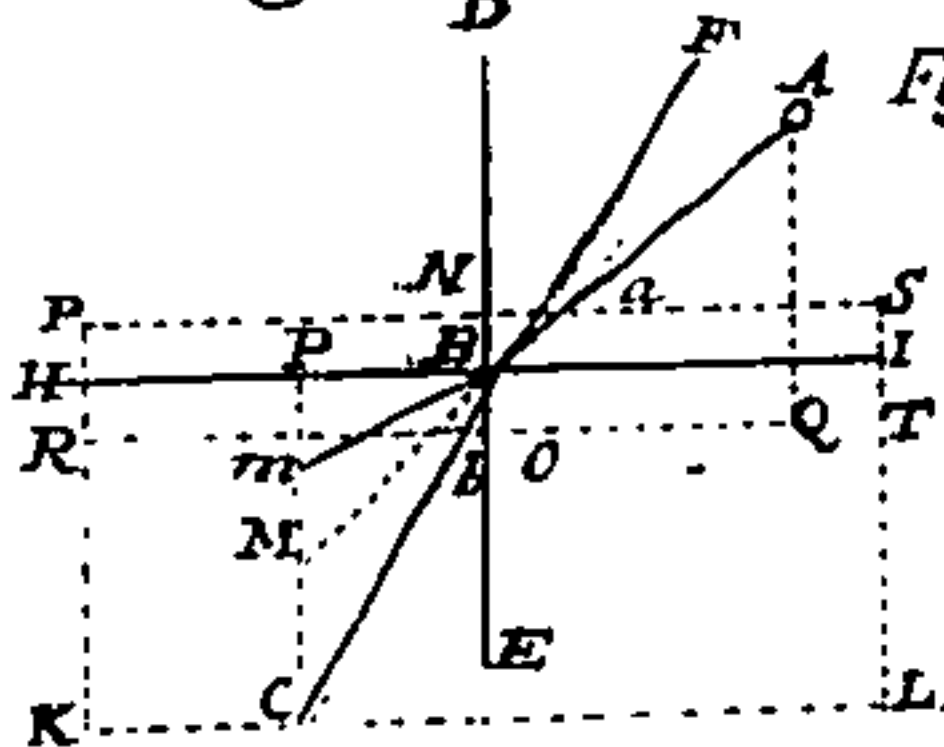


Fig. 57 Refraction

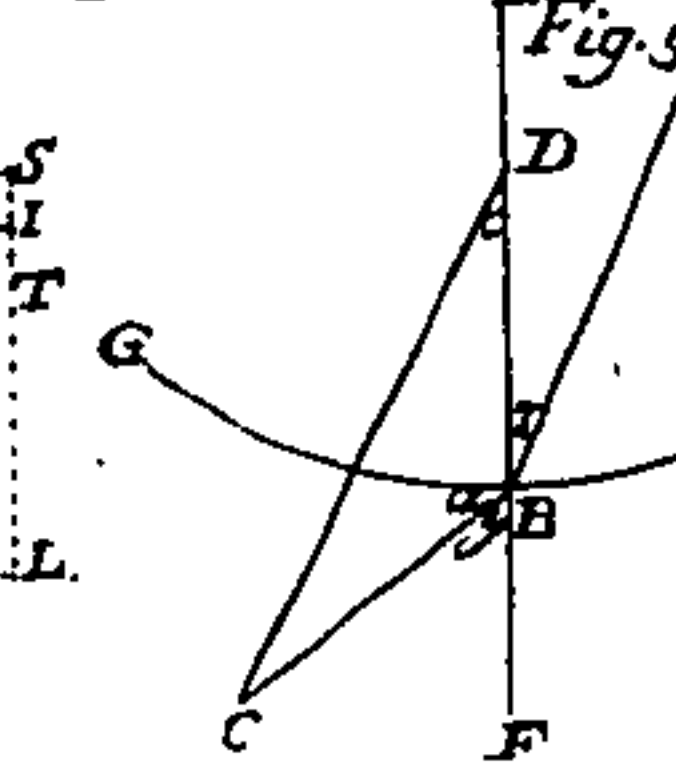


Fig. 58 Refraction

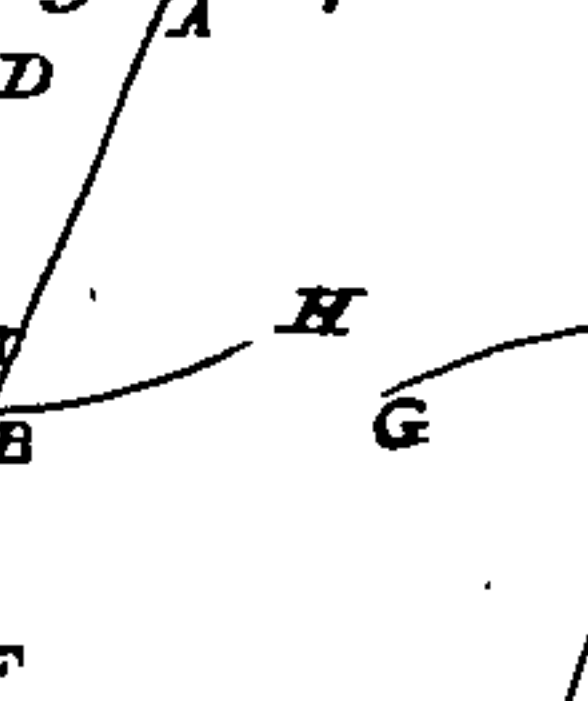


Fig. 59 Refraction

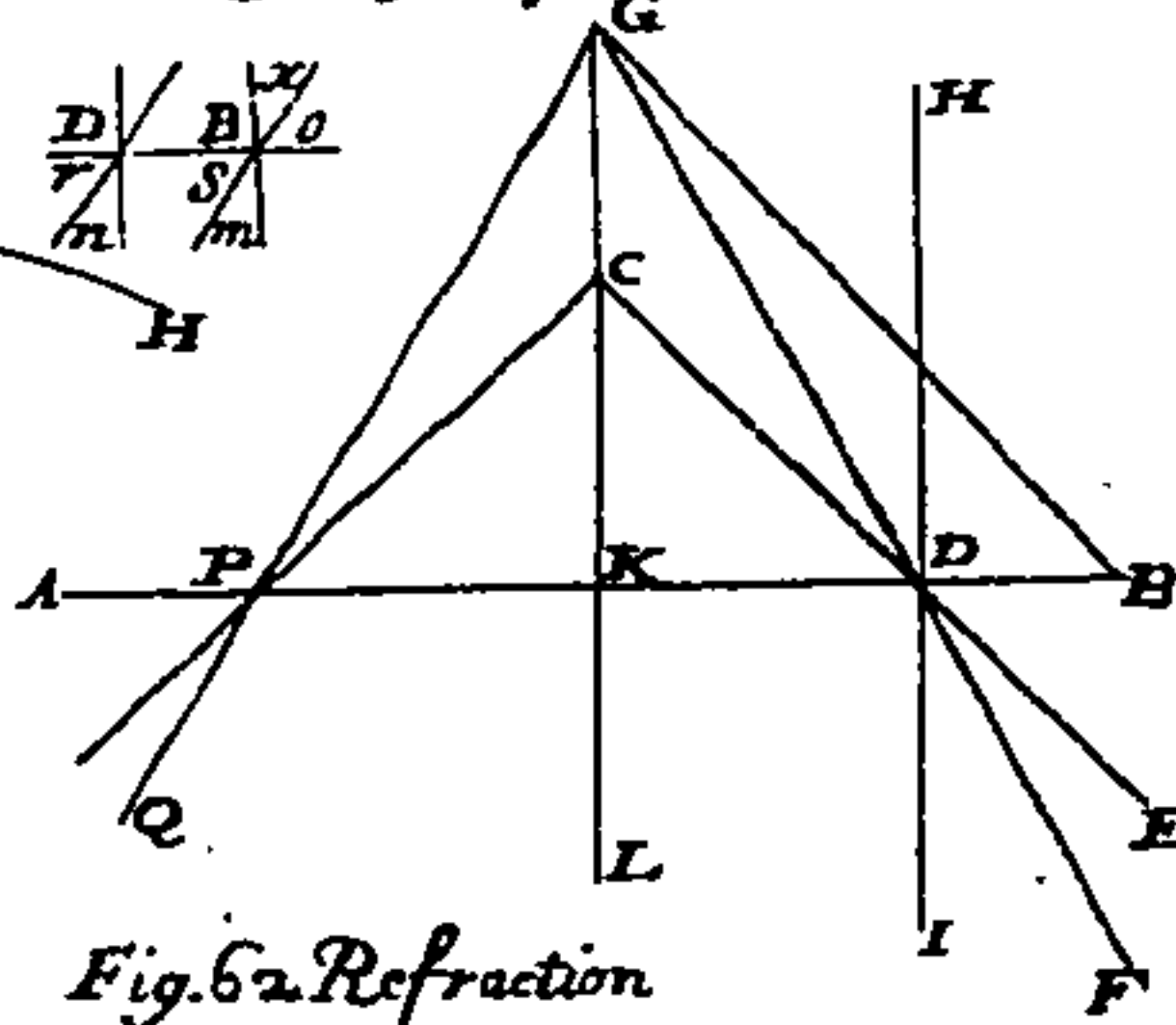


Fig. 60 Refraction

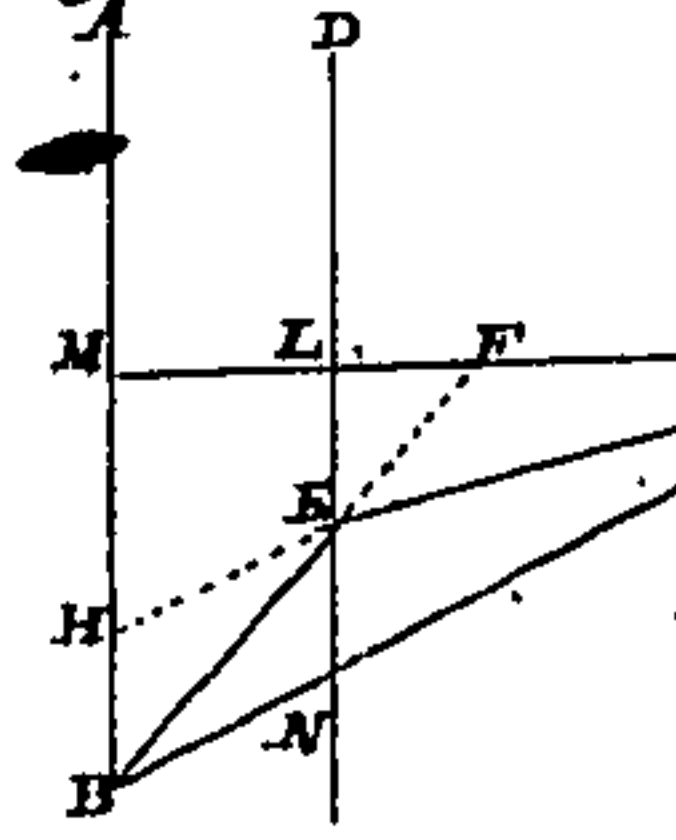


Fig. 61 Refraction

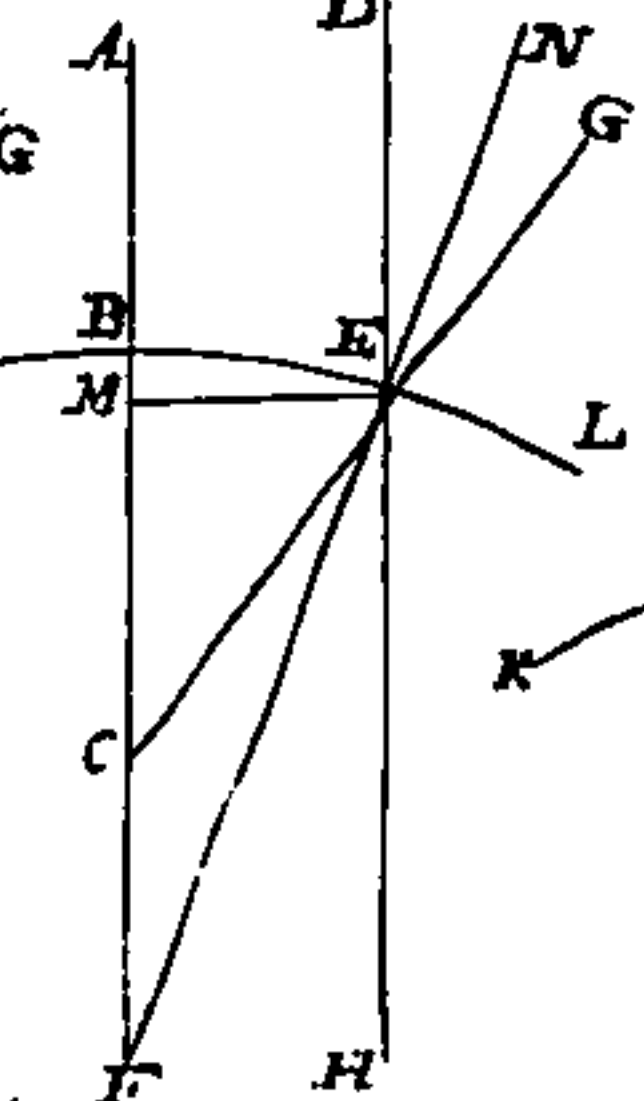


Fig. 62 Refraction

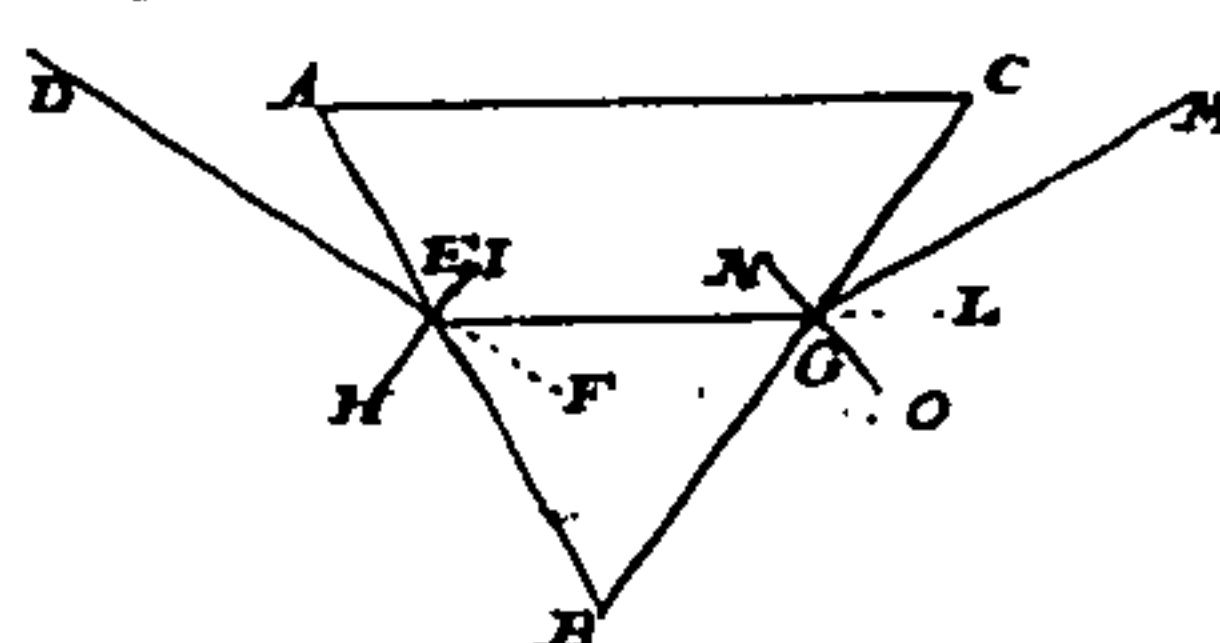


Fig. 63 Refraction

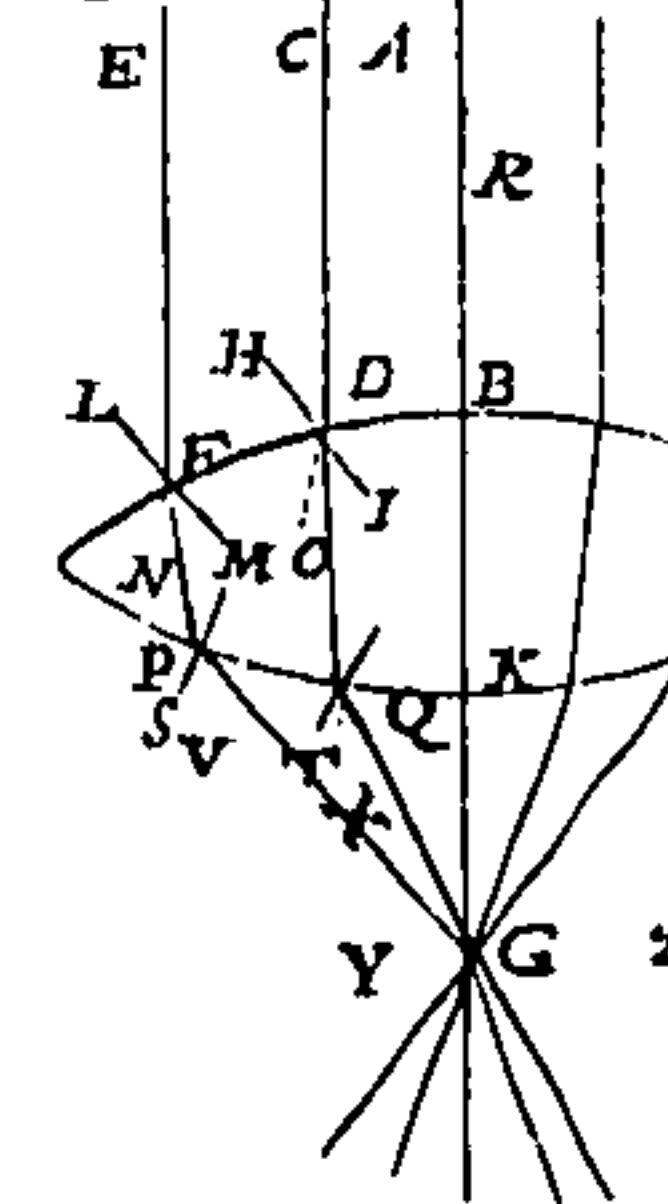


Fig. 64 Refraction

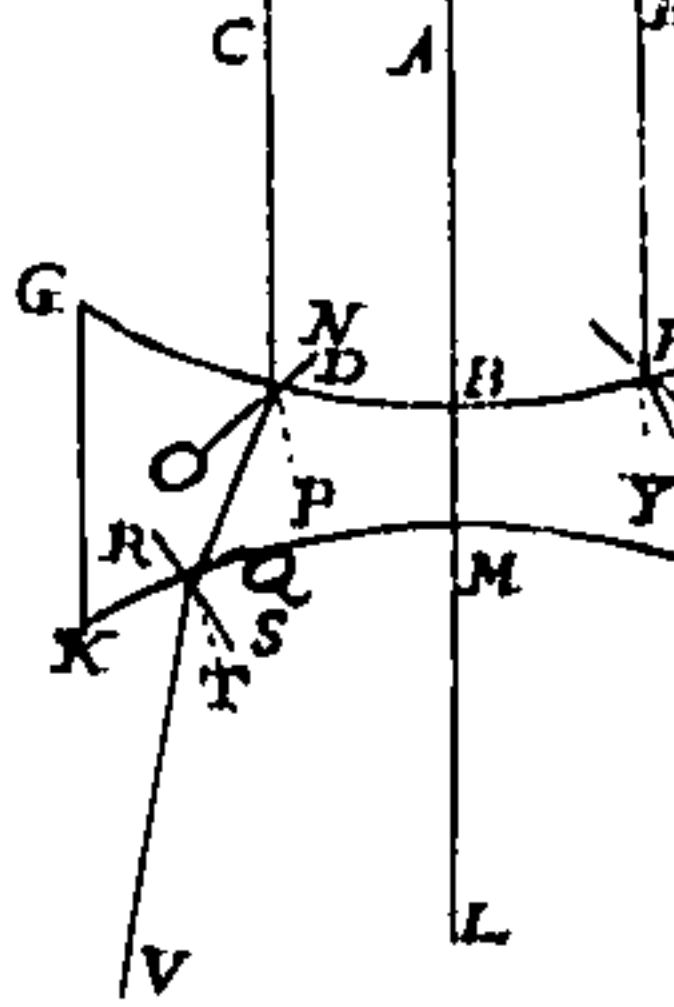


Fig. 65 Refraction

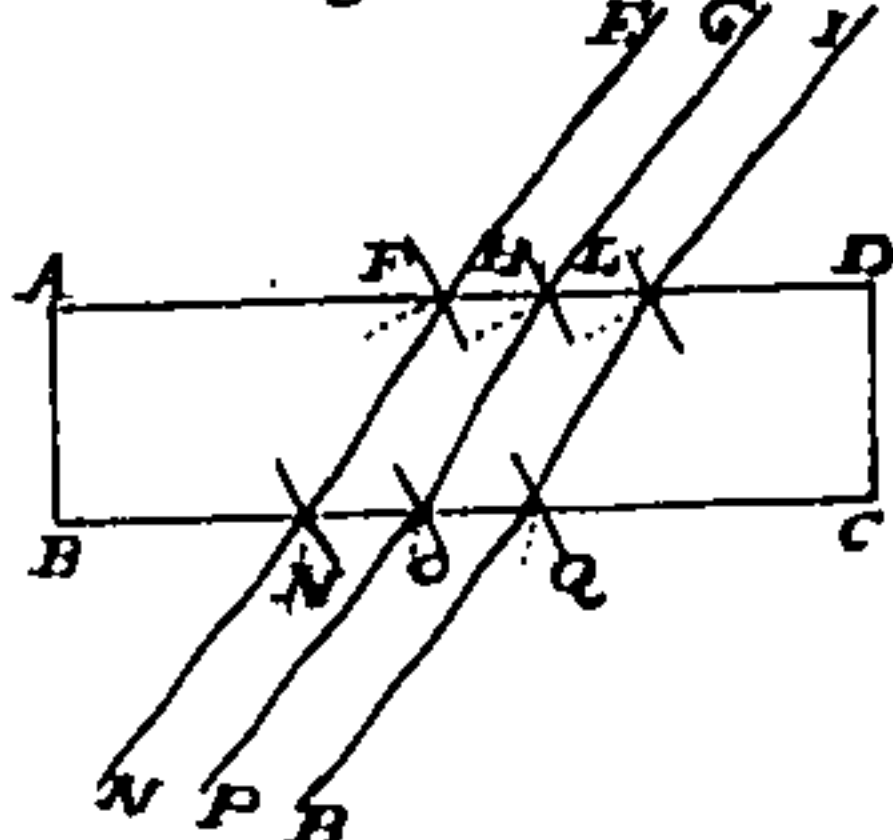


Fig. 66 Refrangibility

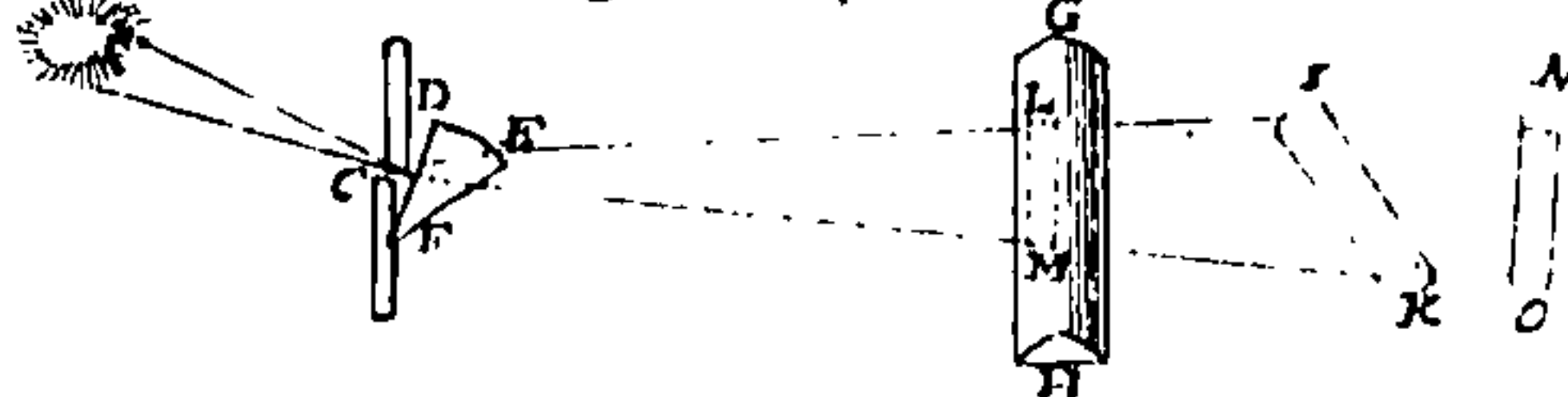


Fig. 67 Horopter

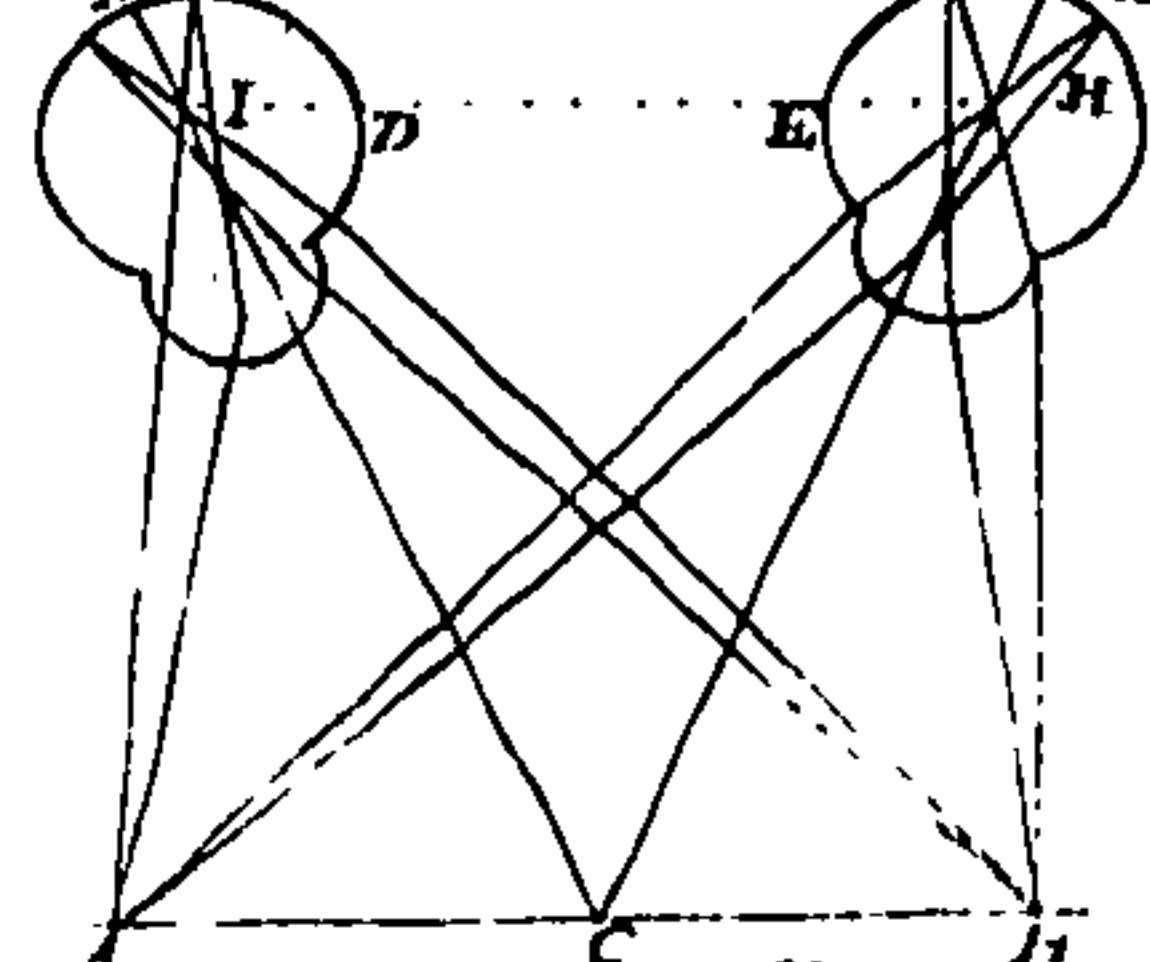


Fig. 68 Optic place

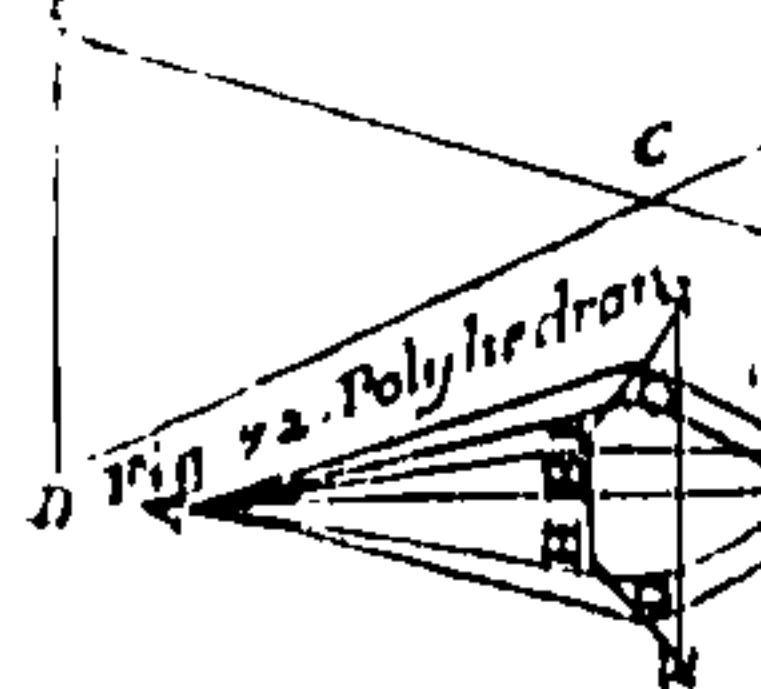


Fig. 69 Optic Angle & apparent Magnitude

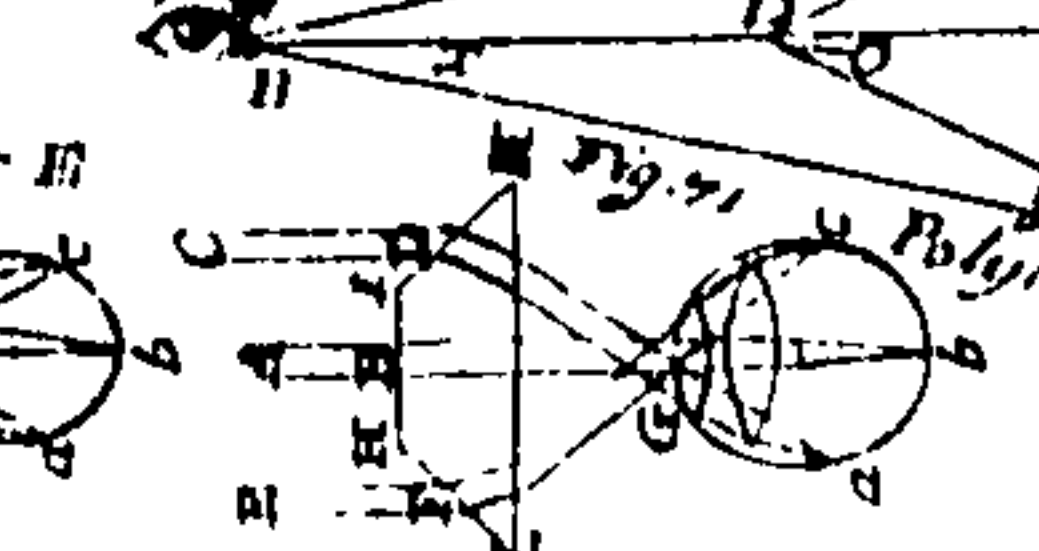
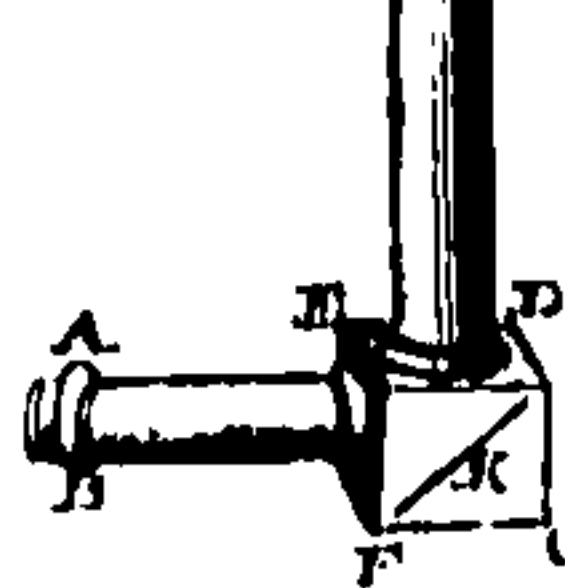


Fig. 70 Polymorph





Eclipses of the Moon never happen but when she is in Opposition with the Sun, and when they both meet in the Nodes of the Ecliptic. See ECLIPSE. Mars in his Opposition to the Sun, is nearer the Earth than he is to the Sun. See LAPIS, see LAPIS VITRIFERI.

OPSONOMUS, in Antiquity, a Magistrate of Athens, whereof there were two, or three; chosen out of the Senate, or Council. Their Office was to inspect the Fish-Market, and to take care that every thing were done in Order, and according to the Laws.

OPTATIVE, in Grammar, the third Mood of the Conjugations of Verbs, serving to express an ardent Desire or Wish for any thing. See MOOD.

Instead of a particular Mood, or a particular Set of Inflections to express this Desire, the English, Latin, &c. express it by an Adverb of Wishing prefix'd to it. The Latins by *Urnam*; the French by *Plût à Dieu*; and the English by *Would to God*, &c.

In these Languages, setting aside the Adverb, the Optative is the same with the Subjunctive; the Inflections of the Verb, which make what we call the Moods, are the same in both.

Indeed, in the Greek, the Wish is express'd by a particular Inflection, thence call'd Optative; and in the French, Spanish, and Italian, there is something like it; their triple Tenses serving the same purposes. But the Optative Mood may be safely retrench'd from the Latin and English. See SUBJUNCTIVE.

OPTERIA, among the Antients, Presents made to a Child, the first time a Person saw it.

The Word was also used for the Presents which the Bridegroom made his Bride when she was conducted to him; this being the first time he saw her. See *Barthol. de Puerp. Ver.*

The Word is form'd from the Greek *οπτομαι*, I see.

OPTICS, is properly the Science of direct Vision. See VISION.

Tho', sometimes, the Word is used in a larger Sense for the Science of Vision, or Visibles in general: In which Sense it includes Catoptrics, and Dioptrics; and even Perspective. See CATOPTRICS, DIOPTRICS, and PERSPECTIVE.

Optics in its more extensive Acceptation, is a mix'd Mathematical Science, which explains the manner wherein Vision is perform'd in the Eye; treats of Sight in the general; gives the Reasons of the several Modifications or Alterations which the Rays of Light undergo in the Eye; and shews why Objects appear sometimes greater, sometimes smaller, sometimes more distinct, sometimes more confused, sometimes nearer, sometimes more remote. See LIGHT, EYE, &c.

In this extensive Signification, it is consider'd by Sir Is. Newton in his admirable Work call'd *Optics*.

Optics makes a considerable Branch of Natural Philosophy; both as it explains the Laws of Nature, according to which Vision is perform'd; and as it accounts for abundance of Physical Phenomena, otherwise inexplicable. For what can be determined about Light, Colours, Transparency, Opacity, Brightness, Meteors, the Rainbow, Parhelia, &c. but on Principles of Optics? What about the Nature of the Stars? The Structure of the Mundane System? The Motions of the Planets? The Eclipses of the Luminaries? &c.

Optics, therefore, make a considerable Part of Astronomy. See ASTRONOMY.

From Optics likewise arises Perspective; all the Rules whereof have their Reason or Foundation in Optics. Indeed Tacquet makes Perspective a part of Optics; tho' John Archbishop of Canterbury, in his *Perspectiva Communis*, calls Optics, Catoptrics, and Dioptrics by the Name Perspective. See PERSPECTIVE.

Euclid has wrote on the antient Optics and Catoptrics; Dioptrics were unknown to them. F. Honorat. Fabri has an Abridgment of Optics, Catoptrics, and Dioptrics. Father Eschinard a Century of Problems in Optics. Vitellio, and Alhazon have done well on the Principles of Optics. Father Kircher has a large Volume on the Secrets of Optics, of Light, and Shadow; and its surprizing Effects, which pass on the People for Magic. We have also l'Optique & Catoptrique of F. Mersenne, Paris 1651. Dioptrique Oculaire of Fath. Cherubin, Paris 1671, Fol. Christ. Scheineri Optica, Lond. 1663. Job. Bapt. Porta de Refractione Optica. Barrovi Lektionen Optica, Lond. 1669. Principe Generale de l'Optique, by Mr. Leibnitz, in the Leipzic Acts, 1682. L'Occhio all' Occhio, or Dioptrica Pratica, Carol. Ant. Mancini, Boulogne 1660, 4°. Physico-Mathesis, de Lumine, Coloribus & Iridi, per F. Mar. Grimaldi, Bononiae 1665, 4°. Cogitationes Physico-Mechanicae de Natura Visionis, per Johann. Ott. Scaphusam, Heidel. 1670, 4°. And, who ought to have been named first, the great Sir I. Newton, in his Optics, English and Latin, 4°.

OPTIC-Nerves, the second Pair of Nerves, springing from

the Crura of the Medulla Oblongata, and passing thence to the Eye. See NERVE.

These Nerves approach, by degrees, in their recess from their Origin; and at length meet, in the Basis of the Brain, near the Infundibulum. Thence they again separate, but without decussating; and proceed, one to each Eye. See EYE.

They are cover'd with two Coats, which they take from the Dura and Pia Mater; and which, by their Expansions, form the two Membranes of the Eye, call'd the Uvea and Cornea. See UVEA, &c.

The Retina, which is a third Membrane, and the immediate Organ of Sight, is only an Expansion of the fibrous, or inner, and medullary Part of these Nerves. See RETINA.

The Construction of the Optic-Nerve seems to be different from that of the other Nerves, which all appear to consist of hard Fibres: For this, e'er it enters the Orbit of the Eye, is only a Coat or Cover form'd by the Pia Mater, and including a Production of the Medulla of the Brain; which is easily separated from it. At its entrance into the Eye, it takes another Coat from the Dura Mater; which two Coats are bound together by exceedingly fine Filaments: That from the Pia Mater is continued in the Choroides, and that from the Dura Mater in the Uvea.

From their Entrance within the Orbit, to the Ball of the Eye, the Medulla, enclosed under the two Coats, is separated into a number of little Cells answering to each other. See VISION.

OPTIC-Pencil, or Pencil of Rays, is that Assemblage of Rays by means whereof any Point or Part of an Object is seen. See PENCIL and RADIANT.

Some Optic Writers laugh at the Notion of Optic-Pencils, and maintain 'em mere Chimera's.

OPTIC-Pyramid, in Perspective, is the Pyramid A B C O (Tab. PERSPECTIVE, Fig. 12.) whose Base is the visible Object A B C; and its Vertex, in the Eye O; form'd by Rays drawn from the several Points of the Perimeter to the Eye.

Hence also appears, what is meant by Optic Triangle.

OPTIC Rays, are particularly used for those wherewith an Optic-Pyramid, or Optic-Triangle, is terminated; as O A, O C, O B.

OPTIC Axis, is a Ray passing through the Centre of the Eye; or the middle of the Optic-Pyramid, &c.

OPTIC Chamber, see Camera OBSCURA.

OPTIC-Glasses, are Glasses ground either concave, or convex, so as either to collect, or disperse the Rays of Light; by means whereof Vision is improved, and the Eye strengthened, preserved, &c.

For the manner of Grinding and Polishing Optic-Glasses, see GRINDING, POLISHING, GLASS, &c.

For their Phenomena, see LENS, MIRROR, &c.

The Principal among Optic-Glasses, are Telescopes, Microscopes, Spectacles, Reading-Glasses, Magic Lanthorn, &c. See the Construction and Use of each under its proper Article, TELESCOPE, MICROSCOPE, SPECTACLE, MAGIC LANTHORN, &c.

OPTIC Place of a Star, &c. is that Point of its Orbit in which it appears to be, to our Eye. See PLACE.

This is either true; as when the Eye is supposed at the Centre of the Earth, or Planet it inhabits; or apparent, as when at the Circumference. See APPARENT, PLANET, &c.

The difference between the two, is the Parallax. See PARALLAX.

OPTICAL Inequality, in Astronomy, is an apparent Irregularity in the Motions of far distant Bodies; so call'd, because not really in the moving Bodies, but arising from the Situation of the Spectator's Eye: So that were the Eye in the Centre, it would always see the Motions uniform.

The Optical Inequality may be thus illustrated: Suppose a Body revolving in the Periphery of a Circle A B D E F G Q, (Tab. OPTICS, Fig. 40.) and moving through equal Arches A B, B D, D E, E F, in equal Times; and suppose the Eye in the Plane of the same Circle, but at a distance from it, viewing the Motion of the Body from O: When the Body goes from A to B; its apparent Motion is measured by the Angle A O B, or the Arch H L, which it will seem to describe. But in an equal time, while it moves thro' the Arch B D, its apparent Motion will be determined by the Angle B O D, or the Arch L M, which is less than the former Arch H L. And when arrived at D, it will be seen at the Point M of the Line N L M. But it spends the same time in describing D E, which is equal to A B or B D; and when arrived at E, is still seen at M; appearing Stationary in all the Space from D to E. When it arrives at E, the Eye will see it in L; and at G, will appear at H; so that it will seem to have gone retrograde: And, lastly, from Q to P, it will again appear Stationary.



**OPTIMATES**, in Antiquity. One of the Divisions of the Roman People, was into *Optimates* and *Populares*.

According to Tully's Description, the *Optimates* were the best Citizens; or those who desir'd their Actions might be approved by the better Sort; and the *Populares* those, who, out of a Thirst of Vain-glory, did not so much consider what was right, as what would please the Populace, and get an Interest in them. But others rather make the *Optimates* to be the vigorous Assertors of the Dignity of the Chief Magistrate, and the Sticklers for the Grandeur of the State; who cared not if the inferior Members suffer'd, if it were for the Advancement of the Commanding Powers: And the *Populares* those who courted the Favour of the Populace, and encouraged them to demand larger Privileges, to bring Matters nearer to a Level.

**OPTION**, the Power, or Faculty of Wishing, or Chusing; or the Choice a Person makes of any thing.

When a new Suffragan Bishop is consecrated, the Archbishop of the Province, by a customary Prerogative, claims the Collation of the first vacant Benefice, or Dignity, in that See, according as he shall chuse; which Choice is call'd the Archbishop's *Option*.

**OR**, in Heraldry, *Yellow*, or the Colour of Gold. See **COLOUR** and **METAL**.

Without this, or *Argent*, there can be no good Armory.

In the Coats of Nobles, it is call'd *Toppaz*; and in those of Sovereign Princes, *Sol*. It is represented in Engraving by small Points, or Dots, all over the Field, or Bearing; as in the Figure.

It is accounted the Symbol of Wisdom, Temperance, Faith, Force, Constancy, &c.

**ORACLE**, an Answer, usually couch'd in very dark and ambiguous Terms, suppos'd to be given by Dæmons of old; either by the Mouth of their Idols, or by those of their Priests, to the People who consulted them on Things to come.

In this sense we say, the Priestess was ever in a Rage when she gave Oracles. *Ablancourt* observes, that the Study or Research of the Meaning of Oracles, was but a heartless Thing; and that they were never understood till after the Accomplishment. Historians relate, that *Cræsus* was trick'd by the Ambiguity and Equivocation of the Oracle:

*Ibis redibis nunquam in bello peribis.*

**ORACLE** is particularly used for the Dæmon who gave the Answer, and the Place where it was given. See **DÆMON**.

The principal Oracles of Antiquity are, that of *Aba*, mention'd by *Herodotus*; that of *Amphiaræus*; that of the *Brancheides* at *Didymus*; that of the Camps at *Lacedæmon*; that of *Dodona*; that of *Jupiter Ammon*; that of *Nabærea*, in the City *Anarlaca*, near the *Caspian Sea*; that of *Trophonius*, mention'd by *Herodotus*; that of *Chysopolis*; that of *Claros* in *Ionia*; that of *Miletus*; that of *Malios*; that of *Patarea*; that of *Pella* in *Macedonia*; that of *Phasclides* in *Cilicia*; that of *Sinope* in *Paphlagonia*; that of *Orpheus's Head*, mention'd by *Philostratus* in his Life of *Apollonius*.

But of all others, the Oracle of *Apollo Pythius* at *Delphos*, was the most celebrated; this was consulted, *en dernier ressort*, by most of the Princes of those Ages. See **PYTHIUS**.

*M. Bayle* observes, that at first it gave its Answers in Verse; and that it fell at length to Prose, upon the People's beginning to laugh at the Poorness of its Versification.

'Tis a pretty general Opinion among the more Learned, that Oracles were all meer Cheats and Impostures; either calculated to serve the avaritious Ends of the Heathen Priests, or the political Views of the Princes.

*M. Bayle* says positively, they were meer human Artifices, in which the Devil had no hand. He is strongly back'd by *Van Dale*, and *M. Fontenelle*, who have wrote expressly on the Subject.

There are two Points in dispute on the Subject of Oracles, viz. whether they were human, or diabolical Machines; and whether or no they ceased upon the Publication or Preaching of the Gospel.

*Plutarch* has a Treatise on the ceasing of some Oracles; and *Van Dale*, a Dutch Physician, has a Volume to prove they did not cease at the Coming of Christ; but that many of them ceased long before; and that others held till the fall of *Paganism*, under the Empire of *Theodosius the Great*; when *Paganism* being dissipated, these Institutions could no longer subsist.

*Van Dale* was answer'd by a German, one *Mælius*, Professor of Theology at *Leipsic*, in 1685. *M. Fontenelle* espoused *Van Dale's* System, and improved upon it in his *History of Oracles*; and shew'd the Weakness of the Argument used

by many Writers in behalf of Christianity, drawn from the ceasing of Oracles.

*F. Malthus*, a learned Jesuit, has answer'd both *Van Dale* and *Fontenelle*. He labours to prove that there were real Oracles, and such as can never be attributed to any Artifices of the Priests or Priestesses; and that several of these became silent in the first Ages of the Church, either by the Coming of Jesus Christ, or by the Prayers of the Saints.

This Doctrine is confirm'd by a Letter from Father *Reubet*, Missionary, to Father *Malthus*; wherein 'tis declared, that what Father *Malthus* says of the antient Oracles, is experimented every day in the *Indies*.

It seems, according to the Missionary, that the Devil still gives Oracles in the *Indies*; and that, not by Idols, which would be liable to Imposture; but by the Mouths of the Priests, and sometimes of the By-standers: 'tis added, that these Oracles, too, cease, and the Devil becomes mute, in proportion as the Gospel is preach'd among them.

'Twas *Eusebius* who first endeavour'd to persuade the Christians, that the Coming of Jesus Christ had struck the Oracles dumb; tho' it appears from the Laws of *Theodosius*, *Gratian*, and *Valentinian*, that the Oracles were still consulted as low as the Year 385. *Cicero* says, the Oracles became dumb, in proportion as People, growing less credulous, began to suspect them for Frauds.

*Plutarch* alledges two Reasons for the ceasing of Oracles: The one was *Apollo's* Chagrin; who, it seems, took it in dudgeon to be interrogated about so many Trifles. The other was, that in proportion as the *Genii*, or Demons, who had the Management of the Oracles, died, and became extinct, the Oracles must necessarily cease. He adds a third, and more natural Cause of the ceasing of Oracles, viz. the forlorn State of *Greece*, ruin'd and desolated by Wars. For, hence, the Smallness of the Gains, let the Priests sink into a Poverty and Contempt, too bare to cover the Fraud.

Most of the Fathers of the Church took it to be the Devil that gave Oracles; and look'd on it as a pleasure he took to give dubious and equivocal Answers; to have a handle to laugh at them. *Vossius* allows, that 'twas the Devil who spoke in Oracles; but thinks that the Obscurity of his Answers, was owing to his Ignorance as to the precise Circumstances of Events. That artful and studied Obscurity, wherein the Answers were couch'd, shew'd the Embarrass the Devil was under; as those double Meanings they usually bore, provided for their Accomplishment. Where the Thing foretold, did not happen accordingly, the Oracle, forsooth, was misunderstood.

*Eusebius* has preserv'd some Fragments of a Philosopher, call'd *Oenemans*; who, out of Retentment for his having been so often fool'd by them, wrote an ample Confutation of all their Impertinences: "When we come to consult thee, says he to *Apollo*, if thou seest what is in Futurity, why dost thou use Expressions that won't be understood? Dost thou not know that they won't be understood? If thou dost, thou takest pleasure in abusing us; if thou dost not, be inform'd of us, and learn to speak more clearly. I tell thee, that if thou intendedst an Equivoke, the Greek Word whereby thou affirm'd that *Cræsus* should overthrow a great Empire, was ill chosen; and that it could signify nothing but *Cræsus's* conquering *Cyrus*. If Things must necessarily come to pass, why dost thou amuse us with thy Ambiguities; what dost thou, Wretch as thou art, at *Delphos*; employ'd in muttering idle Prophecies!"

But *Oenemans* is still more out of humour with the Oracle, for the Answer which *Apollo* gave the *Athenians*, when *Xerxes* was about to attack *Greece* with all the Strength of *Asia*. The *Pythian* declar'd, that *Minerva*, the Protectress of *Athens*, had endeavour'd in vain to appease the Wrath of *Jupiter*; yet that *Jupiter*, in complaisance to his Daughter, was willing the *Athenians* should save themselves in wooden Walls; and that *Salamine* should behold the Loss of a great many Children, dear to their Mothers, either when *Ceres* was spread abroad, or gather'd together.

Here *Oenemans* loses all patience with the God of *Delphos*: "This Contest, says he, between Father and Daughter, is very becoming the Gods. 'Tis excellent, that there should be contrary Inclinations and Interests in Heaven.—Pure Wizzard, thou art ignorant whose the Children are, that *Salamine* shall see perish; whether the *Greeks* or *Persians*. 'Tis certain, they must be either one or the other; but thou needest not have told so openly, that thou knewest not which. Thou concealest the Time of the Battle under those fine poetical Expressions, Either when *Ceres* is spread abroad, or gather'd together: And wouldst thou bamboozle us with such pompous Language? Who knows not that if there be a Sea-sight, it must either be in Seed-time or Harvest? 'tis certain it cannot be in Winter. Let Things go how they will, thou wilt secure thyself by this *Jupiter*, whom *Minerva* is endeavouring to appease. If the *Greeks* lose the Battle, 'tis just."



*Jupiter* prov'd inexorable to the last; if they gain it, why then *Minerva* at length prevail'd." —

ORACLES of the *Sibyls*, see *SIBYLLINE Oracles*.

ORAL, something deliver'd by the Mouth or Voice.

In this sense we say, *Oral Tradition*, &c. See *TRADITION*.

ORANGE, a Fruit, too well known to need a particular Description; yet yielding too many Kinds of Merchandize, to be pass'd over.

The *Latins* call it *Aurantium* or *Malum aureum*, Golden Apple, from its Colour.

Oranges are ordinarily brought from *Nice*, *Ciouta*, the Isles of the *Hieres*, *Genoa*, *Provence*, *Portugal*, the *American* Islands, and even *China* and the Coasts of *India*.

They were first brought into *Europe* from *China*, by the *Portuguese*; and 'tis said the very Tree, whence all the *European* Orange-Trees were produc'd, is still preserv'd at *Lisbon*, in the House of the Count *S. Laurent*.

Those most esteem'd, and that are made Presents of as Rarities, in the *Indies*, are no bigger than a *Billiard-Ball*; when sweeten'd with a little *Sugar*, they are esteem'd excellent for Disorders of the Breast.

Oranges are ordinarily comfit in Halfs and Quarters. They are first peel'd, then scoop'd and dry'd in a Stove.

Orangeat is the Orange-Peel cut in pieces and candied. *Italy* furnishes a great deal of Flower of Oranges, either dry or liquid.

The Water of Flower of Oranges, call'd *Water of Napba*, comes mostly from *Provence*. To be good, it must be very bitter, and not above a Year old.

There are various Oils drawn from Oranges: The Oil of *Neroli* is the Produce of the Flowers by Distillation. That drawn from the Skin by Water and an Alembic, is altogether as good. There is also an Oil drawn from little Oranges, or *Orangelettes*, by steeping them five or six Days in common Water, and distilling them with the same Water in an Alembic. These Oils are all esteem'd good for destroying of Worms in Children; but are very apt to be sophisticated with Oil of *Ben*, or that of sweet Almonds.

ORANGEADE, a Drink made of Orange-Juice, Water, and Sugar.

*Lemery* says, it may be given to People in the height of a Fever.

ORANGE Colour, is a Colour that partakes equally of Red and Yellow; or is a Medium between the two. See COLOUR.

In Heraldry, the Term *Orange* is given in Blazon to all Roundles that are *Tenne* or *Tawney*.

ORANGERY, a Gallery in a Garden, or Parterre; expos'd to the South; but well clos'd with a Glass Window, to preserve the Oranges in, during the Winter Season.

Orangery is also used for the Parterre, where the Oranges are expos'd in kindly Weather. The Orangery of *Versailles* is the most magnificent that ever was built.

ORATION, a Speech, or Harangue, framed according to the Rules of Oratory; and spoke in public. See ORATORY.

All the Kinds of Orations may be reduc'd to three Heads: viz. the *Demonstrative*, the *Deliberative*, and the *Judicial*.

To the demonstrative Kind belong, *Panegyrics*, *Genethliaca*, *Epithalamia*, *Epicedia*, *Eucharistic*, *Epinecia*, and *Congratulations*. See *PANEGYRIC*, *GENETHLIAC*, &c.

To the deliberative Kind belong, *Persuasion*, *Dissuasion*, *Exhortation*, and *Commendation*.

To the judicial Kind belong, *Accusation*, *Confirmation*, *Confutation*, &c. See each under its proper Article, *CONFIRMATION*, &c.

ORATORY, the Art of speaking well; the same with Rhetoric: the difference between the two being only in the Names; the first of which is *Latin*, the other *Greek*. See *RHETORIC*.

ORATORY is also used among the *Romanists*, for a Closet, or little Apartment, in a large House, near a Bed-Chamber, furnish'd with a little Altar, or an Image, for private Devotion.

The ancient Oratories were little Chappels, adjoining to Monasteries, wherein the Monks said their Prayers e'er they had any Churches. Several little Councils and Synods have condemn'd the Use of private Oratories. See *CHAPPEL*.

In the VIth and VIIth Centuries, Oratories were little Churches, frequently built in Church-yards; without either Baptistry, Cardinal Priest, or any public Office; the Bishop sending a Priest to officiate occasionally.

ORATORY is also used for a sort of Society, or Congregation of devout Persons; who form a kind of Monastery, and live in Community; but without being oblig'd to make any Vows: Thus,

Priests of the ORATORY, are a Community of Secular Priests, who live together in a Monastic Manner, but without any Vows; first establish'd at *Rome*, about the Year 1590, by *S. Philip Neri*, a *Florentine*, under the Title of Oratory of *Santa Maria in the Valicella*.

On the Model of this, the Cardinal *Berulle* establish'd a Congregation of the Oratory of *Jesus* in 1612, in *France*; which has since increas'd: so that there are now 60 Houses of Priests of the Oratory.

There is some difference, however, between the *Italian*, and *French* Institutions: *S. Philip Neri*, to prevent the Confusion which the great Number of Houses usually occasion in Congregations; would have his to be a single House. And tho' others were at liberty to form the like Congregations, yet they should have no Dependance on one another.

For this reason, the Houses of the Oratory in *Italy* and *Flanders* are all Independent; whereas those in *France* have a Relation to each other, and all depend on the same Chief, who has the Quality of Superior General; and, with three Assistants, governs the whole Congregation. See *CONGREGATION*.

ORB, ORBIS, in Astronomy, a Spherical Body, or Space, contain'd under two Superficies; the one Concave, the other Convex. See *SPHERE*.

The antient Astronomers conceiv'd the Heavens, as consisting of several vast, azure, transparent Orbs, inclos'd in one another: Or vast Circles, which in their Area include the Bodies of the Planets; the Radii whereof are compriz'd between the Centre of the Earth, and the highest Point to which the Planet rises; supposing the Earth to be in the Centre. See *HEAVENS*.

There are Orbs Concentric, i. e. having the same Centre; and Orbs Excentric. See *CONCENTRIC*, &c.

The Magnus Orbis, or Great Orb, is that wherein the Sun is suppos'd to revolve; or rather that wherein the Earth makes its annual Circuit. See *ORBIT*.

ORB, in Astrology. An Orb of Light is a certain Sphere or Extent of Light, which the Astrologers allow a Planet beyond its Centre.

They say, that provided the Aspects do but fall within this Orb, they have almost the same effect, as if they pointed directly against the Centre of the Planet. See *ASPECT*.

The Orb of *Saturn's* Light they make to be 10 Degrees; that of *Jupiter* 12. that of *Mars* 7°, 30'. that of the *Sun* 17°. that of *Venus* 8°. that of *Mercury* 7°. that of the *Moon* 12°, 30'.

ORBICULARE Os, Orbicular Bone, in Anatomy, is one of the Bones of the inward Ear; tied by a slender Ligament to the Sides of the Lobes of the Ear; and named from its Figure, which is round. See *EAR*.

It was first discover'd by *Fran. Sylvius*: Its Use is in the Extension and Relaxation of the Tympanum. See *TYMPANUM*.

ORBICULARIS, or Constrictor Labiorum, in Anatomy, is one of the Muscles of the Lips. See *CONSTRUCTOR*.

The Orbicularis is single; its Fibres make a Ring about the Mouth, and serve to constrict and draw up the Lips, and by that means to shut the Mouth, &c. It also serves to advance, or stretch them outwards; and has the chief part in the Action of Kissing. Whence it is also call'd *Osculatorius*, or the Kissing Muscle.

*Verheyen* will not have it one Muscle, but a Pair, whose Fibres meet, and join at both Corners of the Mouth; tho' other Authors are unanimous in making it single, and call it a *Sphincter*. See *SPHINCTER*.

ORBICULARIS, or Deprimens Palpebrarum, is a Muscle springing from each Corner of the Eye, and answer'd by another of like Figure and Structure in the lower Eye-lid; which are therefore often consider'd as one Orbicular Muscle. See *EYE-LID*.

Its Fibres inviron the Eye-lids, and are inserted into 'em, not unlike the Sphincters of other Parts. It is fasten'd to that part of the Margin of the Orbit, towards the Nose, made by the fourth Bone of the upper Jaw.

ORBIT, in Astronomy, the Path of a Planet or Comet; or the Line describ'd by its Centre in its proper Motion in the Heavens. See *PLANET*, &c.

The Sun's, or rather the Earth's Orbit, is the Curve which it passes along in its annual Revolution; call'd the *Ecliptic*. See *ECLIPTIC*.

The Orbit of the Earth, and that of all the primary Planets, is an Ellipsis; in one of whose Foci, the Sun is placed; in which Ellipsis they move according to this Law, that a Radius drawn from the Centre of the Sun to the Centre of the Planet, always describes Areas proportional to the Times. See *EARTH*, *SUN*, &c.

The antient Astronomers made the Planets describe circular Orbits, with an uniform Velocity. *Copernicus* himself could not believe they should do otherwise; *Fieri nequit*, says he, *ut Caeleste corpus simplex uno Orbe inequaliter moveatur*. So that to account for their Inequalities, they were oblig'd to have recourse to Eccentrics and Epicycles; from the embarrass whereof, *Copernicus* himself could not entirely disentangle himself. See *EPICYCLE*, &c.



But after him came Astronomers, who, with a little more Physics, have made no difficulty of changing these circular *Orbits* into Elliptic ones; and of making 'em move with different Velocities in different Parts thereof.

Of these Elliptic *Orbits*, there have been two kinds assign'd: The first, that of *Kepler*, which is the common Ellipsis; to which *Seth Ward*, tho' he himself keeps to it, thinks one might venture to substitute circular *Orbits*, by using two Points taken at equal Distances from the Centre on one of their Diameters, as they do in the Foci of the Ellipsis. The second is that of *M. Cassini*; whose Character is this, that the Products of the right Lines drawn from each Point of its Circumference are every where equal; whereas in the common Ellipsis, 'tis the Sum of those right Lines that is always the same. See ELLIPSIS.

*M. Varignon* shews how inconsistent *Copernicus's* Sentiment is with the Mechanism of the Heavens: Since the Forces which Planets have to retain 'em in their *Orbits*, must almost always conspire to make 'em move with really different Velocities; and that among an infinity of Cases, there is but one wherein they can move uniformly.

The Semi-diameter of the Earth's *Orbit*, *Dr. Gregory* makes 94,596,969 Miles *English*; and the Semi-diameter of *Saturn's Orbit* about 10 times as great.

The *Orbits* of the Planets are not all in the same Plane as the *Ecliptic*, or the Earth's *Orbit* round the Sun; but variously inclined to it, and to one another. But still the Plane of the *Ecliptic* intersects the Plane of the *Orbit* of every Planet in a right Line, which passes through the Sun. See INCLINATION.

The Quantities of the Inclinations of the Planes of the *Orbits* of the primary Planets to that of the *Ecliptic*, are as follow: That of *Saturn*, is an Angle of 2 Degrees  $\frac{1}{2}$ : That of *Jupiter*, an Angle of 1 Deg. 20 Min. That of *Mars* is almost 2 Deg. *Venus* is a little more than 3 Deg. 20 Min. And that of *Mercury* a little more than 7 Degr. See SATURN, MARS, VENUS, &c.

The *Orbits* of *Comets*, *Cassini* takes to be Rectilinear; but *Dr. Halley*, from *Sir Isaac Newton's* Theory, shews them to be parabolical, having the Sun in one of their Foci. See COMET.

ORBITS, in Anatomy, the two large Cavities, wherein the Eyes are plac'd. See EYE.

Their Figure is pyramidal: They are form'd of six several Bones; and are perforated at bottom, to give passage to the Optic Nerves.

ORBITER, in Anatomy, a Name sometimes given to two Holes or Cavities, either from their Resemblance of, or Nearness to, the *Orbits* of the Eyes.

The *Orbiter Externus*, is the Hole in the Cheek-Bone below the *Orbit*.

The *Orbiter Internus*, is a Hole in the Coronal-Bone of the Skull, within the *Orbit*. See CORONAL.

ORCHARD, a Seminary or Plantation of Fruit-Trees, chiefly Apples. See FRUIT-TREE.

'Tis a Rule among Gardeners, that those *Orchards*, *ceteris paribus*, thrive best, which lie open to the South, South-West, and South-East; and are screen'd from the North: the Soil dry, and deep.

*Orchards* are stock'd by Transplantation; seldom by Semination. See PLANTING, NURSERY, &c.

The Season for transplanting Apple-Trees into *Orchards*, is in the Months *October* and *November*. If the Leaves be not all off at the time they are remov'd, they must be pull'd off. They are likewise to be prun'd. Trees may be transplanted into *Orchards* after three Years Grafting; and ought not to be set at a less distance than eight Yards, nor greater than fourteen: And the richer the Land, the greater the Distance.

The Trees are transplanted to best purpose, when young; for Trees ten or twelve Years old, a narrow Trench must be dug the *November* before, deep enough to meet the spreading Roots, at such a distance all around the Tree, as the Roots are to be cut off at. In making the Trench, the Roots to be cut off clean, and without splitting or bruising the Bark, and the Trench fill'd up again. This will enable the Tree, upon Removal, to draw more Nourishment than otherwise it would, and so thrive better in its new Mansion. See TRANSPLANTATION, INOCULATION, ENGRAFTING, &c.

The Side-Branches of all tall *Orchard Fruit-Trees*, are to be cut off till the Tree be arriv'd at the height desir'd. If the Tree be to spread low, some are to be left on each Side; so as to form a kind of Balance. For the first three Years, at least, they must not grow thick and bushy-headed; this must be prevented, by cutting off some of the inside Shoots, and such as grow cross each other, or pendant. See PRUNING.

The Soil, if not rich enough, is to be amended in two or three Years; by opening it around the Tree, and on the outside the Ground first dug, when the Tree was set; and

in a Month's time filling it up again with a proper Compost or Manure. See MANURE; see also PRUNING and COMPOST.

ORCHESTRA, in the Drama, the lower part of the ancient Theatre; made in form of a Semi-Circle, and surrounded by the Seats. See THEATRE.

It was so call'd, because in the *Grecian* Theatres it was a Place where they kept their Balls; from *ὄρχησθαι*, which signifies to dance.

The *Orchestra* among the *Greeks* made a part of the Scene; but on the *Roman* Theatres, none of the Actors went down to the *Orchestra*, which was taken up with Seats for the Senators; answering nearly to the *Pit* in our Theatre. See SCENE, &c.

ORDEAL, or ORDAEL, or ORDEL *Purgation*, a Form of Tryal, i. e. of evincing Innocence or Guilt; practis'd in *England* in the time of *Edward the Confessor*, and since, as low as *King John* and *King Henry III.* See TRYAL.

It was call'd *Purgatio Vulgaris*, or *Judicium*, in opposition to *Bellum*, or *Combat*, the other Form of *Purgation*. See PURGATION and COMBAT.

The Practice of *Ordeals* did not only obtain in *England*, but also in *France* and *Germany*: It was condemn'd by *Pope Stephen II.* and abolish'd by a Declaration of *Henry III.*

The *Ordeal* was of various Kinds, viz. that of Fire, that of red-hot Iron, that of cold Water, that of judicial Potage, that of hallow'd Cheese, that of boiling Water, that of the green Cross, and that of Dice laid on Relicks, cover'd with a woollen Cloth.

But the more popular Kinds were those of red-hot Iron and Water: the first for Freemen, and People of fashion; the second for Peasants. See JUDICIUM, FIRE, WATER, &c.

'Tis a popular Story in our Histories, that *Emma*, Mother of *Edward the Confessor*, being accus'd of too much Familiarity with the Bishop of *Leicester*, demanded the *Ordeal* of red-hot Iron; and pass'd bare-footed, and hood-wink'd, over nine red-hot Plough-shares, without touching any of them.

The Word, in the original *Saxon*, signifies a great Judgment. There were particular Masses for these *Ordeals*.

ORDEFF, or OREDEFF, a Word frequently used in Charters of Privileges, for a Liberty whereby a Man claims the Ore found in his own Ground. See ORE.

It properly signifies Ore lying under ground; as, a Delf of Coal, is Coal lying in Veins under ground.

ORDER, in Architecture, a System of the several Members, Ornaments, and Proportions of Columns, and Pilasters: Or, a regular Arrangement of the projecting Parts of a Building; especially those of a Column: so as to form one beautiful Whole. See COLUMN.

*Perrault* defines an *Order* to be what is regulated by the Ordonnance, when it prescribes the Proportions of entire Columns, and determines the Figure of certain Parts proper to them, according to the different Characters their different Uses and Ends require. See ORDONNANCE.

*M. le Clerc* defines an *Order* to be a Column charg'd with an Entablature, and supported on a Pedestal.

The Definitions *Vitruvius*, *Barbaro*, *Scamozzi*, &c. give of *Order*, are so obscure, that it were vain to repeat them: without dwelling, therefore, on the Definition of a Word, which Custom has establish'd; 'tis sufficient to observe, that there are five *Orders* of Columns; three whereof are *Greek*, viz. the *Doric*, *Ionic*, and *Corinthian*; and two *Italic*, viz. the *Tuscan*, and *Composite*.

The three *Greek Orders* represent the three different Manners of Building, viz. the *Solid*, *Delicate*, and *Mean*; the two *Italic* ones are imperfect Productions thereof. The little regard the *Romans* had for these last, appears hence, that we don't meet with one Instance in the Antique, where they are intermix'd. That Abuse the *Moderns* have introduc'd, by the Mixture of the *Greek* and *Latin Orders*, *Daviler* observes, arises from their want of Reflection on the Use made thereof by the Antients.

The Origin of *Orders* is almost as ancient as human Society: The Rigour of the Seasons first led Men to make little Cabins, to retire into; at first, half under ground, and the half above, cover'd with Stubble: At length growing more expert, they planted Trunks of Trees an-end, laying others a-cross, to sustain the Covering. See ARCHITECTURE.

Hence they took the Hint of a more regular Architecture; for the Trunks of Trees, upright, represent Columns; the Girts, or Bands, which serv'd to keep the Trunks from bursting, express'd Bases and Capitals; and the Summers laid a-cross, gave the Hint of Entablatures; as the Coverings, ending in Points, did of Pediments. This is *Vitruvius's* Hypothesis; which we find very well illustrated by *M. Blondel*. See CAPITAL, PEDISTAL, &c.

Others take it, that Columns took their Rise from Pyramids, which the Antients erected over their Tombs; and that the Urns, wherein they enclos'd their Ashes, represented



ented the Capitals, whose Abacus was a Brick, laid thereon to cover the Urns: But *Pitruvius's* Account appears the more natural.

At length, the *Greeks* regulated the Height of their Columns on the foot of the Proportions of the human Body: The *Doric* represented a Man of a strong, robust Make; the *Ionic* that of a Woman; and the *Corinthian* that of a Girl: Their Bases and Capitals were their Head-Dress, their Shoes, &c. See *BASE*, &c.

These Orders took their Names from the People, among whom they were invented: *Scamozzi* uses significative Terms to express their Character; when he calls the *Tuscan*, the *Gigantic*; the *Doric*, the *Herculean*; the *Ionic*, the *Matronal*; the *Composite*, the *Heroic*; and the *Corinthian*, the *Virginal*. See each Order under its proper Article, *Tuscan*, &c.

To give a general Idea of the Orders; it must be observ'd, that the whole is compos'd of two parts at the least, viz. the Column, and Entablature; and of four parts at the most; when there is a Pedestal under the Column, and one Acroter, or little Pedestal, a-top of the Entablature: That the Column has three parts, viz. the Base, the Shaft, and the Capital; the Entablature has three likewise, viz. the Architrave, the Frise, and Cornich: Which Parts are all different in the several Orders. See each Part under its proper Article.

*Tuscan* ORDER is the first, most simple, and solid; its Column is seven Diameters high; and its Capital, Base, and Entablature, have but few Mouldings for Ornaments. See *TUSCAN*.

*Doric* ORDER, is the second, and the most agreeable to Nature. It has no Ornament on its Base, or on its Capital. Its height is eight Diameters. Its Frise is distinguish'd by Triglyphs and Metopes. See *DORIC*.

*Ionic* ORDER, is the third; and a kind of mean Proportional between the solid and delicate Manner. Its Capital is adorn'd with Volutes, and its Cornich with Denticles. See *IONIC*.

*Nich. Angelo*, contrary to all other Authors, gives the *Ionic* a single Row of Leaves at the bottom of the Capital.

*Corinthian* ORDER, invented by *Callimachus*, is the fourth, the richest, and most delicate. Its Capital is adorn'd with two Rows of Leaves, and eight Volutes, which sustain the Abacus. Its Column is ten Diameters high, and its Cornich has Modillions. See *CORINTHIAN*.

*Composite* ORDER, the fifth and last, (tho' *Scamozzi* and *le Clerc* make it the fourth) is so call'd, because its Capital is compos'd out of those of the other Orders; having the two Rows of Leaves of the *Corinthian*, and the Volutes of the *Ionic*. It is also call'd the *Roman*, because invented among that People. Its Column is ten Diameters high; and its Cornich has Denticles, or simple Modillions. See *COMPOSITE*.

*Rustic* ORDER, is that adorn'd with Rustic Quoins, Bosages, &c. See *RUSTIC*.

*Attic* ORDER, is a little Order of low Pilasters, with an architrav'd Cornich for its Entablature; as that of the Caille of *Versailles* over the *Ionic* on the side of the Garden. See *ATTIC*.

*M. Blondel* calls the little Pilasters of Attics and Mezzanines, false Orders.

*Persian* ORDER, is that which has Figures of *Persian* Slaves, instead of Columns, to support the Entablature. See *PERSIAN*.

*Caryatic* ORDER, is that whose Entablature is supported with Figures of Women, instead of Columns. See *CARYATIDES*.

*Gothic* ORDER, that which deviates from the Ornaments and Proportions of the Antique; and whose Columns are either too massive, in manner of Pillars; or too slender, like Poles: its Capitals out of all measure; and carv'd with Leaves of wild Acanthus, Thistles, Cabbage, or the like. See *GOTHIC*.

*French* ORDER, is a new contriv'd Order, wherein the Capital consists of Attributes agreeing to that People; as Cocks-Heads, Flowers-de-Lys, &c.

Its Proportions are *Corinthian*: Such is that of *M. le Brun*, in the Grand Gallery of *Versailles*; and that of *M. le Clerc*.

*M. le Clerc* gives a second *Tuscan* Order, and a *Spanish* Order, besides his *French* Order. The *Tuscan* he ranks between the first *Tuscan* and *Doric*. Its height he makes 23 Semi-diameters, 22 Minutes. The Column to have 15, the Pedestal 5, and the Entablature 3, and 22 Minutes: And he proposes its Frise to be adorn'd with Turtles, which are the Arms of *Tuscany*.

The *Spanish* Order he places between the *Corinthian* and *Composite*. The whole Order he makes 30 Semi-diameters, 28 Minutes; whereof the Column has 19, and 25 Min. the Pedestal 16, and 18 Min. and the Entablature 4, and 15 Min. The Horns of the Abacus he sustains with little Volutes; the middle, in lieu of a Rose, has a Lion's

Snout: that Animal being the Symbol of *Spain*, and expressing the Strength, Gravity, and Prudence of that Nation.

ORDER, is also used for a Class or Distinction of the Members of the Body of a State; with regard to Assemblies, Precedence, &c.

In this sense, Order is a kind of Dignity, or honourable Quality, which, under the same Name, is common to several Persons; and which, of itself, does not give them any particular public Authority, but only Rank, and a Capacity of arriving at Honours and Employments.

To abridge this Definition; Order is a Dignity, with an Aptitude for a public Employ; by which it is distinguish'd from an Office, which has the Exercise and Function of a public Trust. See *OFFICE*.

In this sense, Nobility is an Order, &c. Clericature an Order, &c. See *NOBILITY*, &c.

ORDER is also the Title of certain antient Books, containing the Divine Office, with the Order and Manner of its Performance.

*Roman Order*, that wherein are laid down the Ceremonies which obtain in the *Roman Church*.

ORDER, in Astronomy. A Planet is said to go according to the Order of the Signs, when it is direct; proceeding from *Aries* to *Taurus*, thence to *Gemini*, &c. It goes contrary to the Order or Succession of the Signs, when retrograde, i.e. when it goes back from *Pisces* to *Aquarius*. See *DIRECTION*, *RETROGRADATION*, &c.

ORDER, in War, an Arrangement of the Parts of an Army, either by Land or Sea; or a Disposition of the Battalions, and Squadrons, of Men, or Vessels, for marching or engaging.

An Order of Battel, consists of one, two, or three Lines.

An Order of March, is dispos'd in two or three Columns, according to the Ground. The Orders and Evolutions make the Science of Tactics. See *TACTICS*.

Order is particularly used for the equal Distance of one Rank or File from another. The usual Order in Files is three Foot; in Ranks six Foot. The open Order is twice as much.

ORDERS, by way of Eminency, or Holy ORDERS; a Character peculiar to Ecclesiastics, whereby they are set apart for the Ministry. See *ORDINATION*.

This the *Romanists* make their sixth Sacrament. See *SACRAMENT*.

In the Reformed Churches, there are but three Orders; viz. Bishops, Priests, and Deacons: In the *Romish Church* there are seven, exclusive of the Episcopate: All which the Council of *Trent* enjoins to be received and believ'd on pain of *Anathema*.

They are distinguish'd into *Petty*, or *Secular Orders*; and *Major*, or *Sacred Orders*.

The *Petty*, or *Minor Orders*, are four; viz. those of Porter, of Exorcist, of Reader, and of Acolyther. Those in *Petty Orders* may marry without any Dispensation. In effect, these *Petty Orders* are only look'd on as Formalities, and as Degrees necessary to arrive at the higher Orders; yet the Council of *Trent* is very serious about them; enjoins that none be admitted into them, without understanding *Latin*; and recommends it to the Bishops to observe the Intervals of conferring them, that the Persons may have a sufficient time to exercise the Functions of each Order: Yet it leaves the Bishops a Power of dispensing with those Rules; so that the four Orders are usually conferr'd the same day, and only make the first part of the Ceremony of Ordination.

The *Greeks*, as well as the Reform'd, disavow these *Petty Orders*, and pass immediately to the Sub-diaconate.

Their first Rise, *Henry* dates in the time of the Emperor *Justinian*. There is no Call nor Benefice requir'd for the four *Petty Orders*; and a Bastard may even enjoy them without any Dispensation; nor does Bigamy disqualify.

The *Sacred*, or *Major Orders*, we have already observ'd, are three; viz. those of Deacon, Priest, and Bishop. See *DEACON*, *PRIEST*, and *BISHOP*.

The Council of *Trent*, retrieving the antient Discipline, forbids any Person being admitted to the *Major Orders*, unless he be in peaceable possession of a Benefice sufficient for a decent Subsistence; allowing no Ordinations on Patrimonies or Pensions; except where the Bishop judges it for the Service of the Church.

A Person is said to be promoted to *Orders per saltum*, when he has not before pass'd the inferior Orders. The Council of *Constantinople* forbids any Bishop being ordain'd without passing all the Degrees; yet Church-History furnishes us with Instances of Bishops consecrated, without having pass'd the Order of Priesthood: and *Panormus* still thinks such an Ordination valid.

Military ORDERS, are certain Companies of Knights, instituted by Kings and Princes; either in defence of the Faith, or on other Occasions, as to confer Marks of Honour, and



and make distinctions among their Subjects. See KNIGHT.

There have been five Orders purely Military in England; viz. those of Knights of the Garter, Knights Bannerets, Knights of the Bath, Knights Batchelors, and Knights Baronets. See the Institution of each under its proper Article, GARTER, BATH, BARONET, &c.

The French have had five Military Orders, viz. that of the Genette, instituted by Charles Martel; but which soon fell. The Order of the Virgin Mary, since call'd the Order of the Star, instituted by King John in 1352. The Order of St. Michael, instituted in 1469, by Lewis IX. The Order of the Holy Spirit, or the blue Ribbon; the Knights of the Holy Spirit are first to be Knights of St. Michael. Order of St. Louis, instituted by Louis XIV. in 1693.

The Princes of the Blood, Marshals of France, Admiral, and General, become Knights of St. Louis by their Office.

Religious Military Orders, are those instituted in defence of the Faith, and privileged to say Mass; and withal prohibited Marriage, &c.

Of this kind are the Knights of Malta, or of St. John of Jerusalem; such also were the Knights Templars, the Knights of Calatrava, Knights of St. Lazarus, Teutonic Knights, &c. See each under its proper Article, MALTA, TEMPLAR, &c.

Father Putignani accounts those Military Orders where Marriage is not allow'd, real Religious Orders. F. Papebroch says, it is in vain to search for Military Orders before the XIIIth Century.

Religious ORDERS, are Congregations or Societies of Religious, living under the same Superior, in the same Manner, and wearing the same Habit. See RELIGIOUS and CONGREGATION.

Religious Orders may be reduced to five kinds, viz. Monks, Canons, Knights Mendicants, and Regular Clerks. See each under its proper Article, MONK, CANON, &c.

Father Mabillon shews, that till the IXth Century, almost all the Monasteries in Europe follow'd the Rule of St. Benedict; and that the distinction of Orders did not commence till upon the Reunion of several Monasteries into one Congregation. That S. Odo, Abbot of Cluny, began first this Reunion, bringing several under the Dependence of Cluny: That, a little afterwards, in the XIth Century, the Camaldules arose; then, by degrees, the Congregation of Vallambrosa; the Cistercians, Carthusians, Augustines; and at last, in the XIIIth Century, the Mendicants. He adds, that Lupus Servatus, Abbot of Ferrieres, in the IXth Century, is the first that seems to distinguish the Order of St. Benedict from the rest, and to speak of it as a particular Order. See BENEDICTINE.

White Order is the Order of Regular Canons of St. Augustine. See AUGUSTINE.

Black Order, the Order of Benedictines. These Names were first given these two Orders from the Colour of their Habit; but are disused since the Institution of several other Orders, who wear the same Colours.

Grey Order, the ancient Name of the Cistercians; but since the change of the Habit, the Name suits 'em no more. See CISTERCIANS.

ORDER, in the Geometry of Curves, see LINE and CURVE.

ORDINAL, ORDINALE, in our Law-Books, a Book containing the Order, or Manner of performing Divine Offices: *In quo ordinatur Modus*, &c.

ORDINAL, in Grammar, an Epithet given to such Numbers as mark the Order of things, or in what Rank they are placed. See NUMBER.

Thus, First, Second, Tenth, Hundredth, &c. are Ordinal Numbers.

ORDINANCE, or ORDONNANCE, a Law, Statute, or Command of a Sovereign, or Superior. See LAW, &c.

Ordinance of Parliament, is ordinarily used in the same Sense as Statute, or Act of Parliament. See STATUTE.

In the Parliament Rolls, Acts are often call'd Ordinances of Parliament: Tho' in some Cases we find a difference made between the two; Ordinances being only temporary things, and capable of being alter'd by the Commons alone; whereas an Act is a perpetual Law, and cannot be alter'd but by King, Lords, and Commons. See ACT.

Sir Edward Coke, however, asserts, That an Ordinance of Parliament is to be distinguish'd from an Act, inasmuch as the latter can be only made by the King, and the threefold Consent of the Estates; whereas the former is ordained with or by two of them.

Ordinance of the Forest, is a Statute made in the 34th Year of Hen. I. relating to Forest Matters. See ASSISE.

In the French Jurisprudence, Ordonnances are such Laws as are established by the King's Authority alone. All Ordonnances begin with *a tous Presens & a venir Salut*.

ORDINANCE, or ORDONNANCE, is also a general Term

for all sorts of Great Guns, or Cannon, used in War. See GUN and CANNON.

The several Parts of a Piece of Ordnance are thus nam'd, viz. The Outside, round about the Piece, is call'd the *Superficies of her Metal*. The Substance, or whole Mass of Metal is call'd her *Body*. The Part next us, when she stands ready to fire, the *Breech* or *Coyle*; and the *Pommel*, or round Knob at the end of it, the *Cascabel*; by some the *Cascabel-Dock*. The *Trunnions* are the two Knobs, Spindles, or Ears, which hold the Piece in the Carriage. *Manglons* or *Dolphins* in the German Guns, are two Handles placed on the Back of the Piece near the Trunnions, and near the Centre of Gravity, to mount and dismount 'em more easily. The Rings about it are four: The *Base-Ring* is that which is next below the Touch-hole: The next above the Touch-hole is call'd the *Reinforced-Ring*: The next to that forward, the *Trunnion-Ring*: The next to that the *Cornice-Ring*: That at the Mouth, the *Muzzle-Ring*, or the *Freeze*: All the Rings near the Mouth are sometimes call'd the *Freezes*. As to the internal Parts; the whole Cavity or Bore of the Piece is call'd her *Chase*. That part of the Cavity between the Trunnions and the Muzzle or Mouth, the *vacant Cylinder*: The part from the Trunnions to the end of the Cavity, or so much of it as containeth (or is loaded with) the Powder and Shot, is call'd the *Chamber*. The Diameter of the Mouth, the *Calibre*. The Space between the Shot, and the hollow Superficies of the Piece within, is call'd the *Vent*; being the difference between the Diameter of the Shot, and of the Mouth of the Piece.

Ordnance in England is distinguish'd into two kinds, viz. *Field-Pieces*, which are from the smallest to twelve Pounders; and *Cannon of Battery*, which are from a Culverin to a whole Cannon.

Each of these Divisions is again subdivided; the first into *Base*, *Rabinet*, *Falconet*, *Falcon*, *Minion* ordinary, *Minion* largest, *Saker* least, *Saker* ordinary, *Demi-culverin* least, and *Demi-culverin* ordinary. The second into *Culverin* least, *Culverin* ordinary, *Culverin* largest, *Demi-cannon* least, *Demi-cannon* ordinary, *Demi-cannon* large, and *Royal* whole Cannon.

The Lengths and Weights of each whereof, as also the Weights of the Bullets they carry; see express'd in a particular Table under the Article CANNON. See also each Piece under its proper Head, CANNON, DEMICANNON, CULVERIN, SAKER, &c.

The Strength and Serviceableness of a Piece of Ordnance depends very much on the thickness of the Metal, especially about its Chamber and Breech, which is call'd its Fortification.

Of this there are three Degrees both for Cannons and Culverins: Such as are ordinarily fortify'd, are call'd *Legitimate Pieces*. Those whose Fortification is lessen'd, are call'd *Bastard Pieces*. Those doubly-fortify'd, are call'd *Extraordinary Pieces*. The Fortification of a Gun is reckoned from the thickness of the Metal at the Touch-hole, at the Trunnions, and at the Muzzle, in proportion to the Diameter of the Bore. The doubly-fortify'd Pieces are a full Diameter of the Bore in thickness at the Touch-hole,  $\frac{1}{2}$  of it at the Trunnions, and  $\frac{2}{3}$  at the Muzzle: The lessen'd Cannons have but  $\frac{3}{4}$ , or  $\frac{1}{2}$  of the Diameter of their Bore, in thickness at the Touch-hole,  $\frac{1}{2}$  at the Trunnions, and  $\frac{3}{8}$  at the Muzzle. All the double-fortify'd Culverins, and all the lesser Pieces of that kind, have a Diameter and  $\frac{1}{4}$  at the Touch-hole,  $\frac{1}{2}$  at the Trunnions, and  $\frac{3}{8}$  at the Muzzle. And the ordinary fortify'd Culverins, are every way as the double-fortify'd Cannon; and the lessen'd Culverins as the ordinary Cannon, in all respects. The ordinary-fortify'd Cannons have  $\frac{3}{4}$  at the Touch-hole,  $\frac{1}{2}$  at the Trunnions, and  $\frac{3}{8}$  at the Muzzle.

ORDINANCE, in Painting, see ORDONNANCE.

ORDINARY, something that happens, or passes frequently, usually. See EXTRAORDINARY.

Thus we say, the Ordinary Course of Things: Whatever is done without Miracles, is done by ordinary Agents.

Embassador, or Envoy in ORDINARY, he who is sent to reside stately, and for a number of Years, in the Court of some Prince or State, to keep up a good Understanding, and see to the Interests of his Nation. See EMBASSADOR, ENVOY, RESIDENT, &c.

ORDINARY is also apply'd to several Officers and Servants belonging to the Household, who attend on common Occasions.

Thus we say, Physician in Ordinary, &c.

ORDINARY, in the Civil Law, is any Judge vested with Authority to take cognizance of Causes, in his own Right, as he is a Magistrate; and not by Deputation. See JUDGE.

ORDINARY, in Common and Canon Law, is the Bishop of the Diocese; or he who has Ordinary Ecclesiastical Jurisdiction within that Territory; and the Collation to Benefices therein. See BISHOP, COURT, ECCLESIASTICAL, &c.

There



There are several Chappels, Chapters, Abbeys, &c. exempted from the Jurisdiction of the Ordinary. See CHAPPEL, ABBEY, &c.

The *Romish* Canonists call the Pope *Ordinary of Ordinaries*, since by the *Lateran* Council he has usurped the Right of Collating, by Prevention, to all Benefices; in exclusion of the Ordinary Collators. See COLEATION.

ORDINARY of *Affizes and Sessions*, was a Deputy of the Bishop of the Diocese, antiently appointed to give Malefactors their Neck-Verdes, and judge whether they read or not; also to perform Divine Service for 'em, and assist in preparing them for Death.

ORDINARY, or *Honourable ORDINARY*, in Heraldry, a Denomination given to certain Charges properly belonging to that Art. See CHARGE.

The *Honourable Ordinaries* are ten in Number, viz. the Chief, Pale, Bend, Fesse, Bar, Cross, Saltier, Chevron, Bordure, and Orle. See each in its Place, CHIEF, PALE, &c.

The Heralds give several Reasons for their being call'd *Honourable*; viz. 1. Their great Antiquity, as having been used ever since Armoury was set on foot. And, 2. for that they denote the Ornaments most necessary for noble and generous Men: Thus the Chief represents the Helmet, Wreath, or Crown, covering the Head: The Pale represents his Lance or Spear: The Bend and Bar, his Belt: The Fesse his Scarf: The Cross and Saltier, his Sword: The Chevron, his Boots and Spurs: And the Bordure and Orle, his Coat of Mail.

As to the allotting or distributing of these *Ordinaries*, some Authors write, that when a Gentleman having behav'd himself gallantly in Fight, was presented to the Prince or General, and a suitable Coat-Armour ordered him; if he were wounded on the Head, they gave him a Chief; if in the Legs, he had a Chevron; and if his Sword and Armour were discoloured with the Blood of Enemies, a Cross or Bordure.

Some Authors have attempted to increase the Number of *Honourable Ordinaries* to twenty; adding to those above-mentioned, the plain Quarter, the Giron, the Escutcheon, Cappe dexter and sinister, Emmanch dexter and sinister, Causse dexter and sinister, and the Point. But these are not yet authorized.

ORDINARI, in Antiquity, a sort of Gladiators; being those appointed to exhibit Combats on certain stated days, &c. See GLADIATOR.

ORDINATES, in Geometry, and Conics, are Lines drawn from any Point of the Circumference of an Ellipsis, or other conic Section, perpendicularly across the Axis, to the other side. See CONIC SECTION.

The *Latins* call 'em *Ordinatum applicatæ*: Such are the Lines M M, (Tab. CONICS, Fig. 26.) half of each of these, as the Lines E M, are properly only *Semi-ordinates*, tho' popularly call'd *Ordinates*. See SEMI-ORDINATE.

In *Curves of the second Order*; if any two parallel right Lines be drawn so as to meet the Curve in three Points: a right Line which cuts these Parallels so, as that the Sum of two Parts terminating at the Curve on one side the Secant, is equal to the third part terminated at the Curve on the other side; will cut all other right Lines parallel to these, and that meet the Curve in three Points, after the same manner; i. e. so as that the Sum of the two Parts on one side will be always equal to the third Part on the other side; and these three Parts equal on either side, Sir Isaac Newton calls *Ordinatum applicatæ*, or *Ordinates of Curves of the second Order*. See CURVE.

ORDINATE in a Parabola, } PARABOLA.  
ORDINATE in an Hyperbola, } SEC } HYPERBOLA.  
ORDINATE in an Ellipse, } ELLIPSIS.

ORDINATE Ratio, is that wherein the Antecedent of the first Ratio is to its Consequent as the Antecedent of the second is to its Consequent. See RATIO.

ORDINATION, the Action of conferring Holy Orders; or of initiating a Candidate into the Diaconate, or Priesthood. See ORDERS.

The Ordination of Bishops is properly call'd *Consecration*. See BISHOP and CONSECRATION.

Ordination has always been esteem'd the principal Privilege of Bishops; and they still retain the Function as a Mark of Sovereignty in their Diocese. In the antient Discipline, there was no such thing as a vague and absolute Ordination; but every one was to have a Church, whereof he was to be ordained Clerk or Priest.

In the 12th Century, they grew more remiss, and ordained without any Title or Benefice. See BENEFICE.

The Council of Trent restored the antient Discipline, and appointed that none should be ordained but those who were provided of a Benefice sufficient to subsist 'em. The Shadow of which Practice still obtains among us.

The Reformed hold the Call of the People the only thing essential to the Validity of the Ministry; and teach, that Ordination is only a Ceremony which renders the Call more August and Authentic. The Council of Rome in 744,

orders that no *Ordinations* shall be held except on the first, fourth, seventh, and tenth Months.

With us, *Ordination-Days* are the second Sunday in Lent, Trinity-Sunday, and the Sunday following the first Wednesday after September the 14th, and December the 13th.

Pope Alexander II. condemns *Ordination per saltum*, as they call it; i. e. the Passage to a superior Order without having pass'd the inferior.

ORDNANCE, or ORDINANCE Office, is the standing, grand Magazine of Arms, Habiliments, Instruments, and Utensils of War, as well by Sea as Land; not only for those lodged in the Tower, but in all the Garisons, Castles, Forts, &c. in Great Britain, from whence, as occasion requires, his Majesty's Armies, &c. are supply'd. See OFFICE and ORDINANCE.

The Officers of the *Ordinance* are, the Master-General, from whom are derived all Orders and Dispatches relating to the same, as the Service shall best require. This Post has of late been annexed to the Office of General and Commander in Chief. See MASTER.

Under him is a Lieutenant-General of the *Ordinance*, who receives Orders from the Master-General, and the rest of the Prime Officers at the Board; sees 'em duly executed; orders the firing of the Guns on Days of Rejoicing, and sees the Train of Artillery fitted out, when order'd to the Field. See LIEUTENANT.

Next to him is the Surveyor-General, who has the Inspection of the *Ordinance*, Stores, and Provisions of War, in the Custody of the Store-keepers; he allows all Bills of Debt, keeps a Checque on Labourers, &c. See SURVEYOR.

Under these is a Clerk of the *Ordinance*, who records all Orders and Instructions given for the Government of the Office; with all Patents, Grants, Names of Officers, &c. draws all Estimates for Provisions, and supplies all Letters, Instructions, Commissions, Deputations, Contracts, &c. serves as a Checque between the two Accountants of the Office, the one for Money, the other for Stores.

This Office hath also a Store-Keeper, who takes into his Custody all *Ordinance*, Ammunition, Stores, &c. thereto belonging; and indents, and gives in legal Security for the safe keeping thereof; and renders an exact Account from time to time.

Here is also a Clerk of the *Deliveries*, whose Duty is to draw up all Provisions, either at the Tower, or any other of his Majesty's Magazines, to see them duly executed, &c. And a Treasurer, thro' whose hands passes the Money of the whole Office, as well for payment of Salaries, as Debentures.

ORDONNANCE, or ORDINANCE, in Painting, the Disposition of the Parts of a Painting, either with regard to the whole Piece, or to the several Parts; as the Groups, Masses, Contrasts, Aspects, &c. See PAINTING.

The Doctrine of ORDONNANCE is compriz'd in the following Rules.

In the *Ordonnance* there are three things regarded, viz. the Place, or Scene, where; the Distribution, how; and the Contrast.

In the first, regard is to be had to the Disposition of things to serve as a Ground-Work; and to the Plan, or Position of Bodies: Under the former whereof, come, 1. The *Landscape*; whether an uninhabited Place, where there is a full liberty of representing all the Extravagancies of Nature; or inhabited, where the Marks of Cultivation, &c. must be exhibited. See LANDSHIP.

2. The *Building*, whether Rustic; wherein the Painter's Fancy is at liberty: Or Regular; wherein a nice Attention is required to the Orders. See ORDER.

3. The *Mixture* of both; wherein 'tis a Maxim to compose in great Pieces, and make the Ground-Plot big enough; to neglect some little Places, in order to bellow more on the whole Mass; and to shew the more considerable Places with the more advantage; and to make some Agitation in all the things that move.

As to the *Plan* of Bodies; they are either solid; which again, are either so by Nature, and which must be proportion'd to their Places; or Artificial, where regard must be had to the Rules of Geometry, Perspective, Architecture, &c. Or they move; which they do, either by a voluntary Motion, wherein care must be had to proportion 'em to their Situation, and to strengthen 'em by the regarding Equilibrium; or by some extraordinary Power, as Machines, &c. where the Causes of their Motions must appear. Or they are things at a distance. In all which, an even Plane must still be proposed to find their precise Situation, and settle their Place by sudden breaks and distances agreeable to their Perspective. See EQUILIBRIUM, PERSPECTIVE, &c.

In placing the Figures, regard must be had, 1. To the Group, which connects the Subject, and stays the Sight. In this are to be consider'd the Knot, or *Nodus*, which binds the Group; and the Nearness of Figures, which we may



call the Chain, as it holds 'em together; that the Group be sustain'd by something loose and distinct from it; and by the same join'd and continued to the other Groups: And that the Lights and Shadows be so disposed, as that we may at once see the Effects of all the Parts of the Composition. See GROUP.

2. To the *Actions*, wherein forced Attitudes are to be avoided; and simple Nature shewn in her most advantageous Postures. In weak and lean Figures, the Nudities not to be shewn; but occasions of covering 'em sought. In all human Figures, special Care to be taken, the Head be well placed between the Shoulders; the Trunk on the Haunches, and the whole on the Feet. See ATTITUDE.

3. To the *Drapery*; which is to be adjusted so, as it may appear real Garments, and not Stuffs loosely thrown on. The Folds to be so disposed, as to leave the great parts wherein the Nudity may appear, free; ranging the little Folds about the Joints, and avoiding 'em on the Relief of the Members. And, lastly, to dispose the Draperies, by raising the Stuff, and letting it fall lightly, that the Air sustaining the Folds, may let 'em fall soft. See DRAPERY.

Lastly, in the *Contrast*, are to be consider'd the Actions, which vary infinitely: The Aspects, which, in Actions of the same kind, may, by their difference, make a Contrast: The Situation, according as they meet above or under the Sight, far or near. And, lastly, the Custom; which extends, indeed, to all parts of Painting, but is particularly to be regarded in the *Ordonnance*; to be managed discretely, however, and stiffness and formality avoided. See CONTRAST.

ORDONNANCE, in Architecture, is nearly the same as in Painting; viz. the Disposition of the Parts of a Building, both with regard to the whole, and to one another. See BUILDING.

*Vitruvius* defines *Ordonnance* to be that which regulates the Size of all the Parts of a Building with respect to their Use.

This Definition is censur'd by *M. Perrault*, who takes the *Ordonnance* to consist in the Division of the Plan or Spot of Ground whereon the Building is to be rais'd; i. e. in the apportioning or laying it out, agreeable with the intended Dimensions of the whole Fabric; which *Mr. Evelyn* expresses in fewer Words by the determining of the Measures of what is assign'd to compose the several Apartments.

On this Foundation, *Ordonnance* is the judicious Contrivance of the Plan or Model; as when the Court, Hall, Lodgings, &c. are neither too large nor too little: But the Court, v. gr. affords convenient Light to the Apartments about it, and is large enough for usual Access. The Hall of fit Capacity to receive Company; the Bed-Chambers accordingly, &c. When these Divisions are either too great or too small with respect to the Place, as a large Court to a little House, or a little Chamber in a magnificent Palace; the fault is in the *Ordonnance*.

This the Antients call'd *Taxis*; and distinguished it from *Diathefis*, Disposition; which is, where all the Parts and Members of a Building are assign'd their just Place and Situation with regard to their Quality, Office, Rank, &c. without any regard to the Dimensions or Quantity: As, that the Vestible or Porch precede the Hall, the Hall the Parlor, that the Withdrawing Room, &c. The Bed-Chambers, again, to the Sun-rising; Libraries, Galleries of Paintings, and Cabinets of Curiosities, &c. to the North.

ORE, see OAR.

ORGAL, the Lees of Wine dried, and used by Dyers to prepare the Cloth for more readily taking their several Colours. See DYING, COLOUR, TARTAR, &c.

ORGAN, in Music, the largest and most harmonious of all Wind-Instruments. See MUSIC.

The Invention of the *Organ* is very antient, tho' it is agreed it was very little used till the VIIIth Century. It seems to have been borrow'd from the *Greeks*. *Vitruvius* describes one in his tenth Book. The Emperor *Julian* has an Epigram in its praise. *St. Jerom* mentions one with twelve Pair of Bellows, which might be heard a thousand Paces, or a Mile; and another at *Jerusalem*, which might be heard to the Mount of Olives. The Structure of the modern *Organ* may be conceiv'd as follows.

The *Organ* is a Buffet containing several Rows of Pipes. The Size of the *Organ* is usually express'd by the length of its largest Pipe: Thus we say an *Organ* of 32 Feet, of 16 Feet, of 8 Feet, and of 2 Feet. Church *Organs* consist of two Parts, viz. the main Body of the *Organ*, call'd the great *Organ*; and the *Positive*, or little *Organ*, which is a small Buffet usually placed before the great *Organ*.

The *Organ* has at least one Set of Keys, when it has only one Body; and two or three, when it has a *Positive*. The large *Organs* have four, sometimes five Sets. Besides, the Pedals or largest Pipes have their Key, the Stops or Touches whereof are play'd by the Feet. The Keys of an *Organ*

are usually divided into four Octaves; viz. the second Sub-Octave, first Sub-Octave, middle Octave, and fifth Octave. Each Octave is divided into twelve Stops or Keys; whereof the seven black mark the natural Sounds, and the five white the artificial Sounds; i. e. the Flats and Sharps. So that the Keys usually contain 48 Stops, or Touches. Some Organists add to this Number one or more Stops in the third Sub-Octave, as well as in the second. Note, in Harpsichords and Spinets, the natural Stops or Keys are usually mark'd white, the artificial ones black. The Pedals have about two or three Octaves at the pleasure of the Organist: So that the number of Stops is undetermined.

Each Key or Stop press'd down, opens a Valve or Plug, which corresponds, lengthwise, to as many Holes as there are Rows of Pipes on the Sound-Board. The Holes of each Row are open'd and shut by a Register or Ruler pierced with 48 Holes. By drawing the Register, the Holes of one Row are open'd, because the Holes of the Register correspond to those of the Sound-board. So that by opening a Valve, the Wind brought into the Sound-board by a large Pair of Bellows, finds a Passage into the Pipe which corresponds to the open Hole of the Sound-board. But by pushing the Register, the 48 Holes of the Register, not answering to any of those of the Sound-board, that Row of Pipes answering to the push'd Register are shut. Whence it follows, that by drawing several Registers, several Rows of Pipes are open'd; and the same thing happens, if the same Register correspond to several Rows. Hence the Rows of Pipes become either Simple, or Compound; Simple, when only one Row answers to one Register; Compound, where several. The Organists say, a Row is Compound, when several Pipes play upon pressing one Stop.

The Pipes of the *Organ* are of two kinds; the one with Mouths, like our Flutes; the other with Reeds. The first call'd Pipes of Mutation, consist,

1. Of a Foot A A B B, (Tab. Music, Fig. 1.) which is a hollow Cone, and which receives the Wind that is to sound the Pipe. 2. To this Foot is fasten'd the Body of the Pipe B B D D. Between the Foot and the Body of the Pipe is a Diaphragm, or Partition E E F, which has a little, long, narrow Aperture to let out the Wind. Over this Aperture is the Mouth B B C C; whose upper Lip C C, being level, cuts the Wind as it comes out at the Aperture.

The Pipes are of Pewter, Lead mix'd with a twelfth Part of Tin, and of Wood. Those of Tin are always open at their Extremities; their Diameter is very small, their Sound very clear and shrill. Those of Lead mix'd, are larger; the shortest open, the longest are quite stop'd; the mean ones partly stop'd, and having besides a little Ear on each side the Mouth, to be drawn closer, or set further asunder, in order to raise or lower the Sound. The wooden Pipes are made square, and their Extremity stop'd with a Valve or Tampion of Leather. The Sound of the wooden and leaden Pipes is very soft; the large ones stop'd, are usually of Wood; the small ones of Lead. The longest Pipes give the greatest Sound; and the shortest the most acute: Their Lengths and Widths are made in the reciprocal Ratio's of their Sounds; and the Divisions regulated by their Rule, which they call *Diapason*. But the Pipes that are shut only have the Length of those that are open, and which yield the same Sound. Usually, the longest Pipe is 16 Feet; tho' in extraordinary *Organs* 'tis 32. The pedal Tubes are always open, tho' made of Wood and of Lead.

A Reed-Pipe consists of a Foot A A B B, (Tab. Music, Fig. 2.) which carries the Wind into the Shalot, or Reed C D, which is a hollow Demi-cylinder, fitted at its Extremity D, into a kind of Mould I I, by a wooden Tampion F G. The Shalot is cover'd with a Plate of Copper E E F F, fitted at its Extremity F F into the Mould by the same wooden Tampion: Its other Extremity E E is at liberty; so that the Air entering the Shalot, makes it tremble or shake against the Reed; and the longer that part of the Tongue which is at liberty F L, is made, the deeper is the Sound. The Mould I I, which serves to fix the Shalot or Reed, the Tongue, Tampion, &c. serves also to stop the Foot of the Pipe, and to oblige the Wind to go out wholly at the Reed. Lastly, in the Mould is solder'd the part H H K K, call'd the Tube, whose inward opening is a continuation of that of the Reed. The Form of this Tube is different in the different Ranks of Pipes.

The degree of Acuteness and Gravity in the Sound of a Reed-Pipe, depends on the Length of the Tongue, and that of the Pipe C K, taken from the Extremity C of the Shalot, to the Extremity K of the Tube.

The Quality of the Sound depends on the Width of the Reed, the Tongue, and the Tube; as also on the Thickness of the Tongue, the Figure of the Tube, and the Quantity of Wind.



To diversify the Sounds of the Pipes, they add a Valve to the Port-vent, which lets the Wind go in Fits or Shakes.

**Hydraulic ORGAN**, a Musical Machine that plays by means of Water.

Of these there are several in Italy in the Grotto's of Vineyards. *Ctesibes* of Alexandria, who lived in the Reign of *Ptolemy Evergetes*, is said to have first invented *Organs* that plaid by compressing the Air with Water, as is still practised. *Archimedes* and *Vitruvius* have left us Descriptions of the *Hydraulic Organ*. *Felibien, de la Vie des Archit.*

In the Cabinet of *Q. Christina*, is a beautiful and large Medallion of *Valentinian*, on the reverse whereof is seen one of these *Hydraulic Organs*; with two Men, 'one on the right, the other on the left, seeming to pump the Water which plays it, and to listen to its Sound. It has only eight Pipes, placed on a round Pedestal. The Inscription is *PLACEA SPETRI*.

**ORGAN**, or **ORGUES**, in War, is a Machine composed of several Harquebuss or Musket-barrels, bound together; by means whereof several Explosions are made at the same time; used to defend Breaches, and other Places attack'd.

**ORGAN** is also used in the general for any thing framed, and destined for some certain Action, Use, or Operation. See **FUNCTION**.

Hence, **ORGAN**, or **ORGANICAL Part**, in Physiology, is such a Part of the Body as is capable of the performance of some perfect Act, or Operation. In which sense, all the Parts, even the most simple, might be denominated *Organical*.

These *Organs* are divided into *Primary*, and *Secondary*. The first are those composed of similar Parts, and appointed for some one single Function: Such as consist of several of these, tho' appropriated to one single Action, are esteemed of the *secondary* kind.

Thus the Veins, Arteries, Nerves, and Muscles, are *Primary Organs*; and Hands, Fingers, &c. *Secondary Organs*.

**ORGAN of Sense**, is that part of an animal Body by means whereof it perceives external Objects. See **SENSE**.

These, some divide into *Internal*, which is the Brain; and *External*, viz. the Eye, Ear, Nose, &c. See **BRAIN**, **EYE**, **EAR**, **NOSE**, &c.

**ORGANICAL**, in the antient Music, was that Part performed with Instruments. See **MUSIC**.

The *Organical* comprehended three Kinds of Instruments; viz. *Wind Instruments*, as the Trumpet, Flute, &c. *Stringed Instruments*, as the Lute, Lyre, &c. And *Pulsatile Instruments*, or those play'd on by beating, as Drums, &c. See each in its place, **TRUMPET**, &c.

**ORGANICAL Part**, is that Part of an Animal or Plant destined for the performance of some particular Function. See **ORGAN** and **PART**.

**ORGANICAL Disease**, a Disease in an *organical* Part of the Body, whereby its Function is impeded, suspended, or destroy'd. See **BODY**, **DISEASE**, &c.

**ORGANICAL Description** of Curves, is the Method of describing them on a Plane, by the regular Motion of a Point. See **CURVE**.

**ORGASM**, *Orgasmus*, in Medicine, an Impetus, or too quick Motion of the Blood, or Spirits; whereby the Muscles are convulsed or moved with uncommon Force. See **SPIRIT**, **CONVULSION**, &c.

The Word is Greek, *οργασμος*, denoting violence, force, onset.

**ORGIA**, in Antiquity, Feasts, and Sacrifices in honour of *Bacchus*, instituted by *Orpheus*, and chiefly celebrated on the Mountains by wild, distracted Women, call'd *Bacchantes*. See **BACCHANALIA**.

*Eusebius* derives the Word *and τις οργης*, fury, madness. Others from *ορος*, Mountain; because *Orpheus* removed from Thrace to Mount *Citheron*. Others from *οργας*, a Place consecrated to some Divinity. Others from *αργαν*, to remove, repulse; in regard the Prophane were to be driven away.

*Servius* says, that at first *Orgia* was a common Name for all kinds of Sacrifices among the Greeks; of the same import with the word *Ceremonies* among the Romans.

The *Orgia* were also call'd *Orphica*, from their Instructor.

**ORGUES**, or **ORGAN**, in War, see **ORGAN**.

**ORGIA**, an antient Greek Measure, see **MEASURE**.

**ORIENT**, *Oriens*, in Geography and Astronomy, the East, or East-point of the Horizon. See **EAST**.

It is thus call'd from the Latin *Orire*, to arise; because it is in this Point the Sun rises. See **RISING**.

**ORIENT Equinoctial**, is particularly used for that Point of the Horizon wherein the Sun rises when it enters the Signs *Aries* and *Libra*. See **SPRING** and **AUTUMN**.

Northward of this is denominated *Orient Aestival*; and Southward, *Orient Hybernal*.

**ORIENTAL**, something situated toward the East with regard to us; in opposition to *Occidental*.

In this sense we say, *Oriental Pearls*, q. d. such as are found in the *East-Indies*. See **PEARL**.

**ORIENTAL Languages**, meaning the *Hebrew*, *Syriac*, *Chaldee*, and *Coptic*. See **LANGUAGE**.

**ORIENTAL Bezoard**, see **BEZOARD**.

In Astronomy, a Planet is said to be *Oriental*, when it rises in the Morning before the Sun. See **RISING**.

Hence *Orienting*, the turning a thing towards the East, or disposing it so as it may look towards the East.

In most Religions, particular Care has been taken to have their Temples *oriented*. *St. Gregory Thaumaturgus* is said to have made a Mountain give way, because it prevented the *orienting* of a Church he was building.

**ORIFICE**, the Mouth or Aperture of a Tube, or Pipe, or other Cavity. See **TUBE**.

In Anatomy, **ORIFICE** is particularly used for the Mouths of the several Ducts, Vessels, and other Cavities; as of the Bladder, Uterus, Stomach, &c.

The upper Orifice of the Stomach is the part where Hunger is felt; the lower Orifice is call'd the *Pylorus*. See **HUNGER** and **PYLORUS**.

There are some Operations in Chymistry, where the Orifices of the Vessel must be seal'd hermetically. See **HEMETICALLY**.

The word *Orifice* is also used by Extension for the Aperture of a Wound, or Ulcer. See **WOUND** and **ULCER**.

**ORIGENIANS**, a Sect of antient Heretics, who even surpass'd the Abominations of the *Gnostics*.

*St. Epiphanius* speaks of 'em as still subsisting in his time; but in very small Number. He seems to fix their Rise about the time of the great *Origen*; but does not say they took their Name from him. He distinguishes 'em from the *Origenists*, whom he derives from *Origen Adamantus*; adding, indeed, that they first took their Name from one *Origen*; by which he intimates, that it was not the Great. And *St. Augustine* says expressly, it was another.

As to their Doctrine, all that Modesty will allow to be said, is, that they rejected Marriage; that they used several Apocryphal Books, as the Acts of *St. Andrew*, &c. and that to excuse their open Crimes, they accused the Catholics of doing the same in private.

**ORIGENISTS**, Followers of the Errors of *Origen*. *St. Epiphanius* insists very largely on the Errors of this Father; but as he declares himself too warmly against him, there may be somewhat of Exaggeration in what he says. Nor do *St. Jerom*, or *Theophilus* of Alexandria, seem to have kept their Zeal within the proper bounds in speaking of *Origen*. For which Reason, no doubt, it was that *St. Chrysostom* himself was accused of being an *Origenist*, because not so vehemently bent against him. *Origenism* spread itself chiefly among the Monks of Egypt.

**ORIGINAL**, a first Draught, Design, or Autograph of any thing; serving as a Model, or Exemplar, to be imitated, or copied. See **DESIGN**, **MODEL**, &c.

Scarce any of the antient Titles, Tenures, &c. are now found in the *Originals*. They are only *Vidimus's*, or Copies collated with the *Originals*.

**ORIGINAL Sin**, is that Crime we become guilty of at our Birth; by the Imputation of *Adam's* Disobedience. See **SIN**.

*Father Mallebranch* accounts for *Original Sin* from Natural Causes, thus: Men at this day retain, in the Brain, all the Traces and Impressions of their first Parents. For as Animals produce their like, and with like Traces in the Brain; whence it is that Animals of the same kind have the same Sympathies and Antipathies, and do the same things on the same Occasions: So our first Parents, after their Transgression, received such deep Traces in their Brain, by the Impression of sensible Objects, that 'twas very possible they might communicate 'em to their Children.

Now, as 'tis necessary, according to the Order established by Nature, that the Thoughts of the Soul be conformable to the Traces in the Brain; it may be said that as soon as we are form'd in the Womb, we are infected with the Corruption of our Parents: For having Traces in the Brain like those of the Persons who gave us being; 'tis necessary we have the same Thoughts, and the same Inclinations with regard to sensible Objects.

Thus, of course, we must be born with Concupiscence, and *Original Sin*. With Concupiscence, if that be nothing but the natural Effort the Traces of the Brain make on the Mind to attach it to sensible things; and with *Original Sin*, if that be nothing but the Prevalency of Concupiscence; nothing in effect, but these Effects consider'd as Victorious and as Masters of the Mind and Heart of the Child.

**ORIGINALIA**, in the Exchequer, are Records, or Transcripts sent to the Remembrancer's Office, out of Chancery; and differ from *Records*, which contain the Judgments and Pleadings in Suits tried before the Barons.



**ORILLON**, in Fortification, a small rounding of Earth, lined with a Wall; raised on the Shoulder of those Bastions that have Casements; to cover the Cannon in the retired Flank, and prevent their being dismounted by the Enemy.

There are other sorts of *Orillons*, properly call'd *Shoulder-rings*, or *Epaulements*, almost of a square Figure. See **EPAULEMENT**.

**ORION**, in Astronomy, one of the Constellations of the Southern Hemisphere. See **CONSTELLATION**.

The Word is form'd from the Greek *Ὠρεῖν*, to rain; the Antients supposing that it rais'd Tempests at its rising and setting.

*Stars in the Constellation Orion*, in *Ptolemy's Catalogue* are 37, in *Tycho's* 62, in the *Britannic Catalogue* 80. The Names, Situations, Magnitudes, Longitudes, and Latitudes whereof are as follow:

*Stars in the Constellation ORION.*

| Names and Situations of the Stars.             | Signs. | Longitude | Latitude South. | Magn. |
|--|--------|-----------|-----------------|-------|
|  |        | ° ' "     | ° ' "           |       |
| Preced. and 6th the Lion's Skin.               | II     | 7 32 39   | 15 25 30        | 4     |
| 5th in the Lion's Skin.                        |        | 8 00 53   | 13 31 20        | 4     |
| 7th in the Lion's Skin.                        |        | 7 46 00   | 16 48 55        | 4     |
| 1st and North in the Lion's Skin.              |        | 9 09 15   | 8 16 07         | 4 5   |
| 3d in the Lion's Skin.                         |        | 9 22 11   | 11 09 17        | 6     |
| 5  |        |           |                 |       |
| 4th in the Lion's Skin.                        |        | 9 14 57   | 12 24 01        | 4     |
| 8th in the Lion's Skin.                        |        | 8 09 36   | 20 02 56        | 4     |
| 2d in the Lion's Skin.                         |        | 10 00 34  | 9 06 31         | 4 5   |
| Last and South in the Lion's Skin.             |        | 9 11 42   | 20 53 51        | 4 5   |
| Prec. of 2 Inform. towards the Horn of ♄       |        | 12 12 00  | 7 25 06         | 5     |
| 10   |        |           |                 |       |
| North in the preced. Arm.                      |        | 12 20 45  | 14 22 37        | 6     |
| South and subseq. in the Arm.                  |        | 12 40 11  | 13 04 00        | 6     |
| Subl. of the Inform. tow. the Horn of ♄        |        | 13 27 34  | 7 21 32         | 5     |
| That against the preced. side.                 |        | 13 13 48  | 20 07 24        | 4 5   |
| That against the preced. Arm.                  |        | 14 36 24  | 11 45 55        | 6     |
| 15   |        |           |                 |       |
| Bright one in prec. Foot call'd <i>Regal</i> . |        | 12 30 00  | 31 10 11        | 1     |
| More North over the Heel.                      |        | 13 30 26  | 29 52 52        | 4     |
|  |        | 14 46 42  | 20 30 01        | 6     |
| North in the prec. side und. the Girdle.       |        | 15 13 46  | 23 31 19        | 5     |
| Preced. and North in the side.                 |        | 15 48 42  | 19 37 39        | 6     |
| 20   |        |           |                 |       |
| In the preced. Shoulder.                       |        | 16 37 38  | 16 51 30        | 2     |
| Preced. and South in the Back.                 |        | 16 12 26  | 21 21 07        | 5     |
| S. in the prec. side under the Girdle.         |        | 15 55 49  | 24 05 24        | 6     |
| In the Hilt of the Sword.                      |        | 15 49 47  | 25 34 47        | 3     |
| In the Calf of the preced. Leg.                |        | 15 13 47  | 30 57 44        | 5     |
| 25   |        |           |                 |       |
| Preced. of 4 in the Back, as it were,          |        | 16 50 50  | 20 08 18        | 5     |
| in a right Line.)                              |        | 17 23 22  | 24 21 29        | 6     |
| That foll. the Shoulder to the South.          |        | 18 02 50  | 17 20 25        | 5     |
| 2d of four in the Back.                        |        | 18 01 10  | 20 00 09        | 6     |
| Preced. in the Girdle.                         | II     | 18 01 38  | 23 36 07        | 2     |
| 30   |        |           |                 |       |
| Under the Point of the Sword.                  | II     | 17 34 05  | 30 35 12        | 4     |
| Preced. in the Head.                           |        | 19 15 51  | 13 51 19        | 5     |
| In the Back the 3d.                            |        | 18 51 06  | 19 34 10        | 6     |
| In the Head the North of three.                |        | 19 22 18  | 13 25 02        | 4     |
| South and subseq. of the Head.                 |        | 19 46 28  | 14 02 58        | 5     |
| 35   |        |           |                 |       |
| Prec. of the contig. in the middle             | }      | 18 38 58  | 28 43 24        | 3 4   |
| of the Sword.                                  |        |           |                 |       |
| Preced. of the North of the contig.            |        | 18 42 11  | 28 10 17        | 5     |
| in the middle of the Sword.                    |        |           |                 |       |
| Subseq. in the middle of the Sword.            |        | 18 40 14  | 28 45 02        | 4     |
| South in the Sword.                            |        | 18 39 1   | 29 14 37        | 3 4   |
| Last of the North in the Sword.                |        | 18 46 48  | 28 11 45        | 5     |
| 40   |        |           |                 |       |
| Middle of three in the Girdle.                 |        | 19 07 44  | 24 33 23        | 2     |
| Last of 4 in the Line of the Back.             |        | 20 09 56  | 19 16 03        | 5     |
| That under the third of the Girdle.            |        | 19 45 41  | 25 58 47        | 4     |
| Subl. under the Point of the Sword.            |        | 19 35 25  | 30 34 50        | 5     |
| Third and last in the Girdle.                  |        | 20 21 45  | 25 20 17        | 2     |
| 45   |        |           |                 |       |
| Preced. in the hind-side.                      |        | 20 57 34  | 21 56 08        | 5     |
|  |        | 22 32 37  | 16 59 55        | 6     |
| In the hind Knee.                              |        | 22 03 41  | 33 07 06        | 3     |
| Preced. of two in the Club.                    |        | 24 22 23  | 3 11 44         | 5     |
| Lat. of two in the hind-side.                  |        | 23 38 23  | 21 37 10        | 6     |
| 50   |        |           |                 |       |
| Glittering Star in the hind Shoulder.          |        | 24 29 13  | 3 44 01         | 6     |
|  |        | 24 25 00  | 16 04 26        | 1     |
| That following the side out of form.           |        | 25 14 10  | 21 38 50        | 6     |
| Preced. of those following the Knee.           |        | 25 20 41  | 22 56 04        | 6     |
|  |        | 25 23 32  | 33 02 04        | 6     |
| 55   |        |           |                 |       |
| In the lower part of the hind Arm.             |        | 26 29 13  | 3 47 31         | 5 6   |
| Subseq. in the Club.                           |        | 26 16 05  | 13 50 01        | 4     |
|  |        | 26 36 07  | 3 20 37         | 5     |
|  |        | 26 41 38  | 18 01 56        | 6     |
| Last of the two subseq. of the Knee.           |        | 26 12 07  | 34 04 58        | 5 6   |
| 60   |        |           |                 |       |

*Names and Situations of the Stars.*

|                                       | Sign. | Longitude |    | Latitude |    |
|---------------------------------------|-------|-----------|----|----------|----|
|                                       |       | °         | '  | °        | '  |
| Prec. of the South in □ of hind Hand. |       | 26        | 59 | 00       | 19 |
| Preced. of the North in the Square.   |       | 27        | 31 | 17       | 8  |
| Last of the South in the same.        |       | 28        | 30 | 25       | 3  |
|                                       |       | 28        | 34 | 14       | 7  |
|                                       |       | 28        | 34 | 01       | 9  |
|                                       |       | 29        | 12 | 10       | 4  |
|                                       |       | 29        | 24 | 09       | 7  |
|                                       |       | 29        | 34 | 49       | 10 |
|                                       |       | 29        | 45 | 12       | 11 |
|                                       |       | II        | 29 | 53       | 42 |
|                                       |       | 0         | 00 | 00       | 13 |
|                                       |       | 1         | 56 | 47       | 18 |
|                                       |       | 3         | 33 | 13       | 28 |
|                                       |       | 3         | 55 | 48       | 30 |
|                                       |       | 4         | 09 | 30       | 18 |
|                                       |       | 4         | 09 | 13       | 15 |
|                                       |       | 6         | 02 | 11       | 13 |
|                                       |       | 7         | 48 | 51       | 14 |
|                                       |       | 8         | 27 | 11       | 20 |
|                                       |       | 15        | 11 | 48       | 22 |

Informes following Orion between }  
Gemini and Canis major.

**ORION's River**, in Astronomy, a Constellation call'd *Eridanus*. See **ERIDANUS**.

**ORLE**, **ORLET**, or **ORLO**, in Architecture, a Fillet under the *Ovolo*, or Quarter-round of a Capital. See **FILLET**.

When 'tis at the Top or Bottom of the Shaft, 'tis call'd *Cincture*. See **CINCTURE**.

*Palladio* also uses the Word for the Plinth of the Bases of Columns and Pedestals. See **PLINTH**.

The Word is *French*; form'd from the *Latin*, *Orletum*, or *Orlum*; of *Ora*, a Border, or Lift.

**ORLE**, in Heraldry, an Ordinary in form of a Fillet, drawn round the Shield, near the Edge or Extremity thereof.

Its Breadth is but half that of the Bordure, which contains a sixth part of the Shield; the *Orle* only a twelfth: Add, that the *Orle* is its own breadth distant from the Edge of the Shield; whereas the *Bordure* comes to the Edge itself. See **BORDURE**.

There is sometimes one *Orle*, sometimes two, and sometimes three: When there are three or more, they take up the whole Shield.

The form of the *Orle* is the same with that of the Shield; whence it resembles an *Inescutcheon*: as in the Figure adjoining.

When an *Orle* is flower'd, 'tis call'd a *Tressure*. If a Round of Martlets, Cinque-foils, &c. be placed about any Ordinary, in manner of an *Orle*, they are said to be an *Orle*, &c.

**ORLOPE**, in the Sea Language, the uppermost Space or Deck in a great Ship, from the Main-Mast to the Mizzen.

**ORNAMENTS**, in Architecture, express all the Sculpture, or Carved Work, wherewith a Piece of Architecture is enrich'd. See **SCULPTURE** and **ENRICHMENT**.

*Viruvius* and *Vignola* also use the Word to signify the *Entablature*. See **ENTABLATURE**.

*Ornaments*, in *Relievo*, are those cut in the Contours of Mouldings; as *Leaves*, *Shells*, *Scrolls*, *Flowers*, &c. *Ornaments*, in *Croix*, those cut within the Mouldings; as *Eggs*, *Flutes*, &c. See **MOULDING**.

**ORNITHOLOGY**, that Branch of Natural History, which considers and describes *Birds*, their Natures, Kinds, &c. See **BIRD**.

We have an excellent *Ornithology* of *Fr. Willoughby Esq* and another of *Mr. Ray*, a Posthumous Work, which is only an Abridgment of the former, with the Addition of his *Ittyology*; and several Kinds wanting in the other.

*Willoughby*, herein, speaks with assurance of a Swan that lived 300 Years; and a Goose that they were obliged to kill at 80, by reason of its Mischievousness.

The Word is form'd from the Greek *ορνις*, Bird, and *λογος*, Discourse.

**ORNITHOMANCY**, a kind of Divination, or of arriving at the Knowledge of Futurity, by means of Birds. See **DIVINATION**.

*Ornithomancy*, among the *Greeks*, was the same with *Augury* among the *Romans*. See **AUGURY**.

**ORPHAN**, a Child, or Minor, destitute of Father; or that has neither Father, nor Mother.

Hence the *Talorites*, or Followers of *Zischa*, finding themselves, at his Death, without Chief or Conductor, took the Appellation of *Orphans*.

**ORPHANS Money**, or Tax. See **DUTY**.





**ORPIMENT**, or **ORPIN**, by the *Latins*, *Auripigmentum*, a Mineral, or Semi-Metal, usually found in Copper Mines; and supposed to contain Particles of Gold; which may be extracted by Chymistry, but which were never found to countervail the Expence. See **MINERAL** and **SEMI-METAL**.

**Orpiment** is found in Stones, or Glebes, of several Sizes, and Figures: Its Colour is always yellow, intermixed with other Shades; as green, red, orange, &c.

Sometimes 'tis found almost quite red; which is the proper *Sandarach* of the Antients. See **SANDARACH**.

But that usually call'd *red Orpiment*, or *red Arsenic*, is only the yellow *Orpiment* heated to a great degree, and put in a Crucible, with Oil of Hemp-Seed, Olives, or Nuts.

Painters, Farriers, &c. make a great Consumption of this Mineral; but as it is found a violent Corrosive, and a dangerous Poison, it must be used with a great deal of Precaution.

*Orpiment* must be chosen of a Golden Yellow, easy to scale, and the Scales very thin, small, and shining like Gold.

Some make three Kinds of *Orpiment*; *White*, which is the same with *Arsenic*: See **ARSENIC**. *Yellow*, which is the proper *Orpiment*; and *Red*, which is *Sandarach* or *Realgal*. See **REALGAL**.

The *Indians* use *Orpiment*, corrected with Juice of Lemons, with good Success against Fevers.

**ORTEIL**, in Fortification. See **BERME**.

**ORTHODORON**, an antient Greek Measure. See **MEASURE**.

**ORTHODOXY**, a Soundness of Doctrine, or Opinion, with regard to all the Points and Articles of Faith.

*Orthodoxy* is used in opposition to *Heterodoxy*, or *Heresy*. See **HERESY**.

The Word is form'd from the Greek *orthos*, Right, and *doxa*, Opinion, Judgment.

**ORTHODOXY**, or *Feast of ORTHODOXY*, is also a solemn Feast in the Greek Church, instituted by the Empress *Theodora*; still held on the first Sunday of *Lent*, in memory of the Restoration of Images in Churches, which had been taken down by the *Iconoclastes*. See **ICONOCLASTES**.

**ORTHOGONIAL**, in Geometry, *Right-angled*. When the Term is referred to a plain Figure, it supposeth one Leg or Side to stand perpendicular to the other; When spoken of Solids, it supposeth their Axis to be perpendicular to the Plane of the Horizon.

**ORTHOGRAPHY**, in Grammar, the Art of Writing, or Spelling justly, and with all the necessary Letters. See **WRITING** and **SPELLING**.

The Word is form'd from the Greek *orthos*, and *grapho*, *recta scriptio*.

That Diversity found in most of the modern Languages, especially the *French*, between the Pronunciation and *Orthography*, makes one of the principal Difficulties in acquiring 'em; yet does it arise from the same Source as the Languages themselves. See **LANGUAGE**.

The *Gauls*, e. gr. forming a new Language from the antient *Latin*, took the Liberty to model the Words to their Fancy: At first, indeed, 'tis probable they wrote as they pronounced; but, by degrees, finding that Words pronounced with all their Letters sounded harsh, they began to pronounce more smoothly. Thus, in speaking, they thought fit to soften that Harshness resulting from the concurrence and clashing of Consonants; but as the *Orthography*, or Writing, did not offend the Ear, it still continued on its former footing.

Attempts have been since made to reduce the Writing to the Pronunciation, or to make us write as we speak; which has occasion'd great Disputes. *Pelletier of Mans* was the first who pleaded for the Change of the *Orthography*; and after him *Maigret*, *Peter Ramus*, *de Bois*, *Menage*, and others; but in vain.

They have, however, occasion'd a Schism among Writers, which has done more harm than the evil they intended to reform: The *French* Writers being now divided into two Parties; one of which retains to the *old*, and the other to the *new Orthography*. The latter, *F. Buffier* observes, is the more considerable Body, yet are these divided among themselves; some being for carrying the Reformation much farther than others.

The chief Matters urged in behalf of the antient *Orthography*, are, that by changing it, we should lose sight of the Origin and Etymology of Words borrow'd from the Greek and *Latin*, &c. That it does not matter what Characters are used to express Sounds in writing, provided one know the relation between those Characters and the Sounds they represent: That by a necessary consequence of such Change, the Language would in time be all alter'd, and we should lose the Use of our old Authors; as ours, in their turn, would likewise become unintelligible.

What is alledged for the new *Orthography*, is, its being more commodious, natural, easy, short, &c.

Some Authors take a middle Course between the two Extremes; retrenching the Letters where they are absolutely useless, as the *s* in an infinity of Words; and yet studiously retaining all the Letters whereon the Etymology has any dependance.

In the *English*, the *Orthography* is more vague, and uncertain'd, than in any other Language we know of. Every Author, nay almost every Printer, has his particular System. Nay, 'tis scarce so well with us as that: We not only differ from one another; but there is scarce any that consists with himself. The same Word shall frequently appear with two or three different Faces in the same Work. See **ENGLISH**.

The Antients who have wrote Treatises of *Orthography*, are *Pelius Longus*, *Marius Victorinus*, *Flavius Caper*, *Cassiodorus*, and *Beda*. Among the Moderns, *Torelli*, *Lipsius*, *Dausquius*, *Scioppia*, *Valla*, and *Manutius* the younger, have wrote on the same Subject.

*Orthography* makes one of the great Divisions, or Branches of Grammar. See **GRAMMAR**.

**ORTHOGRAPHY**, in Geometry, the Art of Drawing, or delineating the fore-right Plan of any Object, and of expressing the Heights or Elevations of each Part.

It is call'd *Orthography* from its determining things by perpendicular Lines falling on the Geometrical Plane.

**ORTHOGRAPHY**, in Architecture, is the Elevation of a Building. See **ELEVATION**.

The *Orthography* is either External, or Internal.

*External Orthography* is a Delineation of the external Face or Front of a Building; exhibiting the principal Wall, with its Apertures, Roof, Ornaments, and every thing visible to an Eye placed before the Building.

*Internal Orthography*, call'd also a *Section*, is a Delineation, or Draught of a Building, such as it would appear, were the external Wall removed. See **SECTION**.

To lay down the **ORTHOGRAPHY** of a Building.

Draw a right Line for a Basis or ground Line, (Tab. **PERSPECTIVE**, Fig. 13.) A B, and at one end erect a Perpendicular A D. Upon A B set off the widths and distances of the Gates, Windows, &c. On the right Line A D, set off the Heights of the several Parts visible in the Face of the Building, e. gr. of the Doors, Windows, the Roof, Chimneys, &c. and apply a Ruler to each Point of Division. The common Intersections of the right Lines drawn from three Points parallel to the Lines A B and A D, determine the external *Orthography* of the Building: And after the same manner is the internal *Orthography* laid down. See **PERSPECTIVE**.

**ORTHOGRAPHY**, in Fortification, is the Profile, or Representation of a fortify'd Place; or a Draught so conducted, as that the length, breadth, height, and thickness, of the several Parts are express'd; such as they would appear, if it were perpendicularly cut from Top to Bottom. See **PROFILE** and **FORTIFICATION**.

**ORTHOGRAPHY**, in Perspective, a Delineation of the fore-right Plane of any Object. See **PERSPECTIVE**.

**ORTHOGRAPHIC Projection of the Sphere**, is a Representation of the several Points of the Surface of the Sphere, as they would appear to the Eye, placed at an infinite distance; so call'd, because the Perpendiculars from any Point of the Sphere, will all fall in the common Intersection of the Sphere with the Plane of the Projection. See **PROJECTION**.

**ORTHOPNÆA**, in Medicine, a great difficulty of Respiration, wherein the Patient is obliged to sit, or stand, to be able to breathe. See **RESPIRATION**.

An *Orthopnea*, is a Species, or Degree of an Asthma. See **ASTHMA**.

It may be caused from Pus, thick, or mucilaginous Juices or Polypus's in the *Bronchia*; mercurial, and other Fumes, hindering the playing of the Lungs; Stoppage of Evacuations; Cachexies, ill Digestions, or whatever affords viscid Chyle, or occasions the Blood to run slower through the Lungs, either by straitening the Canals, or thickening the Blood, or hindering the Motion of the Animal Spirits, so that they cannot elevate the Breast; or that causes the Blood to be more rarefy'd, or more in Quantity, so that there is not sufficient room to receive it into the Vessels of the Lungs.

The Word is compounded of *orthos*, right, and *πναιν*, to respire, breathe.

**ORTIVE**, *Ortivus*, in Astronomy. *Ortive* or Eastern Amplitude, is an Arch of the Horizon intercepted between the Point where a Star rises, and the East Point of the Horizon, or the Point where the Horizon and Equator intersect. See **AMPLITUDE**.



**ORVIETAN**, an Antidote, or Counter-poison; so call'd, because invented and propagated by an Operator from *Orvieto* in *Italy*; who made Experiments thereof in his own Person, on the public Stage, after taking several Doses of Poisons. See **ANTIDOTE** and **POISON**.

In *Charras's Pharmacopœia* is a Method of making *Orvietan*; where it appears that Treacle is one of the principal Ingredients. See **THERIACA**.

**OS**, in Anatomy, see **BONE**.

*Os Pubis,*

*Os Sacrum,*

*Os Ischium,*

*Os Hyoides,*

*Os Femoris, &c.*

**PUBIS.**

**SACRUM.**

**ISCHIUM.**

**HYOIDES.**

**FEMUR, &c.**

**OSCHEOCELE**, in Medicine, a kind of *Hernia*, where-in the Intestines descend into the *Scrotum*. See **HERNIA**.

The Word is form'd from the *Greek* *ὄσχεον*, *Scrotum*, and *κῆλη*, Tumor.

**OSCHOPHORIA**, in Antiquity, Feasts instituted by *Theseus*, in acknowledgment for his having destroy'd the *Minotaur*, and by that means freed his Country, *Athens*, from the Tribute of seven young Men, which were to be sent every Year into *Crete*, to be devoured by that Monster. See **MINOTAUR**.

Some say the *Oschophoria* were instituted in honour of *Minerva* and *Bacchus*, who had assisted *Theseus* in his Enterprize. Others, that they were in honour of *Bacchus* and *Ariadne*.

To celebrate the *Oschophoria*, the young People who had Fathers and Mothers alive, run to the Temple of *Bacchus* and that of *Minerva*, with Grapes in their Hands. He who arrived there first, was the Conqueror; and was to perform the Sacrifice by pouring out of a Phial a Mixture of Wine, Honey, Cheese, Flower, and Oil.

The Word is form'd from the *Greek* *ὄσχη*, Branch of a Vine laden with Grapes, and *φέρω*, I bear. *Plutarch* says, the *Oschophoria* were so named, because instituted by *Theseus* when on his Return to *Athens*; and the Feast celebrated after the Vintage.

**OSCILLATION**, in Mechanics, *Vibration*; or the reciprocal Ascent, and Descent of a Pendulum. See **PENDULUM**.

*Axis of OSCILLATION*, is a right Line, perpendicular to the apparent horizontal one, and passing thro' the Centre of the Earth; about which the Pendulum *oscillates*. See **AXIS**.

If a simple Pendulum be suspended between two Semi-cycloids, whose generating Circles have their Diameter equal to half the Length of the Thread; all the *Oscillations*, howsoever unequal, will be *Isochronal*, or *Equi-diurnal*. See **ISOCHRONAL**.

The Time of the entire *Oscillation* thro' any Arch of a Cycloid, is to the Time of the perpendicular Descent thro' the Diameter of the generating Circle, as the Periphery of the Circle to the Diameter. See **CYCLOID**.

If two Pendulums move in similar Arches, the Times of *Oscillations* are in a subduplicate Ratio of their Lengths.

The Numbers of *Isochronal Oscillations*, perform'd by two Pendulums in the same Time, are reciprocally as the Times wherein the several *Oscillations* are perform'd. See **CLOCK**.

*M. Huygens's* whole Doctrine of *Oscillation*, is founded on this Hypothesis; That the common Centre of Gravity of several Bodies, connected together, must return precisely to the same height whence it fell; whether those Weights return conjointly, or, whether after their Fall, they return separately; each with the Velocity it had then acquired. See **CENTRE of Gravity**.

This Supposition was oppos'd by several, and very much suspected by others. And others who inclined to believe it true, yet thought it too daring to be admitted into a Science, which demonstrates every thing.

At length *M. Bernoulli* demonstrated it by strict Geometry; by referring the Weights to a Lever. After his Death, a more easy and natural Demonstration of the Centre of *Oscillation* was advanc'd by his Brother. The Substance whereof may be conceiv'd as follows.

A simple Pendulum of a determinate Length and Weight, raised to a determinate Height, whence it is to fall till it recover its vertical Line; employs, in that Fall or Demi-Vibration, a determinate Space of Time, which cannot be either greater or less. Which Time is necessarily such, because the agitative Force, *i. e.* the Force which produces the Motion of the Pendulum, is determined in every thing that concurs to the Formation thereof: so that it can only cause one certain Effect.

The agitative Force of the Pendulum is form'd of three Things: 1°. Of the Power or Moment of the Weight. 2°. Of the Mass or Body tied to the end of the inflexible Rod. 3°. Of the Distance of that Body from the Point of Suspension, or, which is the same, of the Length of the Rod or the Pendulum.

Now, 1°. The Power of the Weight, be the Cause what it will, is that Power which makes a Body fall, and that, *v. gr.* at the rate of fourteen Foot, in the first Second of Time. 'Tis visible, then, that this Force is the Effect of a Quantity which determines those fourteen Feet; and that a heavy Body would pass more or less Space in that same first Second, if the Force of the Weight were greater or less.

2°. As that Force is apply'd to each Point, or infinitely small Part of a Body, the greater this Body is, or the larger its Mass, the greater Quantity of Motion or Force it has.

3°. The Distance of the moving Body from the Point of Suspension, or the Rod, is always the Radius of a Circle, whereof the moving Body describes an Arch: And of consequence the greater the Radius is, *ceteris paribus*, the larger Arch the Body describes. And at the same time, the greater Height it falls from, the greater Velocity it acquires.

Now, the agitative Force of the Pendulum, is only that of the Body fasten'd to the End of the Rod. So that it is the Product of the Force of the Weight, of the Mass of the Body, and of its Distance from the Point of Suspension. The Force of the Weight therefore being always the same; and a Body or Weight fasten'd to the End of the Rod, always the same; 'tis impossible that two simple Pendulums of a different Length should be *Isochronal*, or should make their Vibrations in the same time: for by virtue of those different Lengths, the Velocities will be unequal, and of consequence, the Times of their Vibrations.

But if it be suppos'd that there are in Nature different Forces of Weight; it will then be possible that two simple Pendulums of different Lengths, should be *Isochronal*; the one animated by the natural Weight, the other by the imaginary one. If the imaginary Weight be greater than the natural one, the Pendulum imagin'd *Isochronal* to the natural one, will necessarily describe a larger Space or Arch in the same time; and of consequence the Weight will be fasten'd at a greater Distance from the Point of Suspension. Tho, to have an *Isochronism*, the two agitative Forces of the two Pendulums must be equal; yet of the three Things which compose these Forces, there are already two greater in the imaginary, than the real Pendulum: the third, therefore, *i. e.* the Mass of its Weight, must be diminish'd in the necessary Proportion. As the Space or Arch describ'd by the imaginary Pendulum, is greater than that by the natural Pendulum, in the same Ratio as the imaginary Weight is greater than the natural one; and a Radius of that Arch, greater in the same Ratio, are two Things inseparable: the two Weights will be always to one another, as those two Radii, or the two Lengths of the two Pendulums; which always gives the Expression of the imaginary Weight, and by a necessary Consequence, that of the diminish'd Mass of the Weight of the imaginary Pendulum. If the Weight be imagin'd less than that of the natural one, 'tis easy to observe how it is to be taken; but that were needless in our Design.

If now there be a compound Pendulum, charg'd with two Weights fasten'd to the same Rod; *M. Bernoulli* conceives each of those Weights removed to a greater Distance from the Point of Suspension, than it was before; but both to the same; and, diminish'd in Mass, in a due Proportion: so as that both together only make one simple Pendulum, animated with one Weight the Expression whereof is had, and *Isochronal* to the natural compound Pendulum.

Thus we shall have one simple natural Pendulum *Isochronal* to the compound natural one, by having a simple natural Pendulum *Isochronal* to the simple imaginary Pendulum before found; which is very easy: since as the imaginary Weight is to the natural, so is the Length of the simple imaginary Pendulum, to the Length of the simple natural Pendulum; and 'tis there is the Centre of *Oscillation* requir'd.

*Centre of OSCILLATION*, in a suspended Body, is a certain Point therein, each Vibration whereof is perform'd in the same manner, as if that Point alone were suspended at that Distance from the Point of Suspension.

Or, it is a Point, wherein, if the whole Length of a compound Pendulum be collected; the several *Oscillations* will be perform'd in the same time as before. See **PENDULUM**.

Its Distance, therefore, from the Point of Suspension, is equal to the Length of a single Pendulum, whose *Oscillations* are *Isochronal* with those of the compound one. See **CENTRE of Oscillation**.

**OSCITATION**, the Act popularly call'd *Yawning*. It is perform'd by expanding almost all the Muscles of voluntary Motion at the same time; but most considerably those of the Lungs: by inspiring a great Quantity of Air, very slowly, and after retaining it some time, and rarifying it, by ex-



expelling it again slowly, and restoring the Muscles to their natural State.

Hence, its Effects are to move, accelerate; and distribute all the Humours of the Body, equably thro' all the Vessels; thereby disposing the Organs of Sensation; and all the Muscles of the Body, for the Performance of their respective Functions.

OSCUA, in Anatomy, a Term used for the Orifices, or Openings of the lesser Vessels. See ORIFICE, VESSEL, &c.

OSCULUM, in the new Analysis. A Circle described on the Point C, as a Centre (Tab. ANALYSIS, fig. 12.) with the Radius of the Evolute MC, is said to osculate, kiss, the Curve described by Evolution in M; which Point M is call'd by the Inventor *Huygens*, the *Osculum of the Curve*. See EVOLUTE.

The Line MC, is also call'd the *Radius of the Osculum*. See RADIUS.

The Evolute BCE, is the Place of the Centres of all the Circles that osculate the Curve AMI, described by Evolution. See EVOLUTION.

The Doctrine of the *Oscula of Curves*, is owing to *Monf. Leibnitz*, who first shew'd the Use of *Huygens's* Evolute in measuring the Curvatures of Curves. See CURVE.

OSCULUM PACIS. Antiently it was a Custom in the Church, that in the Celebration of Mass, after the Priest had consecrated the Wafer, and spoke the Words, *Pax Domini vobiscum*, the People kiss'd each other, which was call'd *Osculum Pacis*. When this Custom was abrogated, another arose; and while the Priests spoke the Words, a Deacon or Sub-Deacon offer'd the People an Image to kiss; which they call'd, *Pacem*.

OSIANDRIANS, the Name of a Sect among the Reformed; so call'd from *Andrew Osiander*, Father of *Luke*.

Their distinguishing Doctrine was, That Man is justify'd formally, not by the Faith and the Apprehension of the Justice of Jesus Christ, or the Imputation of our Saviour's Justice, according to the Opinion of *Luther*, and *Calvin*; but by the essential Justice of God.

*Demi-Osiandrians*, were such among the *Osiandrians*, as held the Opinion of *Luther* and *Calvin* with regard to this Life; and that of *Osiander* with regard to the other: asserting, That Man is justify'd here by Imputation, and hereafter by the essential Justice of God.

OSSA, in Anatomy. See BONES.

OSSICLE, little Bone; a Diminutive of *Os*, Bone. See BONE.

In this sense, the Term is used among Anatomists.

Botanists also use it for the Stone of a Cherry, Plumb, Apricot, or other Stone-Fruit. See STONE-FRUIT.

OSSIFICATION, in the Animal Oeconomy, the Formation of the Bones. See BONE.

Bones, *Dr. Drake* argues, are form'd out of the most comminuted or broken part of the Blood; since we see that the Blood of old Men, which by a long Course of Circulation, becomes in a manner unfit for the common Office of Nutrition; will however ossify, and convert into Bones, many of the Tendons and Ligaments, and even the Coats of the Vessels themselves; whose Substance being next to the Bones the most compact, admits only of the smallest Particles of the Blood; which therefore soonest become ossious, as they are frequently found. See NUTRITION, &c.

OSTENSIO, was a Tax antiently paid by Merchants, &c. for leave to shew or expose their Goods to Sale in Markets.

OSTENSIVE Demonstrations, in Logic, such as plainly and directly demonstrate the Truth of any Proposition; in which they are distinguished from Apogogical ones, or Deductions *ad absurdum*, or *ad impossibile*, which prove the Truth propos'd, by demonstrating the Absurdity or Impossibility of the contrary. See DEMONSTRATION.

These *Ostensive Demonstrations* are of two sorts; some of which, barely, but directly, prove the thing to be; which they call *en*; and others demonstrate the Thing from its Cause, Nature, or essential Properties, and these are call'd in the Schools *orth*.

OSTEOCOLLA, in Natural History, *q. d.* glue-bone, a white, or ash-colour'd Stone, shaped like a Bone, and by some supposed to have a quality of uniting broken Bones; on which account it is order'd in some Plasters; but the present Practice has no such Dependence on it.

OSTEOCOPE, an acute Pain, wherein the Patient is affected as if his Bones were breaking.

It arises from a sharp Humour vellicating the *Periostium*, or Membrane wherewith the Bones are invested.

It is particularly incident to scorbutic and pocky Persons.

The Word is form'd from the Greek *ostion*, Bone, and *kopos*, to break.

OSTEOLOGY, that Part of Anatomy which teaches

the nature of the Bones of the human Body; their Form, Disposition, Articulation, Use; &c. See BONE.

*Dr. Clopton Havers* has given us an *Osteology*; in good repute.

The Word is form'd from the Greek *ostion*, Bone, and *logos*, Discourse.

OSTIA, in Anatomy, a Term used indifferently with *Oscula*, *Orifices*, &c. for the Mouths or Apertures of the Vessels of the Body; as the *Ostia Vaginae*, &c. See VAGINA.

OSTRACISM, a kind of popular Judgment or Condemnation among the *Athenians*; or a Sentence of Banishment against Persons whose too great Power render'd them suspected to the People; or, whose Merit and Credit gave Umbrage lest they should attempt something against the public Liberty, and their Power degenerate into Tyranny. See BANISHMENT.

It had its name *Ostracism*, in regard the People gave their Votes, by writing the Name of the Person to be banish'd in a Shell *ostrakon*, and casting the Shells into an Urn.

This kind of Banishment had nothing infamous in it; as not being for any Crime; but, on the contrary, was held very honourable; as it was a Mark of Popularity.

It lasted for ten Years, but the banish'd Person had the full enjoyment of his Estate all the time.

*Ostracism* was null, unless there were 6000 Citizens in the Assembly of the People.

OSTRACITES, in Natural History, a kind of crusty Stone, reddish, and in form of an Oyster-shell, and, like that, separable into *Laminae*; found in several Places in Germany; and held of good Service in the Gravel.

*Dr. Home*, in the *Philos. Transact.* says, it rather dissolves the little Stones than forces 'em out, as not being remarkably Diuretic. He adds, that he prescribes it in Powder with a third part of *Flores Chamomeli*. The Dose is from half a Drachm to a whole one in white Wine.

OSTRACITES is also the Name of a kind of *Cadmia* found at the bottom of the Furnaces wher Copper is purify'd. 'Tis very heavy, and resembles an Oyster-shell, whence its Name. It is esteemed astringent and deterfive; and is an Ingredient in several Unguents. See CADMIA.

OTACOUS TIC, a Term apply'd to Instruments which aid or improve the Sense of Hearing. See HEARING.

The Word is form'd from the Greek *ot*, *otris*, Ear, and *akouo*, I hear. See ACOUSTIC.

OTALGIA, in Medicine, a Pain in the Ear.

The *Otalgia* usually arises from an Inflammation; sometimes from a sharp serous Humour, which vellicates the Membrane wherewith the Canal of the Ear is lined. It is sometimes also occasion'd by a Wound or Ulcer in that Part, or from some pungent Matter gather'd within the Ear.

The Word is form'd from the Greek *ot*, *otris*, Ear, and *algos*, Pain.

The Smoke of Tobacco convey'd into the Ear through a Pipe, *Emmiller* recommends as good to assuage this Pain; as also Millepedes in a proper Vehicle of Oil.

The *Otalgia* sometimes arises from a Worm in the Ear; which is to be drawn out alive, or kill'd within. Warm Milk tempts the Worm to come forth; Wormwood Juice destroys it within. See WORMS.

OTIOSI, in the Hebrew Customs. The Learned are exceedingly divided about the *Decem Otiosi*, ten idle Persons in the Jewish Synagogues.

Some say, they were the three Presidents and the seven Readers; others that they were ten Persons hired to attend constantly at the Synagogue, because, without the Number Ten, it could be no regular Synagogue, nor legal Assembly; so that the *Decem Otiosi* were ten idle Folks kept in pay, to form, by their Presence, a legal Synagogue. See SYNAGOGUE.

*Vitringa* in his *Archi-Synagogue*, refutes this Opinion; and will have them to be ten Directors, or Officers in the Synagogue. He shews that each Synagogue had its Directors; and that the Number was greater or less according to the Dignity of the Synagogue; that the smallest had at least two; that, from the first times, each Synagogue had its Chief, call'd *Archi-Synagogus*, who had two Colleagues, to be present at the Ceremonies, and other Acts of Religion, and to take care every thing were done with decency; but that the *Archi-Synagogus* reserv'd to himself the Power of Teaching: That besides these three, the *Archi-Synagogus* nam'd several Readers, who read in the Synagogue every Saturday; and that these made the *Decem Otiosi* of the Synagogue; so call'd, because being disengaged from all other Employment, their whole Attendance was on Divine Service.

OVA, Eggs, in Natural History, see EGG.

OVA, in Anatomy, &c. are little spherical Bodies, in form of Bladders, or Bubbles; consisting of two concentric



tric Membranulæ, replete with a limpid Humour like the White of an Egg; found under the external Membrane of the Ovaries of Women, and connected to the minute Orifices of the Vesicles that compose the Substance of the Ovaries themselves by a Calix. See OVARY.

After the use of Venery, they swell sensibly, become more and more pellucid, their Membranes grow thicker, and at length raise that of the Ovary, in form of Papilla; at last, breaking the Membrane of the Ovary, they are detach'd from their Calix, taken into the Cavities of the Fallopian Tubes, and thence convey'd into the Womb; where, being cherish'd and impregnated with the Male Seed, they commence Embrio's; or, for want of that, are again ejected. See CONCEPTION, FALLOPIAN Tube, MATRIZ, EMBRIO, &c.

OVA, in Architecture, are Ornaments in form of Eggs, carved on the Contour of the Ovolo, or Quarter-round; and separated from each other by Anchors or Arrows Heads. See OVULO and QUARTER-round.

The English usually call these Ornaments Eggs and Anchors.

Instead of Eggs, the Antients sometimes used Hearts; on which Foundation it was, that they introduced Arrows; to symbolize with Love.

OVAL, or *Ellipsis*, is an oblong curvilinear Figure, with two unequal Diameters; or, a Figure inclosed with a single curve Line, imperfectly round, its length being greater than its breadth; like an Egg, whence its Name. See OBLONG.

The proper Oval, or Egg-shape, is an irregular Figure, being narrower at one end than the other; in which it differs from an *Ellipsis*, which is the Mathematical Oval, and equally broad at each end.

The common People confound the two together; the Geometricians also call the Oval, a false *Ellipsis*. See ELLIPSIS.

The Method of describing an Oval chiefly used among Workmen, is, by a Cord, or String, as F M E, (Tab. GEOMETRY, Fig. 48.) whose length is equal to the greater Diameter of the Oval, and which is fasten'd by its Extremes to two Points or Nails E, f, planted in its longer Diameter; by which means the Oval is made as much longer, as the two Points or Nails are further a-part.

OVALE Foramen, in Anatomy, see FORAMEN Ovale.

OVALE Centrum, see CENTRUM Ovale.

OVULO, Ovum, in Architecture, a round Moulding, whose Profile, or Sweep, in the Ionic and Composite Capitals, is usually a Quadrant of a Circle; whence it is also popularly call'd the Quarter-Round. See QUARTER Round.

It is usually enrich'd with Sculptures among the Antients, in form of Chestnut-Shells; whence *Vitruvius*, and others of the Antients, call it *Echinus*, Chestnut-Shell. See ECHINUS.

Among us, it is usually cut with the Representation of Eggs, and Anchors, or Arrows-Heads, placed alternately; whence its Italian Name Ovolo, Latin Ovum, and French Oeuf. See OVA.

OVARY, in Anatomy, that Part of an Animal wherein the Ova or Eggs are form'd and lodg'd. See OVA.

The Ovaries in Women, are also call'd *Testes Muliebres*, Female Testicles; from their Use, which the Antients supposed analogous to that of the *Testes* in Men. See TESTES.

They are two in Number; lying near the ends of the Fallopian Tubes, two Fingers distance from the Uterus, to which they are connected by a strong Ligament, call'd *Vas deferens*, and in some measure by the Fallopian Tubes, and the broad Ligament about the Region of the Uterus. They are fasten'd to the Peritonæum by the Spermatic Vessels, by which means they are kept suspended about the same Height with the Fundus Uteri. See UTERUS.

Their Figure is Semi-oval; their Surface somewhat uneven; their Size different in the different Stages of Life. At the time of Puberty, when largest, they usually weigh a Drachm and half.

They are cover'd with a common Membrane from the Peritonæum; their Substance is whitish, compos'd of a number of little thin membranous and slender Fibres, interwoven with Arteries, Veins, and Nerves.

Among these Fibres and Vessels are interspersed a number of little round Bodies, like Bladders; full of a limpid Substance, and call'd Ova, or Eggs, of great Use in Generation. See GENERATION.

OVATION, in the Roman History, a lesser Triumph allow'd to Commanders, for Victories won without the Effusion of much Blood; or for the defeating Rebels, Slaves, Pirates, or other unworthy Enemies of the Republick. See TRIUMPH.

Their Entry was on foot, sometimes on horseback; but never in a Chariot: and they wore Crowns of Myrtle, call'd *Ovales*, having all the Senate attending in their Retinue.

The Word *Ovatio*, according to *Servius*, is deriv'd from *Ovis*, Sheep; because the Conqueror sacrific'd a Sheep on this occasion to *Jupiter*; whereas in the great Triumph, they sacrific'd a Bull. Others derive it from the Sound or Din of the Acclamations and Shouts of Joy made by the People in honour of the Solemnity; the People and Soldiers, on this occasion, redoubling the Letter O; as in the greater Triumph they did the Words *Io Triumphe*.

The Ovation was first establish'd in the Year of Rome 250, or 251; in honour of the Consul *Posthumus Tubertus*, after his defeating the *Sabines*.

OVELTY of Services, in our Law-Books, an Equality of Services; as when the Tenant Paravail owes as much to the Mesn, as the Mesn does to the Lord Paramount.

OVER-RAKE, in the Sea-Language. When a Ship riding at Anchor, doth so over-beat herself into an Head-Sea, that she is wash'd by the Waves breaking in upon her; they say, the Waves do Over-rake her.

OVER-REACH, in the Manage, is when a Horse strikes his hind Feet against his fore Legs.

The Word is also used for a Strain, or painful Swelling of the Master-Sinew of an Horse; occasion'd by such Over-reach.

OVER-FLOWING. See INUNDATION.

The Over-flowing of Lands, used by our Husbandmen, is chiefly effected by diverting the Streams of Rivers, Brooks, Land-Floods, or Springs, or some part of them, out of their natural Channel.

When the Streams lie too low for this, they are made use of to turn such Engines as may raise a sufficient Quantity of Water to do it. The most usual Engine, on this occasion, is the Persian Wheel. See PERSIAN Wheel.

OVER-RULING an Objection, in Law, is the rejecting, or setting it aside.

OVER-RUNNING a Page, among Printers, is the running it over again, and disposing the Lines in a different manner. See PRINTING, CORRECTING, &c.

OVERSAMENESS, an ancient Fine or Penalty, impos'd, before the Statute of Hue and Cry, on such Persons, as hearing of a Murder or Robbery, did not pursue the Malefactor.

OVERT-ACT, a Term in Law signifying an open Act; or an Act capable of being manifested and proved: in which sense it is distinguish'd from an intentional Act.

So an Overt Word, is a plain, open Word; from the French, *Overt*.

OVICULUM, in the ancient Architecture, a little Ovum, or Egg.

*Baldus* will have this to be the Lesbian Astragal of *Vitruvius*. See ASTRAGAL.

Some use the Word *Oviculum* for Ovolo. See OVULO.

OVILIA, or SEPTA, in ancient Rome, a Place in the Campus Martius, at first rail'd in, like a Sheep's Pen; whence its Name. Afterwards it was mounted with Marble, beautify'd with Walks and Galleries; as also with a Tribunal, or Seat of Justice: within which Precinct the People frequently assembled, to give their Suffrages for the Election of Magistrates. See CAMPUS.

The Ascent into the Ovilia was not by Stairs, but by Bridges made for the time; every Parish, Tribe, and Century, as the Assembly was Centurato or Tribute, &c. having its proper Bridge. Whence the Proverb, *de Ponte de jiciendus*, where a Person is to be barred from giving his Vote. See COMITIA.

OVIPAROUS, in Natural History, a Term apply'd to such Animals, as produce their Young *ab Ovo*, from Eggs; as Birds, Insects, &c. See EGG, INSECT, ANIMAL, &c.

The Oviparous Kind stands in opposition to those which bring forth their Young alive, call'd Viviparous Animals; as Man, Brutes, Reptiles, &c. See GENERATION, &c.

Oviparous Animals, may be defined to be such as conceive Eggs, which they afterwards bring forth; and from which, by the Incubation of the Parent, or some other Principle of Warmth and Fermentation, at length arise Animals; which after they have spent the Moisture or Humour they were surrounded withal, and are grown to a sufficient Bulk, Firmness, and Force; break their Shell, and come forth.

The Oviparous Kind, beside Birds, includes divers Species of Terrestrial Animals; as Serpents, Lizards, Tortoises, Crabs, Lobsters, Frogs, &c. See OVARY.

OUNCE, *Uncia*, a little Weight, the sixteenth part of a Pound *Avoirdupois*, and the twelfth of a Pound Troy. See WEIGHT and POUND.



The *Ounce Avoirdupois* is divided into eight Drachms, and the Drachm into three Scruples. The *Ounce Troy* into twenty Penny Weights, and the Penny Weight into twenty-four Grains. See DRACHM, PENNY-WEIGHT, &c.

The *Ounce* makes the eighth Part of the *French Mark*, and is divided into three Gros, or Drachms; the Drachm into three Penny Weights, or Scruples; and the Scruple into twenty-four Grains: each Grain computed to weigh a Grain of Wheat. See GRAIN, &c.

All precious Merchandizes, as Gold, Silver, Silk, &c. are sold by the Ounce. See GOLD, SILVER, STANDARD, &c.

*Ounce Pearls*, are those too small to be sold by Tale; usually call'd *Seeds of Pearl*. See PEARL.

*Ounce Cottons*, are certain Cottons brought from *Damascus*, of a Quality superior to the rest. See COTTON.

The Word *Ounce* is deriv'd from the *Latin Uncia*, the twelfth Part of any Whole; particularly in Geometrical Measures, an Inch, or the twelfth Part of a Foot. See INCH.

Whence, *UNCIAL Letters*, large Letters used in Inscriptions, supposed to be an Inch high. See UNCIAL.

*OURAN*, or *OURAN SOANGUES*; the Title of a Sect of Magicians, in the Island *Grombocanore*, in the *East-Indies*.

The Word implies *Men-Devils*; these People, it seems, having the Art of rendring themselves invisible, and passing where they please, and by that means, doing infinite mischief: for which reason the People hate and fear them mortally, and always kill them on the spot, when they can take them.

In the *Portuguese History*, printed 1581, *Folio*; mention is made of a Present made by the King of the Island, to *Brittio*, a *Portuguese Officer*, consisting of twelve of these *Ourans*; with whom he made Incursions on the People of *Tidore*, kill'd great Numbers, &c.

To try whether, in effect, they had the Faculty ascribed to them, one of them was tied by the Neck with a Rope, without any possibility of disengaging himself by natural means; yet in the Morning 'twas found he had slipp'd his Collar.

That the King of *Tidore* might not complain, *Brittio* made war on him with Devils, he dismiss'd them at length into their own Island.

*OUSTED*, in our antient Law-Books, a being removed, or put out of possession. From the *French Ouster*, to remove, take away.

*OUSTER le Main*, or *OTER le Main*, to remove or take off the Hand, in Law, denotes a Livery of Lands out of the King's Hands; or a Judgment given for him that traversed or sued a *Monstrans le Droit*. See MONSTRANS le Droit.

When it appear'd upon the Matter discuss'd, that the King had no Right or Title to the Land he had seiz'd; Judgment was given in Chancery, that the King's Hands be removed. And hereupon, *Amoveas Manum* was awarded to the Escheator to restore the Land, &c.

But now all Wardships, Liveries, *Ouster le Mains*, &c. are taken away and discharg'd by Statute 12 Car. 2.

*OUSTER le Mer*, in Law, a Cause of Excuse or Essoin; where a Man not appearing in Court upon Summons, it is alledg'd that he was then beyond the Seas.

The Term is compounded of the *French Oultre*, and *le Mer*, q. d. beyond the Sea.

*OUTFANGTHEF*, a Privilege whereby a Lord is enabled to call any Man (dwelling in his Fee, and taken for Felony in another place) to Judgment in his own Court.

The Word is form'd from the *Saxon ut, extra*, without; *fang, capio vel capius*; and *deof, Thief*: q. d. *Fur extra-capius*.

*OUT-LAW*, *Utlégatus*, one depriv'd of the Benefit of the Law; and left out of the King's Protection. See OUT-LAWRY.

*Brañon* says, an *Out-Law* forfeits every thing he has; and that from the time of his *Outlawry*, he wears a Wolf's Head; and any body may kill him *impune*: especially if he defend himself, or fly. But in the beginning of King *Edward the Third's* Reign, it was resolv'd by the Judges, that it should not be lawful for any Man, but the Sheriff alone (having lawful Warrant therefore) to put to death a Man *out-lawed*.

*OUTLAWRY*, or *UTLAWRY*, the Punishment of him, who being call'd into Law, and lawfully sought, does (after an Original Writ with a *Nihil habet*, three Writs of *Capias*, alias *Es phurics*, return'd by the Sheriff, with a *Non est inventus*, and an Exigent with a Procla-

mation awarded thereupon) contemptuously refuse to appear.

He must also be call'd at five County-Court-Days, a Month between each one; and if he appear not in that time, *Pro Ex-lege tenebitur, cum Principi non obediat, nec Legi, & extunc exlegabitur*; i. e. he shall be pronounced to be out of the King's Protection, and deprived of the Benefit of the Law.

The Effect of which is, if he be *out-law'd* at the Suit of another, in a Civil Cause, he shall forfeit all his Goods and Chattels to the King: If on Felony, all his Lands and Tenements, which he has in Fee, or for Life, and all his Goods and Chattels. And then, according to *Brañon*, he may perish without Law, &c. A Minor, or a Woman, cannot be *out-law'd*. A Woman is said to be *waiv'd*, where a Man is *out-law'd*.

*OUT-WORKS*, in Fortification, those Works made without side the Ditch of a fortify'd Place, to cover and defend it. See WORKS and FORTIFICATION.

The most ordinary of these are *Ravelins*, or *Half-Moons*, form'd between the two Bastions, on the flank Angle of the Counterscarp, and before the Curtain, to cover the Gates and Bridges. See RAVELIN.

*OUT-RIDERS*, are Bailiffs Errant, employ'd by Sheriffs, or their Deputies, to summons People in the remotest Parts of their Hundreds, to the County or Hundred Courts. See BAILIFF.

*OUT-PARTERS*, in our antient Writers, were a sort of Thieves, or Highway-men, on the Frontiers of *Scotland*, who rode about to fetch in such things as they could lay hold on. See INTAKERS.

*OVERTURE*, or *OVERTURE*, *Opening*, or *Preluding*; a Term used for the Solemnities at the beginning of a public Act, or Ceremony; as of an Opera, Tragedy, Concert of Music, &c.

The *Overture* of the Theatre, or Scene, is a piece of Music, usually ending with a Fugue.

The *Overture* of the Jubilee is a general Procession, &c.

*OVUM Philosophicum*, or *Chymicum*, is a glass Body, of an oval Form, and resembling an Egg. See BODY.

*OWLER*, a Master of a Ship, or other Person, that conveys Wool, or other prohibited Goods in the Night, to the Sea-side, in order to ship them off, contrary to Law.

The Name is derived hence, that, like *Owls*, they only stir abroad in the Night-time.

*OWSE*, among Tanners, is *Oaken Bark* beaten, or ground small; to serve in the Preparation of Leather. See BARK and TANNING.

*OXGANG* of Land, is ordinarily taken, in our old Law-books, for fifteen Acres; in *Latin*, *Bovatus Terræ*, q. d. *quantum sufficit ad iter vel actum unius Bovis*; as much as an Ox will plow. In *Lincolnshire* they still corruptly call it *Oskin* of Land.

*OXYCRATE*, in Pharmacy, &c. a Mixture of Water and Vinegar.

The usual Proportion is one Spoonful of Vinegar to five or six of Water.

*Oxyerate* is proper to assuage and refresh. They make Fomentations of *Oxyerate*, Clysters of *Oxyerate*, &c.

The Word is form'd from the *Greek* *ὄξύς*, sharp, sour, and *κραννύμας*, I mix.

*OXYCROCEUM*, in Pharmacy, a Preparation much used in Plaisters, for Fractures, and to form Callus's; composed chiefly of Saffron, with Gums dissolved in Vinegar.

The Word is form'd from the *Greek* *ὄξύς*, sharp, sour, and *κρόκος*, Saffron.

*OXYGALA*, *Sour-Milk*. The *Turks* use this as a popular Drink, and call it *Igur*. *Vigenere* says, they drink four Milk diluted with Water, which is found to cool and nourish, much better than the Milk alone.

The Word is form'd from the *Greek* *ὄξύς* and *γάλα*.

*OXYGONOUS*, in Geometry, *acute-angled*; something with an Angle less than 90 Degrees. See ACUTE.

The Word is chiefly apply'd to Triangles, where the three Angles are all acute, or less than 90 Degrees each. See TRIANGLE.

*OXYMEL*, in Pharmacy, a Mixture of Honey and Vinegar.

There are two kinds of *Oxymels*; the one simple, the other compound.

The *simple Oxymel* is composed of two parts of good Honey, and one of White-Wine Vinegar, boil'd into the consistence of a Syrup; proper to incise and scour any Phlegm adhering to the Throat and Breast.



*Compound Oxymel* only differs from the simple, in that to the Honey and Vinegar, they add the Decoction of the five major aperitive Roots, with the Seeds of Smallage, Parsley, and Fennel. It is used to open Obstructions of the Liver and Spleen.

The Word is form'd from the *Greek* ὄξυς, sour, and μέλι, Mel, Honey.

**OXYREGMIA**, in Medicine, a Sourness or Acidity of the Stomach-Liquor, occasioning Belches. From ὄξυς and ρεῦμα, *rucho*. See RUCTATION.

**OXYRRHODON**, a Mixture of two Parts of Oil of Roses, and one part of Vinegar of Roses, stirr'd together for some time.

To these are sometimes added distill'd Waters. It is used for Inflammations, and to dry up Tetters.

*Scultet* prescribes it as follows ; Two Whites of Eggs beaten, one Ounce and half of Vinegar of Roses, four Ounces of Rose-Water, and two Ounces of Oil of Roses.

The Word is composed of the *Greek* ὄξυς, sour, and ῥόδον, Rose.

**OXYSACCHARUM**, a Syrup prepared with Vinegar, the Juice of four Pomegranats, and Sugar ; used to cool, refresh, and resist the malignity of peccant Humours. From ὄξυς, sour, and σακχαρον, Sugar.

**OYER**, seems to have been antiently used for what we call *Affize*. See *Assize of Novel Disseisin*.

**OYER and Terminer**, is a Commission especially granted to some eminent Persons, for the hearing and determining one or more Causes.

It is the first and largest of the five Commissions,

by which our Judges of Affize do sit in their several Circuits. See *JUSTICE*.

Antiently it was only in use upon some sudden Outrage or Insurrection in any Place. See *Assize*.

The Term is *French*, and literally denotes to bear and determine. In our Statutes it is sometimes wrote *Oyer and Determiner*.

**OYER de Record**, is a Petition made in Court, praying that the Judges, for better Proof sake, will be pleased to hear, or look upon any Record.

In the like Sense one may demand *Oyer* of Bond, Deed, or Covenant.

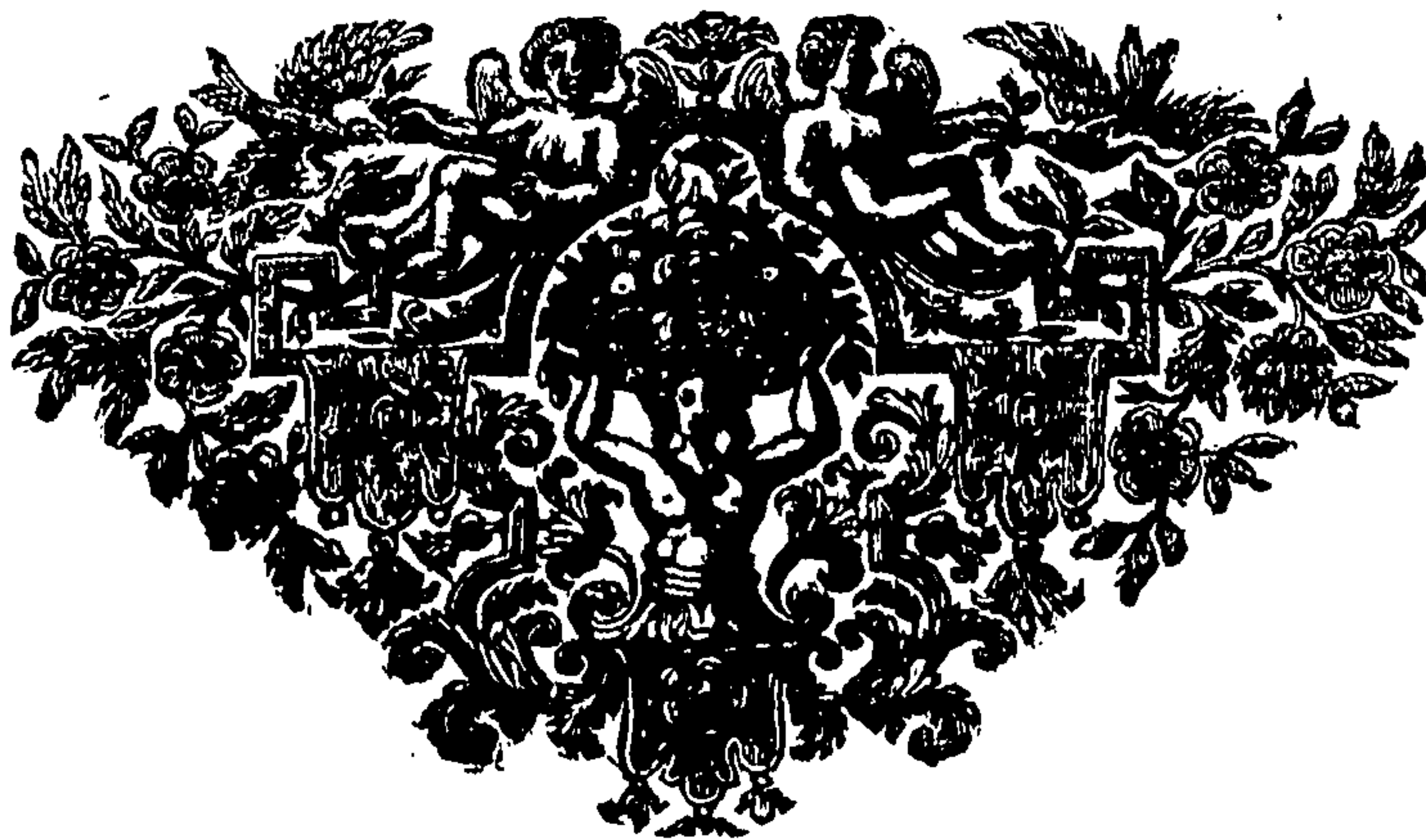
**OYES**, a Corruption of the *French* Oyez, hear ye; being a Term, or Formula whereby the Cryers, in our Courts, enjoin Silence, or Attention e'er they make Proclamation of any thing.

**OZÆNA**, in Medicine, a fetid Ulcer, in one or both Nostrils; wherein the Humour is very acrid or corrosive, sanious, and sometimes mixed with a bloody Mucus. See *ULCER*.

It sometimes proceeds from neglected or ill-managed Wounds, Contusions, &c. in the Nostrils; especially in *Scorbutic*, *Scrophulous*, or *Venereal* Habits; and sometimes follows the *Small-Pox*.

It often spreads and eats thro' the *Alæ*; and at other times preys into the *Septum Nasi*, *Cartilage*, and *Os Palati*; especially in *Venereal* Cases. Whence the great danger of the Nose in that Distemper. See *VENEREAL*.

The Word is *Greek*, ὀζαῖνα, which signifies the same thing.





## P A C

**P**, A Consonant, and the fifteenth Letter in the *English* Alphabet. See **LETTER**, **CONSONANT**, &c.  
When the **P** is follow'd with an **H** in the same Word, it has the Sound of an **F**; thus, *Philosophy* is pronounced *Filosophy*.

**P** and **B** are so like each other, that *Quintilian* declares, that in the Word *obtinuit*, his Reason required him to put a **b**, but that his Ears could hear nothing but a **p**, *optinuit*: Hence in ancient Inscriptions, and old Glossaries, it appears, these two Letters have been often confounded. See **B**.

Several Nations still pronounce one for the other, the *German*s particularly, who say, *ponum vinum* for *bonum vinum*.

*Plutarch* observes, it was usual for those of *Delphos* to say *παρὲν τοι πύρριον, βικέειν* for *μαρὲν*; and among the *Latins*, as often as an **s** followed, the **b** was changed into a **p**, as *scribo, scripsi*.

**P** in the *Italian* Music frequently represents *piano*; which is what in our Music we call *soft*, i. e. the Force of Voice, or Instrument, are to be diminish'd, so as to make a Kind of *Eccho*.

**P P** signifies *pian piano*, i. e. *more soft*, or a second *Eccho* weaker or more remote than the former: and **P P P** signifies *pianissimo* softest of all, or a third *Eccho*, the Voice being, as it were, lost in the Air.

**P. M.** among *Astronomers* is frequently used for *post meridiem*, or *Afternoon*; and sometimes for *post mane*, after the Morning, i. e. after Midnight. See **MORNING**.

**P** was also used among the *Ancients* as a Numeral Letter, signifying the same with the **G**, viz. an *hundred*; according to the Verse of *Uguzior*.

*P similem cum G numerum monstratur habere.*

Tho' *Baronius* thinks it rather stood for *seven*. See what has been observ'd, with respect to these Numeral Letters in general, under the Letter **A**.

When a Dash was added a-top **p**,  $\overline{p}$ , it stood for four hundred Thousand.

*St. Jerom* observes, on *Daniel*, that the *Hebrews* had no **P**, but that the *ph* serv'd 'em instead thereof. Adding, that there is but one Word in the whole Bible read with a **P**, viz. *apaduo*.

**P**, in Prescription, is used for *Pugil*, or the eighth Part of a Handful. See **PUGIL**.

**P. E.** signify *Partes Equales*, equal Parts of any Ingredients; otherwise denoted by  $\overline{a}$  or *ana*. See **ANA**.

**P P** signify *Pulvis Patrum*, i. e. *Jesuit's Powder*, or the Cortex in Powder; which is so called, because first brought into *Europe* by those Fathers. See **CORTEX**.

**PABULUM** is sometimes used among *Naturalists* for *Fuel*; or that Part in combustible Bodies, which the Fire immediately feeds on, or is supported by. See **FIRE**.

The oily or sulphurous Part of Fuels is the only proper *Pabulum*. 'Tis that alone, wherein Fire can inhere. See **FUEL**, **SULPHUR**, &c.

**PACALIA**, a Feast held among the ancient *Romans*, in Honour of the Goddess *Pax*, Peace.

*Adhelmus, de Laud. Virgin.* and *Bibl. Patrum*, speaking of the impure Festivals and Ceremonies of the *Heathens*, calls one of 'em *Pacalia*, which *Passage Gronovius* charges as faulty, alleging, that there was no Feast of that Name, but that it should have been *Pacalia*.

The *Ancients*, who personified, and even deified every Thing, were not forgetful of Peace. She had an Altar at *Rome*, and a stately Temple, and religious Rites were paid her with great Solemnity.

**PACE**, *Passus, Step*, a Measure, taken from the Space between the two Feet of a Man, in walking. See **MEASURE**.

The ordinary *Pace* of a Man is two Foot and a Half. The *Geometrical* or *German Pace* is five Feet. See **FOOT**.

The *Ancient, Roman*, and modern *Italic Mile* consists of a thousand *Paces*, *Mille Passus*. The *French League* is 3000 *Paces*, the *German* 4000. See **MILE**, **LEAGUE**, &c.

**PACE**, in the *Manage*, is a certain Manner of Motion or Progression of a Horse.

The *Natural Paces* of a Horse are three, viz. the *Walk*, *Trot*, and *Gallop*, to which may be added an *Amble*; because some Horses have it naturally. See each under its proper Article, **TROT**, **GALLOP**, &c.

For the artificial *Paces*, see **AIRES**.

Horses that mix their *Paces*, i. e. shuffle betwixt a *Walk* and *Amble*, &c. are seldom of any Value. The Defect proceeds from their fretful, fiery Temper; and sometimes from a Weakness either in their Reins or Legs.

**PACER** is more particularly understood of that easy low Motion wherein the Horse raises the two Feet diametrically opposite at the same time; call'd also *Amble*. See **AMBLE**.

**PACIFIC**, something *peaceful*, or free from Troubles, 'Tumults, &c. See **PRACRANT**.

*Geographers* call the South Sea, *Mare Pacificum*, the *Pacific Ocean*; as being less infested with Storms than the *Atlantic*. *M. Presler* affirms, it does not deserve that Appellation,

## P A D

and that he has seen as violent Tempests therein as in any other Sea: But *Magellan*, happening to have a very favourable Wind, and not meeting with any thing to ruffle him, when he first traversed this vast Ocean in 1520. gave it the Name, which it has retained ever since. *Maty*, however, adds, that the Wind is so regular, that the Vessels wou'd frequently go from *Acapulco* to the *Philippine Islands*, without shifting a Sail.

In the ancient Church, they gave the Name *Pacific Letters* to all Sorts of Letters Testimonial, given by the Bishop or Chorepiscopus to their Priests when they had occasion to travel abroad, certifying that the Bearer was a Catholic, and in Communion with the Church. The Life of Pope *Sexizis I.* taken from the Pontifical of Pope *Damasus*, mentions that Pope as the first who introduced those Letters call'd *Formate* or *Canonice*, *Commendatitiae*, *Communicatorie*, *Ecclesiasticae*, & *Pacificae*.

**PACIFICATION** the Act of Re-establishing the public Peace and Tranquillity.

The Word is particularly appropriated to the Periods put to the Religious Broils rais'd in *France*, in the Year 1562, by the Edict of *Nantz*; and the Civil Commotions, between the *English* and *Scots*, ended in 1636. See **EDICT**.

**PACIFICATOR** is commonly understood in the same Sense with *Mediator*: But *Wicquefort* makes a Difference.

The Peace being concluded between *France* and *England*, in 1621. the Instruments on each Side were put in the Hands of certain *Embassadors*, who had been employed as *Pacificators*, not as *Mediators*; to be kept till such Time as the Rati-fications had been exchanged. So, the Archbishop of *Pisa*, the Duke of *Tuscany's* *Embassador* at *Madrid*, was never esteemed a *Mediator*, tho' the *French* *Embassadors* allow'd him to be present at the Conferences held with the Commissioners of *Spain*, to act as a *Pacificator* of the Differences between 'em. The Grand Duke had not offer'd his Mediation; nor wou'd *France* have accepted it. *Wicquefort*. p. 2. Sect. 2.

**PACK** in Commerce. A Pack of Wool is a Horse's Load, containing 17 Stone, and 2 Pounds, or 240 Pound Weight. See **SARFLAR** and **WOOL**.

**PACT**, **PACTUM**, or **PACTION** in Law, a Treaty, Covenant or Convention between divers Parties. See **COVENANT**.

The Word is form'd of the Latin *pacisci*, to bargain, agree, &c.

The Lawyers say, *Ex nudo pacto non oritur Lex*. See **CONTRACT**.

**PACTUM**, **PACTIO**, **PACT** is particularly used in the Civil Law, for the Consent of two or more Parties to the same Thing.

*Duorum aut plurium in idem consensus*. L. III. §. 2. ff de pactis.

There are two Species of Conventions, viz. the *Pact* and *Contract*. A *Pact* against good Manners, against publick or natural Equity, is null.

**PACTA Conventa**, in *Poland*, are the Articles agreed on between the King and the Republic; and which they mutually oblige each other to observe.

**PADDOCK** or *Paddock-Course*, a Piece of Ground, conveniently taken out of a Park, ordinarily a Mile long, and a Quarter of a Mile broad, encompassed with Pales, or a Wall, for the exhibiting of Races with Greyhounds for Wagers, Plates, or the like. See **PARK**.

At one End of the *Paddock* is a little House, where the Dogs are to be enter'd, and whence they are slipp'd, near which are Penns to inclose two or three Deer for the Sport.

The Deer, when turn'd loose, run all along by the Pale; and the Spectators are placed on the other Side.

Along the Course are several Posts, viz. the *Law-post*, 160 Yards from the Dog-house and Penns. The *Quarter of Mile Post*, *Half Mile Post*, *Pinching-post*; and the *Ditch*, a Place made to receive the Deer, and preserve 'em from further Pursuit.

Near the Ditch, are placed Judges or Triers. The Keeper, to slip the Dogs fairly, puts a *falling Collar* upon each, to slip thro' a Ring, and the Deer being turned loose and put forward by a Teazer, as soon as it is arrived at the Law-post, the Dog-house Door is thrown open and the Dogs slipp'd.

If, now, the Deer swerve so much, as that his Head is judg'd nearer the Dog-house than the Ditch, before he arrive at the Pinching-post; it is no Match; but must be run over again three Days after. If there be no such Swerve, but the Deer runs straight as far as the Pinching-post, then the Dog nearest him, if he chance to swerve, or by any Accident, be blanch'd; or if there be no such Swerve, &c. the Dog that leaps the Ditch first, wins the Match.

**PADUAN**, among Medallists, a Modern Medal in Imitation of the Antique; or a new Medal struck with all the Marks and Characters of Antiquity. See **MEDAL**.



The Name is taken from *Paduan*, a famous *Italian* Painter, who succeeded so well in the Imposture, if it may be so called, that the best Judges are at a Loss to distinguish 'em.

*Paduan* is, properly, applicable to those Medals only, which are struck on the Matrices of the *Paduan*; which are still preserv'd; tho' it is frequently used in the general for all Medals of this Kind.

*Jobert* observes, that there have been a *Paduan* and *Parmesan* in *Italy*, and a *Carteron* in *Holland*, who had the Knack of imitating the Antique in Perfection.

This *Paduan* was thus called, from the Place of his Birth, *Padua*: His proper Name was *Lewis Leo*; he flourish'd in the Beginning of the XVIIth Century. His Son *Octavian*, tho' born at *Rome*, was also called the *Paduan*.

*PÆAN*, in Antiquity, a Hymn in Honour of *Apollo*, or some of the other Gods; chiefly used on Occasions of Victory and Triumph. See *HYMN*.

The *Pæan* took its Name from *Apollo* himself; who was denominated *Pæan*, because, in his Combat with the Serpent *Python*, his Mother *Latona* encouraged him to make use of his Arrows, by crying frequently *ω πάαν Ιο Πæαν*, i. e. smite; shoot.

Thus *Festus*, but *Hesychius* rather takes *Apollo* to have been denominated *Pæan* from *παιω, δεξαμενω, I heal*; in Allusion to his being the Deity of Medicine.

*PÆAN* or *PÆON* was also the Name of a Foot in the ancient Poetry; so called, as commonly supposed, because appropriated to the Hymn *Pæan*; tho' *Quintilian* derives the Name from its Inventor *Pæon*, a Physician. See *FOOT*.

It consisted of four Syllables, the first long, the rest short; as *continuuus, facillimus, sceleratus, &c.*

*PÆDO-Baptism*, Infant-Baptism, or that conferr'd on Children. See *BAPTISM*.

The Word is a Compound of the Greek *παις, παιδος* Infant, and *βαπτισμος*, Baptism.

*PAGAN*, a Heathen, Gentile, or Idolater; one who adores the false Gods of Antiquity. See *IDOLATER*, *GENTILE*, &c.

The Word comes from the Latin *Paganus*, a *Pagis*, Villages. For when the Christians first became Masters of the Cities, they obliged the Heathens to go and live in the Country, where they might serve their false Gods in Safety.

The Abbot *Fleury* gives another Etymology of the Word *Pagan*. He observes that the Emperor *Constantine*, going from *Antioch* against *Maxentius* in 350. assembled all his Troops, and advis'd such as had not receiv'd Baptism to receive it immediately; declaring withal, that such as shou'd be found unbaptiz'd shou'd quit the Service, and go Home.

Hence, perhaps, says the Abbot, the Name *Pagan* might be given to those who chose the latter: The Latin Word, *Paganus*, properly signifying a Person who does not bear Arms; in Opposition to *Miles*.

And hence it might, in Time, extend to all Heathens. Or, continues he, the Word might come from *Pagus*, Village, whence the French *Pais* Country, in regard the Peasants were those who stuck longest to the Idolatry of the Heathens.

*PAGANISM*, the Religious Worship and Discipline of *Pagans*; or the Adoration of Idols and false Gods.

The Gods of *Paganism* were either Men, as *Jupiter*, *Hercules*, *Bacchus*, &c. or fictitious Persons, as *Victory*, *Fame*, *Fever*, &c. or Beasts, as in *Egypt*, *Crocodiles*, *Cats*, &c. or inanimate Things, as *Onions*, *Fire*, *Water*, &c. See *GOD*.

*Baronius* derives the Word *Paganus* a *Pagis* Villages, because, when the Christians became Masters of the Cities, the Heathens were obliged by the Edicts of *Constantine* and his Children, to go and live in the Country Villages, &c. *Salmasius* will have the Word from *Pagus*, considered as originally signifying *Gens* or Nation: Whence we say indifferently, *Paganism* or *Gentilism*.

*PAGANALIA*, an ancient rural Feast, thus call'd, because celebrated in the Villages, in *Pagis*. See *PAGAN*.

In the *Paganalia*, the Peasants went in solemn Procession all around the Village, making Lustrations to purify it. They had also their Sacrifices, wherein they offer'd Cakes on the Altars of the Gods. See *FEAST*.

*Halicarnassensis* and *St. Jerom* refer the Institution of the *Paganalia* to *Servius Tullius*. They were held in the Month of *February*.

*PAGARCHUS*, among the Ancients, a petty Magistrate of a *Pagus* or little District, in the Country; several Times mentioned in the Novels.

The Word is form'd from *Pagus* Village, and *αρχη* Command.

*PAGE*, a Youth of State, retain'd in the Family of a Prince, or great Personage, as an honourable Servant to attend in Visits of Ceremony, do Messages, bear up Trains, Robes, &c. and at the same Time to have a genteel Education, and learn his Exercises.

The *Pages*, in the King's Household, are various and have various Provinces assign'd 'em: As

*Pages of Honour*, *Pages* of the Presence-Chamber, *Pages* of the Back-Stairs.

*Pages* were anciently distinguish'd from the other Servants in Livery, by their wearing Drawers in lieu of Breeches; and

Sleeves turn'd up with Velvet.

The Word is found from the Greek, *παις* Child;

*Cujas* and *Gothefrid* observe, that *Pages*, in the Emperor's Families, were called *Pedagogiani Pueri*. *Faucher* says, the Word *Page* was first given to the little Boys who attend Tutors to bring 'em their Tiles, &c. That till the Time of *Charles VI* or *VII*. the Name was common to the basest Servants, and that 'tis since then, that *Page* is become a Term of Honour; and the meaner Servants distinguish'd from 'em by the Name of *Lacqueys*, &c.

*PAGE* is particularly used in the Seraglio, for the Children of Tribute; or, Slaves who wait on the Grand Signor. They are commanded by the first *Aga*; and constitute four Classes, call'd *Oda's*. See *ODA*.

*PAGE* of a Book. See *PRINTING*.

*PAGEANT*, a Triumphal Car, Chariot, Arch, or other the like pompous Decoration, variously adorn'd with Colours, Flags, &c. carried about in public Shews, Processions, &c. See *DECORATION*, *PROCESSION*, &c.

*PAGOD*, a Name the *Portuguese* have given to all the Temples of the *Indians*, and Idolaters of the East. See *TEMPLE*.

The *Pagod*s of the *Chinese* and *Siamese* are exceedingly magnificent. Among others, there is one at *Golconda*, whose *Niche*, that they pray in, consists of a single Stone, of such prodigious Bulk, that they were five Years in bringing it to the Place; 600 Men being constantly employ'd at it all that Time; and the Machine, that brought it, drawn by 1400 Oxen.

The Revenues of the *Pagod* of the *Janigrate* are so great as to subsist every Day, from fifteen totwenty Thousand Pilgrims.

*PAGOD* is also used for the Idol adored in the Temple. See *IDOL*.

Hence the Curious give the Name to those little porcelain Images brought from *China*.

*PAGOD* is also the Name of a Gold Coin current in several Parts of the *Indies*; on the footing of the Piece of Eight. See *COIN*, &c.

The English coin *Pagods* at Fort St. George; and the Dutch at *Palicate*.

There are also silver *Pagods* struck at *Narsingua*, *Bisnagarg*, &c. which usually bear the Figure of some monstrous Idol, whence their Names. They are of various Values.

*PAIN*, an uneasy Sensation, arising from a sudden and violent Solution of Continuity in the Nerves, Membranes, Vessels, Muscles, &c. of the Body. See *PLEASURE*.

*Pain*, according to some, resides in a Motion in the Organs of Sense; according to others, it is an Emotion of the Soul, occasioned by those Organs. See *SENSE*.

If it be inquired, what it is occasions the *Pain* of a Puncture? One may answer, that the Puncture cannot separate the Fibres of the Flesh, without shaking the Nerves which proceed thence to the Brain. If it be further asked, why we feel Pain upon a shaking of that Part of the Brain? we are at a Stand; there being no necessary Connection between Concussions of the Brain, and the Sensation of Pain wherewith the Soul is affected.

To account, therefore, for Pain; *F. Mallebranch* observes, we must have Recourse to a superior Being, who forms an arbitrary Connection between the Shakes of the Brain, and the Sensations of Pain. See *SENSATION*.

From the Physical Definition of Pain, it follows, that whatever may distract the Parts of the Nerves or Membranes from one another may cause Pain; but there is nothing in the Compass of Nature, which may not do that, with whatever Figures, or Properties, it be endued: For since somewhat may always be apply'd or added to any other Body, such Body may at length increase into a Bulk too big to flow through a Canal of a given Diameter, and will therefore require more Room: Wherefore, while the Sides of a Canal are thrust outward, beyond what they are used to be, that is, the Parts composing those Sides, before contiguous, become loosened and moved away from one another; if that Body strike upon those Sides with a brisk *Impetus*, and that *Impetus* be continually renew'd, the Solution will be considerable, or the *Nisus* towards a Solution violent, or there will be *Pain*. Wherefore the constituent Parts of Fluids being sufficiently augmented in Dimension, and propell'd with a continually repeated *Impetus* against any Canal of our Body, may occasion that Solution, in which consists the Essence of Pain.

For it comes to the same Thing, whether some Parts are added to a Body; or the Parts of that Body are, by any Cause whatsoever, separated to so great an Interval, near the Sides of a Canal, as to constitute a Dimension equal to that which arose from the Addition of a new Part; for the Bulk may so far increase both Ways, as that the natural Capacity of the Canal shall not be big enough to contain it, without some violent Dilatation, and a Distraction of the Fibres it is composed of: And consequently Pain must ensue.

Farther, as there may be always somewhat added to another Body; so from any Body may somewhat be always taken away; a Body so diminished in Dimension, and impell'd with



with a considerable *Impetus* will break thro' the Interstices of the Fibres, where it is less than the Capacity of such Interstices, and moved obliquely: And because the Superficies of the Fibres are not wont to be contained under Geometrical Right Lines, but to have Particles standing out and prominent; these it divides from one another. And thus any Body, of whatsoever Figure, may occasion in us Pain, so it be big enough to distend the Vessels beyond their wonted Measure, or small enough to enter the Pores in the Sides of a Canal, with an *Impetus* in the Manner intimated.

And what is thus advanced, with relation to Things within the Vessels, may be easily apply'd to others out of the Vessels.

PAIN, in Medicine, consider'd as a Symptom of a Disease, makes a considerable Article in a Palliative Cure. See PALLIATIVE.

Pain is mitigated or asswaged divers Ways; as 1. by diluting and softening of Acrimonies, with warm Water mix'd with Flower apply'd by way of Drink, Fomentation, Clyster or Bath. 2. By resolving and washing away Obstructions, by the same Means and Resolvents. 3. By relaxing the nervous Vessels, with Drinks, Fomentations, Baths, the Species of Relaxants, Anodynes and Aperients. 4. By correcting the Acrimony itself with proper Remedies. 5. By freeing the obstructed, and acrimonious Parts from the too much Pressure of the vital Humour; and by softening, and suppuration, and depurating 'em. 6. By rebating or deadening the Sense by Narcoticks, either internally or externally. See NARCOTICK, &c.

PAIN fort, & dure, in Law, an especial Punishment for one, who being arraigned of Felony, refuses to put himself upon the ordinary Trial of God and his Country, and thereby stands mute by the Interpretation of Law. See MUTE.

This is vulgarly called *Pressing to Death*. The Process whereof is thus prescribed:

"He shall be sent back to the Prison, whence he came, and be laid in some low dark House; where he shall lie naked on the Earth, without any Litter, Rushes, or other Cloathing, and without any Raiment about him, but only something to cover his Privy-Members; and he shall lie upon his Back with his Head covered, and his Feet; and one Arm shall be drawn to one Quarter of the House, with a Cord, and the other Arm to another Quarter, and his Legs in the same Manner: Let there be laid upon his Body Iron, or Stone, as much as he may bear, or more; and the next Day following, he shall have three Morsels of Barley-Bread without Drink; and the second Day he shall have Drink three Times, as much at each Time as he can drink, of the Water next unto the Prison, except it be running Water; without any Bread: And this shall be his Diet, till he dies.

PAINIM, the same with *Pagan*. See PAGAN.

PAINTING, the Art of representing natural Bodies, and giving 'em a Kind of Life, by the Turn of Lines, and the Degrees of Colours.

Painting is said to have had its Rise among the *Egyptians*: And the *Greeks*, who learn'd it of 'em, carried it to its Perfection; if we may believe the Stories related of their *Apelles*, and *Zenxis*.

The *Romans* were not without considerable Masters in this Art, in the later Times of the Republic, and under the first Emperors; but the Inundation of *Barbarians*, who ruin'd Italy, proved fatal to Painting, and almost reduced it to its first Elements. It was in Italy, however, that the Art returned to its ancient Honour, and in the Beginning of the XVth Century; when *Cimabue*, betaking himself to the Pencil, translated the poor Remains of the Art, from a Greek Painter or two, into his own Country.

He was seconded by some *Florentines*: The first who got any Reputation was *Ghirlandajo*, *Michael Angelo's* Master; *Pietro Perugino*, *Raphael Urbin's* Master; and *Andrea Verocchio*, *Leonardo Da Vinci's* Master.

But the Scholars far surpassed the Masters; they not only effaced all that had been done before 'em, but carried Painting to a Pitch from which it has ever since been declining.

'Twas not by their own noble Works alone that they advanc'd Painting; but by the Number of Pupils they bred up, and the Schools they form'd.

*Angelo*, in particular, founded the School of *Florence*; *Raphael*, the School of *Rome*; and *Leonardo*, the School of *Milan*; to which must be added, the *Lombard* School, establish'd about the same time, and which became very considerable under *Georgian* and *Titian*. See SCHOOL.

Besides the *Italian* Masters, there were others on this Side the Alps, who had no Communication with those of *Italy*; such were *Albert Durer*, in *Germany*; *Holbens*, in *Switzerland*; *Lucas*, in *Holland*; and others in *France* and *Flanders*: but *Italy*, and particularly *Rome*, was the Place where the Art was practis'd with the greatest Success; and where, from Time to Time, the greatest Masters were produced.

To *Raphael's* School, succeeded that of the *Caraches*, which has lasted, in its Scholars, almost to the present Time; wherein the *French* Painters, by the Munificence of the late *Louis XIV.* seem almost in Condition to vie with those of *Greece* or *Italy*.

In *Paris* they have two considerable Bodies of Painters, the one, the *Royal Academy of Painting and Sculpture*, the other the *Community of Masters in Painting, Sculpture, &c.* See ACADEMY.

The Art of *Painting* is divided, by *Fresnoy*, into three principal Parts, *Invention, Design, and Colouring*; to which some add a fourth, viz. *Disposition*.

*Felicien* divides *Painting* into the *Composition, the Design, and Colouring*.

*Monf. Testling*, Painter to the late King, divides it, somewhat more accurately, into the *Design or Draught, the Proportion, the Expression, the Clair-obscur, the Ordinance, and the Colouring*; to which his *English* Translator adds the *Perspective*. Under each of these Heads, he gives us the Rules and Sentiments of the best Masters, which see under their proper Articles in this Dictionary, *DESIGN, PROPORTION, EXPRESSION, CLAIR-OBSCURE, ORDONNANCE, COLOURING, &c.*

*Painting* is of various Kinds, with regard to the Materials us'd; the Matter whereon they are applied; and the Manner of applying 'em.

Hence come *Painting in Oil; Painting in Water-Colours, or Limning; Painting in Fresco; Painting on Glass; Painting in Enamel; and Painting in Miniature*.

*PAINTING in Oil*. The Art of *Painting in Oil* was unknown to the Ancients; and it was a *Flemish* Painter, one *John van Eyck*, or *John de Bruges*, who first discover'd and put it in practice in the Beginning of the XIVth Century: 'Till him, all the Painters wrought in *Fresco*, or in *Water-Colours*.

This was an Invention of the utmost Advantage to the Art; since, by means hereof, the Colours of a *Painting* are preserv'd much longer and better, and receive a Lustre and Sweetness which the Ancients cou'd never attain to, what Varnish soever they made use of to cover their Pieces.

The whole Secret only consists in grinding the Colours with Nut-Oil or Linseed Oil: But it must be own'd, the Manner of Working is very different from that in *Fresco*, or in *Water*; by reason the Oil does not dry near so fast; which gives the Painter an Opportunity of touching and retouching all the Parts of his Figures, as often as he pleases: Which, in the other Kinds, is a Thing impracticable.

The Figures too are here capable of more Force and Boldness; in as much as the Black becomes blacker, when ground with Oil than with *Water*; besides that, all the Colours, mixing better together, make the Colouring sweeter, more delicate and agreeable, and give an Union and Tenderness to the whole Work, inimitable in any of the other Manners.

*Painting in Oil* is perform'd on *Walls, on Wood, Canvas, Stones* and all Sorts of *Metals*.

To *PAINT on a Wall*: when well dry, they give it two or three Washes of boiling Oil; till the Plaster remain quite greasy, and will imbibe no more. Over this they apply desiccative or drying Colours, viz. white Chalk, red Oker, or other Chalks beaten pretty stiff. This Couch or Lay being well dry, they sketch out, and design their Subject; and at last paint it over, mixing a little Varnish with their Colours; to save the Varnishing afterwards.

Others, to fortify their Wall the better against Moisture, cover it with a Plaster of Lime, Marble-Dust, or a Cement made of beaten Tiles soak'd with Linseed Oil; and at last prepare a Composition of *Greek Pitch, Mastic* and thick Varnish boil'd together, which they apply hot over the former Plaster: When dry, they lay on their Colours as before.

Others, in fine, make their Plaster with Lime-Mortar, Tile-Cement, and Sand; and this dry, apply another of Lime-Cement, and Machefer or Iron Scum; which being well beaten and incorporated with Whites of Eggs and Linseed Oil, makes an excellent Couch or Plaster. When dry, the Colours are applied as before.

To *PAINT on Wood*; they usually give their Ground a Couch or Lay of White temper'd with Size; or they apply the Oil above-mentioned: The rest, as in *Painting on Walls*.

To *PAINT on Linnen or Canvas*; the Canvas being stretch'd on a Frame, they give it a Couch or Lay of Size: When dry, they go over it with a Pumice-Stone, to smooth off the Knots. By means of the Size the little Threads and Hairs are all laid close on the Cloth, and the little Holes stopp'd up, so as no Colour can pass thro'.

When the Cloth is dry, they lay on Oker, which is a natural Earth, and bears a Body; sometimes, mixing with it a little white Lead to make it dry the sooner. When dry, they go over it with the Pumice-Stone to make it smooth.

After this, they sometimes add a second Lay composed of white Lead, and a little Charcoal Black, to render the Ground of an Ash-Colour, observing in each Manner to lay on as little Colour as possible, that the Cloth may not break, and that the Colours, when they come to be painted over, may preserve the better.

In some *Paintings* of *Titian* and *Paolo Veronese* we find they made their Ground with *Water*, and painted over it with Oil; which contributed much to the Vivacity and Freshness of their Works: For the *Water* Ground, by imbibing the Oil of the Colours, leaves them the more beautiful; the Oil itself taking away a deal of their Vivacity.



As little Oil therefore is to be used as possible, if 'tis desired to have the Colours keep fresh: For this Reason some mix 'em up with Oil of Aspic, which evaporates immediately, yet serves to make 'em manageable with the Pencil.

To PAINT on Stones or Metals, 'tis not necessary to apply Size, as on Cloth; it suffices to add a slight Couch of Colours, before you draw your Design; nor is even this done, on Stones where 'tis desired the Ground shou'd appear, as incertain Marbles of extraordinary Colours.

All the Colours used in *Fresco* are good in Oil, except White of Lime and Marble-Dust. See COLOUR.

Those chiefly used are *White Lead* or *Ceruss*, yellow and white *Mafficor*, *Orpiment*, *Black Lead*, *Cinnaber* or *Vermillion*, *Lacca*, blue and green *Albes*, *Indigo*, *Lamp-Black*, *Burnt Ivory*, and *Verdigrease*, &c. See the Preparation, &c. of each under its proper Article, CERUSS, ORPIMENT, VERMILLION, LACCA, INDIGO, &c.

As to Oils, the best are those of Walnuts, of Linseed, Aspic, and Turpentine. The defficcative or drying Oils, are a Nut-Oil boild with Litharge and Sandarac, others with Spirit of Wine, Mastic and Gum-Lacca. See VARNISH.

To have a Varnish that shall dry readily, they mix Spirit of Wine with Turpentine.

PAINTING in *Water-Colours*. See LIMNING.

PAINTING in *Fresco*. See FRESCO.

PAINTING in *Miniature*. See MINIATURE.

PAINTING on *Glass*. See GLASS.

PAINTING in *Enamel*. See ENAMEL.

PAINTING in *Mosaic*. See MOSAIC-WORK.

PAIR, a Collective Term, used for two equal and similar Things ordinarily joined together; tho' more frequently for artificial Things, than for natural Ones.

As a *Pair* of Gloves, of Stockings, of Shoes, &c.

It is also used in compound Things, for two Parts alike each other, tho' they only make one Whole; as a *Pair* of Scissars, &c.

And for a Set or System of several Things join'd to make another compleat, as a *Pair* of Bag-pipes, &c. and lastly, by Extention, for a Thing that is single, as a *Pair* of Tables, &c.

PAIR, *Par*, in Anatomy, an Assemblage or Conjugation of two Nerves, having their Origin together in the Brain or Spine, and thence distributed into the several Parts of the Body, one on the one Side, and the other on the other. See NERVE.

Thus we say the *first Pair*, *second Pair*, &c. the *Par vasum*, *Par quantum*, &c. and sometimes the *Olfactory Pair*, *Ophthalmic Pair*, &c. See VAGUM.

PALACE, *Royal-House*, a Name generally given to the Dwelling-Houses of Kings, and Princes. See HOUSE.

In Course of Time the Name has also been applied to the Houses of other Persons; taking different Epithets, according to the Quality of the Inhabitants; as *Imperial Palace*, *Royal Palace*, *Pontifical*, *Cardinal*, *Episcopal*, *Ducal Palace*, &c.

*Procopius* derives the Origin of the Word *Palace* from a Greek, called *Pallas*, who gave his own Name to a magnificent House he had built: Adding, that *Augustus* after him, gave the Name *Palatium* to the House of the Roman Emperors on the Hill; which, for that Reason, was called the *Palatine Mount*. Others take it the contrary Way; and say, that *Romulus's* House, wherein *Augustus* lived, was properly called *Palatium*, because situate on the *Palatine Mount*. See PALATINE.

Be this as it will, 'tis certain, *Palatium*, from a proper Name, in Time, became common to all Houses of Kings.

And as the Kings usually heard and determined Causes in their Houses, in what Part of the Realms soever situate; hence also *Palatium* became a Name for a Court of Justice; thus the French have their *Palais*, &c. See COURT.

PALANQUIN, a Kind of Chaise, or Chair bore by Men on the Shoulder; much used by the People of *China* and the East, as a Vehicle for their Conveyance from Place to Place.

PALATE, *Palatum*, in Anatomy, the Flesh that composes the *Roof*, i.e. the upper and inner Part of the Mouth. See MOUTH.

The *Palate* is lined with a glandulous Coat, under which are great Numbers of pretty conspicuous Glands, scatter'd in the Fore-part of it like Grains of Millet, with many Interstices, whose excretory Ducts, piercing the Membrane, open into the Mouth; but towards the Hind-part, they lie much thicker; and about the Root of the *Uvula* are gathered so close together, that they appear to form one pretty large conglomerate Gland, called by *Verheyen*, *Glandula Conglomerata Palatina*.

Towards the Bottom of the *Palate*, behind the *Uvula*, is a pretty large Perforation, which, a little from its Orifice, divides into two, each whereof goes to one of the Nostrils.

Many take the *Palate* to be the Organ of Tasting. See TASTE.

*Du Laurener* says, the *Palate* has its Name from the Latin *Pali*; because enclosed with two Rows of Teeth, resembling little Stakes which the *Latins* call *Pali*.

PALATI O's, a small square Bone, forming the Hind-part of the *Palate*, and join'd to that Part of the *Os Maxillare*

which forms the Fore-part of the *Palate*. See PALATE & MAXILLA superior.

PALATINATE, a Province or Signory, possess'd by a *Palatine*; and from which he takes his Title, and Dignity. See PALATINE.

The *Palatinates*, now subsisting, are either those of Germany or Poland.

Those of Germany are the Principalities of the Upper and Lower Rhine, i.e. of Bavaria and the Rhine. The *Palatinates*, in Poland, are the Provinces and Districts of the *P. Lips* Grandees or Senators, who are the Governors thereof.

PALATINE, *Count Palatine*, or *Comes Palatinus* in the ancient Customs, was a Title given to all Persons who had any Office or Employment in the Prince's Palace. See COUNT.

*Mathæus* says, that *Palatines* were originally those who had the Super-intendance of the Palace; the same with what the Greeks call'd *Curopolate*, and the French, *Maitres De palais*; tho', in Time, the Name became more general.

The only *Palatine* of this Kind, now subsisting, is the *Palatine* of the Rhine.

The Title *Palatine* was afterwards conferr'd on those delegated by the Prince to hold a Court of Justice in some Province; and to such among the Lords as had a Palace, i.e. a Court of Justice in their own Houses.

The French Writers make the *Palatinates* of Champagne to be the first, who bore the Title; which, they will have it, the Germans and other People borrowed from them; not they from the Germans.

At present the Word *Palatine* is restrained to a Prince of Germany, or a Lord of Poland possess'd of a *Palatinate*. See PALATINATE.

The Word is derived hence, that anciently the Emperors sent the Judges of their Palace, whom they call'd *Comites Palatini*, or *Paltz-graves*, to correct the Abuses of the other Judges in the Provinces of Saxony, Bavaria, Franconia, and the Rhine. See PALSgrave.

In the Codes we find a Title, *De Palatinis Sacrarum Largitionum*, who were a Kind of Treasurers of the Empire.

PALATINI Ludi, among the Romans, were Games instituted in Honour of *Julius Cæsar*, as some will have it, or as others, of *Augustus*. See GAMES.

'Tis pretended that *Dion* calls 'em *Augustales*; which should seem to confirm the second Sentiment. Indeed, 'tis certain, that he says *Livia* instituted particular Games on the *Palatine Mount*, in Honour of that Prince; but he apparently distinguishes them from those called *Augustales*. See AUGUSTALES.

The Romans had also their *Apollo Palatinus*, a Surname of that Deity, given him in respect of the Temple erected to him by *Augustus* on the *Palatine Mount*, in Consequence of a Report of the *Aruspices*, which required it to be done: *Augustus* enrich'd it with a noble Library, as is intimated by *Horace*, Lib. I. Epist. III. v. 23.

The *Palatine Tribe* was one of the four Tribes, into which Rome was anciently divided by *Servius Tullus*. See TRIBE.

PALATO Salpingæus, called also *Musculus Tube vocis Valsævæ*, and *Pterygostaphilinus Externus*, A Muscle arising broad and tendinous from the Edge of the lunated Part of the *Os Palati*, several of its Fibres being spread on the Membrane that covers the *Foramen Narium*; whence growing into a small thin Tendon, it is reflected about the Hook like the Process of the inner Wing of the *Processus Pterygoideus internus*, and is inserted carnosus, into all the membranous, fleshy, and cartilaginous Parts of the Tube which leads from the Palate to the Ear.

It is used to dilate and keep open this Tube.

PALATO-STAPHILINUS, in Anatomy, a Muscle call'd also *Pterygostaphilinus internus*. See PTERYGOSTAPHILINUS.

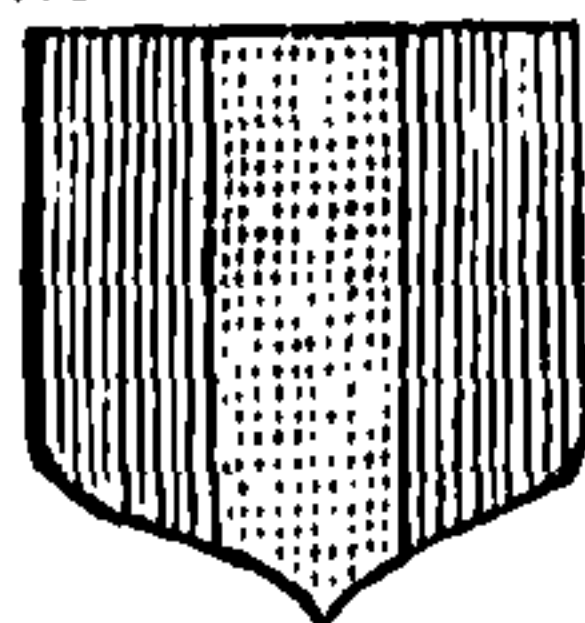
PALE a little pointed Stake, or Piece of Wood, used in making Inclosures, Separations, &c. See PALISSADE.

The *Pale* was an Instrument of Punishment and Execution among the ancient Romans, &c. still continues so among the Turks. Hence *Empaling*; the passing a sharp *Pale* thro' the Fundament up the Body. See EMPALING.

The Word comes from the Latin *Palus*, which signifies the same Thing; whence *Palissade*, &c.

PALES, or Piles, in Carpentry, are Rows or Files of Stakes drove deep into the Ground, to make wooden Bridges over Rivers. See PALLIPLICATION.

They serve to support the Beams which are laid a-cross them, from one Row to another; and are strongly bound together with Cross-Pieces.



PALE, in Heraldry, one of the Honourable Ordinaries of an Escutcheon. See ORDINARY.

The *Pale* is a Representation of a Pale or Stake, placed upright, and comprehending the whole Height of the Coat, from the Top of the Chief to the Point.

When single, it is to contain one Third of the Breadth of the Shield. When there are several they are proportioned so, as that two take up two Fifths of the Shield; and three take up three Sevenths: and in those Cases, the Number



er of Pieces is specified as well as that of those they are charged withal, &c.

*Pales* are bore various Ways, as *Wavy, Crenelle, Faillis,Indented, Ingrailed, &c.* There are also *Cometed and Flaming Pales*, which are Pointed, sometimes Waved, &c.

The *Pale* in an Armoury is a Mark of Jurisdiction. See the adjoining Figure; He bears *Gules a Pale Or.*

A Coat is said to be *Paled*, when it is equally charg'd with Pales of Metal and Colour.

It is *Counter Paled* when it is cut and the two *Demi-Pales* of the Chief, tho' of Colours the same with those of the Point, yet differ in the Place where they meet; so as if the first of the Chief be Metal, that corresponding to it, underneath, is of Colour.

The Coat is said to be *Palisse*, when the *Pales* are pointed like those used in the Defence of Places.

*Du Cange* derives the Word from the Latin Name *Pallea*; Piece of Tapistry. He adds, that the Ancients gave the Name *Pales* to the Hangings of Walls. Thus, a Chamber was said to be *Paled* with Cloth of Gold, with Silk, &c. as consisting of Bands or Stuffs of two Colours. Hence the Origin of the Word *Pale* a Stake, &c. The Arms of *Arragon* are *Paled* with Gold and *Gules*.

*Terrullian* observes, that the *Romans* planted *Pales* to serve as Boundaries of Inheritances; and that they consecrated them to the God *Terminus*, under the Name of *Pali Terminales*. *Ovid* tells us, they were crowned and adorned with *Flowers, Festons, &c.* The God was worshipped before these *Pales*.

In *PALE*, is applied to Things born one above another, in Manner of a *Pale*.

*Party per PALE* is where the Shield is divided by a single Line thro' the Middle, from Top to Bottom. See *PARTY* and *PALY*.

*PALED Flowers*, in Botany, are those that have Leaves set about, or surrounding a Head, or Thrum; as in *Marigolds, &c.*

*PALÆSTRA*, among the antient *Greeks*, a publick Building, where the Youth exercised themselves in Wrestling, Running, Quoits, &c. See *GYMNASIUM*.

Some say it consisted of a College, and an Academy; the one for Exercises of the Mind, the other of the Body. But most Authors rather take *Palestra* to be a *Xystus* or mere Academy for Bodily Exercises, according to the Etymology of the Word *πάλας*, Wrestling, one of the chief Exercises amongst the Ancients. See *XYSTUS*.

The Length of the *Palestra* was mark'd out into *Stadia*, each equal to 125 Geometrical Paces; and the Name *Stadium* was given to the *Arena* whereon they ran. See *STADIUM*.

*PALÆSTROPHYLAX*, among the Ancients, was the Governor of the *Palestra*; and of the Exercises perform'd therein. See *PALÆSTRA*.

This Officer was also called *Xystarcha*. See *XYSTARCH*.

The Word is form'd from the *Greek* *πάλαιστα, & φύλαξ* *Guardian*.

*PALILIA*, a Feast among the ancient *Romans* in Honour of the Goddess *Pales*. Some call 'em *Parilia*. See *FEAST*.

They were celebrated by the Shepherds on the first of *May*; to beseech that Goddess to take care of their Flocks, and preserve 'em from Wolves, and Diseases.

Part of the Ceremony consisted in lighting Heaps of Straw, and jumping over them.

*PALILICIUM*, in Astronomy, a fix'd Star of the first Magnitude, in the *Bull's-Eye*; called also *Aldebaran*.

Its Longitude in *Mr. Flamsteed's Catalogue* is 5°. 27'. 00". Its Latitude 5°. 29'. 49". South.

*Pliny* gives the Name *Palilicium* to the *Hyades*. See *HYADES*.

*PALINDROME*, a Verse, or Sentence, which runs the same, read either backwards, or forwards.

The Word is *Greek*, *παλινδρομος, retro currens*, running backwards: Such is the Verse

*Roma tibi subito motibus ibit amor.*

Some People of Leisure have refined upon the *Palindrome*, and composed Verses, each Word whereof is the same backwards as forwards. As that Instance in *Cambden*.

*Odo tenet multum, madidam mappam tenet Anna.  
Anna tenet mappam madidam, multum tenet Odo.*

*PALING*, in Agriculture, &c. a Kind of Fence-work, for Fruit-Trees, &c. planted in Fields, &c. See *FENCE*.

It consists of three small Posts driven into the Ground at a Foot and a Half Distance; with Cross-Bars nail'd to each other, near the Top.

In fixing the *Pales* in Form of a Triangle, Room is to be left for the Tree to play and bow by the high Winds without galling.

The Trees to be bound to a Stake for a Year or two; after which, Fern or Straw may be stuffed in betwixt the Tree and uppermost Rails to keep it upright.

If the Place be open to Deer, Rabbits, or the like, a Post to be nailed to the Bar between every two *Pales*.

*PALINGENESIA*, a Term signifying *New Birth*; or the Passage of the Soul of a Defunct into another Body.

The *Palingenesia* is almost the same thing with the *Metempsychosis* taught by *Pythagoras*, and still believed by the *Brachmans, Banians* and other Philosophers of the East. See *METEMPSYCHOSIS*.

The Word is *Greek*, form'd of *παλιν* over-again, a-new, and *γενεσις* *Genesis*.

*PALINODY*, a Discourse contrary to a preceding one.

Hence the Phrase *Palinodiam Canere*, to sing *Palinody*; to make a Recantation.

The Word, in the original *Greek*, signifies to sing a-fresh. Hence it has passed as a general Name for Poems, &c. which contain a Retractation in Favour of a Person the Poet had before offended.

The Poet *Stesichorus* is said to be the first Author of the *Palinody*. The sixth Ode of the I. Book of *Horace* beginning, *O Matre pulchra*, is a true *Palinody*.

*PALINTOCIA*, in Antiquity, a Term used in two Senses. 1. For the Delivery of a Child a second Time: Thus the second Birth of *Bacchus*, proceeding out of *Jupiter's* Thigh, was a *Palintocia*.

2. *Palintocia* was also used for the Repetition of Usury, or the refunding of Interests. The *Megarians*, having expell'd their Tyrant, ordained the *Palintocia*; that is, they made a Law, that all the Creditors should return to their Debtors the Interests they had received for Monies lent.

The Word is form'd from the *Greek* *παλιν* a-fresh, a-new, and *τόκος* of *πάλω*, I bring forth.

*PALISSADE* or *PALISSADO*, in Fortification, an Inclosure with Stakes or *Pales* driven into the Ground, eight or nine Inches thick; and nine Foot long, three whereof are hid under Ground.

It is used to fortify the Avenues of open Forts, Gorges, Half-moons, the Bottoms of Ditches, and the Parapets of Covert-ways; on the Talut of Ramparts; the Top of the Out-works, &c.

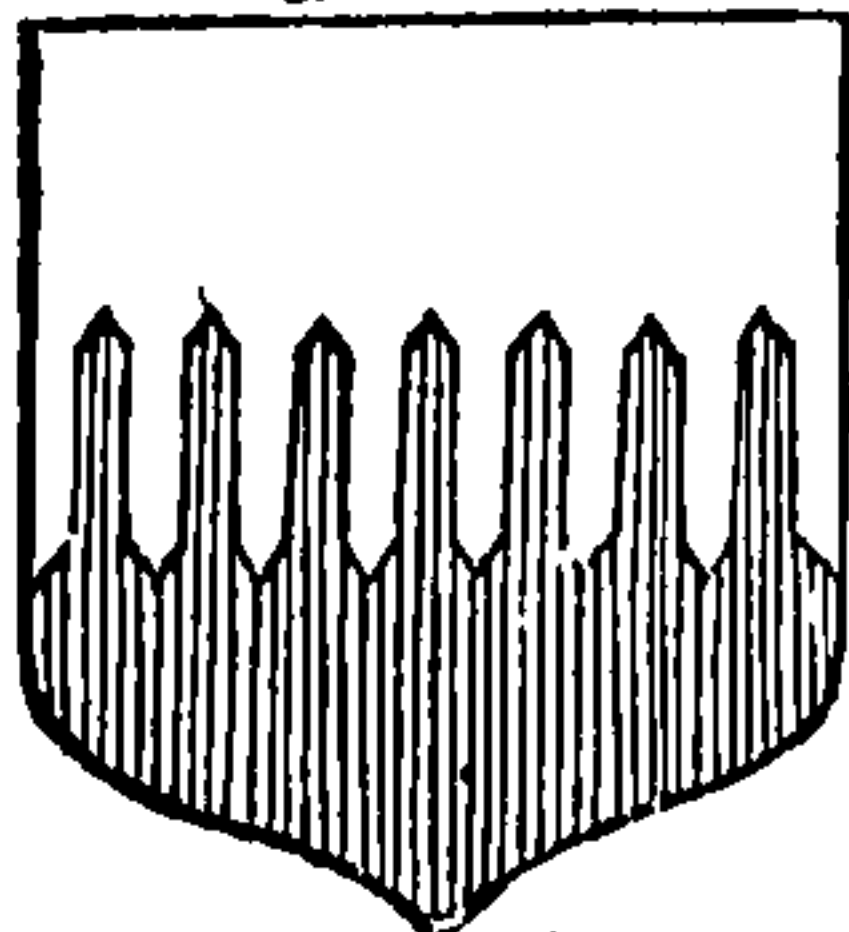
There are *Palissades* made perpendicular; others are made inclining to the Ground; that the Ropes cast over 'em, to tear 'em up, may slip.

*PALISSADES turning*, are an Invention of *Mr. Coehornes*, in order to preserve the *Palissades* of the Parapet from the Be-siegers Shot.

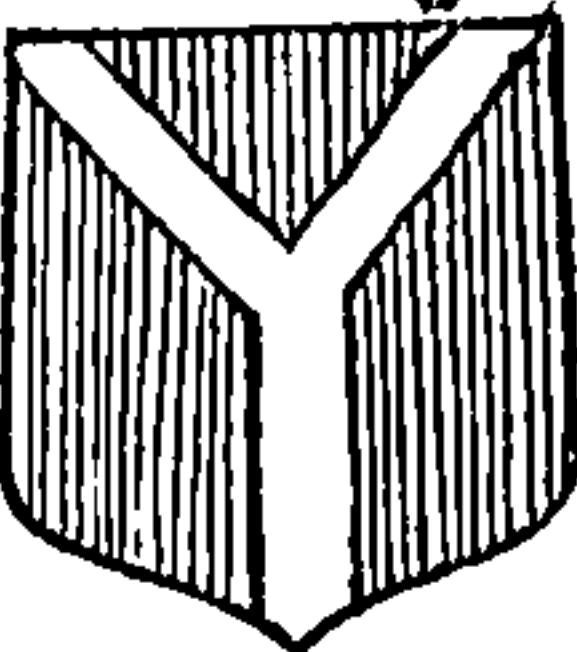
He orders them so, that as many of them, as stand in the Length of a Rod, or in about ten Foot, turn up and down like Traps; so as not to be in Sight of the Enemy till they just bring on their Attack; and yet are always ready to do the proper Service of *Palissades*.

*PALISSADE*, in Gardening, an Ornament in the Allies of Gardens, wherein Trees are planted, which bear Branches from the Bottom, and which are spread in such a Manher, as to appear like a Wall covered with Leaves.

*Palissades* are made of *Jessamin, Filarea, &c.*



*PALISSE*, in Heraldry, a Range of *Palissades* before a Fortification, represented on a *Fesse*, rising up a considerable Height; with the Field appearing thro' them. As in the Figure adjoining.



*PALL*, in Heraldry, a Kind of Cross, after the Manner of the adjoining Figure; blazoned thus: He beareth *Gules, a Cross Pall Argent*.

*PALLA*, among the old *Romans*, a Mantle which Women wore over the Gown, call'd *Stola*. See *STOLA*.

It was bore on the left Shoulder, whence passing to the other Side, under the right Arm, the two Ends were bound under the left Arm, leaving the Breast and Arm quite bare.

It made abundance of Plaies or Wrinkles; whence, according to *Varro*, it had its Name, viz. from *πάλλω*, *Vibro*, I shake, I am very moveable.

Among the *Gauls* there was also a Kind of *Palla* wore by the Men, call'd *Gallica Palla*.

*PALLADIUM*, in Antiquity, a Statue of the Goddess *Pallas*, preserv'd in *Troy*; whereon the Fate of the City depended.

The Tradition was, that in building a Citadel, in Honour of *Pallas*, and a Temple in the most elevated Part thereof; the *Palladium* dropp'd from Heaven, and mark'd out the Place, which the Goddess was pleas'd to possess. After this, *Apollo* gave an Oracle, importing, that *Troy* should never be taken while the *Palladium* was found within its Walls. Which occasioned *Diomed* and *Ulysses* to undertake the stealing thereof.



'Tis said, there was anciently a Statue of *Pallas* preserv'd at Rome, in the Temple of *Vesta*: which some pretended to be the true *Palladium* of *Troy*, brought into *Italy* by *Aeneas*: It was kept among the sacred Things of the Temple, only known to the Priests and Vestals.

This Statue was esteem'd the Destiny of *Rome*; and there were several others made perfectly like it, to secure it from being stolen. See *ANCYLE*.

There was also a *Palladium* in the Citadel of *Athens*, plac'd there by *Nicias*.

These *Palladiums*, in all Probability, were no other than a Kind of *Talismans*. See *TALISMAN*.

*PALLET*, among Painters, a little oval Table, of Wood, or Ivory, very thin and smooth on; and around which the Painters place the several Colours they have occasion for, ready for the Pencil. See *COLOUR*.

The Middle serves to mix the Colours on, and to make the Tints requir'd in the Work. It has no Handle, but in Lieu thereof, a Hole at one End, to put the Thumb through to hold it.

The Word comes from the Latin *Paleta*.

*PALLET*, among Potters, Crucible-Makers, &c. is a wooden Instrument, almost the only one they use, for forming, beating, and rounding their Works. See *POTTER*.

They have several Kinds; the largest are oval, with a Handle; others are round, or hollow'd triangularly; others, in fine, in manner of large Knives, serving to cut off what is superfluous on the Moulds of their Works.

*PALLET*, in Gilding, is an Instrument made of a Squirrel's Tail; used to take up the Gold Leaves from the Pillow, to apply and extend 'em on the Matter to be gilt. See *GILDING*.

*PALLET*, in Heraldry, is the Moiety or Half of the *Pale*; or a small *Pale*, half the Breadth of the usual one. See *PALE*.

The *Pallet* must never be charg'd with any thing, either Quick or Dead; neither can it be divided into two equal Parts, but it may be into four, for one fourth Part of the *Pallet*, or  $\frac{1}{2}$  Part of the *Pale*, is called an *Endorse*. See *ENDORSE*.

If the *Pale* be upon any Beast, they say, the Beast is *Debruised* with the *Pale*: But if the Beast be upon the *Pale*, they say, he is *supported* by the *Pale*.

*PALLET* is also a Part belonging to the Ballance of a Watch or Movement. See *WATCH* and *MOVEMENT*.

*PALLIATION*, the Action of mitigating, soothing, or disguising a Thing.

Hence, in Medicine, *Palliatio* is used for the quieting and assuaging of Pain, and providing against the severer Symptoms of a Disease, when nothing can be directly levell'd against the Cause. See *PALLIATIVE*.

*PALLIATIVE Indication*, is where the Symptoms of a Disease give too much Trouble, and Danger, to have their Cure deferr'd till the Disease, whereon they depend, is removed. See *INDICATION*.

Here, the Symptoms, themselves, are to be cured, or mitigated a-part; And hence,

*PALLIATIVE Cure*, is the Answering of a *Palliative Indication*; or the Removal, or Mitigation of the Symptoms of a Disease; the Cause of the Disease still remaining. See *CURE*.

*Boerhaave* observes, that every Mitigation of a Symptom takes away somewhat from the Disease itself; so that to cure all the Symptoms together, is almost to cure the whole Disease. See *SYMPTOM*.

The principal Symptoms which call for such a Cure are Thirst, Pain, too much Waking, and Faintings. See each under its proper Article. *PAIN*, *THIRST*, *WAKING*, &c.

*PALLIER*, or *Paillier*, in Building, a Landing-Place in a Stair-Case; or a Step, which, being broader than the rest, serves to rest upon. See *STAIR-CASE*.

The Term is pure *French*, and not much used in *English*. In Perrons, or large Stair-cases, where there are sometimes several *Palliers* in the same Range, or Line, they ought to have at least the Width of two Steps.

Those in the Turns of Stair-cases ought to be as broad as long. *Vitruvius* calls the *Palliers* or Landing-Places of Theatres *Diazomata*.

*PALLIFICATION*, in Architecture, is the piling of the Ground-work; or strengthening it with Piles, or Timber driven into the Ground; which is practis'd, when they build upon a moist or marshy Soil. See *FOUNDATION*.

*PALLIO cooperire*. It was an ancient Custom, where Children were born out of lawful Wedlock, and their Parents afterwards intermarried; that those Children, together with the Father and Mother, shou'd stand *Pallio cooperiti* under a Cloth spread over them, while the Marriage was a solemnizing; which was a Kind of Adoption, and had the Effect of a Legitimation.

Thus *Robert Groshead*, the famous Bishop of *Lincoln*, in one of his Letters, *In signum legitimatōis nati ante Matrimonium consueverunt poni sub pallio super Parentes eorum exento, in Matrimonii solemnizatione.*

*Selden*, in his Notes on *Fleta*, adds, that the Children of *John of Gaunt*, Duke of *Lancaster*, by *Catherine*, *Swinsford*, tho' legitimated by Act of Parliament; yet were cover'd with the Pall at the Time of the Marriage of their Parents.

*PALLIUM* or *PALL*, a Pontifical Ornament wore by Popes, Patriarchs, Primates and Metropolitans of the *Romish Church* over their other Garments, as a Sign of their Jurisdiction. See *PONTIFICALIA*, *EPISCOPALIA*, &c.

'Tis in Form of a Band, or Fillet, three Fingers broad, and incompasses the Shoulder; whence by some Authors it is called *Superhumerales*. It has Pendants, about a Palm long, both before and behind; with little *Laminae* of Lead rounded at the Extremes, and covered with black Silk, with four red Crosses.

The *Pallium* is made of white Wool, shorn from off two Lambs, which the Nuns of *St. Agnes* offer every Year, on the Day of her Feast, at the singing of the Mass, *Agnus Dei*.

The Lambs are received by the two Canons of the Church of *St. John de Lateran*; who deliver 'em into the Hands of the Apostolical Sub-deacons, to whom belongs the feeding and shearing of 'em in Season, and who alone have the Right of making these *Palliums*; which, when made, they lay over the Bodies of *St. Peter* and *St. Paul* in the Grand Altar of their Church, making Prayers over 'em all Night, according to the Form prescrib'd for that Purpose in the *Roman Cere-*

monial. Some, with *Eusebius*, will have the *Pallium* to have been introduced by Pope *Linus*; adding, that as the *Ephod* was the Mark of the Pontifical Authority in the *Jewish Synagogue*, so is the *Pallium* in the *Christian Church*. See *EPHOD*.

Others have observ'd, that there is no Mention made hereof before the Year 336.

Lastly, others will have it first granted by *Constantine* the Great, to Pope *Silvester*; from whence it pass'd to the other Patriarchs and Archbishops.

The Pope pretexts to the sole Right of Conferring the *Pallium*; tho' some Patriarchs have granted it to their Suffragans, having first receiv'd it themselves from the *Roman See*.

Antiently the Pope used to send the *Pallium*, to certain of his Diocesan Bishops, on whom he laid a good Part of his Authority, and who were a Kind of a Collaterals to him, as the *Patricii* were to the Emperors.

The first, who receiv'd it in *France*, was *Vigilius*, Archbishop of *Arles*, in order, as *Pasquier* observes, to give him the Precedence over the other Bishops.

Antiently they went to *Rome* to seek it in Person; afterwards, it was sent by the Pope's Legates. At last the Custom was introduced of sending Persons express to demand it, with this Form, *Instante, Instantius, Instantissime*.

A Metropolitan, till he have received the *Pallium*, cannot consecrate Bishops, or Churches, may not be call'd Archbishop, &c. Upon a Translation he must have the *Pallium* afresh; and till then cannot hold a Synod, nor perform any of his Archiepiscopal Functions.

The *Pallium* was antiently interr'd with the Person.

The Use of the *Pallium* is restrain'd to certain Seasons and Occasions; none but the Pope having the Right of wearing it always and in all Places. The Pope sometimes sends it to Bishops on his own Accord; and has sometimes given the Right hereof to particular Churches. Among the *Greeks* all the Bishops wear the *Pallium*.

In ancient Titles, &c. we find mention made of another *Pallium*, which was a long Garment spread over with Crosses. *Terrullian* says, it was a distinguishing Garment of the Christians; that of the Heathens being called *Toga*.

*PALM*, *Palma*, *Span*, an ancient *Roman* long Measure, taken from the Extent of the Hand. See *MEASURE*.

The ancient *Roman Palma* was of two Kinds: The Great *Palm*, taken from the Length of the Hand, contained 12 Fingers, Digits, or Finger's Breadths; equal, according to *Mosses*, to seven *English* Inches, and eight Tenths. See *DIGIT*.

The Small *Palm*, taken from the Breadth of the Hand, contained 4 Digits or Fingers, equal to two *English* Inches, and two Thirds.

Yet *Daviler* makes the ancient *Roman Palma* to be equal to 9 *French* Inches, equivalent to eight *English* Inches.

The *Greek Palm* or *Spitha* was of two Kinds. The Small contained four Fingers, equal to 2 Inches; The Great contained 5 Fingers. The double *Greek Palm*, call'd *Dichas*, contained 8 Fingers.

The modern *Palm* is different in different Places where it obtains.

At *Rome* it contains 7 Inches  $\frac{1}{2}$ : At *Naples*, according to *Riccioli*, 8 Inches: At *Genoa*, according to *M. Petit*, 8 Inches  $\frac{1}{2}$ : At *Morocco* and *Fez*, 7 Inches  $\frac{1}{2}$ : In *Languedec*, and some other Parts of *France*, the *Palm* is 8 Inches  $\frac{1}{2}$ .

At *Leghorn* there are two Kinds of *Palms*, the one for Woollens, the other for Silks. The first one Third shorter than the latter.

*PALMA*, in Anatomy, the Inside of the Hand. See *HAND*.



**PALMS**, among Botanists, white Buds, shooting out of Willows, or Sallows, before the Leaf; of the Expansions whereof, the Leaves themselves are form'd. See **BUD** and **GERMINATION**.

**PALM-SUNDAY**, the Sunday next before *Easter-Sunday*; or the last Sunday in *Lent*. See **LENT**.

It has been thus called from the primitive Days, on Account of a pious Ceremony then in use, of bearing *Palms* in Memory of the Triumphant Entry of *Jesus Christ* into *Jerusalem*, eight Days before the Feast of the Passover, described by *St. Matthew* Chap. XXI, *St. Mark* Chap. XI. and *St. Luke*, Chap. XIX.

The Ancients had also other Names for this Day. For 1. they called it *Dominica Competentium*, i. e. *Sunday of the Competents*; because on that Day the Catechumens came to ask the Bishop Leave to be admitted to Baptism, which was conferr'd the Saturday following. See **BAPTISM** and **CATECHUMEN**.

They had also, then, given 'em the *Symbol* or *Credo* to get off by Heart, to be repeated to the Bishop in the Ceremony of Baptism. See **SYMBOL**.

2. They called it *Capitilivium*, the *Sunday of washing the Head*; by reason those, who were to be baptized the following Sunday, were prepared by washing their Head this Sunday.

Some Time afterwards they called it *Indulgence Sunday*; by reason the Emperors and Patriarchs used to distribute Gifts on that Day. See **INDULGENCE**.

**PALMARIS**, in Anatomy, a Muscle serving to contract the *Palm* of the Hand, in grasping.

It arises from the internal Protuberance of the *Humerus*, and by a long and slender Tendon, passes above the annular Ligament to the *Palm* of the Hand; where it expands itself into a large Aponeurosis, which cleaves close to the Skin above, and to the Sides of the *Metacarpus* below, and to the first Phalanx of the Fingers; by which means it makes four Cases for the Tendons of the Fingers to pass thro'.

This Muscle is sometimes wanting, but the Aponeurosis is always there.

**PALMARIS brevis** or *Quadratus*, a Muscle that lies under the Aponeurosis of the first. It arises from the Bone of the *Metacarpus* that sustains the little Finger, and from that Bone of the *Carpus* which lies above the rest. It goes transversely, and is inserted into the eighth Bone of the *Carpus*.

It serves to draw the *Palm* of the Hand into a concave Figure.

**PALMER**, in our antient Writers, is used for a *Pilgrim*; and sometimes for a *Croise*, on Account of a Staff made of the *Palm-Tree* which they ever afterwards bore as a Badge of their Devotion. See **PILGRIM**, **CROISE**, **CROISADE**, &c.

**PALMISTRY**, a Kind of Divination, perform'd by inspecting the *Palm* of the Hand; call'd also *Chiromancy*. See **CHIROMANCY**.

**PALMULARII**, more properly call'd **PARMULARII**, in Antiquity, a Sort of Gladiators, who fought, arm'd with a Sort of a little Buckler, call'd *Parma*. See **GLADIATOR** and **PARMA**.

**PALPABLE**, something that may be perceiv'd by the Senses, especially the Sense of Feeling.

Hence *Impalpable-Powder*. See **POWDER**.

**PALPEBRÆ**, in Anatomy, the *Eye-Lids*; or those moveable Covers which serve to screen, and defend the Eyes. See **EYE**.

They consist of a thin muscular Membrane, covered without-side with a strong, yet flexible Skin; and lined within-side with a Production, as some think, of the *Pericranium*. Their Edges are fortify'd with a soft Cartilage, by Means whereof, they are enabled to close the better.

Out of these Cartilages grow a Palissade of stiff Hairs call'd *Cilia*; of great Use to warn the Eye of the Approach of Danger, either in sleeping or waking; to keep off Motes, Flies, &c. in the Air, and break the too fierce Impression of the Rays of Light. See **CILIA**.

These Hairs, it is observ'd, only grow to a certain convenient Length, and never need cutting, as most others do; add to this, that their Points stand out of the way; those of the upper Eye-lid being bent upwards, as those of the lower downwards; so nice was Nature, in such small Matters.

At the Commissure, or Joining of the upper and under Eye-lids are formed two Angles call'd *Canthi*. See **CANTHUS**.

In the Inner of these is a Gland call'd *Glandula Lachrymalis*, from which proceed two or three Ducts, which, opening on the inner Surface of the Eye-lid, serve to moisten the Ball of the Eye, and keep its Membranes from growing harsh and dry. See **GLANDULA LACHRYMALIS**.

Near the other Angle, is a Gland call'd *Innominata*; which helping by several Branches to irrigate the Eye, the Over-plus is carried to the greater Angle and transmitted to the Nose thro' the *Puncta Lachrymalia*. See **LACHRYMALIA PUNCTA**.

By these Glands it is, that the Humour, call'd Tears, is secret'd. See **TEARS**.

The Eye-lids are both moveable, especially the upper, which has two Muscles to raise and depress it, call'd *Attollens*, and

*Deprimens* or *Orbicularis*. See **ATTOLLENS**, **DEPRIMENS**, &c.

In Quadrupeds the lower *Palpebra* is moveable; and the smaller; in Birds, on the contrary, the lower is immoveable, and the greater. Animals that have hard Eyes; as Lobsters, and the Generality of Fishes have no *Palpebræ*; as being sufficiently secured without.

In the Generality of Brutes is a Kind of third Eye-lid, which is drawn, like a Curtain, to wipe off the Humidity which might incommode the Eyes; it is called the *Nictitating Membrane*. See **NICTITANS**.

The Monkey is almost the only one that wants it; as being furnish'd, like Man, with Hands to wipe the Eye on Occasion.

**PALPITATION**, in Medicine, a preternatural Beating; or Pulsation of the Heart. See **PULSE**, &c.

The *Palpitation* of the Heart, is an Irregularity in the Motions of that *Viscus*, whereby it is driven with Violence towards the Ribs, in its Contraction, attended with a great Feebleness of Pulse. See **HEART**.

There are several Degrees of *Palpitation*: Sometimes 'tis great, sometimes moderate, sometimes small; 'tis sometimes so impetuous, as to be heard and seen.

The *Trepidation* or Trembling of the Heart differs from the *Palpitation*. In the former the Pulsations are faint, slow, and faltering; in the latter the Shakes are immoderate, violent, and convulsive. See **TREPIDATION**.

The Cause of the *Palpitation*, according to *Boerhaave*, is usually an inordinate and violent *Impetus* of the vital Spirits into the *Villi* of the Heart; as in violent Passions, sudden Fear, hysteric Affections, violent and sudden Motions. Sometimes it is owing to an Irritation of the Fibres of the Heart, occasion'd by some sharp *Stimulus*; as an Inflammation of the Heart or *Pericardium*, or some other Disorder thereof from a Stone, Worms, Hairs, an *Aneurisma*, &c.

Sometimes it arises from a thick, copious, polypous Blood; and sometimes from the Arteries, being become cartilaginous or bony; or their Extremities obstructed therewith.

In the *Diction. de Trevoux*, an Author, himself afflicted with this Disease, makes a particular Disquisition into its Nature, and Cause.

Anatomy, he observes, shews us a great Number of occasional Causes of this Disease: But Physicians are still at a Loss to determine the efficient Cause.

The Moderns, with better Reason than the Antients, seek for it in the Blood of the Pulmonary Artery, which is supposed to rebound impetuously towards the right Ventricle of the Heart; by being prevented from pursuing its Course towards the other Vessels of the Lungs, stopp'd by some Obstruction, or compressed from various Causes.

In opening the Carcasses of People dead of this Disease, or subject to it while living, Worms or *Polypus's* have been found in the Ventricles of the Heart, and Dropsies or Abscesses in the *Pericardium*.

In some the Heart is extraordinarily big, and the Pulmonary Artery dilated to double, or quadruple its ordinary Capacity, with Obstructions of the Pulmonary Vein, consisting of cartilaginous Matters which cram its Cavity so close, that as *Blanchard* tells us, in his Anatomy, 'tis sometimes difficult even to get a Pin in.

From these Observations, some have concluded, that the Capillary, &c. Vessels of the Lungs, opposing an impassable Dike to the Course of the thickest Part of the Blood, driven thither by the Contraction of the Heart, so as only a small Quantity can find a Passage through them; the first must make an Effort against their Sides, and oblige them to give way and stretch them out, in Proportion to the Quantity of Blood impelled against them by the Contraction of the Heart.

But because the Pulmonary Artery cannot stretch wide enough to receive all the Blood of the right Ventricle driven thither at a Contraction; and since the Blood, by reason of Obstructions, cannot continue its progressive Motion, in Proportion to the Velocity wherewith it is impelled, by the Contraction of the Heart; the Heart at each Contraction fails to express into the Pulmonary Artery, all the Blood it contain'd in its right Ventricle.

Thus that Part of the Blood which remains, receiving the whole Shock impressed by the Contraction, returns it again to the Heart by Reflection, striking impetuously against its Sides, and making it bound and shoot towards the Ribs.

The same Consequences will arise from Obstructions of the *Aorta*, preventing the entire Evacuation of the left Ventricle; and generally, from all Obstructions or Compressions of the Vessels, as *Polypus's*, Abscesses, and Dropsies in the Parts near the Heart. As to Worms, their biting, and gnawing of the fibrous Parts of the Heart, must occasion violent Reflexes of Spirits towards the Brain, follow'd with a copious Effusion of other Spirits into the Nerves of the Lungs, by the Consent of Parts. And by such Means violent and convulsive Contractions will be occasion'd throughout the whole Texture of the Lungs, which opposing the free Passage of the Blood may occasion a *Palpitation* of the Heart.



The same Disease may arise from a Compression of the Lungs, occasioned by the extraordinary Rarefaction of vicious and fermentative Juices, sojourning in the Stomach and Intestines; which dilate those Parts to that Degree, that the Diaphragm and Lungs, being extremely straightened, the Blood cannot circulate without Abundance of Difficulty; a *Palpitation* therefore must ensue; which will last as long as that Rarefaction in the first Passages.

Such, according to modern Physicians, are the immediate Causes of the *Palpitation* of the Heart: The remote or occasional Causes are whatever may occasion such Obstruction of the Pulmonary Artery, &c.

In the same Work, another Physician lays down Winds or *Flatus's*, as a Cause of the *Palpitation*; he adds, that the Ancients, to a Man, look'd on that as the most ordinary Occasion thereof: In Effect, says he, from this Source may be deduced a Multitude of Causes of sympathetic *Palpitation*, by Means of the Ventricle, the Diaphragm, Mediastin, &c.

Others will have the sole Cause of *Palpitation* to be a viscid Blood; which, by its extraordinary Rarefaction, dilating the Pulmonary Artery, and, by that means, opening the Cavity of its Capillary Vessels towards their Extremes; or, by this Dilatation, compressing the other little Vessels of the Lungs, prevents the Blood from continuing its circulating Motion with Freedom: and, by that means, opening the Cavity of its Capillary Vessels towards their Extremes; or, by this Dilatation, compressing the other little Vessels of the Lungs, prevents the Blood from continuing its circulating Motion with Freedom; and thus occasions a *Palpitation of the Heart*.

All these Authors hold the *Palpitation* a dangerous Disease, and *Galen* observes, that those troubled with it, when young, never live to grow old.

According to M. *Pison*, a Doctor of the Faculty of *Paris*, the *Palpitation* of the Heart may arise, either from a too abundant Serosity, swelling the proper Membrane of the Heart; as *Galen* found to be the Case in opening a Monkey; or from too great a Quantity of Water contained in the *Pericardium*; by which means, the Heart being straighten'd, and disabled from moving with its usual Freedom, is obliged to make several Jerks or half Beats, instead of the regular Motions it had before; or, again, from a Serosity thrown into the Ventricles of the Heart, either from the grand Vessels which furnish the Blood, or from the Lungs, or from the Brain.

Of these three Causes, the most ordinary seems to be the two great Extension of the *Pericardium*, by Water, as it is found to be in the Bodies of most of those open'd after this Disease. See *PERICARDIUM*.

The different Causes have their different Symptoms. The boiling Serosity, thrown out of the Blood-Vessels into the Heart, shews itself by sudden Beatings of the Temples, Whizzings in the Ear, dim Sight, wandering Pains in various Parts of the Body.

In that produced by the Abundance of Water in the *Pericardium*, or from the Humour swelling the proper Membrane of the Heart; the Heart seems as if suffocated in Water; the Pulse weak, the *Palpitation* continual, or nearly so, together with a Feverishness, and a Difficulty of breathing. To which may be added, that the Disease comes by little and little.

The *Palpitation* arising from the Serosity is cured by bleeding, the other by purging.

*PALSGRAVE*, a Term used among the *Germans*, of the same Import with *Palatine*. See *PALATINE*.

It is compounded of the Latin, *Palatium*, and the Dutch, *Grave*, Governor, i. e. Governor or Superintendant of a Prince's Palace. See *GRAVE*.

*PALSY*, *Paralysis*, in Medicine, a Disease, wherein the Body or some of its Parts, lose their Motion, and sometimes their Sensation.

The Causes of the *Palsy* are an impeded Influx of nervous Spirits into the *Villi* of the Muscles; or of the arterious Blood into their Vessels, which may happen from some Fault, either in the Brain, the Nerves, Muscles or their Vessels.

The *Palsy* is said to be *perfect* or *complete*, when there is a Privation of Motion and Sensation at the same Time.

*Imperfect*, when one of the two is destroy'd, the other remaining.

The *Palsy* is either Universal, Lateral, or Particular.

The first, call'd *Paraplegia* or *Paraplexia*, is a general Immobility of all the Muscles that receive Nerves from the *Cerebrum* or *Cerebellum*, except those of the Head: Its Cause is usually supposed to reside in the Ventricles of the Brain, or in the Root of the spinal Marrow.

*Ermuller* makes this a different Disease from the *Paralysis*, which he supposes to consist in a Relaxation of the Ligaments and Membranes serving for Motion; but the *Paraplegia* in a mere Obstruction of the Nerves.

The *Paraplegia* is seldom a primary Disease, usually a secondary one, attending or following an Apoplexy, *Scorbutus*, *Carus*, *Arthritis*. See *PARAPLEGIA*.

The second, call'd *Hemiplegia* is the same Disease with the *Paraplegia*; only that it affects but one Side of the Body: Its Cause is the same, only restrained to one Side of the Brain or spinal Marrow.

The third, call'd *particular Paralysis* or *Palsy*, is where some particular Part or Member alone is affected; *Eg.* where the Motion of the Arm or Leg is destroy'd.

Dr. *Quincy* observes, that a *Paralysis* where Motion is destroy'd, Sensation remaining, may be produced, first, by too much Humidity, stretching the muscular Fibres in Length. Secondly, from cold Things, which thicken the Juices. Thirdly, from external Compression. Fourthly, from hot Things, which straighten the supple Membranes and Vessels. All these Causes affect either the Blood, or Muscles; the former, by thickening that Tumour so that it cannot suddenly rarify; and the latter, by relaxing the Muscles into too great a Length, by too much Moisture, or contracting them into too narrow Dimensions by too much Heat. But the Sensation may yet be preserv'd, because, notwithstanding all these Hindrances, the animal Spirits and Nerves may not be at all affected.

The Causes of the *Paralysis* where Sensation is destroy'd, Motion remaining, he observes, may be all those Things which so far thicken the animal Spirits in the Nerves, arising below the *Cerebellum*, that tho' indeed they may flow into the Muscles thro' the Nerves, and there, by the Occursion of some Liquor secreted from the Blood, rarify; yet they cannot alone flow in such Quantities into the Nerves, as from a very slight Cause to be made to undulate; whence Sensation will cease without losing the Motion of the Part.

The Causes of this Kind are also whatsoever render those Nerves more lax and moist, and so less apt for lively Vibrations; the animal Spirits flowing in the mean time into the Muscles, from whence Motion is perform'd without Sensation.

The Cure of the *Palsy*, according to *Waldschmidt*, does not differ much from that of the Venereal Disease. Internally, Mercurials, Sudorifics, and Decoctions of the Woods are good: Externally, Unctions, particularly of spirituous and penetrating Things, not on the Part affected, but on the *Spina Dorsi*.

*PALUDAMENTUM*, in Antiquity, a Garment wore by the *Romans* in Time of War; being the Coat of Arms of their principal Men, especially the General; who, for that Reason, were distinguish'd by the Name *Paludari*.

The Soldiers, having only short Coats, were therefore named *Sagati*. See *SAGA*.

This Garment was open on the Sides, with short Sleeves, like Angels Wings, and came down no lower than the Navel.

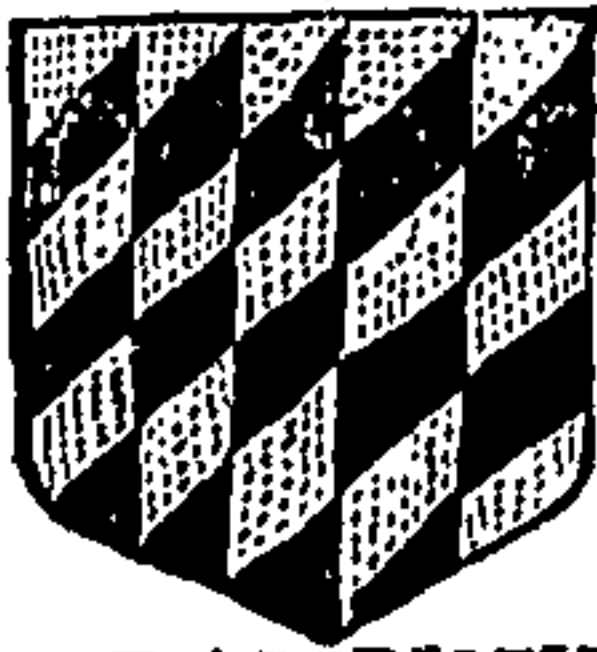
It was either white or red; and *Valerius Maximus* remarks it was an ill Omen to *Crassus*, that they gave him a black *Paludamentum*: *Pullum ei traditum est Paludamentum, cum in praelium euntibus album aut purpureum dari solet.*

*Cornutus* says they wore the *Toga* in Peace, and the *Paludamentum* in War. Hence *Togam Paludamento mutavit*.

*PALY*; when an Escutcheon is divided into six, eight, or ten even Divisions *Pale-wise*, i. e. by perpendicular Lines drawn from the Top to the Bottom: It is blazoned *Paly*, of six, eight, or ten &c. Pieces. See *PALE*.

If the Number be odd, then the Field is first named, and the Number of the *Pales* specified.

The like is to be understood also of *Barry* and *Bendy*. See *BARRY*, &c.



*PALY-BENDY* is, when a Coat is divided, both *Pale* and *Bend-wise*; as here: The Field *Paly-Bendy*, *Topaz* and *Diamond*.

*PAMPINIFORME Corpus*, in Anatomy, a Sort of *Plexus*, or Knot of Blood-Vessels, form'd by the Spermatic Veins; which, in their Progress through the *Testes*, constitute a Body, call'd *Corpus Varicosum Pampiniforme*, or *Pyramidale*. See *PYRAMIDALE CORPUS*. See also *TESTICLE*, *SPERMATIC VEIN*, &c.

*PANACEA*, an universal Medicine; or a Remedy for all Diseases. See *ELIXIR*, &c.

The Word is form'd from the Greek *παν* all, *αἰσιν*, I cure.

The accurate *Boerhaave* overturns the Notion of *Panacea*; and shews, from the different Causes, Natures, Effects, Scars, &c. of Diseases, that several may be cured by one Medicine; but, all, by none.

He observes, that the most universal Remedies known are *Water*, *Fire*, *Mercury* and *Opium*; and adds, that by these alone, cautiously disguised, some have acquir'd the Reputation of universal Physicians. See *MERCURY*, *OPIMUM*, &c.

*PANACES*, or *PANACEOUS*, a Name applied to several Plants, by reason of the extraordinary Virtues ascribed to them.

There are three of these *Panaces*; the *Heracleon*, *Aplepsan*, and *Chironian*; so called from their Inventors, *Hercules*, *Aclepias*, and *Chiron*.

The first is the *Spondilium majus* of *J. Bauhin*; from the Root and Stem of this is drawn, by Incision, the Gum *Opoponax*. See *OPOPONAX*.



The *Aflepian*, according to some Botanists, is a Kind of *Ferula*, which *Gaf. Bauhin.* calls *Libanotis Ferula folio & semine.*

The *Chironian*, according to some is a Kind of *Helianthemum.*

**PANADA**, or *Panarella*, a Diet, consisting of Bread boil'd in Water, to the Consistence of a Pulp; given to sick Persons whose Digestion is weak, or to whom stronger Foods would be improper. See **DIET.**

'Tis sometimes made thin; to serve as a Drink; and sometimes likewise sweetened, &c. to render it more palatable.

The Word is form'd from the principal Ingredient *Panis* Bread.

**PANAGE** or **PANNAGE** in our ancient Customs. See **PANNAGE.**

**PANARIS** or **PAYORYCHIA**, in Medicine, a painful Tumour or Inflammation, arising on the Extremities of the Fingers or Toes, popularly call'd, among us, *Whitloe.*

It is occasion'd by a sharp or saline Humour, lodg'd between the Bone and *Periosteum*, and the Nerves and Tendons.

An infallible Remedy for it, is to open it either with the Point of a Lancet, or with some Unguent, and then to dip the Finger in a *Lixivium* of Vine Ashes.

The *Panaris* is exceedingly restless: Beside the mild Kind call'd *Whitloe*, there is also a malignant Kind, call'd a *Fellon.* It sometimes tends to an Imposthume; but more usually Gangrenes.

The Word is form'd from the Latin *Panaricium*, which we find in *Apuleius*; and that from the Greek *παρωνυχία*, i. e. an Abscess at the Root of the Nails.

For the *Panaris*, after bleeding, and the universal Remedies, *Dr. Burnet* orders the Patient to hold his Finger a good while in a rotten Egg, or a putrify'd Mouse. *Helmont* adds, he has seen a Finger as big as an Arm, by means of a *Panaris*, cured by rubbing it with Blood, then wrapping it up in a Mole-Skin. *Riverius* adds, that to hold the Finger affected in a Cats Ear, cures a *Panaris* in two Hours. *Observat. 63. Cent. 4.*

**PANATHENÆA**, in Antiquity, a Feast celebrated at *Athens*, in Honour of *Minerva*, whom the Greeks call'd *Athenæ.*

*Harpocration* and *Stuidas* refer their Institution to *Erichthonius IV.* King of *Athens* who lived before *Theseus.* *Theodoret*, alone, says the Feast was establish'd by *Orpheus.*

Be this as it will, till *Theseus*, this was a particular Feast of the City of *Athens*, and was call'd simply *Athenæa*: But that Prince uniting all the People of *Attica* into one Republic, they all assisted at the Feast; whence the Name *Panathenæa*, i. e. Feast of all *Attica.*

In Effect all *Attica* was present; and each People sent a Bullock for the Sacrifices, and for the Entertainment of the vast Multitude of People assembled.

If they eat a great deal, it appears they did not drink less; witness the Vessels they drunk out of, which were call'd *Panathenæica*, each of which held two Congiuses and a half. See **CONGIUS.**

There were two Kinds of *Panathenæa*; the *Great*, celebrated every five Years; and the *Little*, every Year, or every three Years; if we may credit the Author of the Argument of *Demosthenes's* Oration against *Midias.*

In the *Panathenæa* was held one of the Processions which the Antients call'd *Pompæ*, compos'd of the briskest old Men, each whereof bore, in his Hand, an Olive-Branch; whence they were call'd *Thallopophori.*

This was to do honour to *Minerva*, in Quality of Inventress of the Olive-Tree; on which Account they had likewise Combats, wherein the Victors were rewarded with Vessels of Oil, and crown'd with Olive-Crowns. It was a Crime in any of the Spectators to be clad in black.

The Ceremonies were the same in the great, and the little *Panathenæa*; excepting a Banner wherein the Actions of the Goddess were represented in Embroidery perform'd by Maids, with the Names of those who had distinguish'd themselves in the Service of the Republic; which was only bore at the Greater.

**PANCARPUS**, in Antiquity, a Sort of Spectacle, or Show which the *Roman* Emperors frequently exhibited to the People. See **SPECTACLE.**

The *Pancarpus* was a Kind of Chace, or Hunt. For the Performance hereof, a Number of Beasts, as Hares, Deer, Bulls, &c. were shut up in the *Circus* or Amphitheatre; into which Trees were frequently transplanted, so as to form a Kind of Forest, wherein the Beasts were let loose; whence the *Pancarpus* was also call'd *Sylva.*

The Beasts were thus abandon'd to the People, i. e. to all who were dispos'd to share in the Pleasure of the Chace; who pursued, shot, killed and cut in Pieces all they could lay hold of.

*Heliogabalus*, the *Gordian's* and *Probus*, gave this Diversion very frequently.

*Cassiodorus*, *Cujas*, *Pitbon*, &c. make the *Pancarpus* and *Sylva* the same thing; *Salmastus* will have them different. The *Sylva*, according to him, was a Diversion, as that above described; but the *Pancarpus* a Combat, wherein robust People,

hired for that Purpose, fought with wild Beasts; which Opinion he confirms from *Cassian*, *Justinian*, *Claudian*, *Firminus*, *Manilius* and *Cassiodorus.*

The Word is form'd from the Greek *παν* all and *καρπος* Fruit.

Hence the Name was also given by the *Athenians* to a Sacrifice, wherein all Kinds of Fruits were offer'd.

**PANCHREAS** } See **PANCREAS.**  
**PANCHREATIC** } See **PANCREATIC JUICE.**

**PANCHREST**, *Panchrestos*, in Medicine, a *Panacea*, or Remedy for all Distempers.

The Word is form'd of the Greek *παν* all, *χρησ* *Utilis*, useful.

**PANCHYMAGOGUE**, in Pharmacy, an Extract of Aloes, Rhubarb, Senna, Scammony, Jalap, Agaric, Coloquintida and Black Hellebore. See **EXTRACT.**

Its Name arises hence, that being a Composition of all the Kinds of Purgatives, it has the Virtue of purging all the Humours of the Body at once. See **PURGATIVE.**

The Word is form'd from the Greek *παν* all, *χυμος* *Succus*; Juice; and *αγω* *ducere*, to draw off.

**PANCRATIUM**, among the Antients, a Kind of intermix'd Exercise, consisting of the *Lucta* or Wrestling, and Boxing or *Pugilata.*

The *Pancratiium* was the third *Gymnastic* Exercise, and was not introduced till long after the former. See **GYMNASTIC.**

The People, who engaged in these Exercises, were call'd *Pancratiastes*; which Name was also given to such as did not confine themselves to one Exercise, but succeeded in several different ones.

The Word is compounded of *παν* all, and *κρατος* Force.

**PANCREAS**, in Anatomy, popularly call'd the *Sweetbread*, a huge conglomerate Gland; or a Body compos'd of an infinite Number of little Glands, tied up in the same common Membrane; situate at the Bottom and Hind-part of the Stomach, and reaching from the *Duodenum* to the Spleen. See **GLAND**, **STOMACH**, &c.

The Glands it consists of are bound together both by the Vessels, and by a Membrane proper to each of them; and all together are loosely cloath'd with a thin Membrane, from the *Peritonæum.*

Its Colour is Carnation; its Form like that of a Dog's Tongue, 8 or 9 Fingers long,  $2\frac{1}{2}$  broad, and one thick; its Weight 4 or 5 Ounces.

Its Arteries come from the *Celiac*; its Veins go to the *Porta*; its Nerves come from the *Hepatic plexus.*

Each little Gland has an excretory Duct, which uniting form one common excretory Duct, call'd *Ductus Pancreaticus Vitsungii*, from *Witsungius*, Professor of Anatomy at *Padua*, the Discoverer thereof.

This Duct, running along the Middle of the *Pancreas*, opens into the Cavity of the *Duodenum*, generally by two Mouths, the one four or five Fingers below the *Pylorus*; sometimes at the same Orifice with the *Ductus Cholidicus*; the other lower. 'Tis of the Bigness of a Raven's Quill; near the Intestines, but less, further off. *De Graaf* observes, that it is frequently double.

The *Pancreas* serves to separate a peculiar Humour from the Blood, call'd the *Pancreatic Juice.* See **PANCHREATIC JUICE.**

The Word is form'd of the Greek *παν* all, and *κρεας* *Caro*, Flesh.

**PANCREAS Asellii**, in Comparative Anatomy, is a large Gland in the Middle of the Mesentery of some Brutes, especially Dogs; to which, most of the Lacteals resort; and whence the Chyle is conveyed, by large Vessels, that have their Rise immediately from the Intestines, and call'd *Lactea secundæ Generis.* See **MESENTERY.**

It has its Name from the Author who first took notice of it *Asellius.* See **LACTEAL.**

*M. Perrault* observes, that the Fish, call'd *Place*, has 440 *Pancreas's*; tho' it has but five Ducts opening into the Intestines, each of which correspond to 80 *Panchreas's* and 2 of them to 100 a-piece.

**PANCREATIC Juice**, an insipid, limpid Juice, or Humour separated from the Blood, and prepared in the *Pancreas.* See **PANCREAS.**

This Juice is not acid, as most Authors have supposed; nor alkaline, as some others; but, a little saline, and much resembling the *Saliva* in its Origin, Vessels, and Properties.

'Tis carried by the *Pancreatic* Duct into the *Duodenum*, where it serves to dilute the Chyle, to render it more fluid and fit to enter the Mouths of the Lacteals; and perhaps to temper and dilute the *Bile*, to change its Viscidity, Bitterness, Colour, &c. and make it mix with the Chyle, in order to reduce the several Tastes, Odours, and Properties of the several Foods into one homogeneous one. See **BILE**, **CHYLE**, and **CHYLIFICATION.**

*Theo. Janssen* will have the *Pancreatic Juice* to have been known to *Hippocrates* and *Galen.*

*De Graef*, a *Dutch* Physician, has found Means of collecting a Quantity of it for Experiments; and has publish'd a Treatise express'd *de Succo Pancreatico.*



*Brunner* relates, that the *Pancreatic Duct*, in several Dogs having been tied, and cut; they still continued to eat, and drink, and perform all the other Functions of Life as usual. One of them seem'd only to have the better Stomach for it.

**PANDECTS, PANDECTA**, in Juris-prudence, the Digest, or Collection made by *Justinian's* Order, of 534 Decisions or Answers of the antient Lawyers, on so many Questions occurring in Law; to which that Emperor gave the Force and Authority of Laws by the Epistle prefixed to them. See **DIGEST**.

The Word is form'd from the Greek *πανδία*, i. e. Compilation, or a Book containing all Things. Others, as *Bartoli*, will have it form'd from *παν* all; as if these Books contained the whole Doctrine of the Law.

The *Pandects* consist of fifty Books, and make the first Part of the Body of the Civil Law. See **CIVIL LAW**.

They were design'd by two *ππ*; but the Copists taking those *ππ* for *ff*, the Custom arose of quoting them by *ff*.

*Papias* extends the Signification of *Pandects*, to the Old and New Testament.

The *Florentine Pandects* are those printed from a famous ancient Manuscript at *Florence*.

**PANDECTA Medicinæ**. There are also *Pandects of Medicine*, a Kind of Dictionary of Things relating to Medicine, compiled by *Matt. Sylvaticus* of *Mantua*, who lived about the Year 1297.

*Leunclavius* has also publish'd *Pandects of Turkey*; and *Bishop Beveridge Pandects of the Canons*.

**PANDICULATION**, that Restlessness, Stretching, and Uneasiness, which usually accompany the cold Fit of an Intermitting Fever. See **INTERMITTING FEVER**.

It is suppos'd to arise from a convulsive Dilatation of the Muscles, whereby Nature endeavours to throw off something that disturbs her.

**PANDORON**, a musical Instrument, used among the Antients; resembling the Lute. See **LUTE**.

It has the same Number of Strings; but they are of Brasses, and of Consequence give a more agreeable Sound.

Its Frets are of Copper, like those of the Cistron; its Back flat, like that of the Guitarre; and the Rims of its Table, as well as its Ribs, cut in Semi-circles.

*Du Cange* observes, that *Varro*, *Isidore*, and others of the Antients, mention it as having only three Strings.

The Word, according to some, is form'd from the Greek *παν* and *δωρον*, i. e. all Gift, or all Sorts of Gifts. *Isidore* derives the Name from its Inventor *Pandorus*; others from *Pan*, to whom they attribute its Invention, as well as that of the Flute.

**PANEGYRIC**, an Oration in Praise of some extraordinary Person, or Virtue. See **ORATION**.

The *Panegyric* is rank'd among the demonstrative Kinds of Orations. See **DEMONSTRATIVE**.

It has its Name from *παν* all, and *ἀγείρω* I assemble, because it was anciently held in public, and solemn Assemblies of the *Greeks*, either at their Games, their Feasts, Fairs, or religious Meetings.

To make them the more solemn, they used to begin with the Praises of the Deity, in whose Honour the Games, &c. were celebrated; then they descended to the Praise of the People or Country where they were celebrated; then to the Princes or Magistrates who presid'd at them; and at length, to the Champions, especially the Conquerors who had gain'd the Prize.

*F. de Colonia* lays down two Methods, or Series's observ'd in *Panegyrics*.

The *Artificial*, where, without any Regard to the Order of Time, every Thing is reduc'd to certain Heads. Thus, *Tully* refers the whole Praise of *Pompey* to his Skill in War, his Virtue, Authority, and Felicity.

The other *Natural*, wherein the Order and Time of History are observ'd. This Series he divides into three Periods, the Space before the Person's Birth, that wherein he lived, and if he be dead, that which follow'd his Death. This Natural Series requires much less Art, Genius, &c. than the other.

The Places or Sources of *Panegyric* are chiefly the Family, Country, *Anguities* at his Birth, his Virtues, the Talents of his Body and Mind, Honours, Riches, Manner of his Death, and the Consequences thereof.

**PANEGYRIC**, is also the Name of a Church-Book, in use among the *Greeks*; so call'd, as consisting of *Panegyrics* or Discourses in Praise of *Jesus Christ* and the Saints. See **GREEK**.

'Tis found in MS. in most Churches; but is not the same in all; each Church having its particular Saints; and the Compilers of this Kind of Books, usually suiting their Collections to the Taste of their own Devotion.

They are dispos'd according to the Order of Months, and frequently consist of 12 Volumes, answering to the 12 Months of the Year.

**PANEL** or **PANNEL**, in Law, is deriv'd by *Spelman*, from *Pagella* a Schedule, or Page; in which Sense we say a *Panel* of Parchment, a Counter-*Pane* of an Indenture, &c.

But it is more commonly used for a Schedule or Roll, containing the Names of such Jurors, as the Sheriff returns to pass upon the Trial.

Hence the *Empanelling* of a Jury is the Entering of their Names, by the Sheriff, into a *Panel*, or little Schedule of Parchment. See **JURY**. In *Panello Affixe*, &c.

*Coke on Littleton* will have *Panel* to be an *English* Word, signifying a little Part; as being a Diminutive of the Word *Pane*, Part. But *Spelman* takes this for an Over-sight.

**PANEL**, in Joinery, &c. See **PANNEL**.

**PANES**, in the antient Theology. See **SATYR**.

**PANIC**, or *Panic-Fear*, a Term used for a needless, or ill-grounded Fright.

*Polyenus* fetches the Origin of the Phrase from *Pan*, one of the Captains of *Bacchus*, who, with a few Men, put a numerous Enemy to rout, by a Noise which his Soldiers raised in a rocky Valley, favour'd with a great Number of *Eccho's*. This Stratagem making their Number appear much greater than it really was, the Enemy quitted a very commodious Encampment, and fled.

Hence all ill-grounded Fears have been call'd *Panicks* or *Panic Fears*; and 'twas this gave Occasion to the Fable of the Nymph *Eccho's* being belov'd by that God.

Others derive the Origin of the Expression hence, that in the Wars of the *Titans* against the Gods, *Pan* was the first who struck Terror into the Hearts of the Giants. *Theon* on *Aratus* says, he did it by means of a Sea-Shell which serv'd him for a Trumpet, whereof he was the Inventor.

**PANICULA, PANICLE**, in Botany, called also *Faba* a soft woolly Beard, or String, whereon the Seeds of some Plants hang, pendulous, as in Reeds, Miller, &c.

Such are hence called *Paniculated Plants*. See **PLANT**.

**PANNAGE, PANAGE**, or **PAWNAGE**, are used in our Law-Books, &c. for the Mast of Woods; as of Beech, Acorns, &c.

As also for the running and feeding of Swine or other Cattel in Forests, and the Monies taken by Agistors for the same.

*Pannagium liberum*, or free *Pannage*, was a Liberty of free running of Swine in certain Forests and Woods; which was a Privilege, granted to certain private Persons, and several religious Houses. *Linwood* defines *Pannagium Pastus Pecorum in Nemoribus, & in Silvis, ut pote de Glandibus & aliis fructus arborum sylvestrium, quarum fructus aliter nec solent colligi*.

It is also mentioned 20 Car. II. *Quisque villanus habens decem Porcos, dat unum Porcum de Pannagio*; by which it appears, that one Hog in 10 was given to *Pannage*.

**PANNEL**, in Law. See **PANEL**.

**PANNEL**, or **PANEL**, in Joinery, &c. a Tympanum or square Piece of thin Wood, sometimes carv'd, fram'd, or groov'd in a larger Piece between two Montants or upright Pieces, and two Traverses or Cross-Pieces.

Hence *Pannels* or *Panes* of Glass, are Compartiments or Pieces of Glass of various Forms, Square, Hexagonal, &c.

**PANNEL**, in Masonry, one of the Faces of a hewn Stone. See **STONE**.

*Pannel of a Saddle*, two Cushions full of Hair or Flocks, placed on each Side the Saddle to prevent the Bow from hurting the Horse. See **SADDLE**.

The Word is form'd from the *French*, *Panneau* of *Pan*, flat-side.

**PANNICULUS**, in Anatomy, a Term frequently used for a Membrane. See **MEMBRANE**.

Hence, *Panniculus adiposus*, &c. is the same with *Membrana adiposa*, &c. See **ADIPOSA**, &c.

The Word is *Latin*, form'd by Diminution, from *Pannus*, Cloth, q. d. a little Cloth or fine Web.

**PANNICULUS Carnosus**, is a fleshy Membrane, which the antient Anatomists suppos'd to be common to the whole Body; and to be the fourth Integument or Covering thereof, after the *Epidermis*, *Cutis*, and the *Adiposus*. See **SKIN**.

This fleshy *Pannicle*, according to them, is a thick Membrane, which covers the whole Body; and even becomes muscular in some Parts: But the latest Anatomists deny any such Membrane in the human Body; maintaining, that what the Antients call'd the fleshy *Pannicle*, is only the fat or adipose one. Dr. *Drake* makes it a double Membrane, one Half of which forms the *Membrana adiposa*, the other Half the *Membrana communis* of the Muscles. The Use the Antients ascrib'd to the fleshy *Pannicle* was to wrinkle and contract the Skin; but the Truth is, where-ever the Skin wrinkles, there are particular Muscles for the Purpose, call'd *Cutaneous Muscles*. See **CUTANEOUS**.

These Muscles the Antients own'd; but said their Office was confin'd to particular Motions; adding, that there are Places where no Fat is found between the *Cutis* and the fleshy *Pannicle*; which is false.

Further, even in Animals which do move the Skin; this *Pannicle* is no more than a cutaneous Muscle, as well as the *Dartos*. Some of the modern Anatomists, however, admit the fleshy *Pannicle*, and deny the adipose one; supposing the latter, in reality, only a Part of the former. See **FAT** and **FLESH**.

**PANNIER**, in Architecture. See **CORBEL**.

**PANNUS**,



**PANNUS**, in Medicine, &c. a Disease of the Eye, popularly call'd the *Web*; and by the *Arabs*, *Zebel*.

The *Pannus* is an Excrescence arising on the *Adnata* or *Conjunctiva*; less hard and membranous than the *Unguis*; and representing a Web, or Tissue of little Veins swell'd with Blood. See **CONJUNCTIVA**.

Its Cause is an Obstruction of the Blood in the minute Vessels of that Tunic. Its Cure is almost the same with that of the *Pteridium* or *Unguis*; between which, and the *Pannus*, there is a great Affinity. See **PTERIDIUM**.

The chief Difference is, that in the *Unguis*, the membranous Excrescence only covers Part of the Eye, after the manner of a Nail; whereas in the *Pannus* it covers the whole.

**PANTALOO** or **PANTALON**, the Name of an ancient Garment, frequent among our Fore-fathers, consisting of Breeches and Stockings all of a Piece.

The Word comes from the *Italians*, who first introduced this Habit, and who are called *Pantaleoni* from St. *Pantaleon*, who was formerly their Patron.

**PANTALOO**, on the Theatre, is a Buffoon or Mask who performs High and Grotesque Dances, and shews violent and extravagant Postures and Airs.

The Word is also used for the Habit or Dress these Buffoons usually wear; which is made precisely to the Form of their Body, and all of a-piece from Head to Foot. Hence those who wear a Habit of this Kind, for Convenience, under their other Cloaths are call'd *Pantaloons* of *Venice*.

**PANTHEA**, among the *Romans*, were single Statues; composed of the Figures or Symbols of several different Divinities. See **STATUE**.

Father *Joubert*, who calls them *Pantheons*, and who has observed them on several Medals, says their Heads are most commonly adorn'd with Symbols belonging to several Gods.

An Instance hereof we have in a Medal of *Antoninus Pius*; which at the same time represents *Serapis*, by the Bushel it bears; the *Sun*, by the Crown of Rays; *Jupiter Ammon*, by the Ram's Horns; *Pluto*, by the large Beard; and *Esculapius*, by the Serpent twisted in his Hand. See **STATUE**.

M. *Baudelot*, in a Dissertation on the *Lares*, will have the *Pantheons* to have had their Rise from the Superstition of those, who, taking several Gods for the Protectors of their Houses, united them all in the same Statue, by adorning it with the several Symbols, proper to each of those Deities. See **LARES**.

**PANTHEON**, in Architecture, is a Temple, or Church of a circular Form; dedicated to all the Gods, or all the Saints. See **TEMPLE** and **CHURCH**.

It is thus named from the Greek *παν* all, and *θεος* God.

The *Pantheon* of ancient *Rome*, is, of all others, the most celebrated, and that whence they all take their Name. It was built by *Agrippa*, Son-in-law of *Augustus*, in his third Consulship, 25 Years before *Christ*. It was dedicated by him to *Jupiter Ultor*, *Jupiter* the Revenger; and had the Name *Pantheon*, by reason of the great Number of Statues of the Gods ranged in Niches all around; and because built round, to represent Heaven, the Residence of all the Gods. It had but one Door, and one Window; receiving all its Light from the Top of its Dome.

The Pope, obtaining it of the Emperor *Phocas*, converted it into a Church, without any Alteration in the Building, and dedicated it to the Virgin and all the Martyrs. And it still subsists at *Rome* under the Title of *Norre Dame della Rotonda*. See **ROTONDA**.

The *Pantheon* of *Nismes*, was a Temple in that City, wherein were 12 Niches or Statues, supposed to have been destin'd for the 12 great Gods.

In the *Escorial* is a magnificent Chapel, call'd *Pantheon*, 35 Feet in Diameter, and 38 high, from the Pavement which is of Marble and Jasper inlay'd. The whole Inside of the Chapel is of black Marble, excepting the *Lutern* and some Ornaments of Jasper and red Marble.

In this Chapel are deposited the Bodies of the Kings and Queens: there are only Places made for 26; eight of which are already fill'd. See **ESCURIAL**.

**PAPAL Crown** is a deep Cap, or Mitre of Cloth of Gold, encompassed with three Coronets or Circles of Gold, adorn'd with Flowers; and the Whole enrich'd with precious Stones; having a Globe at top, finished with a Cross. See **CROWN**.

**PAPILLA**, in Anatomy, *Nipple* or *Teat*, a Prominence arising from the Middle of the Breast, or *Mamma*. See **BREAST**.

The Colour of the *Papille* is various; in different States, and Stages of Life, it is reddish, bluish, blackish. They are encompassed with a pale brownish Circle, call'd the *Areola*.

The lacteal Tubes, coming from the several Parts of the Breasts, terminate in the *Papille*, with several nervous, or spongy Emissaries which communicate with each other by *Anastomoses*, thro' which, in sucking, the Milk is drawn. See **MILK**.

**PAPILLÆ Pyramidales**, are little Eminences arising from the subcutaneous Nerves.

Under the *Cutis* lies a thick Congeries of Nerves, wove into a Kind of Membrane; together with Arteries, Veins, and

Lymphaticks: These Nerves standing out above the Level form little *Papille*, which laying aside the outer Coat given them by the *Dura Mater*, form the *Corpus reticulare*, first observ'd by *Malpighi* in the Feet, Hands, and Tongue; and since shewn by *Ruyssch*, throughout the whole Body. See **RETICULARE**.

These *Papille* are still most numerous and conspicuous in the Places of acute Sense, as the Tongue, Glans of the *Penis*, *Vagina*, *Labia*, *Oesophagus*, Ventricle, small Intestines, and Tips of the Fingers and Toes, where the *Cutis* they are covered withal is extremely thin. See **CUTIS**.

In the other Parts of the Body the *Cutis* is thicker; and the *Papille* much fewer, smaller, &c. See **RETICULAR BODY**.

These *Papille* are supposed to be the immediate Organ of Feeling. See **FEELING**.

**PAPILLÆ** of the Tongue, are little Eminences of the Tongue; so called from their Resemblance to the *Papille* of the Breast. See **TONGUE**.

From the papillary Tunic of the Tongue arise numerous nervous *Papille*, which, penetrating the viscous Substance over them, terminate under the Surface of the Tongue. See **PAPILLARY**.

'Tis by means of these *Papille* that the Tongue is supposed to have its Faculty of Tasting. See **TASTING**.

**PAPILLÆ**, or *Caruncule Papillares* of the Kidnies, are Bundles of little urinary Pipes, join'd together in the inner Substance of the Kidnies. See **KIDNEY**.

They end in short tubulous Bodies, or larger Pipes, answering in Number to the *Papille*, which are usually 12; and are called *Fistule Membranaceæ*; being only Productions of the membranous Cell, called the *Pelvis*. See **PELVIS**.

The *Papille* serve to distill the Urine separated from the Arteries, and brought them by the urinary Pipes, into the *Pelvis*. See **URINE**.

**PAPILLARY**, in Anatomy, an Epithet given to a Tunic or Membrane of the Tongue, call'd *Papillary Tunic*, *Papillary Membrane*, or *Papillary Body*.

The *Papillary Tunic* or *Body* is the third Tegument, plac'd beneath the exterior Membrane which lines the Tongue, and the viscous Substance next under the same. See **TONGUE**.

The *Papillary Tunic* is full of Nerves derived from the fifth and ninth Pair. From this Tunic arise little Eminences, call'd *Papille* or *Papillary Eminences*. See **PAPILLA**.

The Salts and Juices of Bodies, striking against these Prominences, occasion Undulations therein, which are immediately communicated to the Spirits contained in the Nerves, which carry them to the Brain, &c. See **TASTING**.

**PAPILLARY Processes**, a Name the Antients gave to the Olfactory Nerves, from the Place of their Origin, to the *Os Cribriform*. See **NERVE**.

Dr. *Drake* thinks this Name becomes them better in this Place than that of Nerves: in regard they rather appear Productions of the *Medulla Oblongata*: whence the Olfactory Nerves arise, than distinct Nerves; against which their manifest Cavities, and their Communication with the Ventricles, argue.

**PAPILIONACEOUS**, in Botany, the Flowers of some Plants are thus called, by Botanists, as representing something of the Figure of a *Papilio* or Butterfly, with its Wings display'd. See **PLANT**.

They have four such Leaves, joined together at the Extremities; one in the Middle of the Flower is larger than the rest, and by some called *Vexillum*.

The Plants, that have this Flower, are of the leguminous Kind, as Pease, Vetches, &c.

**PAPPUS**, in Botany, that soft light Down, which grows out of the Seeds of some Plants, as Thistles, Dandelion, Hawkweed, &c. and which buoys them up so in the Air, that they may be blown any where about with the Wind. See **SEMINATION**.

This distinguishes a Class or Kind of Plants, which are hence denominated *Papposa*, or *Pappi Flore*.

**PAR**, in Commerce a Kind of Equality among Monies; or how much a Person must give of one Kind of Species, to render it just equivalent to a certain Quantity of another.

The *Par* differs from the *Course* of Exchange in this, that the *Par* of Exchange shews what other Nations shou'd allow in Exchange; which is certain and fix'd: But the *Course* shews what they will allow in Exchange; which is uncertain and contingent, sometimes more, sometimes less. See **EXCHANGE**.

The *Par* of Exchange of the French Crown of 60 Sols or 4 s. 6 d. Sterl. with Foreign Monies, both real and imaginary, of most of the Trading Cities of Europe, follows; whence also the Relation or *Parity* of those other Monies among themselves, appears.

The French Crowns of 60 Sols is equivalent to 54 Pence Sterl. of England; to 100 Deniers Gros of Holland; and to 101, of those of Cologne. To 48 Sols-Lubs of Germany and Hambourg. To 88 Croences of Ausbourg and 90 of Francfort, 83 of Rolsam, and 84 of Switzerland. To 8 Julio's and an half of Rome, and as many of Ancona; to three Testons of Florence, 58 Soldi of Leghorn, 83 of Geneva, 94 of Milan, 60



of *Nova*; to 5 *Lires* or *Livres* of *Genoa*, 4 *Lires* and 10 *Soldi* of *Lucca*, 8 *Lires* of *Bergama*, 3 *Lires* and 15 *Soldi* of *Savoy*; to 9 *Carlins* of *Naples*, and as many of *Sicily*; 21 *Groats* and three *Fifths* of *Venice*, 24 of *Neumbourg*; to 372 *Maravedes* of *Spain*, to 600 *Rays* of *Portugal*, to 4 *Tarins* and 15 *Grains* of *Malta*, to 120 *Aspers* of *Constantinople*, to a *Demi-hongre* of *Gold* of *Hungary*, to 2 *Florins* of *Liege*, 3 of *Strasbourg* and 20 of *Raconis*, to 90 *Groats* or *Groch's* of *Poland*, and 24 of *Berlin*, to 80 *Marks* of *Copper* of *Sweden*, to 50 *Grives* or *Grifs* of *Copper* of *Muscovy*, and lastly to 4 *Hors* of *Denmark*.

PAR, in Anatomy. See PAIR.

PAR Vagum, or the fourth Pair, is a very notable Conjugation of Nerves, of the *Medulla oblongata*; thus call'd from their wide vague Distribution throughout the several Parts of the Body.

See the Origin, Course, Distribution, &c. of the *Par vagum* under NERVE.

PAR, a Term of Nobility. See PEER.

PARABLE, a Fable, or Allegorical Instruction founded on something real, or apparent in Nature or History; from which some Moral is drawn, by comparing it with some other Thing, wherein the People are more immediately concerned.

Such are those Parables of the *Ten Virgins*, of *Dives and Lazarus*, of the *Prodigal Son*, &c. in the New Testament. St. Matthew says our Saviour never spoke to the People but by Parables.

F. de Colonia calls the Parable, a Rational Fable. See FABLE.

The Word is form'd from the Greek *παρεβολή* to compare. Whence Aristotle defines it a Similitude drawn from Form to Form. Cicero calls it a *Collation*, others a *Simile*.

In the New Testament it is used variously. In Luke IV. 23. for a Proverb or Adage. In Matth. XV. 15. for a Thing darkly and figuratively express'd. In Heb. IX. 9. &c. for a Type. In Luke XIV. 7. &c. for a special Instruction. Matth. XXIV. 32. for a Similitude or Comparison. The Hebrews call it *משל* from *משל* to predominate, to assimilate; whence the Proverbs of Solomon are call'd *משל* Parables or Proverbs.

Aquinas defines Parable a similitudinary Discourse; or a Speech which says one thing and means another. Glossius more accurately defines it a *Simile* wherein a fictitious Thing is related as real, and compared with some Spiritual Thing, or accommodated to signify it.

Some make Parable differ from Fable; Grotius and others will have them the same. Kircher derives the Use of Parables from the Egyptians.

PARABOLA, in Geometry, a Figure arising from the Section of a Cone, when cut by a Plane parallel to one of its Sides. See SECTION.

From the same Point of a Curve, therefore, only one Parabola can be drawn: All the other Sections within those Parallels being Ellipses; and all without, Hyperbola's. See CONE.

Wolfius defines the Parabola to be a Curve wherein the Square of the Semi-ordinate is equal to the Rectangle of the Abscisse, and a given right Line call'd the Parameter of the Axis or *Latus rectum*.

Hence, a Parabola is a Curve of the first Order; and as the Abscisses increase, the Semi-ordinates increase likewise; consequently the Curve never returns into itself. Hence also the Abscisse is a third Proportional to the Parameter and Semi-ordinate; and the Parameter a third Proportional to the Abscisse and Semi-ordinate; and the Semi-ordinate a mean Proportional between the Parameter and Abscisse.

To describe a Parabola. The Parameter A B Tab. Conicks. Fig. 8. being given; continue it to C, and from B let fall a Perpendicular, to N. From Centres taken at Pleasure, with the Compasses open to A, describe Arches cutting the right Line B V in I, II, III, IV, V, &c. And the right Line BC in 1, 2, 3, 4, 5, &c. Then will B I, B 2, B 3, B 4, B 5, &c. be Abscisses, B I, B II, B III, B IV, B V, &c. Semi-ordinates. Wherefore if the Lines B I, B 2, B 3, &c. be transferr'd from the Line BC to that BN, and in the Points 1, 2, 3, 4, &c. Perpendiculars be rais'd, 1 I = B I, 2 II = B II, 3 III = B III, &c. The Curve passing thro' the Points I, II, III, &c. is a Parabola; and PN its Axis.

Every Point of the Parabola may also be determined geometrically. E. gr. If it is inquired whether the Point M be in the Parabola or not? From M to BN let fall a Perpendicular MP. And let PN be equal to the Parameter AB; upon BN describe a Semicircle. For if that pass thro' M, the Point M is in the Parabola.

In a Parabola the Distance of the Focus from the Vertex is to the Parameter in a subquadruple Ratio: And the Square of the Semi-ordinate is quadruple the Rectangle of the Distance of the Focus from the Vertex, into the Abscisse.

To describe a Parabola by a continued Motion. Assuming a right Line for an Axis, let A Fig. 9. = A F =  $\frac{1}{2}a$ . In A fix a Ruler DB cutting the Axis AD at right Angles. To the Extremity of another Ruler EC, fasten a Thread fix'd at its other Extreme in the Focus F which is to be = A D + A F. If then a Style or Point be fix'd to the Ruler EC, and the Ruler be carried first to the Right then to the Left, according to the Direction of the other DB; the Style will mark out a Parabola: For FM will be constantly = EM = PF =  $x + \frac{1}{2}a$ , and consequently the Point M is in a Parabola.

Properties of the PARABOLA.

The Squares of the Semi-ordinates are to each other as the Abscisses; and the Semi-ordinates, themselves, in a subduplicate Ratio of the Abscisses.

The Rectangle of the Sum of the two Semi-ordinates into their Difference, is equal to the Rectangle of the Parameter into the Difference of the Abscisses: The Parameter therefore is to the Sum of the two Semi-ordinates, as their Difference to the Difference of the Abscisses.

In a Parabola the Rectangle of the Semi-ordinate into the Abscisse, is to the Square of the Abscisse, as the Parameter to the Semi-ordinate.

In a Parabola the Square of the Parameter is to the Square of one Semi-ordinate, as the Square of the other Semi-ordinate to the Rectangle of the Abscisses.

In a Parabola the Subtangent is double the Abscisse, and the Subtangent subduple the Parameter.

Quadrature of the Parabola. See QUADRATURE.

Rectification of the Parabola. See RECTIFICATION.

Centre of Gravity of a Parabola. See CENTRE OF GRAVITY.

Centre of Oscillation of the Parabola. See OSCILLATION.

PARABOLA's of the higher Kinds are Algebraic Curves, defin'd by  $a^{m-1}x = y^m$ . E. gr. by  $a^2x = y^3$ ,  $a^3x = y^4$ ,  $a^4x = y^5$ ,  $a^5x = y^6$ , &c. See CURVE.

Some call these *Paraboloides*: particularly, if  $a^2x = y^3$ , they call it a *Cubical Paraboloid*. If  $a^3x = y^4$ , &c. They call it a *Biquadratic Paraboloid*, or a *Surdesolidal Paraboloid*. And in respect of these, the Parabola of the first Kind, above explained, they call the *Apollonian* or *Quadratic Parabola*.

Those Curves are likewise used to be referred to Parabola's wherein  $a^m x^{m-1} = y^m$ . as E. gr.  $a^2x^2 = y^3$ ,  $a^3x^3 = y^4$ , which some call *Semi-parabola's*. They are all comprehended under one common Equation  $a^m x^n = y^m$ , which also extends to other Curves, v. g. to those wherein  $a^2x^2 = y^4$ ,  $a^3x^3 = y^5$ ,  $a^4x^4 = y^6$ .

Since in Parabola's of the higher Kinds,  $y^m = a^{m-1}x$ ; If any other Semi-ordinate be call'd  $v$ , the Abscisse corresponding to  $z$ , will be  $v^m = a^{m-1}z$  consequently  $y^m : v^m :: a^{m-1}x : a^{m-1}z$ . That is  $x : z$ . 'Tis a common Property, therefore, of these Parabola's, that the Powers of the Ordinates are in the Ratio of the Abscisses.

But in *Semi-parabola's*  $y^m : v^m :: a^m x^{m-1} : a^m z^{m-1}$ . Or the Powers of the Semi-ordinates are as the Powers of the Abscisses, one Degree lower. E. gr. In *Cubical Semi-parabola's*, the Cubes of the Ordinates  $y^3$  and  $v^3$  are as the Squares of the Abscisses  $x^2$  and  $z^2$ .

APOLLONIAN PARABOLA, is the Common, or Quadratic Parabola or Parabola of the first Kind; so called by way of Distinction from Parabola's of the higher Kinds: Which see.

QUADRATIC PARABOLA, is the same with the Apollonian: Which see.

PARABOLAN, PARABOLANUS, among the Antients, was a Sort of Gladiator; called also *Confector*. See CONFECTOR.

The Name was given them from the Greek *παράβαλον* of *βάλλω* to throw, precipitate; in regard they throw themselves on Danger and Death.

PARABOLAN is also used in Church-History, for a Set of People, especially in Alexandria, who devoted themselves to the Service of Churches, and Hospitals. The Parabolans were not allowed to withdraw themselves from their Function, which was the Service of the Sick. They made a Kind of Friary, amounting sometimes to 600 Persons; depending on the Bishop.

The Design of their Institution was, that the diseased, especially those infected with the Plague, might not be without Attendance.

PARABOLIC Space, the Space or Area contained between any entire Ordinate as V V Tab. Conicks Fig. 8. and the Curve of the incumbent Parabola.

The Parabolic Space is to the Rectangle of the Semi-ordinate into the Abscisse, as 2 to 3: to a Triangle inscribed on the Ordinate as a Base, the Parabolic Space is as 4 to 3.

Every Parabolic and Paraboloidal Space is to the Rectangle of the Semi-ordinate into the Abscisse as  $r^2 x y : (m+1)$  to  $x y$ , that is, as  $r$  to  $m+1$ .

Segment of a Parabolic Space, is that Space included between two Ordinates. See SEGMENT.

Quadrature of a Parabolical Segment. See QUADRATURE.

PARABOLIC Pyramidoid, a solid Figure, generated by supposing all the Squares of the ordinate Applicates in the Parabola, so placed, as that the Axis shall pass thro' all their Centres at Right Angles; in which Case the Aggregate of the Planes will be arithmetically proportional.

The Solidity hereof is had by multiplying the Base, by half the Altitude; the Reason whereof is obvious: for the component Planes being a Series of Arithmetical Proportionals beginning from 0, their Sum will be equal to the Extremes multiply'd by half the Number of Terms, that is, in the present Case, equal to the Base multiply'd by half the Height. PARABOLIC



**PARABOLIC Cuneus**, a solid Figure form'd by multiplying all the DB's *Tab. Conics Fig. 10.* into the D's: or which amounts to the same, on the Base APB erect a Prism, whose Altitude shall be AS or PS; this will be a *Parabolical Cuneus*; which of necessity will be equal to the *Parabolical Pyramid*; inasmuch as the component Rectangles, in one, are severally equal to all the component Squares in the other.

**PARABOLIC Conoid**, a solid Figure generated by the Rotation of a *Semi-parabola* about its Axis, and is  $\frac{1}{2}$  of its circumscribing Cylinder.

The Circles conceived to be the Elements of this Figure, are in an arithmetical Proportion, decreasing towards the Vertex.

A *Parabolic Conoid* is to a Cylinder of the same Base and Height, as 1 to 2; and to a Cone of the same Base and Height, as  $1\frac{1}{2}$  to 1.

**PARABOLIC Spindle.** See PYRAMOID.

**PARABOLIC Speculum or Mirrour.** See MIRROR.

**PARABOLOIDES**, in Geometry, *Parabola's* of the higher Kinds. See PARABOLA of the higher Kinds.

**Quadrature of a PARABOLOID.** See QUADRATURE.

**Rectification of a PARABOLOID.** See RECTIFICATION.

**Centre of Gravity of a PARABOLOID.** See CENTRE.

**Quadratic PARABOLOID, Cubical Paraboloid, Surfsolidal Paraboloids.** See PARABOLA's of the higher Kinds.

**PARACENTESIS**, in Chirurgery, an Operation in Chirurgery, popularly call'd *Tapping*.

It consists in the opening a little Hole in the lower Venter or Belly, to let out Waters collected in the Capacity thereof, or between the Teguments, in an *Ascites* or *Water-Dropsy*. See DROPSY.

The Antients cut the Aperture with a Lancet; but the Moderns punch it with a Kind of Stilet or Bodkin; clapping a *Cannula* or Tap into the Hole when made, to carry off the Water. See CANNULA.

The Operation is usually perform'd two or three Fingers Breadth on one Side the Navel, sometimes a little lower, but always so as to avoid the *Linea Alba*.

The Water is usually drawn off at several Times, as the Patient's Strength will allow; and a new Puncture is made, every Time the Belly is thus to be emptied.

The *Paracentesis* does not often succeed, tho' often repeated; because the Root of the Disease, notwithstanding the carrying off the Water by this Means, is still left behind.

The Word is form'd from the Greek *παρε* with, and *κέντην* *pungere* to prick.

Some Authors give the Name *Paracentesis* to all Operations either with the Lancet, the Needle, or Punch; not excepting the Operation of Couching for Cataracts; founded on the Etymology of the Word: others restrain it to Apertures made in the Head, Breast, Belly and *Scrotum*; and others to the single Operation of *Tapping in Dropsies*.

**PARACENTRICK Motion of Impetus**, in Astronomy, a Term used for so much as a revolving Planet approaches nearer to, or recedes farther from the Sun, or Centre of Attraction. See ATTRACTION.

Thus if a Planet in A *Tab. Astronomy Fig. 25.* move to B, then is SBT — SA = b B, the *Paracentric Motion* of that Planet.

**PARACENTRIC Sollicitation of Gravity or Levity** amounts to the same with the *Vis Centripeta*, and, in Astronomy, is expressed by the Line AL *Fig. 26.* drawn from the Point A parallel to the Ray SB (infinitely near SA) till it intersect the Tangent BL.

**PARACLET**, a Name the Church has given to the Holy Spirit; from *παράκλησις*, *Comforter, Advocate*.

**PARACYNANCHE**, in Medicine. See PARASYNANCHE.

**PARADE**, the Shew, or Expofal of any Thing to view, in all its Advantages and Ornaments.

Bed of *Parade*, is that wherein a Person lies in State.

**PARADE**, in War, is the Appearance of the Officers and Soldiers at a Post assign'd them, to put themselves under Arms, in the best Order they can; either to mount, or break up the Guard; or to form a Battalion, or on some other Occasion.

**PARADE**, in Fencing, the Action of Parrying, or Turning off any Push, or Stroke.

There are as many Kinds of *Parades* as of Strokes and Attacks. *Parade* inward, outward, above, below, feign'd, &c.

**PARADIGMA** or **PARADIGM**, an Example, or Instance of something said, or done. See EXAMPLE.

The Word is form'd of the Greek *παράδειγμα* Exemplar, of *παράδειγμα* *ostendo*, q. d. *juxta ostendo*.

**PARADISE**, a Garden of Delights; a Term primarily used for the Place wherein Adam was seated, during his Innocence; and from which he was expell'd for disobeying God; call'd in a stricter manner, the *Terrestrial Paradise*.

The Word is form'd of the Greek *παράδεισος* Orchard, a Place stored with Apples, and all Kinds of Fruit. Moses calls it the *Garden of Eden*.

The Critics are in dispute about the precise Place of *Paradise*. Some will have it in *Judea*, in the Place where now is

the Lake *Genesareth*; others, in *Syria*, toward the Springs of the *Orontes*, and *Celisyrrhoes*. But, in neither of those Places do we discover any Track of the Rivers wherewith *Paradise*, in Moses's Description, was water'd. Others place it in the greater *Armenia* near the Mountain *Ararat*, where Noah's Ark was left; and imagine they there discover the Sources of the four Rivers which water'd the Garden of *Eden*, viz. *Euphrates*; *Hiddekel*, now the *Tigre*; *Gihon*, now *Araxes*; and *Pison*, now *Phazzo*. But Sir J. Chardin assures us, in his Travels, that the *Phazzo* springs out of the Mountains of *Caucasus*, Northward of the Kingdom of *Imereti*, and far enough from Mount *Ararat*: Beside that in *Armenia*, we have no Signs of the Countries of *Havilah* and *Ethiopia*, which those Rivers wash'd after their departing from *Eden*.

There are various other Opinions, as to this Point: *Postellus* will have *Paradise* placed under the North-Pole; grounding his Notion upon an ancient Tradition of the *Egyptians* and *Babylonians*, that the Ecliptic or Sun's Way was at first at Right Angles to the Equator; and so pass'd directly over the North-Pole. Others are against limiting it to any one Place, and contend, that it included the whole Face of the Earth, which was, as it were, one continued Scene of Pleasures, till alter'd upon Adam's Transgression.

But the most common, and withal, most probable Opinion is that of *Hopkinson*, *Huet*, *Bochart*, &c. who place it between the Confluence of the *Euphrates*, and *Tyger*, and their Separation. These Rivers are two of those wherewith the Garden of *Eden* was water'd: *Pison* was a Branch arising out of one of them after their Separation; and *Gihon* another Branch arising from the other, on the Side of *Armenia* or the West: Accordingly *Ethiopia*, one of the Countries which these Rivers wash'd was, incontestably, *Arabia Deserta*, for Moses calls his Wife, who was of this Country, an *Ethiopian*; and *Havilah*, the other Country, must be the *Chusistan*, in *Persia*; where there were anciently found Gold, *Bdellium*, the *Onyx*, &c. mentioned in Moses's Description.

**PARADISUS**, among ancient Church-Writers, was a square Court, before Cathedrals, surrounded with Piazza's, or Portico's for walking under, supported by Pillars. *Matthew Paris* calls it *Parvisus*.

**PARADOX**, in Philosophy, a Proposition seemingly absurd, because contrary to the receiv'd Opinions; but yet true.

The *Copernican System* is a *Paradox* to the People; the Learned are all agreed of its Truth.

There are even *Paradoxes* in Geometry; a Number whereof are collected by the Jesuit *Mario Bettino*: among others is this, that the Contain'd is greater than the Containing.

The Word is form'd from the Greek *παρε*, contra, against, and *δοξα* Opinion.

**PARADOXI**, or **PARADOXOLOGI**, among the Antients, were a Kind of Mimes or Buffoons, who diverted the People with their Drolling. See PANTOMIME.

They were also call'd *Ordinarii* for this Reason apparently, that, as they spoke without Study or Preparation, they were always ready.

They had another Denomination, viz. *Nianicologi* q. d. Tellers of Children's Tales: And, beside, were call'd *Aretalogi*, of *ἀρετή*, Virtue as talking much of their own rare Talents and Qualifications.

**PARÆNESIS**, *παρρησιάζω*, a Greek Term, signifying Admonition, Instruction, Precept, or Exhortation.

The Word is form'd of *παρε* and *αἰνέω*, *Laudo*.

**PARAGE**, in Law, and Customs, an Equality of Name, Blood, or Dignity, but more especially of Land, in the Partition of an Inheritance between Co-heirs. See PEERAGE.

**PARAGE**, *Paragium*, was particularly used in ancient Customs, for an Equality of Condition among Nobles, or Persons holding Nobly: Thus, when a Fief is divided among Brothers; in this Case, the younger hold their Part of the Elder by *Parage*, i. e. without any Homage or Service.

This still obtains, in some Measure, in *Scotland*, where the Husbands of the younger Sisters are not obliged to any Faith or Homage to the Husband of the Elder; nor their Children, to the second Degree.

This *Parage* being an Equality of Duty or Service among Brothers and Sisters, some have call'd it *Fratrage* and *Parentage*. The Customary of *Normandy* defines the *Tenure by Parage* to be, when, a noble Fief being divided among Daughters, the Eldest does Homage to the chief Lord for all the rest, and the youngest hold their Parts of the Eldest by *Parage*, i. e. without any Homage or Fealty. *Parage* ceases at the sixth Degree inclusively. It likewise ceases, when any of the Sharers sell their Part. See HOMAGE.

**PARAGOGÉ**, in Grammar, a Figure, whereby a Word is lengthen'd out, by adding a Syllable at the End thereof: as in *dicier* for *dici*. See FLOUNCE. Or

**PARAGOGIC**, in Grammar, something added to a Word without adding any thing to the Sense thereof. In the *Hebrew*, the *ק* is frequently *Paragogic*; as *אברהם* for *אברר* I will praise.



The Use of *Paragogic* Letters is only to give a more full and agreeable Sound to Words, either for the Sake of the Verse, or the Period.

The Word is form'd of the Greek *παεγω* I add; compounded of *παε* and *γω*.

PARAGORICKS, Medicines prescrib'd with an Intention to assuage Pain. See PAIN.

They are thus call'd, from the Greek *παεγω* I mitigate; abate; but are more ordinarily denominated *Opiates*. See OPIATE.

PARAGRAPH, a Term originally in Juris-prudence, signifying a Section, or Division of the Text of a Law; otherwise call'd an *Article*.

Thus, such a Law is said to be divided into so many *Paragraphs*. The Character of a *Paragraph* in a Quotation is, §. See CHARACTER.

The Greek Poets also used *Paragraphs* to mark the Couplets, Strophes, and other Divisions of Odes, and other poetical Works.

PARAGUAY, or PARAGOUÉ, in Nat. History, a celebrated Plant, of the Shrub Kind, growing in some Provinces of *South America*, especially at *Paraguay*, whence its Name; tho' better known, of late, among us, under the Denomination of *South-Sea Tea*.

This Plant, which does not rise above a Foot and half high, has very slender Branches, and Leaves like those of *Senna*; it may be look'd on as a Kind of Occidental Tea, which, like the Oriental, is taken infused in hot Water, to which it communicates a Colour and Smell nearly like those of the best Tea seen in *Europe*.

There are two Kinds of *Paraguay*, the one call'd simply *Paraguay*; the other *Camini*, by the *Spaniards*, *Yerva-Camini*; which last is most esteem'd, and sold for a Third more than the other.

The first the *Spaniards* call *Yerva-Compalos*, i. e. Herb with little Sticks, because full of broken Branches, and is chiefly used by Domesticicks and Slaves: The latter is the Drink of the richest. But both are of so much Use, and esteem'd of such absolute Necessity, that no body in that Part of *America* will live without 'em. The Works of the Mines of *Potosi* wou'd stand still, but that the Masters take care to supply the poor Slaves that labour therein, with *Paraguay*. Nor will a Servant engage himself with any Master, but upon this among other Conditions, that he have nothing but *Paraguay* for Drink.

The *Paraguay* makes one of the most considerable Articles of the *South American* Commerce. At *Peru*, *Chilly*, and *Buenos Aires*, there are above two Millions Worth sold per Annum; which passes almost altogether thro' the Hands of the Jesuits. The Use of *Paraguay* began lately to obtain in *England*; where many People seem'd to like it as well as Tea. But Foreigners say, that their Approbation flow'd as much from their Interest as their Taste; in regard they come so easily by it, by reason of their Commerce with the *Spaniards* of *S. America*, and *Buenos Aires*, since the Treaty of *Utrecht* in 1713.

The Preparation of the Plant, and the making it into a Drink is much the same with that of Tea, except that they infuse both Leaves and Wood, that they drink it immediately out of the Vessel 'tis made in; without letting it have Time to infuse, by reason of the black Tincture it gives; and that, to prevent Leaves and all from coming, they suck it thro' a silver, or glass Pipe, which goes round the Company one after another. *Frezier*.

Beside all the Virtues which the Eastern People ascribe to their Tea; as to be good in Diseases of the Head, Breast, Stomach, against Phlegm, and to restore Sleep; the *Americans* attribute to theirs this further of purifying all Kinds of Water, how foul and corrupted soever, by only infusing it therein, either hot or cold. Thus, having always some of it with 'em, if they meet with none but the worst Waters in the vast Desarts to be cross'd in going from *Buenos Aires* to *Peru* and *Chilly*, they are not afraid to drink it, after steeping some of the Plant a little while therein. It is also held sovereign against the Scurvy, and putrid Fevers.

PARALEPSIS, in Rhetoric, a Feint, or Pretence of omitting or passing over a Thing, and yet expressing it. See FIGURE.

When the Imagination is warm'd, and Reasons and Arguments present themselves in abundance; the Orator wou'd willingly lay 'em all down, in Form; but, for Fear of wearying his Audience, only produces some of 'em *en passant*, and without dwelling on them: and this is call'd a *Paralepsis*; for Instance, *I pass over in Silence the many Injuries I have receiv'd, &c. I won't insist on his last Outrage.*

PARALIPOMENA, a Supplement of Things omitted, or forgot in some preceding Work, or Treatise.

In the Canon of Scripture, there are two Books of *Paralipomena*, call'd also *Chronicles*; being a Supplement to the four Books of Kings, the two first whereof are also called Books of *Samuel*.

*Quintus Calaber* has a Work entituled, the *Paralipomena of Homer*.

The Word is form'd from the Greek *παελαίσω*, *pretermitto*, I pass by.

Some Authors use the Word *Subrelictorum* instead of *Paralipomenon*.

PARALLAX, in Astronomy, an Arch of the Heavens intercepted between the true Place of a Star, and its apparent Place. See PLACE.

The true Place of a Star is that Point of the Heavens, B, placed in the Centre of the Earth, as at T. The apparent Place is that Point of the Heavens C, wherein the Star appears to an Eye on the Surface of the Earth, as at E.

Now, as in Effect, we view the Celestial Bodies not from the Centre but from the Surface of our Earth, which is a Semi-diameter distant from the Centre; we see it by a visual Ray, which passing thro' the Centre of the Star, and proceeding thence to the Surface of the Mundane Sphere, marks out another Point C, which is its apparent Place.

This Difference of Places, is what we call absolutely the *Parallax*, *παελλαξις*, or the *Parallax of Altitude*; by *Copernicus* call'd the *Commutation*; which, therefore, is an Angle form'd by two visual Rays, drawn, the one from the Centre, the other from the Circumference of the Earth, and traversing the Body of the Star; and is measured by an Arch of a great Circle intercepted between the two Points of true and apparent Place C and B.

PARALLAX is also used for the Angle made in the Centre of the Star, by two right Lines, drawn, the one from the Centre, the other from the Surface of the Earth.

The Angle is also call'd *Parallaetic Angle*. See PARALLACTIC Angle.

Hence the *Parallax* diminishes the Altitude of a Star, or increases its Distance from the Zenith, and has, therefore, a contrary Effect to the Refraction. See REFRACTION.

The *Parallax* of the Altitude, C B is, strictly, the Difference between the true Distance from the Zenith C A, and the apparent Distance B A. See PARALLACTIC Angle.

The *Parallax* is greatest in the Horizon; in the Zenith, or Meridian, a Star has no *Parallax* at all, the true and apparent Places, then co-inciding.

The Horizontal *Parallax* is the same, whether the Star be in the true or apparent Horizon.

The fix'd Stars have no sensible *Parallax*, by reason of their immense Distance to which the Semi-diameter of the Earth is but a mere Point. See STAR.

Hence also the nearer a Star is to the Earth, the greater is its *Parallax*, at an equal Elevation above the Horizon; *Saturn* is so high, that we have much ado to observe any *Parallax* at all.

The *Parallax* increases the right and oblique Ascension, diminishes the Descension, diminishes the Northern Declination, and Latitude in the Eastern Part, increases it in the Western; increases the Southern in the Eastern and Western Part; diminishes the Longitude in the Western Part, increases it in the Eastern. The *Parallax*, therefore, has just opposite Effects to the Refraction. See REFRACTION.

PARALLAX of Declination, is an Arch of a Circle of Declination S I, Fig. 28. whereby the *Parallax* of the Altitude increases or diminishes the Declination of a Star. See DECLINATION.

PARALLAX of Ascension and Descension, is an Arch of the Equator D d, Fig. 29. whereby the *Parallax* of the Altitude increases the Ascension, and diminishes the Descension. See ASCENSION and DESCENSION.

PARALLAX of Longitude, is an Arch of the Ecliptic T t, Fig. 28. whereby the *Parallax* of the Altitude increases or diminishes the Longitude. See LONGITUDE.

PARALLAX of Latitude, is an Arch of a Circle of Latitude S I, whereby the *Parallax* of Altitude increases or diminishes the Latitude. See LATITUDE.

PARALLACTIC Angle, called also simply *Parallax*, is the Angle made in the Centre of the Star by two right Lines, drawn, the one from the Centre of the Earth T B, *Tab. Astronomy*, Fig. 27. the other from its Surface E B.

Or, which amounts to the same, the *Parallaetic Angle* is the Difference of the Angles C E A, and B T A, under which the real and apparent Distances from the Zenith are seen. See PARALLAX.

The Sines of the *Parallaetic Angles* A I T and A S T, *Tab. Astron.* Fig. 30. at the same or equal Distances from the Zenith S Z; are in a reciprocal Ratio of the Distances of the Stars from the Centre of Earth T L and T S. Hence the *Parallax* of the remoter Star S, is less than the *Parallax* of the nearer L, at the same Distance from the Zenith; as before observ'd.

The Sines of the *Parallaetic Angles* M and S, of Stars equally distant from the Centre of the Earth T, are as the Sines of the Distances seen from the Vertex Z M and Z S.

Hence, as the Distances from the Vertex decrease, i. e. as the Altitudes decrease, the *Parallax* decreases; and hence, also, the *Parallax* affects the Altitude of the Star, from the Horizon to the Zenith.



The Doctrine of *Parallaxes* is of the utmost Importance in Astronomy; both for the determining of the Distances of the Planets, Comets, and other *Phænomena* of the Heavens; for the Calculation of Eclipses; and for determining the Longitude.

See PLANET, DISTANCE, LONGITUDE, and ECLIPSE.

Methods of finding the *Parallaxes* of the Celestial *Phænomena* are various: Some of the principal and easier follow.

To observe the *Parallax* of a Celestial *Phænomenon*.

Observe when the *Phænomenon* is in the same Vertical with a fix'd Star which is near it; and measure its apparent Distance from this Star. Observe, again, when the *Phænomenon* and fix'd Star are in equal Altitudes from the Horizon; and again measure their Distance: the Difference of those Distances will be, very nearly, the *Parallax* of the Star.

The *Parallax* of a *Phænomenon* may be likewise found by observing its Azimuth and Altitude; and by marking the Time, between the Observation and its Arrival at the Meridian.

All, requir'd to find the *Parallax* of the Moon, is the *Parallax* of right Ascension: i. e. to find the Effect of the Magnitude of the Semi-diameter of the Earth, with regard to the *Phænomena* of its Motion, 'tis sufficient to know how far the Meridian, to which the Eye refers it, deviates from the true Meridian. This is what M. Cassini found and practised, with regard to Mars; and which M. Maraldi has since practised, with regard to the Moon. The whole Mystery here consists in having the Moon's true Motion, which refers to the Centre of the Earth; and its apparent Motion, which refers to the Place of Observation. The Difference of these, which is greatest in the Horizon, or Horary Circle of 6 o' Clock, gives the Horizontal *Parallax*, for that Latitude whence the general *Parallax*, or that under the Equator is easily found: The *Parallax* of any Parallel being to that of the Equator, as the Semi-diameter of this Parallel is to that of the Equator. See the *Præface* of this Method exemplify'd in finding the *Parallax* of Mars.

The popular Method for that of the Moon, *Wolffius* gives us as follows:

To observe the Moon's *Parallax*.

Observe the Moon's Meridian Altitude, with the greatest Accuracy, (See ALTITUDE) and mark the Moment of Time: This Time being equated; (See EQUATION) compute her true Longitude and Latitude; and from these find her Declination, (See DECLINATION) and from her Declination and the Elevation of the Equator find her true Meridian Altitude. If the observ'd Altitude be not meridian, reduce it to the true Altitude for the Time of Observation. Take the Refraction from the observ'd Altitude, and subtract the Remainder from the true Altitude: the Remainder is the Moon's *Parallax*.

By this means *Tycho* in 1583. Oct. 12. Hor. 5<sup>h</sup>. 19<sup>m</sup>. from the Moon's Meridian Altitude observ'd, 13°. 38' her *Parallax* 54 Minutes. See MOON.

To observe the Moon's *Parallax* in an Eclipse.

In an Eclipse of the Moon, observe when both Horns are in the same Vertical Circle; in that Moment take the Altitudes of both Horns; the Difference of the two being halved and added to the least, or subtracted from the greatest, gives nearly the visible Altitude of the Moon's Centre. But the true Altitude is nearly equal to the Altitude of the Centre of the Shadow at that Time. Now we know the Altitude of the Centre of the Shadow; because we know the Sun's Place in the Ecliptic, and its Depression under the Horizon, which is equal to the Altitude of the opposite Point of the Ecliptic in which the Centre of the Shadow is. Thus have we both the true and apparent Altitude; the Difference whereof is the *Parallax*.

From the Moon's *Parallax* A S T Fig. 30. and Altitude S R, to find her Distance from the Earth.

By her apparent Altitude given, we have her apparent Distance from the Zenith, i. e. the Angle Z A S; or by her true Altitude the Angle A T S. Wherefore, since, at the same Time, we have the *Parallactic* Angle S; and the Semi-diameter of the Earth is reputed. By plain Trigonometry we shall have the Moon's Distance in Semi-diameters of the Earth; thus: as the Sine of the Angle S is to the opposite Side given, so is the Sine the other Angle T, to the Side required T S.

Hence, according to *Tycho*'s Observation, the Moon's Distance at that Time from the Earth was 62 Semi-diameters of the Earth. Hence also, since, from the Moon's Theory, we have the Ratio of her Distances from the Earth in the several Degrees of her Anomaly; those Distances being found by the Rule of Three in Semi-diameters of the Earth, the *Parallax* is thence determined to the several Degrees of the true Anomaly.

*De la Hire* makes the greatest Horizontal *Parallax* 1°. 1'. 55", the smallest 54' 5". The Moon's Distance, therefore, when in her Perigee is 55  $\frac{3}{4}$ , that is, almost 56 Semi-diameters; in her Apogee 63  $\frac{1}{4}$ , that is, 63  $\frac{1}{4}$  Semi-diameters.

To observe the *Parallax* of Mars.

1. Suppose Mars in the Meridian and Equator, in H. Tab. A. Astronomy Fig. 31. and that the Observer under the Equator in A,

observes him culminating with some fix'd Star. 2. If now the Observer were in the Centre of the Earth, he wou'd see Mars constantly in the same Point of the Heaven with the Star; and therefore, together with it in the Plane of the Horizon, or of the sixth Horary. But since Mars, here, has some sensible *Parallax*, and the fix'd Star none, Mars will be seen in the Horizon, when in P, the Plane of the sensible Horizon; and the Star, when in the Plane of the true Horizon: observe, therefore, the Time between the Transits of Mars and of the Star thro' the Plane of the sixth Hour. 3. Convert this Time into Minutes of the Equator; by this means we shall have the Arch P M, to which the Angle P A M, and consequently the Angle A M D is nearly equal, which is the Horizontal *Parallax* of Mars.

If the Observer were not under the Equator, but in a Parallel, I Q, that Difference will be a less Arch Q M. Wherefore, since the little Arches, Q M and P M, are as their Sines A D and I D; and since A D G is equal to the Distance of the Place from the Equator, i. e. to the Elevation of the Pole; and therefore, A D to I D, as the whole Sine to the Co-sine of the Elevation of the Pole; say, as the Co-sine of the Elevation of the Pole I D is to the whole Sine A D; so is the *Parallax* observ'd in I, to the *Parallax* to be observ'd under the Equator.

Since Mars and the fix'd Star cannot be commodiously observ'd in the Horizon; let 'em be observ'd in the Circle of the third Hour: And since the *Parallax* there observ'd, T O, is to the Horizontal one, P M, as I S to I D; Say, as the Sine of the Angle I D S, or 45° (since the Plane D O is in the Middle between the Meridian, D H and the true Horizon D M) to the whole Sine, so is the *Parallax* T O to the Horizontal *Parallax* P M.

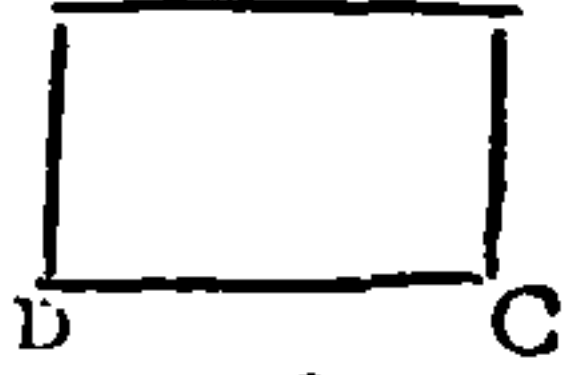
If Mars be likewise out of the Plane of the Equator; the *Parallax* found will be an Arch of a Parallel; which must, therefore, be reduced, as above, to an Arch of the Equator.

Lastly, if Mars be not stationary, but either direct, or retrograde; by Observations for several Days, find out what his Motion is every Hour, that his true Place from the Centre may be assign'd for any given Time.

By this Method, Cassini, to whom we owe this noble Invention, observ'd the greatest Horizontal *Parallax* of Mars to be 25 Seconds, or a little less. By the same Method Mr. Flamsteed found it near thirty Seconds.

By the same Method the same Author Cassini observ'd the *Parallax* of Venus.

It must be here noted, that the Observation is to be made with a Telescope, in whose Focus are strain'd A B four Threads cutting each other at right Angles A, B, C, D. The Telescope to be turn'd about, till some Star near Mars be seen to pass over some of the Threads; A B and C D being parallel to the Equator; and therefore, A C and B D representing Circles of Declination. Thus, by means of the perpendicular Threads, the Situations of the Star, and of Mars in the Meridian, will be determined.



To find the Sun's *Parallax*.

The great Distance of the Sun renders its *Parallax* too small to fall under even the nicest immediate Observation: Indeed, many Attempts have been made both by the Antients and Moderns; and many Methods invented for that Purpose. The first, that of *Hipparchus*, follow'd by *Ptolemy*, &c. was founded on the Observation of Lunar Eclipses; the second, was that of *Aristarchus*, whereby the Angle subtended by the Semi-diameter of the Moon's Orbit, seen from the Sun, was sought from the Lunar Phases: But, these both proving deficient, Astronomers are forced to have Recourse to the *Parallaxes* of the Planets nearer us, as Mars and Venus; for from their *Parallaxes* known that of the Sun, which is inaccessible by any direct Observation, is easily deduced.

For from the Theory of the Motions of the Earth and Planets, we know at any Time the Proportion of the Distances of the Sun and Planets from us; and the Horizontal *Parallaxes* are in a reciprocal Proportion to those Distances: Knowing, therefore, the *Parallax* of a Planet, that of the Sun may be found from it.

Thus, Mars, when opposite to the Sun, is twice as near as the Sun is, his *Parallax*; therefore, will be twice as great as that of the Sun: and Venus, when in her inferior Conjunction with the Sun, is sometimes nearer us than he is; her *Parallax*, therefore, is greater in the same Proportion.

Thus, from the *Parallaxes* of Mars and Venus, the same Cassini found the Sun's *Parallax* to be ten Seconds, which implies his Distance to be 223062 Semi-diameters.

In an Observation of the Transit of Venus over the Sun, which will be seen in May, 1761. Dr. Halley has shewn a Method of finding the Sun's *Parallax* and Distance to a great Nicety, viz. to a five hundredth Part of the Whole. See SUN.

The *Parallax* of the Stars, with regard to the Earth's annual Orbit.

The Stars have no *Parallax*, with regard to the Earth's Semi-diameter; yet, with regard to the Earth's annual Orbit, 'tis justly expected that some *Parallax* be found. See ORBIT.



The Axis of the Earth in its annual Motion describes a Kind of Cylinder, which being prolong'd to the Heaven of the fix'd Stars, there forms a circular Circumference; each Point whereof is the Pole of the World for its respective Day: so that the Situation of the apparent Pole, with regard to any of the fix'd Stars changes very considerably in the Course of a Year.

Could this be found by Observation, it wou'd irrefragably evince the annual Motion of the Earth round the Sun, and remove that only Objection which lies against it, urg'd by *Ricciolus*, from no such *Parallax* being observ'd. See EARTH.

Accordingly Dr. *Hook* attempted to find it by observing the various Distance of a fix'd Star from the Zenith, in different Parts of the Earth's Orbit; and Mr. *Flamsteed*, from the Access and Recess of a fix'd Star from the Equator at different Times of the Year, and with Success: The Result of his Observations being, that the Distance of a fix'd Star, near the Pole, was found 40 or 45 Seconds nearer it at the Winter Solstice than at the Summer one, for seven Years successively.

M. *Cassini* the Younger allows the Observations of *Flamsteed* to agree with those made at the Royal Observatory; but he denies the Consequences: he says the Variations in the Distance of the Pole Star are not such as they shou'd be, supposing the Motion of the Earth; and accounts for them from a Supposition that the Stars, like the Sun, turn or revolve on their Centres, and that some of 'em have their Hemispheres unequally luminous; Whence, when the more shining Hemisphere is turn'd towards us, the Stars appears bigger, consequently more remote than when the darker is towards us. See STAR.

PARALLAX is also used in levelling, for the Angle contain'd between the Line of true Level, and that of apparent Level. See LEVELLING.

PARALLEL, in Geometry, from the Greek *παράλληλος*, equidistant; is a Term applied to Lines, Figures and Bodies, which, being prolong'd, are still at equal Distance from one another.

PARALLEL Right Lines, are those which, tho' infinitely produced, would never meet.

Thus, the Line OP, *Tab. Geometry*, Fig. 36. is parallel to QR. See LINE.

Parallel Line is used in Opposition to Lines converging and diverging. See CONVERGING.

Some define an *inclining* or *converging* Line, that which will meet another at a finite Distance; and a *Parallel* that which wou'd only meet at an *infinite* Distance.

Others define a Perpendicular the shortest of all Lines that can be drawn to another; and a *Parallel* the longest. For the Orthodoxy of these Definitions of Parallelism we don't undertake.

Geometricians demonstrate, that two Lines, *parallel* to the same third Line, are also *parallel* to one another; and that if two *Parallels* OP and QR, *Tab. Geometry* Fig. 36. be cut by a transverse Line ST. in A and B, 1. The alternate Angles *x* and *y* are equal. 2. The external Angle *u* is equal to the internal opposite one *y*; and thirdly, That the two internal opposite ones *z* and *y* are also equal to two right ones.

It is shewn on the Principles of Opticks, that if the Eye be placed between two *Parallel* Lines, they will appear to converge towards a Point opposite to the Eye. And if they run to such a Length, as that the Distance between them be but as a Point thereto, they will there appear to co-incide.

*Parallel Lines* are described by letting fall equal Perpendiculars, and drawing Lines through their Extremes, by sliding the Compasses open to the desir'd Width along a Line, &c. or by a

PARALLEL Ruler, call'd also *Parallelism*, an Instrument consisting of two wooden, brass, or steel Rulers AB, and CD; Fig. 37. equally broad every-where, and so join'd together by the Cross-blades EF and GH, as to open to different Intervals, accede and recede, yet still retain their *Parallelism*.

The Use of this Instrument is obvious; for one of the Rulers being applied to PS, and the other drawn to a given Point V; a right Line AB, drawn by its Edge, thro' V, is a *parallel* to RS.

PARALLEL Rays, in Opticks, are those which keep at an equal Distance to each other, from the visible Object to the Eye, which is supposed to be infinitely remote from the Object. See RAY.

PARALLEL Planes are those Planes, which have all the Perpendiculars drawn betwixt them equal to each other. See PLANE.

PARALLELS, OF PARALLEL Circles, in Geography, call'd also *Parallels* of Latitude, and Circles of Latitude, are lesser Circles of the Sphere, conceived to be drawn from West to East thro' all the Points of Meridian; commencing from the Equator, to which they are *parallel*, and ending with the Poles. See CIRCLE.

They are call'd *Parallels* of Latitude, &c. because all Places lying on the same *Parallel*, have the same Latitude. See LATITUDE.

PARALLELS of Latitude, in Astronomy, are lesser Circles of the Sphere *parallel* to the Ecliptic, imagined to pass thro' every Degree and Minute of the Colures. See LATITUDE.

They are represented on the Globe by the Divisions of the Quadrant of Altitude, in its Motion round the Globe, when screw'd over the Poles of the Ecliptic. See GLOBE.

PARALLELS of Altitude or Almucantars, are Circles *parallel* to the Horizon, imagined to pass thro' every Degree and Minute of the Meridian between the Horizon, and Zenith; having their Poles in the Zenith. See ALTITUDE.

On the Globes they are represented by the Divisions on the Quadrant of Altitude, in its Motion about the Body of the Globe, when screw'd to the Zenith. See GLOBE.

PARALLELS of Declination, in Astronomy, are the same with *Parallels* of Latitude in Astronomy. See DECLINATION.

PARALLEL Sphere, that Situation of the Sphere, wherein the Equator co-incides with the Horizon, and the Poles with the Zenith and Nadir. See SPHERE.

In this Sphere all the *Parallels* of the Equator become *Parallels* of the Horizon, consequently no Stars ever rise or set; but all turn round in Circles *parallel* to the Horizon; and the Sun, when in the Equinoctial, wheels round the Horizon the whole Day. After his rising to the elevated Pole, he never sets for six Months; and, after his retiring again to the other Side of the Line, never rises for six Months longer.

This Position of the Sphere is theirs who live under the Poles; if any such there be. Their Sun is never above 23°. 30'. high.

PARALLEL Sailing, in Navigation, is the Sailing under a *Parallel* of Latitude. See SAILING.

Of this there are but three Cases. 1. Given, the Departure, and Distance; required the Latitude. The Canon is, As Difference of Longitude is to Radius :: So is Distance, to Co-sine of the Latitude.

2. Given Diff. of Longitude between two Places under the same *Parallel*, required their Distance. The Canon is, As Rad. to Diff. of Longitude :: So is Co-sine of Latitude to Distance.

3. Given the Distance between two Places in the same Latitude; required their Difference of Longitude. The Canon is, As the Co-sine of Lat. to Distance :: So is Rad. to Diff. of Longitude.

PARALLELOPIPED, in Geometry, one of the regular Bodies, or Solids, comprehended under six Rectangular and *Parallel* Surfaces, the opposite ones whereof are equal: As in the Figure *Tab. Geometry* Fig. 38. See REGULAR.

Two Cubes, laid together, Side by Side, constitute a *Parallelopiped*: And the same may be said of a square Beam, whose two Extremes are square, and Sides long Squares.

Properties of the PARALLELOPIPED.

All *Parallelopipeds*, Prisms, and Cylinders, whose Bases and Heights are equal, are, themselves, equal.

A diagonal Plane divides the *Parallelopiped* into two equal Prisms: A Triangular Prism, therefore, is half a *Parallelopiped* upon the same Base and of the same Altitude. See PRISM.

All *Parallelopipeds*, Prisms, Cylinders, &c. are in a Ratio compounded of their Bases and Altitudes: Wherefore, if their Bases be equal, they are in Proportion to their Altitudes; and conversly.

All *Parallelopipeds*, Cylinders, Cones, &c. are in a triplicate Ratio of their homologous Sides; and also of their Altitudes.

Equal *Parallelopipeds*, Prisms, Cones, Cylinders, &c. reciprocate their Bases and Altitudes.

To measure the Surface and Solidity of a *Parallelopiped*.

Find the Areas of the Parallelograms ILMK, LMON. See PARALLELOGRAM. Add these into one Sum, and multiply that Sum by 2: The *factum* will be the Surface of the *Parallelopiped*. If then the Base ILMK be multiplied by the Altitude LN, the Product will be the Solidity.

Suppose *v. g.* LM = 36 MK = 15 MO = 12. Then,

$$\begin{array}{l} LM = 36 \quad LM = 36 \quad MK = 15 \\ MK = 15 \quad MO = 12 \quad MO = 12 \end{array}$$

$$\begin{array}{r} 180 \quad 72 \quad 30 \\ 36 \quad 36 \quad 15 \end{array}$$

$$\begin{array}{l} LIKM 540 \quad LMON 432 \quad MOKP 180 \\ LIKM 540 \\ MOKP 180 \end{array}$$

$$\begin{array}{r} 2304 \\ MO 12 \end{array}$$

$$\begin{array}{r} 4608 \\ 2304 \end{array} \quad \begin{array}{r} 1152 \\ 2 \end{array} \quad 2304 \text{ Superficies.}$$

$$27648 \text{ Solidity.}$$

PARALLELISM, the Quality of a *Parallel*; or that which denominates it such: Or it is that whereby two Things, Lines, or Rays become equidistant from one another. See PARALLEL.

Thus, we say remote Objects are scarce perceptible, by reason of the *Parallelism* of the Rays.

PARALLELISM of the Earth's Axis, in Astronomy, or, *Motion of Parallelism*; is that Situation or Motion of the Earth's Axis



Axis, in its Progress thro' its Orbit, whereby it still looks to the same Point of the Heavens, viz. towards the Pole Star; so that if a Line be drawn parallel to its Axis, while in any one Position; the Axis, in all other Positions or Parts of the Orbit, will always be parallel to the same Line. See AXIS.

This *Parallelism* is the necessary Result of the Earth's double Motion; the one round the Sun, the other round its own Axis. Nor is there any Necessity to imagine a third Motion, as some have done, to account for this *Parallelism*. See EARTH.

'Tis to this *Parallelism* that we owe the Vicissitude of Seasons, and the Inequality of Day and Night. See SEASON. See also DAY, &c.

**PARALLELISM of Rows of Trees.** The Eye placed at the End of an Alley of two Rows of Trees, planted in parallel Lines, never sees 'em parallel, but always inclining to each other, towards the further Extreme.

Hence the Mathematicians have taken Occasion to enquire in what Lines, the Trees must be disposed, to correct this Effect of the Perspective, and make the Rows still appear parallel; parallel they must not be, but diverging; but according to what Law must they diverge: The two Rows must be such, as that the unequal Intervals of any two opposite or corresponding Trees may be seen under equal visual Angles.

On this Principle, F. Fabry has asserted, without any Demonstration, and F. Tacquet, after him, demonstrated by a long and intricate Synthesis, that the two Rows of Trees must be two opposite Semi-Hyperbola's.

M. Varignon has since, in the Memoirs of the French Academy, Anno 1717, found the same Solution by an easy and simple Analysis. But he renders the Problem much more general, and requires not only that the visual Angles be equal, but to have them increase or decrease in any given Ratio; provided the greatest do not exceed a right Angle. The Eye, he requires to be placed in any Point, either just at the Beginning of the Ranges, or beyond, or on this Side.

All this laid down, he supposes the first Row to be a right Line, and seeks what Line the other must be, which he calls the Curve of the Range. This he finds must be an Hyperbola, to have the visual Angles equal. The straight and hyperbolic Rows will be seen parallel to Infinity; and if the opposite Semi-hyperbola be added, we shall have three Rows of Trees, (the straight one in the Middle) and all three parallel.

Nor is it required this second Hyperbola be the Opposite of the first, i. e. of the same Kind, or have the same transverse Axis: 'Tis enough if it have the same Centre, its Vertex in the same right Line, and the same conjugate Axis. Thus the two Hyperbola's may be of all the different Kinds possible; yet all have the same Effect.

Again, the straight Row being laid down as before; if it be required to have the Trees appear under decreasing Angles; M. Varignon shews, that if the Decrease be in a certain Ratio, which he determines; the other Line must be a parallel straight Line. But he goes yet farther; and supposing the first Row any Curve whatever, he seeks for another that shall make the Rows have any Effect desired, i. e. be seen under any Angles equal, increasing, or decreasing.

**PARALLELOGRAM**, in Geometry, a Quadrilateral Figure, whose opposite Sides are *parallel*, and consequently equal to each other. See QUADRILATERAL.

A *Parallelogram* is generated by the equable Motion of a right Line always parallel to itself. See FIGURE.

When the *Parallelogram* has all its four Angles right, and only its opposite Sides equal, it is call'd a *Rectangle* or oblong. See RECTANGLE.

When the Angles are all right, and the Sides equal, it is called a *Square*. See SQUARE. If all the Sides be equal, and the Angles unequal, it is call'd a *Rhombus* or *Lozange*. See RHOMBUS.

If both the Sides, and Angles be unequal, it is call'd a *Rhomboides*. See RHOMBOIDES.

**Properties of the PARALLELOGRAM.**

In every *Parallelogram*, what Kind soever it be of, E. gr. that ABCD Tab. Geometry Fig. 39. A Diagonal DA divides it into two equal Parts; the Angles diagonally opposite BC, and AD, are equal, the opposite Angles of the same Side CD, and AB, &c. are, together, equal to two right Angles; and each two Sides, together, greater than the Diagonal.

Two *Parallelograms* ABCD, and ECDF on the same or equal Base CD, and of the same Height AC, or between the same Parallels AF, CH are equal. Hence two Triangles CDA and CDF on the same Base, and of the same Height, are also equal. Hence, also, every Triangle CFD is half a *Parallelogram* ACDB, upon the same or an equal Base CD, and of the same Altitude, or between the same Parallels. Hence also a Triangle is equal to a *Parallelogram*, having the same Base, and half the Altitude, or half the Base and the same Altitude. See TRIANGLE.

*Parallelograms*, therefore, are in a given Ratio, compounded of their Bases and Altitudes. If then the Altitudes be equal, they are as the Bases, and conversely.

In similar *Parallelograms* and Triangles, the Altitudes are proportional to the homologous Sides; and the Bases are cut

proportionably thereby. Hence, similar *Parallelograms* and Triangles are in a duplicate Ratio of their homologous Sides, as also of their Altitudes, and the Segments of their Bases: They are, therefore, as the Squares of the Sides, Altitudes, and homologous Segments of the Bases.

In every *Parallelogram*, the Sum of the Squares of the two Diagonals, is equal to the Sum of the Square of the four Sides.

This Proposition, M. de Lagny, takes to be one of the most important in all Geometry; he even ranks it with the celebrated 47th of *Euclid*, and with that of the Similitude of Triangles; and adds, that the whole first Book of *Euclid* is only a particular Case hereof. For, if the *Parallelogram* be not rectangular, it follows that the two Diagonals are equal; and, of consequence, the Square of a Diagonal, or which comes to the same Thing, the Square of the Hypothenuse of a right Angle, is equal to the Squares of the two Sides. If the *Parallelogram* be not rectangular, and, of consequence, the two Diagonals be not equal; which is the most general Case; the Proposition becomes of vast Extent. It may serve, for Instance, in the whole Theory of compound Motions, &c.

There are three Manners of demonstrating this Problem; The first by Trigonometry, which requires 21 Operations; the second Geometrical and Analytical; which requires 15. M. de Lagny gives a more concise one, in the *Memoirs, de l'Acad.* which only requires 7. See DIAGONAL.

To find the Area of a rectangular *Parallelogram*, ABCD.

Find the Length of the Sides AB, and AC; multiply AB into AC; the Produce will be the Area of the *Parallelogram*. Suppose E. gr. AB to be 345; AC 123. The Area will be 42435.

Hence 1. Rectangles are in a Ratio compounded of their Sides AB and AC. 2. If, therefore, there be three Lines continually proportional; the Square of the middle one is equal to the Rectangle of the two Extremes: and if there be four proportional Lines; the Rectangle under the two Extremes is equal to that under the two middle Terms. See RECTANGLE.

Other *Parallelograms*, not rectangular, have their Areas found by resolving them, by Diagonals, into two Triangles; and adding the Areas of the separate Triangles into one Sum. See TRIANGLE.

**Centre of Gravity of a *Parallelogram*.** See CENTRE OF GRAVITY. See also CENTROBARYC Method.

**PARALLELOGRAM, or PARALLELISM, or PARALLELOGRAMIC Protractor**, is a Machine used for the ready and exact Reduction or Copying of Designs, Schemes, Prints, &c. in any Proportion; which is done hereby without any Knowledge or Habit of Designing.

The *Parallelogram* is also called *Pentagraph*. See its Description and Use under the Article PENTAGRAPH.

**PARALOGISM**, in Logic, a false Reasoning; or a Fault committed in a Demonstration, when a Consequence is drawn from Principles that are false, or not proved; or when a Proposition is pass'd over, which shou'd have been proved by the Way.

A *Paralogism* differs from a *Sophism*, in this, that the *Sophism* is made out of Design and Subtlety; and the *Paralogism* out of Mistake, and for Want of a sufficient Light and Application. See SOPHISM.

Yet the Messieurs de Port-Royal don't seem to make any Difference between them. None of the Pretenders to the Quadrature of the Circle but have made *Paralogisms*. See QUADRATURE.

**PARALYSIS**, in Medicine, a Disease popularly call'd *Palsy*. See PALSY.

The *Paralysis* only differs from the *Paresis* as the greater from the less. See PARESIS.

Authors distinguish the *Paralysis* into a *Paraplegia*, or *Paraplexia*, *Hemiplegia*, and, particular *Paralysis*.

The first is a *Palsy* of the whole Body. See PARAPLEGIA. The second, of one Side of the Body. See HEMIPLEGIA. The third of some particular Member, which is the proper *Palsy*.

The Word *Paralysis* is form'd from the Greek *παράλυω*, I unbind; This Disease being supposed to unbend the Nerves, and Muscles. Hence

**PARALYTIC**, a Person affected with the *Paralysis* or *Palsy*. See PALSY, &c.

**PARAMETER**, in Geometry, a constant right Line, in several of the Conic Sections; call'd also *Latus rectum*. See LATUS RECTUM.

In a *Parabola* VBV Tab. Conics Fig. 9. the Rectangle of the *Parameter* AB, and any Abscisse, E. gr. B3, and Semi-ordinate 3 III. See PARABOLA.

If all the Sides, and Angles of a Quadrilateral Figure be equal, it is called a *Square*; which some make a Species of *Parallelogram*, others not. See SQUARE.

In an Ellipsis and Hyperbola, the *Parameter* is a third Proportional to the conjugate and transverse Axis. See ELLIPSIS, &c. HYPERBOLA.

**PARAMOUNT**, in our Law, signifies the Supreme Lord of the Fee. See LORD and FEE.



There may be a Tenant to a Lord, that holdeth himself of another Lord; the former Lord is called *Lord Mefne*; and the other, *Lord Paramount*. But even the Term *Lord Paramount*, is only comparative: for as one Man may be great, compared to a less, and little, being compared with a greater; So none simply seems to be *Lord Paramount* but the King, who is *Patron Paramount* to all the Benefices in England. See KING. PATRON, &c.

PARAMESE, in the antient Music, the ninth Chord or Sound in the *Diagramma* or Scale of Music. See DIAGRAMMA.

The Word is Greek, and signifies *juxta mediam*, next to the Middle; its Situation in the first State of the Scales, being next the Mese or middle Chord. See CHORD.

PARANYMPH, PARANYMPHUS, among the Antients, the Person who waited on the Bride, and directed the Nuptial Solemnities; called also *Auspex*, because the Ceremony begun with taking *Auspices*.

In strictness, however, the *Paranymp* only officiated on the Part of the Bridegroom; on the Part of the Bride, 'twas a Woman officiated, call'd the *Pronuba*.

The Jews had likewise a Kind of *Paranymp*s, which the *Talmud* and the *Rabbins* call *שוחטין* *Schuschebim*, q. d. Companions of the Spouse. The IVth Council of *Carthage* appoints, that, when the married Couple come to ask the Priest's Blessing, they be presented, either by their Fathers and Mothers, or by the *Paranymp*s.

PARAPET, in Fortification, a Defence or Skreen, on the Outside of a Rampart, raised six or seven Foot high, to cover the Soldiers and the Cannon from the Enemy's Fire. See DEFENCE.

*Parapets* are raised on all Works, both within and without the Place; and even on the Approaches. See WORK.

The *Parapet Royal*, or that of the Rampart, is to be of Earth, Cannon-proof, from 18 to 20 Foot thick. See RAMPART. Before the *Parapet* is a *Banquette*, or little Eminence, a Foot and half high, for the Soldiers to stand on. See BANQUETTE.

The *Parapet* of the Wall is of Stone. The *Parapet* of the Trenches is either made of the Earth dug up, Gabions, Fascines, Sacks of Earth, or the like.

The *Parapet* of the Corridor is the *Glacis* or *Esplanade*. See ESPLANADE.

PARAPET, is also a little Wall, breast-high, rais'd on the Brinks of Bridges, Keys, or high Buildings; to serve as a Stay; and prevent People's tumbling over.

*Borel* gives us, from *Jos. Maria Subresius*, a curious Collection of Names, which the Antients and Moderns have given to this Kind of *Parapets*: The *Latins* called them *Subaræ*, and *Bastie*, whence the Names *Bastion* and *Bastile*. They also called them *Pagineumata Lorice*, and *Antemuralia*. The *Spaniards* called them *Barbacanes*; the *Italians*, *Parapetti*, because of their defending the Breast, *petto*; whence our *Parapet*.

PARAPH, a particular Character, Knot, or Flourish, which People habituate themselves to make always in the same Manner at the End of their Name, to prevent their Signature from being counterfeited. See CYPHER.

The *Paraph* of the Kings of France is a Grate, which the Secretaries always place before their own, in all Letters, &c. *Menage* derives the Word from *Paragraphus*.

PARAPHERNALIA, or PARAPHERNA, in the Civil Law, those Goods which a Wife brought her Husband, besides her Dower, and which were still to remain at her Disposal, exclusive of her Husband; unless there were some particular Provision made to the contrary, in the Marriage Contract. See DOWER.

In his *Rebus quas extra Dotem Mulier habet* & quas *Græci* *παρρησια* vocant, nullam, Uxore prohibente, Vir habeat communionem. Cod. de pactis.

The grand Customary of Normandy, gives a different Sense to the Word: It calls *Paraphernalia* the Moveables, Linnen, and other Female Necessaries, which are adjudged to the Wife, in prejudice of the Creditors, when she renounces the Succession of her Husband.

The Word is form'd from the Greek *παρὰ* beyond, or over, and *δωρ* *Dos*, Dower.

PARAPHIMOSIS, in Medicine, a Disorder of the Penis, wherein the Prepuce is shrunk, and withdrawn behind the Glans, so as not to be capable of being brought to cover the same. See PREPUCE and GLANS.

This happens oftent in venereal Disorders, where the Humours of a Gleet frequently prove so sharp, as to cause this Retraction. There sometimes arises a Necessity in this Case to snip or cut the Prepuce open, otherwise the Humours will be pent up under it, and do a great deal of Mischief. See PHIMOSIS.

PARAPHIRASE, an Explication of some Text in clearer and more ample Terms, whereby we supply what the Author might have said or thought on the Subject.

*Colomerius* looks on *Erasmus's* *Paraphrases* on the New Testament, as such extraordinary Works, that he makes no scruple to declare, he thinks the Author to have been divinely inspired, when he penn'd 'em.

*Chaldee* PARAPHRASE, is a Phrase frequent among the Critics and Divines. There are three *Chaldee* *Paraphrases* on the *Pentateuch*. That of *Onkelos*, which some take to be the same with *Aquila*: And which others take to have been that *Onkelos* which the *Talmudists*, in the *Treatise Gittin*, make a Nephew of the Emperor *Titus*. See PENTATEUCH.

The second is a *Paraphrase* of *Jonathan*; the third is called the *Targum* of *Jerusalem*. See TARGUM.

The *Chaldee* *Paraphrase* on the Prophets is of *Jonathan* Son of *Uziel*, whom some confound with *Theodotion*.

The Author of the *Chaldee* *Paraphrase* on the Hagiographic Books is unknown. Some attribute it to one *Joseph*, surnamed the *Squinter*; others to *Rabbi Akilas*. Others say, there is so much Difference in the Style, that no one Person can have been the Author.

PARAPHRENESIS, or PARAPHRENETIS, or PARAPHRENITIS, in Medicine, a Kind of Phrenzy, the Cause whereof was attributed, by the Antients, to an Inflammation of the Ventricle, the Liver, and especially the Diaphragm. See PHRENZY.

They also called it a *Pseudo Phrenesis*, false Phrenzy, to distinguish it from the true one, which they made to consist in an Inflammation of the Brain and its *Meninges*.

The Moderns don't make any such Distinction in Phrenzies: They all come from the same Cause; but that Cause is neither an Inflammation of the Brain, nor of the Diaphragm. See MANIA, MELANCHOLLY, &c.

*Paraphrenitis*, among the modern Physicians, is an Inflammation of the *Mediastinum*, or *Pleura*, about the Diaphragm, attended with a continual Fever, and exquisite Pain in the Parts affected, on contracting the abdominal Vessels, as also a *Delirium* and arising of the *Hypochondria*.

PARAPLEGIA, or PARAPLEXIA, in Medicine, a Species of *Paralysis*, or Palsy, usually succeeding an Apoplexy. See PALSY and APOPLEXY.

The *Paraplegia* is a general Palsy, affecting the whole Body, the Head alone excepted. *Boerhaave* defines it an Immobility of all the Muscles below the Head, that have Nerves from the *Cerebrum* and *Cerebellum*.

Sometimes, Sensation as well as Motion are destroyed hereby; sometimes only one of them.

Its Original is usually supposed to be some Disorder, or Obstruction in the fourth Ventricle of the Brain, or in the Beginning of the spinal Marrow.

*Etmuller* distinguishes the *Paraplegia* from the *Paralysis*. The *Paralysis*, according to him, is a Relaxation and Resolution of the Ligaments and Members ministering to Motion; not from any Obstruction of the Nerves, but from a Resolution of the nervous Parts: Whereas the *Paraplegia* arises from some Obstruction of the Nerves.

The latter usually succeeds an Apoplexy, Epilepsy, Convulsions, Verrigo's; the former, the *Scorbutus*, Hypochondriacal Disease, Colic, &c.

The Word comes from the Greek *παρὰ* much, and *πλῆξω* to strike.

PARAPLEXIA, in Medicine. See PARAPLEGIA.

PARASANG, an antient Persian Measure, different at different Times, and in different Places; sometimes it is 30, sometimes 40, and sometimes 50 *Stadia* or Furlongs. See MEASURE and STADIUM.

The Word, according to *Littleton*, has its Rise from *Parasch Angarius*, q. d. the Space a Post-man rides from one Station, *Angaria*, to another.

PARASCENIUM, or *Postscenium*, among the Romans, was a Place behind the Theatre, whither the Actors withdrew to dress, undress, &c. See THEATRE.

PARASCEVE, the sixth Day of the last Week of Lent, popularly, Good-Friday.

*St. John* says our Saviour was crucified on the *Parasceve* of the Passover, i. e. on the Eve or Day of Preparation of the Passover: For *Isidore* and *Papias* observe, that the Word in the original Greek signifies Preparation, and was applied among the Jews to Friday, because on that Day they used to prepare what was necessary for the Celebration of the Sabbath. See PASSOVER.

Hence what our Translation of the new Testament renders Preparation of the Sabbath, *M. Simon*, and some others call *Parasceve*. See PREPARATION.

PARASELENE, in Physiology, *Mock-Moon*, a Meteor, or Phenomenon, encompassing the Moon, in form of a luminous Ring; wherein is sometimes observ'd one, sometimes two apparent Images of the Moon.

The *Paraselenes* are form'd after the same Manner as the *Parhelias*, or *Mock-Suns*. See PARHELION.

The Word is form'd from the Greek *παρὰ* near, and *σῆλη* Moon.

PARASITE, PARASITUS, among the Greeks, was originally a very reputable Title; the *Parasites* being a Kind of Priests, or at least Ministers of the Gods; in the same manner, as at Rome were the *Epulones*. See EPULONES.

They took care of the sacred Corn; or the Corn destined for the Service of the Temples and the Gods, v. z. *Sacres*, *1. cultus*.



Feasts, &c. They had even the Intendance over Sacrifices, and took care they were duly performed.

At Athens there was a Kind of College of twelve *Parasites*; each People of *Attica* furnishing one; who was always chosen out of the best Families.

*Polybius* adds, that *Parasite* was also an honourable Name among the antient *Gauls*; and was given to their Poets.

*PARASITES*, or *PARASITICAL* Plants, in Botany, a Kind of diminutive Plants, growing on Trees, and so called from their Manner of living and feeding, which is altogether on others. See *PLANT*.

Such is Moss, which was antiently supposed the Effect of a Derangement of the Texture of the Bark; or a Kind of Rust; or, at most, little Filaments arising from the Bark: But from many Observations of the Moderns, it appears, that Mosses are real Plants, whose Seed is exceedingly fine, and inclosed in very little *Capsule*; which bursting of themselves, the Seed is driven by the Wind, and, at length, detained in the Inequalities of the Barks of Trees; where it takes Root and is fed at the Expence thereof. See *MOSS*.

Of these Mosses *M. Vaillant* reckons no less than 137 Species, all in the Neighbourhood of *Paris*; which, with the Lichens and *Mistleto's*, make the *Genus* of the *Parasite* Plants. See *MISTLETO*, &c.

The most pernicious of these *Parasites*, to the Trees that support 'em, are the Lichens; which appear on the Barks of Trees, in Form of a Crust, mix'd with Yellow and a dirty White. See *DISEASE of Plants*.

*M. de Reffons* gives us a Remedy for this Disease, in the *French Memoirs* of the *Acad. Roy.* It consists in making an Incision thro' the Bark to the very Wood, from the first Branches to the Earth; the Bark closes again in a little Time; and always preserves itself clean and free from Mosses for the future.

This Aperture renders the Course of the Sap more free, and prevents the Forming of those Inequalities so favourable to the Production of Mosses. The Incision, he adds, is to be made from *March* to the End of *April*; and on that Side turn'd most from the Sun.

*PARASOL*, a little Moveable, in manner of a Canopy, bore in the Hand to screen the Head from the Sun, Rain, &c. more usually called *Umbrella*.

'Tis made of Leather, Taffety, Oil-Cloth, &c. mounted on a Stick, and open'd or shut at Pleasure, by Means of Pieces of Whale-bone that sustain it.

The *East Indians* never stir out without a *Parasol*.

The Word is *French*: that used against Rains is sometimes called *Paraphuie*.

*PARASTATA*, in the antient Architecture, an Impost, or Kind of Anta or Pilaster, built for the Support of an Arch. See *ANTA*.

*Mr. Evelyn* makes the *Parastata* expressly the same with Pilaster. See *PILASTER*. *Daviler*, the same with *Impost*. See *IMPOST*.

*PARASTATÆ*, or *Epididymidæ*, in Anatomy, are two tuberculous, varicose Bodies, lying upon, and adhering to, the upper Part of the Testicles; whereof they properly appear to be a Part; tho' different from the rest, in Form and Consistence. See *TESTICLE*.

The *Parastatæ* consist, like the Testicles, of a Convolution of seminal *Tubuli*, mix'd with Blood-Vessels; the Difference between 'em lying only in this, that, in the *Parastatæ*, the *Tubuli* are united into one; the various Convolutions of which, being more firmly bound together by a strong Membrane, arising from the *Tunica Albuginea*, it feels more compact than the Testicles. See *SEED*, *SPERMATIC*, &c.

The *Parastatæ* and Testicles are said to be enclosed in three proper Membranes; the first *Musculus*, derived from the Cremaster Muscle; the second, called the *Vaginalis*; the third, the *Albuginea*. See each under its proper Article.

*PARASYNANCHE*, in Medicine, a Kind of Angina or Squinancy, wherein the exterior Muscles of the Throat are inflamed. See *SQUINANCY*.

The Word comes from *παρά, συν ασπν* to suffocate.

*PARATHESIS*, in the Greek Church, the Prayer which the Bishop rehearses over the Catechumens, stretching his Hands over 'em to give 'em Benediction; which they receive, bowing the Head under his Hands.

*PARATHESIS*, in Grammar, a Figure whereby two or more Substantives are put in the same Case. See *FIGURE*.

*PARATILMUS*, in the antient Greek Jurisprudence, a Name given to the Punishment imposed on Adulterers who were poor and unable to stand the common Penalty.

It consisted either in making 'em run a Horse-Radish up the *Anus*, which they called *ἀποκαταδωσις*; or in tearing up the by Roots, the Hair about the Fundament, &c. which they called *παρτίλμος* of *παρτίλλαν*, to tear, pluck up.

*PARATITLES*, *PARATITLA*, in Jurisprudence, short Notes, or Summaries of the Titles of the Digest, and Code; which have been made by several Lawyers, in order to compare, and examine the Connection of the several Parts with one another.

We have *Paratitles* of *Cujas*, of *Mayan*, &c. *Chassanetius* has a second Comment on the *Paratitles* of *Cujas*.

*PARAVAIL*, in Law, the lowest Tenant; or he that is immediate Tenant to the Land. See *TENANT*.

He is called *Tenant Paravail*; because it is presumed he hath Profit and *Avail* by the Land.

*PARAZONIUM*, or *Scipio*, among Medallists, a Scepter, rounded at the two Ends in Manner of a Truncheon or Commander's Staff; or a Kind of Poniard or short Sword; represented as wore at the Girdle, on several antient Medals.

Antiquaries are much divided on the Explication of the *Parazonium*; as, indeed, the Form and Manner of bearing it are very different. It is sometimes thrown a-cross the Shoulders in Manner of a Quiver.

*PARBOILING*, in Pharmacy, &c. a Term applied to Fruits, Herbs, &c. which are boiled a little while, to draw out the first Juices, to be afterwards inspissated or thickened. See *BOILING*.

*PARCÆ*, *Destinies*, Goddesses, who, according to the antient *Pagan* Theology, preside over the Lives of Men.

These the Antients frequently confounded with the *Fates*, or *Destinies*; and, in effect, the *Parcæ*, according to *Plato*, were the Daughters of *Necessity*, and *Destiny*. See *FATE* and *DESTINY*.

The *Parcæ* were three, *Clotbo*, *Lachesis*, and *Atropos*; because, forsooth, all Things have their Beginning, Progress, and End.

Hence the Poets tell us, the *Parcæ* spun Men's Lives; that *Clotbo* held the Distaff, and spun the Thread; *Lachesis* turned the Wheel; and *Atropos* cut it.

The Antients represent the *Destinies* divers Ways: *Lucian*, in the Shape of three poor old Women, having large Locks of Wool, mix'd with Daffodils on their Heads; one of which holds a Distaff, the other a Wheel, and the third a Pair of Scissars, wherewith to cut off the Thread of Life. Others represent them otherwise; *Clotbo* appearing in a long Robe of divers Colours, wearing a Crown upon her Head, adorned with seven Stars, and holding a Distaff in her Hand; *Lachesis* in a Robe full of Stars, with several Spindles in her Hands; and *Atropos* clad in black, cutting the Thread with large Scissars.

The Antients imagined that the *Parcæ* used white Wool for a long and happy Life; and black, for a short and unfortunate one.

*PARCEL-MAKERS*, two Officers in the Exchequer, that make the Parcels of the Escheator's Accounts, wherein, they charge them with every Thing they have levied for the King's Use, within the Time of their Office, and deliver the same to one of their Auditors of the Court to make an Accompt with the Escheator thereof. See *ESCHEATOR*.

*PARCENERS*, *quasi* *Parcellers*. See *CO-PARCENERS*.

*PARCHMENT*, in Commerce, &c. Sheep's or Goat's Skin prepared after a peculiar Manner, which renders it proper for several Uses; particularly for writing on and covering of Books, &c.

The Word comes from the *Latin Pergamentum*, the antient Title of this Manufacture; which 'tis said to have took from the City *Pergamos*, to one of the Kings whereof its Invention is ascribed.

Parchment is begun by the Skinner, and ended by the *Parchment-Maker*. It makes a very considerable Article in the *French* Commerce: 'Tis made in most of their Cities; and, besides the Consumption at Home, they send vast Quantities abroad; particularly to *England*, *Flanders*, *Holland*, *Spain*, and *Portugal*.

That call'd *Virgin Parchment*, and which superstitious People believe to be made of a Kind of Caul, wherein some Children are inclosed in the Womb; is nothing but a somewhat thinner and finer Sort than the rest, proper for certain Purposes, as Fans, &c. and made of the Skin of an abortive Lamb, or Kid.

#### Manufacture of PARCHMENT.

The Skin having been stripp'd of its Wool, and pass'd the Lime-Pit; (after the Manner described under the Article *CHAMOIRS*.) The Skinner stretches it on a Kind of Frame, consisting of four Pieces of Wood, mortals'd into each other at the four Angles, and perforated lengthways from Distance to Distance, with Holes, furnished with wooden Pins that may be turned at Pleasure, like those of a Violin.

To stretch the Skin on this Frame, they make little Holes all around it, and thro' every two Holes draw a little Skewer; to this Skewer they tie a Piece of small Packthread, and tie that over the Pins; so that coming to turn the Pins equally, the Skin is strained tight every Way, like that of a Drum.

The Skin being thus sufficiently stretch'd on the Frame; the Flesh is par'd off with a sharp Instrument for the Purpose; this done, 'tis moistened with a Rag, and a Kind of white Stone or Chalk, reduced to a fine Dust, strew'd over it; then with a large Pumice-Stone, flat at Bottom, much after the Manner of a Mullet for grinding Colours, they rub over the Skin as if about to grind the Chalk; and thus scower off the Remains of the Flesh. They then go over it again with the iron Instrument; again moisten it as before, and again rub it with the



the Pumice-Stone without any Chalk underneath; this smooths and softens the Flesh-Side very considerably. They drain it again, by passing over it the iron Instrument as before.

The Flesh-Side thus drain'd, they pass the Iron on the Wool, or Hair-Side; then, stretch it tight on the Frame by means of the Pins, and go over the Flesh-Side again with the Iron; this finishes its draining; and the more the Skin is drained, the whiter it ever becomes.

They now throw on more Chalk, sweeping it over with a Piece of Lamb-skin that has the Wool on; this smooths it still further, and gives it a white Down or Nap. 'Tis now left to dry, and when dried, taken off the Frame, by cutting it all round.

The Skin, thus far prepared by the Skinner, is taken out of his Hands by the Parchment-Maker; who first scrapes or pares it dry on the Summer, with an iron Instrument like that above-mentioned, only finer and sharper; with this, work'd with the Arm from Top to Bottom of the Skin, he takes away about one Half of its Thickness. The Skin, thus, equally pared, on both Sides, they pass the Pumice-Stone over both Sides, to smooth it. This last Preparation is perform'd on a Kind of Form or Bench cover'd with a Sack stuffed with Flocks, and leaves the Parchment in a Condition for writing on.

The paring of the Skin dry on the Summer, is the most difficult Preparation in the whole Process of Parchment-making, for which Reason the Skinners seldom dare meddle with it; but usually leave it to those more experienced in it: The Summer, whereon it is performed, is a Calf-Skin well stretch'd on a Frame, serving as a Support to the Skin which is fasten'd a-top of it with a wooden Instrument, that has a Notch cut in it. Lastly, that the iron Knife may pass the easier, between the Summer and the Skin to be pared, they put another Skin which they call the Counter-Summer. The Parings thus taken off the Leather, are used in making Glue, Size, &c. See GLUE, &c.

What we call *Vellum* is only Parchment made of the Skins of abortive Calves, or at least of sucking Calves; 'tis finer, whiter, and smoother than the common Parchment; but is prepared in the same manner as that, abating that 'tis not pass'd thro' the Lime-Pit.

PARCO *fracto*, in Law, a Writ that lies against him who violently breaks open a Pound, and takes out Beasts thence, which, for some Trespass done, were lawfully impounded. See POUND.

PARDON, in Law, a Remission, or Forgiveness of a felonious, or other Offence against the King.

This our Lawyers make twofold; the one, *ex Gratia Regis*, the other, *per Cours de Ley*. The first is that, which the King out of some special Regard to the Person, or some other Circumstance, grants by his absolute Perogative or Power. The other is that he grants, as the Law and Equity persuades, for a slight Offence; as Homicide Casual, &c.

PARDON, in the Canon Law, is an Indulgence which the Pope grants to supposed Penitents, for Remission of the Pains of Purgatory, which they have merited for the Satisfaction of their Sins. See INDULGENCE.

The grand Time for the Dispensation of Pardons is the *Jubilee*. See JUBILEE.

In this Sense, *Pardon* is properly the Angelic Salutation, said to the Virgin at the Sound of three little Strokes of a Bell, rung in the Morning, Noon, and Night, in order for the Person to be entitled to Indulgences.

PARDONERS, in our antient Customs, were Persons who carried about the Pope's Indulgences, and sold 'em to the highest Bidders. See INDULGENCE.

PARAGORICKS, in Medicine, Remedies which assuage Pain; the same with what we otherwise call *Anodynes*, and *Opiates*. See ANODYNE and OPIATE.

The Word is Greek παρηγορεω.

PARELCON, in Grammar, a Figure, whereby a Word, or Syllable, is added to the End of another.

PARELIA, or *Parbelia*, in Physiology. See PARHELIA.

PAIREIRA BRAVA, the Root of a Plant growing in the *West-Indies*; chiefly *Mexico* and *Brazil*; esteem'd a Specific for the Cure of the Stone and Gravel.

The Name, which in the original *Portuguese*, signifies *Wild-Vine*, or *Bastard Vine*, bears a good deal of Analogy to the Plant, which bears Branches laden with Leaves perfectly like those of the Vine; and which, like them, creep along Walls and Trees.

The *Portuguese* value this Root on an equal footing with the *Ipecacuanha*. Some Druggists call it, by Corruption, *Parada Brava*.

M. *Geoffroy* attributes the Efficacy of this Root, in Nephritic Cases, to its dissolving the viscid Matters, whereby the Particles of the Sand, &c. were cemented together: And hence, he gives it with the same Intention in Jaundices, Asthma's, &c. It is given in Decoction.

The *Portuguese* hold it also a Remedy for Dysenteries, Quinzies, Bites of venomous Beasts, &c.

PARENCHYMA, or PARENCHYMOUS *Flesh*, in Anatomy, a

Term used for the peculiar Substance of several Parts of the Bodies of Animals, as the Heart, Lungs, Liver, Spleen, Kidnies, &c. thus called from the Greek *παρυσμα*, Effusion, &c. generated by a Collection and Condensation of Juice. See FLESH.

*Erasistratus* first gave the Name; as imagining the Substance of these Parts not to be Vascular like the rest, but to consist of a Mass or *Coagulum* of Blood, stagnated in the Vessels of the Parts: But the Moderns reject this Opinion: The Observations made by Microscopes, Injections, &c. clearly shewing that the Heart is a true Muscle, (See HEART) the Lungs and Spleen, Clusters of membranous Vesicles, and Vessels (See LUNGS and SPLEEN) and the Liver and Kidnies, Compositions of Glands, thro' which the Bile and Urine are filtrated. See LIVER and KIDNIES.

PARENCHYMA of a Plant. Dr. *Grew* gives the Name *Parenchyma* to the *Pith* or *Pulp*; or that inner Part of the Plant, thro' which the Juice is supposed to be distributed. See PLANT, PITH, &c.

This, when view'd with a Microscope, appears to resemble Marrow; or rather a Sponge; being a porous flexible dilatable Substance. See MEDULLA.

Its Pores are innumerable, and exceedingly small; receiving as much Humour as is requisite to fill and extend them; which Disposition of Pores it is, that is supposed to fit the Plant for Vegetation and Growth. See VEGETATION.

The *Parenchyma* is white, at first, but changes its Colour, in Proportion as the Root grows thicker. Thus it becomes yellow in the Root of the *Bastard Rhubarb*, and red in that of the *Snake-weed*. See PLANT.

PARENT, a Term of Relation, applicable to those from whom we immediately receive our Being. See FATHER and MOTHER.

PARENTALE, *de Parentale se tollere*, in the antient Customs, signified a Renunciation of one's Kindred, and Family.

This was done in open Court, before the Judge, and in the Presence of twelve Men, who made Oath, they believed it was done for a just Cause.

We read of it in the Laws of *Hen. I.* after such Abjuration, the Person was incapable of inheriting any Thing from any of his Relations, &c.

PARENTALIA, in Antiquity, funeral Obsequies; or the last Duties paid by Children to their deceased Parents. See OBSEQUIES.

PARENTHESIS, in Grammar, a Number of Intercalary Words, inserted in a Discourse; which interrupt the Sense, or Thread, but which seem necessary for the fuller understanding of the Subject.

The Word is form'd of the Greek *παρὰ* inter, between, and *ενδιον* Position, *q. d.* put between.

The politest of our modern Writers avoid all *Parentheses*; as keeping the Mind in suspense, embarrassing it, and rendering the Discourse less clean, uniform and agreeable: Long and frequent *Parentheses* are intolerable; especially in Verse, which they ever render dull, and languid, and like to Prose.

The proper Characteristic of a *Parenthesis*, is that it may be either taken in, or left out, the Sense and Grammar remaining entire.

In Speaking, *Parentheses* are to be pronounced with a different Tone; and in writing, are inclosed between ( ); to distinguish them from the rest of the Discourse.

The Character itself is also called a *Parenthesis*. See CHARACTER.

PARERE, in Commerce, an *Italian* Term which begins to be naturalized. It signifies the Advice or Counsel of a Merchant or Negotiant; for that such a Person, being consulted on any Point, introduces his Answer, in *Italian*, with *Mi pare*, i. e. *I think, it seems to me*.

The Method of Negotiating, especially, that of Bills of Exchange, being borrowed from the *Italians*, most trading Cities, especially *Lyons*, retain the Use of *Pareres*; which are the Advices or Opinions of Merchants and Negotiants; and which serve as Acts before Notaries, when given by Authority of a Judge-Consultator, or at a particular Consultation, for maintaining the Right of the Consultor.

M. *Savary* has an excellent Treatise, intitled, *Parere, ou Avis & Conseils sur les plus Importantes Matieres du Commerce*; Containing the Resolution of the most difficult Questions relating to Bankrupts and Failures, Bills of Exchange, Orders without Dates or Expression of Value, Blank-signings, Renewing of Bills of Exchange, those drawn or accepted by Women in Behalf of their Husbands, or during the Minority of the Drawer, &c.

PARERGA, a Term sometimes used in Architecture, for Additions, or Appendages, made, by way of Ornament, to a principal Work.

It is sometimes also used in Painting for little Pieces, or Compartments on the Sides, or in the Corners of the principal Piece.

PAREISIS, in Medicine, a Disease call'd also *Paralysis* and *Palsy*. See PARALYSIS, &c.

PARGETING, in Building, is used for the Plastering of Walls; sometimes for the Plaster itself. See PLAISTER.



*Parqueting* is of various Kinds; as, 1. White Lime and Hair Mortar laid on bare Walls. 2. On bare Laths, as in partitioning and plain Cieling. 3. Rendering the Insides of Walls or double Partition-Walls. 4. Rough-casting on Hearth-Laths. 5. Plastering on Brick-work, in Imitation of Stone-work; and the like upon Hearth-Laths.

**PARHELIUM, PARHELION, or PARELION**, in Physiology, *Mock-Sun*, a Meteor, in Form of a very bright Light, appearing a-side of the Sun; form'd by the Reflexion of his Beams in a Cloud properly posited. See METEOR.

The *Parbelia* usually accompany the *Corone*, or large Crowns; are placed in the same Circumference, and at the same Height. Their Colours resemble those of the Rain-bow; the Red and Yellow on the Side towards the Sun; and the Blue and Violet on the other. See RAINBOW.

Tho' there are *Corone* sometimes seen entire, without any *Parbelia*; and *Parbelia* without *Corona*. See CORONA.

In the Year 1629. was seen at Rome a *Parbelion* of five Suns; and in 1666. another at Arles of six.

The Word is form'd from the Greek *παρὰ ἵστα*, near, and *ἥλιος*, Sun.

M. Mariotte accounts for the Appearance of *Parbelia*, from an Infinity of little Parcels of Ice floating in the Air, which multiply the Image of the Sun, either by refracting and breaking his Rays, and thus making him appear where he is not; or by reflecting 'em, and serving as Mirrors. See MIRROR, &c.

The known Laws of Reflexion and Refraction have given a Handle for Geometrizing on these *Phænomena*; and M. Mariotte has determined the precise Figure of the little Icicles, and their Situation in the Air, the Size of the *Corone* or Circles which accompany the *Parbelia*, and the Colours wherewith they are painted, by a Geometrical Calculus.

Mr. Huygens accounts for the Formation of a *Parbelion*, in the same Manner, as for those of the *Halo*, viz. by supposing a Number of small icy Cylinders, with opaque Kirnels, carried in the Air, neither in a perpendicular nor parallel Direction, but inclined to the Horizon in a certain Angle, nearly half a right one.

To make the Effect of these Cylinders manifest, M. Huygens produced to the Academy of Paris, a glass Cylinder a Foot long, with an opaque Cylinder of Wood in the Middle, and the ambient Space fill'd with Water and transparent Ice; which Cylinder being expos'd to the Sun, and the Eye put in the requisite Situation, there were successively seen all the Refractions and Reflections, necessary for the *Phænomena* of the *Parbelia*. See HALO.

**PARIETALIA Ossæ**, in Anatomy, the third, and fourth Bones of the *Cranium*; so called, because they form the *Parietes*, or Sides of the Head. See CRANIUM.

Their Substance is finer and thinner than that of the *Coronal* and *Occipital*. Their Figure is square; their Size surpasses that of the other Bones of the Head; and their Situation, in the lateral Parts, which they possess entirely.

The *Sagittal Suture* connects them at the upper Part; the *Coronal* joins their Fore-part to the *Os Frontis*; the *Lambdoidal* joins them by the Hind-part to the *Occipital* Bone; and, lastly, the squamous *Suture* joins them by the Lower-part to the *Ossa Petrosa*.

The outer Surface of these Bones is very smooth and polish'd; the inner, rough and uneven; full of Impressions, which the Arteries of the *Dura Mater* have made by their continual Pulsation before they were ossified.

**PARIETES, Sides**, in Anatomy, a Term used for the *Intlosures*, or Membranes, that stop up or close the hollow Parts of Bodies, especially those, of the Heart, the *Thorax*, and the *vis*. See HEART, THORAX, &c.

The *Parietes* of the two Ventricles of the Heart are of unequal Strength and Thickness, the left exceeding the right, because of its Office, which is to force the Blood thro' all Parts of the Body; whereas the right only drives it thro' the Lungs. See VENTRICLE, &c.

**PARISH**, the Precinct or Territory of a *Parish* Church. See CHURCH. See also PAROCHIAL.

In the ancient Church, there was one large Building in each City, for the People to meet in; and this they call'd *Parish*. But the Signification of the Word was afterwards enlarged, and by *Parish* was meant a Diocese, or the Jurisdiction of a Bishop, consisting of several Churches; unless we will suppose, as some do, that those Bishops were only Pastors of single Churches. See DIOCESE and BISHOP.

At least, the Word now retains its original Meaning.

*Du-pin* observes, that Country *Parishes* had not their Origin before the IVth Century; but those of Cities are more ancient. The City of *Alexandria* is said to have been the first that was divided into *Parishes*. *Baronius* says, that in the Time of Pope *Cornelius*, there were 46 *Parishes* in Rome.

The Division of England into *Parishes*, is attributed to *Horinus* Archbishop of *Canterbury*, in 636. *Camden* reckons 9284 *Parishes* in England. *Chamberlayn* makes, at present, 9913.

The Word comes from the Latin *Parochia*, of the Greek *παροικία*.

*Du Cange* observes, that the Name *parochia* was antiently

given to the whole Territory of a Bishop, and derives it from Neighbourhood; because the Primitive Christians, not daring to assemble openly in Cities, were forced to meet secretly in Neighbour-houses.

**PARISH-Priest**; the Parson, or Minister who holds a *Parish* as a Benefice. See PARSON.

If the predial Tythes be appropriated, the Parson is called *Rector*. See RECTOR. If they be impropriated, he is call'd *Vicar*. See VICAR.

**PARISIS**, a Money of Account; formerly a real Money; struck at *Paris*; at the same Time with the *Tournois*, struck at *Tours*. See MONEY and COIN.

The *Parisis* exceeded the *Tournois* by one Fourth; so that the *Livre* or Pound *Parisis* was 25 *Sols*; and the *Livre Tournois* 20. The *Sols* and *Deniers*, *Parisis*, &c. in Proportion. See LIVRE, SOL, &c.

**PARK**, an Inclosure stock'd with wild Beasts, *tam Sylvestres, quam Campestris*; say our old Lawyers.

*Crompton* observes, that a Subject may hold a *Park* by Prescription, or the King's Grant, which he can't do a Forest. See FOREST.

A *Park* differs from a *Chase* or *Warren*; for that a *Park* must be enclosed; if it lie open, it is a good Cause of seizing it into the King's Hand; as a free *Chase* may be, if it be enclosed. Nor can the Owner have any Action against such as hunt in his *Park*, if it lie open. See CHASE.

*Du Cange* refers the Invention of *Parks* to King Henry I. of England: But *Spehman* shews, 'tis much more antient; and was in use among the *Anglo Saxons*.

*Zozimus* assures us, the antient Kings of *Persia* had *Parks*. The Word is originally *Celtic*, where it signifies an Inclosure, or Place shut up with Walls.

**PARK** is also used for a moveable Palissade set up in the Fields to inclose Sheep in to feed, during the Night.

The Shepherds shift their *Park*, from Time to Time, to dung the Ground, one Part after another.

**PARK** is also used for a very large Net, disposed on the Brink of the Sea, with only one Hole which looks towards the Shore; and which becomes dry, after the Flood is gone off; so that the Fish has no Way left to escape.

**PARK**, in War, or *Park of the Artillery*, a Post in a Camp, out of Cannon Shot; where the Cannon, artificial Fires, Powder, and other warlike Ammunition are kept, and guarded, by Pike-men only, to avoid all Casualties that might happen by Fire. Every Attack, at a Siege, hath its *Park* of Artillery.

**PARK** of Provisions, is another Place in a Camp, on the Rear of every Regiment, which is taken up by the Sutlers, who follow the Army with all Sorts of Provisions, and sell them to the Soldiers.

**PARLEY**, a Conference with an Enemy, &c. of the *French* *Parler* to speak, talk.

Hence to beat or sound a *Parley*, is to give a Signal for the holding of such a Conference by Beat of Drum, or Sound of Trumpet.

**PARLIAMENT**, a Grand Assembly, or Convocation, of the Three Estates of the Kingdom, viz. *Lords Spiritual*, *Lords Temporal*, and *Commons*, summoned to meet the King, to consult of Matters relating to the Common-weal; and particularly to enact and repeal Laws. See ESTATE.

The two Houses of *Parliament* are the King's Grand Council. See COUNCIL.

'Till the Conquest, the great Council, consisting only of the great Men of the Kingdom, was call'd *Magnatum Conventus*, and *Prelatorum procerumque Concilium*. The *Saxons*, in their own Tongue, call'd it *Wittenagemote*, i. e. Assembly of the Wise.

After the Conquest, about the Beginning of the Reign of K. *Edw. I.* Some say, in the Time of *Hen. I.* it was called *Parlementum*, q. d. *Speechment*, from the *French*, *Parler*, to speak; tho' it still only consisted of the great Men of the Nation: Till in the Reign of *Hen. III.* the Commons were also called to sit in *Parliament*: The first Writs sent out to summon them bore Date 49 *Hen. III.* Anno 1217.

*Parliaments* are to be summoned, prorogued, and dissolved by the King alone: Nor can a *Parliament* begin without the King's Presence. See KING.

At first new *Parliaments* were call'd every Year: By degrees their Term grew longer. In the Time of King *Charles II.* they were held a long Time with long Interruptions between. Both which were found of so ill Consequence, that in the Beginning of the Reign of K. *William*, an Act was passed, whereby the Term of all *Parliaments* was restrained to three Sessions, or three Years; hence call'd the *Triennial Act*. Since that, from other Views, the Period of *Parliaments* is again, 3 *Georgii*, lengthen'd to seven Years.

A *Parliament* is call'd by the King's Writ, or Letter, directed to each Lord, commanding them to appear; and, by other Writs, directed to the Sheriffs of each County, to summon the People to elect two *Knights* for each County, and one or two *Burgeesses* for each Borough, &c.

Antiently, all the People had Votes in the Elections; till it was enacted by *Hen. VI.* That none but Freeholders, residing in the County, and who had a yearly Revenue of 40 s. should



be admitted to vote; nor were any to be elected that were under 21 Years of Age.

That the Members might attend in *Parliament* with more Freedom, they, and all their menial Servants, were privileged from all Arrests, Attachments, Imprisonments, &c. for Debts, Trespasses, &c. *eundo, morando ad propria Reduendo*; but not from Arrests for Treason, Felony, and Breach of Peace.

The Place where the *Parliament* meets, is wherever the King pleases; of late, it has been in the Palace of *Westminster*; the Lords and Commons each in distinct Apartments. In the Lord's House the Princes of the Blood are placed in distinct Seats; the great Officers of State, Dukes, Marquisses, and Bishops on Forms; and the Viscounts and Barons on others across the House; all according to their Order of Creation, Place, &c. See PRECEDENCY.

The Commons sit promiscuously; only the Speaker has a Chair at the upper End; and the Clerk and his Assistant a Table near him. Before any Matters be done, all the Members of the House of Commons take the Oaths, and subscribe their Opinions against Transubstantiation, &c. which Test, the Lords too, tho' they don't take the Oaths, are obliged to take.

The House of Lords is the sovereign Court of Justice of the Realm, and the Dernier Resort: The House of Commons the grand Inquest, but no Court of Justice. See PEERS and COMMONS.

As to the Manner of debating and passing Bills in Parliament; Any Member may move to have a Bill brought in for any thing, which, upon a Question put, being agreed to by a Majority, that Person with others are ordered to prepare and bring in the same. When ready, a Time is appointed for a Reading: after reading it by the Clerk, the Speaker reads the Abstract thereof, and puts the Question, whether or no it shall have a second Reading? after a second Reading, the Question is, whether or no it shall be committed? which is either to a Committee of the whole House, if it be of Importance; or to a private Committee, any Member naming the Persons. See COMMITTEE.

The Committee appointed, and a Chairman chosen, the Chairman reads the Bill, Paragraph by Paragraph, puts every Clause to the Question, fills up Blanks, and makes Amendments, according to the Opinion of the Majority. The Bill thus gone thro', the Chairman makes his Report at the Side-bar of the House, reads all the Additions and Amendments, &c. and moves for Leave to bring up the Report to the Table; which granted, he delivers it to the Clerk, who reads the Amendments, &c.

The Speaker then puts the Question, whether they shall be read a second Time; and, if agreed to, reads them himself. To so many as the House acquiesces in, the Question is now put, whether the Bill, thus amended, shall be engross'd and writ fair in Parchment, and read a third Time? The Bill engross'd, the Speaker holds it in his Hand; and asks if it shall pass? If the Majority be for it, the Clerk writes on it, *Soit baille aux Seigneurs*. Or, in the House of Lords, *Soit baille aux Communes*.

If a Bill be rejected, it cannot be any more more proposed during that Session. See BILL.

Forty Members constitute a *House of Commons*, and eight a Committee. A Member of the Commons, to speak, stands up, uncovers, and directs his Speech to the Speaker only. If what he says be answered by another, he is not allowed to reply the same Day, unless personally reflected on. Nor may any Person speak more than once to the same Bill in the same Day.

In the Lord's House they vote, beginning at the Puiss or lowest Baron, and so up orderly to the highest, every one answering a-part, *Content* or *Not Content*. In the House of Commons, they vote by *Yea's* and *Nay's*; and if it be dubious, which is the greater Number, the House divides. If the Question be about bringing any Thing into the House, the *Yea's* go out; if it be about any the House already has, the *No's* go out. In all Divisions, the Speaker appoints four Tellers, two of each Opinion. In a Committee of the whole House, they divide by changing Sides, the *Yea's* taking the right, the *No's* the left of the Chair, and then there are but two Tellers.

If a Bill pass one House, and the other demur at it, a Conference is demanded in the Painted Chamber, where certain Members are deputed from each House; and here the Lords sitting cover'd, the Commons standing bare, the Case is debated. If they disagree, the Affair is null; if they agree, this, with the other Bills that have passed both Houses, is brought down to the King, in the House of Lords, who comes thither cloath'd in the Royal Robes and with the Crown on, before whom the Clerk of the *Parliament* reads the Title of each Bill, and as he reads, the Clerk of the Crown pronounces the Royal Assent or Dissent.

If it be a public Bill, the Royal Assent is given by these Words, *Le Roy le veut*. If a private one, by *Soit fait comme il est desire*. If the King refuses the Bill, the Answer is, *Le Roy s'avisera*. If it be a Money Bill, the Answer is, *Le Roy remercie ses Loyaux Sujets, accepte leur Benovolence & aussi le Veut*.

The Bill for the King's general Pardon has but one Reading. The Number of Members in the House of Lords is un-

certain; as increasing at the King's Pleasure. The Members of the House of Commons, when full, are 552, viz. 92 Knights of Shires; 52 Deputies for the 25 Cities, *London* having 4; 16 for the 8 Cinque Ports; 2 for each University; and, finally, 332 for 180 Boroughs, beside 12 Boroughs for *Wales*, and 45 Members for *Scotland*.

PARLIAMENT is sometimes also used for other Assemblies beside those of the States of the Realm. Thus we read that the Abbot of *Croyland* was used to call *Parliaments* of his Monks, to consult of the Affairs of the Monastery: And, at this Day, an Assembly of the two Temples, called to consult of their common Affairs, is called a *Parliament*. See TEMPLE.

PARLIAMENTS of *France*, are Courts or Assemblies establish'd by the King, to judge of the Differences between particular Persons, and to pronounce on Appeals from Sentences given by inferior Judges. See COURT.

There are ten of these Parliaments in *France*. That of *Toulouse*, establish'd in 1303: That of *Dison*, in 1476: That of *Grenoble*, in 1453: That of *Rouen*, in 1499: That of *Remes* in *Bretagne*, in 1553: That of *Bordeaux*, in 1502: That of *Aix*, in 1501: That of *Metz*, in 1633: That of *Pau* in *Bearn*, in 1519: And that of *Paris*.

The *Parliament* of *Paris* is the Principal, and that whose Jurisdiction is of the greatest Extent. This is the chief Court of Justice throughout the Realm. It consists of six Chambers: the grand Chamber, where Causes of Audience are pleaded; and five Chambers of Inquests, where Processes are adjudged in Writing. See CHAMBER.

Under their second Race of Kings, the *Parliament*, like that of *England*, was the King's Council; gave Audience to Ambassadors, and consulted of the Affairs of War and Government.

The Kings, like ours, presided in 'em, without being, at all, Masters of their Resolution. But, in after Times, their Authority has been abridg'd, the Kings having reserv'd the Decision of the grand Affairs of the Public to their own Councils; leaving none but private ones to the *Parliaments*.

PARLIAMENTUM *Indoctorum*, a Denomination given to a *Parliament* held at *Coventry*, 6 Hen. IV. whereunto, by special Precept to the Sheriffs of the several Counties, no Person skill'd in the Law was to be called.

PARLIAMENTUM *Insanum*, was a *Parliament* held at *Oxford*, An. 41 Hen. III. thus call'd, say our Chronicles, because the Lords came with great Retinues of armed Men to it; and many Things were violently transacted therein, against the King's Prerogative.

PARLIAMENTUM *Diabolicum*, was a *Parliament* held at *Coventry*, 38 Hen. VI. wherein *Edward* Earl of *March* afterwards King, and several others, were attainted. The Acts pass'd herein were annull'd by the succeeding *Parliament*.

PARLIAMENTUM *de la Bonde*, was a *Parliament* in *Edward* II's Time, whereto the Barons came armed against the two *Spencers*, with colour'd Bands on their Sleeves for Distinction.

PARLOIR, PARLOUR, in Nunneries, a little Room, or Closter, where People talk to the Nuns, thro' a Kind of grated Window.

The Word is formed from the *French* *Parler*, to talk; and hence also our *Parlour*.

Antiently, there were also *Parlours* in the Convents of Monks, where the Novices used to converse together, at the Hours of Recreation; but there were listening Places over, from whence the Superiors cou'd hear what they said; such a one there still subsists in the Abbey St. *Germain de Trez*.

In the Order of *Fevillans*, the *Parlour* is a little Room open on all Sides, placed at each End of the Dormitory, where the Monks talk together, it not being allow'd them to speak in the Dormitory.

PARMA, among Antiquaries, a Kind of ancient Buckler. See BUCKLER.

*Polybius* describes the *Parma* as very strong, round, three Foot in Diameter, and big enough to cover the whole Body; Yet *Servius*, on the *Aeneid*, and even *Virgil* himself mention it as a light Piece of Armour, in Comparison of the *Clypeus*. See SHIELD.

PARMESAN. See PANUAN.

PAROCHIAL, something belonging to a *Parish*. See PARISH.

Every Church is either Cathedral, Collegiate, or *Parochial*. See CHURCH.

*Cathedral* is where there is a Bishop's See, or Seat, call'd *Cathedra*. *Collegiate*, consists either of regular Clerks, professing some religious Order; or of Dean and Chapter. See CATHEDRAL, COLLEGIATE, &c.

*Parochial* Church is that instituted for the performing of divine Service to the People who dwell within a certain Compass of Ground.

PARODY, a popular Maxim, Adage or Proverb. See PROVERB.

The Word is form'd from the *Greek* *παρὰ* and *ὁδὸς*, *Via*, Way, as being trite, or passing among the People.

PANONY, is also a poetical Pleasantry, consisting in applying the Verses of some Person, by Way of Ridicule, to another; or



turning a serious Work into Burlesque, by affecting to observe, as nearly as possible, the same Rhymes, Words, and Cadences. See **BURLESQUE**.

The *Parody* was first set on foot by the *Greeks*; from whom we borrow the Name. It comes near to what some of our late Writers call *Travesty*. See **TRAVESTY**.

**PARODICAL Degrees**, in an Equation, the several regular Terms in a Quadratic, Cubic, or Biquadratic Equation, &c. The Indices of whose Powers ascend or descend orderly in an arithmetical Progression. See **EQUATION**.

Thus,  $Z + Z^2 M + Z^3 r = S$  is a Cubic Equation where no Term is wanting, but having all its *Parodic Degrees*; the Indices of the Terms regularly descending thus 3, 2, 1, 0.

**PAROL**, in Law, is sometimes used in antient Writers for a Plea in Court. See **PLEA**.

*Lease-PAROL*, or *per Parol*, is a Lease by Word of Mouth; thus call'd to distinguish it from one in Writing. See **LEASE**.

**PAROLE**, in War, &c. when a Prisoner of War is allow'd to go into his own Country, or to his own Party, upon his Word and Promise to return at a Time appointed, if not exchange'd, he is said to be out upon *Parole*, i. e. upon his Word.

**PAROLI**, in Gaming, the double of what was laid at Stake before; hence, to offer the *Paroli*, &c.

**PAROEMIA**, a Proverb. See **PROVERB**.

The Word is form'd from the Greek *παροιμία* Way; *quasi* *παρὰ τὴν ὁδὸν* *juxta viam*, i. e. *tritum*; or from *παρὸν* Word.

**PARONOMASIA**, in Rhetoric, a Figure whereby Words nearly alike in Sound, but of very different Senses are affectedly used.

As, not Friends but Fiends were here: So Tully to Anthony, cum in Gremio Mimarum mentem & mentum deponeres: And to Atticus, Consul ipse parvo Animo & pravo, facie magis quam faciliis ridiculus. And that of P. Chrysologus; Monachorum Cellule jam non Eremiticæ sed Aromaticæ. And in another Place, Hoc agant in Cellis quod Angeli in Cælis.

Among the *Greeks* the *Paronomasia* was very familiar. Thus Herodotus *παθήματα, μαθήματα, quæ nocent, docent*.

And thus that Inscription of *Apolloionus* a celebrated Painter, on one of his Pieces.

*Μαυησεται τις μάλλον ἢ μιμήσεται*

*'Twill be easier to deride, than to imitate.*

The Word is form'd from the Greek *παρὰ* near, and *ὄνομα* Name, q. d. Proximity or Resemblance of two Names.

**PARONYCHIA**, *Whitloe*, in Medicine, a painful Kind of Tumor, or Inflammation, arising on the Ends of the Fingers, and the Roots of the Nails; otherwise called *Panaris*. See **PANARIS**.

The Humour or Matter of the *Paronychia* is sometimes so sharp as to corrode the Tendons, Nerves, *Periosteum*, and even the Bone itself.

It is lodged either between the Integuments, or between the *Periosteum* and Bone. The deeper the more dangerous.

The Word is derived from the Greek *παρὰ* and *ὀνύξ* *Unguis*, Nail.

**PAROTIDES**, in Anatomy, two big Glands, situate behind the two Ears; and filling all the Space between the posterior Angle of the under Jaw, and the mastoidal *Apophysis*. See **GLAND** and **EAR**.

They are of the Conglomerate Kind, and by divers excretory Ducts, which, at last, coalesce into one Trunk, discharge a Humour separated in 'em from the arterious Blood, called *Saliva*, into the Mouth, by two Vessels formed of several Branches uniting at the Issue of these Glands, and which run along the Cheek to the third Grinder. See **SALIVA** & **SALIVAL**.

The Word is form'd from the Greek *παρὰ* near, and *ὅτι* Ear.

**PAROTIDES**, in Medicine, Tumors or Inflammations arising behind the Ears, on the *Parotid* Glands.

*Parotides* are very frequent after malignant and pestilential Fevers: Children are particularly liable to 'em. They are to be treated like *Bubo's*. See **BUBO**.

**PAROXYSM**, in Medicine, the severe Fit of a Disease which grows higher, or exasperates as the Gout, &c.

It is sometimes also used for the Access or Return of a Disease that intermits, as an Ague. See **ACCESS**.

The Word is form'd from the Greek *παρὰ* much, and *ὀξύς* acute.

**PARRICIDE**, in Strictness, is the Murder, or the Murderer of a Father; as *Matricide* is of a Mother.

The Word *Parricide* is also ordinarily extended to both. See **MURDER**.

The *Romans*, for a long Time, had no Law against *Parricides*; from an Opinion, nobody could be so wicked as to kill his Parents.

*J. Opus* was the first, who killed his Father, 500 Years after *Nume's* Death; and then the *Pompeian* Law was made, which ordain'd, that the Person, convicted of this Crime, after he had been first whipp'd till the Blood came, should be tied up in a

leathern Sack, together with a Dog, an Ape, a Cock, and a Viper, and so thrown into the Sea, or the next River.

**PARRICIDE** is also used in the General for the Murder of any near Relation, as a Husband, Wife, Brother, Sister, Child, Grandchild, &c. and even to that of great sacred Persons, tho' no Way allied in Blood, as a King, &c. See **TREASON**.

**PARRYING** in Fencing, the Action of defending a Man's self, or of flaving off the Strokes, &c. offer'd him by another. See **FENCING**.

Good Fencers push and parry at the same Time. See **GUARD**.

The *Spaniards* parry with the *Poniard*. The Antients parried with their Bucklers. See **PARADE**.

**PARSON**, the Incumbent of a Parish Church. See **PARISH**.

He is said, by some, to be thus called by Way of Eminence; the Revenues of a Church being destined to maintain *magnam Personam*; or, as some will have it, because he is bound by Virtue of his Office, in *propria Persona servire Deo*, whence *im-personare*, in old Charters, is to put in Possession of a Parsonage, &c.

Or as others, because the original *Parsons*, *Personæ*, were, in reality, only Dignitaries, and possess'd Benefices which gave them some *Personal* Pre-eminence in the Church or Chapter, but no Power. See **PARSONAGE**.

Or, lastly, as others, because the *Parson*, for his Time, represents his Church, and sustaineth the *Person* thereof, as well in suing, as being sued in any Action touching the same.

Some distinguish between a *Rector* and a *Parson*: The *Rector*, say they, is where the Vicaridge is endow'd; and the *Parson*, *Persona*, where the Parsonage is without a Vicaridge: But the Distinction seems new and subtle; *Bracton* apparently uses *Rector* and *Parson*, as synonymous. See **RECTOR**.

Formerly he who had a Church by Institution and Induction, only for his own Life, was call'd *Parson Mortal*: But any Collegiate, or Conventual Body, to whom the Church was forever appropriated, was call'd *Parson Immortal*.

Some again make a Distinction between *Persona*, *Parson*, simply, and *Parson*, *Impersonæ*, *impersonated*: The *Parson Impersonæ* is the Rector in Possession of a Parish Church, whether Presentative or Improperiate, and with whom the Church is full. *Parson*, *Persona*, simply, they contend, is properly the Patron, or he that has the Right of Presentation; call'd *Parson*, by reason, before the *Lateran* Council, he had a Right to the Tithes, in respect of his Liberality, in erecting or endowing the Church, *quasi sustineret Personam Ecclesiæ*.

But 'tis certain, that in the *Register of Writs*, *Persona impersonate* is used for the Rector of a Benefice Presentative: And in *Dyer*, a Dean and Chapter are said to be *Parsons impersonæ* of a Benefice appropriated to them. So that *Personata* seems only chang'd into *Impersonata*, in respect of the Possession of the Benefice. See *Coke on Litt. fol. 300*.

**PARSONAGE**, in its Original, among us, and at this Day, in other Countries, is a Benefice which gives some Prerogative or Pre-eminence in a Church or Chapter, but without any Jurisdiction. See **BENEFICE**.

The ancient *Parsonages* gave a little Honour and Dignity as to the Person, but no Power: Whence, apparently, the Name, intimating the Effect of the Dignity to be restrain'd to the Person, *Persona*, *Parson*. Such are still the Chanteries in several Churches, and the Sub-Chantries in others.

Some as *Obrade*, &c. extend the Word *Parsonage* to Dignity, and comprehend under it the Archdeacons, Deans, &c. in Cathedrals; but this seems straining the Sense of the Word.

In effect, the Doctors use the Term very differently: Some applying it to all who have any Prerogative in the Choir, or the Chapter, over the other Canons, either in Options, Suffrages, Elections, or barely in Place and Procession; thus confounding it with Dignity; while others apply it to simple Rectors, &c. See **DIGNITY**.

**PART**, a Portion of some Whole, considered as divided, or as divisible. See **WHOLE** and **DIVISION**.

Quantity is divisible into an infinite Number of *Parts*: Not equal *Parts*, but proportional ones. See **DIVISIBILITY**.

Philosophy is divided into four *Parts*, viz. Logicks, Ethicks, Physicks and Metaphysicks. See **PHILOSOPHY**, &c.

The Schoolmen usually distinguish *Parts* into *Logical* and *Physical*.

A *Logical Part*, is that referring to some universal as its Whole; in which Sense the Species are the *Parts* of a *Genus*; and Individuals, or Singulars, *Parts* of the Species. See **GENUS**, &c.

A *Physical Part* is that, which, tho' it enter the Composition of a Whole, may yet be consider'd a-part, and under its own distinct Idea: And, in this Sense, a *Continuum* is said to consist of *Parts*.

'Tis controverted in the Schools, whether the *Parts* of a *Continuum* or *Physical Whole*, E. gr. Water, do exist actually before the Division be made, or only potentially.

*Physical Parts*, again, are of two Kinds; *Homogeneous*, and *Heterogeneous*; the first are those of the same Denomination with some other; the second of a different one. See **HOMOGENEOUS**, &c.

*Parts*, again, are distinguish'd into *Subjective*, *Essential*, and *Integral*.

A *Subjective* or *Potential Part*, is the same with a *Logical* one, viz. that contain'd in some universal Whole, not in Act, but only in Power; as Man and Horse are in Animal; Peter and Paul in Man.



An *essential Part* is that, whereby, with the Concurrence of some other, an essential Whole is constituted. Thus Body and Soul are essential *Parts* of Man.

An *integrant* or *integral Part* is that which is necessary to the Integrity of the Whole; as a Head is of a Man, &c.

In Anatomy, we divide the *Parts* of the human Body into *Containing* and *Contained*; into *Similar* and *Dissimilar*; the *Similar*, again, into *Spermatic* and *Sanguin*, &c. See *SIMILAR*, &c.

They also call *Noble* or *Essential Parts*, those absolutely necessary to Life, as the Heart, Lungs, Liver, Brain, &c.

The *Natural* or *Genital Parts*, popularly call'd *Privy Parts*, are those ministering to Generation. See *GENERATION*.

The finest Books of Physicians are those treating of the *Use of the Parts*. Nature, we say, always discharges itself on the *weak Part*, the *diseased Part*, the *Part affected*, &c.

In Chymistry, Bodies are said to be resolved into their *minute Parts*, their *Component Parts*, &c. See *CHYMISTRY*, *ANALYSIS*, *ELEMENT*, &c.

That Art is said to separate the *Homogeneous Parts* from the *Heterogeneous*; *Volatile*, *subtile*, *sulphureous*, *mercurial* &c. *Parts*, from the *fix'd*, *crass*, *earthy*, *viscid* &c. *Parts*. See *VOLATILE*, *FIX'D*.

In *Geometry* and *Astronomy*, *Part* is applied to the Divisions of Lines, and Circles: The Semi-diameter of the Circle, call'd also the Radius and whole Sine is divided into an hundred thousand *Parts*; the Circumference of the Circle into 360 *Parts*, or *Degrees*; on which two Divisions all the Celestial Computations are made. See *DEGREE*, &c.

*Aliquot PART*, is a Quantity which, being repeated any Number of Times, becomes equal to an Integer; thus 6 is an *aliquot Part* of 24; and 5 an *aliquot Part* of 30, &c. See *ALIQUOT*. See also a Table of *Aliquot* and *Aliquant Parts*, under the Article *MULTIPLICATION*.

*Aliquant PART*, is a Quantity which, being repeated any Number of Times becomes always either greater or less, than the Whole. Thus 5 is an *aliquant Part* of 17; and 9 an *aliquant Part* of 10, &c. See *ALIQUANT*.

The *aliquant Part* is resolvable into *aliquot Parts*. Thus 15, an *aliquant Part* of 20, is resolvable into 10 a half and 5 a fourth *Part* of the same. See a Table of the *aliquant Parts* of a Pound under *MULTIPLICATION*.

*Proportional PART* is a *Part* or Number agreeable and analogous to some other *Part* or Number; or a *Medium* to find out some Number or *Part* unknown by Proportion and Equality of Reason. See *PROPORTION*.

*Similar PARTS* are those which are to one another, as their Wholes are to one another. See *SIMILITUDE*.

*PART*, in Music, a Piece of the Score or Partition, wrote by itself, for the Convenience of the Musician; or it is one or more of the Successions of Sounds which make the Harmony, wrote a-part. See *PARTITION*.

Or, the *Parts* are the Sounds made by several Persons singing, or playing in Concert. See *CONCERT*.

Music in *Parts* was unknown to the Antients; they had but one *Part*; all their Harmony consisted in the Succession of Notes; none in the Consonance. See *MUSIC* and *SYMPHONY*.

There are four principal *Parts*; the *Treble*, *Bass*, *Tenor*, and *Counter-tenor*. See *TREBLE*, *BASS*, *TENOR*, &c.

Some compare the four *Parts* in Music, to the four Elements: The *Bass* represents the Earth; the *Tenor*, Water; *Counter-tenor*, Air; and the *Treble*, Fire.

*PART*, in Trigonometry. In a rectangular spherical Triangle ABC. *Tab. Trigonometry Fig. 22.* that *Part* lying between two others, considered as Extremes, is call'd by some Authors, the *middle Part*.

Thus, if AB and BC be the extreme *Parts*, the Angle B will be the *middle Part*.

If the *Parts*, considered as Extremes, be contiguous to the middle *Part* and one of the Extremes; those are call'd *conjunct Parts*.

Thus, if B be the middle *Part*, AB and BC will be the *conjunct Parts*.

If between the Extremes, and the middle *Part*, there lie another, beside a Right Angle; then the *Parts* are said to be *separate* or a-part, *E. gr.* If B be the middle Term, AC and C will be *separate Parts*; because, between the middle *Part* B and the extreme C, there lies the Hypothenuse BC; and between the middle *Part* B, and the other Extreme AC, beside the Right Angle, there lies the Leg AB. See *TRIANGLE*.

Those *Parts*, either join'd to the middle *Part* or separated from it, are call'd *Lateral Parts*.

*Parts of Speech*, in Grammar, are all the Sorts of Words which enter the Composition of a Discourse. See *WORD* and *SPEECH*.

The Grammarians usually admit of eight *Parts of Speech*, viz. *Noun*, *Pronoun*, *Verb*, *Participle*, *Adverb*, *Conjunction*, *Preposition* and *Interjection*. See each in its proper Place, *NOUN*, *PRONOUN*, &c.

*Part of Fortune*, in judiciary Astrology, is the Lunar Horoscope; or the Point wherein the Moon is, at the Time when

the Sun is in the ascending Point of the East.

The Sun in the Ascendant is supposed to give Life; and the Moon disposes the radical Moisture, and is one of the Causes of Fortune. In Horoscopes, the *Part of Fortune* is presented by a Circle divided by a Cross.

*PARTERRE*, in Gardening, that open Part of a Garden into which we enter, coming out of the House; usually, set with Flowers, or divided into Beds, encompassed with Plant-bands; &c. See *GARDEN*.

The *Parterre* is a level Division of Ground, which, for the most Part, faces the South and best Front of a House, and is generally furnished with Greens, Flowers, &c.

There are divers Kinds of *Parterres*, as *Bowling-Green* or *plain Parterres*; *Parterres of Embroidery*; cut in Shell, and *Scroll-work*, &c. with Sand-Allies between them.

An oblong, or long Square is accounted the most proper Figure for a *Parterre*; the Sides whereof, to be as two, or two and a half to one.

*PARTI*, *PARTIE* or *PARTY* or *PARTED* in Heraldry, is applied to a Shield, or Escutcheon, denoting it divided, or marked out into *Partitions*. See *SHIELD*.

The French Heralds, from whom we borrow the Word, have but one Kind of *Parti*, the same with our *Parti per Pale*, which they call simply *Parti*; but, with us, the Word is applied to all the Sorts of Partitioning; and is never used without some Addition to specify the particular one intended.

Thus we have *Parti* or *Parted per Cross*, *per Chief*, *per Pale*, *per Fess*, *per Bend Dexter*, *per Bend Sinister*, *per Chevron*, &c. See *QUARTERING*.

The Humour of our Ancestors, *Colombiere* observes, turning much upon Exploits of Arms and Chivalry; they used to preserve their batter'd and hack'd Armour as honourable Symbols of their hardy Deeds; and those who, had been in the hottest Service, were distinguish'd by the many Cuts and Bruises that appear'd on their Shields. To perpetuate the Memory hereof, says the same Author, they caused them to be painted on their Shields, and thus handed down to Posterity. And when Heraldry grew into an Art, and Officers were appointed to direct the Manner of Bearing, and Blazoning; they gave Names to those Cuts, answerable to the Nature thereof; appointing four, from which all the others proceed: These are *Parti* (in English, *Parti per Pale*) *Coupee* (in English, *Parti per Fesse*) *Tranche* (in English, *Party per Bend Dexter*) and *Taille* (in English *Party per Bend Sinister*). See *COUPE*, *TRANCHE*, &c.

*PARTY per Pale*, is when the Shield has received a perpendicular Cut in the Middle, from Top to Bottom. See *PALE*, &c.

*PARTY per Fesse* is when the Cut is a-cross the Middle, from Side to Side. See *FESSE*.

*PARTY per bend Dexter*, is when the Cut falls on the upper Corner of the Shield on the right Hand, and descends a-thwart to the opposite lower Corner. See *BEND*.

*PARTY per bend Sinister*, is when the Cut, falling on the upper left Corner, descends a-cross to the opposite lower one.

From these four Partitions have proceeded an infinite Number of others of various and extravagant Forms.

*Spekman* in his *Aspilogia* observes, that the present Divisions of Escutcheons were unknown in the Reign of the Emperor *Theodosius*; were brought up in the Time of *Charlemaigne*, or later; little used among the English in the Days of *K. Henry III.* but more frequently under *Edw. III.*

The erect or upright Section, he observes, is called, in Latin, *Palaris*, from its Resemblance to a *Palus*, or Stake; and two Coats are often entire on the Sides, the Husbands on the Right, and the Wives on the Left. The direct Section a-cross, being in the Place of a Belt, is call'd *Baltica*, &c.

When the Shield is *Parti*, and *Coupee*, it is said to be *Ecartele*. See *ECARTELE*.

It is said to be *Parti from the one to the other*, when the whole Shield is charg'd with some honourable Bearing divided by the same Line that parts the Shield; here, 'tis a Rule, that one Side be of Metal, and the other of Colour. Thus he bears *Salis Parti d' Argent*, *Spread Eagle Parti* from one to the other.

*PARTICIPATION*, that which gives us a Part, or Share in any thing, either of Right or of Grace.

In Italy they distinguish *Participation Officers*, as *Prothonotaries*, &c. which have a real Function; from *honorary ones*; which have only a Title, without any Duty or Employ.

*PARTICIPLE*, in Grammar, an Adjective form'd of a Verb; so called, because it participates of some of the Properties of the Verb; still retaining the Regimen and Signification thereof: Whence most Authors confound 'em with *Verbs*. See *VERB*.

There are two Kinds of *Participles*, the one call'd *Active*, because expressing the Subject which makes the Action of the Verb; as *legens*, *audiens*, reading, hearing: The other call'd *Passive*, because expressing the Subject that receives the Action of the Verb, as *lectum*, *audium*, read, heard.

As our Adjectives are not declined, the *Participles*, being real Adjectives, are not declined neither: In the *Latin*, &c. where the Adjectives are declined, the Pronouns *Active* are declined.



declined likewise; thus they say *audiens, audientis, audienti*, &c. and in the *French* the Pronouns Passive are declinable like their other Adjectives, as *J'ay lu, elle a lue, nous avons lus*, &c.

We take this Occasion to observe, that Declension is a Thing perfectly accidental to the several Kinds of Words, i. e. the changing or not changing the Termination: The *Latins, E. gr.* have indeclinable Nouns, as *Cornu* and *Nequam*, yet both *Latins* and *Italians* decline their Adverbs as *fortiter, fortissime; bene, benissimo*, &c. and some Nations scarce conjugate their Verbs at all. Indeed the *English* do it very little in Comparison with the *Latins, Greeks, French*, &c.

In our Language the *Participle* and *Gerunds*, are not at all distinguishable. See *GERUND*.

*PARTICLE*, in *Physicks*, the minute Part of a Body; of an Assemblage or Coalition of several whereof Natural Bodies are compos'd. See *BODY*.

*Particle* in the new Philosophy, is frequently used in the same Sense with *Atom* in the ancient *Epicurean* Philosophy; and *Corpuscle* in the later. See *ATOM* and *CORPUSCLE*.

Some of the more accurate Writers, however, distinguish 'em; making *Particle* an Assemblage or Composition, of two or more primitive, and physically indivisible *Corpuscles* or *Atoms*; and *Body*, an Assemblage or Mass of several *Particles* or secondary *Corpuscles*. See *ELEMENT*.

Indeed, the Distinction is of no great Moment; and, as to most Purposes of *Physicks*, *Particle* may be understood as synonymous with *Corpuscle*. *Particles*, then, are, as it were, the Elements of Bodies: 'Tis the various Arrangement, and Texture of these, with the Difference of the Cohesion, &c. that constitute the various Kinds of Bodies, *hard, soft, liquid, dry, heavy, light*, &c.

The smallest *Particles* or *Corpuscles* cohere with the strongest Attractions, and compose bigger *Particles* of weaker Cohesion; and many of these cohering compose bigger *Particles* whose Vigour is still weaker; and thus on for divers Successions till the Progression end in the biggest *Particles*, whereon the Operation in Chymistry, and the Colours of natural Bodies depend, and which, by cohering compose Bodies of sensible Bulk. See *MATTER*.

The Cohesion of the *Particles* of *Matter*, the *Epicureans* imagined were effected by Means of hooked Atoms; the *Aristotelians* by Rest, that is, by nothing at all. But Sir *Isaac Newton* shews it is done by means of a certain Power whereby the *Particles* mutually attract or tend to each other. See *COHESION*.

By this Attraction of the *Particles* he shews that most of the *Phænomena* of the lesser Bodies are effected; as those of the heavenly Bodies are by the Attraction of Gravity.

For the Laws of this Attraction of the *Particles*. See *ATTRACTION*.

All Bodies, the same great Author shews, consist of the same solid perfectly hard *Particles* or *Corpuscles*.

*PARTICLE*, in Grammar, a little indeclinable Word, consisting of one or two Syllables at the most. See *WORD*, &c.

Those alone are properly *Particles* which are not declined nor conjugated. *Brighland* calls *Particles, Manners of Words*, because rather serving to express the Circumstances and Manners, of other Ideas and Objects of the Mind, than to represent any distinct Objects of their own.

*Particles* may be reduced under three Heads: The first shew the Manners or Qualities of Words, by being added to them; call'd *Adverbs*. See *ADVERB*.

The second denote some Circumstances of Actions and join Words to Words, Sentence to Sentence, &c. See *CONJUNCTION*.

The third express the Emotions of the Soul. See *INTERJECTION*.

'Tis in the right Use of *Particles*, Mr. *Locke* observes, that more particularly consists the Clearness and Beauty of a good Style. To express the Dependence of his Thoughts and Reasonings one upon another, a Man must have Words to shew what Connection, Restriction, Distinction, Opposition, Emphasis, &c. he gives to each respective Part of his Discourse. This cannot be rightly understood, without a clear View of the Postures, Stands, Turns, Limitations, Exceptions, and several other Thoughts of the Mind. Of these there are a great Variety much exceeding the Number of *Particles*, that most Languages have to express them by; for which Reason it happens that most of these *Particles* have divers, and sometimes almost opposite Significations.

Thus the *Particle But* in *English*, has several very different Significations; as in, *But* to say no more; where it intimates a Stop of the Mind in the Course it was going, before it came to the End of it. I saw *but* two Planets: Here it shews that the Mind limits the Sense to what is express'd with a Negation of all other. You pray, *but* it is not that God would bring you to the true Religion, *but* that he would confirm you in your own. The former of these intimates a Supposition in the Mind, of something otherwise, than it should be; the latter shews that the Mind makes a direct Opposition between that and what goes before. All Animals have Sense, *but* a Dog is

an Animal: Here it signifies the Connection of the latter Proposition with the former.

*PARTICLES* is also a Term used in Theology, and particularly in the *Greek Church*, where 'tis call'd *μυστήρια*. In the *Latin Church* the Name *Particles* is given to the Crums or little Pieces of Consecrated Bread. In the *Greek Church* they have a particular Ceremony, call'd *τὸν μυστήριον*, of the *Particles*, wherein certain Crums of Bread not consecrated, are offer'd up in Honour of the Virgin, St. *John Baptist*, and several other Saints. They also give the Name *προσφορά*, Oblation, to these *Particles*. *Gabriel*, Archbishop of *Philadelphia*, has a little Treatise express'd *μετὰ τὸν μυστήριον*, wherein he endeavours to shew the Antiquity of this Ceremony, in that it is mentioned in the Liturgies of St. *Chrysostom*, and *Basil*.

There has been a considerable Dispute on this Head, between the Reformed and the Catholick Divines. *Aubertin* and *Blondel* explain a Passage in the Theory of *Germain*, Patriarch of *Constantinople*, where he mentions the Ceremony of the *Particles* as in use in his Time; in Favour of the former: *Messieurs de port Royale* contest the Explanation: But *M. Simon* in his Notes on *Gabriel* of *Philadelphia*, endeavours to shew, that the Passage is an Interpolation; not being found in the ancient Copies of *Germain*: And consequently that the Dispute is from the Purpose.

*PARTICLE*, out of *Share*, in Astronomy. See *PARTICULA exsors*.

*PARTICULA exsors*, in Astronomy, the Difference between the *Æquatorial Triangle L A C*, (*Tab. Astronom. Fig. 32.*) and its Fellow, *B L Z*. See *EQUATION*.

To find the *Particula exsors*, the Menstrual Eccentricity *A C*, and the Annual Augment of Longitude *H A D*, being given; from the *Data* in the Triangle *B C A*, find the Hypotenuse *A B* to the Angle *C*; and to the Angle *C A B* find *C B*. Multiply *C B* into half the Menstrual Eccentricity *A C*; the Product is the Area of the Triangle *A C B*. Find likewise the Area of a Circle described by the Radius of the Eccentric *B L*. Then as the Area of the Circle is to  $360^{\circ}$  or  $129600''$ ; so is the Area of the Triangle *A C B* to its Value in those Seconds: which Value is the *Particula exsors*.

*PARTICULAR*, a relative Term, referring to Species, or Individual; and opposed to General, or Universal. See *GENERAL*, &c.

In the Schools, *Particular* is defined to be something included under an Universal; as Man under Animal. Sometimes it is taken for an Individual, as *Peter*. See *INDIVIDUAL*.

There is this Difference between *Particular*, and *Singular*, that *Particular* denotes a Thing taken as a Part; as *Peter* in respect of Mankind: Whereas *Singular* denotes the Part taken after the Manner of a Whole; as *Peter* considered in himself.

*PARTICULARIST*, among Polemical Divines, a Person who holds for Particular Grace, i. e. who teaches or believes that *Christ* died for the Elect only, and not for Mankind in general. See *GRACE*.

*PARTIES*, in Law, are those who are named in a Deed, or Fine, as *Parties* to it; as those that levy the Fine, and to whom the Fine is levied. See *FINE*.

So those that make any Deed, and they to whom it is made, are called *Parties in the Deed*. See *DEED*.

*PARTILE Aspect*, in Astrology, the most exact and full Aspect that can be. See *ASPECT*.

*PARTING*, or *DEPARTING*, a Method of separating Gold and Silver by Means of *Aqua fortis*. See *GOLD* and *SILVER*.

The Method hereof, see under the Articles *DEPART* and *REFINING*.

*PARTITION*, the Act of parting, or dividing, or distributing a Thing. See *DIVISION* and *DISTRIBUTION*.

The Name *Partitiones Oratoriae*, is also given to a Dialogue of *Cicero*'s between him and his Son; in regard the Discourse is, as it were, parted or divided between 'em.

*PARTITION*, in Law, a dividing of Lands, descended by the Common-Law, or Custom, among Co-heirs, where there are two at least.

This *Partition* is made four Ways, whereof three are by Agreement, the fourth by Compulsion.

The first *Partition* by Agreement is, when they divide the Land equally themselves into so many Parts as there are Co-heirs; the second, when each chuses some of their Friends to make Division for them.

The third is by drawing Lots, thus: Having first divided the Land into as many Parts, as there are Persons, they write every Part severally in a distinct Scroll, and wrapping it up, throw each into a Hat, or such like Thing; out of which each one draws according to his Superiority; and so the Land is severally allotted.

The fourth *Partition*, which is by Compulsion is, when one or more of the Heirs, by Reason of the Refusal of some other, sues out a Writ of *Partitione facienda*; by Force whereof they shall be compelled to divide.

In *Kent*, where Land is of Gavel-kind Nature, they call their *Partition*, *Shifting*.



*Partition* also may be made by Joint-Tenants in common, by Assent, by Deed, or by Writ.

**PARTITION**, in Music, the Disposition of the several Parts of a Song, set on the same Leaf; so as upon the uppermost Ranges of Lines are found the *Treble*; in another the *Bass*; in another the *Tenor*, &c. that they may be all sung or play'd jointly or separately. See **PART**, **MUSIC**, &c.

**PARTITION**, in Architecture, that which divides or separates one Room or Apartment from another.

**PARTITION**, in Heraldry. See **QUARTERING**.

**PARTNER**, and **PARTNERSHIP**. See **PARCENER**, and **CO-PARTNER**.

**PARTURITION**, the Act of bringing forth, or being delivered of Young. See **DELIVERY**.

**PARTUS**, in Medicine and Law, the *Delivery* of a Woman, or the Birth of a Child. See **DELIVERY** and **BIRTH**.

*Cæsareus* **PARTUS**, is that where the Mother is cut open, and the Child taken out at one Side. See **CÆSAREUS**.

**PARTY** or **PARTIE**, a Faction, Interest, or Power, considered as opposite to another. See **FACTION**.

The *French*, and *Spaniards* are always of opposite *Parties*: *England* has, for upwards of a Century, been divided into two *Parties*. See **WHIG** and **TORY**.

**PARTY**, in Law. See **PARTIE**.

**PARTY**, in the military Sense, is used for a Body of Men, whether Cavalry, Infantry, or both, commanded out on any Expedition. A *Party* of Cavalry carried off a great Number of Cattle. Those who go out on *Parties* should have an Order in writing from the commanding Officer, and be at least twenty in Number, if Foot, or fifteen, if Horse; otherwise they are reputed as Brigands.

**PARTY** *Fury*, in Law. See **MEDIETAS Lingue**.

**PARTY**, in Heraldry. See **PARTI**.

**PARULIS**, in Medicine, an Inflammation of the Gums, attended with a violent Pain, and an Aposthume; sometimes ending in an Ulcer, and sometimes in a Cancer, Fistula, Gangrene, &c.

*Sennerius* orders it to be cured by Revulsion, Derivation, and proper Gargarisms. Care is to be taken in the Beginning to prevent the Aposthume.

The Word is *Greek*, form'd of *παρ* near, and *ειλον* *Gingiva*, Gum.

**PASCHAL**, something belonging to the *Jewish* Passover, or the Christian *Easter*. See **PASSOVER**. See also **EASTER**.

The *Paschal* Lamb is a Lamb the *Jews* eat with a deal of Ceremony, in Memory of their having been brought out of Slavery in *Egypt*. It shou'd be eaten standing, their Loins girt, the Staff in the Hand, &c.

**PASCHAL Rents**, are Rents or annual Duties paid by the inferior Clergy to the Bishop, or Arch-deacon, at their *Easter* Visitations: They are also called *Synodals*. See **SYNODALS**.

**PASCHAL Letter**, in Church-History, a Circular Letter, which the Patriarch of *Alexandria*, first, then the Pope, anciently wrote to all the Metropolitans, to inform 'em of the Day whereon the Feast of *Easter* was to be celebrated. See **EASTER**.

**PASQUIN**, a mutilated Statue, seen at *Rome*, in a Corner of the Palace of the *Ursines*.

It takes its Name from a Cobler of that City, called *Pasquin*, famous for his Sneers and his Gibes; and whose Shop was the Resort of a Number of idle People, who diverted themselves with bantering Folks as they pass'd by.

After *Pasquin's* Death, as they were digging up the Pavement before his Shop, they found a Statue of an ancient Gladiator, well cut, but maim'd and half spoil'd. This they set up, in the Place where 'twas found, at the Corner of the deceased Master *Pasquin's* Shop; and, by common Consent, call'd it by the Name of the Defunct.

From that Time all Satires, and Lampoons are ascribed to this Figure, are put in its Mouth, or pasted against it; as if they came from *Pasquin redivivus*.

*Pasquin* usually addresses himself to *Marsforio*, another Statue in *Rome*; or *Marsforio* to *Pasquin*, whom they make reply.

The Answers are usually very short, poignant, and unlucky: When *Marsforio* is attack'd, *Pasquin* comes to his Assistance; and *Pasquin* is assisted by *Marsforio* in his Turn, i. e. the People make the two Statues speak just what they please. See **MARSFORIO**.

**PASQUINADE**, or **PASQUIL**, is, properly, a satirical Libel fastened to the Statue of *Pasquin*. See **PASQUIN**.

Hence, by Extension, the Term becomes used for any Satire, Lampoon, or Sneer upon the Public, or the ruling Powers.

There is this Difference between a *Pasquinade* and a *Satire*; that the End of the latter is to correct and reform; whereas that of the former is only to scoff and expose.

The *Italians* have publish'd several Books which they call *Pasquino in cassi*.

**PASS**, **PASSADE**, in Fencing, a Leap or Advance upon the Enemy.

Of these there are several Kinds; as *voluntary Passes*, com-

mencing from the left Foot out of Measure of the firm Foot, as when the Enemy is not expected. Others *necessary*, made after a Push from the right Foot; where being so press'd by the Enemy, as not to have Time to retire, you endeavour to seize the Guard of his Sword.

The Measure of the *Pass* is, when the two Smalls of the Swords are so near, as that they may touch one another. There are *Passes*, *within*, *above*, *beneath*, *to the right*, *the left*, *Passes* under the Sword, over the Line, &c.

**Pass of Arms**, in Chivalry, a Place which the ancient Knights undertook to defend, *E. gr.* a Bridge Road, &c. not to be passed without fighting the Persons who kept them.

The Knights who held the *Pass* hung up their Arms on Trees, Pales, Columns, &c. erected for the Purpose; such as were disposed to dispute the *Pass*, touched one of these Armories with his Sword; which was a Challenge the other was obliged to accept. The Vanquish'd gave the Victor such Prize as was before agreed on.

**Pass-Port**, a Licence, or Letter from a Prince, or Governor, granting Liberty and Safe-Conduct to travel, enter, and go out of his Territories, freely and without Molestation.

The *Pass-Port* is, properly, given to Friends, and the Safe-Conduct to Enemies. See **SAFE-CONDUCT**.

*Pasquier* takes *Passé-Port* to be used for *Passé-par-tout*. *Balsac* mentions a very honourable *Pass-Port* given by an Emperor to a Philosopher; in these Terms: *If there be any one on Land, or on Sea, hardy enough to molest Artamon; let him consider whether he be strong enough to wage War with Cæsar.*

**Pass-Port** is also used for a Licence granted by a Prince for the importing or exporting Merchandizes, Moveables, &c. without paying the Duties.

Merchants sometimes procure such *Pass-Ports* for certain Kinds of Commodities; and they are always given to Embassadors and Ministers, for their Baggage, Equipage, &c.

**Pass-Port** is also a Licence obtain'd for the importing or exporting of Merchandizes deem'd Contraband, and declared such by Tariffs, &c. as Gold, Silver, pretious Stones, Ammunition of War, Horses, Corn, Wool, &c. upon paying Duties.

**Pass-Parole**, a Command given in the Head of an Army, and thence communicated to the Rear; by passing it from Mouth to Mouth.

**Pass-par-tout**, a Master-key; or Key that opens indifferently several Locks belonging to the same Lodge or Apartment. See **KEY**.

**Pass-Volant**, a Fagot, or a pretended Soldier, not enroll'd, whom the Captain or Colonel makes pass in Review, or Muster, to shew that his Company is compleat, or to receive the Pay thereof to his own Profit. See **FAGOT**, &c.

In *France* the *Passé-volants* are condemn'd to be mark'd on the Cheek with a *Flour-de-lis*.

**PASSA**, or *Passa Uva*, in Pharmacy, a Term applied to those dried Grapes, which we call *Raisins*. See **RAISIN**.

*Uve Passée* is sometimes also used, with less Propriety, for *Figs*. See **FIG**.

**PASSADE**, or **PASSADO**, in Fencing, a Thrust or *Pass*. See **PASS**.

**PASSADE**, is also a Benevolence or Alms given to poor Passengers.

In the Manage, it signifies a Turn, or Course of a Horse backwards and forwards on the same Plot of Ground.

**PASSAGE**, in Commerce, *Right of Passage* is an Imposition which some Princes exact by their Officers or Farmers, in certain narrow close Places of their Territories, either at Land or Sea; on all Vessels, Vehicles, and Carriages of all Kinds; and even sometimes on Persons, and Passengers coming in or going out of Ports, &c.

The *Passage* of the Sound, (that famous Streight which carries us out of the *German* into the *Baltic* Sea) is the most celebrated *Passage* in *Europe*. The Rights belong to the King of *Denmark*, and are paid at *Elseneur* or *Cronembourg*.

All Nations who traffic into this Part of the North, are subject to this Right; the *Sweedes*, indeed, were exempted from it by the Treaty of 1658, by their seizing the other Side of the Streight; but by the Treaty of 1720, they are excluded the Privilege; and put on the same Footing with their Neighbours. *Cromwell* was bent on extorting this *Passage* from the *Danes*; and had, doubtless, effected it, but that ere the Fleet he sent for the Purpose arriv'd there, he died.

*Birds of PASSAGE*, are such as only come at certain Seasons, and then disappear again; being supposed to *pass* the Sea to some other Climate. See **MIGRATION**.

The *Birds of Passage* are the Stork, Swallow, Nightingale, Martin, Woodcock, Quail, &c. There are also *Fishes of Passage*, as Herrings, Mackerel, &c.

Mr. *Derham* produces it as a remarkable Instance of Instinct, that, — the stork in the heavens knoweth her appointed time, and the turtle, and the crane, and the swallow observe the time of their coming — Jer. viii. 7. No doubt, the Temperature of the Air, and their natural Propensity to breed their Young, are the great Incentives to this Migration: But how these untaught, unthinking Creatures, should so exactly know the best and only



proper Seasons to go and come from a Place that would obstruct their Generation, or not afford convenient Food for them and their Young; or how they shou'd know which Way to steer their Course, and whither to go; is a difficult Consideration.

*Phys. Theol. L. VII. c. 3.*

**PASSAGE**, or *Passage*, in the Manage, an Action wherein the Horse raises two Legs together, a hind and a fore Leg, in the Form of St. Andrew's Cross; when, setting those two on the Ground again, he raises the other two; and thus alternately; never gaining above a Foot of Ground at a Time.

The Beauty of the *Passage* consists in keeping the Legs a good while in the Air; setting that aside, the Motion of the Legs in the *Passage* is the same as in pacing and trotting.

**PASSAGE**, in Music, a Portion of an Air, or Tune, consisting of several little Notes, as Quavers, Demi-quavers, &c. lasting one, two, or at most, three Measures.

Thus what the *Italians* call *contra punto d'un sol passo*, is a Portion in the Beginning of the Song, consisting of one, two, or three Measures, which is to be imitated in other Notes; not with the same Strings or Tones, but only observing the same Motion, Number, and Figure as in the Notes of the first *Passage*; which is one of the Kinds of *contra punto perfi-diato*.

**PASSALORHYNCHITES**, a Sect of Montanists in the second Century; who made Profession of perpetual Silence, and, the better to maintain it, kept the Thumb continually on their Lips; founding their Practice on that of the *Psalmist*. *See a guard, O Lord, on my Mouth.* St. *Jerom* mentions his having met with some of 'em in his Time. See *MON-TANISTS*.

**PASSANT**, in Heraldry, a Term applied to an Animal in a Shield, appearing to walk; or, to the ordinary Posture of terrestrial Animals.

Thus we say, he bears *Gules* two *Lions Passants* over one another.

In most Beasts, except *Lions*, they frequently use *Tripping*, instead of *Passant*.

**PASSION**, a Term understood of the different Motions, and Agitations of the Soul, according to the different Objects that present themselves to the Senses. See *SOUL*.

In Propriety, all those Motions whereby the Soul is carried towards any Thing; as Love, Ambition, Revenge, &c. are rather Actions than *Passions*; and on the contrary, those Motions whereby the Soul finds itself interrupted in its Action, as Grief, &c. are the only real *Passions*. See *ACTION*.

We find various Modifications and Impressions of Pleasure and Pain, inseparably annex'd by an establish'd Law of Nature, to the several Judgments we form concerning Good and Evil: These Judgments, with their respective Modifications of Pleasure or Pain annex'd, according to the various Appearances and Relations of the Object considered, either as good or evil, present or absent, certain or uncertain, probable or improbable, possible or impossible, and affecting the Machine in a certain Manner peculiar to the Modifications; make what we call the *Passions*.

How, or by what Means, this mutual Action and Communication between Soul and Body is effected, we are, in a great Measure, ignorant: We have but very obscure and faint Notions of any Thing prior, or more simple to resolve it into; except the immediate Will and Agency of the first Cause itself. See *COMMUNICATION*, *CAUSE*, &c.

*Malebranch* defines the *Passions* to be all those Emotions naturally arising in the Soul, on occasion of extraordinary Motions of the animal Spirits, and the Blood: In Opposition to those Motions of the Soul which are common to us with pure Intelligences, and which he calls *Natural Inclinations*. See *NATURAL Inclination*.

Tho' the *Passions* be inseparable from Inclinations; and tho' a Man be only capable of sensible Love or Hatred, because he is capable of spiritual Ones; yet does it appear just in that Author to distinguish between them. *Passions* are much stronger and warmer than Inclinations; their Objects are different, and so are their Causes: *Passions* and Inclinations differ just as much as Sense and Imagination.

In Effect, the *Passions* of the Soul are Impressions of the Author of Nature, which incline us to our Bodies, and all Things that may be of Use to their Preservation: Natural Inclinations are Impressions of the Author of Nature, which determine us primarily to love him, as our supreme Good.

The Philosophers are not agreed about the Number and Division of the *Passions*: The ordinary Division is thus; the *Passions* of the Concupiscible Appetite, are *Pleasure* and *Pain*, *Desire* and *Aversion*, *Love* and *Hatred*; Those of the Irascible Appetite, are *Anger*, *Courage*, *Fear*, *Hope*, and *Despair*. See the Authors on the Subject of the *Passions*; *Des Cartes*, who considers them physically; *Coeffeteau* who gives us the *Tableau*, Picture of the *Passions*; *La Chambre*, the Characters of the *Passions*; and *Fath-Senault*, the Use of the *Passions*.

Dr. *Cheyne* considers the *Passions* as either *Spiritual* or *Animal*: The *Spiritual Passions* he defines to be those Sentiments produced in the Soul by external Objects, either spiritual Ones

immediately, or material Ones, by the Mediation of the Organs of the Body.

The *animal Passions* he defines by those Effects produced by Spirits or Bodies, immediately on the Body.

Hence as outward Objects may be consider'd either as Goods or Evils; the most natural Division of the *Passions*, whether spiritual, or Animal, as they regard those Objects, is into *Pleasurable* and *Painful*. And in this Sense all the *Passions* may be reduced to *Love* and *Hatred*; of which *Joy*, and *Sorrow*, *Hope* and *Fear*, are only so many Modifications, or Complexions, according to the various Appearances, Positions, &c. of the Object.

In Effect, all the *Passions* may not only be reduced to two, viz. *Love* and *Hatred*; but, perhaps, to one, *Love*; and even that may be all resolved into *Self-love*; and that into a Principle of *Self-preservation*, or necessary invincible Desire of Pleasure or Happiness. The Rest are only Rivulets from this Source; or special Applications of this Principle to particular Occasions.

Thus the Desire of any Thing under the Appearance of its Goodness, Suitableness, or Necessity to our Happiness constitutes the *Passion of Love*; the Desire of eschewing or avoiding any Thing apprehended to be mischievous, hurtful, or destructive, constitutes *Hatred* or *Aversion*: The Desire of a Good, which appears at the same Time probable, and in our Power constitutes *Hope*; but if the Good appear improbable, difficult, or impossible, it constitutes *Fear* or *Despair*: The unexpected Gratification of *Desire* is *Joy*: The Desire of Happiness to another under Pain, or Suffering, is *Compassion*; and the Desire of another's Punishment, *Revenge* or *Malice*, &c.

The single Desire of Happiness, then, is the Spring or Motive of all our *Passions*; as those are of all our Actions. Some wise and reasonable Motive, or End of Action, says Dr. *Morgan*, is certainly necessary to all wise and reasonable Action; to act without a Motive, wou'd be the same Thing as not to act at all, that is, such an Action cou'd answer no farther or better End than not acting; and consequently the Action, as well as the Agent, wou'd be so far insignificant and useless. He who shou'd have no Object at all of his Love or Aversion; Hope or Fear, Joy or Grief, must be simply and purely indifferent to all Action; and consequently must either be in a State of perfect Rest and Inaction, or in a State, equivalent thereto; wherein the Actions of such a Being cou'd be of no more Significancy, than the uncertain Fluctuation of an Atom, or the Whivering of a Feather in the Air.

The natural, or occasional Cause of all the *Passions*, *Malebranch* makes to be the Motion of the animal Spirits, which are diffused thro' the Body to produce, and preserve a Disposition therein, suitable to the Object perceiv'd; to the End, the Body and Mind may mutually assist each other on this Occasion; it being the Order of the Creator, that our Wills be followed by Motions of the Body proper to execute them; and that the Motions of the Body mechanically excited in us by the View of external Objects, be accompanied with a *Passion* of the Soul which inclines us to will or nill what appears serviceable or noxious to the Body.

'Tis a continual Impression of the Will of the Creator, that unites us thus intimately to a Piece of Matter, and occasions this Reciprocation of Motions and Sensations: Were this Impression of the Creator's Will suspended a Moment, we should be delivered from all Dependence, all *Passions*, &c. For, what People usually imagine of a necessary Connection between the Motions of the Spirits and Blood, and the Emotions of the Soul, is inconceivable.

Some little Parts of the Bile, say they, move with some Violence among the Fibres of the Brain: Therefore the Soul must necessarily be agitated with some *Passion*; and this *Passion* be Anger, rather than Love. What Relation can we conceive between the Faults of an Enemy, a *Passion* of Contempt or Hatred, and a bodily Motion of the Parts of the Blood, striking against certain Parts of the Brain? How can the Union or Alliance of two Things so different as Spirit or Matter be effected, but by the omnipotent Will of the Author of Nature?

'Tis a Point, about which the Divines and Philosophers can never agree; whether this Relation and Connection of Thoughts of the Mind, and Motions of the Body, be the Gift of Nature, or the Punishment of the first Sin? And whether the *Passions* be the Institution of Nature, or the Corruption thereof. Indeed, considering the good and wise Purposes the *Passions* serve, and that absolute Necessity they are of; 'tis surprizing it shou'd ever be doubted, that they are essential to human Nature.

This Union or Relation is found in all Men; but in different Degrees, and of different Extent, according to the different Temperaments, Conditions, Ages, Sexes, Occasions, Objects, &c. *E. gr.* Thus, our Union or Relation to sensible Objects we have seen is stronger than that to Things we have only heard talk of. And thus the Great have a Relation to many more Things, than others, their Slavery is more extensive. A General, *E. gr.* retains or has a Relation to all his Soldiers, as they all respect him; and 'tis this Slavery that usually



fuallly occasions his Generosity : The Desire of being esteem'd by all in whose Sight he is frequently, obliges him to sacrifice more reasonable Pleasures.

'Tis thus throughout the World : Vanity animates Virtue, otherwise we should never have such Lengths gone. Again, Children don't mind the same Things with grown People. Women look no farther than their Families and Neighbourhood : But Men retain to their whole Country ; 'tis for them to defend it ; they mind Honours, Offices, &c. Nor is there a less Variety resulting from the different Circumstances and Employments of People.

The Disposition of Mind in a married Man differs much from that of a Bachelor. The People in Monasteries have both the Mind and Heart turn'd very differently from People who live in the World. They are united to much fewer Things ; but then the Attachment is much closer and stronger. Their *Passions* move in a little Sphere ; and like the Sun's Rays, in a convex Lens, are assembled, as it were, in a *Focus*.

In every *Passion* there may seven Things be distinguish'd : The *first*, the Judgement the Mind makes of an Object ; or the View of the Relation the Objects bears to us. The *second*, a new Determination of the Motion of the Will towards that Object ; supposing it to appear a good. The *third*, the peculiar Sensations or Modifications which accompany them ; as the Sensation of Love, Hatred, Desire, or Joy ; which Sensations are always different in the different *Passions*, and, as it were, the Characteristicks thereof. The *fourth*, a new Determination of the Course of the Blood and Spirits, towards the several Parts of the Body : Before the Sight of the Object of the *Passion*, the animal Spirits were pretty equally diffused throughout the Body ; but the Presence of the new Object disturbs the whole OEconomy ; and the greatest Part of the Spirits are sent into the Muscles of the Arms, Legs, Face, &c. The *fifth* is the sensible Emotion of the Soul, which finds itself shaken by this sudden Over-flowing of Spirits. The *sixth*, is the different Sensations of Love, Hatred, &c. caus'd, not by the intellectual View of Good or Evil, but by the different Shakes or Pulses, the animal Spirits occasion in the Brain. The last is a certain Sensation of Joy, or inward Satisfaction, which detains the Soul in its *Passion*, and attests its being in the State it ought to be with Regard to that Object.

PASSIONS, in a View to Medicine, make one of the six *Non-naturals*, of the utmost Consequence, with respect to Health or Disease. See NON-NATURAL.

In Consequence of the several Judgements we form concerning Objects, as either Good or Evil, the Organs of Sensation and Motion, viz. the *nervous Fibres*, are variously impress'd or stimulated ; whence arise certain Sensations, and certain Modifications of Motion, which, 'tis apparent, are reciprocal, and follow mutually from each other, whether the Impression be supposed first made on the Body, or on the Mind : that is, any strong violent Motion made on the Organs, will excite a painful Sensation in the Mind ; or any such painful Sensation first excited in the Mind from the bare Consideration of an Object will impress a violent Motion on the Organs. And, on the contrary, an easy and placid Undulation, impress'd originally by the actual Impulse of Objects, will excite a pleasurable Sensation in the Mind ; or a pleasurable Sensation excited in the Mind, from the mere Contemplation of an Object, will be follow'd with a like easy, placid Undulation of the Organs.

The painful *Passions*, then, as well as bodily Pain, impress the nervous Fibres with a violent Motion which brings 'em alternately into forcible Contractions, and Dilatations, or strengthens and increases their muscular Force, and Action. While then this Pain or Uneasiness of Desire, annex'd to the *Passions*, and impress'd on the Nerves, is moderate and restrain'd within the Bounds of Nature ; Such stimulating Desires have a good Effect ; as they strengthen muscular Motion, keep up the Circulation of the Blood, promote the natural Secretions, and excite a Man to such Actions and Exercises, wherein animal Life, Health, and Vigour consist. But where the Uneasiness annex'd to the *Passion* is too violent, such a continual *Stimulus* will gradually derive a too great Proportion of Blood to the stimulated Organs, by which the Vessels will be over-stretch'd, and distended, their muscular Force gradually impair'd, and the *Equilibrium* of the Blood and Juices be interrupted. And hence, from a mere painful Sensation, will arise a complicated Train of bodily Illnesses and Pains, in Consequence of the establish'd Laws of the Union and Communication of Soul and Body.

Again, while we are wearing off the Uneasiness of Desire, annex'd to any *Passion*, we feel a sensible Pleasure, or agreeable Emotion ; and the Organs, hereupon falling into easy, uniform, placid Undulations, the too great Current of the Blood toward them is diverted, and the *Equilibrium* restored. As soon as the Uneasiness is all gone, the Pleasure ceases, and terminates in meer Indolence, which disposes the Person to Rest and Inaction ; till the Return of some fresh Desire, stimulating to farther Action, renew the same Succession, and interchangeable Series of Pains and Pleasure.

And this is the Circle of animal Life : as the *Stimulus* of Desire throws off the Indolence of Rest, and excites to Action ;

So the Gratification moderates the Pain of Desire, creates a Pleasure at first, and then terminates in the former Indolence and Inaction ; till fresh Desires returning, stimulate to farther Action, and continue the same *Round*.

Dr. Cheyne divides the *Passion*, into *Acute* and *Chronical* ; after the same Manner, and for the same Reason as Diseases are so divided.

The *Acute Passions*, whether pleasurable or painful, he observes, have much the same Effect, and operate after the same Manner as *Acute Diseases* do. They effect a brisk Circulation of the Fluids, and constrict the Solids for some short Time. Thus, sudden gusts of Joy or Grief stimulate the Nervous Fibres, and the Coats of the Animal Tubes, and thereby give a greater Celerity to their included Fluids ; and the Functions of the Heart and Lungs being involuntary, they have their more necessary and immediate Effects on them. Thus, both sudden Joy and Grief make us Breathe short and quick, and render the Pulse small and frequent. Tho' retaining our Breath sometime to reflect more intently on any painful Object, forces at length a strong Expiration, which becomes a *Sigh*. Thus a sudden painful Idea, making a quick Circulation, and thereby throwing a great quantity of Blood upward, makes it appear in the superficial Vessels of the Face, Neck, and Breast, and so produces a *Blush*. The same Principles will account for the effects of Fear and Anger, which make us change Colour, and look *Red* or *Pale* as the Blood is accelerated or retarded in its Course. Sudden, and great Fear do so convulse the Nervous System, that they sometimes alter the Position of the Parts : Thus the Hair shall stand an end in a Fright, and the Nerves be render'd so stiff and rigid, as to stop at once the Animal Functions, whence Fainting, and sometimes Death.

*Chronical Passions*, waste the Nervous System gradually. Those Nerves employ'd in considering, brooding over, and fixing such a Set of Ideas in the Imagination, mult be worn out and impair'd ; and the rest, by diffuse, render'd resty and unactive, lifeless and destitute of a sufficient Flux of warm Blood and due Nourishment. Thus does long Grief, dark Melancholly, hopeless Love, over Weening, Pride, &c. impair the Habit ; and sometimes when long indulged, terminate in Madness ; the Reason is, that a constant Habit of fixing one Thing in the Imagination, begets a ready Disposition in the Nerves, to produce again the same Image, till the Thought of it become Spontaneous and Natural, like Breathing, or the Motion of the Heart. Thus the *Faquirs* in *India* fix one or both Hands by long holding 'em up, so as that they cannot bring them down again. *Essay of Health*, &c.

But Dr. Morgan seems to have gone almost beyond any Body in explaining the Origin, and effects of the *Passions*.

From a Course of actual Observations of the several *Phenomena* in the Body, which attend the several *Passions*, viz. The State of the Pulse, Respiration, Warmth, Digestion, &c. that ingenious Author these general Conclusions :

I. That all the grateful, or pleasurable *Passions* raise the vital Tide, strengthen and quicken the Pulse, diffuse the natural Heat, and take off any antecedent *Stimulus*, or Pressure upon the Abdomen and inferior Organs : And, on the contrary, the painful *Passions* sink and depress the Blood, weaken the Pulse, recall and concenter the natural Heat, and fix a *Stimulus* or Compression on the inferior Organs.

II. All the *Passions* impress their characteristick Sensations, or Modifications of Pleasure and Pain, especially upon the *Oesophagus*, and upper Orifice of the Stomach.

III. That they impress their different Modifications on the Muscles of the Larynx, and thus discover themselves by the different Modulation and Tone of the Voice.

And hence he infers, that the Nerves of the eighth Conjugation, or *Par Vagus*, are the principal Instruments of the *Passions* ; by means whereof, they are variously impress'd, modified, and organized : These, therefore, which are dispersed to all Parts of the Breast and Abdomen, particularly the Heart, Lungs, Stomach, Liver, *Oesophagus*, Diaphragm, Intestines, the Organs of Generation, &c. he considers as *Patheticks of the first Order* ; the *Intercostal*, which accompanies all the Divisions of the *Par Vagus*, he calls *Patheticks of the second Order* : The Nerves which serve the Muscles employ'd in Respiration, and have the nearest Communication with those of the *Par Vagus*, by means of the *Intercostal*, he calls *Patheticks of the third Order* ; and, the Nerves which immediately dispense Sense and Motion to the several Parts of the Head, and have a remoter Communication with the *Par Vagus*, the *Patheticks of the fourth Order*. See NERVE.

According to this Gradation, then, the Organs which are immediately supplied with Nerves from the *Par Vagus*, or *Patheticks of the first Order* will be first affected in the *Passions*, and with the smallest Degree of impress'd Motion, with which the Parts communicating immediately with the *intercostal*, or *second Order of Patheticks*, keep Pace and are affected



affected almost at the same Time, and with the same Motion: The Organs supplied with the *third Order of Patheticks*, the Nerves employ'd in the Muscles of Respiration, are affected. And lastly, the Organs of Sense and Motion in the Brain itself, by which Sensation and Imagination are performed, are put in a forcible Emotion; by which the ordinary Operations of Sense, Judgement, &c. are much disturbed.

This gradual Rise and Progress of the *Passions* is confirm'd by Fact; Observation and Experience; but how they are generated, and by what Steps they make these Advances, requires some farther Consideration.

It may be observ'd, then, that the Quantity of Motion impress'd on the pathetic Nerves in any *Passion*, is always proportional to the Strength of the Desire; but such impress'd Motion is not always uniform or equably diffused thro' the whole pathetic System; for as the largest and most numerous Branches of the Pathetick Nerves are spent on those Parts which derive their Blood from the descending Trunk of the *Aorta*, viz. the Stomach, Spleen, Kidneys, &c. upon any Motion too forcibly impress'd or too long continued, these inferior Organs are the first and greatest Sufferers; whence the Blood flowing impetuously and irregularly to the Parts thus stimulated, they become over-stretch'd; and hence a Sense of Pain, Weight and Oppression.

By this means the Head and superior Parts being deprived of their due Share of Blood, the Pulse must sink, the natural Heat diminish and retire, and a Sense of Cold and Constriction be felt about the *Oesophagus*, where the Branches of the *Par Vagus* are very numerous: And hence the Patient will be excited to sigh, groan, moan, cry out, and complain, and discover in the Tone of the Voice, and Modulation of the Muscles of the Larynx, the Characteristics of the prevailing *Passion*.

Such is the State of Nature under the painful *Passions*, where the strong Desire of Good is attended with an Appearance of Difficulty, or Improbability: where the same Desire is attended with a seeming Probability of obtaining, or effecting; this Appearance, by moderating the Intensity of the Pain of the Desire, and taking off the too violent Action of the pathetic Nerves on the inferior Organs, puts the pathetic System in an easy, natural, uniform Undulation; by which the *Equilibrium* of the Blood being restored, the pleasurable *Passions* of Love, Joy, Hope, &c. will be rais'd: And in this Case the Pulse will rise, and the natural Heat be diffused, and by the Action of the Pathetic Nerves on their proper Organs the several Symptoms be produced which discover their placid Emotions. Where the Desire is very Keen, and Intense, we see what a prodigious Force it will impress on the Nerves, by the Actions of Mad-men, and Men in a Fright. In this Case, the Stimulus of Desire being exceeding strong, and the impress'd Motion universal; the pathetic Nerves of the fourth or last Order come to be affected; that is, the Organs of Sensation and Imagination in the Brain are brought into such violent Vibrations, as to disturb the Operations of Reason.

And from this violent Perturbation of the pathetic Nerves in the Brain, Mad-men have their Imagination as strong and vivid as Sensation itself. See IMAGINATION.

Hence, also, we may observe the Heights, or Extremes of the two contrary painful and pleasurable *Passions*; the one rising at length into a Mania or raving Madness, and the other sinking into a hypochondriacal Melancholy. The principal Seat of the one is the Brain; and of the other, the Viscera of the Abdomen, especially the Spleen and Mesentery. The one inflames and over-heats, the other chills and freezes the Imagination: The one hangs over the Understanding like a glaring, dazzling Light, which animates and leads us on with Zeal and Vehemence; the other like a thick, black, and dismal Cloud, that sinks all the Powers of Nature unto the Depths of Misery and Despair. See MANIA and MELANCHOLY.

PASSIONS in Poetry, the *passionate* Sentiments, Gestures, Actions, &c. which the Poet gives his Persons.

The *Passions* are, as it were, the Life and Spirit of the longer Poems. Their Necessity in Tragedy and Comedy is obvious; nor can the *Epopœa* subsist without 'em. See TRAGEDY, COMEDY, &c.

'Tis not enough, the Epic Narration be surprizing; it must likewise be moving, and passionate; hurrying away the Reader's Mind, and filling it with Anxiety, Joy, Terror, or some other violent *Passion*, and this for Subjects it knows are feign'd. See NARRATION.

Tho' *Passions* be always necessary, yet, all are not equally necessary, or suitable to all. Comedy has Joy, and agreeable Surprizes for its part: Tragedy on the contrary, has Terror, and Compassion. The proper *Passion* of the *Epopœa* is Admiration; tho' the *Epopœa*, as a Medium between the two others, takes in both their Kinds of *Passions*; as we see in the Grievings of the fourth Book of the *Aeneid*, and the Games and Diversions of the fifth. Admiration in effect, is consistent with each, we admire with Joy the Things that surprize us agreeably, and with Terror and Grief those that amaze and afflict us.

Besides the general *Passion*, which distinguishes the Epic from Dramatic Poems; each *Epopœa* has its peculiar *Passion*, which distinguishes it from other Epic Poems. This peculiar

*Passion* still follows the Character of the Hero. Thus Wrath and Terror reign in the *Iliad*, because *Achilles* is wrathful, and πάντων ἐκκαυχώτατος ἀνδρῶν, the most terrible of Men. The *Aeneid* is all in the tender, softer *Passions*; such being the Character of *Eneas*. The Prudence of *Ulysses*, not allowing these Excesses, we find none of 'em reign in the *Odyssée*.

As to the conducting of the *Passions*, to make 'em have their Effect, there are two Things required, viz. that the Audience be prepared or disposed to receive 'em; and that several incompatible *Passions* be not mix'd together.

The Necessity of disposing the Audience, is founded on the natural Necessity of taking up Things where they are, in order to remove 'em elsewhere. The Application of this Maxim is easy; a Man is calm, and at Ease, and you wou'd put him in a *Passion* by a Discourse made on purpose. You must begin, then, in a calm Manner; by this Means you join your self to him; and afterwards, walking together, he wou't fail to follow you in all the *Passions* to which you lead him insensibly.

If you shew your Anger at first, you'll be as ridiculous, and will have as little Effect, as *Ajax* in the *Metamorphoses*; in whom the ingenious *Ovid* gives a fine Example of this failing. He begins his Harangue in the Height of *Passion*, and with the most violent Figures, before his Judges, in the deepest Tranquillity.

*Sigeia torvo,  
Littora prospexit, classemque in Littore, vultu;  
Protendensq; manus, Agimus pro Jupiter! inquit  
Ante rates causam, & mecum conjertur Ulysses.*

The necessary Dispositions arise from some preceeding Discourse; or, at least from some Action, which has already begun to raise the *Passions* ere they are mention'd. The Orators themselves, sometimes use this last Means: For tho', ordinarily, they don't raise the *Passions* till the End of their Discourse; yet, when they find their Audience already moved, 'twou'd be ridiculous in 'em, by an unseasonable Tranquillity, to lay 'em again.

Thus, the last time *Catiline* came to the Senate, the Fathers were so shock'd at his Presence, that those near the Place where he sat down, rose up, retired, and left him alone. On this Occasion, *Cicero* had too much Sense to begin his Oration with the usual Tranquillity and Coolness of Exordiums. By this Means he'd have pallid and abated the Indignation of the Senators against *Catiline*; which it was his Business to spirit up, and inflame; and wou'd have eas'd the Parricide of that Consternation, the Behaviour of the Senators had given him; and which it was his Design to aggravate. Omitting therefore, the first Part of his Oration, he takes his Auditors in the Condition he finds 'em; continues and augments their *Passions*. *Quousque tandem abutere, Catilina, patientia nostra? Quamdiu nos etiam furor iste tuus eludet? Quem ad finem sese effrenata jactabit audacia? Nihil me nocturnum praestidium palatii, nihil urbis Vigiliæ, nihil timor populi, nihil, &c.*

The Poets are full of Instances of this Kind; where the *Passion* is prepar'd or kept up by Actions. *Dido* in *Virgil* begins a Discourse like *Ajax*: *pro Jupiter! ibi hic, ait, &c.* But then the Motions are here well disposed; *Dido* is before represented under terrible apprehensions of *Aeneas's* quitting her, &c.

*Seneca's* Conduct, indeed, is quite opposite to this Rule. If he has a *Passion* to raise, he is sure first to take from his Audience any Disposition they might have to be affected. If they be in Grief, Fear, or the Expectation of something horrible, &c. He'll begin with some fine Description of the Place, &c. In the *Troades*, *Hecuba* and *Andromache*, being prepared to hear the violent and barbarous Death of their Son *Astyanax*, whom the Greeks precipitated from the Top of a Tower; what booted it to tell them, that of the Spectators who crouded from all Quarters to see the Execution, some placed themselves on Stones, which the Ruins of the Walls occasion'd to Project; that others shook their Legs, as being placed too high, &c. *Alta Rupes, cujus cacumine erecta summos turba libavit pedes. &c.*

The second Thing required in the Management of the *Passions*, is, that they be found pure and disengaged from any Thing that might prevent their Effect.

*Polyarchy*, therefore, i. e. a Multiplicity of Fables, Actions, or Histories, must be avoided: All Adventures much broken, and hard to be retain'd; and all Intrigues intricate and difficult to conceive, are at once excluded. These embarrass the Mind, and require so much Attention, that there is none to spare for the *Passions*. The Soul must be free and disengaged to feel; and we divert our selves even from our real Sorrows, by an Application to other Things.

But of all others, the greatest Enemies to the *Passions*, are the *Passions* them selves: They oppose and destroy one another; and if two opposite ones *i. gr.* Joy and Sorrow meet in the same Object; they will neither of 'em stand it. 'Tis the Nature of these Habitudes that imposes this Law: The Blood and Spirits cannot move gently and equally, as in a State of Tranquillity, and at the same Time be stopp'd, and



Suspended with some Violence, occasioned by Admiration. Nor can they be in either of those Situations, while Fear calls 'em from the outer Parts of the Body, to assemble 'em about the Heart; or Rage sends 'em into the Muscles, and makes 'em act there with Violences very opposite to the Operations of Fear.

The Causes and Effects, therefore, of the Passions in the Soul, are to be studied, to be able to manage 'em with all their Force. *Virgil* furnishes two Examples, of what we have said about the Simplicity and Disengagement of each Passion, in the Deaths of *Camilla* and *Pallas*. See the *ÆNEID*.

PASSION in Heraldry, or the Cross of *Passion*, a Cross thus called, because, in Shape of that wherein our Saviour suffer'd, i. e. not cross'd in the Middle, but nearer the Top; with Arms short in proportion to the Length of the Shaft. See CROSS.

PASSION-WEEK, the Week next preceeding *Easter*. See *EASTER*.

It is thus call'd from our Saviour's *Passion*, i. e. his Crucifixion, which happen'd on the *Friday* of this Week, now call'd *Good-Friday*.

*Iliac* PASSION. See *Iliac* *Passion*.

PASSIVE, a term of Relation, implying a Thing to suffer, or undergo the Action of some other; which in respect hereof is denominated *Active*. See *ACTIVE*.

In all Generations, the School Philosophers conceive an active Power and a *Passive*. See *POWER*.

In civil Life, we say such a Person in such an Election, has both an active Voice, and a *Passive*, i. e. he is both capable of Electing and being Elect'd. See *VOICE*.

Some also use the term *Passive Debt*, for a Debt which we owe another; in contradistinction to an Active Debt, which is owing us. See *DEBT*.

The Chymists divide their Principles or Elements into Active and *Passive*. The *Passive* are such as have no active Force inherent in themselves; and only act by being join'd with some of the other. See *PRINCIPLE*.

Such are Phlegm, and Earth; some say also, Salt, and, in effect, all but Sulphur, or Fire, which they will have the only principle of Action and Motion in the Universe. See *EARTH*, *SULPHUR*, *FIRE*, &c.

*Passive* Prayer, in the Language of the Mystick Divines, is a total Suspension or Ligature of the intellectual Faculties, in virtue whereof the Soul remains, of it self and its own Power, impotent as to the producing of any Effects. The *Passive* State, says, *Fenelon*, is only *Passive* in the same Sense as Contemplation is so, i. e. It does not exclude peaceable, disinterested Acts, but only unquiet ones, or such as tend to our own Interest. In the *Passive* State, the Soul has not properly any Activity, any Situation of its own: 'Tis a mere infinite flexibility of the Soul, which the feeblest impulse of Grace gives Motion to. *Id.*

PASSIVE in Grammar, is a second Voice, or Inflection of Verbs; which of Active become *Passive*, by assuming, in the modern Languages, new auxiliary Verbs; in the Ancient, by new Terminations. See *VERB*, *VOICE*, &c.

The *English* Verbs become *Passive*, by taking the auxiliary Verb *I am*, in lieu of *I have*, wherewith the Active are conjugated: The *French* by *Jesuis*, in lieu of *J'ay*; the *Italian*, by *Io so*, for *Io ho*, &c.

The *Latin* Verbs become *Passive*, by changing their Terminations; as *Amor* for *Amo*, &c. *Amari* for *Amare*, &c.

The *English* Verbs *Passive* are nothing else, in effect, but the Verb *I am*, in all its Inflections join'd to the Participle *Passive*; as, *I am prais'd*; in *Latin* *laudor*, in *French* *Je suis loué*; *I have been prais'd*, *J'ay été loué*, *laudatus sum*, &c.

Neuter PASSIVE, is a Verb that has a *Passive* Conjugation, but a Neuter Signification. See *NEUTER*.

Of these, there are a very small Number in *Latin*, more in *French*, fewer in *English*: As, *I am enter'd*, *ingressus sum*, *je suis entre*, &c. But Grammarians are frequently Mistaken here; taking Verbs for Neuters-*Passives*, which in effect are Actives, and only differ in that they act on themselves, by adding the Pronoun Personal; and which on that footing shou'd rather be Neuters-Active, than Neuters-*Passive*.

Some admit of no genuine *Passive* Verbs in the modern Tongues; such we mean as answer to the Notion of *Passives* in the Ancient, where all is done by different Terminations. On which footing, there shou'd be none but Actives *Passive* and Neuters *Passive*.

PASSOVER, a solemn Feast, celebrated among the *Jews*, on the fourteenth Day of the Moon next after the vernal Equinox. See *FEAST*.

This Feast was call'd by the Ancient *Latins* and *Greeks* *Passcha*; not from *πάσχω* I suffer, as *Lactantius* weakly imagines; but from the *Hebrew* *פסח* *Pesach*, Passage, Leap; the Design of the Feast being to commemorate the destroying Angels passing over the Houses of the *Israelites*, when he enter'd in, and destroy'd the first born in those of the *Egyptians*.

Yet, many weakly imagine that it was in Memory of their passing the Red Sea, that this *Passover* was instituted; tho' 'tis certain the Feast was held, and had its Name before the

*Israelites* took a Step of their Way out of *Egypt*; and consequently several Days before their passing the Red Sea.

Beside the *Passover* celebrated on the fourteenth of the first Month; there was a second *Passover* held on the fourteenth of the second Month after the Equinox, instituted by God in favour of Travellers and Sick Persons who could not attend at the first; nor be at *Jerusalem* on the Day.

The *Greeks*, and even some of the Catholic Doctors, from the XVIII Chapter of *St. John*, take occasion to conclude that *Jesus* anticipated the Day mark'd for the *Passover* in the Law; but the Authority of three Evangelists seems to evince the contrary.

*F. Lamy*, is of Opinion, he did not attend at the *Passover* the last Year of his Life; which Sentiment has drawn upon him Abundance of Opposers.

*F. Hardouin* maintains, that the *Galileans* celebrated the *Passover* on one Day, and the *Jews* on another. See *SAMARIA-TAN*.

PAST-BOARD, a kind of thick Paper, form'd of several Sheets pasted together. See *PAPER*.

There is also a coarse kind of *Past-board*, made of old Paper and old *Past-board*, beaten in a Mortar with Water, and reduced into a kind of Pulp; to which is added a little Paste, to give the Mass a Consistence; after which it is form'd in a Mould; and to finish it, laid in a Press, to squeeze out all the Water, and reduce it to its proper Thickness.

Each Kind is distinguish'd by *Numéro's*, which express its Fineness and Value: The finest is cover'd on both Sides with a very white smooth Paper, others only on one Side; and others on both Sides with common Paper.

The chief Use of *Past-board* is in the Binding of Books, Letter-Cases, Hat-Cases, Gloves, &c. See *BOOK-BINDING*.

PASTE, in Cookery, a soft Composition of Flower, wrought up with proper Fluids, as Water, Milk, or the like, to serve as a Case or Coffin, therein to bake Meats, Fruits, &c.

*Paste*, is the Basis, or Foundation of Pyes, Tarts, Patties, Pasties, and other Works of Pastry. See *PASTRY*, &c.

PASTE, is also us'd in Confectionry, &c. for a Preparation of some Fruit, made by beating the Pulp thereof, with some Fluid or other admixture, into a soft pappy Consistence, spreading it into a Dish, and drying it with Sugar, till it become as plyable as an ordinary Paste. See *CONFECT*.

It is us'd occasionally for making the Crufts, and Bottoms of Pyes, &c.

Thus they make Almond Pastes, Apple Pastes, Apricock Pastes, Cherry, Curran, Lemon, Plum, Peach, Pear Pastes.

PASTE, is also us'd for a Preparation of Wheaten Flower, boil'd up, and incorporated with Water; us'd by various Artificers, as Upholsterers, Sadlers, Bookbinders, &c. instead of Glue or Size, to fasten or cement their Cloths, Leathers, Papers, &c.

PASTERN of a Horse, the Distance between the Joint next the Foot, and the Coronet of the Hoof.

This Part should be short, especially in middle siz'd Horses; because long *Pasterms* are weak, and cannot so well endure Travel.

The *Pastern*-Joint, after travelling, is apt to be crowned, i. e. to have a Swelling round it beneath the Skin, in form of a Circle  $\frac{1}{2}$  an Inch broad.

PASTIL, among Painters, &c. a Sort of Paste, made of several Colours, ground up with Gum-Water, either together or separately; in order to make Crayons to paint with on Paper or Parchment. See *CRAYON*.

PASTIL, is also us'd for a dry Composition, yielding a fragrant Smell when burnt in a perfuming Pan, to clear and scent the Air of a Chamber.

It is composed of odorous Resins, mixt with Aromatic Woods, or Drugs pulveriz'd, and incorporated with Mucilages of Gum Tragacanth.

Some call 'em *Offelers of Cyprus*.

There are also *Pastils* for the Mouth, eaten to procure a sweat Breath.

These have several Names, and consist of several Preparations, as Muscadines, Conserve, &c.

PASTIL, is sometimes also us'd for the Plant otherwise call'd Woad or Glass-wort. See *WOAD*.

PASTIL in Confectionry, is a Preparation of Sugar with Lemon-Water, &c. boil'd up with Gum-Water, strain'd, beat up, and by the Addition of more dry Sugar, work'd into a plyable Paste, and thus form'd into round or oblong Figures, and dry'd in the Stove.

PASTINATION, a Term sometimes us'd in Agriculture, for the Act of opening, loosening, and preparing the Earth for planting. See *EARTH* and *PLANTING*.

PASTORAL, something that relates to Shepherds, *Pastores*. The Poets represent the *pastoral* Life, and *pastoral* Manners in the most agreeable Light. We must not imagine 'em so agreeable in Nature as in their Descriptions.

PASTORAL, in Poetry, a poetical Piece, the Subject whereof is something in the *Pastoral*, at least the rural Life, and the Persons Shepherds, at least Rusticks. See *PORM*. Most



Most Authors, except the *English*, esteem *Pastoral* of the Dramatic Kind; and define it a Dramatic Piece, the Persons whereof are clad like Nymphs and Shepherds, and act their own Amours.

The Scene is always in the Fields or the Woods; whence *Tasso* calls *Pastoral*, *Fable Bucagere*.

Such are the *Pastor Fido* of *Guarini*, the *Aminata* of *Tasso*, the *Sylvia* of *Maizet* the French Poet; the *Comus* of *Milton*, &c.

*Tasso* assumes to himself the Honour of having invented *Pastoral*; but the first Idea of this kind of *Drama* seems to be *Beccari's Due*, who made the first Attempt of this Kind in 1552. But *Tasso's Aminto*, which did not appear till the Year 1573, effacing what had been done by *Beccari*; the first Author was forgot, and *Tasso* left the Inventor.

'Tis certain this Kind of *Pastoral Fable*, composed according to the Rules of the Stage, was unknown among the Ancients. The *Greeks* and *Latins* have indeed introduced Shepherds in their Eclogues; but these Eclogues had nothing Theatrical in 'em; nor were the Shepherds ever brought upon the Stage. See *ECLOGUE*.

This Kind of Dramatic *Pastoral* is still but little known among us; nor have we any Thing considerable under the Title of *Pastorals*, but Country-pieces after the manner of the Eclogues or Idyllions of the Ancients. See *IDYLLION*.

Every *Pastoral*, however, even in this last View, shou'd have a little Plot, or Fable, which may deserve the Title of a *Pastoral Scene*. It must be Simple, and but one; yet, not so as to refuse all Digressions, provided they be but small. This Rule of the Plot is every where observ'd by *Virgil*.

PASTORAL-STAFF. See *CROSIER*.

PASTRY, the Branch of Cookery, which teaches the Preparation of *Paste* with several savoury Ingredients of Flesh, Fruits, Spices, Sugar, Butter, &c. See *PASTE*.

PASTRY, is chiefly conversant in the making of Pies, Pasties, Patties, Cakes, Biscuits, &c. See *PIE*, *PASTY*.

PASTURA, in our Law-Books, is any Place where Cattle are occasionally fed; by which it differs from *Pascua*, which is a Place set wholly a-part for feeding, and never plough'd.

*Pastura*, says *Lindewode*, *Omne Genus pascendi significat, five in pratis, five instipula, five in Agris, five in Campis: sed Pascua est locus principaliter deputatus pecoribus pascendis ut pua in Montibus, Moris, Mariscis & planis non cultis nec aratis.*

PASTURE Ground is that not cultivated; that is, neither Meadow, nor Arable; but reserved for the feeding of Cattle.

The best Domains are those consisting in *Pasture*, they need no Tilling. *Holland* is a Country abounding much in *Pasture*.

PASTUS, the Procuration, or Provision which the King's, or Lords Tenants, are bound to make for 'em at certain Days, or Seasons, or as often as they make a Progress to their Lands.

This, in many Places, has been converted into a pecuniary Fee; as in the Procurations of the Clergy. See *PROCURATION*.

PASTY, in Cookery, a Work of Pastry; being a Preparation of some proper Meat, as Beef, Venison, Lamb, or the like, well boned, beaten up to a Pulp, and highly season'd; put up in a Paste, and then baked in an Oven.

They also make *Veal-pasties*, *Umble-pasties*, *Kidney-pasties*, *Marrow-pasties*, &c.

PATAVINITY, PATIVINITAS, among Criticks and Philosophers, a Fault objected to *Titus Livy*, which he derived from his Country *Padua*, *Patavium*.

*Afinius Pollio*, as we are inform'd by *Quintillian*, tax'd *Livy* of *Patavinity*: What this *Patavinity* consisted in, has given the Criticks a World of Pain.

*Paolo Beni*, Professor of Eloquence in the University of *Padua*, is of Opinion, it must be understood of the Inclination of that Historian to *Pompey's* Party: But wou'd *Pollio* have reproach'd him with an Inclination from which he himself was not exempt?

*Pignorius* will have the *Patavinity* to consist in *Livy's* retaining the vicious Orthography of his Country-men of *Padua*; who wrote *sibe* and *quase*, for *sibi* and *quasi*; which he proves from several Inscriptions.

*J. J. Rapin*, takes the *Patavinity* to be only a faulty Pronunciation, which shock'd the delicate Ears of the People in the Court of *Augustus*; and favour'd a little of that Country.

*Morbofius* believes it to be a certain Turn of Expression, and some Phrases peculiar to the *Paduense*.

All we know for certain, is, that it was a Fault in the Language of *Livy*, not in the Sentiments or Manners. In all probability, 'tis one of the Delicacies that are lost in a dead Language. *M. Balzac* could not ridicule his Dorard better than by supposing he valued himself on having discover'd the *Patavinity* objected by *Pollio* to *Livy*.

*Dan. Georg. Morbofius*, has an express Treatise, *De patavinitate Liviana*, Printed at *Kiel* in 1685; where he explains, very learnedly, the Urbanity and Peregrinity of the *La-*

PATE in Fortification, a kind of Platform, like what they call an Horse-shoe; not always regular, but generally Oval, encompassed only with a Parapet, and having nothing to flank it. See *HORSE-SHOE*.

It is usually erected in Marshy Grounds, to cover a Gate of a Town.



PATEE, or PATTEE, a Term in Heraldry for a Cross, small in the Centre, and widening towards the Extremes; as in the Figure adjoining. The Field is Sable, a Cross *Pattee* Argent, by the Name of Cross.

This Form of a Cross is called also *Formee*. See *FORMEE*.

PATELLA, in Anatomy, a Bone which covers the Fore-part of the Joynt of the Knee; call'd also *Mola*, *Rorula*, and popularly, the *Knee-Pan*. See *MOLE*.

The Patella is roundish on the Out-side, somewhat of the Figure of a Shield, cover'd with a smooth Cartilage, and about two Inches in Diameter; over it slide the Tendons of the Muscles which extend the Leg, as on a Trochlea, or Pulley.

But its more immediate Use is to hinder the Leg from being bent forwards in Extension; which wou'd of necessity be the Case in this Articulation; did not this Bone, like a Bolster, check its rolling forwards; as the Olecranon does the swing of the Cubitus backwards. See *OLECRANUM*.

In an erect Posture, when one Foot is set forwards, the whole Weight of the Body bears on the *Patella*; which in this Situation, hinders the Knee from bending backwards, and straining the Muscles that inflect it behind.

Hence it was that *Galens* Wrestler, who had dislocated his *Patella*, found so much Pain in going down Hill.

PATENA, in the *Romish* Church, the Cover or Lid of the Chalice, made of the same Metal therewith, serving to hold the Particles of the Host; and given the People to kiss when they make an Offering. It has its Name *Patena*, a *Patendo*; and is a general Name in *Columella* for any broad flat Vessel.

PATENT, or *Letters Patent*, in Law, the King's Letters, seal'd with the Great-Seal; serving to convey the Title or Property of some Grant, Favour, Privilege of a new Establishment, or the like. See *LETTERS PATENTS*.

They have their Name in opposition to *Letters de Cachet*; because deliver'd open, *ut pateant omnibus*; whereas the other are seal'd. It is to be noted, that *Patents* differ from *Writs*; and that a Coroner is made by *Writ*, not by *Patent*. See *WRIT*.

PATENTEE, is he, to whom the King grants his Letters *Patent*.

PATERA, among Antiquaries a Goblet, or Vessel, used by the *Romans* in their Sacrifices; wherein they offer'd their consecrated Meats to the Gods; and wherewith they made Libations. See *SACRIFICE* and *LIBATION*.

On Medals, the *Patera* is seen in the Hands of several Deities; and frequently in the Hands of Princes, to mark the Sacerdotal Authority, join'd with the Imperial, &c.

Hence, *F. Joubert* observes, that beside the *Patera*, there is frequently an Altar upon which the *Patera* seems to be a pouring.

The *Patera* was of Gold, Silver, Marble, Brass, Glass, or Earth; and they us'd to enclose it in Urns with the Ashes of the Deceas'd, after it had serv'd for the Libations of Wine and other Liquors at the Funeral.

The *Patera* is an Ornament in Architecture, frequently seen in the *Dorick* Freeze; and the Tympana of Arches.

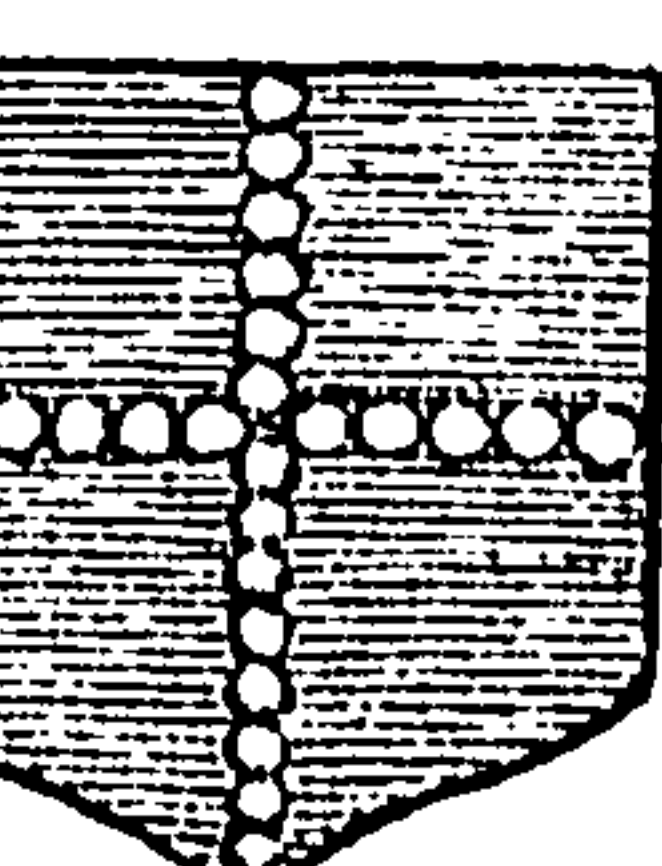
The Word is form'd from the *Latin* *Patera*, of *Pateo* I am open; *quod pateat*, because it has a great Aperture; in contradistinction to Bottles, &c. which have only narrow Necks, or whose Aperture is less than the Body of the Vessel.

PATER-NOSTER, the *Lord's Prayer*; a Form so call'd from the two Initial Words thereof.

PATER-NOSTER is also us'd for a Chapelet or string of Beads; because, serving to Number the Rehearsals of that Prayer. See *CHAPELET*.

PATER-NOSTERS, in Architecture, are certain Ornaments placed underneath Ovols, cut in form of Beads, round, or Oval. See *BEAD*.

PATER-NOSTREE in Heraldry. A Cross *Pater-nostree*, is a Cross, made up of Beads, as in the Figure adjoining. See *CROSS*.



Note, This Cross is to be so shadowed in drawing, as that the Sphericity of the Beads may appear; to distinguish 'em from *Besants*, &c.

PATERNITY, the Quality of a Father. See *FATHER*.

There is an immediate Relation between the Paternity of the Father, and the Filiation of the Son, in the Mystery of the Trinity, See *TRINITY*.



The Divines have a long Time disputed, whether *Paternity* be a real and specific Character, which absolutely distinguishes the Father from the Son; or whether it be a mere Relation of Oeconomy and Subordination. On the one Hand, if *ternity* be supposed incommunicable to the Son, and if it constitute a real and positive Distinction; this amounts to *Tritheism*. See *TRITHEISM*.

On the other Hand, if *Paternity* be only regarded as a Mode, or a term of Order and Oeconomy; there is no essential and intrinsic Difference between the Father and Son; which is nothing less than Sabellianism. See *SABELLIAN*.

*PATH* of the *Vertex*, a Term frequently us'd by Mr. *Flamsteed*; signifying a Circle, described by any Point of the Earth's Surface, as the Earth turns round its Axis.

This Point is consider'd as Vertical to the Earth's Centre; and is the same with what is call'd the *Vertex* or *Zenith* in the Ptolemaick Projection.

The Semi-Diameter of this Path of the *Vertex*, is always equal to the Complement of the Latitude of the Point or Place that describes it; that is, to that Place's Distance from the Pole of the World.

*PATHETIC*, something that relates to the *Passions*; and particularly, that is proper to awake, or excite them. See *PASSION*.

The *Pathetic*, and the *Sublime* have a near Affinity. See *SUBLIME*. See also *STYLE*.

The Word comes from the Greek *πάθος*, *Passion*.

*PATHETIC*, in Music, something very moving, expressive, passionate, capable of exciting Pity, Compassion, Anger, or the like Passion.

In this Sense, we say a *Pathetic Fugue*, *Pathetic Song*, &c.

The Chromatic Genus, with its major and minor Semi-tones, either ascending or descending is very proper for the *Pathetic*; as is also an artful Management of Discords; Variety of Motions, now brisk, now languishing, now swift, now slow.

*Niewenhuysen*, tells us of a Musician at *Genoa*, who excell'd in the *Pathetic*; to that Degree, that he was able to play any of his Auditors into Distraction; he adds, that the great Means he made Use of, was the Variety of Motions, &c.

*PATHETICI*, in Anatomy, the fourth of the ten pair of Nerves, which arise out of the Medulla Oblongata. See *NERVE*.

The *Pathetici* are the smallest Nerves of the Brain; they have their Origin in the lower part of the Medulla Oblongata, behind the Nates and Testes.

They have their Name *Pathetici*, from their serving to move the Eyes in the various Passions; and are by some call'd *Amatarii*, from the great Use made thereof by Lovers, in Ogling, &c.

*PATHOGNOMONIC*, in Medicine, an Essential Sign or Characteristic; or a Symptom peculiar to, and inseparable from some Disease; and every Stage thereof, See *SYMPTOMS*.

Thus *Blanchard*, and after him *Harris*, &c. But the Truth is, there is nothing in all Medicine that Answers to the Idea of a *Pathognomonic*; Disease and Symptoms are too complicated. See *DIAGNOSTIC*.

*PATHOLOGY*, that part of Medicine which considers Diseases; both those of the Body, and the Mind; their Natures, Causes, Symptoms, &c. See *DISEASE*.

The Word is form'd from the Greek *πάθος* Passion, Suffering, and *λόγος*, Discourse.

*PATHOS*, a Greek Word, *πάθος*, signifying *Passion*; us'd in speaking of the Movements, which the Orator excites in his Audience.

There is a World of *Pathos* in his Discourse.

We sometimes also Use the Word for Energy or Strefs.

*PATIENT*, among Physicians, a Person under the Direction of a Physician, or Surgeon, to be cured of some Disease.

*PATIENTIÆ Musculus*, in Anatomy. See *LEVATOR SCAPULÆ*.



*PATONCE*, in Heraldry, a *Cross Patonce*, a Cross of the Figure adjoining. He bears Gules, a Cross *Patonce*, Argent, by the Name of *Lattimer*. It comes near to the Cross Flory, and only differs in some Circumstances of the Ends. See *FLORY*.

*PATRES Conscripti*, in Antiquity, a Denomination given the Senators of *Rome*. See *SENATOR*, *PATRICIAN*.

The first hundred Senators appointed by *Romulus*, were call'd simply *Patres*, Fathers; another hundred being added by *Romulus* and *Tatius*, upon the Union of the two People; these latter were call'd *Patres minorum Gentium*, and the former *Majorum Gentium*.

At length, *Tarquinius Priscus* making up the Number 300, the two latter Classes were call'd *Patres Conscripti*; because, *Adscripti* wrote down to the former.

Those afterwards chosen from among the Knights, were call'd *Patres Alieii*.

*PATRIARCH*, one of those first Fathers who liv'd to-

wards the Beginning of the World; and who became famous by their long Lines of Descendants.

*Abraham*, *Isaac*, *Jacob*, and his twelve Sons are the *Patriarchs* of the Old Testament: The Number of Children is the Benediction, and the Character of a *Patriarch*.

*PATRIARCH*, is also us'd in Christendom for the Bishops in Possession of some of the grand Sees, independant of the papal Jurisdiction. See *BISHOP*.

The *Patriarchate* has been always esteem'd the supreme Dignity in the Church: So that to rise by Degrees, the Bishops had only under him the Territory of the City, whereof he was Bishop; the *Metropolitan* commanded a Province, and had for Suffragans the Bishops of his Province; the Primate was the Chief of a Diocese, and had several *Metropolitans* under him; and the *Patriarch* had under him several Dioceses, and Primate's emelves were under him. See *METROPOLITAN*.

But this Order was not always observ'd. See *PRIMATE*. *Usher*, *Pagi*, *de Marca* and *Morin*, attribute the Establishment of the Grand *Patriarchs* to three Apostles. They suppose that the Apostles, according to the Description of the World then given by Geographers, pitch'd on the three principal Cities in the three Parts of the known World, viz. *Rome* in *Europe*; *Antioch* in *Asia*; and *Alexandria* in *Africa*; and thus form'd a Trinity of *Patriarchs*.

Others, far from attributing this Institution to St. *Peter*, maintain that the Name *Patriarch* was unknown at the Time of the Council of *Nice*; and that for a long Time afterwards, *Patriarchs* and *Primates* were confounded together: as being all equally Chiefs of Dioceses; and equally superior to *Metropolitans*, who were only Chiefs of Provinces.

Hence it is that *Socrates* gave the Title *Patriarch* to all the Chiefs of Dioceses, and reckons ten of 'em.

In Effect, it does not appear that the Dignity of *Patriarch* was attach'd, and affected to the five grand Sees of *Rome*, *Constantinople*, *Alexandria*, *Antioch*, and *Jerusalem*, till after the Council of *Calcedon* in 451. For when the Council of *Nice* regulated the Limits and Prerogatives of the three *Patriarchs* of *Rome*, *Antioch*, and *Alexandria*, it did not give 'em the Title of *Patriarchs*, tho' it allow'd 'em the Pre-eminence and Privileges thereof. Thus, when the Council of *Constantinople* adjudg'd the second Place to the Bishop of *Constantinople*, who, till then, was only a Suffragan of *Hieraclea*; it said nothing of his *Patriarchate*.

Nor is the Term *Patriarch* found in the Decree of the Council of *Calcedon* whereby the fifth Place is assign'd to the Bishop of *Jerusalem*; nor did these five *Patriarchs* govern all the Churches.

There were still many Independant Chiefs of Dioceses, who, far from owning the Jurisdiction of the grand *Patriarchs*, call'd 'emselfes *Patriarchs*; such as that of *Aquila*; nor was *Carthage* ever subject to the *Patriarch* of *Alexandria*.

The Authority of the *Patriarchs* grew by insensible Degrees, till at length all Affairs of Moment, within the Compass of their *Patriarchate*, came before them; either at first hand, or by Appeal from the *Metropolitans*.

They consecrated Bishops, appointed the Time of *Easter*, &c. Nothing in short was done without consulting 'em; and their Decrees were executed with the same Respect as those of Princes.

The *Latin Church* was unacquainted with *Patriarchs* till the VI. Century; and the Churches of *Gaul*, *Britain*, &c. were never subject to the Authority of the *Patriarch* of *Rome*, whose Authority only extended to the suburbicary Provinces.

There was no Primalty, no Exarch, or *Patriarch* own'd here; but the Bishops, with the *Metropolitans*, governed the Church in Common.

Indeed, after the name *Patriarch* became popular in the West; it was attributed to the Bishops of *Bourges* and *Lions*; but it was only in the first signification: viz. as Chiefs of Dioceses.

*Du Cange* adds, that there have been some Abbots, who have bore the Title of *Patriarchs*. See *ANNOT*.

*PATRIARCH*, is also us'd for the chiefs of several Churches in the East, who live out of Communion with the *Roman Church*: as the *Patriarch* of the *Armenians*, residing in a Monastery of St. *Gregory*; The *Patriarch* of the *Abyssinians*, called *Abuna*; the *Patriarch* of the *Copti*, the *Jacobin*, &c. See *ARMENIANS*, *COPTI*, *JACOBINS*, &c.

*PATRIARCHAL*, in Heraldry. A *Cross Patriarchal* is so call'd, because the Shaft is twice cross'd; the lower Arms being longer, and the Upper shorter.

Such a Cross is said to belong to *Patriarchs*, as the Triple Cross does to the Pope.

*PATRICIAN*, in ancient *Rome*, a Title given to the Descendants of the Hundred, or according to others, of the two Hundred first Senators, chosen by *Romulus*, and by him call'd *Patres*, Fathers. See *SENATOR*, *PATRES*, &c.

*Patricians*, therefore, were then the ancient Nobility; in Opposition to the *Plebeians*. See *PLEBEIAN*.

But the Cognizance and Character of these ancient Families being almost lost and extinguish'd, by a long Course of Years, and frequent changes in the Empire; a new Kind of *Patricians*



*Patricians* were set on Foot; who had no pretensions from Birth; but their Title depended wholly on the Emperor's Favour.

This new *Patriciate*, *Zozimus* tells us, was erected by *Constantine*; who attributed the Quality to his Councillors; calling 'em *Patricii*, not because descended from the ancient Fathers of the Senate, but because they were the Fathers of the Republic, or of the Prince.

This Dignity in time, became the highest of the Empire. *Justinian* calls it *Summam dignitatem*, in effect, the *Patricians* had the Precedence of *Consularii*, and took Place before 'em in the Senate.

This Dignity was only conferr'd on those who had gone thro' the first Offices of the Empire; or had been Consuls.

We frequently read of *Patricians* among the *English Saxons*.

Pope *Adrian* made *Charlemaign* take the Title of *Patrician*; ere he took the Quality of Emperor; other Popes have given the Title to other Kings and Princes, by reason of its Eminence.

*PATRICIANS*, or *PATERNIANS* ancient Sectaries; who disturbed the Church in the Beginning of the third Century.

They had their Name from their Founder *Patricius*, Preceptor of a Marcionite, call'd *Symmachus*.

His distinguishing Tenet, was that the Substance of the Flesh is not the Work of God, but that of the Devil; on which Account, his Adherents bore an implacable Hatred to their own Flesh; which sometimes carried 'em so far as to kill 'em selves.

They were also called *Tatiani*. See *TATIAN*.

*PATRIMONY*, a Right, or Estate, which a Person inherits from his Ancestors.

The Name was also antiently given to the Effects, or Revenues wherewith a Church or religious House was endowed. In this Sense, we say the *Patrimony* of the Church of *Rimini*, of *Milan*, &c.

The Dutchie of *Urbino* and *Spoletto*, are called *St. Peter's Patrimony*. The Church of *Rome* had *Patrimonies* in several Countries; in *France*, *Africa*, the *Alps*, *Sicily*, &c.

To make what belong'd to the Churches the more respected, they usually gave their *Patrimonies* the Name of the Saints they held in the highest Veneration.

Thus the Church of *Ravenna*, called its Inheritance the *Patrimony* of *St. Apollinaris*; that of *Milan* the *Patrimony* of *St. Ambrose*, &c. as is observed by *Fra. Paolo*.

*PATRIPASSIANS*, a Name given to the *Sabellians*; because they did not believe 'twas the Son, but the Father himself that was Crucified. See *SABELLIAN*.

The Council of *Antioch* held by the *Eusebians* in 345; says, that those whom the *Romans* call *Patripasians*, the *Eastern* People call'd *Sabellians*; it adds the Reason of the Name *Patripasians* in their Condemnation; viz. supposing that by the Incarnation of the Father, they render'd him Comprehensible and *Possible*.

*PATROLL*, or *PATROUL*; antiently *Patoul*, in War, a Round, or March made by the Guards, or Watch, in the Night-time; to observe what passes in the Streets, and to secure the Peace and Tranquillity of the City or Camp.

The *Patroll* consists of a Body of five or six Men detach'd from a *Corps de Guard*, and commanded by a Serjeant.

*PATRON*, a Term us'd in various Acceptations, tho' all reducible to the Relation of a Protector and Guardian.

Particularly, in the Church of *Rome*, a Saint, whose Name a Person bears, or under whose Protection he is put, and whom he takes particular Care to invoke; or a Saint in whose Name a Church or Order is founded; or a Person who first establish'd it, and who is chosen Protector, are call'd *Patrons* thereof.

*St. Peter* and *St. Paul* are the Patrons of the Church of *St. Genevieve*, *St. Denis* the Patron of the City *Paris*; *St. George* of *England*, *St. Benedict* the Patron of the *Benedictines*, *St. Michael* of the *Armourers*, *St. Ignatius* of the *Jesuits*, &c.

*PATRON*, *PATRONUS*, among the *Romans*, was used for two different Persons.

They call'd *Patron* the Master, who had freed his Slave. And hence, as the Right, and Relation of Master expir'd, that of *Patron* commenc'd.

For the *Romans*, in giving their Slaves their Freedom; did not despoil 'em selves of all Rights and Privileges in 'em: The Law still subjected the freed Men to considerable Services and Devoirs to their Patrons, the Neglect whereof was severely punish'd. See *SLAVE*.

The principal Right which *Patrons* had, was that of being the legal Heirs of their freed Men, if they died without lawful Issue born after their Enfranchisement and Intestate.

By the *Papian* Law it was further provided, that if the Estate of the freed Men were 100000 Sesterces, and he had three Children, the *Patron* shou'd have a Child's Portion. See *FREED-MAN*, *LIBERTUS*, *ENFRANCHISEMENT*, &c.

*PATRON*, was also a Name which the People of *Rome* gave to the Person, under whose Protection they put themselves.

The common People usually chose some Person of Eminence and Authority to whom they paid all Kinds of Honour and Respect; denominating 'em selves his *Clients*: And the *Patron* on his Side owed them his Credit and Protection.

By this reciprocal Relation was the *Patron* bound to his Client, and the Client to his *Patron*. See *CLIENT*.

*PATRON*, in Navigation, a Name given in the *Mediterranean*, to the Person who commands the Vessel and Seamen; sometimes to the Person who steers it; the former in other Places call'd *Master*, the second *Pilot*. See *MASTER* and *PILOT*.

*PATRON*, in the Canon and Common Law, a Person who founds, or endows a Church or Benefice, and reserves to himself the Right of Patronage. See *PATRONAGE*.

The King is *Patron Paramount* of all Ecclesiastical Benefices in *England*. See *KING*, *PARAMOUNT*, &c.

*PATRONAGE*, the Right belonging to the Founder of a Church or Benefice. This Right consists in having the Nomination or Presentation to the Benefice by him founded or endow'd; in having the honourable Rights of the Church, in being enter'd in the Chancel, &c. See *BENEFICE*.

Of *Patronages*, some are *Lay*, others *Ecclesiastical*.

*Lay-patronage* is a Right attach'd to the Person, either as Founder, or as Heir of the Founder; or as Possessor of a Fee to which the *Patronage* is annex'd.

*Ecclesiastical Patronage* is that a Person is entitled to by Virtue of some Benefice which he holds.

If an Ecclesiastic have a Right of *Patronage* on his own Bottom, independant of his Ecclesiastic Capacity; this is still *Lay-Patronage*.

*Lay-Patronage* is either *real* or *personal*: *Real* is that attach'd to the Glebe; or to a certain Inheritance.

*Personal* is that belonging immediately to the Founder of the Church, and transmittible to his Children and Family, without being annex'd to any Fee.

*Personal Patronage* cannot be alienated or sold; *Real* may, together with the Glebe to which it is annex'd. There must ever be some Body or Matter to fix it to, in order to its being transfer'd to another.

The Origin of the Right of *Patronage*, we find in the 10th Canon of the Council of *Orange*; where it is express'd that a Founder may present to the Diocesan the Clerks he thinks proper for his Church. By a Law of *Justinian* it is ordain'd, that the Founders of Churches may not put Clerks in 'em on their own Authority; but only present them to the Bishop.

Some Canonists look on the Right of *Patronage*, as a Kind of Ecclesiastic Servitude. See *SERVICE*.

The Right of *Patronage* sleeps, but is not lost, while a Person is out of the Communion of the Church.

*Arms of Patronage*, in Heraldry, are those, a Top whereof are some Marks of Subjection and Dependance: Thus the City of *Paris* bears three *Flower-de-lis* in chief, to shew her Subjection to the King.

The Cardinals on the Top of their Arms bear those of the Pope, who gave 'em the Hat, to shew that they are his Creatures.

*PATTES*, in Heraldry, the Paws of a Beast. See *PAW*.

*PAVAGE*, in our old Law-Books, Money pay'd towards the paving of Streets or High-ways. See *PAVEMENT*.

*PATRONYMIC*, a Term which Grammarians use; for those Names, which the *Greeks* gave to the Race, or Lineage; and which were form'd from him who was Chief, or Founder thereof. See *NAME*.

Thus the Descendants of *Æacus*, were called *Æacides*; and those of *Hercules*, *Heracides*.

These *Patronymic*-Names the *Romans* call'd *Gentilitia*, which amounts to our Sur-names. See *SUR-NAME*.

Thus, those of the present reigning Family in *France*, we call the *Bourbons*; those of the late in *England*, the *Stewarts*, &c. The Word is form'd from the Greek *πατήρ* Father, and *ὄνομα*, Name.

*PAVAN*, or *PAVANE*, a Grave Dance, derived from the *Spaniards*; wherein the Dancers make a kind of Wheel, or Tail before each other, like that of a Peacock, whence the Name. See *DANCE*.

The *Pavane* was antiently in great repute; and was danced by Gentlemen with Cap and Sword; by those of the Long Robe, with their Gowns; by Princes with their Mantles, and by the Ladies with their Gown-tails trailing on the Ground.

It was called the *Grand Ball*; from the Solemnity, wherewith it was perform'd.

To moderate its Gravity, 'twas usual to introduce several Flourishes, Passades, Capers, &c. by way of *Episodes*.

Its Tablature or Score is given at large by *Thoinot Arbeau* in his *Orchesographie*.

*PAVEMENT*, a Lay of Stone, or other Matter, serving to cover and strengthen the Ground of divers Places, for the more commodious walking on, or the Passage of Carriages.

The Word is form'd from the *Latin Pavimentum*, of *Pa-*



vire, to beat down the Earth, in order to make it firm and strong.

In *England*, the Pavements of the Grand Streets, &c. are usually Flint; or Pebble; Courts, Equeries, Kitchens, Halls, Churches, &c. Tiles, Bricks, Flags, or Fire-Stone; sometimes a Kind of Free-Stone; and Rag-Stone. See **STONE**.

In some Cities, *E. gr. Venice*, the Streets, &c. are paved with Brick; Churches sometimes with Marble, and sometimes with Mosaic-Work, as the Churches of St. Mark at Venice.

In *France*, the public Roads, Streets, Courts, &c. are paved with *Gres*, a Kind of Free-Stone.

In *Amsterdam*, and the chief Cities of *Holland*, they call their Brick Pavement the *Bourguier Masters Pavement*, to distinguish it from the Stone or Flint Pavement, which usually takes up the Middle of the Street, and which serves for Carriages; the Brick which borders it being destined for the Passage of People on Foot.

Pavements of Free-Stone, Flint, and Flags, in Streets, &c. are laid dry, *i. e.* are retained in a Bed of Sand; those of Courts, Equeries, Ground Rooms, &c. are laid in a Mortar of Lime and Sand; or in Lime and Cement, especially if there be Vaults or Cellars underneath.

Some Mafons, after laying a Floor dry, especially of Brick, spread a thin Mortar over it; sweeping it backwards and forwards to fill up the Joints.

Thirty two Statute Bricks laid flat pave a Yard square; 64 of Edge wise.

The Square Tiles us'd in Paving, call'd Paving-bricks, are of various Sizes, from 6 to 12 Inches Square. See **BRICKS**.

Pavements of Churches, &c. frequently consist of Stones of several Colours; chiefly black and white, and in several forms, chiefly Square, and Lozange, artfully disposed.

Indeed, there needs no great variety of Colours to make a surprizing variety of Figures and Arrangements. *M. Truchet*, in the Memoirs of the *French Academy*, has shewn by the Rules of Combination, that two Square-Stones divided diagonally into two Colours, may be join'd together Checquer-wise 64 different Ways; which appears surprizing enough; since two Letters or Figures are only combined two Ways.

The Reason is, that Letters only change their Situation with regard to first and second; the Top and Bottom remaining the same: But in the Arrangement of these Stones, each admits of four several Situations, in each whereof the other Square may be chang'd 16 Times, which gives 64 Combinations.

Indeed, from a further Examination of these 64 Combinations, he found there were only 32 different Figures; each Figure being repeated twice in the same Situation, tho' in a different Combination; so that the two only differ'd from each other by the Transposition of the darker or higher Squares. See **COMBINATION**.

Pavement of a Terrass, is that which serves for the covering of a Plat-form; whether it be over a Vault, or on a Wooden Floor. See **TERRASS**.

Those over Vaults are usually Stones squared, and bedded in Lead.

Those on Wood, call'd by the *Latins Pavimenta contignata*, are either Stones with Beds for Bridges; Tiles for Ceilings in Rooms, or Lays of Mortar, made of Cement and Lime, with Flints or Bricks laid flat, as is still practis'd by the Eastern and Southern People a Top of their Houses. See **PLAT-FORM**.

All those Pavements which lye open, are call'd by the *Latins Pavimenta subdialia*.

Mosaic PAVEMENT. See **MOSAIC WORK**.

Projection, or Perspective of a PAVEMENT, See **PERSPECTIVE**.

PAVILLION, in Architecture, from the *Italian Padiglione*, Tent, of the *Latin Papilio*; signifies a Turret, or Building usually insulated, and under a single Roof; sometimes Square; and sometimes in form of a Dome.

Pavillions are sometimes also projecting Pieces, in the Facade of a Building, marking the Middle thereof; sometimes the Pavillion flanks a Corner, in which Case 'tis call'd *Angular Pavillion*. The *Louvre* is flank'd with four Pavillions. Pavillions are usually higher than the rest of the Building.

There are Pavillions built in Gardens; popularly call'd Summer-houses, Pleasure-houses, &c.

There are Castles or Ports which only consist in a single Pavillion.

PAVILLION, in War, a Tent, rais'd on Posts, to lodge under in the Summer-time. See **TENT**.

PAVILLION, is also us'd in the General, for Flags, Colours, Ensigns, Standards, Banners, &c. all which, Authors usually confound with one another. See **FLAG**, **ENSLION**, **STANDARD**, **BANNER**.

The Custom of bearing pointed Pavillions, as at present, first came from the *Mahometan Arabs*, at the Time they first seiz'd on *Spain*.

Till then, all Colours were stretch'd on cross Pieces like Thurch Banners; whence they were call'd in *Latin*, *Vexilla* quasi *Velilla*, a Diminutive of *Vela*, Sails.

The Pirates all along the Coast of the *Atlantic* and *Barbary*, bear Hexagonal Pavillions. 'Tis Gules, charg'd with a little Turk, dress'd in his Turban; tho' contrary to their Law, which prohibits the making any Image of a Man; from an Opinion that those who make the Figure here, will be oblig'd to furnish a Soul to the Figure at the Day of Judgement, or in Default thereof be damn'd.

But this Portrait it seems is that of *Hali Sulficar*, *Mahomet's* Son-in-law, to whose Party the *Africans* adhere; and who appointed his Picture to be represented on their Banners; imagining himself so terrible to the Christians, that a mere View of his Image wou'd put 'em to flight; as we are told by *Leunclavius*.

PAVILLION, in Heraldry, a Covering in form of a Tent, which invests, or wraps up the Armories of divers Kings and Sovereigns, depending only on God and their Sword. The *French* Herald's hold, that none but Sovereign Monarchs may bear the Pavillion intire, and in all its parts.

It consists of two Parts, the Top, which is the Chapeau, or Coronet, and the Curtain which makes the Cloak. Those who are Elective, or have any Dependence, say the Herald, must take off the Head, and retain nothing but the Curtains.

The Use of Pavillions and Cloaks in Armories is derived from the ancient *Lambrequins*, which are sometimes found stretch'd out in form of Coverings; and tuck'd back on either Side.

Others will have it derived from the ancient Tournaments, wherein were expos'd the Arms of the Knight in rich Tapestry Work, on Tents and Pavillions, which the Chiefs of the Quadrils rais'd to shelter 'emselves, till the Time of entering the Lists.

PAULIANISTS, a Sect of Hereticks, so call'd from their Founder *Paulus Samosatenus*, a Native of *Samosata*, elected Bishop of *Antioch* in 262.

This Heresiarch denied the Distinction of Persons in the Trinity, with *Sabellius*; and taught with *Artemon* that the Word descended into Jesus; and that after having perform'd by him what he desir'd to do, he re-ascended to his Father.

He distinguish'd two Persons in *J. C.* the Word and the Christ: The latter, according to him, was only God in regard of his Holiness; accordingly he did not baptize in the Name of the Father and Son, &c. For which Reason the Council of *Nice* order'd those baptized by him to be re-baptized.

Being condemn'd by *Dionysius Alexandrinus*, in a Council; he abjured his Errors to avoid Deposition; but soon after resum'd 'em, and was actually depos'd by another Council in 270.

PAULICIANS, a Branch of the ancient *Manichees*; so call'd from their Chieftain, one *Paulus an Armenian*, in the VIIth Century. See **MANICHEE**.

The Paulicians by their Number, and the Countenance of the Emperor *Nicephorus*, became formidable to all the East.

To the other Opinions of the *Manichees*, they are said to have added an Abhorrence of the Cross; and to have employ'd it in the most servile Offices, out of despatch.

The Empress *Theodora*, Tutress of the Emperor *Michael* in 845, wou'd oblige 'em either to be converted, or to quit the Empire: Upon which several of 'em were put to Death, and more retired among the *Sarazens*; but they were not all exterminated.

Towards the End of the ninth Century, they were able to maintain War against the Emperor *Basil*; and even preach'd long after this in *Bulgaria*; whence they spread into several other Parts of *Europe*.

The Paulicians were also call'd *Publicans*, and *Poplicans*. See **PUBLICAN**. &c.

PAVO, in Astronomy. See **PEACOCK**.

PAUPER, in Law, See **FORMA PAUPERIS**.

PAUSARY, PAUSARIUS, in ancient *Rome*, an Officer, who in the solemn Poms or Processions of the Goddess *Isis*, directed the Stops or Pauses.

In these Ceremonies, there were frequent Stands at Places prepared for the Purpose; wherein the Statues of *Isis* and *Anubis* were set down, much after the Manner of the resting Places in the Procession of the Holy Sacrament in the *Romish Church*.

These Rests were call'd *Mansiones*; the Regulation whereof was the Office of the *Pausarii*.

From an Inscription quoted by *Salmasius*, it appears that the *Romans* had a kind of College or Corporation of *Pausaries*. See **COLLEGE**.

The Name *Pausary* was also given to an Officer in the *Roman Gallies*, who gave the Signal to the Rowers, and mark'd the Times and Pauses; to the End they might act in concert, and row all together.

This was done with a Musical Instrument. *Hyginus* says, that in the Ship *Argo*, *Orpheus* did the Office with his Lute.

PAUSE, a Stop, or Cessation of speaking, singing, playing, &c.

The Use of Pointing in Grammar, is to make proper Pauses in certain Places. See **POINTING**.

There is a Pause in the Middle of each Verse; in a Hemistich, 'tis call'd the Rest or Repose.



The Word is form'd from the *Latin Pausa*, which we find in *Lucretius* and *Plautus* in the same Sense.

PAUSE, in Music, a Character of Silence and Repose; call'd also by some, a *Mute figure*; because it shews that some of the Parts are to be Silent, while the others continue the Song; either for the sake of some Figure of Imitation, or to give a breathing Time; or to give room for another Voice, &c. to answer what this Part sung, as in Dialogues, Echoes, &c.

The Ancients had two kinds of Pauses; the one call'd by the *Italians*, *Initial Pauses*; because, first placed at the Beginning of the Piece, tho' sometimes after; and regularly before the Circle O, or the Semi-circle C.

They had also Pauses after the Characters of the Measure, and in the Course of the Piece.

A general Pause is a general Cessation of Silence of all the Parts.

*Demi-pause* is a Cessation for the Time of half a Measure.

We also say *Pause of a Minim*, *Pause of a Semibreve*, long *Pause*, *Pauses of Croma*, and *Semi-Croma*; which are Names given by the *Italians*, to express the different values of Pauses. For the Signs or Characters of Pauses. See CHARACTER.

PAW, *Patte*, in Heraldry, the Fore-foot of a Beast cut off short. If the whole Leg be retain'd, it is call'd *Gambe*.

Lyons-paws are much us'd in Armoury.

PAWN-broker. See BROKER.

PAWNAGE. See PANNAGE.

PAX Dei. See PEACE of GOD.

PAX Ecclesie. See SANCTUARY.

PAX Regis, See PEACE of the King. *Longe debet esse*

*Pax Regis a parte sua, ubi residens fuerit, a quatuor partibus*

*loci illius, hoc est quatuor miliaria & tres Quarentene, &*

*Novem acie Latitudine, & novem pedes, & novem palme, &*

*novem Grana hordei, &c.* See EDU. CONFESS.

*Ad Pacem redire*, to restore to the Peace, is to reverse an Out-lawry; whereby a Person is restored to the Benefit of the King's Peace. See OUT-LAWRY.

*Rex potest dare quod suum est, hoc est pacem suam, quam ut legatus amittit.* Bracton. Lib. 3.

PAYMENT, the Discharge of a Debt, either by Money really told, or by Bills of Exchange, &c. See DEBT, &c.

Prompt PAYMENT, a popular Term in England and Amsterdam, is, when a Debtor acquits what he owes before the Expiration of the Term granted by the Creditor.

The Discount for Prompt Payment on most Merchandises is usually 1 per Cent. See DISCOUNT.

PAY, in the Sea Language. The Seamen, say, *pay more Cable*, i. e. let out more Cable; and *pay cheap* that is, at the turning the Anchor out of the Boat, to turn it out faster.

PEACE, in its general Signification, stands in opposition to War. See WAR.

In our Law-Books, &c. Peace is restrain'd to a quiet, and inoffensive Carriage towards the King, and his People. *Lamb. Erenarch.*

Where any Man stands in danger of Harm from another, and makes Oath thereof before a Justice of the Peace; he must be secur'd by good Bond, which is call'd *binding to the Peace*, &c. See FRANK-PLEDGE, See also CONSERVATOR, and JUSTICE of the Peace.

Time of Peace is when the Courts of Justice are open, and the Judge and Ministers of the same may by Law protect Men from Wrong and Violence, and distribute Justice to all. See COKE on Little. See also TERM.

Peace of the King, mention'd in the Stat. 6. Rich. 2d. &c. is that Security that the King promises his Subjects, and others taken into Protection; both for Life and Goods. See SUIT of the King's Peace.

Peace of God and the Church, mention'd in our ancient Law Books, is that Rest and Cessation which the King's Subjects had from Trouble and Suit of Law, between the Terms. See VACATION.

Peace of the Plough, that whereby the Plough, Plough-Tackle, and Plough-Cattle are secured from Distresses. See First Nat. Brev.

Thus Fairs may be said to have their Peace, because no Man may be troubled in them, for any Debt contracted elsewhere.

Clerk of the PEACE. See CLERK of the Peace.

PEACOCK, *Pavo*, in Astronomy, a Constellation of the Southern Hemisphere; unknown to the Ancients; not visible in our Northern Parts of the World. See CONSTELLATION.

PEAN, in Heraldry, is when the Field of a Coat of Arms is Sable, and the Powderings, Or

PEARL, in natural History, a hard, white, clear Substance, usually roundish, found in a testaceous Fish, resembling an Oyster; and rank'd in the Number of precious Stones.

The Fish wherein the Pearls are found, is three or four times the Size of the common Oysters; and is usually call'd *Pearl*, or *Mother of Pearl*, by the Naturalists, *Pinna Mar-*

*ina*.

Each *Mother-Pearl* ordinarily yields ten or twelve of 'em; tho' an Author, who treats of their Production, pretends to have seen an hundred and fifty in the same Fish; but those in different Degrees of Perfection. The most perfect still drop first; the rest remaining at the Bottom of the Shell. The Formation of Pearls has puzzled both the ancient and modern Naturalists; and given Occasion to a great Number of Hypotheses, many of 'em wild and extravagant enough: The Ancients, *Pliny*, *Solinus*, &c. will have 'em to be form'd of Dew. The Fish, say they, rise every Morning to the Surface of the Water, and there open their Shells, to imbibe the Dew of Heaven; which, like a Liquid Pearl, insinuating into the Body of the Oyster, fixes its Salts, and their assumes the Colour Hardness and Form of Pearl; as some Liquors are converted into Crystals in the Earth; or the Juice of Flowers into Honey and Wax in the Bee-hive.

But this, how plausible soever, is apparently false: For the Oysters grow fast to the Rocks, and no Body ever yet saw any of 'em appear on the Surface of the Water.

Others will have Pearls to be the Eggs of the Fishes they are found in: But neither does this consist with the Phenomena. For Pearls are found throughout the whole Substance of the Oyster, in the Head, the Coat that covers it, the circular Muscles that terminate in it, the Ventricle, and in general in all the fleshy and musculous Parts; so that there is no Appearance that Pearls shou'd be in the Oysters what the Eggs and Sperm are in Fowls and Fishes. For, beside that there is no particular Place destined for their Formation; the Anatomists have not been able to find any Thing that bears any Relation to what passes in this Respect in other Animals.

This, indeed may be said, that as in a Hen there is an Infinity of little Eggs, in form of Seed; some whereof grow and ripen, whilst the Rest continue nearly in the same State; so in each Oyster is usually found one Pearl much larger, and that ripens much faster, than the Rest. This Pearl sometimes grows big enough to hinder the Oyster from shutting, in which case the Fish rots and dies.

Others, with *M. Geoffroy* the younger, rank Pearls among the Bezoards; as comprehending under that Class all Stones form'd in Lays or Strata in the Bodies of Animals. See BEZOARD.

*M. Reaumur*, has a very curious Piece on the Subject of the Formation both of the Shells and Pearls, in the Memoirs of the French Academy, An. 1717. He observes that Pearls are form'd like other Stones in Animals, as those E. gr. in the Bladder, Kidneys, &c. and that they are apparently the Effects of a Disease of the Fish.

In Effect, they are all form'd of a Juice extravasated out of some broken Vessels, detain'd, and fix'd among the Membranes.

To evince the possibility of this, he shews that the Shells of Sea-Fishes, as well as those of Snails, &c. are wholly form'd of a glutinous, stony Matter, ouzing out of the Body of the Animal. (See SHELL.) Now 'tis no wonder that an Animal which has Vessels wherein circulates a sufficient Quantity of stony Juice to build, thicken, and extend a Shell; shou'd have enough to form Stones, in case the Juice destined for the Growth of the Shell shall chance to overflow, and burst forth in any Cavity of the Body, or among the Membranes.

To confirm this System, he observes, that the inner Surface of the common Pearl-Muscle, found on the Coasts of Provence, is of a Pearl, or Mother of Pearl Colour, from one part of its Extent, which he determines, to another; after which it becomes reddish: Now there are Pearls of two Colours found in the Shell; and the Colours of the Pearls are precisely the same with those of the Shell; nay, more, each Kind of colour'd Pearl is found in the corresponding colour'd Part of the Shell, which shews, that in the same Place wherein the Transpiration of a certain Juice had form'd, and would have continu'd to form a Couch, or Lay of Shell of a certain Colour; the Vessels which convey'd that Juice being broke, there is made a little Mass or Collection of the Juice, which hardening, becomes a Pearl of the same Colour with the part of the Shell to which it corresponds.

Add to this, that the Silver, or Pearl-colour'd part of the Shell is form'd of Strata or Lays over one another, like an Onion; and the reddish Part of little cylindrical, short Fibres applied against one another. The Pearls of the two Colours have this Difference of Texture; not but they are both compos'd of concentric Couches; but those of the reddish Pearls are much less sensible; and, besides, have Threads, which like Radii, proceed from their Centre to their Circumference.

These Circumstances seem effectually to determine the Formation of Pearls, and to establish the new System beyond Contradiction.

As to the Formation of the Pearl Fish; tho' 'tis the most natural Opinion, that this Fish, like all others, produces Eggs or Spawn, whose exterior Surface at first is soft and viscous, but changes and hardens by degrees into Shell; yet, we must not



not leave unmention'd the popular Hypothesis of the *Paravas*, viz. that in rainy Weather the Brooks of the neighbouring Lands that empty 'emselves all along the Coasts, run near two Leagues on the Surface of the Sea without mixing therewith. For a While, the suspended Water retains its natural Colour and Sweetness; but at length, the Heat of the Sun condensing it, forms it into a Kind of light transparent Froth; this done, it presently divides into an infinity of Parts, each whereof appears as if animated; moving this way and that, like little Insects. The Fishes sometimes catch at 'em as they pass by: but soon abandon 'em. By degrees their Skin thickening and hardening, they at length become heavy enough to sink to the Bottom, and assume the Figure of Oysters.

The Perfection of *Pearls*, whether round, in form of Pears, or Olives, or irregular, consists chiefly in the Lustre and Clearness of the Colour; which they call the *Water*. There are some whose Water is white; which are those most esteem'd, in *Europe*. The Water of others borders on the Yellow, which some *Indians* and *Arabs* prefer to the White. Others are of a Lead-colour, others border on Black; and others are quite Black.

They are all liable to change with wearing; in 80 or 100 Years they usually become of little value; especially the white Ones, which turn Yellow, and spoil in 40 or 50 Years time.

The Difference of Colours doubtless arises from the different Parts of the Oyster wherein they are form'd. When the Seed happens to be thrown into the Mesentery or Liver, or the Parts corresponding thereto, 'tis no wonder if the Impurities of the Blood change the Natural White.

In *Europe*, *Pearls* are sold by the *Carat*-weight, the *Carat* containing four Grains.

In *Asia*, the Weights us'd for *Pearls* are different, in different States. See *CARAT*.

The Term *Pearl* is only properly applied to what grows independant of the Shell. The Shell itself is call'd *Mother of Pearl*. See *MOTHER of Pearl*.

Those Pieces which have grown thereto, and have been since separated by the Address of the Workman, are call'd *Wens of Pearls*; which are in effect nothing but roundish Excrescencies, or Pieces of the Shell; tho' frequently us'd for real Shell. See *WEN of Pearl*.

*Pearls*, *F. Bouhours* observes, have this Advantage over precious Stones dug out of Rocks, &c. that the Latter owe their Lustre to the Industry of Men; Nature only, as it were hews 'em out, and leaves the finishing of 'em to Art: But the Former are born with that beautiful Water which gives 'em their Value. They are found perfectly polish'd in the Abysses of the Sea; and Nature has put the last Hand to 'em ere they are separated from the Mother.

*Pearls* of unusual Figures, i. e. neither round, nor in the Pear-form, are call'd *Baroguas*, or *Scotch-Pearls*: Those of unusual Sizes, are call'd *Parangons*; as that of *Cleopatra* valued by *Pliny* at five hundred thousand Crowns; that brought in 1574 to *Philip II.* of the Size of a Pigeons Egg, valued at 14400 Ducats; that of the Emperor *Rudolph*, mention'd by *Boetius*, called *La peregrina*, or the incomparable, of the Size of a Muscade Pear, and weighing 37 *Carats*; and that mention'd by *Tavernier*, in the Hands of the Emperor of *Persia*, in 1633, bought of an *Arab* for 32000 Tomans, which at 3 l. 9s. the Toman, amounts to 110400 l. *Sterling*.

*Pearls*, are of some Use in Medicine; but 'tis only the smallest Sort, call'd *Seed of Pearls* that is there used. The Quality required, is, that they be white, clear, and transparent; and truly oriental. They serve to make Cordial Potions, formerly much valued, but now fall'n much from their ancient Reputation; and scarce own'd by any but *Charletans*.

The Ladies also use certain Preparations of *Pearls*, as they are made to believe, for their Complexion; such as the Whites of *Pearls*, Flowers, Essences, Spirits, Tinctures, &c. of *Pearl*; but they are all apparently Deceits.

#### PEARL Fisheries.

*Pearl* is fish'd in the Seas of the *East-Indies*; in those of *America*; and in some parts of *Europe*.

PEARL-Fisheries of the East, are

I. The Island of *Bakren*, or *Baharem*, in the *Persian* Gulph. This the *Portuguese* were Masters of while they held *Ormuz* and *Mascata*; but it has been returned to the *Sophi* of *Persia*, since the Time that Prince, with the Assistance of the *English*, took from 'em *Ormuz*, and the *Arabs*, *Mascata*.

II. The Fishery of *Catifa*, on the Coast of *Arabia Felix*, over-against *Bakren*.

III. That of *Manar*, a Sea-port in the Isle of *Ceylon*. The *Pearls* here fish'd, are the finest in all the East for their Water and Roundness, but they seldom exceed four *Carats*.

Lastly, there are *Pearls* fish'd on the Coast of *Japan*; but they are coarse and irregular, and little minded.

The *Pearls* of *Bakren* and *Catifa* are those commonly sold in the *Indies*; they border a little on the Yellow, but the *Eastern* People don't value 'em the less for it; they esteem it a Sign of their being Ripe and Mature, and are persuaded, that those which have this yellowish Tincture naturally, never change their Colour; and that on the contrary, the white Water does not hold above thirty Years. 'ere the *Pearl* assumes a filthy yellow Colour; by reason of the Heat of the Climate, and the Sweat of the Persons who wear 'em. *American PEARL Fisheries*, are all in the great Gulph of *Mexico*, along the Coast of the *Terra-Firma*. There are five of 'em.

I. The Fishery of *Cubagna*, an Island five Leagues from new *Andalusia*, in 10 Deg.  $\frac{1}{2}$  N. Lat.

II. That of the Island *Marguerites*, or *Pearl* Island.

III. That of *Comogote* near the *Terra-Firma*.

IV. That of the River *de la Hack*, called *la Rencheria*.

V. That of *St. Martha* sixty Leagues from the River *de Cattache*.

The *Pearls* of these three last Fisheries are usually of a good Weight; but ill form'd, and of a Livid-Water. Those of *Cubagna* seldom exceed 5 *Carats*; but are found in abundance. But the greatest Quantity, and the finest, both with regard to Weight and Water, are those of the Island *Marguerite*.

PEARL Fishery in *Chinese Tartary*, is near the City *Nipetroa*, situate on a Lake of the same Name: The *Pearls* here are less beautiful than those of *Baharem*; and the Fishery less plentiful. 'Twas this Fishery that occasioned the War between the *Chinese* and *Muscovites*, terminated towards the End of the last Century, by the *Jesuits Pereira* and *Gerbilin*; and the Lake, which is of great Extent, divided between the two Nations; each whereof had pretended to the whole.

There are some *Pearl* Fisheries in the *South-Sea*, but they are very inconsiderable.

PEARL Fisheries of *Europe*, are in some Places on the Coasts of *Scotland*, and in a River of *Bavaria*: But the *Pearls* found here are no ways comparable to those of the *East-Indies*, or of *America*; tho' they serve for Necklaces, sold sometimes for a thousand Crowns and upwards.

#### Manner of Fishing for PEARLS in the East-Indies.

There are two Seasons of *Pearl*-Fishing in the Year; the first in *March* and *April*, the second in *August* and *September*; the more Rain falls in the Year, the more plentiful are the Fisheries.

In the Opening of the Season, there are found sometimes two hundred and fifty Barks on the Banks. In the larger Barks are two Divers, in the smaller, one. Each Bark puts off from Shore 'ere Sun-rise, by a Land-breeze, which never fails; and returns again by a Sea-breeze, which succeeds it about Noon.

As soon as the Barks are arrived, and have cast Anchor, each Diver binds a Stone six Inches thick, and a Foot long under his Belly; which is to serve him as Ballast, and prevent his being driven away by the Motion of the Water; and to enable him to walk more steadily a-crofs the Waves.

Beside this, they tie another very heavy Stone to one Foot, whereby they are sunk to the Bottom of the Sea in a Moment. And as the Oysters are usually strongly fasten'd to the Rocks, they arm their Fingers with Leathern Mittens, to prevent their being wounded in scraping 'em violently off; and some even carry an Iron Rake for the Purpose.

Lastly, each Diver carries down with him a large Net, in manner of a Sack, tied to his Neck by a long Cord the other End whereof is fasten'd to the Side of the Bark. The Sack is destined for the Reception of the Oysters gather'd from the Rock, and the Cord to pull up the Diver when his Bag is full, or he wants Air.

In this Equipage he precipitates himself, sometimes above 60 Foot under Water. As he has no Time to lose there, he has no sooner arrived at the Bottom, than he begins to run from Side to Side, sometimes on a Sand, sometimes on a Clayey Earth, and sometimes among the Points of Rocks; tearing off the Oysters he meets withal, and cramming 'em into his Budget.

At whatever Depth they be, the Light is so great, that they easily see whatever passes in the Sea, with the same Clearness as on Land. And to their Consternation, they sometimes see monstrous Fishes, from which, all their Address in mudding the Water, &c. won't save 'em; but they become their Prey; and of all the Perils of the Fishery, this is one of the greatest and most usual.

The best Divers keep under Water for half an Hour, the rest don't stay less than a Quarter. During which Time, they hold their Breath without the Use of Oils, or any other Liquors. See *DIVING*.

When they find 'emselves straiten'd, they pull the Rope to which the Bag is fastened, and hold fast by it with both Hands.



Hands, when the People in the Bark, taking the Signal, heave 'em up into Air and unload 'em of their Fish, which is sometimes five hundred Oysters, sometimes not above fifty.

Some of the Divers need a Moment's Respite to recover Breath; others jump in again instantly, continuing this violent Exercise without intermission, for many Hours.

On the Shore they unload their Barks, and lay their Oysters in an infinite Number of little Pits, dug four or five Foot square in the Sand; raising heaps of Sand over 'em to the Height of a Man, which, at a Distance, look like an Army rang'd in Battle.

In this Condition they are left, till the Rain, Wind, and Sun have oblig'd 'em to open, which soon kills 'em. Upon this the Flesh rots and dries, and the Pearls, thus disengaged, tumble into the Pit upon taking the Oysters out.

The Flesh of the Fish is excellent, and if what some Naturalists maintain be true, viz. that the Pearls are Stones, form'd there by the ill Constitution of the Body, as sometimes happens in Men, and in the Bezoard; this Disease does not alter the Humours; at least, the Paravas, who eat 'em, don't find any Difference between those that have Pearls and those that have none.

After clearing the Pits of the grosser Filth, they sift the Sand several times, to separate the Pearls. But what Care soever they take herein, they always lose a great many. After cleaning and drying the Pearls, they are pass'd thro' a Kind of Sieves, according to their Sizes. The smallest are sold for Seed of Pearls; the rest are put up by Auction, and sold to the highest Bidder.

#### Manner of Fishing for Pearl in the West-Indies.

The Season for Fishing is usually from October to March. In this Time there set out from Carthagena ten or twelve Barks, under the Convoy of a Man of War, call'd *Larmadilla*. Each Bark has two or three Slaves, Divers.

Among the Barks, there is one call'd *Capitana*; to which all the rest are oblig'd to bring at Night what they have caught in the Day, to prevent Frauds. The Divers never last long, by reason of the great Hardships they sustain; continuing sometimes under Water above a Quarter of an Hour.

The rest is the same, as in the *East-India* Fisheries.

The *Indians* knew the Value of their Pearls before the Discovery of *America*; and when the *Spaniards* arriv'd there, they found great Quantities stor'd up, which the *Americans* set great Value on. But they were almost all imperfect, and their Water yellow and smoaky; by reason they us'd Fire in opening the Fishes.

In the *Dictionnaire de Commerce*, is a Table of the Value of Pearls, communicated to the Author by an able Hand. As Pearls make a very curious Article in Commerce, and as their Value is a Thing little known among us; we shall here give the Reader an Abridgement of the same, reduced to our Money, on the Foot of 1 s. 6 d. Sterling the French Livre, or 4 s. 6 d. the French Crown.

Value of all kinds of Pearls, with regard to their different Weight.

#### Seeds of PEARLS.

|  | l. | s. | d. per Oz. |
|--|----|----|------------|
| Seeds of Pearls not perforated, fit for grinding, are worth      | 00 | 09 |            |
| Fine Seed of Pearls perforated for small Necklace or Embroidery, | 01 | 01 |            |
| Ditto a little larger,   | 01 | 16 |            |

#### Ragged, or Irregular PEARLS.

|                               |    |    |  |
|-------------------------------|----|----|--|
| Of 500 to the Ounce are worth | 03 | 00 |  |
| 300                           | 06 | 00 |  |
| 150                           | 11 | 02 |  |
| 100                           | 18 | 00 |  |
| 60                            | 33 | 15 |  |
| 30                            | 75 | 00 |  |

#### Regular ROUND PEARLS.

|                                       |    |    |                 |
|---------------------------------------|----|----|-----------------|
| One of $\frac{1}{2}$ a Grain is worth | 00 | 00 | 2 $\frac{1}{2}$ |
| Of a Grain                            | 00 | 00 | 4 $\frac{1}{2}$ |
| Of a Grain and half                   | 00 | 01 | 0               |
| Of two Grains                         | 00 | 02 | 0               |
| Of 2 Grains and half                  | 00 | 04 | 6               |
| Of 3 Grains                           | 00 | 07 | 6               |
| Of 4 Grains, or 1 Caract              | 00 | 18 | 0               |
| Of 5 Grains                           | 01 | 10 | 0               |
| Of 6 Grains                           | 02 | 05 | 0               |
| Of 7 Grains                           | 03 | 01 | 0               |
| Of 8 Grains, or two Caracts           | 04 | 10 | 0               |
| Of 9 Grains                           | 06 | 00 | 0               |
| Of 10 Grains                          | 08 | 05 | 0               |

|                             | l.  | s. | d. per Oz. |
|-----------------------------|-----|----|------------|
| Of 11 Grains                | 09  | 15 | 00         |
| Of 13 Grains                | 13  | 05 | 00         |
| Of 15 Grains                | 21  | 00 | 00         |
| Of 17 Grains                | 27  | 10 | 00         |
| Of 20 Grains, or 5 Caracts  | 37  | 10 | 00         |
| Of 22 Grains                | 52  | 10 | 00         |
| Of 24 Grains, or 6 Caracts  | 82  | 10 | 00         |
| Of 26 Grains                | 99  | 00 | 00         |
| Of 28 Grains, or 7 Caracts  | 150 | 00 | 00         |
| Of 32 Grains, or 8 Caracts  | 225 | 00 | 00         |
| Of 36 Grains, or 9 Caracts  | 262 | 10 | 00         |
| Of 40 Grains, or 10 Caracts | 300 | 00 | 00         |

As to Pearls in form of Pears, tho' equally perfect, and of equal Weight with the round Ones, their Value is much inferior: However, when two are found that match well, their Value is but less by one third.

False PEARLS, are counterfeit, or factitious Pearls, resembling the true Ones in Water or Colour. These anciently were only made of Glass; with a Kind of Tincture of Quick-silver Withinside, afterwards they us'd Wax, cover'd over with a fine Brilliant Fish Glue.

There has since been invented in France, another manner of making 'em, so near the natural Ones in Lustre and Water, that they deceive a good Eye. These are what the Ladies now generally wear in defect of true Pearl; little Necklaces whereof they despise; and the great ones being generally too dear.

#### Method of making False Pearls.

This curious Invention is owing to the *Sieur Janin*, and is the more to be valued, in that, 'tis not only very simple, but prevents the ill Effects of false Pearls, made with Quick-silver within, or Fish Glue without.

That ingenious Artist having observ'd, that the Shell of a little Fish call'd *Able*, found plentifully in the River *Marne*, had not only all the Lustre of the real Pearl; but that after dissolving it in Water, it return'd to its former Brilliant upon drying; he bethought himself of setting a Piece thereof in the Cavity of a Bead, or Grain of *Girajol*, which is a kind of Opal or Glass, bordering much on the Colour of Pearl. The Difficulty was to get it in there, and when in, to spread it equally throughout the Bead.

A little Glass Tube six or seven Inches long, and a Line and half in Diameter, but very sharp at one End, and a little crooked, serv'd for the introducing of the Matter, by blowing it with the Mouth, after having taken up a Drop with the pointed Extremity of the Tube; and to spread it throughout the inner Circumference, he contented himself to shake it gently a long Time, in a little Osier-Basket lined with Paper.

The dissolved Shell, fasten'd by this Motion in the Inside of the Crystallin, resumes its Lustre as it dries. To increase this Lustre, in Winter, they lay the Beads in a Hair Sieve, or a Bolting-cloth, which they suspend to the Ceiling, and under it, at 6 Foot Distance, lay heaps of hot Ashes. In Summer they suspend 'em in the same Manner, but without any Fire.

The Pearls, thus well dried, become very Brilliant; and nothing remains but to stop up the Aperture, which is done by melted Wax, convey'd into it with a Tube like that us'd in introducing the dissolved Shell.

After clearing off the superfluous Wax, they perforate the Pearls with a Needle, and string 'em; and thus they commence Necklace.

Mother of PEARL, is the Shell of the Pearl-Oyster, or Fish wherein the Pearls are form'd. See PEARL.

The Shell within-side is very smooth, and polish'd, and of the Whiteness and Water of Pearl itself; and it has the same Lustre without-side, after the first *Lamina*, or Leaves which make the outer Coat of this rich Shell Fish, have been cleared off with *Aqua fortis* and the Lapidaries Drill.

Mother of Pearl is us'd in inlay'd Works, in China Varnish, and in several Toys, as Snuff-boxes, &c.

Wens of PEARL, are certain Excrescences, or prominent Places, in form of half Pearls; sometimes found in the Bottom of the Pearl Shells.

The Lapidaries have the Address to Saw off these Protuberances, to join 'em together, and to Use 'em in several Works of Jewellery, as if they were really Pearls.

PEARL, in Heraldry, is us'd by such as blazon with precious Stones, instead of Colour and Metals, for Argent, or White. See ARGENT.

PEARL, Pin, or Web in Medicine, an unnatural Speck, or thick Film over the Eye. See PANNUS. See also UNGUIS.

PECCANT in Medicine, an Epithet given to the Humours of the Body, when they offend either in Quantity or Quality, i. e. when they are either Morbid, or in too great Abundance. See HUMOUR.

Most Diseases arise from Peccant Humours, which are either



either to be corrected by Alteratives and Specificks, or evacuated. See DISEASE, &c.

PECK, a Measure, or Vessel us'd in measuring Grains, Pulse, and the like dry Matters. See MEASURE.

The Standard, or Winchester Peck, contains two Gallons; each Gallon weighing about eight Pound Troy. See GALLON.

Four Pecks make a Bushel; four Bushels a Comb or Carnock, &c. See BUSHEL.

Besides the general, or Winchester Peck, there are Local Pecks, containing some more, some less, as the Lancaster Peck containing six Gallons, &c.

PECQUETS Duct, in Anatomy, the Thoracic Duct; thus call'd from its Discoverer Pecquet. See THORACIC DUCT.

PECTEN Arboris, in Botany, is the Grain of the Wood of any Tree. See WOOD.

PECTEN, in Anatomy, is us'd by some Authors for the Regio pubis, or lower Part of the Hypogastrium. See HYPOGASTRIUM.

PECTINIS Os in Anatomy, the same with Os Pubis. See Os PUBIS.

PECTINEUS, in Anatomy, the third of the fifteen Muscles of the Thigh; so call'd, because it has its Origin in the Fore-part of the Os Pectinis.

Its Insertion is in the Thigh, under the left Trochanter: the Pectineus, with the Psoas and Iliacus, draw the Thigh forwards, and of Consequence bend it.

PECTORAL, something relating to the Breast, Pectus. See BREAST.

In the Romish Church, Bishops and regular Abbots wear a Pectoral Cross, i. e. a little Cross of Gold, hanging from the Neck down the Breast.

PECTORAL Medicines, or simply Pectorals, are Remedies proper to strengthen and relieve the Breast and Stomach; or against Diseases of the Breast and Stomach.

Their ordinary Intentions are either to attenuate, or thicken the Humours of those Parts, which cause Coughing, &c. and render 'em fit to be expectorated, or spit out.

PECTORALE, or PECTORAL, in the Jewish Law. See RATIONALE.

PECTORALIS, in Anatomy, a Muscle which moves the Arm forwards. It arises by a fleshy and semicircular Beginning, from the Clavicula, Sternum, and Cartilages of the six superior Ribs; and covereth a great Part of the Breast, and is inserted by a short, but strong and broad Tendon into the upper and inner Part of the Humerus, between the Biceps and Deltoïdes.

Its Fibres, near their Insertion, decussate one another. Those which come from the Clavicle, or first Ribs, are on the Lower-side of the Tendon, and those from the inferior Ribs on the Upper-side of the Tendon.

Naturalists observe a special Mark of Providence in the Size and Strength of the Pectoral Muscle in different Animals. 'Tis by the Action of this Muscle, that the flying of Birds is chiefly perform'd: Accordingly it is much larger and stronger in Birds than in any Animals not made for flight.

Borelli observes, that in Men the Pectoral Muscles are small; scarce the 50th or 70th Part of all the other Muscles: But in Birds they are vastly large, equalling, nay, exceeding in Bulk and Weight all the other Muscles of the Birds together. See FLYING.

PECTORALIS internus. See TRIANGULARIS.

PECTORIS os, the same as Sternum. See STERNUM.

PECULATE, PECULATUS, in the Civil Law, the Crime of pilfering the Public Money, by a Person who is the Manager, Depositary, or Receiver thereof; so call'd, quasi pecunie ablatio.

The Civil Lawyers use Peculate for any Theft of a Thing Sacred, Religious, Public, or Fiscal. Peculate is prosecuted even on the Criminals Heir.

PECULIUM, the Stock which a Person in the Power of another, as a Slave, a Minor, &c. may acquire by his own Industry, without any Advance or Assistance from his Father or Master; but merely by their Permission.

The Romans had a Civil and a Military Peculium.

The Word is usually derived a Pecunia & Pecoribus, because the whole Estate antiently consisted in Money and Cattle.

Hence Peculium comes to be us'd among the Romanists, for what each Monk or Religious reserves and possesses to himself.

Some say that the Peculium of a Religious, when preser'd to a Cure, does not cease to belong to the Monastery; and that the Property thereof never absolutely resides in the Religious.

PECULIAR in the Canon Law, a particular Parish or Church, that hath Jurisdiction within it self, for Probate of Wills, &c. Exempt from the Ordinary, and the Bishops Courts, and peculiarly belonging to the Archbishop. See ARCH-BISHOP.

In the Province of Canterbury are 57 such Peculiars.

The King's Chapel is a Royal Peculiar, exempt from all spiritual Jurisdiction, and reserved to the Visitation and immediate Government of the King himself, who is supreme Ordinary. See CHAPEL.

It is an ancient Privilege of the See of Canterbury, that wheresoever any Mannors or Advowsons do belong to it, they forthwith become exempt from the Ordinary, and are reputed Peculiars.

Court of PECULIARS, is a Court where the Affairs of Peculiars are transacted. See COURT.

PECUNIA, Money, in our old Law Books, &c. is sometimes us'd for Cattle, and sometimes for other Goods, as well as Money. See MONEY, &c.

In the Emendat. of the Laws of Edward the Confessor, by Will. the 1st, 'tis ordered that no Viva Pecunia, living Pecunia, i. e. Chattel be bought or sold, except within Cities; and that before three sufficient Witnesses. See CHATTEL.

Again, Qui habet 30 Denarios vive Pecunie, &c. In Domesday, pecunia is frequently us'd, pro pecude; as, Pasture ad pecuniam Ville; & pecunia Ecclesia, was antiently us'd for the Estate of the Church.

Pecunia Sepulchralis, was Money antiently paid to the Priest at the opening of the Grave, for the Good and Behoof of the deceased's Soul, and which our Saxon Ancestors call'd Soul-Scot, and Animæ Symbolum.

PEDAGE, Toll, or a Local Right exacted on Persons, Goods, and Carriages passing thro' certain Places. See TOLL.

Pedage is usually levied for the Repairing of Roads, Bridges, Causeways, the Paving of Streets, &c.

Antiently, those who had the Right of Pedage, were to keep the Roads secure, and Answer for all Robberies committed on Passengers between Sun and Sun; which is still observed in some Parts of England, and in Italy, where there are Guards call'd Stationaries, establish'd for the Security of Merchants, particularly at Terracina, on the Road between Rome and Naples.

PEDAGOGUE, a Term of Reproach, us'd for a Tutor, or Master, to whom is committed the Discipline and Direction of a Scholar; to be instructed in Grammar and other Arts.

The Word is form'd from the Greek παιδαγωγός, *paedagogos*, *dux* or *dux*, leader of Boys. M. Fleury observes, that the Greeks gave the Name Pedagogue to their Slaves, appointed to attend their Children, lead 'em, and teach 'em to walk, &c.

PEDAGOGUES, among the Romans were likewise Slaves, to whom was committed the Care and Instruction of Children.

PEDALS, the large Pipes of an Organ, so call'd, because play'd and stop'd with the Foot. See ORGAN.

The Pedals are the largest Pipes in the Machine, they are made Square, of Wood; usually thirteen in Number.

They are of modern Invention, and serve to carry the Sounds an Octave deeper than the rest.

PEDANEUS, in the Civil Law, a petty Judge; who has no formal Seat of justice, but hears Causes standing, and without any Tribunal.

The Word is form'd from *Stans in Pedibus*; and is us'd among the Ancients in opposition to the Roman Magistrates, who were seated on Chariots, in *Sella Curuli*, or had a Tribunal or Bench rais'd on high.

The Roman Pedanei, therefore, were such as had no Tribunal, nor Pretorium, but render'd Justice *de Plano*, or *Plano pede*.

From the 82 Novel, it appears that the Emperor Zeno establish'd these Pedanei, in the See of every Province; and that Justinian erected seven of 'em at Constantinople, in manner of an Office; granting 'em Power to judge in any Sum as high as 300 Crowns.

PEDANT, a School-Master, or Pedagogue, who professes to instruct and govern Youth, teach 'em the Humanities and the Arts. See PEDAGOGUE.

PEDANT is also us'd for a coarse, unpolish'd, stiff, Man of Learning, who makes an impertinent Use of the Sciences, and abounds in vile, unseasonable Criticisms and Observations. Dacier defines a Pedant, a Person who has more Reading than good Sense.

Pedants, are People ever arm'd with Points and Syllogisms; breathe nothing but Dispute and Chicanery, and pursue a Proposition to the last Limits of Logic: Malbranche describes a Pedant as a Man full of false Erudition, who makes a Parade of his Knowledge, and is ever quoting some Greek or Latin Author, or hunting back to a remote Etymology.

St Evremont says, that to paint the Folly of a Pedant, we must represent him turning all Conversations to some one Science he is best acquainted withal.

There are Pedants of all Conditions, and of all Robes: and Wicquefort says, an Ambassador always attentive to Formalities and Decorums, is nothing else but a Political Pedant.

PEDAN-



**PEDANTRY**, or **PEDANTISM**, the Quality or Manner of a *Pedant*.

To swell up little and low Things, to make a vain Show of Science, to heap up *Greek* and *Latin* without Judgement, to pull and tear those who differ from us about a Passage in *Suetonius*, or the Etymology of a Word, to stir up all the World against a Man for not admiring *Cicero* enough, to be interested for the Reputation of an Ancient as if he were our next of Kin, is what we properly call *Pedantry*.

**PEDESTAL**, in Architecture, the lowest Part of an order of Columns; being that which sustains the Column; and serves it as a Foot or Stand. See **COLUMN**.

The Word is form'd from the *Latin* *Pes* *Pedis*, Foot and *Column*.

The *Pedestal*, call'd by the *Greeks*, *Stylobates* and *Stereobates*, consists of three principal Parts; viz. a square Trunk or *Dye*, which makes the Body; a *Corniche*, the Head; and a *Base* the Foot of the *Pedestal*. See **DYE**, **CORNICHE**, and **BASE**.

The *Pedestal* is properly an Appendage to a Column; not an essential Part thereof; tho' *M. le Clerc* thinks 'tis Essential to a compleat Order. See **ORDER**.

The Proportions and Ornaments of the *Pedestal*, are different in the different Orders: *Vignola*, indeed, and most of the Moderns make the *Pedestal* and its Ornaments in all the Orders, one third of the Height of the Column, including the *Base* and *Capital*; but some deviate from this Rule.

*M. Perrault* makes the Proportions of the three constituent Parts of *Pedestals* the same in all the Orders, viz. the *Base* or *Socle* one fourth of the *Pedestal*; the *Corniche* an eighth Part; and the *Socle* or *Plinth* of the *Base* two thirds of the *Base* itself. The Height of the *Dye* is what remains of the whole Height of the *Pedestal*.

*Tuscan* **PEDESTAL**, is the simplest, and the lowest: *Palladio* and *Scamozzi*, make it three Modules high; *Vignola* 5. See **PROPORTION**.

Its Members in *Vignola*, are only a *Plinth* for a *Base*, the *Dye*, and a *Talon* crowned, for a *Corniche*.

The *Tuscan* Column has rarely any *Base*. See **TUSCAN**.

*Doric* **PEDESTAL**, *Palladio* makes four Modules, five Minutes high, *Vignola* Modules four Minutes.

In the *Antique*, we not only don't meet with any *Pedestals*; but even, not with any *Base* in the *Doric* Order.

The Members in *Vignola's* *Doric* *Pedestal*, are the same with those in the *Tuscan*, with the Addition of a *Mouquette* in its *Corniche*. See **DORIC**.

*Ionic* **PEDESTAL**, in *Vignola* and *Serlio*, is 6 Modules high; in *Scamozzi* 5; in the Temple of *Fortuna Virilis* 'tis 7 Mod. 12 Min.

Its Members and Ornaments are mostly the same with those of the *Doric*, only a little richer.

The *Pedestal* now usually follow'd, is that of *Vitruvius*; tho' we don't find it in any Work of the *Antique*.

Some in lieu hereof Use the *Attic* *Base*, in imitation of the Ancients. See **ATTIC**.

*Corinthian* **PEDESTAL** is the richest and most delicate. In *Vignola* 'tis 7 Mod. high; in *Palladio* 5 Mod. 1 Min. in *Serlio* 6 Mod. 15 Min. in the *Coliseum* 4 Mod. 2 Min.

Its Members in *Vignola* are as follows: in the *Base* are a *Plinth* for a *Socle*, over that a *Tore* carved; than a *Reglet*; a *Gula* inverted and enrich'd, and an *Astragal*.

In the *Dye* are a *Reglet*, with the *Conge* over it; and near the *Corniche* a *Reglet* with a *Conge* underneath.

In the *Corniche* is an *Astragal* a *Frieze*, *Fillet*, *Astragal*, *Gorge*, *Talon*, and a *Filler*. See each under its proper Article.

*Composite* **PEDESTAL**, in *Vignola*, is of the same Height with the *Corinthian*, viz. 7 Mod. in *Scamozzi* 6 Mod. 2 Min. in *Palladio* 6 Mod. 7 Min. in the *Goldsmiths* Arch 7 Mod. 8 Min.

Its Members in *Vignola*, are the same with those of the *Corinthian*; with this Difference, that whereas these are most of 'em enrich'd with Carvings in the *Corinthian*, they are all plain in the *Composite*.

Nor must it be omitted, that there is a Difference in the Profiles of the *Base* and *Corniche* in the two Orders.

The Generality of Architects, *Daviler* observes, use Tables or Pannels, either in *Relievo* or *Crenx*, in the *Dyes* of *Pedestals*; without any regard to the Character of the Order. Those in *Relievo*, he observes, only fit the *Tuscan* and *Doric*; the three others must be indented; which he adds, is a Thing the Ancients never practis'd, as being contrary to the Rules of Solidity.

*Square* **PEDESTAL**, is that whose Height and Width are equal; as that of the Arch of the Lyons at *Verona*, of the *Corinthian* Order; and such, some Followers of *Vitruvius*, as *Serlio*, *Philander*, &c. have given to their *Tuscan* Orders.

*Double* **PEDESTAL**, is that which supports two Columns, and is more in Width than Height.

*Continued* **PEDESTAL**, that which supports a Row of Columns without any Break or Interruption; such is that

which sustains the fluted *Ionic* Columns of the Palace of the *Tuileries* on the Side of the Garden.

**PEDESTALS** of *Statues*, are those serving to support Figures or Statues. See **STATUE**.

*Vignola* observes, there is no Part of Architecture more Arbitrary, and wherein more Liberty may be taken than in the *Pedestals* of Statues; there being no Laws prescribed by Antiquity; nor any even settled by the Moderns.

There is no settled Proportion for these *Pedestals*; but the Height depends on the Situation, and the Figure they sustain. Yet, when on the Ground, the *Pedestal* is usually two thirds, or two fifths of that of the Statue: But the more Massive the Statue, the stronger the *Pedestal*.

Their Form, Character, &c. are to be Extraordinary and Ingenious, far from the Regularity and Simplicity of the *Pedestals* of Columns. The same Author gives us a great Variety of Forms, Oval, Triangular, Multangular, &c.

**PEDICLE**, in Botany, the little Stalk or Tail, whereby the Leaf, Fruit, or Flower is connected to its Branch or Stem. See **FLOWER**, **LEAF**, &c.

Flowers will keep fresh a long Time after gathering, by immersing their *Pedicles* in Water.

The great Secret of preserving Fruits for the Winter, is to seal up their *Pedicles* with Wax.

Cherries with the shortest *Pedicles*, are esteem'd the best.

The Pistil of the Flower frequently becomes the *Pedicle* of the Fruit. See **PISTIL**.

The Word is a Diminutive of the *Latin*, *Pes* Foot.

**PEDIMENT**, in Architecture, a Kind of low Pinnacle; serving to crown an Ordinance, or finish a Frontispiece; and placed as an Ornament over Gates, Doors, Windows, Niches, Altars, &c. See **CROWNING**, &c.

The Pinnacles of the plainest Houses, *Vitruvius* observes, gave Architects the first Idea of this noble Part; which still retains the Appearance of its Original. See **PINNACLE**.

The Parts of the *Pediment* are, the *Tympanum*, and its *Corniche*.

The first is the Pannel naked, or Area of the *Pediment*, enclos'd between the *Corniche*, which crowns it, and the *Entablature*, which serves it as a *Base* or *Socle*. See **TYMPANUM**, &c.

Architects have taken a deal of Liberty in the Form of this Member: Nor do they vary less as to the Proportion of the *Pediment*.

The most beautiful, according to *Daviler*, is that where its Height is about one fifth of the Length of its *Base*.

It is described thus: divide the Line *a b*, (Tab. Architecture Fig. II.) which is the Length of the *Base*, into two equal Parts, in the Point *c*; by means of the Perpendicular *f d*; in this Perpendicular, take the Part *e d*, equal to *a c*; and from the Point *d*, as a Centre, describe the Arch *a e b*. The Point of the Perpendicular cut in *e*, will be the Top of the *Pediment* *a e b*; and the *Corniche*, and the Triangular Space included therein, the *Tympanum*.

*Vitruvius* calls the *Pediments*, *Fastigia*; a Word which signifies a Roof rais'd, or pointed in the Middle, which Form among the *Romans* was peculiar to Temples. All their Dwelling-houses are cover'd in the Plat-form manner; and *Salmasius* on *Solin* observes, that *Cesar* was the first who obtain'd leave to Roof his House with a Ridge or Descent, after the manner of Temples. See **PLAT-FORM**.

*Pliny* tells us, that *Pediments* were first made to place Statues upon, whence they were call'd *Plasæ*.

The *Pediment* is usually Triangular, and sometimes an equilateral Triangle, call'd also a pointed *Pediment*; sometimes it is Circular; tho' *Felicien* observes, that we have no Instance of round *Pediments* in the *Antique*, beside those in the Chapels of the *Rotondo*.

Sometimes its upper *Corniche* is divided into three or four Sides, or right Lines. Sometimes the *Corniche* is cut, or open a Top; which is an Abuse introduced by the Moderns, particularly *Michael Angelo*; for the Design of this Part, at least over Doors, Windows, &c. being chiefly to shelter those underneath from the Rain; to leave it open in the Middle, is to frustrate its End.

Sometimes the *Pediment* is form'd of a couple of Rolls, or Wreathes, like two Consoles join'd together. See **CONSOL**.

Sometimes the *Pediment* is without *Base*, or its lower *Corniche* is cut out, all but what is bestow'd on two Columns, or Pilasters, and on these an Arch or Sweep rais'd, in lieu of an *Entablature*; of which *Serlio* gives an Instance in the *Antique*, in a *Corinthian* Gate at *Feligny*, in *Umbria*; and *Daviler*, a more Modern one, in the Church of *St Peter* at *Rome*.

Under this kind of *Pediments*, come those little arch'd *Corniches*, which form *Pediments* over Doors and Windows, supported by two Consoles, in lieu either of *Entablature* or Columns.

Sometimes the *Pediment* is made double, i.e. a less *Pediment* is made in the *Tympanum* of a larger, on account of some Projecture in the Middle; as in the Frontispiece of the Church of the Great *Jesus* at *Rome*; but this Repetition is



an abuse in Architecture; tho' authoriz'd by very good Buildings; as the large Pavillion of the *Louvre*, where the *Caryatides* support three *Pediments* one in another.

Sometimes the *Tympanum* of the *Pediment* is cut out, or left open, to let in light; as we see under the Portico of the Capitol at Rome.

Lastly, this open *Pediment* is sometimes triangular, and enrich'd with Sculpture, as Roses, Leaves, &c. as we find it in most of the Gothic Churches.

*M. le Clerc* observes, that the Modillions in the Corniche of the *Pediment* shou'd always answer exactly over those of the Entablature. Indeed, *Vitruvius* says, the Ancients did not allow any Modillions at all in *Pediments*. See MODILLION.

The same *M. le Clerc* observes, that the Corniche which serves the *Pediment* as a Base, shou'd have no *Cymatium*; by reason the *Cymatium* of the rest of the Entablature, when it meets the *Pediment*, passes over it.

This Change of Determination occasions a considerable Difficulty; the *Cymatium*, in this Case, appearing too broad in the Turn of the Angle. To remedy which, the Architects have recourse to several Expedients.

A pointed *Pediment* may crown three Arches; but a circular *Pediment* can only crown one agreeably.

One wou'd never use above two *Tympana* over each other in the same Frontispiece; and even where there are two, 'twou'd be proper to have the lower Circular, the upper pointed.

The Word is form'd of the French *Pere* and *Degree*, *q. d.* Degree of Fathers or Ancestors.

PEDIGREE, *Descent* or *Genealogy*. See DESCENT and GENEALOGY.

PEDICULARIS *Morbus*, in Medicine, the lousy Disorder; a Disease arising from some uncommon Corruption in the Body, which generates infinite Quantities of Lice on the Skin.

*Herod* died of the *pedicular* Disease.

The Word comes from the Latin *Pediculus*, Louse.

PEDIÆAN, in Antiquity. The City of Athens was antiently divided into three different Quarters; one on the Descent of a Hill; another on the Sea-shore; and a third in a Plain between the two.

The Inhabitants of the middle Region were call'd *Pediæans*; or according to *Aristotle*, *Pediaci*; those of the Hill, *Diacrians*; and those of the shore, *Paralians*.

These Quarters usually compos'd so many different Factions: *Pisistratus* made use of the *Pediæans* against the *Diacrians*.

In the time of *Solon*, when a Form of Government was to be chosen, the *Diacrians* wou'd have it *Democratic*; the *Pediæans* demanded an *Aristocracy*; and the *Paralians* a mixt Government.

The Word is form'd from the Greek *πῆδος* plain, flat.

PEDIÆUS, in Anatomy, is the second of the Extensor Muscles of the Foot, *Pes*; whence its Name. See FOOT.

It has its Origin in the lower Part of the *Peroneum*, and annular Ligament; and is divided into four Tendons, which are inserted into the external Part of the first Articulation of the four Toes.

Its Use is to extend the Foot together with the first of the Extensors, call'd *Extensor Communis*. See EXTENSOR.

PEDO BAPTISM. See PÆDO BAPTISM.

PEDUNCULI, in Anatomy, two medullary Processes of the *Cerebellum*, whereby that Part is join'd to the *Medulla oblongata*. See CEREBELLUM and MEDULLA.

*Willis*, who first gave 'em the Name, observed in 'em three distinct Processes on either Side, the two first whereof go to the Testes, the second directly from the *Cerebellum* to the *Medulla oblongata*, decussating the former, and fastning the *Processus Annularis*. And the third, springing from the hind Process of the *Cerebellum*, is inserted into the *Medulla oblongata*; looking like an additional Chord to it.

PEDIS *Abscissio*, Cutting off a Foot; a Punishment antiently inflict'd among us: as appears by the Laws of William the Conqueror, by *Ingulphus* and other Authors.

*Interdicimus ne quis occidatur, vel suspendatur, pro aliqua Culpa, sed eruantur Oculi, Abscindantur Pedes, vel Testiculi, vel manus, &c.* Leg. Will. Cap. i.

So *Ingulphus*, *sub pena perditionis dextri sui pedis, &c.*

PEDOMETER, or PODOMETER, or Way-wiser, a Mechanical Instrument, in form of a Watch; consisting of various Wheels with Teeth, catching in one another; all disposed in the same Plane; which by means of a Chain or String fastned to a Man's Foot, or the Wheel of a Chariot, advance a Notch each Step, or each Revolution of the Wheel; so that the Number being mark'd on the Edge of each Wheel, one may number the Paces, or Measure exactly the Distance from one Place to another. See WAY-WISER.

The Word is form'd from the Greek *πῆς*, *Pes*, Foot; and *μέτρον*, Measure.

POMERITER, is sometimes, also, us'd for a Surveying Wheel, an Instrument chiefly us'd in measuring Roads; popularly call'd the *Way-wiser*. Which see

PEDRERO, or PETTERERO, a small Piece of Ord-

nance, chiefly us'd on board Ships; for the discharging of Nails, broken Iron, or Partridge Shot on an Enemy attempting to board. See ORDNANCE and MORTAR.

They are generally open at the Breech, and their Chamber made to take out, to be loaded that Way, in lieu of the Muzzle. See CHAMBER.

PEEK, in the Sea Language, a Term us'd in various Senses.

*E. gr.* an Anchor is said to be *a-peek*, when the Ship being about to weigh, comes over her Anchor, so as the Cable hangs perpendicularly between the Hawse and the Anchor; the bringing of a Ship into which Position they call *heaving a-peek*.

A Ship is said to *ride a-peek* when she lies with her Main and Fore-yards hoisted up; having one End of her Yards brought down to the Shrouds, and the other rais'd up an End; which is chiefly done when she lies at rest in Rivers, lest other Ships falling foul on her, shou'd break her Yards.

To *rise a broad Peek*, denotes the same, excepting that the Yards here are only rais'd to half the Height.

To *Peek the Mizen*, is to put the Mizen-yard perpendicularly by the Mast.

The Room in the Hold, from the Bitts forward to the Stern, where Men of War keep their Powder, and Merchant Men their Victuals, is also call'd the *Peek*.

PEER, *Par*, denotes an equal, or one of the same Rank and Condition.

Hence, in some Councils or Assemblies, we find, *with the Consent of our Peers, Bishops, Abbots, &c.*

Afterwards, *Peer* was applied to the Vassals or Tenants of the same Lord, who were oblig'd to serve and assist him in his Courts: They were call'd *Parcs*, because equal in Function, and *Peers in Fiefs* or *Fees*; because, holding Fees of the Lord; or because their Business in Court was to sit and judge under their Lord of Disputes arising on Fees. See VASSAL.

The Number of Peers required to sit in Court, was at least four; and when there happen'd to be too many Peers in the same Lordship, the Lord usually chose out 12 who had the Title of *Peers* by way of Distinction and Eminence. See VASSAL.

There are Instances of Women, who have assisted at Judgements, on account of their Tenements, not of their being Wives of *Peers*.

The Origin of these *Peers* of Fees is as ancient as that of the Fees they were appointed to judge of; from these we derive our common *Juries*, and our *Peers* of the Realm. See JURY and *Peer of the Realm*.

PEER of the Realm, a noble Lord, or a Person who has a Seat, and Vote in the Upper-house of Parliament; hence call'd the *House of Peers*. See NOBLE and PARLIAMENT.

There are five Degrees of Peerage, or Nobility, *viz.* That of a Duke, Marquess, Earl, Viscount, and Baron. See each under its proper Article DUKE, MARQUESS, EARL, &c.

'Tis the King confers the *Peerage*, by honouring the Person with some of these Titles by Patent. See NOBILITY.

PEERS, PAIRS of France, are the twelve grand Lords of France.

The Institution of these *Peers* is very uncertain; some refer it to *Hugo Capet*, at the Time when the Dukes and Counts chang'd the Offices they then held of the King into perpetual Fiefs. But this is impossible; *Champagne* not being then erected into a County. Indeed *Pasquier* observes, that 'tis an old Tradition there has been 12 *Peers* in all Ages.

Of these *Peers*, six are Dukes, and six Counts, Comtes; of these again, six are Ecclesiasticks, and six Lay-men. The Archbishops of Rheims, Bishops of Laon, and Langres are Dukes and *Peers*; the Bishops of Noyons, Chalon on the Marn, and Beauvais, are Counts and *Peers*.

The Dukes of Burgundy, Normandy, and Aquitaine were Lay-peers and Dukes; and the Counts of Flanders, Champagne, and Thelouse Lay-peers and Counts.

These Lay-peers still assist at the Coronation of the Kings in Ceremony, and by way of Representatives; where each performs the Functions attach'd to his respective Dignity: tho' the Peerships be in reality all, except Flanders, reunited to the Crown. Six Lords of the first Quality are chose to represent 'em.

The Ecclesiastic *Peers* usually assist in Person.

At present, the Title *Peer* in France is bestowed as, in England, on every Lord or Person, whose Fee is erected into a Lordship or Peership.

The Word according to *Pasquier*, is derived from *Paricinus*, the first Dignity in the Eastern Empire, on the Model whereof he supposes these *Peers* to have been instituted.

But others with more probability derive the Title from the *Parcs Curie*, or of Fees, because of their being equal to each other.

These *Parcs Curie*, on whose Model they suppose 'em to have been erect'd, were a Kind of Vassals depending on the same Lord, whom they were obliged to attend and assist in Court.



All Feodal Matters or Disputes among Vassals relating to their Fees or Dependances, were terminated by the superior Lord of the two contending Parties, and by their Peers in Fee.

If the Process were between the Lord and the Vassal, the Lord took no Cognizance of it, and the Peers alone judg'd it. See PEER.

Hence, all Lords or Nobles being *Pares Nobilitate*, i. e. all equally entitled to the Privileges of Nobility, are denominated *Pares Regni*, Peers of the Realm.

Some Authors attribute the first Institution of Peers of the Realm to *Charlemain*; but with little probability; since most of the Fiefs which bear the Names of Dutchies, &c. or give Titles to the Peers, were not erected into Dutchies, &c. till long after. The Dukes, &c. in those Days being no more than simple Governors of Provinces, without any other Title or Privileges. See DUKE.

The more probable Opinion is, that Peers were first instituted by *Philip* the young, of *France*, about the Year 1719; and that they first acted in Capacity of Peers at the Coronation of his Son.

PEERAGE, the Dignity of a Peer, attach'd to a Dutchy, Earldom, or the like. See PEER.

The Kings of *England* and *France* confer *Peerage* at Pleasure. His present Majesty of *England* offer'd his Parliament to resign that Branch of his Prerogative, and to have the Number of Peers limited.

The Reason insisted on, was the Inconveniences accruing to the State from an Arbitrary and immoderate Use thereof. The Prince having it hereby in his Power to throw what Number of his Creatures he pleases into the Upper-house of Parliament.

The twelve Peers created at once in the late Reign, was a main Argument in behalf of the *Peerage Bill*.

'Tis recorded as a popular Saying of King *Charles*, that if his Friends cou'd but secure him a House of Commons, he'd throw his whole Troop of Guards into the Upper-house, but he'd have the Peers.

To hold Land in *Peerage*, in the ancient Customs, was a Tenure which obliged the Person to assist the Lord's Bailiff in his Judgements; as all the ancient Vassals, call'd *Pairs* did. See PEER and VASSAL. See also TENURE.

PEER, or PIER, in Building, a Massive of Stone, &c. opposed, by way of Fortrefs, against the Force of the Sea, or a great River; for the Security of Ships, that lye at Harbour in any Haven.

Such is the Peer of *Dover* described by *Cambden*, *Brit.* The Haven and Peer of great *Tarmouth*, mention'd 22d. *Car.* II.

The Word in this Sense, is form'd from the *French Pierre*, Stone. See PIÉDROIT.

PEERS are also used in Architecture for a Kind of Pilasters or Buttresses, raised for support, strength, and something for Ornament.

PEGASUS, among the Poets, a Horse imagin'd to have Wings; being that whercon *Bellerophon* was fabled to be mounted when he engaged the *Chimera*. See CHIMERA.

The opening of the Fountain *Hippocrene*, on Mount *Helicon*, is ascribed to a blow of *Pegasus's* Hoof.

It was feign'd to have flown away to Heaven; where it became a Constellation. Hence

PEGASUS, in Astronomy, a Constellation of the Northern Hemisphere, in form of a flying Horse. See CONSTELLATION.

The Stars in this Constellation in *Ptolemy's* Catalogue are 20, in *Tycho's* 19, in the *Britannic* Catalogue 93. The Longitudes, Latitudes, Magnitudes, &c. whercof are as follow.

### Stars in the Constellation PEGASUS.

| Names and Situation of the Stars.  | Sign | Longit.  | Latitude. South. | Magnit. |
|------------------------------------|------|----------|------------------|---------|
| Preced. In the Triangle over Pe-   | ♊    | 25 58 39 | 33 18 39         | 4       |
| North. } <i>gafus's</i> Mouth.     |      | 29 49 57 | 36 09 30         | 4 5     |
|                                    |      | 24 43 41 | 19 38 14         | 6       |
|                                    |      | 24 36 55 | 18 46 05         | 6       |
|                                    |      | 29 49 32 | 31 28 35         | 6 7     |
|                                    |      | 23 37 56 | 15 21 40         | 6       |
|                                    |      | 25 21 30 | 18 22 36         | 6       |
|                                    |      | 27 33 32 | 12 07 16         | 3       |
| <i>Pegasus's</i> Mouth             | ♋    | 0 41 04  | 29 02 49         | 4 5     |
| Poster. and South, in the Triangle |      | 4 37 10  | 36 39 05         | 4       |
| In the Heel of the Preced. Foot    |      | 25 39 21 | 15 06 59         | 6       |
|                                    |      | 3 34 17  | 34 05 10         | 6       |
|                                    |      | 2 04 04  | 28 28 58         | 6       |
|                                    |      | 8 25 13  | 40 15 40         | 6       |
|                                    |      | 8 19 10  | 38 46 07         | 6       |

### Names and Situations of the Stars.

|  | Sign | Longitd. | Latitude. South. | Magnit.  |
|--|------|----------|------------------|----------|
|  | ♊    | 6 54 27  | 36 07 07         | 6        |
|  |      | 1 35 20  | 23 01 46         | 6        |
|  |      | 0 16 21  | 17 46 20         | 5        |
|  |      | 1 06 39  | 19 06 36         | 7        |
|  |      | 3 01 42  | 23 37 20         | 6        |
| 20   |      |          |                  |          |
| South. of two in the Head                    |      | 2 51 41  | 21 47 57         | 5        |
|  |      | 0 58 06  | 15 42 01         | 5        |
| In the preced. Knee                          |      | 11 39 57 | 37 40 34         | 6        |
| 25   |      | 10 04 09 | 34 16 48         | 4        |
|  |      | 8 31 30  | 30 51 42         | 6 7      |
| North. in the Head                           |      | 2 28 45  | 16 21 48         | 4        |
|  |      | 15 04 15 | 4 03 45          | 8        |
|  |      | 8 48 51  | 29 58 44         | 6 7      |
| In the Heel of the hind Foot                 |      | 15 15 13 | 40 59 52         | 4 5      |
| 30   |      | ♋        | 19 42 07         | 44 24 30 |
| Small one against the Ear.                   | ♋    | 4 48 30  | 15 01 47         | 6        |
| North. in the Ear, or rather inform.         |      | 7 37 52  | 20 51 42         | 4 5      |
|  |      | 15 10 56 | 35 34 03         | 5 6      |
|  |      | 11 55 26 | 28 34 40         | 6 7      |
|  |      | 5 42 45  | 13 09 56         | 6        |
| In the Top of the Main, preced. of little Δ) |      | 6 08 55  | 13 21 09         | 5        |
| 35   |      | 8 11 58  | 17 18 50         | 6 7      |
| North. of the Triangle                       |      | 6 33 16  | 12 53 28         | 6        |
| Poster. and South, in the same               |      | 19 41 51 | 38 29 08         | 6        |
| 40   |      | 13 48 43 | 27 09 30         | 6 7      |
|  |      | 15 00 29 | 25 54 02         | 6 7      |
| Preced. of the Contig. Stars in the Neck)    |      | 15 17 33 | 25 56 59         | 6        |
| South. in the hind Knee                      |      | 11 59 06 | 17 42 03         | 3        |
| North. in the same Knee                      |      | 20 35 43 | 34 25 43         | 5 6      |
| 45   |      | 21 24 12 | 35 07 01         | 3        |
|  |      | 16 29 36 | 25 05 48         | 6        |
| Last of the Contig. in the Neck              |      | 13 37 19 | 18 27 18         | 5        |
| Preced. of two in the Breast                 |      | 18 43 48 | 28 48 12         | 4        |
| Subseq.                                      |      | 20 03 20 | 29 23 32         | 4        |
| North. of two in the Main                    |      | 13 57 01 | 15 43 34         | 6        |
| 50   |      |          |                  |          |
| South. of the same                           |      | 14 14 06 | 14 30 06         | 6        |
|  |      | 19 56 37 | 25 11 47         | 6        |
|  |      | 16 21 59 | 16 46 18         | 6        |
| In the rise of the hind Leg, <i>Scheat</i>   |      | 25 02 13 | 31 08 06         | 2        |
| In the Shoulder of the Wing, <i>Markab</i>   |      | 19 09 13 | 19 24 37         | 2        |
| 55   |      |          |                  |          |
| Preced. of the North in the small □          |      | 17 14 16 | 13 53 52         | 5        |
| That under <i>Scheat</i> (of the Neck        |      | 24 28 48 | 28 28 30         | 5 6      |
| Preced. of South. in □ of Neck               |      | 17 31 19 | 12 58 10         | 6        |
| Last of North.                               |      | 18 06 39 | 13 57 55         | 6        |
| Last of South.                               |      | 18 03 32 | 12 47 24         | 6 5      |
| 60   |      |          |                  |          |
|  |      | 26 16 35 | 29 13 44         | 6        |
|  |      | 27 53 40 | 30 05 17         | 6        |
| North. of two under the Wing in the Body)    |      | 26 44 08 | 25 33 5          | 6        |
| Preced. of 5 in the Belly                    | ♊    | 0 10 38  | 31 31 39         | 6        |
| 65   |      | 1 11 12  | 32 39 01         | 6        |
|  | ♋    | 25 50 08 | 22 44 22         | 6 7      |
| Preced. of two behind <i>Markab</i>          |      | 22 10 23 | 14 57 25         | 6        |
| Second and North. in the Belly               | ♊    | 02 09 28 | 32 52 21         | 6 7      |
| South. of two under the Wing                 | ♋    | 27 38 15 | 24 47 52         | 6        |
|  |      | 29 01 51 | 26 09 20         | 6 7      |
| 70   |      |          |                  |          |
| That behind <i>Markab</i>                    |      | 23 45 06 | 14 45 25         | 5 6      |
| That in a right Line with the 69th (and 63d. | ♊    | 29 04 02 | 23 10 09         | 6        |
|  |      | 03 35 42 | 31 01 57         | 6        |
| Third and Middle in the Belly                |      | 4 56 31  | 32 53 00         | 6        |
|  | ♋    | 27 25 39 | 17 37 36         | 7        |
| 75   |      |          |                  |          |
| Preced. in middle of the Wing                |      | 28 12 34 | 10 04 48         | 6        |
|  |      | 28 23 55 | 16 40 02         | 6        |
|  |      | 26 00 19 | 11 07 40         | 6        |
|  | ♊    | 4 46 00  | 28 18 05         | 5 6      |
|  |      | 5 45 24  | 27 16 20         | 6        |
|  | ♋    | 27 24 45 | 9 24 26          | 6 7      |
|  |      | 2 57 24  | 20 32 38         | 7        |
|  |      | 1 49 59  | 18 13 41         | 6        |
|  | ♋    | 28 22 33 | 10 45 59         | 6        |
|  |      | 3 03 01  | 20 55 0          | 6        |
| 85   |      |          |                  |          |
| North. in the Extrem. of the Wing            |      | 5 45 50  | 23 09 16         | 6        |
|  |      | 7 37 33  | 24 34 42         | 6        |
|  |      | 2 22 00  | 11 42 38         | 5 6      |
|  |      | 9 58 50  | 25 41 00         | 2        |
|  |      | 5 09 17  | 15 46 15         | 6        |
|  |      | 2 25 18  | 9 13 22          | 5        |
|  |      | 4 49 50  | 12 35 12         | 2        |
| Tip of the Wing, <i>Algenib</i>              | ♊    | 7 17 42  | 17 01 40         | 6        |
| South. in Extrem. of the Wing.               |      |          |                  |          |



**PEGMATES**, or **PEGMARES**, in Antiquity, a Name given to certain *Gladiators*, as well as *Artificers*, among the *Romans*.

The Ancients sometimes exhibited Shews of certain Machines, call'd *Pegmata*. These were a Kind of Scaffolds, variously adorn'd, somewhat after the Manner of those now rais'd for Fire-works.

These Scaffolds being made to play, either threw up into the Air the Matters wherewith they were charg'd; and among the rest, Men, who were thus sacrificed to afford the People Diversion; or they precipitated 'em into Holes dug in the Ground, where they lighted their Funeral Piles; or into the Dens of wild Beasts.

Now, both the miserable People thus sacrificed, and the Workmen that made and play'd the Machines, were call'd *Pegmates*.

According to *Casaubon*, Fire was set to the Scaffold, and the *Pegmates* were to save 'emselves thro' the Flames, and the Wrack of the Machine.

*Lipsius* says simply, that the *Pegmates* were such *Gladiators* as fought on Scaffolds erected for that purpose.

They were also call'd *Petauristes*. See *GLADIATOR*.

**PEIRCED**, in Heraldry; when an ordinary, or Charge in Heraldry hath a Hole in it, so that the Field appears through; they say that ordinary, or charge, is *Peirced*. See *PIERCED*.

**PELAGIANS**, ancient Hereticks, well known in the Church by the Writings of *St. Augustin*. See *HERETIC*.

The Author of this Sect, *Pelagius*, properly call'd *Aurigan*, was an *Irish* Monk, Cotemporary with *St. Jerom*, and *St. Augustin*. He quitted his Country to go and live in the East; according to the Custom of the Monks of those Days, who were not attach'd to particular Houses like those of our Days.

He absolutely denied all original Sin, which he held to be the mere Invention of *St. Augustin*; and taught that Men are entire Masters of their Actions, perfectly free Creatures, in opposition to all Predestination, Reprobation, Election, &c. See *ORIGINAL SIN*, *PREDESTINATION*.

He own'd indeed that the natural Power of Man needed to be assisted by the Grace of God, to enable him to work out his own Salvation; but by this Grace, he only meant outward Assistance, viz. the Doctrines of the Law and of the Gospel. See *GRACE*.

Tho', when press'd by those Words of *St. Paul*, *Deus est enim qui operatur in nobis*, &c. he own'd that 'tis God, in effect, that makes us will what is good, when he warns and excites us by the Greatness of the Glory we are to obtain, and by the Promises of Rewards; when he makes us love him, by revealing his Wisdom, &c.

These are *Pelagius's* own Words, as cited by *St. Augustin*; who confutes him, and shews that beside these exterior Graces, there are required other real and interior ones.

*Pelagius* own'd further, that the Will of Man is indeed aided by a real Grace; but added that this Grace is not absolutely necessary in order to live well; but only helps us to do well with the more ease.

*Julian*, one of his Adherents went further yet; and own'd that the Assistance of Grace was absolutely necessary to enable us to do perfect Works.

In effect, the grand Doctrine of the *Pelagians*, was, that a Man might accomplish all the Commands of God by the mere force of Nature; and that the Gifts of Grace were only necessary to enable him to act more easily, and more perfectly.

**PELAGIÆ**, in natural History, a Term used to express such *Sea-Shells* and *Fishes*, as never, or very rarely, are found near the Shores; but always reside in the Deep, or in those parts of the Bottom of the Sea, which are most remote from Land. See *SHELL*.

The Word is form'd of the *Greek* *πυλαγος*, *Marine*, belonging to the Sea.

**PELLS**, Clerk of the *PELLS*. See *CLERK of the Pells*.

**PELLICAN**, among Chymists, a Kind of double Vessel; ordinarily of Glass; used in distilling Liquors by Circulation. See *DOUBLE Vessel*, and *CIRCULATION*.

**PELLICAN**, is also an Instrument used by Chirurgeons, &c. to draw Teeth.

**PELLICAN**, again, is the Name of an ancient Piece of Ordinance, equal to a Quarter-Culverin, and carrying a Ball of six Pounds. See *CULVERIN*.

**PELLICLE**, **PELLICULA**, a Diminutive of *Pellis*, Skin; a thin Film, or Fragment of a Membrane or Skin.

The *Epiderma* or *Cuticula*, is a little *Pellicle* covering the *Dermis*, *Cutis*, or Skin. See *CUTICLE*.

The Valves of the Veins and Arteries are insensible *Pellicles*, which open and shut to promote the Circulation. See *VALVE*.

When any Chymical Solution is evaporated in a gentle Heat till a thin Skin or Film arise a Top, 'tis call'd an *Evaporation to a Pellicle*, wherein there is but just Liquor enough left to keep the Salts in fusion. See *EVAPORATION*.

**PELLETS**, in Herakly, a Name given those Roundles which are Black; call'd also *Ogresses* and *Gun-stones*.

**PELICOIDES**, in Geometry, a Figure, in form of a *Hatchet*; whence its Name; from the *Greek* *πικρὸν* *Hatchet* and *εἶδος* form.

Such is the Figure *BCDA*, Tab. Geometry Fig 45. contained under the two inverted Quadrantal Arks *AB* and *AD*, and the Semi-circle *BCD*.

The Area of the *Pellicoides* is demonstrated to be equal to the Square *AC*; and that, again, to the Rectangle *EAD*: It is equal to the Square *AC* because it wants of the Square on the left-hand, the two Segments *AB* and *AC*, which are equal to the two Segments *BC* and *CD*, by which it exceeds on the Right-hand.

**PELLUCID**, a Term of the same Import as *Diaphanous* or *Transparent*. See *TRANSPARENT*, &c.

*Pelucid*, stands opposed to *Opaque*. See *OPAQUE*.

The Word is form'd of the *Latin* *Pelluceo* or *Perlucio*, I shine thro'.

**PELLUCIDITY**, *Diaphaneity* or *Transparency*. See *TRANSPARENCY*, &c.

**PELTA**, in Antiquity, a kind of Buckler, used among the Ancients. See *BUCKLER*.

The *Pelta* was small, light, and more manageable than the *Parma*. See *PARMA*.

It appears from *Virgil*, and other Authors, that the *Pelta* was the Buckler used by the *Amazons*: And *Xenophon* observes that the *Pelta* of the *Amazons* was like a Leaf of Ivy.

*Pliny* speaking of the *Indian* Fig-tree, says its Leaves are the Width of the *Amazonian* *Pelta*. *Servius* on the *Aeneid* says, the *Pelta* resembled the Moon in her first Quarter.

**PELVIS**, in Anatomy, the lower-part of the Cavity of the *Abdomen*; thus call'd from its resemblance to a Basin or Ewer, call'd in *Latin*, *Pelvis*. See *ABDOMEN*.

The *Pelvis* is always much larger in Women than Men, to give Room for the Growth, &c. of the *Fetus*.

'Tis well fortified with Bones, to skreen the Contents from external Injuries.

**PELVIS**, of the *Kidneys*, a large Membranous Sinus, or Cell, in the concave Part of the *Kidneys*. See *KIDNEY*.

From the twelve *Papillæ* of the *Kidneys*, arise twelve Canals, call'd *Fistulæ Membranaceæ*. These at length are collected into three large Branches, which being at last united into one, form the *Pelvis*; and this again, contracting it self, terminates in a Membranaceous Pipe, call'd the *Ureter*. See *PAPILLÆ* and *URETER*.

The Urine, then, separated from the Blood by the Urinary Pipes; conveyed by them into the *Papillæ*, and taken up by the *Fistulæ Membranaceæ*; is brought into the *Pelvis*, and thence discharg'd into the *Ureter*, thence into the Bladder, &c. See *URINE*.

**PEN**, according to *Cambden*, originally signifies a high Mountain; which was thus call'd among the ancient *Britanni*, and even *Gauls*.

And hence that tall Range, which parts *Italy* and *France*, is call'd *Apennines*. See *MOUNTAIN*.

**PEN**, is also a little Instrument, usually form'd of a Quill, and serving to write withal. See *WRITING*.

**Dutch PENS**, are those made of Quills which have been pass'd thro' hot Ashes, to take off the grosser Fat and Moisture thereof. See *QUILL*.

**Fountain-PEN**. See *FOUNTAIN-PEN*.

**PEN-Stock**, a sort of *Sluice* or Flood-gate, placed in the Water of a Mill-pond, or the like, to retain or let go the Water at Pleasure. See *SLUICE*.

**PENANCE**, is properly the Exercise of *Penitence*; and may be defined a Punishment, either voluntary, or imposed by a legal Authority, for the Faults a Person has committed. See *PUNISHMENT*.

In this Sense the *Romanists* define it a Sacrament, wherein a Person, who has the requisite Dispositions, receives Absolution at the Hand of the Priest, of all Sins committed since Baptism. See *SACRAMENT*.

To a Legitimate *Penance* they require three Things, Contrition, Absolution, and Satisfaction.

Their Priests receive a Power of administering the Sacrament of *Penance*, when they receive the Priesthood; but to exercise this Power, 'tis required they have the Jurisdiction of an Ordinary, i. e. that they have a Benefice, either Original or Delegated; with the Approbation of the Bishop to hear Confessions.

**PENANCE**, is particularly used in the *Romish* Church, for the Penalty which a Confessor imposes, for the Satisfaction of the Sins whereof a Person is absolved. See *CONFESSION* and *ABSOLUTION*.

The ancient Discipline, *Du-pin* observes, was very severe on the Head of *Penance*. For great Crimes People were excluded the Communion of the Church, expell'd the Assemblies of the Faithful, obliged to fast, and to mortify 'emselves publicly, even at the Church Door, cut their Hair, go always on Foot, &c.

He adds, that those who had done publick *Penance*, were never admitted into the Clergy; and that public *Penance* was never



never granted more than once. Those who fell a second Time were never to be reconciled to the Church, and were to look for Pardon only at the Hands of God.

**PENANCE**, in our Canon-Law, is an Ecclesiastical Punishment, chiefly adjudg'd to the Sin of Fornication. The Punishment is thus prescribed by the Canons: The Delinquent to stand in the Church Porch on some Sunday bare Head and bare Foot, in a white Sheet, with a white Wand in the Hand; here bewailing himself, and begging every one to pray for him. Then to enter the Church, falling down, and kissing the Ground; and at last, placed on an Eminence in the Middle of the Church, against the Minister, to declare the Foulness of the Crime, odious to God, and scandalous to the Congregation.

If the Crime be not notorious, the Canons allow the Punishment to be commuted at the Parties Request, for a pecuniary Mulct, for the Benefit of the Poor, &c.

**PENATES**, in the ancient Mythology, a Term applied to all the Domestic Gods, whom the Ancients adored in their Houses; whence they are ordinarily confounded with the *Lares*. See *LARES*.

Authors are not at all agreed about the Origin of the *Dii penates*, who were properly the Tutelary Gods of the *Trojans*, and were only adopted by the *Romans*, who gave 'em the Title of *Penates*.

*De Meziriac*, in his Notes on *Dido's* Epistle to *Aeneas*, relates at large what he has met withal in the ancient Writers on this Subject: *Dionysius Halicarnassensis* tells us that *Aeneas* first lodg'd these Gods in the City *Lavinium*; and that his Son *Ascanius*, afterwards, upon building the City *Alba*, translated 'em thither; but that they return'd twice miraculously to *Lavinium*. The same Author adds, that in *Rome* is still seen a dark Temple, shaded by the adjacent Buildings, wherein are the Images of the *Trojan* Gods, with the Inscription *Penates*, which signifies *Penates*. See *DENATES*.

These Images represent two young Men sitting, each of which holds a Lance. I have seen, adds *Dionysius*, several other Statues of the same Gods in ancient Temples; who all appear like young Men dress'd in a Habit of War.

*Varro* fetches these *Penates* from *Samothrace* to *Phrygia*, to be afterwards transported by *Aeneas* into *Italy*.

*Macrobius*, who relates this from *Varro*, adds, that they were call'd *Penates* from the Latin Words *Per quos penitus spiramus*, which seems a mere Subtilty. The real Etymology must be sought in the *Phrygian*, not the *Latin* Tongue.

*Rosinus* distinguishes among the *Penates*: He makes an Order of *Penates of the Heavens*; such as *Pallas* in the Etherial Region, *Jupiter* in the middle Region, and *Juno* in the lowest; *Penates of Cities*, *Penates of private Families*, &c.

So that in effect, the *Dii penates* were the Guardian or tutelary Gods of every Thing. See *God*.

*Cicero*, in *Aulus Gellius*, derives the Word hence, *quod penes nos nati sunt*. Yet, in his Book *de Nat. Deor.* he says 'tis form'd from *Penus*, Provision; or, perhaps, adds he, *quod penitus insident*. Others say, *quia coluntur in penetralibus*.

'Tis a popular Question among the Learned, who were the *Penates of Rome*? Some say *Vesta*, others *Neptune* and *Apollo*; *Vives* says *Castor* and *Pollux*, with whom agrees *Vossius*, who adds that the Reason of their chusing *Castor* and *Pollux* in quality of *Penates*, might be the important Service they did the *Romans* in the War against the *Latins*.

Nor are Authors more unanimous on the Subject of the *Penates*, which *Aeneas* brought into *Italy*. Some say they were *Neptune* and *Apollo* who built the Walls of *Troy*; others *Jupiter*, *Juno*, and *Minerva*; others *Caelus* and *Terra*.

**PENCIL**, an Instrument used by Painters, for the Application of their Colours. See *COLOUR*.

There are *Pencils* of various kinds, and made of various Matters: The most usual are of Badgers and Squirrels Hair, those of Swans-down, and those of Boars Bristles; which last are bound on to a Stick bigger, or less, according to the Uses they are destined for; and when large are call'd *Brushes*.

The others are inclos'd in the Barrel of a Quill.

The Word comes from the *Latin*, *Penicillum*, which signifies the same Thing. The Ancients, *M. Felibien* observes, had *Pencils* made of little Pieces of Sponge; whence doubtless, the Story of the Painter, who not able to express the Foam of a Dog, succeeded by throwing his *Sponge* at the Picture.

**PENCIL-CASE**. See *PORTUL-CRAION*.

**PENCIL of Rays**, in Opticks, is a double Cone of Rays, joined together at the Base; one of which hath its Vertex in some point of the Object, and has the Glass *G L S*. (Tab Opticks Fig. 39) for its Base; and the other has its Base on the same Glass, but its Vertex in the point of Convergence; as at C. See *RAY*, &c.

Thus *B G S C* is a *Pencil of Rays*; and the Line *B L C* is call'd the *Axis of that Pencil*.

**PENDANT**, an Ear-ring, or Ornament, of some precious Matter, wore by the Ladies; hung by a Hole made for that purpose thro' the Ear; and frequently enriched with Diamonds, Pearls, and other precious Stones.

The *Pendants* of the *European* Ladies are nothing in comparison with those wore by the *E. Indians*, both Men and Women; among whom 'tis the Fashion to lengthen out the Ears, and to enlarge the Hole, by putting in *Pendants* of the Size of Saucers, set with Stones.

The Queen of *Calicut*, *Pyrard* tells us, and other Ladies of her Court, have their Ears, by this Means, weigh'd down as low as their Breasts, and even lower; imagining this a main point of Beauty; and the Holes large enough to pass the Fist thro'.

The *Moncois*, who are the common People, are not allowed to wear their Ears so long as the *Naires*, who are the Noblesse; three Fingers length are the utmost stretch allow'd the Former.

In the *W. Indies*, *Columbus* named a certain Coast *Oreja*, by reason he found People with Holes in their Ears big enough to pass an Egg thro'.

They make Holes, too, in their Lips and Nostrils, and hang *Pendants* at 'em; which is also practis'd by the *Mexicans* and other Nations.

**PENDANT**, in Heraldry, a Term applied to the Parts hanging down from the Label, to the Number of 3, 4, 5, or 6 at most: These must be specified in Blazoning, when there are more than three. See *LABEL*.

They resemble the Drops at the Bottom of the Triglyphs in the Doric Freeze.

**PENDANT Feathers**, in Falconry, are those Feathers, which grow behind the Thighs of an Hawk. See *FEATHER*.

**PENDANTS**, among Florists, a Kind of Seeds; growing on Stamina, or Chives; such are those in the middle of Tulips, Lillies, &c.

**PENDANTS of a Ship**, are of two Kinds.

I. Those long Colours or Streamers, cut pointing out towards the End, and there divided into two Parts, and hung out at the Heads of the Masts, or at the Yard-arm Ends, are called *Pendants*; and used for shew, and sometimes for distinction of Squadrons. See *COLOUR*, *FLAG*, &c.

II. That short Rope is called a *Pendant*, which at one End is fastened to the Head of the Mast, or to the Yard, or to the Clew of the Sail, and at the other End, hath a Block and Shiver, to reeve some running Rope into.

Thus, the *Pendant* of the Tackle is made fast to the Head of the Mast; and the *Pendants* of the Back-stays are fastened to, and hang down on the inside of the Shrouds.

All the Yard-arms, except the Mizen have of these *Pendants*, into which the Braces are reev'd.

**PENDENTIVE**, in Architecture, the whole Body of a Vault, suspended out of the Perpendicular of the Walls, and bearing against the Arc-boutants. See *VAULT*.

*Daviler* describes it as a Portion of a Vault between the Arches of a Dome, usually enrich'd with Sculpture: And *Felibien*, as the Plain of the Vault, contain'd between the double Arches, the forming Arches and the Ogives. See *OGIVE*.

The *Pendentives* are usually of Brick, or soft Stone; but Care must be taken that the Couches or Beds of Masonry be always laid level, and in right Lines proceeding from the Sweep whence the Rise is taken.

The Joints too must be made as small as possible, to save the Necessity of filling 'em up with Wood, or of using much Mortar.

**PENDULOUS**, hanging down; a Name Botanists give to those Flowers which hang downwards; the Stalk not being able to sustain 'em upright. See *FLOWER*.

**PENDULUM**, in Mechanics, any heavy Body so suspended as that it may vibrate, or swing backwards and forwards, about some fix'd Point, by the force of Gravity. See *VIBRATION*.

The Vibrations, or alternate Ascent and Descent, of the *Pendulum*, are call'd its *Oscillations*. See *OSCILLATION*.

The Point on which it vibrates, is call'd the Centre of *Suspension* or *Motion*. See *CENTRE* and *SUSPENSION*.

And a right Line passing thro' the Centre, parallel to the apparent Horizon, is call'd the *Axis of Oscillation*. See *AXIS*.

The Vibrations of a *Pendulum*, are all *Isochronal*, or effected in spaces of Time perfectly equal. See *ISOCHRONAL*.

And hence the *Pendulum* becomes the most accurate Chronometer, or Instrument for measuring Time, in the World. See *TIME* and *CHRONOMETER*.

And hence also its Vibrations are proposed as an invariable and universal Measure of Lengths for the most distant Countries and Ages. See *MEASURE*.

For a Vibration being once found precisely equal to a second of Time of the Suns mean Motion; if v.g. the *Horay* Foot (as *M. Huygens* calls the third Part of his second *Pendulum*) compared to the *English* Standard Foot, be as 392 to 360; 'twill be easy, by Calculation, to reduce all the other Measures of the World to those Feet; the Lengths of *Pendulums*, reckon'd from the Point of Suspension, to the Centre of the Ball, being to each other, as the Squares of the Times wherein



wherein the several Oscillations are perform'd; and therefore reciprocally as the Squares of the Numbers of Oscillations perform'd in the same Time.

On this same Principle, M. Mouton, Canon of Lyons, has a pretty Treatise, *de mensura posteris transmittenda*.

Mr. Huygens lays down the Length of a *Pendulum* that shall swing Seconds, to be 3 Feet, 3 Inches, and 2 Tenths of an Inch; according to Sir J. Moor's Reduction; which agrees perfectly with M. Mouton's *Pendulum* 8 Inches 1 Tenth long, to Vibrate 132 times in a Minute: so that this may be relied on as a sure Measure.

Note, the Lengths of *Pendulums* are usually measur'd from the Centre of Motion.

The First who observ'd this noble Property, the *Isochronism* of *Pendulums*, and made Use thereof in measuring Time, *Sturmius* tells us, was *Ricciolus*; after him *Tycho*, *Langrenus*, *Wendeline*, *Mersenne*, *Kircher* and others hit on the same Thing; tho' without any Intimation of what *Ricciolus* had done.

*Huygens* first applied the *Pendulum* to Clocks. See *Pendulum Clock*.

*Pendulums* are either *Simple* or *Compound*.

*Simple PENDULUM*, is that consisting of a single Weight, as *A*, consider'd as a Point; and an inflexible right Line, as *AC*, consider'd as void of Gravity, suspended on a Centre *C*, and voluble about it. (Tab. Mechanicks Fig. 36)

*Compound PENDULUM*, is that which consists of several Weights, so fix'd as to retain the same Distance both from one another, and from the Centre about which they vibrate.

#### The Doctrine and Laws of PENDULUMS.

A *Pendulum* rais'd to *B*, thro' the Arch of the Circle *BA*; will fall, and again rise, thro' an equal Arch, to a Point equally high, *L*; and thence fall to *A*, and again rise to *B*; and thus continue rising and falling reciprocally, for ever.

or suppose *HI* a horizontal Line, and *BD* parallel thereto; if the Ball *A*, which we here consider as a Point, be rais'd to *B*; the Line of Direction *BH*, being Perpendicular from the Centre of Gravity *B* to the Horizontal Line *HI*, falls without the *Base*, which is in the Point *C*.

The Ball therefore cannot rest, but must descend. See DESCENT.

But being retain'd by the Thread *BC*, from falling perpendicularly thro' *BH*; it will fall thro' the Arch *BA*. Consequently, when the Centre of Gravity arrives at the Bottom; *A* has the same force, it wou'd have acquired in falling from *K*; and will therefore be able to rise equally high as if it had, i.e. in descending thro' the first half of its Vibration, it acquires a Velocity by the continual Acceleration of its Fall; and as this Velocity is always proportionable to the Height whence it falls, as being in some measure the Effect thereof; it is still able to make it remount to the same Height, supposing according to the System of *Galileo*, that the Velocities are always the square Roots of the Heights. See ACCELERATION.

Since then the Thread prevents the *Pendulum* going off in the Tangent *AI*, it must ascend thro' the Arch *AD*, equal to that *AB*.

All the Force therefore which it had acquired by falling, being exhausted; it will return by the force of Gravity thro' the same Arch *AD*, and again rise from *A* to *B*; and thus for ever. Q. E. D. See GRAVITY.

Experience confirms this Theorem, in any finite Number of Oscillations; but if they be supposed infinitely continued, there will arise a Difference. For the Resistance of the Air, and the Friction about the Centre *C*, will take off part of the Force acquired in falling; whence it will not rise precisely to the same Point whence it fell.

Thus the Ascent continually diminishing; the Oscillation will be at last stopp'd, and the *Pendulum* hang at rest. See RESISTANCE and FRICTION.

II. If a simple *Pendulum* be suspended between two Semi-cycloids *CB* and *CD*. (Tab. Mechanicks Fig. 37) Whose generating Circles have their Diameters *CE* equal to half the length of the Thread *CA*; so as the Thread in Oscillating be wound about 'em; all the Oscillations, however unequal in Space, will be *Isochronal*, or perform'd in equal Times; even in a resisting Medium.

For since the Thread of the *Pendulum* *CE*, is wound about the Semi-cycloid *BC*; the Centre of Gravity of the Ball *E*, which is here consider'd as a Point, by its Evolution, will describe a Cycloid *BEAD*; as is shewn from the Doctrine of Infinites; but all Ascents and Descents in a Cycloid are *Isochronal*, or equal in Time: Therefore the Oscillations of the *Pendulum* are also equal in Time Q. E. D. See CYCLOID.

Hence, if with the length of the *Pendulum* *CA*, a Circle be described from the Centre *C*; since a Portion of the Cycloid near the Vertex *A*, is almost described by the same Motion; a small Arch of the Circle will almost coincide with the Cycloid.

In little Arches of a Circle, therefore, the Oscillations of *Pendulums* will be *Isochronal* as to Sense; however, unequal in 'emselves; and their Ratio to the Time of perpendicular Descent thro' half the length of the *Pendulum*, is the same with that of the Circumference of a Circle to its Diameter.

Hence also, the longer the *Pendulums* are, that oscillate in Arches of a Circle; the more Oscillations are *Isochronal*; which agrees with Experiment; for in two *Pendulums* of equal lengths, but oscillating in unequal Arches, provided neither Arch be very great, you'll scarce discern any inequality in an hundred Oscillations.

Hence also, we have a Method of determining the Space which a heavy Body, falling perpendicularly, passes over in a given Time. For the Ratio which the Time of one Oscillation has to the Time of the Fall thro' half the Length of the *Pendulum*, being thus had; and the Time wherein the several Vibrations of any given *Pendulum* being found; we have the Time of the Fall thro' half the length of the *Pendulum*. And hence may collect the Space it will pass over in any other Time.

The whole Doctrine of *Pendulums* oscillating between two Semi-cycloids, both Theory and Practice, we owe to the great *Huygens*; who first publish'd the same in his *Horol. Oscillator. sive demonstrationes de Motu Pendulorum*, &c.

III The Action of Gravity is less in those Parts of the Earth where the Oscillations of the same *Pendulum* are slower, and greater where they are swifter.

For the Time of Oscillation in a Cycloid, is to the Time of Perpendicular Descent thro' the Diameter of the generating Circle, as the Periphery of the Circle to the Diameter.

If then, the Oscillation of the same *Pendulum* be slower; the Perpendicular Descent of heavy Bodies is likewise slower; i. e. the Motion is less accelerated, or the Force of Gravity is less: and conversely. See GRAVITY.

Hence, as 'tis found by Experiment, that the Oscillations of the same *Pendulum* are slower near the Equator, than in Places less remote from the Pole; the force of Gravity is less towards the Equator than towards the Poles. And consequently the Figure of the Earth is not a just Sphere, but a Spheroid. See EARTH and SPHEROID.

This M. *Richier* found by an Experiment made in the Island *Cayenna*, about four Degrees from the Equator; where a *Pendulum* 3 Foot, 8 Lines  $\frac{2}{3}$  long, which at *Paris* vibrates seconds, was to be shorten'd a Line and a Quarter to reduce its Vibrations to Seconds.

M. *des Hayes*, in a Voyage to *America*, confirms the Observation of *Richier*; but adds, that the Diminution establish'd by that Author, appears too little.

M. *Couplet* the younger, upon his return from a Voyage to *Brazil* and *Portugal*, falls in with M. *des Hayes*, as to the Necessity of shortening the *Pendulum* towards the Equator more than *Richier* has done. He observ'd, that even at *Lisbon* the *Pendulum* which beats Seconds, must be two Lines  $\frac{1}{2}$  shorter than that of *Paris*; which is shorter than that of *Cayenna*, as fix'd by *Richier*; tho' *Cayenna* be in 24 Degrees less Latitude than *Lisbon*.

The Truth is, this Diminution does not proceed regularly: Mefs. *Picart* and *de la Hire*, found the Length of the *Pendulum* which beats Seconds exactly the same at *Bayonne*, at *Paris*, and at *Uranisbourg* in *Denmark*; tho' the first be in  $45^{\circ}$   $\frac{1}{2}$  of Latitude, and the last in the Latitude  $55^{\circ}$   $\frac{1}{2}$ .

Hence M. *de la Hire* takes occasion to suspect that the Diminution is only Apparent; and that E. g. the Iron Yard, wherewith M. *Richier* measur'd his *Pendulum*, might be lengthen'd by the great Heats of the Isle of *Cayenna*; nor the *Pendulum* shorten'd by the approach towards the Line.

To confirm this, he tells us he found, by very careful Experiments, that an Iron Bar, which exposed to the Frost was 6 Foot long; was lengthen'd  $\frac{1}{2}$  of a Line by the Summer's Sun. See DILATATION, HEAT, THERMOMETER.

IV. If two *Pendulums* vibrate in similar Arches, the Times of the Oscillations are in the Subduplicate Ratio of their Lengths.

Hence the Lengths of *Pendulums* vibrating in similar Arches, are in a Duplicate Ratio of the Times wherein the Oscillations are perform'd.

V. The Numbers of *Isochronal* Oscillations perform'd in the same Time by two *Pendulums*, are reciprocally as the Times wherein the several Oscillations are perform'd.

Hence, the Lengths of *Pendulums* vibrating in similar and small Arches, are in the Duplicate Ratio of the Numbers of Oscillations perform'd in the same Time, but reciprocally taken.

VI. The Lengths of *Pendulums* suspended between Cycloids, are in a Duplicate Ratio of the Times wherein the several Oscillations are perform'd.

And hence they are in a Duplicate Ratio of the Numbers of Oscillations perform'd in the same Time, but reciprocally taken: and the Times of Oscillations in different Cycloids are in a Subduplicate Ratio of the Lengths of the *Pendulums*. VII. If



VII. To find the Length of a Pendulum, which shall make any assign'd Number of Vibrations in any given Time.

Let the Number of Vibrations requir'd, be 50 in a Min. and the Length of the String, counted from the Point of Suspension, to the Centre of Oscillation, or round Ball at the End of it be requir'd: 'Tis a fix'd Rule that the Lengths of Pendulums are to each other, as the Squares of their Vibrations Contrarywise: Now 'tis agreed that a Pendulum vibrating Seconds (or 60 times in a Minute) is 39 Inches, and  $\frac{1}{5}$  of an Inch; say therefore as the Square of 50 (which is 2500) to the Square of 60, (which is 3600) so is 39, 2. to the Length of the Pendulum requir'd: which will be found to be 56 Inches  $\frac{1}{5}$ .

Note, In Practice, since the Product of the mean Time, will always be 1411200 (that is the Product of the Square of 60, multiplied by 39, 2.) that is 3600 + 39, 2. you need only divide that Number by the Square of the Number of Vibrations assign'd; and the Quotient will give the Length of a Pendulum, that shall vibrate just so many times in a Min.

VII. The Length of a Pendulum being known, to find the Number of Vibrations it will make in a given Time.

This being the Reverse of the Former; say, As the Length given, suppose 56, 4, is to the Length of the Standard Pendulum swinging Seconds, viz. 39, 2; so is the Square of the Vibrations of the Standard Pendulum in the given Time, v. gr. a Minute, to the Square of the Vibrations sought: that is, as 56: 4: 39: 2, 3600: 2500.

And the Square Root of 2500, will be 50, the Number of Vibrations sought.

But for Use, here, (as in the former Problem) you need only divide 1411200 by the Length; and it gives the Square of the Vibrations; as there you divided by the Square of the Vibrations, to find the Length.

On these Principles, Mr. Derham has constructed a Table of the Vibrations of Pendulums of different Lengths in the Space of a Minute.

| Pend. length in inches | Vibrat. in a Minute | Pend. length in inches | Vibrat. in a Minute |
|------------------------|---------------------|------------------------|---------------------|
| 1                      | 375.7               | 30                     | 68.6                |
| 2                      | 265.6               | 39.2                   | 68.0                |
| 3                      | 216.9               | 40                     | 59.5                |
| 4                      | 187.8               | 50                     | 53.1                |
| 5                      | 168.0               | 60                     | 48.5                |
| 6                      | 153.3               | 70                     | 44.9                |
| 7                      | 142.0               | 80                     | 42.0                |
| 8                      | 132.8               | 90                     | 39.6                |
| 9                      | 125.2               | 100                    | 37.5                |
| 10                     | 118.8               |                        |                     |
| 20                     | 84.0                |                        |                     |

Note, These Laws, &c. of the Motion of Pendulums, will scarce hold strictly, unless the Thread that sustains the Ball, be void of Weight, and the Gravity of the whole Weight be collected in a Point.

In practice, therefore, a very fine Thread, and a small Ball, but of a very heavy Matter, are to be used. A thick Thread, and a bulky Ball disturb the Motion strangely; for in that Case, the Pendulum, of Simple, becomes compound; it being much the same as if several Weights were applied to the same inflexible Rod in several Places.

The Use of Pendulums in measuring Time in Astronomical Observations, and on other Occasions where a great Degree of Preciseness is requir'd; is too obvious to need a Description. Either the Length of the Pendulum may be adjust'd before its Application, and made to vibrate the desired Time, v. g. Seconds, half Seconds, &c. by Article VI. or it may be taken at Random, and the Times of the Vibrations afterwards determined from Article VIII.

For the Use of the Pendulum in measuring remote inaccessible Distances, &c. by means of Sound, &c. See SOUND.

PENDULUM Clock, a Clock, which derives its Motion from the Vibration of a Pendulum.

'Tis controverted between Galileo and Huygens, which of the two first applied the Pendulum to a Clock; for the Pretensions of each. See CLOCK.

After Huygens had discover'd that the Vibrations made in Arches of a Cycloid, however, unequal they were in extent, were all equal in Time; he soon perceiv'd that a Pendulum applied to a Clock, so as to make it describe Arches of a Cycloid, would rectify the otherwise unavoidable Irregularities of the Motion of the Clock; since, tho' the several Causes of those Irregularities shou'd occasion the Pendulum to make greater or less Vibrations; yet, in virtue of the Cycloid, it wou'd still make 'em perfectly equal; and thus the Motion of the Clock govern'd thereby, wou'd be preserv'd perfectly equable. See CYCLOID.

But the Difficulty was to make the Pendulum describe Arches of a Cycloid; for, naturally, the Pendulum being tied to a fix'd Point, can only describe Arches of Circles about the same.

Here M. Huygens hit on a Secret which all the World is now ter of: The Iron Rod or Wiar which bears the Bob at Bottom, he tied a Top to a Silken Thread, placed between two Cycloidal Cheeks, or two little Arches of a Cycloid, made of Metal. Hence the Motion of Vibration, applying incessantly from one to t'other of those Arches, the Thread, which is extremely flexible, easily assumes the Figure thereof; and by Means hereof tis demonstrated, that the Weight suspended at the other End of the Rod, will describe a just Arch of a Cycloid.

This is doubtless one of the most useful and ingenious Inventions many Ages have produced: By means whereof, we have Clocks which won't err a single Second in several Days.

'Tis true, the Pendulum is liable to its Irregularities; how minute soever they may be; M. de la Hire thinks there is still room to improve it.

The Silk Thread by which it is suspended, he observes shortens in moist Weather, and lengthens in dry; by which means the Length of the whole Pendulum, and consequently the times of the Vibrations are varied.

To obviate this Inconvenience, M. de la Hire, in lieu of a Silk Thread, used a little fine Spring; which was not indeed subject to shorten and lengthen; but which he found grew stiffer in cold Weather, and made its Vibrations faster than in warm.

He had therefore recourse to a stiff Wiar or Rod, Firm from one End to t'other. Indeed, by this means he renounced the Advantages of the Cycloid; but he found, as he says, by Experience, that the Vibrations in Arches of Circles are performed in Times as equal, provided they ben't of too great Extent, as those in Cycloids. But the Experiments of Sir J. Moor and others, have demonstrated of the contrary.

The ordinary Causes of the Irregularities of Pendulums, Mr. Derham ascribes to the Alterations in the Gravity, and Temperature of the Air; which increase and diminish the Weight of the Ball, and by that means make the Vibrations greater and less: An Accession of Weight in the Ball being found by Experiment to accelerate the Motion of the Pendulum.

A Weight of Six Pound added to the Ball, Mr. Derham found, made his Clock gain 13 Seconds every Day.

A general Remedy against these Inconveniences of Pendulums, is to make 'em long, the Bob heavy, and to vibrate but a little way: this is the usual means in England; the Cycloidal Cheeks being generally overlook'd.

To correct the Motion of Pendulum Clocks; the usual Method is to screw and let down the Ball; but a very small Alteration here having a very great Effect; Mr. Derham prefers Huygens's Method, which is to have a small Weight or Bob to slide up and down the Rod above the Ball, which is to be immoveable: tho' he improves on the Method, and recommends having the Ball to screw up and down, to bring the Pendulum near its Gage; and the little Bob to serve for the nicer Corrections, as the Alteration of a Second, &c.

Mr. Huygens orders the Weight of this little Corrector to be equal to that of the Wiar, or 50 of that of the great Ball: He adds a Table of the Alterations, the several shiftings thereof will occasion in the Motion of the Pendulum; Wherein it is observable, that a small Alteration towards the lower End of the Pendulum, makes as great an Alteration in Time, as a greater rising or falling does when higher.

PENDULUM Royal, a Name given among us to a Clock, whose Pendulum swings Seconds, and goes eight Days; shewing the Hour, Minutes, and Seconds. See CLOCK.

The Numbers of such a Piece are thus calculated; first cast up the Seconds in 12 Hours, and you will find them to be 43200 = 12 x 60 x 60. The swing Wheel must be 30 to swing 60 Seconds in one of its Revolutions: Now let  $\frac{1}{2}$  43200 = 21600, be divided by 30, and you will have 720 in the Quotient, which must be broken into Quotients; the first of them must be 12 for the great Wheel which moves round once in 12 Hours. 720 divided by 12, gives 60, which may also be conveniently broken into 8 ) 96 ( 12 two Quotients, as 10 and 6, or 5 and 12, or 8 ) 64 ( 8 and 7  $\frac{1}{2}$ ; which last is most convenient: and 8 ) 60 ( 7  $\frac{1}{2}$  if you take all your Pinnions 8, the Work will stand thus.

According to this Computation, the great Wheel will go about once in 12 Hours, to shew the Hour; the second Wheel once in an Hour, to shew the Minutes; and the swing Wheel once in a Minute, to shew the Seconds. See MOVEMENT and CLOCK-WORK.

PENECILLA, in Pharmacy, a Lozenge, made round by rolling; the same as Turundula; thus call'd from Penecillus a Pencil, which it resembles in shape.

PENECILLUS, among Chirurgeons, is used for a Tent, to be put in Wounds or Ulcers. See TENT.



**PENETRATION**, the Action whereby one Thing enters another, or takes up the same Place. See **PLACE**.

The School-men define *Penetration*, the Co-existence of two or more Bodies; so, as one is present, or has its Extension in the same Place as the other. See **EXISTENCE** and **BODY**. See also **MATTER**, **SOLIDITY**, &c.

In Physicks, the real *Penetration of Bodies* is held absurd, i. e. that two Bodies shou'd be at the Time in the same Place: accordingly *Impenetrability* is laid down as one of the essential Properties of Matter. See **IMPENETRABILITY**.

What we popularly call *Penetration*, only amounts to the Matter of one Body's being admitted into the Vacuity of another. See **VACUITY**, **DIMENSION**.

Such is the *Penetration of Water thro' the Substance of Gold*. See **WATER**, **GOLD**, &c. See also **HARDNESS**.

**PENIDIUM**, in Pharmacy, *Barly-Sugar*; a Preparation of Sugar, made by boiling it up with a Decoction of Barley, till it become Brittle; which done, it is turn'd out upon a Marble, anointed with Oil of Sweet Almonds, kneaded with the Hands like past; and while yet hot, drawn out into Sticks twisted like Cords. See **SUGAR**.

*Penidia* are very good against Colds, to moderate the Acrimonies of the Breat, promote Expectoration, &c.

Dr. *Quincy* uses the term *Penidium*, for a kind of clarified Sugar, with a Mixture of Starch, made up into Bolus's.

**PENINSULA**, in Geography, a Portion, or Extent of Land, joining to the Continent by a narrow Neck, or *Isthmus*; the rest encompassed with Water. See **ISTHMUS**.

Such is *Peloponnesus*, or the *Morea*, *Africa*, &c.

*Peninsula* is the same with *Chersonesus*. See **CHERSONESUS**.

The Word is compounded of the *Latin*, *Pene*, and *Insula*; q. d. almost Island, which the *French* pertinently enough render *presque Isle*.

**PENIS**, in Anatomy, a part of the Body, from its form, call'd also the *Tard*; and by way of Eminence the *Member*, or *virile Member* as being one of the principal Organs of Generation in the Male Kind. See **GENERATION**, and **MALE**.

It is fasten'd to the lower Part of the *Os Pubis*, and the upper Part of the *Ischion*: Its Body consists of the two *Corpora Cavernosa*, the *Corpus Cavernosum Urethrae*, and the *Urethra* it self.

The *Corpora Cavernosa* of the *Penis*, call'd also *Corpora Nervosa* & *Spongiosa*, &c. have two distinct Origins in the *Os Pubis*; whence they proceed, growing both in bulk and thickness, till they meet the *Corpus cavernosum* of the *Urethra*; where they join; leaving an Interstice or Channel for its Passage along 'em; and thus continue their Progress, connected together by a membranous Body call'd the *Septum*, and terminating at length in the Glans. See **CAVERNOSA Corpora Penis**.

The Cavernous Body of the *Urethra*, includes the *Urethra* or Urinary Passage. Its form contrary to that of the other Cavernous Bodies, is largest at the two Extremes, and smallest in the Middle.

That Part included between the two Origins of the Cavernous Bodies of the *Penis*, Mr. *Cowper* calls the *Bulb of the Urethra*: Its other Extremity being dilated, forms the Body call'd the *Glans*. See **URETHRA**, **BULB** and **GLANS**.

The *Penis* receives Arteries from the internal Iliac Branches, and Umbilical Arteries; and these at Length subdividing into innumerable Branches, from the capillary Extremities thereof arise so many Veins; in whose Channels are Apertures corresponding to so many Cells, which communicating with each other, empty 'emselves into larger Venous ducts, running on the superior Surface of the *Penis*; some whereof join the Veins of the Prepuce; others make one large Trunk, call'd *Vena Penis*, which marching on the *Dorsum Penis* to the *Prostate*, there divides and enters the internal Iliac on either Side.

The *Penis* has Nerves from a Trunk composed of a Coalescence of the third of the *Os Sacrum*, and a Branch of the great Crural: These ascending the Cavernous Bodies, expand 'emselves o'er the upper Surface thereof, and are thence distributed to all Parts of the *Penis*.

It has Lymphaducts very numerous on its Surface under the Skin, which discharge 'emselves into the Glandular Inguinales. See **SEED** and **URINE**.

The *Penis* has two pair of Muscles, and an odd one; the odd Muscle is call'd *Accelerator Urinae*: its upper Part, which covers the Bulb, serves to streighten the Veins passing thro' it from the *Corpus Cavernosum* of the *Urethra*, and thus hinders the Reflux of the Blood in Erection; and by repeated Contractions, drives the Blood into the Bulb towards the Glans. Its Elongation serves to compress the Channel of the *Urethra*, and to force out the contain'd Seed or Urine. See **ACCELERATOR URINAE**.

The first pair of Muscles is call'd the *Erectores Penis*. By their Action the *Penis* is sustain'd, and drawn towards the *Pubes*; and by the Assistance of the suspensory Ligament of the *Penis*, this *Vena Penis* is applied to the transverse Ligament of the *Os Pubis*, and the reflux Blood hinder'd from

passing that way; whereby the *Copora Cavernosa* become distended. See **ERECTORES Penis**.

The last pair of Muscles are the *Transversales Penis*, which vary in various Subjects, and are sometimes wanting: Their Use is to dilate that Part of the Cavernous Body of the *Urethra*, to which they are fasten'd. See **TRANSVERSALES Penis**.

The *Penis* has also three Glands, first discover'd by Mr. *Cowper*; these all empty 'emselves into the *Urethra*, and from the Tenacity of the Liquor they sepeare, are call'd the *Mucous Glands*. See **MUCOUS GLANDS**.

The whole Compages of the *Penis* is invested with a Cellulose Membrane, of admirable Texture; which again is cover'd with a firm nervous Coat; and that with a *Cuticula* and *Prepuce*. See **PREPUTIUM**.

It is tyed to the lower Part of the Glans by a Ligament, call'd the *Frænum*. See **FRÆNUM**.

By another Ligament, call'd *Suspensorium*, the *Penis* is held up to the *Os Pubis*. See **LIGAMENTUM suspensorium Penis**.

The Use of the *Penis* is for the Evacuating of the Seed and Urine. See **SEED** and **URINE**.

Indeed, Dr. *Drake*, from a View of its Structure, thinks it originally intended for the former only; and that the Conveyance of the Urine was not consider'd by Nature in the Mechanism of this Part.

He adds another Use, viz. the Incitement to the Propagation of the Species.

In Effect, without such an Instrument, the Seed of the most perfect Animals cou'd not be convey'd to the Place of Prolification: Add to this, that an Alternation of Erection and Flaccidity is absolutely necessary; the first for the performance of its Office, the second for the Security of the Part.

Without an Erection, it were impossible to emit and lodge the Seed where it ought to be; and with a constant one, almost as impossible to secure the Part from Injuries; not to mention the Loss of Instigation, which wou'd be the Consequence of constant Erection. See **SATYRIASIS**, &c.

The Cause of the Erection of the *Penis* is the Blood distending the *Copora Cavernosa*; as is evident from many Experiments; among the rest, from tying the *Penis* of a Dog in *Coitu*, in which nothing is found but Blood. And hence, in the Bodies of Criminals that hang long after death, the *Penis* becomes erected, by the Blood's falling to the inferior Parts, and stopping there.

The Cavernous Body of the *Urethra* is erected by the *Musculi Acceleratores*, embracing the Veins of its Bulb. See **ERECTION**.

**PENITENCE**, *Pœnitentia*, is sometimes used for a State of Repentance, and sometimes for the Act of Repenting. See **REPENTANCE**.

**PENITENCE** is also used for a Discipline or Punishment attending Repentance, more usually call'd *Penance*. See **PENANCE**.

**PENITENCE**, is also the Title of several religious Orders, consisting of converted Debauchees, and reform'd Prostitutes; or of Persons who devote 'emselves to the Office of reclaiming 'em.

Of this latter Kind is the Order of *Penitence* of St. *Magdalen*, establish'd about the Year 1272, by one *Bernard*, a Citizen of *Marseilles*; who devoted himself to the work of converting the Courtezans of that City.

*Bernard* was seconded by several others; who making a kind of Society, were at length erected into a religious Order by Pope *Nicholas III.* under the Rule of St. *Augustin*.

*F. Gesnay* adds, that they also made a religious Order of the *Penitents*, or Women they converted, giving 'em the same Rules and Observances which they themselves kept.

The Congregation of *Penitence of the Magdalen* at *Paris*, owed its Rise to the preaching of *F. Tisseran*, a *Franciscan*; who converted a great Number of Courtezans about the Year 1492.

*Louis*, Duke of *Orleans*, gave 'em his House for a Monastery; or rather, as appears by their Constitutions, *Charles VIII.* gave 'em the Hotel, call'd *Bochaigue*, whence they were removed to St. *George's Chapel* in 1572. By Virtue of a Brief of Pope *Alexander*; *Simon*, Bishop of *Paris*, in 1497, drew 'em up a Body of Statutes, and gave 'em the Rule of St. *Augustin*.

To qualify a Woman for Admission, it was required that she had committed the Sin of the Flesh: None were admitted above 35 Years of Age.

Till the Beginning of the last Century, none but *Penitents* were admitted; but since its Reformation by *Mary II.* in 1616, none have been admitted but Maids; who, however, still retain the ancient Name *Penitents*. See **PENITENTS**.

**PENITENTS**, are certain peculiar Friaries, or Societies of Persons who assemble together for Prayers, make Processions bare footed their Faces cover'd with Linnen, and give 'em selves Discipline.



There are *white Penitents* in Italy, at *Avignon*, and at *Lyons*: There are also *blue Penitents*, and *black Penitents*, which last assist Criminals at their Death, and give 'em Burial.

*Abailon* tells us, that at *Turin* there are a Set of *Penitents* kept in pay, to walk thro' the Streets in Procession, cut their Shoulders with Whips, &c.

*PENITENTS*, or *Converts of the Name of Jesus*, a Congregation of Religious in *Sevil*; consisting of Women, who have led a licentious Life; founded in 1550.

This Monastery is divided into three Quarters: one for professed Religious; another for Novices; a third for those under Correction.

When these last give Signs of a real Repentance, they are removed into the Quarter of the Novices; where, if they don't behave 'emself well, they are remanded to their Correction. They observe the Rule of *St. Augustin*.

*PENITENTS* of *Orvieto*, are an Order of Nuns, instituted by *Anthony Simoncelli*, a Gentleman of *Orvieto*.

The Monastery he built, was at first destined for the Reception of poor Girls, abandoned by their Parents, and in danger of losing their Virtue.

In 1662, it was erected into a Monastery, for the Reception of such as having abandoned 'emself to the Flesh, were willing to take up and consecrate 'emself to God by solemn Vows. Their Rule is that of the *Carmelites*.

These Religious have this in peculiar, that they undergo no Noviciate. All they require is, that they continue a few Months in the Monastery in a secular Habit; after which they are admitted to the Vows.

*PENITENTIAL*, *PENITENTIALE*, an Ecclesiastical Book, retain'd among the *Romanists*; wherein is prescribed what relates to the Imposition of *Penance*, and the Reconciliation of *Penitents*. See *PENANCE* and *PENITENT*.

In the Capitularies of *Charlemain*, the Priests are enjoined to study well their *Penitential*.

There are various *Penitentials*; the *Roman Penitential*; that of *Venerable Bede*; that of *Pope Gregory III*. &c.

*PENITENCIARY*, an Office, or Tribunal in the Court of *Rome*; wherein are examined and deliver'd out the secret Bulls, Graces, or Dispensations relating to Conscience, Confession, &c. See *BULL*, &c.

The Expeditions of the *Penitentiary* are seal'd up with red Wax; and sent close; directed to the Confessors.

*PENNATA Folia*, winged Leaves; amongst *Botanists*, are such Leaves of Plants, as grow directly one against another, on the same Rib, or Stalk as: those of *Ash*, *Walnut Trees*, &c. See *LEAVES*, *PLANT*. &c.

*PENITENTIARY*, is also an Officer, or Dignitary in some Cathedrals, vested with Power from the Bishop to absolve Cases reserv'd to him; on which Account he is call'd the *Bishop's Ear*.

In some Places there is a *Grand Pensionary*, and a *Sub-Penitentiary*. *Anastasi* says, that *Pope Simplicius* chose some among the *Roman Priests* to preside over *Penances*. At present the Pope has his *Grand Penitentiary*; who is a Cardinal, and the Chief of the other *Penitentiary Priests* establish'd in the Patriarchal Churches of *Rome*, who consult him in difficult Cases.

He presides in the *Penitentiary*, dispatches Dispensations, Absolutions, &c. and has under him a Regent, and twenty four Proctors or Advocates of the *sacred Penitentiary*.

*PENNON*, a Standard with a long Tail; antiently belonging to a simple Gentleman; properly us'd as a Guidon to place over a Tent. See *GUIDON*, &c.

It is oppos'd to the *Banner*, which was square; and hence, when any one was to be made a Banneret, the Ceremony consisted in Cutting off the Tail of his *Pennon*, and thus converting it into a *Banner*. See *BANNER*, or *BANNERET*.

The word comes from the *Latin*, *Pannus*, Cloath.

*PENNY*, or *PENY*, in Commerce, an ancient *English* Coin, which had formerly considerable Course; but is now generally dwindled into an imaginary Money, or Money of Account. See *MONEY* and *COIN*.

The ancient *English Penny*, *Penig* or *Pening*, is the first Silver Coin struck in *England*; nay, and the only one Current among our *Saxon* Ancestors, as is agreed by *Cambden*, *Spehman*, *Dr. Hicks*, &c.

Hence, *Peny*, in ancient Statutes, &c. is used for all Silver Money. *Cambden* derives the Word from the *Latin*, *Pecunia*, Money, in the general; and hence the *Ward-Peny*, *Aver-peny*, *Hundred-peny*, *Tithing-peny*, and *Brothel-peny*.

The *Penny* was equal in Weight to our *Three-pence*; five of 'em made one *Shilling*, or *Scilling Saxon*; thirty a *Mark* or *Mancuse*, equal to our 7 s. 6d.. See *MARK*, *MANCUSE* &c.

Till the Time of King *Edward I*. The *Penny* was struck with a Cross so deeply indented in it, that it might be easily broke, and parted, on occasion, into two parts; thence call'd *Half-pennys*; or into four, thence call'd *Fourthings*, or *Farthings*. See *PARTHING*.

But that Prince coin'd it without Indenture; in lieu of which he first struck round *Half-pence* and *Farthings*.

He also reduc'd the Weight of the *Penny* to a Standard; ordering that it should weigh 32 Grains of Wheat, taken out of the Middle of the Ear.

This *Penny* was call'd the *Penny Sterling*. See *STERLING*.

Twenty of these Pence were to weigh an Ounce; whence the *Penny* become a Weight, as well as a Coin. See *PENNY* *Weight*.

The *Penny Sterling*, is now nigh disused as a Coin, and scarce subsists, but as a Money of Account; containing the 12th Part of a Shilling. See *SHILLING*. Or the two hundred and fortieth Part of a Pound. See *POUND*.

The Course of Exchange between *England* and *France*, is settled on the Foot of so many Pence Sterling, for a French Crown of three Livres. See *EXCHANGE*.

The French *PENNY*, or *Denier*, is of two Kinds; the *Paris Penny*, call'd *Denier Paris*; and the *Penny of Tours*, *Denier Tournois*. See *DENIER*.

The Dutch *Penny*, call'd *Pening*, is a real Money, worth about one fifth more than the French *Penny Tournois*.

The *Penin* is also used as a Money of Account, in keeping Books by Pounds, *Florins* and *Patards*; twelve *Penins* make the *Patard*; and twenty *Patards* the *Florin*. See *FLORIN*.

At *Hambourg*, *Nuremberg*, &c. the *Penin of Account*, is put equal to the French *Penny Tournois*. Eight of 'em make the *Kreux*; and 60 the *Florin* of those Cities; and 90 the French Crown, or 4 s. 6d. Sterling.

*PENNY-Weight*, a Troy Weight, containing 24 Grains; each Grain weighing a Grain of Wheat gather'd out of the Middle of the Ear, well dried. See *WEIGHT* and *GRAIN*.

Twenty of these *Penny-weights* make an Ounce Troy. See *OUNCE*.

A *Penny-weight* of Gold Bullion Standard, is worth four Shillings; and of Silver Bullion, Three-pence. See *GOLD* and *SILVER*.

The Name took its rise hence, that this was actually the Weight of one of our ancient Silver Pennies. See *PENNY*.

*PENNY-Post*. See *Penny-Post*.

*PENSA Libra*, in our ancient Customs, a Pound of Money paid by Weight, not by Tale. See *POUND* and *LIBRA*.

*PENSION*, a yearly Appointment, or Sum of Money paid any one for Services, or Considerations already past. See *PENSIONARY*.

That which in the two Temples is call'd a *Parliament*, and *Lincoln's-Inn* a *Council*, is in *Gray's-Inn* termed a *Pension*; that is, an Assembly of the Members of the Society, to consult of the Affairs of the House. See *PARLIAMENT*, &c.

*Pensions*, are also certain annual Payments of each Member to the House, for certain Occasions.

When a *Pension-Writ* is issued, none sued thereby in the Inns of Court, shall be discharged, or permitted to come into Commons, till all Duties be paid.

Hence a *Pension-Order* in the same Inn, is a peremptory Order against such of the Society as are in Arrear for *Pensions*, and other Duties.

*PENSIONARY*, or *PENSIONER*, a Person who has a *Pension*, Appointment, or yearly Sum, payable during Life, by way of Acknowledgement; charg'd on the Estate of a Prince, Company, particular Person, &c.

In the *Romish* Countries, 'tis frequent to have *Pensions on Benefices*: These were antiently granted with a great deal of Ease, under pretence of Infirmities, Poverty, &c. But since the XII. Century, these Pretences were carried so far, that the Incumbents, or Titularies of Benefices were little more than Farmers.

This oblig'd the spiritual Powers to fix the Causes, and the quantities of *Pensions*. *Pensions* are now only creatable by the Pope; and are never to exceed one third of the Revenue; two thirds being still to remain to the Incumbent.

*PENSIONARY*, is also the first Minister of the States of the Province of *Holland*. See *STATES*.

The *Pensionary* is Chairman in Assemblies of the States of that Province; he proposes the Matters to be consulted on, collects the Votes, forms and pronounces the Resolutions of the States, opens Letters, confers with foreign Ministers, &c.

He is charg'd with inspecting the Finances, preserving the Rights of the Province, maintaining the Authority of the States, and seeing to the Observation of Laws, &c. for the good of the State.

He assists in the College of Deputy-Councillors of the Province, who represent the Sovereignty in the Absence of the States; and is perpetual Deputy of the States General of the United Provinces.

His Commission is only given for five Years; after which 'tis deliberated whether or no it shall be renew'd. Indeed, there is no Instance of its having been revoked. Death only puts a Period to the Functions of this important Minister.

Formerly, he was call'd the *Advocate of the Province*: The Title *Pensionary* was only given at the Time *Barnveldt* had the Office.



*Gronovius* calls him in *Latin*, *Adfessor Jurisperitus*; *Merula*, *Advocatus Generalis*; *Mathæus*, Professor at *Leiden*, *Consiliarius Pensionarius*; which is the Quality the States give him in their Instruments.

**PENSIONARY**, is also the first Minister of the Regency of each City, in the Province of *Holland*. See **PROVINCE**.

His Office is to give his Advice in Matters relating to the Government, either of the City in particular, or of the State in General; and in Assemblies of the States of the Province is Speaker in behalf of his City.

Yet, the Functions of these *Pensionaries* is not alike every where: In some Cities they only give their Advice; and are never found in Assemblies of the Magistrates, except when expressly call'd thither: In others they attend constantly; and in others they even make the Propositions on the Part of the Bourguier Masters, draw up their Conclusions, &c.

They are call'd *Pensionaries*, because they receive an Appointment or *Pension*.

**Gentlemen-PENSIONERS**, a Band of Gentlemen, whose Business is to Guard the King's Person in his own House; and who for that End wait in the presence Chamber.

They were first set on Foot by *K. Henry VII.* The Number is Forty; and each obliged to keep three double Horses and a Servant, who is to be arm'd: so that they properly make a Troop of Guards; and have accordingly been muster'd by their own Officers: but this part of Duty, to which they are sworn, the King usually dispenses with.

Their Officers are a Captain, Lieutenant, Standard-bearer, and Clerk of the Cheque.

Their ordinary Arms are guilt Pole-Axes, with which they attend the King to and from the Chapel Royal; receiving him in the Presence Chamber, or coming out of his private Lodging; as also at all great Solemnities. Their *Pension* 100*l.* per Annum.

**PENTACHORD**, an ancient musical Instrument, with five Strings; whence the Name, of *πεντέ*, five, and *χορδή* Chord, String.

The Invention of the *Pentachord* is referr'd to the *Scythians*: The Strings were of Bullocks Leather, and were struck with a *Plectrum* made of Goats Horn.

**PENTACROSTICK**, a Set or Series of Verses so dispos'd, as that there are always found five Acrosticks of the same Name, in five Divisions of each Verse. See **ACROSTIC**.

**PENTAGON**, in Geometry, a Figure with five Sides, and five Angles; whence its Name; from the Greek *πενταγωνος* *Quinquangulus*. See **POLYGON**.

If the five Sides be equal, the Angles are so too; and the Figure is call'd a *regular Pentagon*: As Fig. 47. Tab. Geometry.

Most Cittadels are regular *Pentagons*. See **CITTADEL**.

The most considerable Property of a *Pentagon* is, that one of its Sides, *v. g.* *DE*, is equal in Power to the Sides of a *Hexagon*, and a *Decagon* inscribed in the same Circle *ABCDE*: that is, the Square of the Side *DE* is equal to the Sum of the Squares of the Sides *Da* and *Db*.

*Pappus* has also demonstrated that twelve regular *Pentagons* contain more than twenty Triangles inscribed in the same Circle, Lib. 5. prob. 45.

The *Dodecahedron*, which is the fourth regular Body, consists of twelve *Pentagons*. See **DODECAHEDRON**.

*Projection or Perspective of a PENTAGON*. See **PERSPECTIVE**.

**PENTAGRAPH**, an Instrument whereby Designs, Prints, &c. of any Kind, may be copied in any Proportion; without a Person's being skill'd in drawing. See **DESIGN**, **REDUCTION**, &c.

The Instrument is otherwise call'd a *Parallelogram*. See **PARALLELOGRAM**.

The common *Pentagraph* (represented Tab. *Miscellany* Fig. 6.) consists of four Brasses or Wooden Rulers, two of 'em from 15 to 18 Inches long, the other two half that length. At the Ends, and in the Middle of the longer Rulers, as also at the Ends of the shorter are Holes; upon the exact fixing whereof the Perfection of the Instrument chiefly depends. Those in the Middle of the long Rulers are to be at the same distance from those at the ends of the long ones, and those of the short ones; so that when put together they may always make a *Parallelogram*.

The Instrument is fitted together for use, by several little Pieces, particularly a little Pillar, Fig. 1. having at one End a Screw and Nut, whereby the two long Rulers are joined; and at the other a little Knot for the Instrument to slide on. The Piece 2 is a Rivet with a Screw and Nut, wherewith each short Ruler is fasten'd to the Middle of each long one. The Piece 3 is a Pillar, one End whereof being hollow'd into a Screw, has a Nut to fit it.

At the other End is a Worm to screw into the Table: when the Instrument is to be used, it joins the Ends of the two short Rulers. The Piece 4 is a Pen, Portecration, or Pencil, screw'd into a little Pillar. Lastly, the Piece 5 is a Brass-point, moderately blunt, screw'd likewise into a little Pillar.

## Use of the PENTAGRAPH or Parallelogram.

1. To Copy a Design in the same Scale or Bigness as the Original: Screw the Worm 3 into the Table; lay a Paper under the Pencil 4, and the Design under the Point 5. This done, conducting the Point over the several Lines and Parts of the Design, the Pencil will draw or repeat the same on the Paper.

2. If the Design be to be reduced *E. gr.* into half the Space; the Worm must be placed at the End of the long Ruler 4; and the Paper and Pencil in the Middle. In this Situation conduct the Brass-point over the several Lines of the Design as before; and the Pencil at the same Time will draw its Copy in the Proportion required; the Pencil here only moving half the Lengths that the Point moves.

Hence, on the contrary, if the Design be to be enlarged by one half: The Brass-point, with the Design, must be placed in the Middle, at Fig. 3. the Pencil and Paper at the End of the long Ruler, and the Worm at the other.

3. To enlarge or reduce in other Proportions, there are Holes drill'd at equal Distances on each Ruler, *viz.* all along the short ones, and half way the long ones; in order for placing the Brass Point, Pencil, and Worm in a right Line therein; *i. e.* if the Piece carrying the Point be put in the third Hole, the two other Pieces must be put each in its third Hole.

If then, the Point and Design be placed at any Hole of the great Rulers, and the Pencil with the Paper at any Hole of the short Ruler, which forms the Angle therewith; the Copy will be less than half the Original. On the contrary, if it be placed at one of the Holes of that short Ruler, which is parallel to the long Ruler, the Copy will be greater than half the Original.

The Construction of this Instrument requires a Degree of Accuracy, which most of our Instrument Makers are Strangers to; for which reason there are very few of the Instruments that succeed. Few will do any Thing tolerably but straight Lines; and many of 'em not those.

**PENTAMETER**, in Poetry, a kind of Verse, consisting of five Feet. See **VERSE** and **FOOT**.

The two first Feet of a *Pentameter*, may be either *Dactyls*, or *Spondees*; the third always a *Spondee*; and the two last *Anapests*.

It is usually join'd to *Hexameters*, in *Elegies*, *Epistles*, *Epigrams*, and other little Pieces. There is no work of *Pentameters* alone. See **HEXAMETER**.

The Word is form'd from the *πενταμετρον*, *q. d.* five Measures.

**PENTAPETALOUS Plants**, are such whose Flower consists of five Leaves. See **PLANT**.

**PENTAPOLIS**, in Geography, &c. a Country wherein are five Cities.

The Name has been given to several Countries, particularly the Valley wherein stood the five infamous Cities destroy'd by the Shower of Fire and Brimstone, in the Time of *Abraham*.

'Tis commonly supposed, this Country was the Place where now stands the Lake *Asphaltites*, or dead Sea: *Sanson* places it in the Neighbourhood of this Lake, but without any Proof. *D'Herbelot* calls this the *Pentapolis of the Sodomites*.

The *Pentapolis of Egypt* was in the *Cyrenaica*, on the Sea of *Libya*; its five Cities were *Berenice*, *Arsinoc*, *Ptoemais*, *Cyrene*, and *Apollonia*.

Among the ancient Geographers and Historians, we likewise read of the *Pentapolis of Libya*, now call'd *Mesrata*; The *Pentapolis of Italy*; and the *Pentapolis of Asia Minor*.

**PENTAPTOTON**, in Grammar, a Noun which has only five Cases. See *Aprore* and **CASE**.

**PENTASTICH**, in Poetry, a Stanza, or Division of a Poem, consisting of five Verses. See **STANZA**.

**PENTASTYLE**, in Architecture, a Work wherein are five Rows of Columns.

Such was the *Portico* begun by the Emperor *Gallian*, and which was to have been continued from the *Flaminian Gate* to the Bridge *Milvius*, *i. e.* from the *Porto del Popolo*, to the *Ponte-mole*.

**PENTATEUCH**, in the sacred Learning, the five Books of *Moses*, at the Head of the Old Testament; *viz.* *Genesis*, *Exodus*, *Leviticus*, *Numbers*, and *Deuteronomy*. See **BIBLE**.

The Word is form'd from the Greek *πεντατευχη*. *Pere Simon*, in his *Hist. Crit. du V. Test.* produces a good Number of Passages to prove that *Moses* was not wholly the Author of the *Pentateuch*, as we now have it. Indeed, those apparent Interpolations at the End, are sufficient to determine the Point; it being absurd to suppose *Moses* the Author of the Account of his own Death and Burial, and of the Comparison between him and the succeeding Prophets in *Israel*. These interpolated Passages are usually attributed to *Esdra*; who, on his Return from the *Babylonish Captivity*, is sup-



supposed to have publish'd the Old Testament, or at least a Part of it corrected and enlarg'd. See CANON.

There are two famous *Pentateuchs*, or Editions of the *Pentateuch*, which have a long Time disputed the Preference, both as to Antiquity, and as to Character, viz. that of the *Jews*, call'd the *Jewish* or *Hebrew Pentateuch*, wrote in the *Chaldean* or *Assyrian* Characters; and that of the *Samaritans* wrote in the *Samaritan* or *Phœnician* Character.

Each is maintain'd to be the ancient *Hebrew*; tho' the Generality of the Critics give it in behalf of the latter. See *HEBREW*.

Indeed, as to the Point of *Matter*, they are generally pretty conformable to each other; each has all the interpolated Passages above-mention'd, tho' the *Samaritan* has one or two more, not in the *Hebrew*. The first a Passage in *Deut.* 27. 4 where an Altar is enjoin'd to be built, and Sacrifices to be offer'd at Mount *Ebal*, or rather Mount *Gerizzim*, which Passage was doubtless foisted in to countenance the *Samaritan* Worship, and represent it of equal Antiquity with that of the Temple of *Jerusalem*. See *SAMARITANS*.

Indeed, Mr. *Whiston* declares he sees no Reason to accuse the *Samaritan* of Corruption, in these Points, but rather the *Jewish*; and earnestly concludes that the Former is an uncorrupted Copy of the Books of *Moses*, originally derived from the first Separation of the ten Tribes 'emselves, in the Days of *Jeroboam*; the contrary whereof is apparent from the mere confessed Interpolations ascribed to *Ezdras*, who lived several hundred Years after the time of *Jeroboam*.

But the grand Difference is in the Character: The *Jewish* being in the *Chaldean* or *Assyrian* Character, and the *Samaritan* in the *Phœnician*, i. e. the *Canaanitish* Character; this latter seems to have an Advantage over the vulgar *Jewish Pentateuch*; yet is *Prideaux* of Opinion, the Latter is only a Transcript from the Former, out of the *Chaldean* into the old *Hebrew* Character. One great Reason he gives, is, that there are many Variations in the *Samaritan*, manifestly occasioned by mistaking the similar Letters in the *Hebrew* Alphabet; which Letters having no Similitude in the *Samaritan* Character, 'tis evident the Variations must have arisen in transcribing from the vulgar *Hebrew* into the *Samaritan*; not the contrary way.

Add to this, that *Simzon*, *Allix*, and many other learned Men take the *Chaldean* or *Assyrian* Character to have been the Character always in use among the *Jews*; and the *Samaritan* or *Canaanitish*, or as it is also call'd the old *Hebrew* Character, to have never been used by the *Jews* before the Captivity, in any manner, either in Books or on Medals. See *CHARACTER*.

Hence the *Pentateuch* must have been transcribed into that Character; and that, probably, to render it legible to the Inhabitants of *Samaria*, who upon the first Introduction of the *Pentateuch* might probably be versed in no other Character.

*Usher* takes the *Samaritan Pentateuch* to have been compiled by *Dositheus* a *Samaritan*, mention'd by *Origen* to have adulterated the *Pentateuch*, *Du-pin* supposes it the Work of some modern *Samaritan*, whom he imagines to have compiled it chiefly out of the different Copies of the *Palestinian* and *Babylonian* *Jews*, and the *Septuagint*; because it sometimes agrees with one, and sometimes with another.

*PENTATHLON*, in Antiquity, the five Exercises performed in the *Grecian* Games, and for which Prizes were proposed. See *EXERCISES*, *GAME*, &c.

These Exercises were Wrestling, Boxing, Leaping, Running and Quoit-playing.

He who bore away the Prize in 'em all, was call'd *Pentathlus*; by the *Latins*, *Quincurtio*; as the five Exercises themselves were by those latter People call'd *Quinquertium*.

*PENTATONON*, in the ancient Music, a Concord, by us call'd the greater Sixth. See *SIXTH*.

It consists of four Tones, and a major and minor Semitone; whence the Name *Pentatonon*, q. d. five Tones.

*PENTECOST*, *Whitsuntide*, a solemn Feast of the Church, held in Commemoration of the Descent of the Holy Ghost on the Apostles; as described in the *Acts*. See *FEAST*.

It has its Name from the *Greek* *πενήκωστος*, *Quinquagesimus* 50th, because held on the fiftieth Day after Easter. See *EASTER*.

In the ancient Church, *Pentecost* finish'd the Paschal Time, or Easter-Season; wherein, as *Tertullian*, *St. Jerom*, &c. observe, *Hallelujah* was sung every where, the Office celebrated standing, no Fasting allowed, &c.

The *Jews* likewise had a Feast, they call'd *Pentecost*, or *Quinquagesimus*; solemnized in Memory of the Laws being given to *Moses* 50 Days after their Departure out of *Egypt*.

*PENTECOSTALS*, antiently, were pious Oblations made at the Feast of *Pentecost*, by the Parishioners, to their Parish Priest; and sometimes by inferior Churches or Parishes, to the principal Mother Church. See *OBLATION*.

These Parish *Pentecostals* were also call'd *Whiston-Farthings*; and their Sum was divided into four Parts, of which one went to the Priest, one to the Poor, one towards the Re-

pair of the Parish Church, and one to the Bishop. See *WHISTON-FARTHING*.

*PENTECONTORE*, a Vessel with fifty Oars.

*PENTESYRINGUS*, in Antiquity, a Sort of Pillory, with five Holes; wherein were fastened the Legs, Arms, and Heads of Criminals, to prevent their stirring.

*PENTHEMIMERIS*, in the *Greek* and *Latin* Poetry, part of a Verse consisting of two Feet, and a long Syllable.

The Word is *Greek* *πενθήμερος*.

*PENULTIMA*, or *PENULTIMATE*, in Grammar, &c. a Syllable, or Foot, immediately before the last.

Hence *Antepenultimate* is that before the *Penultimate*, or the last but two.

The Word is form'd from the *Latin*, *Pene* & *ultimus*, almost last.

*PENULTIMATE*, in Music. *M. Brossard* will have it the same with what the *Greeks* call'd *Paranete*; tho' others won't allow the *Paranete* to be the *Penultimate* Chord, but the next thereto.

The *Penultimate* of the separate, *Paranete Diezeugmenon*, is a Name the Ancients gave to one of the Chords of their Lyre or System; corresponding to the *D, la, re*, of the third Octave of the modern System.

*Penultimate* of the *Acute*, Or *paranete Hyperboleon*, a Chord of the ancient System, answering to the *G, re, sol*, of the third Octave of the modern System.

*PENUMBRA*, in Astronomy, a faint or partial Shade, observ'd between the perfect Shadow and the full Light, in an Eclipse. See *SHADOW*.

The *Penumbra* arises from the Magnitude of the Sun's Body: were he only a luminous Point, the Shadow wou'd be all perfect; but by reason of the Diameter of the Sun, it happens that a Place which is not illuminated by the whole Body of the Sun, does yet receive Rays from a Part thereof.

Thus suppose *S* the Sun (*Tab* Astronomy Fig. 47.) and *T* the Moon, and the Shadow of the latter to be projected on a Plane as *G H*. The true proper Shadow of *T*, viz. *G H*, will be incompass'd with an imperfect Shadow or *Penumbra H L* and *G E*, each Portion whereof is illuminated by an entire Hemisphere of the Sun.

The Degree of Light or Shadow of the *Penumbra* will be different in different Parts, as those Parts lye open to the Rays of a greater or lesser Part of the Sun's Body: Thus from *L* to *H*, and from *E* to *G* the Light continually diminishes; and in the Confines of *G* and *H*, the *Penumbra* becomes lost and confounded with the total Shade; as, near *E* and *L*, it is confounded with the total Light.

The *Penumbra* must be found in all Eclipses, whether of the Sun, the Moon, or the other Planets, primary, or secondary; but it is most considerable with us in Eclipses of the Sun; as in the Case here refer'd to.

In Eclipses of the Moon, the Earth is incompass'd indeed with a *Penumbra*; but 'tis only sensible to us on the Earth near the total Shadow: An Observer placed on a Plane, whereon the Shadow falls, might observe the whole *Penumbra*, as in Eclipses of the Sun. Thus an Eye placed at *I* or *F*, will only see the Semi-diameter of the Sun; the rest being hid behind the Moon. Going from *I* towards *H*, the more and more of the Sun is hid, till it be lost in the Shadow itself, &c.

Hence we have Eclipses of the Sun when the Shadow never touches the Earth, provided the *Penumbra* doth but reach it; and hence there is a Difference observ'd in Eclipses of the Sun, as the Shadow itself, or a greater or less Degree of the *Penumbra*, passes over a Place. See *SUN*.

But Eclipses of the Moon appear the same in all Places where they are visible. See *MOON*.

When the Shadow itself falls on the Earth, the Eclipse is said to be *Total* or *Central*; when only the *Penumbra* falls on it, the Eclipse is said to be *partial*. See *ECLIPSE*.

The *Penumbra* extends infinitely in length, inasmuch as to each point of the Diameter of the Sun, there answers a space infinite in length into which no Rays enter from that Point, tho' there do from others. Two Rays drawn from the two Extremities of the Earth's Diameter, and which proceed still diverging, make the two Edges of the *Penumbra*; which, of Consequence, is continually growing in Width, and is infinite, also in this Sense.

All that infinite Space is the *Penumbra*, except the Triangle of the Shadow included in it.

The Figure of this Space comprehending the Shadow, is a Trapezium, one of whose Sides is the Diameter of the Earth; the opposite Side parallel thereto is an infinite Line, i. e. the Width of the *Penumbra* projected to infinity; and the two other Sides the two Rays drawn from the two Extremities of the Diameter of the Sun, by those of the Diameter of the Earth, and which prolong'd back beyond the Sun, will intersect in a certain Point, making an Angle equal to the apparent Diameter of the Sun; which Angle may be call'd the *Angle of the Penumbra*.

Now the *Penumbra* will be the greater as this Angle, or, which is the same Thing, as the Star is greater, the Planet remaining



maintaining the same: And if the Diameter of the Planet be increas'd, the Star remaining the same, 'twill be the same as if the Diameter still receded from the Angle of the *Penumbra*.

*M. de le Hire* examines the different Degrees of the *Penumbra*, and represents 'em Geometrically by the Ordinates of a Curve, which shall be among 'emselfes, as the different Parts of the Sun's Disk, wherewith a Body placed in the *Penumbra* is enlighten'd.

**PEPPER**, an Aromatic Fruit, or Grain of a hot, dry Quality; chiefly used in the seasoning of Meats. See **SPICE**.

It is the Product of a Shrub growing in several Parts of the *East-Indies*, chiefly *Java*, *Sumatra*, *Malacca*, and the Coasts of *Malabar*. The Plant is very weak and of the reptile Kind, and for that Reason usually planted at the Foot of the larger Trees, as the *Areca*, *Cocoa*, &c.

The *Pepper* grows in Grapes or Clusters; at first green, as they ripen they grow red; and at last, after being exposed a While to the Sun, become black, in the Condition we see 'em.

The Fruit is gather'd in *November*. It must be chosen large, well fed, not wrinkled, without Dust, with a good many white Grains in it; and Care be taken the largest Grains han't been pick'd out to make white *Pepper*.

*White PEPPER* is the Fruit of the same Plant with the Black, and is prepared from it by moistening it with Sea-Water, and then exposing it to the Sun, and casting away the outer Bark, which abandoning the Grain, leaves it white.

Indeed, *M. Delion*, a late Traveller, says, they strip off the Skin, by beating it before it be quite dry; or by soaking it in Water after it has dried, and then bearing it.

Many Authors, and among the rest *Pomet*, will have the white *Pepper* to be natural, and the Fruit of a different Plant from the Black; but *M. Delion*, who expressly declares the contrary from his own long Experience, seems to put the Matter past doubt.

*White Pepper* must be chosen after the same manner as black; with this further Care, that it han't been whiten'd.

*Pepper* that is sold ground, is very apt to be sophisticated; the Black with burnt Crust of Bread, &c. the White with beaten Rice.

*Long PEPPER* is a kind of *Pepper* denominated from its form, which in Length and Thickness equals a Child's Finger; it consists of an assemblage of Grains join'd close to one another, of a brownish Colour, bordering without on red, and within on black; and grows by a long Pedicle to a Plant, like that of the black *Pepper*, but lower, and its Leaves smaller and greener.

Its Taste resembles that of the former, but less sharp.

There are three kinds of this *Pepper*, that of the *East-Indies*, that of *America*, and that of *Ethiopia*, call'd also Grain of *Zeilon*: Tho' the first alone is the proper long *Pepper*, the rest resembling it but little.

It must be chosen new, large, heavy, well fed, hard to break, without Dust or Mixture; its chief Use is in Medicine, where it enters several Galenical Compositions, among the rest *Treacle*.

*Guinea PEPPER*, is a red *Pepper*, of a Coral Colour, much esteem'd by the *Americans*, from among whom 'tis brought, and by them call'd *Chile*, by the *Spaniards* *Pimenta*, and the *French*, *Garden Coral*.

'Tis now cultivated pretty commonly in *France*, especially in *Languedoc*; used in making Vinegar, and likewise confected with Sugar. It must be chosen new, in large Pods, dry, entire, and red.

There are four Kinds, the first call'd by the *Americans* *Chilchotes*; the second very small Chilterpin, both of a very pungent Taste; the third *Tonalchiles*, moderately hot, and eaten by the Natives like other Fruit with Bread; the fourth *Chilpelagua*, moderately pungent, much used by the *Spaniards* in the Preparation of Chocolate; there is also a fifth Kind call'd *Agy*, growing in *Peru*.

*Jamaica PEPPER*, call'd by the *Dutch* *Amomi*, is the Fruit of the Tree that yields the *Indian Wood*, growing plentifully in *Jamaica* and other *American* Islands.

It is a real Aromatic, and may supply the Defect both of Cloves, Nutmeg, and Cinnamon; the *French* call it the *round Clove*, from its Taste resembling that Spice.

**PERACUTUM Menstruum**. See **MENSTRUUM**.

**PENY**. See **PENNY**.

**PEPASMUS**, in Medicine, the digesting and ripening of morbid Humours. See **MATURATION**, **DIGESTION**.

The Word is *Greek* *πεπασμος*.

**PEPASTIC**, or **PEPTIC**, in Medicine, a kind of Medicament, of the Consistence of an Emplaster; proper to bring vicious and corrupt Humours to a Head, and dispose 'em for Suppuration. See **RIPENER** and **DIGESTIVE**.

Butter, Roots of Mallows, of Flowers-de-lis, Onions and Leaves of *Oxylapathum* are esteem'd good *Pepasticks*, or *Maturatives*.

The Word is form'd from the *Greek* *πεπασιν* to digest or ripen.

**PEPIA**, popularly **PEP** or **PIP**, a Disease of Fowls; consisting in a little white dry Pellicle, arising on the Tongue, from their having thirsted much.

Among Falconers, the *Pepia* is a Disease arising in the Tongues of their Birds, from eating Salt and stinking Flesh.

**PEPSIS**, in Medicine, the Coction, or digesting of Foods, or Humours in the Body. See **COCTION** and **DIGESTION**.

The Word is *Greek*, *πέψις*, boiling.

**PEPTIC**, in Medicine. See **PEPASTIC**.

**PEPUZIAN**, a Sect of ancient Hereticks, otherwise call'd *Phrygians*, or *Cataphrygians*.

They had their Name *Pepuzians* from a Pretence that *J. C.* appear'd to one of their Prophetesses in the City *Pepusa* in *Phrygia*, which was their holy City. See **QUINTILIANS**.

**PER** *Descensum*, by *Descent*, in Chymistry, a particular manner of Distillation. See **DESCENT**.

**PER** *Deliquium*. See **DELIQUIUM**.

Salt of Tartar, dissolved by the coldness or moisture of the Air, is call'd Oil of Tartar *per Deliquium*, &c. See **TARTAR**.

**PER** *Arfin*, **PER** *Thefin*. Terms in Music. *Per* is a Latin Preposition, signifying *by*, *during*; *Arfin* and *Thefin* are Greek Words, the first whereof signifies *Elevation*; the second *Position*.

*Per Thefin*, signifies *in beating* or during the first time of the Measure; *Per Arfin*, *in rising*, or in the last Time of the Measure.

A Song, Counter-point, Fugue, &c. are said to be *per Thefin*, when the Notes descend from the Acute to the Grave; and on the contrary, that they are *per Arfin*, when the Notes ascend from Grave to Acute.

**PERAMBULATION** of the Forest, the Surveying or Walking about the Forest, or the Limits of it, by Justices or other Officers thereto appointed, to set down the Metes and Bounds thereof, and what is within the Forest, and what without. See **PURLIEU** and **FOREST**.

**PERAMBULATIONE facienda**, is a Writ comanding the Sheriffs to make *Perambulation*, and set down the Bounds of two or more Manours, whose Limits are not so well known.

**PERAMBULATOR**, in Surveying, an Instrument for the measuring of Distances, call'd also *Pedometer*, *Way-wiser*, and *Surveying Wheel*. See **PEDOMETER** and **SURVEYING-WHEEL**.

Its Advantages are its Handiness, and Expedition; its contrivance is such, as that it may be fitted to the Wheel of a Coach; in which it preforms its Office, and measures the Road without any Trouble at all.

There is some Difference in its make: That now most usual, as most Convenient, is as follows.

#### *Construction of the PERAMBULATOR or Way-wiser.*

The *Perambulator* (represented Tab. Surveying Fig. 23.) consists of a Wheel 2 Foot 7 Inches and an half in Diameter; consequently half a Pole, or eight Foot and 3 Inches in Circumference. On one End of the Axis is a Nut; of an Inch in Diameter, divided into 8 Teeth, which upon moving the Wheel round, fall into the 8 Teeth of another Nut *a*, fix'd on one End of an Iron Rod *Q*, and thus turn the Rod once round, in the Time the Wheel makes one Revolution. This Rod lying along a Groove in the Side of the Carriage of the Instrument, has at its other End a square Hole, into which fits the End *e* of the little Cylinder *P*. This Cylinder is disposed under the Dial-plate of a Movement, at the End of the Carriage *B*, in such manner as to be moveable about its Axis. Its End *a* is cut into a perpetual Screw, which falling into the 32 Teeth of a Wheel perpendicular thereto; upon driving the Instrument forward, that Wheel makes a Revolution, each 16 Pole. On the Axis of this Wheel is a Pinion with six Teeth, which falling into the Teeth of another Wheel of 60 Teeth, carries it round every 160th Pole, or half Mile.

This last Wheel then carrying a Hand or Index round with it, over the Divisions of the Dial-plate whose outer Limb is divided into 160 Parts, corresponding to the 160 Poles; points out the Numbers of Poles pass'd over.

Again, on the Axis of this last Wheel, is a Pinion containing 20 Teeth, which falling into the Teeth of a third Wheel that has 40 Teeth, drives it once round in 320 Poles, or a Mile. On the Axis of this Wheel is a Pinion of 12 Teeth, which falling into the Teeth of a fourth Wheel that has 72 Teeth, drives it once round in 12 Miles.

This fourth Wheel carrying another Index, over the inner Limb of the Dial-plate, divided into 12, for Miles, and each Mile subdivided into Halves, Quarters, and Furlongs, serves to Register the Revolutions of the other Hand, and to keep Account of the half Miles and Miles pass'd over as far as 12 Miles.

#### *Use of the PERAMBULATOR or Way-wiser.*

The Application of this Instrument is obvious from its Construction. Its proper Office is in the Surveying of Roads, and



and large Distances, where a great deal of Expedition, and not over much Accuracy is required. 'Tis evident the driving it along, and observing the Hands; has the same Effect as dragging the Chain, and taking account of the Chains and Links. See therefore the Article CHAIN.

**PERCEPTION**, in Philosophy, a simple Comprehension; or that simple Idea of a Thing, which we conceive without making any Affirmation or Negation. See IDEA.

If that Idea exhibit any Image to the Mind, it is call'd Imagination; if it exhibit none, it retains the general Name of Perception. See IMAGINATION.

Thus when we hear the Word *Tree*; the Idea we then form in the Mind, is call'd an *Imagination*. But when we hear of a Thing, whereof no Image can be framed as of *doubting*, the Idea we then have is a mere *Perception*. See SENSATION.

It may be observ'd, that the Idea's we receive by *Perception*, are often alter'd by the Judgement, without our taking notice of it; thus a Globe being set before our Eyes, the Idea thereby imprinted, is a flat Circle, variously shadow'd: But being accustom'd to perceive what kind of Appearances convex Bodies are wont to make in us; the Judgement alters the Appearances into their Causes; and from that Variety of Shadow or Colour frames to itself the *Perception* of a convex Figure of one uniform Colour. See JUDGEMENT.

This in many Cases, by a settled Habit, is perform'd so readily, that we take that for the *Perception* of our Sensation, which is but an Idea form'd by the Judgement; so that one serves only to excite the other, and is scarce taken notice of itself: as a Man who reads or hears with Attention, takes little notice of the Characters or Sounds; but of the Idea's which are excited in him thereby.

The Faculty of *Perception*, seems to be that which puts the Distinction between the animate and inanimate Parts of the Creation. *Vegetables*, some of them, have some degree of Motion, and upon different Application of other Bodies, alter their Figures and Motions; and have hence obtained the Name of *sensitive Plants*: Which, however, is the Result of mere Mechanism, and no otherwise produced, than the shortening of a Rope by the Affusion of Water. But *Perception* is a Metaphysical Principle, and found in some Degree in all Animals; and in them alone.

**PER MINIMA**, in Pharmacy, an intimate and perfect Mixture of natural Bodies; wherein their very *Minima*, i. e. their Atoms, or first component Particles are supposed to be accurately blended together. See MIXTURE.

If Silver and Lead be melted together, they will mingle together *Per minima*.

**PER-SE**, in Chymistry. When a Body is distill'd singly, and without the usual addition of any other Matter to raise it; it is said to be *distill'd Per-se*. See DISTILLATION.

The genuine Spirits of Harts-horn, are those rais'd *Per-se*, in opposition to those distill'd by the addition of Chalk.

**PER-SE**, in Logic. A Thing is said to be considered *Per-se*, when it is taken in the Abstract. See ABSTRACT.

**PERCH**, Pole or Rod, a long Measure, much used in surveying and measuring of Land. See MEASURE.

Among the old Romans, and still among Geometricians, the *Pertica*, *Perch*, is ten foot; and they otherwise call it the *Catena*, *fums*, and *Decempeda*. See DECEMPEDA.

In England, the Statute *Perch* contains 16 Foot and  $\frac{1}{2}$ , and for Coppice-woods, &c. 18 Foot: 40 square Perches make a Rood, and 160 an Acre. See ROOD and ACRE.

The Customary *Perch* is various in various Counties: In Staffordshire 'tis 24 Foot; in the Forest of Sherwood 21, the Foot there being 8 Inches, the Measure whereof was mark'd on the Chancel Wall of Edonstow, and in the Church of St. Mary in Nottingham. See FOOT.

In Herefordshire, a *Perch* of walling is 16 Foot; a *Perch* of Ditching 21 Foot, &c.

In France, the *Perch* is from 18 to 23, and even 27 of their Feet.

**PERCHANT**, among Fowlers a Decoy-bird, which the Fowler has fasten'd by the Foot, and which flutters about the Place where 'tis tied, to draw other Birds to it, and give the Fowler an Occasion of catching 'em.

**PERCOLATION**, in Medicine, &c. the Action of Filtering. See FILTRATION.

**PERCUSSION**, in Physicks, the Impression a Body makes in falling or striking upon another; or the Shock or Collision of two Bodies, which concurring, alter each others Motion. See MOTION and COLLISION.

*Percussion* is either direct or oblique.

*Direct Percussion*, is where the Impulse is given in the Direction of a right Line perpendicular to the point of Contact.

In Spheres, therefore, the *Percussion* is *direct*, when the Line of Direction passes thro' both their Centres. See DIRECT.

*Oblique Percussion*, is where the Impulse is given in the Direction of a Line *Oblique* to the Point of Contact. See OBLIQUE.

*Doctrine of PERCUSSION, or the Laws of Motion, resulting from the PERCUSSION of Bodies.*

In Bodies either perfectly hard, or perfectly soft, and so void of all Elasticity; the Laws of *Percussion* are easily determin'd: but since, even the hardest Bodies have their share of Elasticity; and in Elastic Bodies, the Laws are very different, and much more intricate; having been first ascertain'd in the Philosoph. Transact. by Sir Ch. Wren, Dr. Wallis, and Mr. Huygens; we shall lay down each a-part.

*Laws of PERCUSSION in Bodies not Elastic.*

I. If a Body in Motion as *A*, (Tab. Mechanicks Fig. 40.) strike directly against another at rest *B*: the first will lose just as much of its Motion as it communicates to the 2d; so that the two will proceed thence with an equal Velocity, as if collected into one Mass.

If *A* therefore be triple of *B*, it will lose one fourth of its Motion; so, that if before, it moved thro' a Line of 24 Foot in a Minute, it will now only move 18.

II. If a moving Body, *A*, strike against another already in Motion, *B*; the first will increase the Velocity of the latter; but will lose less of its own Motion than if the latter had been at rest: Since all here requir'd, is that some Degrees of Motion be added to those it already has, to make 'em both proceed with an equal Velocity.

Suppose *E. gr.* the Body *A* with 12 Degrees of Motion, to strike against the other *B*, less by half, and at rest: The first will transfer 4 Degrees of its Motion to the latter, and retain 8 to itself: But if it strike with 12 Degrees of Motion on the other already moving with three Degrees, it will communicate two Degrees; for *A* being double of *B*, this need only half the Motion to make it proceed with the same Velocity.

III. If a moving Body *A*, strike on another *B*, either at rest, or moving more slowly, and either in the same Direction, or in a contrary one; the Sum of the Momenta, if the Bodies move in the same Direction; or their Difference, if they move in a contrary one, will be the same after the *Percussion* as before.

IV. If two equal Bodies *A* and *B* meet each other with equal Velocities; after the Congress, they well both remain at rest.

V. If a Body *A*, strike directly on another at rest *B*, its Celerity after the Stroke, is to its Celerity before it; as the Weight *A* is to the Sum of the Weights *A* and *B*: if therefore the Weights were equal, the Celerity after the Shock will be half of that before it.

VI. If a Body in Motion, *A* strike directly on another moving more slowly, but in the same Direction; the Velocity after the Shock, will be equal to the Sum of the Momenta, divided by the Sum of the Weights.

VII. If two equal Bodies moving with different Velocities, strike directly against each other; after the Conflict, they will proceed with the Semi-difference of the Velocities, wherewith they were moved before it.

VIII. If two Bodies *A* and *B* meet directly with Velocities that are reciprocally as their Weights; after the Conflict, they will both remain at rest.

IX. If two Bodies *A* and *B* meet directly with the same Velocity, the Celerity after the Impulse will be to that before it, as the Difference of the Weights to their Sum.

X. If two Bodies meet directly with any Velocity whatever, the Celerity after the Stroke will be equal to the Semi-difference of the Momenta, divided by the Sum of the Weights.

To determine the Momentum lost by the Conflict: multiply the Celerity which the Body had before the Conflict, into its Mass: Thus have you the Momentum before the Conflict. In like manner, multiply the Celerity after the Conflict into the Mass: Thus have you the Momentum after the Conflict. The latter Moment therefore being subtracted from the former Leaves the Loss. Hence may the Magnitudes of the Strokes be estimated.

XI. A direct or perpendicular Stroke is to an Oblique one; as the whole Sine is to the Sine of the Angle of Incidence.

*Laws of PERCUSSION in Elastic Bodies.*

In Bodies perfectly Elastic, the Force of Elasticity is equal to the force wherewith they are compress'd, i. e. the Collision of two such Bodies on each other, is equivalent to the Motion which either of 'em wou'd acquire, or lose, by mere simple Impulse. This Force exerting itself contrary ways; a Motion equivalent thereto must be subtracted from the Motion in the impelling Body, and added to that in the Body impell'd by mere Impulse, to find their Velocities after *Percussion*. See ELASTICITY.

XII. If



XII. If a Body strike directly on an immoveable Obstacle, either one, or both of 'em being Elastic; the Body will be reflected with the same Velocity wherewith it struck, and in the same Line.

For if the Elasticity were away, the whole force of the Body wou'd be spent in breaking the Obstacle, and its Motion wou'd be stopp'd: The whole Force therefore is spent in compressing the Elastic Body; by which means it acquires an Elastic Force equal thereto: since then, the Elasticity, when the compressing Force is spent, reduces the Body into its former state; it repels the other with the same Force wherewith it struck; consequently it will rebound with the same Velocity. And because an Elastic Body restores itself in the same Direction wherein it was compress'd; (there being no reason why it shou'd change its Direction) the Body will rebound in the same right Line.

XIII. If an Elastic Body strike obliquely on an immoveable Obstacle, it will rebound in such manner as to make the Angle of Reflexion equal to the Angle of Incidence. See REFLEXION.

XIV. If an Elastic Body *A*, strike directly against another at rest *B*; after *Percussion*, *A* will remain at rest, and *B* proceed with the same Velocity which *A* had before the Shock, and in the same Direction.

For if the Bodies were not Elastic, each wou'd proceed after the Stroke in the same Direction, and with half the Velocity; but since the Elastic Force acts in the same Direction wherein the Compression is made, and is equal to the compressing Force; it repels *A* with half its Velocity, and therefore stops its Motion; but it drives *B* further, with half its Velocity, and therefore accelerates its Motion. 'Tis therefore carried after the Shock with the whole Celerity wherewith *A* was carried before it, and *A* remains at rest.

Hence, since *A* (Tab Mechanicks Fig. 41.) transfers all its force to *B*; *B* in like manner will transfer it to *C*; *C* again to *D*, and *D* to *E*. Wherefore, if there be several equal Elastic Bodies, mutually touching each other; and *A* be struck against *B*; all the intermediate ones remaining at rest, the last alone, *E* will be mov'd; and that with the Velocity wherewith *A* struck against *B*.

XV. If two equal Elastic Bodies *A* and *B* meet directly, and with equal Velocity; each will rebound with the same Velocity wherewith it struck, and in the same Direction.

For setting aside the Elasticity, both wou'd remain at rest: Their whole Force therefore is spent in the Compression; but their Elastic Force whereby they rebound in the former Direction, is equal thereto: This Force therefore acting equally on each Body *A* and *B* will produce the same Celerity in each; and that, equal to the former. So that they will rebound with the Celerity wherewith they struck.

XVI. If two equal Elastic Bodies *A* and *B* strike directly against each other with unequal Velocities; after the Shock they will rebound with interchanged Velocities.

For suppose the Bodies to concur with the Velocities  $C + c$  and  $C$ : If they meet with the same Velocity  $C$ ; after the Shock, they wou'd both move with the Velocity  $C$ . If *B* were at rest, and *A* shou'd strike upon it with the Celerity  $c$ ; after the Shock, *A* wou'd remain at rest, and *B* be mov'd with the Celerity  $c$ . Therefore the Excess of Celerity  $c$ , wherewith *A* is carried, is transferr'd wholly by the Conflict to *B*: *A* therefore is mov'd with the Celerity  $C$ , and *B* with the Celerity  $C + c$ .

Hence, after *Percussion*, they recede from each other with the same Velocity as, before, they concurr'd.

XVII. If an Elastic Body *A*, strike on another equal one, indued with a less Degree of Motion, *B*; after *Percussion*, both will proceed in the same, viz. the former, Direction, and with interchanged Velocities.

For suppose *A* to strike with the Velocity  $C + c$ , upon *B* moving with the Velocity  $C$ . Since by reason of the equal Velocities  $C$  and  $C$ , there arises no Impulse; 'tis the same thing as if *A* struck on *B* with the sole Celerity  $c$ , on *B* at rest. But in that case *A* wou'd remain at rest, and *B* move with the Velocity  $c$ : Therefore, after *Percussion*, *A* will move with the sole Celerity  $C$ ; and *B* with the Celerity  $C + c$ , both according to the former Direction, there being nothing to change that Direction.

XVIII. If a Body *A* strike on another *B*, the Stroke is the same as wou'd be made by the Body *A* striking on *B* at rest, with the Difference of their Velocities.

Hence, since the Elastic Force is equal to the *Percussion*; it acts on the Bodies *A* and *B* with the Difference of the Velocities they had before the Congress.

XIX. To determine the Velocities of any two Elastic Bodies *A* and *B*, striking directly on each other with any Velocities.

If the Elastic Body *A* strike on *B*, either at rest, or moving slower than *A*; the Velocity *v. g.* of *A* after *Percussion*, is found thus: as the Sum of the Weights is to double of either of 'em, suppose, in this Case, of *B*; so is the Difference of the Velocities before the Congress, to a Velocity, which subtracted

from the Velocity of *A* before the Impulse (in the other Case added to it) leaves the Velocity of *A* after the Congress.

If the two Elastic Bodies *A* and *B* meet each other; the Velocity of *A* after the Impulse is found thus: As the Sum of the Weights, is to the double of either of 'em, suppose of *B*; so is the Sum of the Velocities before Collision, to a Velocity which subtracted from the Velocity of *A* before Collision, leaves its Celerity after Collision.

XX. If an Elastic Body *A* strike directly on another at rest *B*; its Velocity after *Percussion* will be to its Velocity before it, as the Difference of Weights is to their Sum: But the Velocity it communicates to *B* is the same, as double the Weight of *A* to the Sum of the Weights.

After *Percussion*, therefore, the Velocity of *A* is to the Velocity of *B*, as the difference of Weights, to the double of *A*.

XXI. If two Elastic Bodies, *A* and *B*, strike directly on each other with Velocities that are reciprocally proportional to their Weights; after Collision, they will rebound with the same Velocity wherewith they met.

XXII. In the direct Collision of Bodies, the same respective Velocity is preserv'd, i. e. in a direct Concurrence, the Difference of Velocities is the same before and after the Shock; and in a direct mutual Encounter, the difference of Velocities after the Shock is the same with their Sum before it.

Hence they retire from each other after the Impulse, with the same Velocity wherewith they met.

XXIII. In the Collision of Elastic Bodies, there is not always preserv'd the same Momentum, or as the *Cartesians* express it, the same Quantity of Motion; but it is sometimes increas'd, and sometimes diminish'd.

'Tis a Mistake, therefore of *Cartes* and his Followers, that the same Quantity of Motion is still preserv'd in the World. See *CARTESIAN*.

XXIV. If two Elastic Bodies, *A* and *B*, meet, or overtake each other directly; the Sum of the Factums of the Masses into the Squares of the Velocities, remains the same before and after the Congress.

Hence the same Quantity of Force is likewise preserv'd in the Congress.

XXV. To determine the Motion of two Bodies *A* and *B*, (Fig. 42.) striking obliquely against each other, whether they be Elastic, or not Elastic.

The Motion of the Body *A*, along *AC*, is resolvable into two others, in the Directions *AE* and *AD*; and the Motion of *B* along *BC* into two others according to *BF* and *BG*; and the Velocities thro' *AD* and *BF* are to the Velocities thro' *AC* and *BC* as the right Lines *AD*, *BF*, *AC*, *BC*; now, since the right Lines *AE* and *BG* are parallel, the Forces acting according to these Directions are not mutually opposite, and must therefore be consider'd in the Congress. But since the Lines *AD* and *BF*, or which is the same, *EC* and *GC* constitute the same right Line perpendicular to *DC*; 'tis the same as if the Bodies *A* and *B* shou'd meet directly with Velocities that are as *EC* and *GC*. Find therefore the Velocity of *A* and *B* according to the Rules above laid down.

Suppose *E. gr.* the Velocity of the rebounding Body *A* to be as *CH*; since the Motion along *AE* is not chang'd by the Congress, make *CK = AE*, and compleat the Parallelogram *HCKI*; the Diagonal *CI* will represent the Motion of *A* after Congress: for after *Percussion*, the Body will move according to the Direction *CI*, and with a Velocity as *CI*. In the same manner it will be found that the rebounding Body *B* will move along the Diagonal of the Parallelogram *CM*; in which *LM = BG*. The Velocities therefore after *Percussion* are as *CI* to *CM*.

Centre of *PERCUSSION* that Point wherein the Shock or Impulse of the percutient Bodies is the greatest. See *CENTRE*.

The Centre of *Percussion* is the same with the Centre of Oscillation, if the percutient Body revolve round a fix'd Axis. See *OSCILLATION*.

If all the Parts of the percutient Body be carried with a parallel Motion, or with the same Velocity; the Centre of *Percussion* is the same with the Centre of Gravity. See *GRAVITY*.

*PERDONATIO Urlogarie*, in Law, a Pardon for one who is out-law'd. See *PARDON* and *OUT-LAWRY*.

*PERDUE*, a Soldier placed in a dangerous, and almost desperate Post.

The Word is *French*, and literally signifies *lost*. Thus we say *Enfans Perdues*, for the Forlorn Hope of an Army. See *FORLORN*.

To lie *Perdue*, is to lie flat on the Belly, to lie closely in wait.

*PEREMPTORY*, in Law, an Epithet applied to an Action, Exception, &c. signifying 'em to be absolute, final, and determinate; not to be alter'd, renew'd, or restrain'd. Thus in our Law-Books we find *Peremptory Action*, *Peremptory Nonsuit*, *Peremptory Exemption*, &c.

*PERENNIAL*, in Botany, is applied to *Ever-green*, or Plants, which preserve their Leaves and Verdure all the Year. See *EVER-green*.



**PEREGRINE**, *foreign, outlandish*; a Term applied among Astrologers, to a Planet, when found in a Sign where it has none of its Essential Dignities.

**PERFECT**, something to which nothing is wanting; or that has all the Requisites. See **PERFECTION**.

**PERFECT**, in Arithmetic. *Perfect Number* is that, all whose aliquot Parts added together, make the same Number with the Number whereof they are such Parts. See **NUMBER**.

**PERFECT** in Grammar. *Preter- or Preterit-perfect Tense*, is an Inflection, marking a Time perfectly past; as *I have heard*. *Plusquam perfect*, is an Inflection, expressing a Time more than perfectly past, as *I had heard*, &c. See **TENSE**.

**PERFECT** in Music, something that fills and satisfies the Mind and the Ear.

In this Sense we say, *Perfect Cadence*, *Perfect Concord*, &c. See **CONCORD**, **CADENCE**, &c.

The Ancients had two kinds of Modes, the Major and Minor; and each of these again was either *Perfect* or *Imperfect*. See **MODE**.

The Word *Perfect* when join'd with the Words *Mode* and *Time*, usually expresses triple Time or Measure; in opposition to double Time, which they call'd imperfect. See **TIME**, **TRIPLE**, &c.

**PERFECT**, in Physiology. A *perfect Animal*, is used by some Writers for that which is born by univocal Generation, in opposition to Infants, which they pretend to be born by equivocal Generation. See **GENERATION**, **UNIVOCAL**, **EQUIVOCAL**, &c.

**PERFECT Flowers**, are such as have Petala, Pistil, Stamina and Apices. See **FLOWER**.

**PERFECTION** is divided into *Physical*, *Moral* and *Metaphysical*.

*Physical*, or *natural Perfection*, is that whereby a Thing has all its Powers or Faculties, and those too, in, their full Vigour; all its Parts both Principal and Secondary, and those in their due Proportion, Constitution, &c.

In this Sense a Man is said to be *Perfect* when he has a sound Mind in a sound Body.

This *Perfection* is by the Schoolmen, frequently call'd *perfectio*, by reason a Thing is hereby enabled to perform all its Operations.

*Moral Perfection*, is an eminent Degree of Virtue, or moral Goodness; to which Men arrive by often repeated acts of Piety, Beneficence, &c.

This, some subdivide into *Absolute* or *Inherent*, which is actually in him to whom we attribute it; and *Imputative* which exists in some other, and not in him it is attributed to.

*Metaphysical*, or *Transcendental* or *Essential Perfection* is the Possession of all the essential Attributes, or of all the Parts necessary to the Integrity of a Substance: Or it is that whereby a Thing has, or is provided of every thing belonging to its Nature. See **ESSENCE**.

This is either *Absolute*, where all Imperfection is excluded; such is the *Perfection* of God: Or *Secundum quid*, and in its kind. See **GOOD**.

**PERFECTISSIMATE**, a Quality or Dignity whereof we find mention made in the Code.

*Perfectissimi* were those with whom the Emperors intrusted any Office, Administration or Government. *Alciat* imagin'd the Name had been only given to the Governors of *Hispania Tarragonensis*, and *Norica*; but *Calvin* has shewn the contrary in his *Lexicon Juridicum*. The *Perfectissimi* were inferior to the *Clarissimi*, tho' that Word imply *most perfect*. See **CLARISSIMI**.

**PERFIDIA**, in Music, a Term borrowed from the *Italian*; signifying an Affectation of doing always the same Thing, of following the same Design, continuing the same Motion, the same Song, the same Passage, and the same Figures of Notes.

Such are the stiff Basses of Chacones, &c. because depending wholly on the Caprice of the Composer.

**PERFORANS Manus**, in Anatomy, a Muscle of the Hand; call'd also, from its Action, *Flexor 3<sup>ii</sup> Internodii digitorum Manus*.

It arises fleshy from the fore and upper Part of the Ulna, and the Ligament which joins that and the Radius; and after forming a pretty thick fleshy Body, is split into four round Tendons; which passing under the annular Ligament, and thro' the Slits in the Tendons of the former, are inserted into the third Bone of each Finger. See **FINGERS**.

**PERFORANS Pedis**, in Anatomy, a Muscle of the Foot, call'd also *Profundus*; and from its Action, *Flexor 3<sup>ii</sup> Internodii digitorum pedis*, & *Flexor Magnus*.

It rises from the Upper and Back-part of the Tibia, and passing under the inner Ankle and Ligament, that ties the Tibia and Os Calcis together, divides into four Tendons, which passing thro' the Holes of the Perforatus, are inserted into the third Phalanx of the lesser Toes.

There is a *Massa Carneae*, or fleshy Substance that arises from the Os Calcis, and which joins the Tendons of this Muscle where the Lumbricales begin.

**PERFORATUS Manus**, in Anatomy, a Muscle of the Fingers, thus call'd from the *Perforations* of its Tendons by those of the *Perforans*; sometimes *Flexor Secundi Internodii*, from its Action; and sometimes *Sublimis*.

It arises tendinous from the internal Protuberance of the Humerus, and the Upper part of the Radius before; and being parted into four, passes under the annular Ligament; whence it sends several Tendons into the Upper-part of the Phalanx of each Finger: Every Tendon having at the first Internode, a Slit or *Perforation* for the Admission of the Tendons of the *Perforans*.

**PERFORATUS Pedis**, in Anatomy, a Muscle of the Foot, call'd also *Flexor pedis*, & *sublimis*.

It arises from the inner and lower Part of the Calcaneum; and sends a Tendon to every Bone of the second Phalanx of each of the four less Toes. In this, as the *Perforatus* of the Hand, there is a Slit in each Tendon about the first Joint, which lets thro' the Tendon of the *Perforans*.

**PERFUME**, an agreeable Odour, striking the Sense of Smelling. See **ODOUR** and **SMELL**.

The generality of *Perfumes* are made or compos'd with Musk, Amber-greece, Civet, Rose, and Cedar-woods, Iris, Orange-Flowers, Jassemin, Jonquills, Tuberoses, and other odoriferous Flowers.

Therein also enter Storax, Frankincense, Benjoin, Cloves, Mace, and other like Drugs, commonly call'd Aromatics. See **AROMATIC**.

Some perfumes are also compos'd with Aromatic Herbs, as Lavender, Marjoram, Sage, Thyme, Hyssop, &c.

*Perfumes* were anciently much in Use; particularly those wherein Musk, Ambergreese, and Civet, enter; they are now generally disused, since People have become sensible of the Harm they do the Head. In *Spain* and *Italy* they are still Alamode.

**PERFUMES**, *Suffitus*, in Pharmacy, &c. are Topic, or external Medicines, compos'd of certain Powders and Gums, which being mix'd together, and thrown on the Coals, produce a Vapour or Smoak, Salutary in several Diseases. See **SUFFITUS** and **SUFFIMENTUM**.

Fits of the Mother are cured by a *Perfume* of Partridge Feathers, old Leather, &c. burnt. Mercury is sometimes applied by way of *Perfume*, call'd *Perfume* of Cinnabar.

For those whose Brain is too humid, Tobacco is prescribed by way of *Perfume*.

There are dry *Perfumes* made up in Troches, Pills, &c. of Olibanum, Mastic, Aloes, &c. and moist viscous ones of the Juices of Herbs, &c.

**PERIANTHEUM**, in Botany the little green Leaves which compass the Bottom of a Flower; call'd by Dr. Grew the *Empalement*, and by others the *Calyx*. See **CALYX**. See also **FLOWER**.

The Use of the *Periantheum* is to be a Support, Security, and as it were Bands, to the other Parts of the Flower.

Mr. Ray observes, that Flowers, whose Leaves or Petala are strong, as Tulips, have no *Perianthium*, as needing none. Carnations, &c. whose Petala are long and slender, have their *Perianthium* of one piece; others, as the Knap-weed, &c. have it of several Pieces, and in divers rounds, and all with a counterchangeable Respect to each other, for the greater Strength and Security of 'emselves, and the Petala, &c. they include.

The Word is form'd from the *Greek* περί about and άνθος Flower.

**PERIAPTA**, a kind of Medicines, otherwise call'd **PERIAMMA**, *Appensa* and *Amulets*; which being tied about the Neck, are supposed to prevent, or cure Diseases. See **AMULET**. See also **PHYLACTERY**.

**PERICARDIARY**, an Epithet given to Worms generated in the Pericardium, or Capsula of the Heart. See **WORMS** and **PERICARDIUM**.

M. Andry makes these one of the twelve Kinds of Worms engender'd in the human Body: They sometimes occasion Convulsions; the Paroxysms whereof last but a little while, but return incessantly.

These Worms are accompanied with a frightful Paleness of the Face, a low Pulse, violent Pains of the Stomach and Breast.

They sometimes occasion a Palpitation of the Heart. See **PALPITATION**. M. Andry adds, that they have been known to occasion sudden Death.

**PERICARDIUM**, in Anatomy, a Capsula, or Pouch, which includes the Heart. See **HEART**.

It consists of a double Membrane; the Inner arising from the Coats of the Vessels of the Heart, and the Outer from the Mediastinum. Its Figure resembles that of the Heart, Conoidal; and it embraces the Heart laxly, allowing Room for its Pulsation.

'Tis connected either immediately, or by Vesiculae emitted from it, to the Sternum, Back, Jugulum, and in human Bodies to the tendinous Part, or Centre of the Diaphragm; whereas in Brutes it is loose.

Its Use is supposed to be to defend the Heart; as likewise to contain a soft serous Humour, which serves to lubricate



cate and moisten the Heart, and prevent any Inflammation that might probably arise from the dry Friction of the Heart and its Capsula. But this latter Use is controverted; for some take the Humour found in it to be unnatural, and will have it forcibly separated by the convulsive Agonies supervening in the Article of Death. In effect, Anatomists are puzzled to find whence it shou'd come, or from what Vessels it is secreted. The word *Pericardium* is form'd from the Greek *περι* about and *καρδια* Heart.

Dr. Keil, in his Treatise of *Anim. Secretion* shews that the Liquor in the *Pericardium* must be the most Fluid of any separated from the Blood, because its Particles unite first, and are secreted first. For those Particles which unite first, will have the greatest attractive Force, consequently their Particles must be the most Spherical and most Solid; and therefore their Contact the least of any, therefore the most Fluid. See FLUIDITY.

In the Memoirs of the *French Academy*, *M. de Mortal* gives an Instance of a *Pericardium*, which being open'd, the Liquor contain'd therein, was found congeal'd into a Consistence fit to be cut with a Knife, and two square Fingers thick about the Heart.

PERICARPIA, from *περι*, circum, about, and *Carpus* the Wrist, are Medicines that are applied to the Wrist.

PERICARPUS, in Botany, a Pellicle, or thin Membrane, encompassing the Fruit or Grain of a Plant. See FRUIT, SEED, &c.

The Word is form'd of the Greek *περι* about and *καρπος* Fruit. PERICHORUS, in Antiquity, a Name given by the Greeks, to their profane Games and Combats; i. e. to such as were not consecrated to any of the Gods. See GAMES.

The Word in the Original, signifies *near* or *neighbouring*; apparently, because none but the People of the Neighbourhood attended at these obscure Exercises.

The Champions did not fight in Honour of any God or Heroe, as in the others; but only for the prize Sake.

The Word is form'd from the Greek *περι* about and *χωρη* Country.

PERICRANIUM, in Anatomy, a thick solid Coat or Membrane, covering the out Side of the *Cranium* or Skull. See CRANIUM.

Some call it by the general Name of *Periosteum*, because of its adhering to the Bone: others divide it into two Membranes, the under whereof immediately investing the Skull, they call *Periosteum*; and the upper the *Pericranium*. But in effect, 'tis but one double Membrane, consisting, as most others do of two Coats. 'Tis supposed to have its Origin from the dura Mater; which passing thro' the Sutures of the Skull, by means of several Filaments forms this thick Membrane: At least, 'tis still found connected to the dura Mater by Fibres transmitted from it to the Membrane, thro' the Sutures.

About the Origin of the temporal Muscles, the two Coats of the *Pericranium* part; the Outer passing over those Muscles, and the Inner still adhering close to the *Cranium*. See PERIOSTEUM.

The Word is form'd from the Greek *περι* about and *κρανιον* Head.

PERIDROME, PERIDROMUS, in the ancient Architecture, the Space, Gallery, Alley, or the like, in a Periptere, between the Columns and the Wall. *Salmasius* observes that the *Peridromes* served for Walks among the Greeks.

PERIOECI, in Geography, such Inhabitants of the Globe as have the same Latitudes, but opposite Longitudes; or live under the same Parallel, and the same Meridian, but in different Semi-circles of that Meridian. See GLOBE.

These have the same common Seasons throughout the Year; and the same Phenomena of the heavenly Bodies; but their Hours, or times of the Day, are opposite to each other. When v. g. with the one 'tis Mid-day; with the other 'tis Mid-night. See DAY and SEASON.

The Word is form'd from the Greek *περι* about and *οικω* I inhabit.

PERIEGETES, a Greek Term, signifying a Person who conducts another about a Thing, to show it him, &c.

It is applied in Antiquity to Geographers; especially to those who described the Sea-Coasts: Thus *Dionysius* is stiled *Periegetes*, for publishing a Geography in Hexameter Verses; which *Eustathius* has commented on, both, in Greek.

The Name *Periegetes* was also given to those who conducted Strangers about in Cities, to shew 'em the Antiquities, Monuments, Curiosities, &c. thereof.

These *Periegetes* were the same with what they now call Antiquaries in Italy. See ANTIQUARY.

PERIGÆUM, PERIGEE, in Astronomy, that point of the Heavens, wherein the Sun and Planets are at their least Distance from the Earth. See EXCENTRIC.

The Moon in her *Perigee* is 53 or 54 Semi-diameters of the Earth distant from us. See MOON.

The Term is but little used, except in the Ptolomaic System; where the Earth is placed in the Centre of the World, and the Distances of the Planets chiefly consider'd with regard thereto; being form'd of the Greek *περι*, about and *γην* Terra, Earth.

The *Copernicans* use the Word *Perihelium* in lieu of *Perigæum*; because they place the Sun in the Centre. See PERIHELIIUM.

PERIHELIIUM, in Astronomy, that point of the Orbit of a Planet, or Comet, wherein it is at its least Distance from the Sun. See PLANET, COMET, SUN, &c.

The Word is form'd from the Greek *περι* and *ήλιος*, Sol, Sun.

The ancient Astronomers, in lieu hercof used *Perigæum*; because they placed the Earth in the Centre. See PERIGÆUM.

PEREGRINARY, PEREGRINARIUS, in the ancient Monasteries, a Monk to whom was committed the Care of receiving, and entertaining Strangers, or Visitors.

PERIMETER, in Geometry, the Ambit, or extent, that bounds a Figure or Body. See FIGURE.

The Perimeters of Surfaces, or Figures, are Lines; those of Bodies are Surfaces. See SUPERFICIES.

In circular Figures, &c. instead of Perimeter we say *Circumference* or *Periphery*. See PERIPHERY.

The Word is form'd from the Greek *περι* and *μέτρον* Measure.

PERINÆUM, in Anatomy, the Space between the *Penis* or *Scrotum*, and the Fundament; properly the Ligamentous Seam; call'd by the *Latins*, *Femen*, and *Interfemineum*.

The Word *Perinæum* is form'd from the Greek *περι* and *νάειν* to inhabit.

PERINDE *Valere*, in the Canon Law, a Dispensation granted a Clerk, who being legally incapable of a Benefice, or other ecclesiastical Function, is, *de facto*, admitted to it. See DISPENSATION.

The *Perinde Valere*, is a kind of Writ; thus call'd from two Words therein, signifying the Dispensation to be equivalent or tantamount to a legal Capacity.

PERIOCHA, an Argument containing the Sum of a Discourse.

PERIOD, in Astronomy, the Time taken up by a Star or Planet; in making a Revolution; or the Duration of its Course, till it return to the same Point of the Heavens. See REVOLUTION.

The Sun's, or rather the Earth's *Period*, is 365 Days, five Hours, 49 Min. That of the Moon 27 Days, 13 Hours, 9 Min. &c. See SUN, MOON, &c.

The *Periods* of the Comets are now many of 'em pretty well ascertain'd. See COMET.

There is a wonderful Harmony between the Distances of the Planets from the Sun, and their *Periods* round him; the great Law whereof is, that the Squares of the *Periodic Times* are ever proportional to the Cubes of their mean Distances from the Sun. See PLANET.

The several *Periods* and mean Distances of the several Planets are as follow.

| PERIODS. |       |    |    |    |            |
|----------|-------|----|----|----|------------|
|          | Days  | h. | '  | "  | mean Dist. |
| Saturn   | 10579 | 6  | 36 | 26 | 953800     |
| Jupiter  | 4332  | 12 | 20 | 35 | 520110     |
| Mars     | 686   | 23 | 27 | 30 | 152369     |
| Earth    | 365   | 6  | 9  | 30 | 100000     |
| Venus    | 224   | 16 | 49 | 24 | 72333      |
| Mercury  | 87    | 23 | 15 | 53 | 38710      |

PERIOD, in Chronology, an Epocha or interval of Time, by which the Years are accounted; or a Series of Years, whereby, in different Nations, and on different Occasions Time is measur'd. See TIME.

Such are the *Callippic*, and *Metonic Periods*, two different Corrections of the Greek Calendar; the *Julian Period*, invented by *Jos. Scaliger*; the *Victorian Period*, &c.

*Metonic PERIOD*, or *Cycle*, call'd also the *Cycle of the Moon*, is a Series of 19 Years, which elaps'd the new and full Moons, are supposed to return to the same Day of the solar Year: It was thus call'd from its Inventor *Meton*. See METONIC. See also CYCLE.

*Callippic PERIOD*, is a Series of 76 Years, returning in a perpetual Circle; which elaps'd the new and full Moons, are supposed to return to the same Day of the solar Year. The *Callippic Period* is an improvement on the *Metonic* of 19 Years, which proving inaccurate, *Callippus* the *Athenian* multiplied it by 4, and thus arose the *Callippic Period*. See CALIPPIC.

*Hipparchus's PERIOD*, is a Series of 304 solar Years, returning in a constant round; and restoring the new and full Moons to the same Day of the solar Year; according to the Sentiment of *Hipparchus*.

This *Period* arises by multiplying the *Callippic Period* by 4. *Hipparchus* assumed the Quantity of the solar Year to be 365 Days, 5 Hours, 55' 12". And hence concluded that in 104 Years, *Callippus's Period* wou'd Err a whole Day. He therefore multiplied the *Period* by 4, and from the Product, cast away an entire Day. But even this does not restore the new and full Moons to the same Day throughout the *Period*.



period: But they are sometimes anticipated 1 Day 8 Hours,

25' 29" 20".  
**Victorian PERIOD**, an Interval of 532 Julian Years, which elaps'd, the new and full Moons, return on the same Day of the Julian Year; according to the Sentiment of *Victorinus* or *Victorius*, who lived in the Time of Pope *Hilary*.

Some ascribe this Period to *Dionysius exiguus*; and hence call it the *Dionysian Period*: others call it the great *Paschal Cycle*; because invented for computing the Time of *Easter*.

The *Victorian Period*, is produced by multiplying the Lunar Cycle 19, by the solar Cycle 18; the Product of which is 532. But neither does this restore the new and full Moons to the same Day throughout its whole Duration; by 1 Day, 16 Hours, 58' 59" 40".

**Dionysian PERIOD**. See *Victorian PERIOD*.

**Julian PERIOD**, a Series of 7980 Julian Years; arising by the Multiplication of the Cycles of the Moon, the Sun, and Indictions into one another; commencing from the first Day of January, in the Julian Year. See *JULIAN*.

The *Julian Period* is also produced by multiplying the *Victorian Period* by 15. Since every Year in the *Julian Period* has its particular Cycles of the Moon, Sun, and Indictions; *E. gr.* only the first has the Moon's Cycle 1, the Sun's Cycle 1, and the Cycle of Indictions 1; all the Years of this Period are accurately distinguish'd from each other.

This Period was invented by *Scaliger*, as a common receptacle of Epocha's, to facilitate the reduction of Years of a given Epocha, to those of another Epocha likewise given. It agrees with the *Constantinopolitan Epocha*, or *Period*, used by the *Greeks*, except in this that the Cycles of the Sun, Moon, and Indictions, are reckon'd differently; and in that the first Year of the *Constantinopolitan Period* differs from that of the *Julian Period*.

**Constantinopolitan PERIOD**. See *Julian PERIOD*.

**PERIOD**, in Grammar, a little Compass of Discourse, containing a perfect Sense; distinguish'd at the End by a Point or full Stop (.) and its Members or Divisions mark'd by Comma's, Colons, &c. See *SENTENCE*, *POINT*, &c.

*De Cologne* defines *Period* a short, but perfect Sentence, consisting of certain Parts or Members, depending one on another, and connected together by some common Vinculum.

That celebrated Definition of *Aristotle* is; a *Period* is a Discourse which has a Beginning, a Middle, and an End, all visible at one View.

A *Period* of two Members, *Cicero* supplies us with: *Ergo est mihi mee pristinae vitae Consuetudinem, C. Caesar, interclusam aperuisse; et his omnibus ad bene de republica sperandum quasi signum aliquod sustulisti.*

A *Period* of three Members, the same *Cicero* gives us in the Exordium of his *Manilian Oration*: *Nam cum antea per atatem hujus Auctoritatem loci contingere non auderem; statueremque nihil huc nisi perfectum ingenio, elaboratum Industria afferri oportere: Omne meum tempus amicorum temporibus transmittendum putavi.*

A *Period* of four Members he gives us in that admirable Description of the Punishment of Parricides. *Ita vivunt ut ducere animam de Caelo non queant: Ita Moriantur ut eorum ossa terra non tangat: Ita jactantur fluitibus ut nunquam abluantur: Ita postremo ejiciuntur ut ne ad Saxa quidem mortui conquiescant.*

The Laws and Measures of *Periods* are pretty strictly regarded by Orators; at least by the ancient ones: In ordinary Discourse, and in the modern Tongues, Authors are much less severe.

In Oratory, the Members of *Periods* are to be equal or nearly equal; that the Pauses or Rests of the Voice at the close of each Member may be nearly equal; but in Writing no ways intended for rehearsal, this is disregarded. Common Discourse allows of *Periods* both longer and shorter than Oratory; which admits of none less than two Members, nor greater than four. Short, mutilated *Periods* break the Stream, and check the Course of the Sublime; and long ones embarrass and keep the Mind too long in Suspense; and even strain the Voice which is never to stop but at the Ends of *Periods*.

The *Periods* allow'd in Oratory are three: A *Period* of two Members, call'd by the *Greeks*, *Dicolos*, and the *Latins*, *Bimembris*: A *Period* of three Members, *Tricolos*, *trimembris*; and a *Period* of four, *Quadrinembris*, *Tetracolos*. See *MEMBER*.

A strict Oratorical *Period* does not allow of either more or fewer than these: 'Tis possible indeed to introduce a *Period* of one Member, call'd by *Aristotle* *Monocolos*, or simple *Period*; but 'twill be reputed a Flaw; and is a Thing never to be practis'd by the Masters. The *Period* may be likewise prolonged to five or six Members, but then it changes its Name; and instead of *Period* commences what they call a *periodical Speech*.

*Phalarus*, *Hermogenes*, *Terence*, &c. confine the just *Period* (call'd by the *Latins*, *Ambitus* and *Circuitus*;) to four Members; agreeably to the Distich

*Quatuor e membris plenum formare videbis  
 Rhetora Circuitum, sive Ambitus ille vocetur.*

Of which Sentiment is *Cicero*, who in his *Orator*, says, *Constat ille Ambitus et plena comprehensio e quatuor fere partibus quae membra dicuntur, ut et aures impleat, et ne brevior sit quam satis sit, neque longior*: An Instance of a periodical Oration he gives us in the Opening of his Oration for *Archias* the Poet. *Si quid in me sit Ingenii, Judices, quod sentio quam sit exiguum; aut si qua exercitatio dicendi, in qua me non inficior mediocriter esse versatum; aut si hujusce rei ratio aliqua ab optimarum artium studiis et disciplina profecta, a qua ego confiteor nullum Aetatis meae tempus abhorruisse; earum rerum omnium vel in primis hic A. Licinius fructum a me repetere prope suo jure debet.*

*Periods* are said to be either *rotundi*, round, or *quadrati*, Square, according to their different Oeconomy and Cadences: A *square Period* is that consisting of 3 or 4 equal Members, formally distinguish'd from each other; as that of *Cicero* on the Punishment of Parricides. A *round Period* is that whose Members or Parts are so connected, and fitted into each other, as that the Junctures or Commisures are scarce seen; but the whole slides equally round; without any notable Stops or Inequalities. Such are the *Dicolos* and *Tricolos* of *Cicero* above-mention'd.

**PERIOD** is also used for the Character (.) wherewith the *Periods* of Discourse are terminated and express'd; popularly call'd a *Full-stop* or *Point*. See *POINTING*.

Father *Buffier* observes two Difficulties in the Use of the *Period* or *Point*, *i. e.* in the distinguishing it from the Colon, or double *Point*; and in determining justly the End of a *Period*, or perfect Sentence.

'Tis observ'd that the *Supernumerary Members* of a *Period*, separated from the rest by Colons and Semicolons, usually commence with a Conjunction. (See *COLON*.) Yet 'tis certain these same Conjunctions sometimes rather begin new *Periods*, than *supernumerary Members* of old ones. 'Tis the Sense of Things, and the Authors own Discretion that must make the proper Distinction which of the two in effect it is. No Rules will here be of any Service, unless this be admitted as one; that when what follows the Conjunction is of as much extent as what precedes it, 'tis usually a new *Period*; otherwise not.

The second Difficulty arises hence, that the Sense appears perfect in several short detached Phrases, wherein it does not seem there shou'd be *Periods*: A Thing frequent in free Discourse; as, *we are all in Suspence; make your Proposals immediately; you'll be to blame for detaining us longer.* Where 'tis evident that simple Phrases have perfect Senses like *Periods*; and ought to be mark'd accordingly; but that the Shortness of the Discourse making 'em easily comprehended, the *Pointing* is neglected.

The Word *Period* in the original *Greek* *περίοδος* signifies *ambit*, *circuit*.

**PERIOD**, in Numbers, is a Distinction made by a Point or Comma, after every sixth Place, or Figure; and is used in Numeration, for the readier distinguishing and naming the several Figures or Places: which see under *NUMERATION*.

**PERIOD**, in Medicine, the Space of Time a Distemper continues, from its Beginning to its Declension. See *DISEASE*.

Hence, such as return after a certain Space, with like Symptoms, are call'd *periodical Distempers*; such are *Agues*, intermitting Fevers, &c. See *FEVER*.

In the *Phil. Transact.* Dr. *Musgrave* gives us an Instance of a *periodic Palsy*; Dr. *Cole* an Instance of a *periodic Convulsion*. See *CONVULSION*, *PALSY*, &c.

**PERIODIC**, something that terminates and comprehends a *Period*. See *PERIOD*.

A *periodic Month*, is the Space of Time wherein the Moon dispatches her *Period*, or *periodic Motion*, *viz.* 27 Days, 7 Hours, 43 Minutes; in which Time she returns to the same Point of the Zodiac, wherein she was when she left the Sun. See *MONTH*.

*Periodic Diseases*, are such as decline and rise again with similar Symptoms alternately.

*Periodic*, in Grammar, is applied to a *Stile* or Discourse that has Numbers; or which consists of just, and artful *Periods*. See *NUMBERS*.

**PERIODUS Sanguinis**, the Circle of the Blood, or the Tour it makes round the Body, for the Support of Life. See *CIRCULATION*.

**PERIODEUTA**, a Church Officer among the *Greeks*; establish'd by the Council of *Laodicea*, in Towns, &c. where there were no Bishops.

The *Periodeute* were a Kind of rural Deans, so call'd, according to *Zonaras*, because always on the Road, going from one Quarter to another to keep the People in their Duty. See *RURAL*.

Hence, *Gregory of Thessalonica* calls 'em *Ambulantes*, *Walkers*. *Bassamon* calls 'em *Exarchae*, by which Name they are still known among the *Greeks* at this Day. See *EXARCHA*.

**PERIOPHTHALMIUM**, in natural History, a thin Skin, which Birds can draw over their Eyes, to defend 'em without shutting their Eye-lids: The same with the *Nictitating Membrano*. See *NICTITATING Membrane*. The



The Word is compounded of the Greek *περι* about, and *ὀφθαλμός* Eye.

**PERIOSTEUM**, in Anatomy, a Membrane, pretty tough, and extremely sensible, covering the whole exterior Surface of all the Bones of the Body; the Teeth alone excepted. See **BONE**.

It is derived from the Dura Mater, and consists principally of Fibres detach'd thence; besides which it receives other Fibres from the Membrana Communis of the Muscles, or as Dr. *Havers* imagines, from the fleshy Fibres of the Belly of the Muscles, which intersect the Former.

That Part of it which covers the Cranium or Skull, is by a peculiar Name call'd the *Pericranium*. See **PERICRANIUM**.

The *Periosteum* is very thin every where; tho' not every where alike. It adheres closely to the Bone; and in some Places is observ'd to send Fibres into the very Substance thereof.

Its principal Use is to defend the Muscles and Tendons from being fretted in their Action by the attrition of the hard Substance of the Bones; and to give Notice, by its sensibility, of any Thing that might annoy the Bones.

Indeed, this last Use is controverted; some of the latest Anatomists maintaining that the *Periosteum* is insensible.

The Word is form'd from the Greek *περι* about and *ὀστέον*.

**PERIPATETICKS**, a Sect of Philosophers, the Followers of *Aristotle*; or the Maintainers of the *Peripatetic* Philosophy; call'd also *Aristotelians*. See **ARISTOTELIAN**.

*Cicero* tells us that *Plato* left two excellent Disciples, *Xenocrates* and *Aristotle*, who founded two Sects, which only differ'd in Name; The Former taking the Appellation of *Academicks*, who were those that continued to hold their Conferences in the Academy, as *Plato* had done before; the other who follow'd *Aristotle* were call'd *Peripateticks*; from *περιπατῶ*, I walk, because they disputed walking in the *Lyceum*. See **LYCEUM**.

*Ammonius* fetches the Name *Peripatetic* from *Plato* himself, who only taught walking; and adds that the Disciples of *Aristotle*, and those of *Xenocrates* were equally call'd *Peripateticks*; the one *Peripateticks* of the Academy, the other *Peripateticks* of the *Lyceum*; but that at length, the Former quitted the Title *Peripatetic* for that of Academic, on occasion of the Place where they assembled; and the Latter retain'd simply that of *Peripatetic*. See **ACADEMIC**.

The greatest and best Part of *Aristotle's* Philosophy, he borrow'd from his Master *Plato*: *Serranus* affirms confidently, and says he is able to demonstrate it, that there is nothing exquisite in any part of *Aristotle's* Philosophy, Dialectics, Ethics, Politics, Physics, or Metaphysics, but is found in *Plato*. And of this Opinion are many of the ancient Authors, *Clemens Alexandrinus*, &c. See **PLATONISM**.

*Gale* endeavours to shew that *Aristotle* borrow'd a good deal of his Philosophy both Physical about the first Matter; and Metaphysical about the first Being, his Affections, Truth, Unity, Goodness, &c. from the sacred Books; and adds from *Clearchus*, one of his (*Aristotle's*) Scholars, that he made use of a certain Jew, who assisted him therein.

*Aristotle's* Philosophy preserv'd itself in *paris naturalibus*, a long Time; none of his Followers or Commentators having dared to make any Innovations therein: Till the Beginning of the XIIIth Century; when it began to be new model'd. A reform'd System of *Peripateticism* was first introduc'd into the Schools, in the University of *Paris*; from whence it soon spread throughout *Europe*; and has subsisted in the Schools to this Day, under the Name of School Philosophy. See **SCHOOL**, &c.

The Foundation hereof is *Aristotle's* Doctrine, frequently misunderstood; oftener misapplied: Whence the Retainers thereto may be denominated reformed *Peripateticks*.

Out of these have sprung at several times several Branches, the chief are the *Thomists*, *Scotists*, and *Nominalists*; See each under its proper Article, **THOMIST**, **SCOTIST**, and **NOMINAL**.

**PERIPATETIC Philosophy**, the System of Philosophy, taught and establish'd by *Aristotle*, and maintain'd by his Followers the *Peripateticks*. See **PERIPATETICKS** and **PHILOSOPHY**.

A Specimen of the *Peripatetic* Philosophy, See under **ARISTOTELIAN**.

**PERIPETIA**, in the Drama, that part of a Tragedy wherein the Action is turn'd, the Plot unravel'd, and the whole concludes. See **TRAGEDY**.

The *Peripetia* is properly the Change of Condition whether happy or unhappy, which the principal Person or Persons undergo; arising from some Discovery or Incident, which gives a new turn to the Action.

The *Peripetia* therefore coincides with the Catastrophe, or Unravelling; unless we make the *Peripetia* to depend on the Catastrophe, &c. as an effect on its Cause. See **CATASTROPHE** and **UNRAVELLING**.

The *Peripetia* is sometimes induced by Remembrance or Discovery, as in the *Oedipus*, where the Messenger sent from *Corinth* to invite *Oedipus* to the Crown, informs him that *Polybus* and *Merope* were not his Father and Mother; which begins a Discovery, that *Laius*, whom he had kill'd, and *Jo-*

*casta* whom he had then to Wife, were his Father and Mother, and throws him into the deepest Distress. See **DISCOVERY**.

This Instance *Aristotle* calls a double *Peripetia*.

The Qualities of the *Peripetia* are, that it be probable and necessary; in order to which it must be the natural Result, at least the Effect, of the foregoing Actions, or of the Subject itself; not start out from any foreign, or collateral Cause.

Sometimes the *Peripetia* is occasion'd without any Discovery; as in the *Antigone* of *Sophocles*, where the Change in *Creon's* Fortune is produced by the Effect of his own Obstinacy; and sometimes by a mere Change of the Will, which, tho' the least artful, yet, Mr. *Dryden* observes, may be so managed as to become exceedingly beautiful.

These two Cases *Aristotle* calls simple *Peripetias*; in these, the Change only consists in a Passage out of Trouble and Action, into Tranquillity and Rest. See **FABLE**, **ACTION**, &c.

The Word *Peripetia* is form'd from the Greek *περι* about, and *πέπτεω*, something falling into a different State.

**PERIPHERY**, in Geometry, the Circumference, or Bounding-Line of a Circle, Ellipsis, Parabola, and other similar Figures. See **CIRCUMFERENCE**, **CIRCLE**, &c.

The *Periphery* of every Circle is supposed to be divided into 360 Degrees, which are again subdivided, each into 60 Minutes, the Minutes into Seconds, &c. See **DEGREE**, **MINUTE**, &c.

The Divisions of Degrees, therefore, are Fractions, whose Denominators proceed in a sexacuple Ratio: As, the Minute is  $\frac{1}{60}$ , Second  $\frac{1}{3600}$ , Third  $\frac{1}{216000}$ . See **SEXAGESIMAL**.

But these Denominators being troublesome; in their stead are used the Indices of their *Logarithms*; hence the Degree, being the Integer, or Unit, is mark'd by 0, the Minute by 1, Second by 2, &c. See **MINUTE**, **SECOND**, &c.

Geometricians demonstrate that a Circle is equal to a Triangle, whose Base is equal to the *Periphery*, and Altitude to the Radius. See **TRIANGLE**.

Hence it follows that Circles are in a Ratio compounded of their *Peripheries* and Radii. But they are also in a duplicate Ratio of the Radii; therefore the *Peripheries* of Circles are to each other as their Radii: and since the *Periphery* of one Circle is to its Radius, as the *Periphery* of any other to its Radius; The Ratio of the *Periphery* to the Diameter is the same in all Circles.

The Word is form'd from the Greek *περι* about, and *φέρω* I surround.

**PERIPHRAISIS**, in Rhetoric, *Circumlocution*, a Circuit or Tour of Words, much affected by Orators, to avoid common and trite manners of Expression. See **CIRCUMLOCUTION**, **FIGURE**.

The *Periphrasis* is of good use on many occasions; and we are frequently forced to have recourse to it, to make Things be conceiv'd, which it is not proper to name.

'Tis a Piece of Politeness to suppress the Names, and only intimate, or design 'em. These Turns of Expression are particularly serviceable in Oratory; for the Sublime admitting of no direct Citations, there must be a Compass taken to insinuate the Authors, whose Authority is borrowed. A *Periphrasis* by turning round a proper Name to make it understood, amplifies and raises the Discourse; but Care must be taken it be not too much swell'd, nor extended mal a propos, in which Case it becomes flat and languid.

The Word in the original Greek *περιφρασις*, signifies *Circumlocution*.

**PERIPLUS**, a Voyage or Navigation round a certain Sea, or Sea Coasts.

*Arrian* has described all the Coasts of the black Sea, after having inspected 'em in Quality of General of the Emperor *Adrian*, to whom he dedicates the Description under the Title of *Periplus of the Euxine Sea*.

**PERIPNEUMONIA**, in Medicine, an Inflammation of some Part of the Thorax, properly of the Lungs; attended with an acute Fever, and a Difficulty of breathing. See **LUNGS**, &c.

The *Peripneumonia* is distinguish'd into vera, true; and nottha, spurious.

The first is a real Inflammation of the Lungs, attended with a symptomatical Fever, and a Cough; by the Former of which it is distinguish'd from an Asthma; and by the latter from a Pleurisy. See **ASTHMA** and **PLEURISY**.

Its usual Causes are, want of Exercise, hard Study, Suppression of natural Evacuations, a moist Air, or the like.

When it arises from a Phlegmon, the Patient spits pure Blood; when it is Erysipelatous, the Sputum is yellow, and not much tinged with red. In this last, the Breast is not so much contracted, but the Fever more violent.

The *Peripneumonia* is more dangerous, tho' less painful than a Pleurisy: Its usual way of going off is by Expectoration of well concocted reddish, yellow, or white Matter. The flowing of the Menses, or any Haemorrhage, a Diarrhea, Abscesses about the Ears, or other Parts, are also good Prognosticks.

The Medicines prescribed are mostly the same that obtain in Asthmatick and Pleuritic Cases.

The



The Word is form'd from the Greek περί about, and περιμεν, to the Muscle of the Uvula, more properly denominated *Pterygostaphilinus*. See UVULA and PTERYGOSTAPHILINUS.

**PERIPNEUMONIA** *Notha* or *Spuria* is a Disease of the Lungs, arising from a heavy pituitous Matter generated throughout the whole Mass of Blood, and discharged upon the Lungs.

'Tis known by the Viscidity, Paleness, and Slowness of the Blood, Ropiness of the Saliva, Paleness and Want of Scent of the Urine, Swellings and Obstructions in the minuter Vessels, short Breath, Oppression in the Thorax, &c. worn out, phlegmatic, cold, phthisical, catarrhus, Constitutions, are most liable to it. It begins with a Feebleness, Indolence, Weariness, Difficulty of Breathing, Oppression of the Breast, Feverishness, and goes on without any great Appearance of danger to Death itself, without any Prognostic thereof in the Urine, Pulse, &c. It is cured by Blood-letting, Clysters, thin Diet, Diluents, Abstergers and Aperients.

**PERIPTERE**, in the ancient Architecture, a Building compass'd without-side by a Series of insulated Columns, forming a kind of Isle all around.

Such were the Basilic of *Antonine*, the Septizon of *Severus*, the Portico of *Pompey*, &c. The *Peripteres* were properly Temples, which had Columns on all the four Sides; by which they were distinguish'd from the *Prostyles* and *Amphiprostyles*, the one of which had no Columns before, and the other none on the Sides. See PROSTYLE, &c.

M. *Perrault* observes, that *Periptere* in its general Sense, is the Name of a Genus, including all the Species of Temples which have Portico's of Columns all around; whether the Columns be Diptere, or Pseudo-diptere, or simply *Periptere*, which is a Species that bears the Name of the Genus, and which has its Columns distant from the Wall by the Breadth of an Intercolumniation. See TEMPLE.

For the Difference between *Periptere* and *Peristyle*. See PERISTYLE.

The Word is form'd of the Greek περί, circum, about and πτερυ, Ala, Wing.

**PERISCH**, in Geography, those Inhabitants of the Earth, whose Shadows do, in one and the same Day, successively turn to all the Points of the Horizon. See SHADOW.

Such are the Inhabitants of the frozen Zones, or those who live within the compass of the Arctic and Antarctic Circles, for, as the Sun never goes down to them after he is once up, but always round about, so do their Shadows; in so much, that in the same Day they have their Shadows on all Sides. See ZONE.

And hence the Name, from the Greek περισκιος, Circum umbres.

**PERISKYTISM**, in Chirurgery, an Operation perform'd by the Ancients on the Cranium. See CRANIUM.

The *Periskytism* is an Incision which they made under the Coronal Suture, reaching from one Temple across to the other, and penetrating to the Bone of the Cranium: its Intention was to separate the Pericranium from the Skull. See PERICRANIUM.

The Word is form'd from the Greek περί and σκύττειν to flea.

**PERISSACHOREGIA**, a Term found in the Code, about the Meaning whereof Authors are much divided.

*Alciat*, and some others will have it to be the Name of an Office viz. that of Curator of the *Annona* or Provisions; from περίσσεια Abundance and χορηγέω to bring. Others take it to be the Office of a Magistrate who was to look to the Augmentation of the *Annona*, and the Distribution of the same.

*Dom. Macri* will have it to signify a Donative or Distribution made to the Soldiers over and above their Pay. See DONATIVE.

**PERISTALTIC**, in Medicine, a Motion proper to the Intestines, wherein the several Parts are successively contracted from above downwards, in a manner resembling the creeping of a Worm; whence it is also call'd the *Vermicular Motion*. See INTESTINES.

The *Peristaltic* Motion is perform'd by the Contraction of the circular and longitudinal Fibres, whereof the fleshy Coat of the Intestines is compos'd. 'Tis by Means hereof, that the Chyle is driven into the Orifices of the lacteal Veins, and the Excrements press'd downwards, and at last expell'd. See CHYLE and EXCREMENT.

When this Motion comes to be depraved, and its Direction changed, so as to proceed from below upwards, it produces what we call the *Iliac Passion*. See ILIAC PASSION.

M. *Perrault*, in an express Treatise on the *Peristaltic* Motion, observes, that tho' 'tis ordinarily, only attributed to the Intestines; yet, it is really an Action common to all the Parts of the Body which alter, prepare, concoct the several Humours and Spirits, which are the Matter and Instruments of animal Action. In effect, he gives the Name to all the Motions whereby the Cavities of the Body are press'd and compress'd.

The Word is form'd from the Greek περιστάλλω; and literally implies something sent all a-round.

**PERISTAPHILINUS**, in Anatomy, a Name some give

to the Muscle of the Uvula, more properly denominated *Pterygostaphilinus*. See UVULA and PTERYGOSTAPHILINUS.

**PERISTYLE**, in the ancient Architecture, a Place, or Building, compass'd with a Row of Columns on the Inside; by which it is distinguish'd from the *Periptere*, where the Columns are disposed without-side. See PERIPTERE.

Such was the Hypetre Temple of *Virruvius*; and such are now some Basiliques in *Rome*, several Palaces in *Italy*, and most Cloisters of Religions.

Yet, the Word *Peristyle* is still used indifferently for a Range of Columns, either within or without a Building: As the Corinthian *Peristyle* of the Portail of the *Louvre*, &c.

The Word is form'd from the Greek περί about and στήλος, Column.

**PERISYSTOLE**, in Medicine, the Pause or Interval between the two Motions of the Heart, or Pulse; viz. that of the Systole or Contraction, and that of the Diastole or Dilatation. See SYSTOLE and DIASTOLE. See also PULSE and HEART.

**PERITONÆUM**, in Anatomy, a thin, soft Membrane, covering and containing all the Viscera of the lower Belly. See VISCERA and ABDOMEN.

Its Figure and Size answer to those of the lower Belly, which it lines throughout; its internal Surface is smooth, and lin'd with an unctuous Humour, serving to prevent its wounding the Intestines, and other Parts it touches, as well as to lubricate and facilitate their Motion; when the Glands which furnish it are obstructed, the *Peritonæum* grows thick, as 'tis frequently found in Dropsies.

The external Surface is fibrous and unequal, that it may adhere more firmly to the Muscles of the Abdomen, *Linea Alba*, *Ossa pubis*, *Iscium*, *Ilium*, *Sacrum*, and the *Vertebrae Lumbares*, to which it is fasten'd; and from the last whereof, many suppose it to have its Origin.

It is also connected to the inferior or convex Surface of the Liver, which it suspends; and the Part employ'd in this Action, is call'd the *Ligamentum Suspensorium Hepatis*.

The *Peritonæum* is double every where; but most apparently so from the Navel to the Os pubis, and near the *Lumbar Vertebrae*, as appears not only from its extraordinary Thickness in both, but from its Spontaneous parting in the latter, to receive the Kidnies.

It is perforated in the upper Part to give Passage to the *Oesophagus*, *Aorta* and *Cava*; in the under, for the *Fundament*, the Neck of the *Matrix*, and the Vessels that go to the Thighs; and in the Fore-part to give Passage to the *Umbilical Vessels*.

Its exterior Coat has two Processes; which in Men fall down into the Scrotum, wrap up the *Spermatick Vessels*, and dilating make the *Tunica Vaginalis* of the Testicles; in Women they form a Cover for the round Ligament of the Womb.

The *Peritonæum* receives Veins and Artries from the *Mammariae*, *Diaphragmaticae*, *Epigastricae*, *Sacrae*, and *Lumbares*: Nerves from the Os Sacrum and Loins. *Ol. Ruabekius* pretends to have likewise discover'd Lymphaticks, which being scarce visible, except in Hydropic Cases, an't much taken notice of.

In morbid Cases, great Quantities of Serum have been found between the Duplicatures of this Membrane, when there was none in the Cavity of the Abdomen; which constitutes the true *Tympany*. See TYMPANY.

The Use of the *Peritonæum* is to contain, and keep in their Place the Viscera of the Abdomen: This is so manifest, that when ever this Membrane happens to be broke, or extraordinarily dilated, some of the Parts are apt to fall down, and to form those Tumors call'd *Hernia's* or *Ruptures*. See HERNIA.

The Term *Peritonæum* is Greek, and is derived from the Verb περιτείνω circumtendo, I stretch all a-round.

**PERITROCHIUM**, in Mechanics, a Wheel or Circle, as *A B*, (Tab. Mechanics, Fig. 44.) concentric with the Base of a Cylinder, and moveable together with it, about an Axis *E F*.

The Axis, with the Wheel, and Levers fix'd therein to move it, make that mechanical Power, call'd *Axis in Peritrochio*. See AXIS in PERITROCHIO.

*Axis in Peritrochio*, in Mechanics, one of the six mechanical Powers, or simple Machines, contriv'd for the raising of Weights. See its Structure, Doctrine, Application, &c. under the Article AXIS in Peritrochio.

**PERJURY**, in Law, the Crime of swearing falsely in a lawful Oath, administer'd by one who has Authority, in any Matter relating to an Issue, or Cause in Question; whether it be of the Persons own accord, or by Subornation of another. See OATH.

If a Man call me *perjur'd*, I have my Action upon the Case. If he calls me *forsworn* no Action lies, because the Forswearing may be extra-judicial.

*Perjury* is usually excepted out of general Acts of Grace.

The Punishment of *Perjury* is *Calistrium*, the Pillor, or burning the Criminal in the Forehead with a *P*, robbing up his Trees, and confiscating his Goods. See PILLORY, &c.



**PERMEABLE**, denotes a Body consider'd as its Pores are capable of letting somewhat pass thro' 'em. See **PORE**.

**PER MINIMA**, in Medicine, denotes a perfect Mixture of the smallest Particles of several Bodies, or Ingredients. See **MIXTURE** and **MINIMA**.

**PERMUTATION**, the Truck, or Exchange of one Thing for another. See **EXCHANGE**.

The Commerce of the Ancients, was perform'd wholly by way of Permutation. See **COMMERCE**.

**PERMUTATION**, in the Canon Law, a real and active Exchange of two Benefices. See **BENEFICES**.

*Permutation*, is a Means of bringing Benefices into Commerce without Simony. See **SIMONY**.

The Conditions requir'd to a canonical *Permutation* are; 1<sup>o</sup>. That there be Benefices *permuted* on either Side; tho' the Revenues be unequal; and in Case of Inequality, no Compensation to be made in Money; but only a Pension charged on the bigger. 2<sup>o</sup> That each of the Permutants quit his Benefice, and make a Procuration *ad resignandum*. 3<sup>o</sup> That the *Permutation* be followed by a Collation of the Ordinary. 4<sup>o</sup> That the Ordinary be inform'd of the Cause of the *Permutation*. 5<sup>o</sup> That those to whom the Presentation or Election to the Benefices belongs, give their Consent; or in Case of their Refusal, that the Consent of the *Diocesan* be had.

The chief Rules of *Permutation* are, that if one of the Compermutants cannot enjoy, he re-enters with full right into the Benefice he has quitted; and that if he die 'ere he have accomplish'd the *Permutation* on his Part by the taking of Possession, the Compermutant who has accomplish'd, retains both Benefices, unless they fall into the Regale.

**PERMUTATIONS** of *Quantities*, in Algebra, the Changes, Alternations, or different Combinations of any Number of Quantities. See **COMBINATION** and **CHANGE**.

**PERMUTATIONE** *Archidiaconatus & Ecclesie eidem annexæ cum Ecclesia & prebenda*, is a Writ issued to an Ordinary, commanding him to admit a Clerk to a Benefice upon Exchange made with another. Reg. of Writs.

**PER MY & PER TOUT**, a joint Tenant is said to be seiz'd of the Land he holds jointly *Per my & Per tout*, i. e. he is seiz'd by every Parcel, and by the whole, *Totum tenet, & nihil tenet, sc. totum conjunctim & nihil separatim*. *Bracton*.

**PERNANCY**, in Law, the taking or receiving any Thing; from the French *Prendre*, to take.

Tithes in *Pernancy* are Tithes taken in kind. See **TITHES**.

**PERNIO**, in Medicine, a Disease afflicting the Hands and Feet in Winter-time, popularly call'd a *Kibe* or *Chilblain*. See **CHILBLAIN**.

The Parts affected swell, inclining from a white to a blueish Colour, itch and ache; yet, the Tumour vanishes without any Exulceration, upon anointing the Part with Petrol.

**PERNOR** of *Profits*, he who takes, or receives the Profits of any Thing; from the French *Preneur*, Taker.

**PERONE**, in Anatomy, a Bone of the Leg, more usually call'd *Fibula*. See **FIBULA**. Hence

**PERONÆUS** *Anticus, longus* or *primus*, a Muscle of the Leg, arising fleshy and tendinous from the Head to the Middle of the Perone; whence running as in a Pulley, thro' the Channel on the hind Part of the outer Ankle Bone, it is inserted into the Upper-end of the Bone of the Metatarsus, which joins the great Toe: The Office of this Muscle is to draw the Foot upwards.

**PERONÆUS** *Posticus, brevis*, or *secundus*, a Muscle sometimes also call'd *Semifibularis*, arising fleshy and sharp in the Back-part of the Perone; whence, continuing down the Outer-side of the Bone till below the Middle, it forms a smooth, strong, flat Tendon, which runs thro' the same Channel at the Bottom of the Malleolus externus, with the Longus, to the Out-side of the Os Metatarsi of the little Toe: Its Office is to pull the Foot upwards.

**PERORATION**, in Rhetoric, the *Epilogue*, or last Part of an Oration; wherein, what the Orator had insisted on thro' his whole Discourse is urg'd afresh, with greater Vehemence and Passion: Thus *Quintilian*. See **ORATION**.

The *Peroration* consists of two Parts, 1. *Recapitulation*, wherein the Substance of what is diffused throughout the whole Speech, is collected briefly, and cursorily; and sum'd up with new Force and Weight. See **RECAPITULATION**.

And, 2. The *Mowing of the Passions*; which is so peculiar to the *Peroration*, that the Masters of the Art call this Part *sedes affectuum*. See **PASSIONS**.

The Passions to be rais'd in the *Peroration* are various, according to the various Kinds of Orations: In a Panegyric, Love, Admiration, Emulation, Joy, &c. In an Invektive, Hatred, Contempt, &c. In a Deliberation, Hope, Confidence or Fear.

The Qualities required in the *Peroration* are, that it be vehement and passionate; and that it be short: Because, as *Cicero* observes, Tears soon dry up.

The *Peroration* was *Cicero's* Master-piece: Here that great Orator not only set his Judges and Auditors on Fire, but even seem'd to burn himself; especially when he was to raise Pity and Commiseration towards the accused; where, as he himself tells us, he frequently fill'd the Forum with Weeping

and Lamentation. He adds, that where there were several Orators to speak for the same Person, the *Peroration* was always reserv'd to *Cicero*; and subjoins, that if he excell'd herein, 'twas not owing to Genius, but to the Grief he himself shew'd. This is abundantly evident in his *Milonian Peroration*; where he says *sed finis sit: neque enim præ Lacrymis jam loqui possum; & hic se Lacrymis defendi verat*—and in that for *Rabirius Posthumus*: *sed jam, quoniam, ut spero, fidem quam potui, tibi præstiteri, Posthume, reddam etiam Lacrymas quas debeo*—*Jam indicat tot hominum fletus quam scilicet carus tuus, & me dolor debilitat, includitque vocem*.

**PERPENDICULAR**, in Geometry, a Line falling directly on another Line, or so as to make equal Angles on each Side; call'd also a *normal* Line. See **LINE**.

Thus the Line *I G*. (Tab. Geometry Fig. 57.) is *Perpendicular* to the Line *K H*. i. e. makes right and equal Angles therewith:

From the very Notion of *Perpendiculars*, it follows; 1. That the *Perpendicularity* is mutual, i. e. if a Line as *I G* be *Perpendicular* to another, *A B*; that other, is also *Perpendicular* to the first.

2. That only one *Perpendicular* can be drawn from one Point in the same Place.

3. That if a *Perpendicular* be continu'd thro' the Line it was drawn *Perpendicularly* to; the Continuation will also be *Perpendicular* to the same.

4. That if there be two Points of a right Line, each of which is at an equal Distance from two Points of another right Line; that Line is *Perpendicular* to the other.

5. That a Line which is *Perpendicular* to another, is also *Perpendicular* to all the Parallels of the other. See **PARALLEL**.

6. That a *Perpendicular* Line is the shortest of all those which can be drawn from the same Point to the same right Line.

Hence the Distance of a Point from a Line, is a right Line drawn from the Point *Perpendicular* to the Line or Plane; and hence the Altitude of a Figure is a *Perpendicular* let fall from the Vertex to the Base. See **DISTANCE**.

To erect a *Perpendicular* *G I* on any given Point *G*, in a right Line *M L*; one Foot of the Compasses being in *G*, with any Interval at Pleasure, cut off equal Parts on each Side *G H* and *G K*; from the Points *K* and *H*, with an Interval greater by half than *K H* strike two Arches intersecting in *I*; the right Line *G I* is *Perpendicular* to *M L*.

*Perpendiculars* are best describ'd in Practice by means of a Square; one of whose Legs is applied along that Line to, or from which the *Perpendicular* is to be let fall or rais'd. See **SQUARE**.

To erect a *Perpendicular* on the End of a given Line, suppose at *P*; open your Compasses to any convenient Distance, and setting one Foot in *C*, describe the Arch *R P S*; lay a Ruler from *S* through *C*, it will find the Point *R* in the Arch, whence draw *P R*, which is *Perpendicular* to *P M*.

To let fall a *Perpendicular* on a given Line *M P*, from a given Point *L*; set one Foot of the Compasses in *L*, and with the other cross the given Line in the Points *M* and *G*. Then setting the Compasses in *G* and *M*, strike two Arches intersecting each other below in *S*: Then lay a Ruler from *L* to *S*, and the Line *K L* describ'd thereby is the *Perpendicular* requir'd.

**PERPENDICULAR** to a *Parabola*, is a right Line cutting the *Parabola* in the Point in which any other right Line touches it, and is also itself *Perpendicular* to that Tangent. See **PARABOLA**.

A Line is said to be *Perpendicular* to a Plane, when it is *Perpendicular* to all the Lines it meets with in that Plane; and a Plane is *Perpendicular* to another Plane, when a Line in one Plane is *Perpendicular* to the other Plane. See **PLANE**.

**PERPENDICULARITY** of *Plants*, is a curious *Phænomenon*, in Nat. History, first observ'd by *M. De la Haye*, and publish'd in an express Essay on the *Affectation* of *Perpendicularity*, observable in the *Stems* or *Stalks* of all *Plants*; of the *Roots* of many, and even of the *Branches* as much as possible.

The Matter of Fact is, that tho' almost all *Plants* rise a little crooked; yet, the *Stems* shoot up *perpendicularly*, and the *Roots* sink down *perpendicularly*: Even such as by the Declivity of the Soil come out inclin'd, or such as are diverted out of the *Perpendicular* by any violent Means again streighten themselves, and recover their *Perpendicularity*, by making a second and contrary Bend or Elbow, without rectifying the first.

A common Eye looks on this *Affectation* without any Surprise; but a Man that knows what a *Plant* is, and how form'd, finds it a Subject of Astonishment.

In effect, each Seed contains a little *Plant*, already form'd, and needing nothing but to be unfolded: The little *Plant* has its little *Root*; and the *Pulp*, which is usually separated into two Lobes, is the Foundation of the first Food the *Plantule* draws, by its *Root*, when it begins to germinate. See **SEED**, **RADICLE**, &c.

Now, if a Seed in the Earth, be so disposed, as that the

Root



Root of the little Plant be turn'd downwards, and the Stem upwards, and even *Perpendicularly* upwards; 'tis easy to conceive that the little Plant coming to unfold itself, 'its Stalk and Root need only follow the Direction they have, to grow *Perpendicularly*. But 'tis known the Seeds of Plants whether sown of themselves, or by the Help of Man, fall in the Ground at random; and among an infinite Number of Situations with regard to the Stalk of their Plant, the *Perpendicular* one upwards is but one. See SEMINATION.

In all the rest therefore, 'tis necessary the Stalk redress or rectify itself, in order to get out of the Ground: But what Force is it, that effects this change, which is certainly a violent Action? Is it that the Stalk finding a less Load of Earth above it, goes naturally that way where it finds the least Obstacle? Were this so, the little Root when it happens to be uppermost, must for the same Reason follow the same Direction, and mount on high.

M. *Dodart*, therefore, to account for two such different Actions; has recourse to another System: He supposes that the Fibres of the Stalks are of such a Nature, as that they contract and shorten by the Heat of the Sun, and lengthen out by the Moisture of the Earth: And on the contrary, that the Fibres of the Roots contract by the Moisture of the Earth, and lengthen by the Heat of the Sun.

When, then, the Plantule is inverted, and the Root at Top; the Fibres which compose one of the Branches of the Root are not equally exposed to the Moisture of the Earth; the lower Part is more exposed than the Upper. The Lower therefore must contract the most; which Contraction is again promoted by the lengthening of the Upper, whereon the Sun acts with the greatest Force. Of Consequence, therefore, this Branch of the Root must recoil towards the Earth, and insinuating thro' the Pores thereof get underneath the Bulb, &c.

By inverting this reasoning, 'tis easy to shew how the Stalk comes to get uppermost.

In a Word, we may imagine that the Earth attracts the Root to itself, and that the Sun contributes to its Descent; and on the contrary, that the Sun attracts the Stem, and the Earth, in some measure, sends it towards the same.

As to the second Streightning, *viz.* that of the Stalks in the open Air; he takes it to arise from the Impression of external Causes, particularly the Sun and Rain. For the upper Part of a Stalk that is bent, is more exposed to the Rain, Dew, and even Sun, &c. than the under. Now both these Causes, in a certain Structure of the Fibres, tend equally to streighten the Part most exposed, by the Shortening they successively occasion it; for Moisture shortens by swelling, and Heat by Dissipating. Indeed, what that Structure is which gives the Fibres such different Qualities; or whereon it depends, is still a Mystery.

M. *de la Hire* Accounts for the *Perpendicularity* of the Stems or Stalks of Plants thus: He imagines that in Plants, the Root draws a coarser and heavier Juice; and the Stem and its Branches a finer and more volatile one. And, in effect, most Naturalists conceive the Root as the Stomach of the Plant, where the Juices of the Earth are subtiliz'd, so as to become able to rise thro' the Stem to the Extremity of the Branches. This Difference of Juices supposes larger Pores in the Roots than the Stalk, &c. and in a Word, a different Contexture; which Difference must be found even in the little invisible Plant inclosed in the Seed: In this Plantule, therefore, we may conceive a point of Separation; such, as that all on one Side *E. gr.* the Root, shall be unfolded by the grosser Juices, and all on the other Side by the more subtile Juices.

Suppose, now, the Plantule when its Parts begin to unfold, to be entirely over-turn'd; the Root at Top, and the Stalk below: the Juices which enter the Root will still be coarsest, and when they have open'd and enlarg'd the Pores, so as to admit Juices of a determinate Weight, those Juices still pressing the Root more and more, will drive it downwards, and thus the more, as the Root more extended or enlarged: For the Point of Separation being conceived as the fixed Point of a Lever, they will act by the longer Arm. At the same Time the volatile Juices having penetrated the Stalk, will tend to give it a Direction from below upwards; and by reason of the Lever, will give it more and more every Day. Thus is the little Plant turn'd on its fix'd Point of Separation; till it be perfectly erect.

The Plant thus erected; the Stalk, we know, shou'd continue to rise *Perpendicularly*, to give it the more firm Biding and enable it to withstand the Effort of Wind and Weather.

The Manner wherein this is effected, M. *Parent* lays down thus: The nutritious Juice being arriv'd at the Extremity of a rising Stalk; if it evaporate, the Weight of the Air which encompasses it on all Sides, will make it ascend vertically; and if it do not evaporate, but congeal, and remain fix'd to that Extremity whence it was ready to go off; the Weight of the Air will give it the same Direction: so that the Stalk will have acquir'd a very little new Part, vertically laid over it: Just as in a Candle held any how obliquely to the Horizon, the Flame still continues Vertical, by the Pressure of the Atmosphere. The new Drops of Juice that succeed, will

follow the same Direction; and as all together form the Stalk, that must of course be Vertical, unless some particular Circumstance intervene.

As to the Branches, which are at first supposed to proceed laterally out of the Stalk in the first Embryo of the Plant; tho' they shou'd even come out in a horizontal Direction, yet, must they raise 'emself upwards by the constant Direction of the nutritious Juice; which at first scarce meets any Resistance in a tender, supple Branch; and even afterwards, tho' the Branch grow more firm, yet will it act with the more Advantage: since the Branch being become longer, furnishes it with a longer Arm of a Lever. The slender Action of a little Drop becomes very considerable, by its Continuity; and by the Assistance of such favorable Circumstances. Hence may be accounted for, that regular Situation and Direction of the Branches, which all, and always, nearly, make the same constant Angle of  $45^{\circ}$  with the Stem and one another. See BRANCH.

M. *Astruc*, accounts for the *Perpendicularity* of the Stems, and their Redressing themselves; on these two Principles. 1<sup>o</sup>. That the nutritious Juice arises from the Circumference of the Plant, and terminates in the Pith. 2<sup>o</sup>. That Fluids contained in Tubes either parallel or oblique to the Horizon, gravitate on the lower Part of the Tubes, and not at all on the Upper.

For hence it easily follows, that in a Plant posited either obliquely or parallel to the Horizon, the nutritious Juice will act more on the lower Part of the Canals than the upper, and by this Means, insinuate more into the Canals communicating therewith, and be collected more copiously therein; thus the Parts on the lower Side will receive more Accretion, and be more nourish'd than those on the upper; the Consequences whereof must be, that the Extremity of the Plant will be oblig'd to bend upwards.

The same Principle brings the Seed into its due Situation at first: In a Bean planted upside down, the Plume and Radicle are easily perceiv'd with the naked Eye, to shoot, at first, directly for about an Inch; but thence forth they begin to bend, the one downward, and the other upward. The like is seen in a heap of Barley, to be made into Malt; in a Quantity of Acorns, laid to sprout in a moist Place, &c. each Grain of Barley in the first Case, and each Acorn in the second, has a different Situation; and yet, all the Sprouts tend directly upward, and the Roots downward, and the Curvity or Bend they make is greater or less as their Situation approaches more or less to the direction wherein no Curvature at all wou'd be necessary. Now, two such opposite Motions cannot arise without supposing some considerable Difference between the two Parts: The only one we know of, is, that the Plume is fed by a Juice, imported to it by Tubes parallel to its Sides, whereas the Radicle imbibes its Nourishment at all the Pores in its Surface. As oft, therefore, as the Plume is either parallel, or inclin'd to the Horizon, the nutritious Juice feeding the lower Parts more than the upper, will determine its extremes to turn upward, for the Reasons already assign'd. On the contrary, when the Radicle is in the like Situation, the nutritious Juice penetrating more copiously thro' the upper Part than the under; there will be a greater Accretion of the former, than the latter; and consequently the Radicle will be bent downwards. And this mutual Curvity of the Plume and Radicle must continue, till such Time as their Sides are nourish'd alike, which cannot be till they are Perpendicular. *Memoirs de l'Acad. Royale des sciences*. An. 1708.

PERPETUAL, something that endures always, that lasts for ever. See ETERNITY.

The Term is sometimes also used for a Thing that lasts, or holds, during a Person's Life.

Thus Offices, &c. held *durante vita*, are sometimes call'd *Perpetual* Offices: In this Sense M. *Fontenelle* is said to be *Perpetual* Secretary of the Royal Academy of Sciences. Hence the French call him absolutely *M. le Perpetuel*.

PERPETUAL Motion, in Mechanicks, is a Motion which is supplied and renew'd from itself, without the Intervention of any external Cause; or it is an uninterrupted Communication of the same Degree of Motion from one Part of Matter to another, in a Circle, (or other Curve returning into itself) so as the same Momentum still returns perpetually undiminished upon the first mover. See MOTION.

To find a *perpetual* Motion, or to construct an Engine, &c. which shall have such a Motion, is a famous Problem that has employ'd the *Mathematicians* of two thousand Years; tho' none perhaps have prosecuted it with Attention and Earnestness equal to those of the present Age.

Infinite are the Schemes, Designs, Plans, Engines, Wheels, &c. to which this long'd for *perpetual* Motion has given Birth: 'Twere as endless as impertinent to give a Detail of 'em all.

Nor does any of 'em deserve particular Mention, since they have all equally prov'd Abortive. It wou'd rather be of the Nature of an *Assault* than a *Complement*, to distinguish the Pretenders hereto; when the very Thing they are commemorated for, carries with it so disagreeable an Idea.



In effect, there seems but little in Nature to countenance all this Assiduity and Expectation: Among all the Laws of Matter and Motion, we know of none yet, which seems to lay any Principle or Foundation for such an Effect. See NATURE.

Action and Re-action are allow'd to be ever equal; and a Body which gives any Quantity of Motion to another, loses just so much of its own: But under the present State of Things; the Resistance of the Air, the Friction of the Parts of Machines, &c. do necessarily retard every Motion. See RESISTANCE.

To keep the Motion on foot, therefore, 1. Either there must be a Supply from some foreign Cause; which in a *perpetual* Motion is excluded.

Or, 2<sup>o</sup> all Resistance from the Friction of the Parts of Matter, must be removed; which implies a Change in the Nature of Things. See MATTER.

For by the second Law of Nature, the Changes made in the Motions of Bodies, are always proportional to the impress'd moving Force, and are produc'd in the same Direction with it; no Motion, then, can be communicated to any Engine, greater than that of the first Force impress'd. See COMMUNICATION and PERCUSSION.

But, on our Earth, all Motion is perform'd in a resisting Fluid; and must therefore of necessity be retarded; consequently a considerable Quantity of its Motion will be spent on the Medium. See MEDIUM.

Nor is there any Engine or Machine wherein all Friction can be avoided; there being in Nature no such Thing as exact Smoothness, or perfect Congruity; The Manner of the Cohesion of the Parts of Bodies, the small Proportion the solid Matter bears to the Vacuities between them, and the Nature of those constituent Particles not admitting it. See FRICTION.

This Friction, therefore, will also in Time sensibly diminish the impress'd, or communicated Force; so that a *perpetual* Motion can never follow, unless the communicated Force be so much greater than the generating Force, as to recompense the Diminution made therein by all these Causes: but *nil dat quod non habet*, the generating Force cannot communicate a greater Degree of Motion than it hath itself.

The whole Business of finding a *perpetual* Motion, therefore, comes to this, *viz.* to make a Weight heavier than itself, or an elastic Force greater than itself. See MACHINE.

Or 3<sup>o</sup>. and *lastly*, there must be some Method of gaining a Force equivalent to what is lost, by the artful Disposition and Combination of Mechanic Powers: To which last Point, then, all Endeavours are directed; but how, or by what Means such Force shou'd be gain'd, is still a Mystery.

The Multiplication of Forces, 'tis certain avails nought; for what is gain'd in Force is still lost in Time, so that the Quantity of Motion still remains the same.

All Mechanicks cannot really make a little Force equal, or superior to a larger; and wherever a less Force is found in *Equilibrio* with a larger *v. g.* 25 Pounds with 100, 'tis a Kind of Deception of the Sense; the Equilibrium is not strictly between 100 Pounds and 25; but between 100 Pounds, and 25 moving, or disposed to move four times as fast as the 100.

To consider the Weights 100 and 25 as fix'd, and immoveable; the 25 wou'd seem, some how, rais'd beyond 'emselves; which is one of the Sham-miracles of Mechanicks, that has deceiv'd Millions; but which is easily dissipated by considering the four Degrees of Velocity, which are to be given to the 25 Pounds, and which require a Force equal to the Excess of 100 above 25 Pounds.

A Force of 10 Pounds moved with ten times the Velocity of the 100 Pounds, wou'd have equal'd 'em in the like Manner; and the same may be said of all the possible Products equal to 100. But in fine, there must still be 100 Pounds of Force on each Side, what way soever they be taken; whether in the Matter, or in the Velocity.

This is an inviolable Law of Nature; by which nothing is left to Art, but the Choice of the several Combinations that may produce the same Effect. See LAW of NATURE.

PERPETUAL, or *endless* Screw. See SCREW.

PERPETUAL Pills, *Pilule perpetue*, among Physicians, are Pills made of *Regulus* of *Antimony*; which being swallow'd, and voided 50 Times, will purge every Time, with undiminish'd Force. See ANTIMONY.

PERPETUAL Glandules, in Anatomy, are those which are Natural; thus distinguish'd from the adventitious ones. See GLAND.

PERPETUITY, in the Canon Law, the Quality of a Benefice that is irrevocable, or whose Incumbent cannot be deprived; except in certain Cases determin'd by Law. See BENEFICE.

'Tis assert'd with Reason, that the *Perpetuity* of Benefices is establish'd by the ancient Canons, and that the Priests are inseparably attach'd to their Churches, as by a spiritual Marriage. 'Tis true, by the Corruption of the Times, the secular Priests being fallen into great disorder, and even Contempt; the Bishops antiently call'd the Religious to their Assistance, and committed to them the Cure of Souls, and

the Administration of Parishes; still remanding 'em back again to their Cloisters, when they thought fit, and revoking them *ad Nutum*.

But this vague and uncertain Administration only lasted to the XII Century, when Benefices return'd to their essential *Perpetuity*.

PERQUISITE, any Thing gotten by a Man's own Industry, or purchased with his own Money; in contradistinction to that which descends to him from his Father, or Ancestors.

PERQUISITS of Court are those Profits which arise to a Lord of a Mannor, by Virtue of his Court-Baron, over and above the certain yearly Profits of his Land; as Fines of Copy-holds, Harriots, Amerciaments, Waifes, Strays, &c.

PER QUÆ *servitia*, is a Writ judicial, issuing from the Note of a Fine, and lies for the Cognizee of a Manor, Seignory, chief Rent, or other Services, to compel him that is Tenant of the Land at the Time of the Note of the Fine levied, to attorn to him.

PERRON, in Architecture, a Stair-Case lying open, or without-side the Building; properly, the Steps in the Front of a Building, which lead into the first Story when rais'd a little above the Level of the Ground. See STAIR-CASE.

*Perrons* are made of different Forms and Sizes, with regard to the Space and Height they are to lead to.

Sometimes the Steps are round, or Oval; more usually Square.

PERRUKE, was antiently used for a long Head of natural Hair, such, particularly, as there was care taken in the Adjusting and Trimming of. The Latins call'd it *Coma*, whence part of *Gaul* took the Denomination of *Gallia Comata*; from the long Hair which the Natives wore as a Sign of Freedom. See HAIR.

An ancient Author says, that *Abolom's* *Perruke* weigh'd 200 Shekels.

PERRUKE, is now used for a Set of false, or borrow'd Hair, curl'd, buckled, and sew'd together on a Frame or Cawl; antiently call'd a *false Perruke*.

*Menage* derives the Word from the Greek *μύπη* which signifies the same Thing.

'Tis doubted whether or no the Use of *Perrukes* was known among the Ancients. 'Tis true, they used false Hair; *Martial* and *Juvenal* make merry with the Women of their Time, for making 'emselves look young with their borrow'd Hair; with the Men who chang'd their Colours according to the Seasons; and the Dotards who hoped to deceive the Delinies by their white Hair.

But these seem to have scarce had any Thing in common with our *Perrukes*; and were at best compos'd of Hair painted, and glu'd together: Nothing can be more ridiculous than the Description *Lampridius* gives of the Emperor *Commodus's* *Perruke*: 'Twas powder'd with scrapings of Gold, and oil'd (if we may use the Expression) with glutinous Perfumes for the Powder to hang by.

In effect, the use of *Perrukes*, at least on their present footing, is not an hundred Years old: The Year 1619 is reckon'd the Epocha of long *Perrukes*; at which time they began to appear in *Paris*; whence they spread by degrees throughout the rest of *Europe*.

At first it was reputed a Scandal for young People to wear 'em; by reason the Loss of the Hair at that Age was attributed to a Disease, the very Name whereof is a Reproach; but at length the Mode prevail'd over the Scruple; and now all Ages and Conditions wear 'em; foregoing, without any Necessity, the Conveniences of their natural Hair.

'Twas sometime, though, 'ere Ecclesiasticks came into the Fashion: The first who assum'd the *Perruke* were some of the *French* Clergy, in the Year 1660; nor is the Practice yet well authoriz'd. The Cardinal *Grimaldi* in 1684, and the Bishop of *Lavour* in 1688, prohibited the Use of the *Perruke* to all Priests without a Dispensation and Necessity. *M. Thiers* has a Treatise express, to prove the *Perruke* indecent in an Ecclesiastic, and directly contrary to the Decrees and Canons of Councils. A Priests Head embellish'd with an artificial Hair curiously adjust'd, he esteems a Monster in the Church; nor can he conceive any Thing so scandalous as an Abbot with a florid Countenance, heighten'd with a jolly *Perruke*.

PERRY, a Drink made of Pears, after the like manner as Cyder from Apples.

The best Fruit for this Use are such as are least fit for eating; *E. gr.* the Borberry-Pear, Horse-Pear, Boreland-Pear, and Choak-Pear; and still the redder they are the better.

The Method of preparing *Perry* is perfectly the same with that of preparing Cyder. See CYDER. Only Note, that the Fruit must be perfectly ripe. Some mix Crabs with 'em to mend the Liquor.

PER SE, in the Schools, is sometimes oppos'd to *per accidens*; in which Sense a Thing is said to agree with another *Per se*, when the Agreement is not owing to any accidental Event, but that is found in the intrinsic Principles of the Things themselves.

Sometimes



Sometimes *Per se* is opposed to *Per aliud*; in which Sense God alone is said to have a Being *Per se*, as not deriving it from any other, but having it necessarily and of himself. Sometimes again, *Per se* signifies as much as, of its own Nature, or in virtue of its own Entity: Thus the Sun is said to give light *Per se*; and Quantity is extended *Per se*.

Among Logicians, a Thing is said to be known *Per se*, *Per se notum*, when we immediately perceive it upon the first proposing of the Terms: As that the Whole is greater than its Parts. See AXIOM.

The Philosophers go so far as to consider the Mode of a Thing existing *Per se*, or that which constitutes its Existence such; which they call *Perseity*, *Perseitas*. See EXISTENCE. PERSECUTION, a Word which literally imports any Pain, Affliction, or Inconvenience, which a Person designedly inflicts on another.

But, as a Term, Persecution is restrain'd to the Sufferings of Christians, in Behalf of their Religion; particularly to those of the primitive Christians, under the Heathen Emperors Nero, Decius, Diocletian, &c.

They reckon ten of these Persecutions; Nero lighted the first. Lactantius has wrote the History of the Deaths of Persecutors; tho' some question whether that Work be really his or not. Bishop Burnet, who has turn'd it into English, makes no great doubt of it.

PERSEVERANCE, in Theology, a Christian Virtue, whereby we are enabled to persist in the way of Salvation to the End.

The final *Perseverance* of the Saints is an Article much controverted between the *Arminians* and *Calvinists*: The latter of whom maintain it impossible for Grace to be lost; and therefore make *Perseverance* to the End, a necessary Consequence thereof; which the former deny; believing the most confirm'd Believers never out of a Possibility of falling. See GRACE.

PERSEUS, in Astronomy, a Constellation of the Northern Hemisphere. See CONSTELLATION.

The Stars in this Constellation, in Ptolomy's Catalogue are 29; in Tycho's as many; in the Britannic Catalogue 67. The Longitudes, Latitudes, Magnitudes, &c. whereof are as follow:

| Names and Situations of the Stars.  | Sign. | Longit.    | Latitude. North. | Magnit. |
|---|-------|------------|------------------|---------|
| In Andromeda's Foot, according to Ptolomy and Tycho; according to Bayer in <i>Perseus</i> . | ♈     | 8 08 36    | 35 23 45         | 4       |
| In the Middle of the Sword  |       | 10 18 13   | 36 49 13         | 5       |
|   |       | 14 19 14   | 40 13 15         | 6       |
|   |       | 11 52 02   | 36 18 37         | 6       |
|   |       | 12 09 56   | 34 26 01         | 6 7     |
|   |       | 15 39 10   | 38 57 37         | 6       |
|   |       | 19 02 06   | 41 13 15         | 6       |
|   |       | 15 45 38   | 35 09 28         | 6       |
| South in the Hilt of the Sword against North, (the Hand                                     |       | 19 56 48   | 40 43 20         | 5 6     |
| 10  |       | 20 12 34   | 41 03 20         | 6       |
| Small one under the Hand  |       | 19 44 42   | 38 57 41         | 6       |
|   |       | 20 39 23   | 39 28 49         | 7       |
|   |       | 22 47 39   | 37 06 23         | 7       |
| North. of the Informes before Medusa's Head   |       | 16 32 13   | 23 13 10         | 6       |
| In the preceed. Shoulder (dusa's Head   |       | 20 19 25   | 31 36 07         | 4       |
| 15  |       | 18 25 56   | 26 57 26         | 6       |
| In the upper Arm (dusa's Head   |       | 24 23 27   | 37 26 50         | 4       |
| South. of the Informes before Medusa's Head   |       | 17 29 12   | 20 55 32         | 4       |
| Preced. of Inform. under Medusa's Head  |       | 16 36 35   | 17 46 05         | 6 5     |
| In <i>Perseus</i> 's Head [Head   |       | 23 35 30   | 34 20 12         | 5       |
| 10  |       | 18 08 09   | 20 44 42         | 6       |
| Subseq. and less. before Medusa's Head  |       | 16 51 09   | 14 24 47         | 5 6     |
| Preced. in Medusa's Head  |       | 19 34 36   | 21 42 15         | 4       |
| Last of Inform. und. Medusa's Head  |       | 18 13 28   | 17 24 46         | 6       |
| In the hind Shoulder  |       | 25 42 10   | 34 30 05         | 3       |
| 25  |       | 17 10 38   | 37 27 42         | 5 6     |
| In the upper Part of the Arm  |       | 20 34 30   | 20 33 13         | 4       |
| South. in Medusa's Head   |       | 24 49 20   | 30 38 35         | 4       |
| In the Middle of the Back <i>Algol</i>  |       | 21 50 42   | 22 23 47         | 2 3     |
| Bright one in Medusa's Head   |       | 23 21 12   | 26 04 21         | 4       |
| In the lower Part of the Arm  |       | 22 01 38   | 20 55 56         | 4 5     |
| That under <i>Algol</i>   |       | 26 52 43   | 30 42 10         | 6 7     |
|   |       | 24 38 48   | 24 49 51         | 6       |
|   |       | 26 54 54   | 30 33 42         | 6       |
| Against the Preceed. and South. Side  |       | 25 07 54   | 23 58 05         | 5 6     |
| 35  |       | 27 46 04   | 30 05 20         | 2       |
| A Lucid one against the hind Part   |       | 28 35 25   | 29 30 00         | 6       |
| Preced. the Lucida of the hind Part   |       | 28 17 42   | 28 00 24         | 5       |
|   |       | 28 03 15   | 26 03 51         | 6       |
| Middle of three in the Side   |       | 29 26 13   | 27 56 05         | 5       |
| 40  |       | II 0 29 07 | 27 15 21         | 3       |
| Another following these against the Hip   | II    |            |                  |         |

| Names and Situation of the Stars.  | Sign. | Longit.  | Latitude. North. | Magnit. |
|------------------------------------|-------|----------|------------------|---------|
| Over the Heel of the inner Foot    | ♈     | 26 48 20 | 13 53 28         |         |
| In the lower Thigh                 |       | 29 30 16 | 22 07 03         | 4       |
| In the Heel of the South. Foot     |       | 26 49 11 | 12 08 36         | 3 4     |
| In the Heel of the same Foot       |       | 28 05 52 | 12 40 25         | 6       |
| In the upper Thigh                 | II    | 2 54 03  | 26 20 30         | 7       |
|                                    |       | 3 46 50  | 29 33 04         | 5       |
| In extrem. of South. Foot          | ♈     | 28 47 44 | 11 17 54         | 3       |
| In South. Knee                     | II    | 1 21 25  | 19 04 53         | 3       |
| In South Leg 50                    |       | 0 39 15  | 14 54 06         | 5       |
| Preced. against North Knee         |       | 5 26 24  | 28 51 00         | 5       |
| Preced. in the upper Leg           |       | 5 10 54  | 26 12 08         | 4 5     |
|                                    |       | 2 56 50  | 16 26 27         | 6       |
|                                    |       | 3 03 45  | 16 44 25         | 6 7     |
| Subseq. in upper Leg               |       | 6 28 58  | 26 40 09         | 5       |
| 55                                 |       | 7 54 41  | 31 27 20         | 6       |
| Inform. over North Knee            |       | 4 49 30  | 18 53 20         | 5       |
| That following South Knee          |       | 7 30 02  | 28 24 56         | 5       |
| That following North. Knee         |       | 7 37 09  | 28 08 30         | 6       |
| South. of those contiguous thereto |       | 7 59 23  | 28 58 11         | 7       |
| North. 60                          |       |          |                  |         |
| In the Calf of the upper Leg       |       | 7 17 48  | 24 35 00         | 6       |
|                                    |       | 4 51 10  | 12 51 48         | 6 5     |
|                                    |       | 5 37 12  | 12 17 47         | 7       |
|                                    |       | 5 37 19  | 12 07 44         | 7       |
| In the Heel of upper Foot.         |       | 8 55 46  | 20 49 11         | 6       |
| 65                                 |       |          |                  |         |
| In the Sole of the same Foot       |       | 9 16 20  | 18 58 00         | 5       |
|                                    | II    | 10 48 29 | 20 52 59         | 6       |

PERSIAN, or the PERSIAN Tongue, one of the living oriental Languages; spoke in the Empire of Persia. See LANGUAGE.

The *Persian* has two Particularities not found in any of the other Eastern Tongues, The one that it has an auxiliary Verb, answering to the Verb *εἶμι* of the Greeks; the other, that it has an Aoristus: Both these it borrow'd from the *Macedonians*, after the Conquest of Alexander. See GREEK.

PERSIAN Wheel, in Agriculture, is a Machine for raising a Quantity of Water sufficient to over-flow Lands bordering on the Banks of Rivers, &c. where the Stream is too low to do it alone. See WHEEL.

PERSIAN or PERSIC, in Architecture, a Name common to all Statues of Men, serving instead of Columns, to support Entablatures. See STATUE.

They only differ from Caryatides, in that those represent Statues of Women. See CARYATIDES.

The *Persian* is a Kind of Order of Columns, first practiz'd among the Athenians; on occasion of a Victory their General Pausanias obtain'd over the Persians. As a Trophy of this Victory, the Figures of Men dress'd in the Persian Mode, with their Hands bound before them, and other Characters of Slavery, were charg'd with the Weight of Doric Entablatures; and made to do the Office of Doric Columns. See ORDER.

Persian Columns, M. le Clerc observes, are not always made with the Marks of Slavery; but are frequently used as Symbols of Virtues, Vices, of Joy, Strength, Valour, &c. as when made in the Figure of Hercules to represent Strength, of Mars, Mercury, Fauns, Satyres, &c.

PERSIAN Era and Year. See EPOCHA and YEAR.

PERSON, an individual Substance, of a rational or intelligent Nature. See SUBSTANCE, and INDIVIDUAL.

The Father and Son are reputed, in Law, as the same Person; an Ambassador represents the Person of his Prince. See EMBASSADOR.

In Theology the Godhead is divided into three Persons; but here the Word *Person* carries a peculiar Idea, very different from that attach'd to it every where else; being only used for want of a Term more pertinent and expressive. See TRINITY.

The Word *Person*, *Persona* is said to be borrow'd a *Personando*, from personating, or counterfeiting; and is supposed to have first signified a Mask: By Reason, says Boetius, in *Larva Concava sonus volvatur*, and hence the Actors who appear'd mask'd on the Stage, were sometimes call'd *Larvati*, and sometimes *Personati*.

Hence, adds Boetius, as the several Actors represented each their single individual Man, viz. Oedipus, or Chremes, or Hecuba, or Medea; for this Reason, other People, who were also distinguish'd by something in their Form, Character, &c. whereby they might be known; came also to be call'd by the *Latin* *Personae*, and by the *Greeks* *πρόσωπα*.

Again, as these Actors rarely represented any but great and illustrious Characters, the Word came at length to import the *Mind*, as being a Thing of the greatest Regard and Dignity among human Matters. And thus Men, Angels, and even God himself were call'd *Persons*.

Things merely corporeal, as a Stone, a Plant, or a Horse, were call'd *Hypostases*, or *Supposita*; but never *Persons*. See HYPOSTASIS, &c.



Hence also, the Learned imagine, the same Name *Person* came to be used to signify some Dignity, whereby a *Person* is distinguish'd from another; as a Father, Husband, Judge, Magistrate, &c. In which Sense we are to understand that of *Cicero*: *Cæsar* never speaks of *Pompey*, but in Terms of Honour and Respect; but he does many hard and injurious Things against his *Person*.

This for the Name: as for the Thing, we have already defin'd *Person*, an individual Substance of a reasonable Nature; which is the same *Boethius's* Definition.

Now a Thing may be individual two ways; 1. Logically, as it cannot be predicated of any other; as *Cicero*, *Plato*, &c. 2. Physically, in which Sense a Drop of Water separated from the Ocean may be call'd an individual. *Person* is an individual Nature in each of these Senses: Logically says *Boethius*, since *Person* is not spoke of universals, but only of Singulars and Individuals; we don't say the *Person* of an Animal or a Man, but of *Cicero* and *Plato*: And physically, since *Socrates's* Hand or Foot are never consider'd as *Persons*.

This last Kind of Individual is denominat'd two ways; positively, as when the *Person* is said to be the whole Principle of Acting; for, to whatever Thing Action is attributed, that do the Philosophers call a *Person*: And negatively, as when we say, with the Thomists, &c. that a *Person* consists in this, that it does not exist in another as a more perfect Being.

Thus, a Man, tho' consisting of two very different Things, viz. Body and Spirit, is not two *Persons*; since neither Part alone is a whole Principle of Action; but one *Person*, since the Manner of his consisting of Body and Spirit, is such as constitutes one whole Principle of Action: nor does he exist in any other as a more perfect Being, as *E. gr.* *Socrates's* Foot does in *Socrates*, or a Drop of Water in the Ocean.

So Christ, tho' consisting of two different Natures, viz. the Divine and Humane, is not two *Persons*, but one Divine *Person*; the human Nature, in him, not being a whole Principle of Action; but existing in the other more perfect one. By the Union of the Divine and human Nature one Individual, or Whole is constituted; that is one Principle of acting: for whatever Christ's Humanity does, that does his Divinity join'd therewith: So that there is but one *Person* in Christ, and one Operation, which is call'd *Theandric*. See *THEANDRIC*.

*PERSON*, in Grammar, a Term applied to Verbs and Pronouns, which being conjugated, are applicable to three different *Persons*. See *VERB*, &c.

*I love* is a Verb used in the first *Person*; *thou lovest* designs the second *Person*; *he loveth* marks the Third: And thus in the Plural Number. See *NUMBER*.

*I, thou, he*, are Pronouns of the first, second, and third *Persons*. See *PRONOUN*.

Verbs agree with their Nouns in Tense, Number, and *Person*. See *CONSTRUCTION*, and *CONCORD*.

*PERSON*, *Persona*, in dramatic Poetry, the Name and Part of an Actor; or of him represented by the Comedian.

At the Head of dramatic Pieces come the *Dramatis Personæ*, the List of Actors, and Characters that are to appear on the Stage.

The ancient Tragedy was only a simple Chorus: *Thespis* was the first who introduced a *Person* to relieve the Chorus; *Æschylus* added a second. See *TRAGEDY*. See also *CHORUS*, &c.

*F. Bessu* observes, that in the Epic and Dramatic Poem, the same *Person* must reign throughout, i. e. must sustain the chief Part thro' the whole Piece, and the Characters of all the other *Persons* be subordinate to him. See *CHARACTER*. See also *HERO*.

*PERSONA*, in Law. See *PARSON*.

*PERSONABLE*, in Law, implies the being able to hold, or maintain, a Plea in Court.

That is, as the Civilians wou'd express it, *habere personam standi in Judicio*.

Thus they say, the Defendant was judg'd *Personable* to maintain this Action: Old *Nat. Brev. in Kitchen* Fol. 124. The Tenant pleaded that the Wife was an *Alien*, born in *Portugal*, without the Ligeance of the King; and Judgment was ask'd whether she shou'd be answer'd? The Plaintiff said he was made *Personable* by Parliament.

*PERSONABLE*, is also used to signify a Capacity to take any Thing granted or given. See *CAPACITY*.

*PERSONAL*, something that concerns, or is restrain'd to the *Person*. See *PARSON*.

In Disputes among the Learned, there is ever something *Personal* intermix'd; in Ethics 'tis a Maxim that all Faults are *Personal*, i. e. don't pass to our Descendants.

A *PERSONAL Action*, in Law, is that levied directly, and solely against the *Person*, in opposition to a real or mix'd Action. See *ACTION*.

*PERSONAL Goods*, or *Personal Estate*, is that consisting of Money, Moveables, &c. which every *Person* has in his own Disposal; in opposition to Lands and Tenements, which are call'd *real Estate*. See *ESTATE*, and *GOODS*.

Theft is defin'd a felonious taking a way another Man's moveable *Personal Goods*. See *THEFT*.

*PERSONAL Tithes*, are Tithes paid of such Profits as come by the Labour of a Man's *Person*; as by buying and selling; gains of Merchandize, Handicraft, &c. See *TITHES*.

*Pronoun PERSONAL*, or *Verb PERSONAL*, in Grammar, a Verb, or Pronoun, conjugated in all the three *Persons*. See *VERB* and *CONJUGATION*.

In Opposition to *Impersonals* which have only the third *Person*. See *IMPERSONAL*.

*PERSONALITY*, in the Schools, the Quality of *Person*; or that which constitutes an Individual in the Quality of *Person*. See *PERSON*.

The Philosophers being used to consider Matter, and Form in every other Thing; do the same in *Person*. The Matter of *Person*, according to them, is a singular Substance, endued with Reason. For, Substance may, at the Pleasure of God, either be, or not be a *Person*; in as much as the human Nature in Christ is not a *Person*. The Form of *Person* which they call *Subsistency*, *Suppositality*, and *Personality*, is that by which the foresaid Substance becomes individual.

The School Divines are divided about what it is that distinguishes the several *Personalities* in the Trinity: some will have it to be only the different Relations; others, as *Horatius* contend for some incommunicable Substance: *S. Bonaventure*, and *S. Thomas*, take it to be the different Origins that distinguish the *Personalities*; which Opinion is the most follow'd. See *IDENTITY*.

*PERSONALITY*, in Law. An Action is said to be in *Personality*, when it is brought against the right *Person*.

*PERSONATI*, among Botanists, are such Flowers as express the gaping Mouths of some living Creatures.

*PERSONIFYING*, or *PERSONALISING*, the feigning a *Person*; or attributing a *Person* to an inanimate Being; or giving it the Figure, Sentiments, and Language of a *Person*.

The Poets have *personified* all the Passions; and made Divinities of them, which were worship'd by the Heathens; as the Goddesses *Persuasion*, the God *Sleep*, the Furies, *Envy*, *Discord*, *Fame*, *Fortune*, *Victory*, &c. See *GOD*, See also *MACHINE*.

*Personifying* is essential to Poetry, especially the *Epic*. See *POETRY* and *EPIC*.

*PERSPECTIVE*, the Art of Delineating visible Objects on a plane Surface, such as they appear at a given Distance or Height, upon a transparent Plane, placed perpendicular to the Horizon, between the Eye and the Object. See *DELINEATING*.

This, we particularly call *linear Perspective*, as regarding the Position, Magnitude, Form, &c. of the several Lines, or Contours of Objects; and expressing their Diminution: In Opposition to the *Aerial Perspective*, which regards the Colour, Lustre, Strength, Boldness, &c. of distant Objects, consider'd as seen thro' a Column of Air; and expresses the Diminutions thereof.

The former is a Branch of Mathematicks: Some make it a Member of Opticks; others a Rivulet therefrom; and its Operations, are all Geometrical. See *OPTICKS*.

The latter is a Part of Painting, and consists wholly in the Conduct of the Colours, their different Tints, or Degrees, Force, Weakness, &c. See *COLOUR* and *COLOURING*.

Some make a third Kind of *Perspective*, viz. *Specular Perspective*; which represents the Objects in Conical, Spherical, or other Mirrors, erect, and clear; whereas on *Lawn* and other Planes appear confused and irregular. See *MIRROR*.

To conceive the Nature of *Perspective*; i. e. *Linear Perspective*: Suppose a Glass-plane *H I*, (Tab. *Perspective* Fig. 1.) rais'd perpendicularly on a horizontal Plane; and the Spectator *S*, directing his Eye *O*, to the Triangle *A B C*: If now we conceive the Rays *AO*, *OB*, *OC*, &c. in their Passage thro' the Plane, to leave their Traces or Vestigia, in *a*, *b*, *c*, &c. On the Plane; there will appear the Triangle *a b c*; which, as it strikes the Eye by the same Rays *a O*, *b O*, *c O*, by which the Species of the Triangle *A B C* is carried to the same; it will exhibit the true Appearance of the Triangle *A B C*, tho' the Object shou'd be remov'd; the same Distance and Height of the Eye being preserv'd. See *VISION*, *POINT*, *PLANE*, *LINE*, &c.

The Business of *Perspective* then, is to shew by what certain Rules the Points *a*, *b*, *c*, &c. may be found Geometrically: And hence also, we have a mechanical Method of delineating any Object very accurately; See *DESIGNING*.

*Perspective* is either employ'd in representing the *Ichneographics*, or Ground-plats of Objects, as projected on *Perspective Planes*. See *ICHOGRAPHY*.

Or in *Scenographics*, or Representations of the Bodies themselves. See *SCENOGRAPHY*.

The general Laws of each, are subjoin'd; in order to which it is necessary to premise the following Lemmas in *Perspective*.

1. That the Appearance of a right Line is ever a right Line; whence, the two Extremes being given, the whole Line is given.

2. That if a Line be Perpendicular to any right Line drawn on a Plane, it will be Perpendicular to every other right Line drawn on the same Plane.



# Tab: Perspective

Fig. 1. Perspective

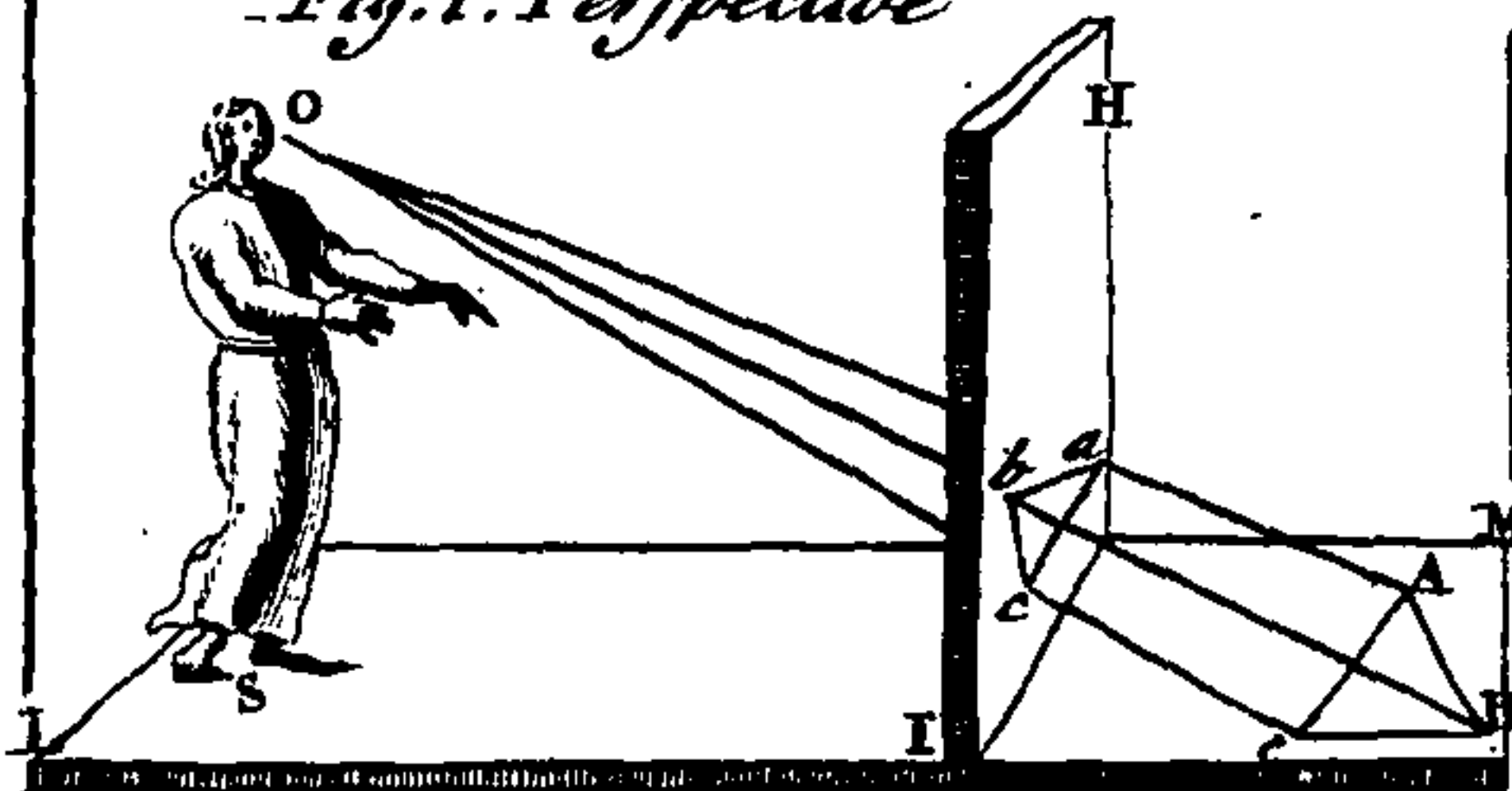


Fig. 2 Scenography. in Perspective

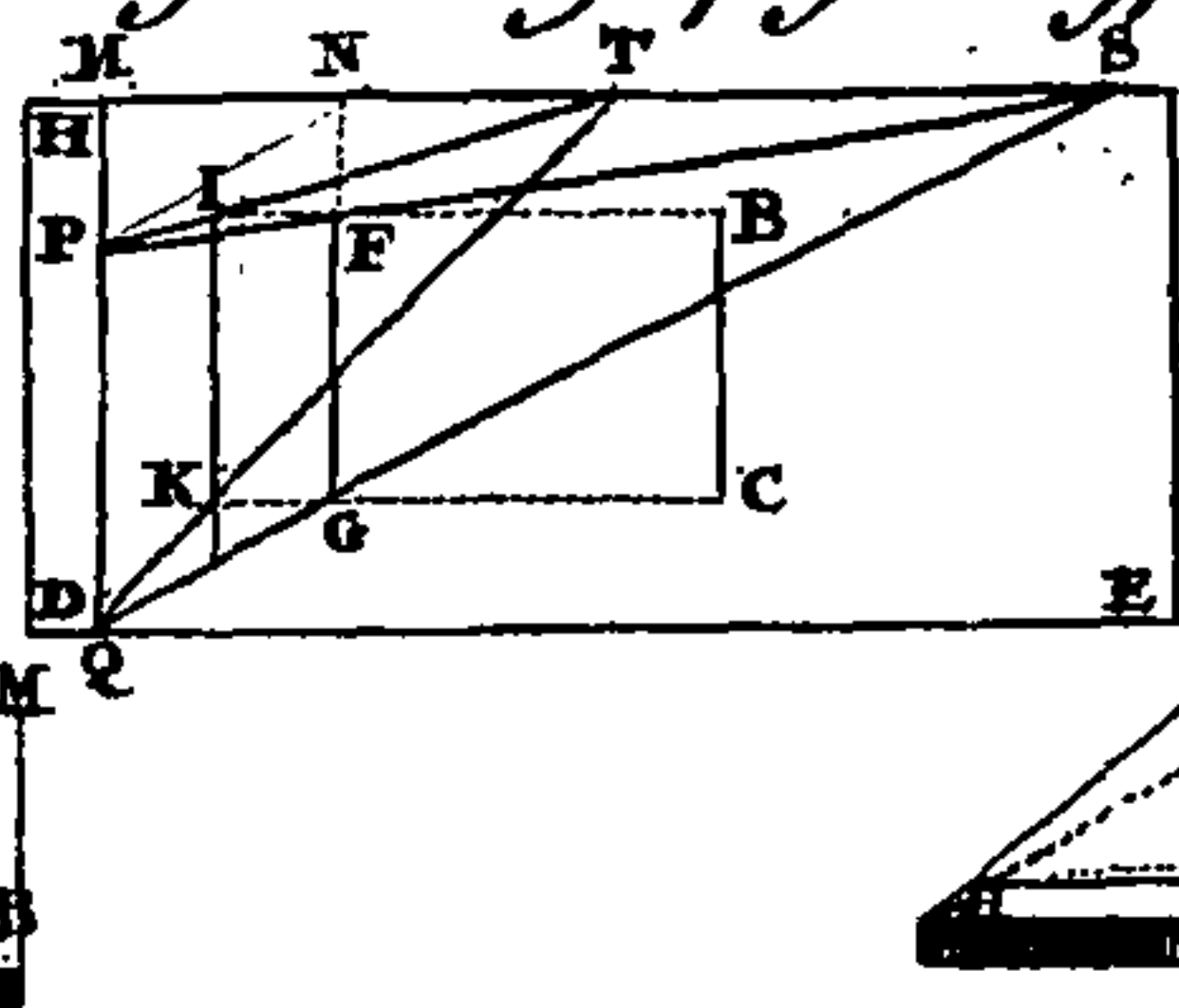


Fig. 2 Perspective

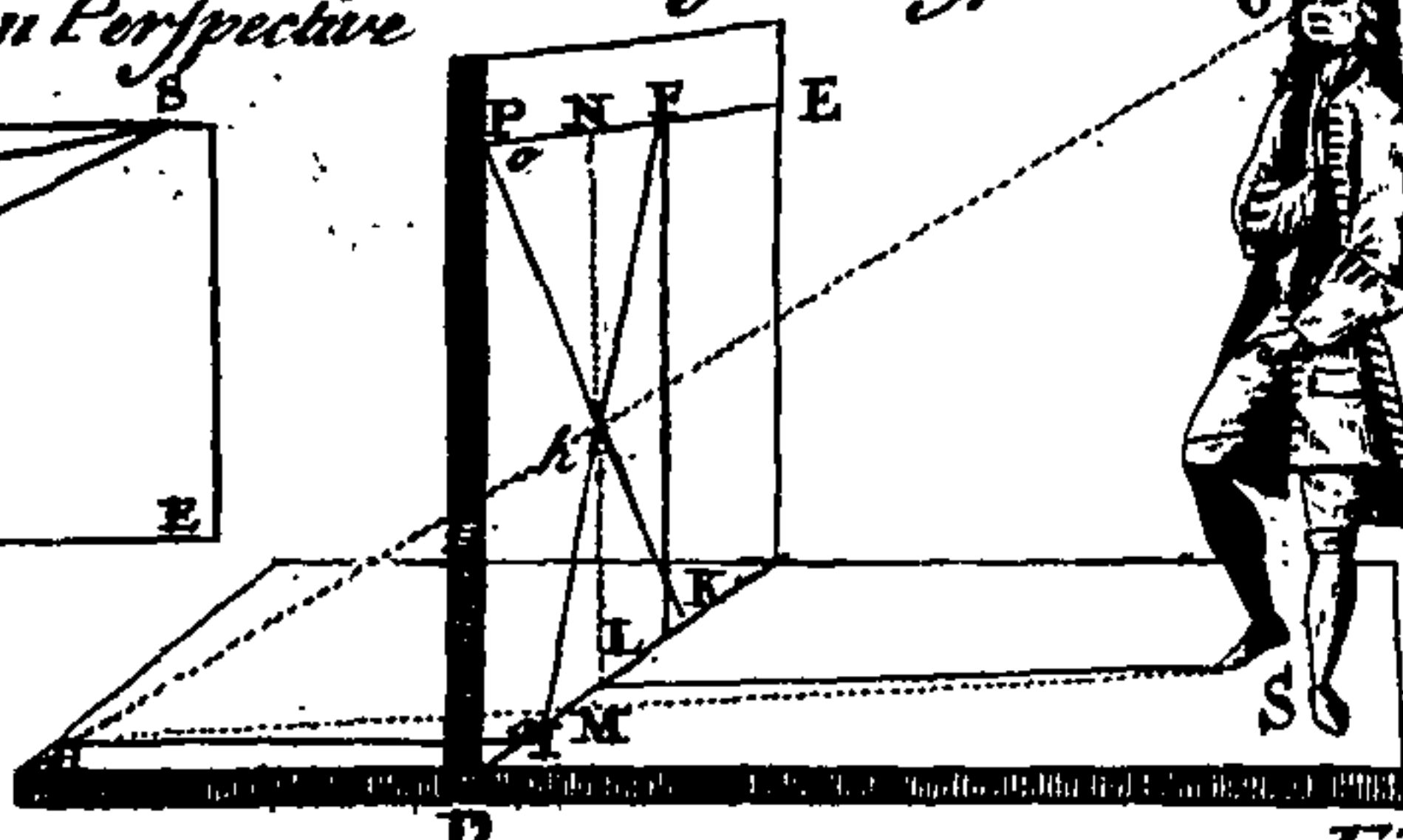


Fig. 2 Scenography

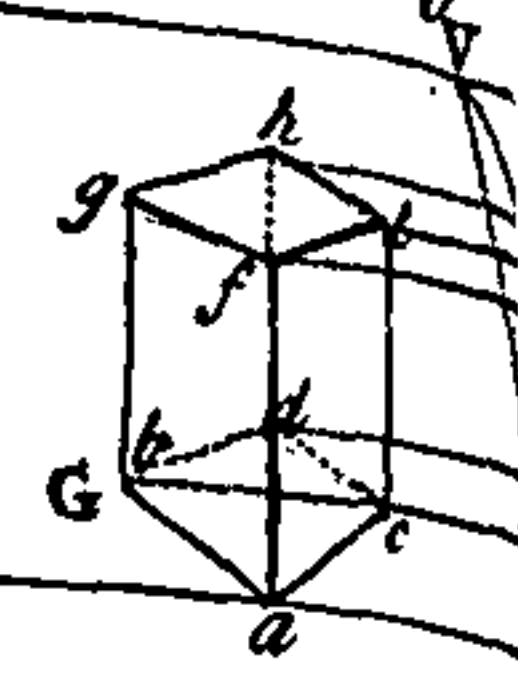


Fig. 3 Scenography.

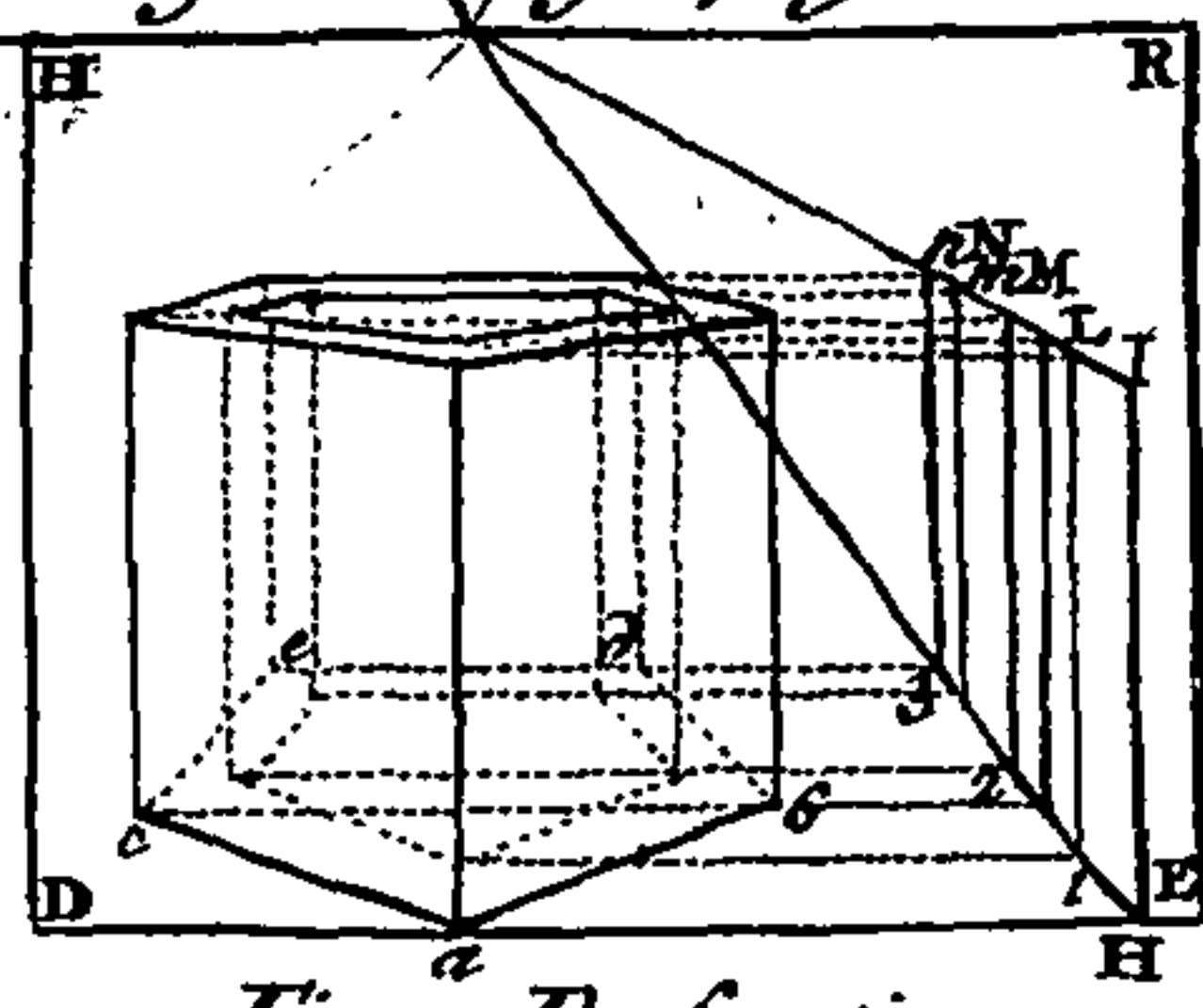


Fig. 3 Perspective

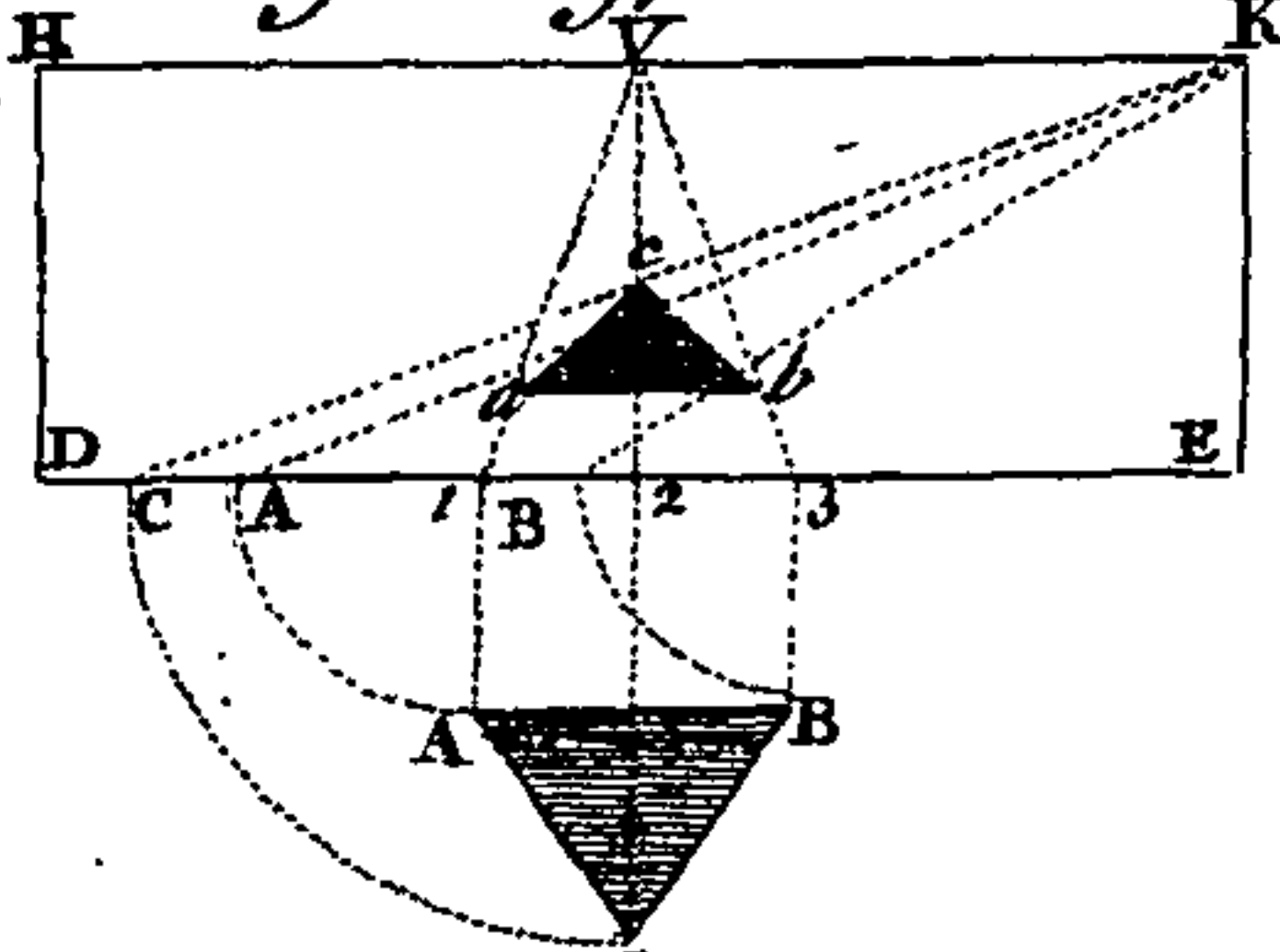


Fig. 4 Perspective

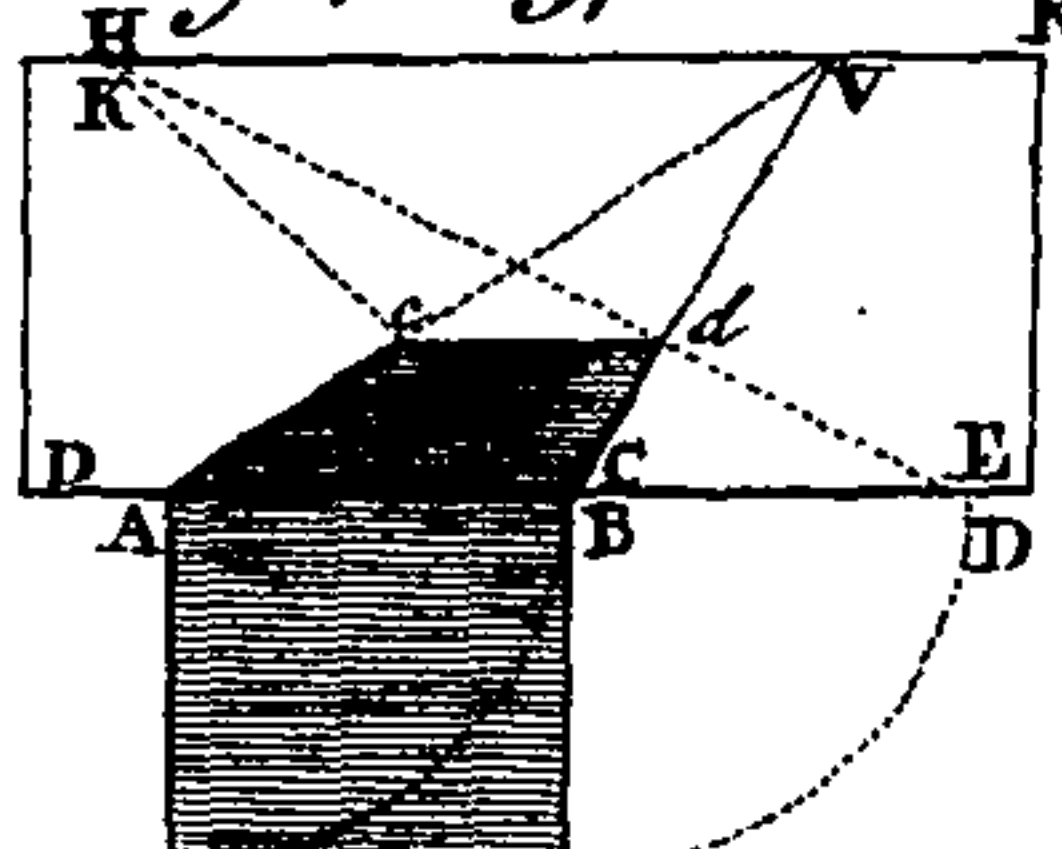


Fig. 4 Scenography

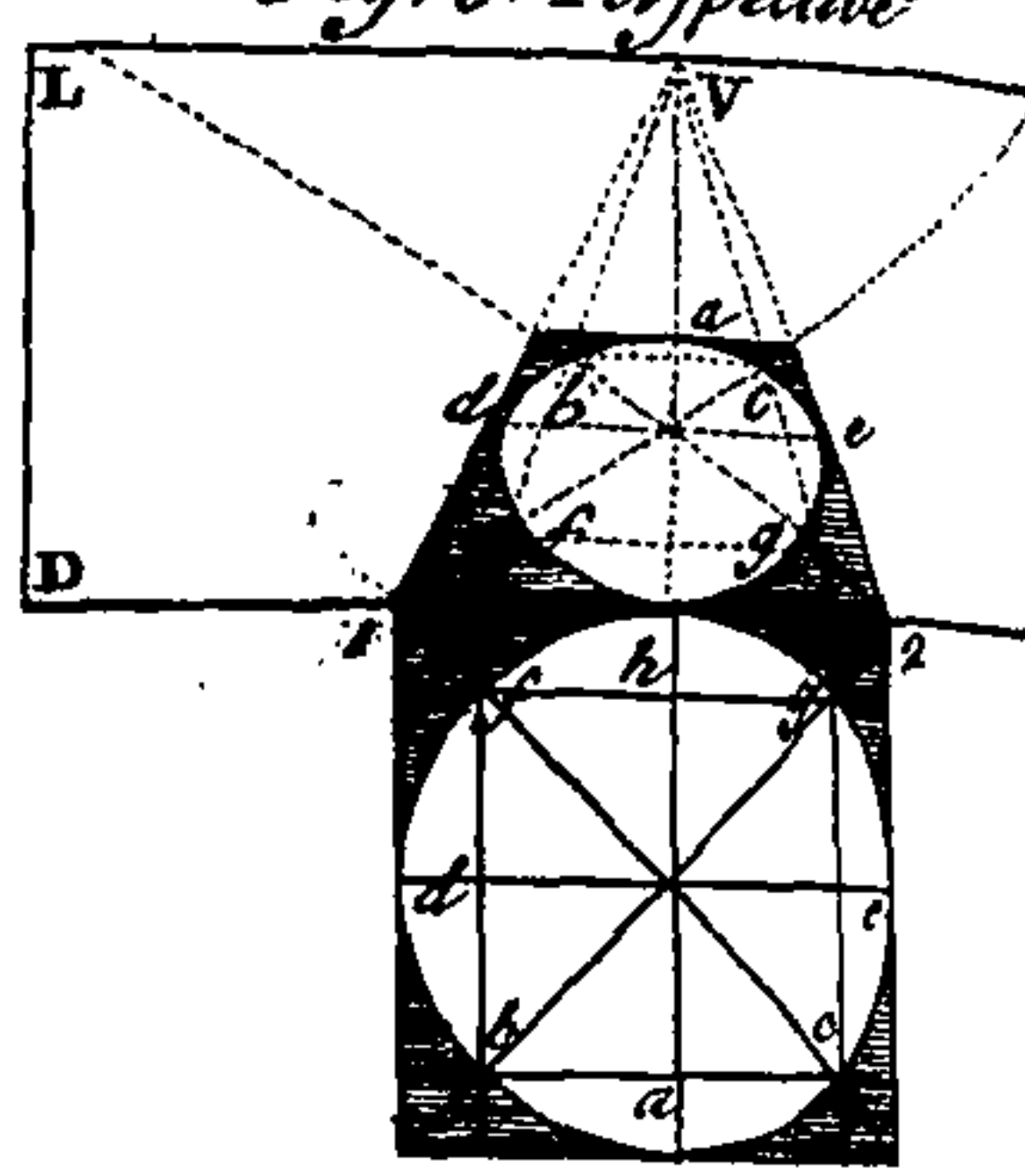


Fig. 8. Perspective

Fig. 5 Perspective

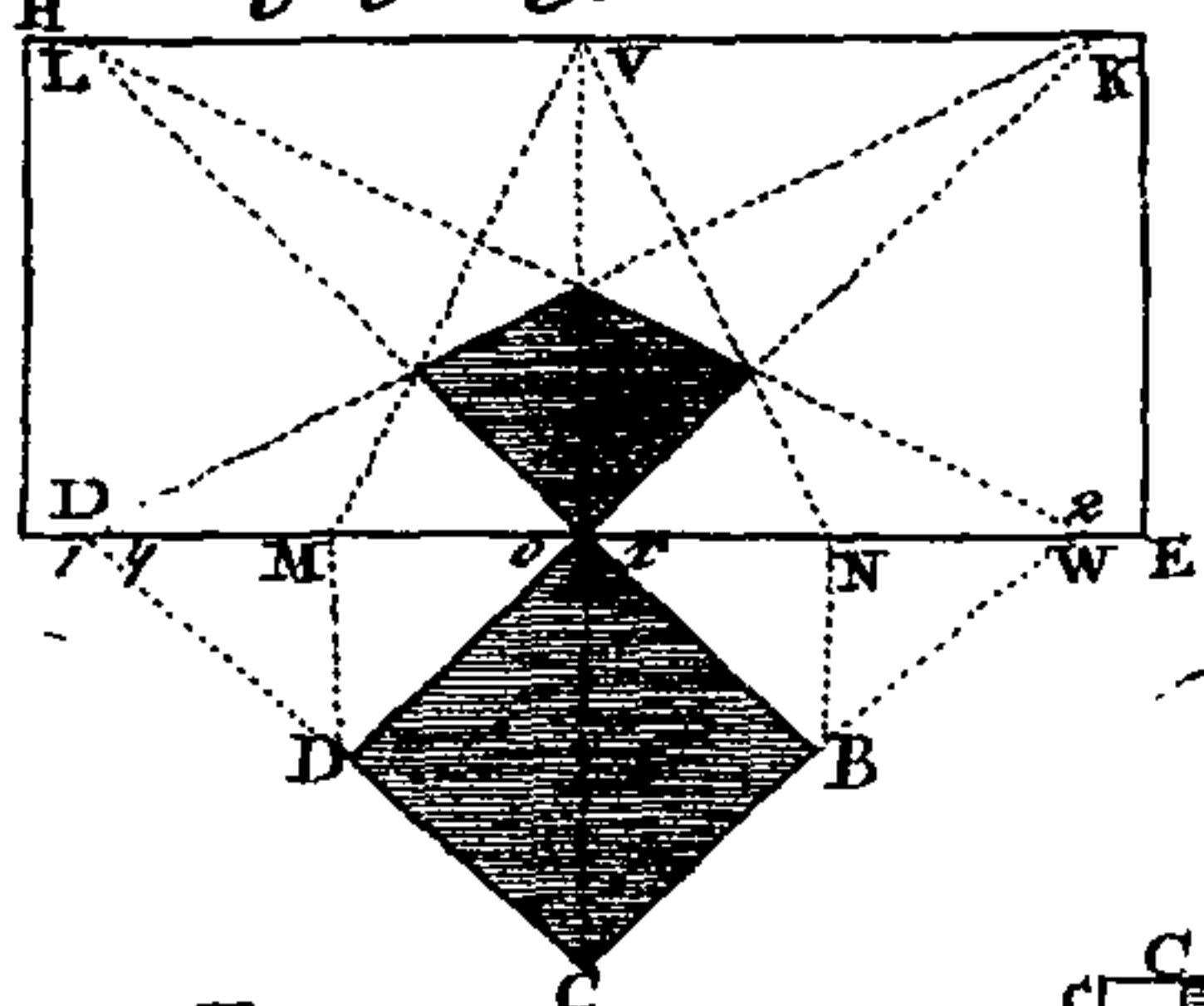


Fig. 5 Scenography

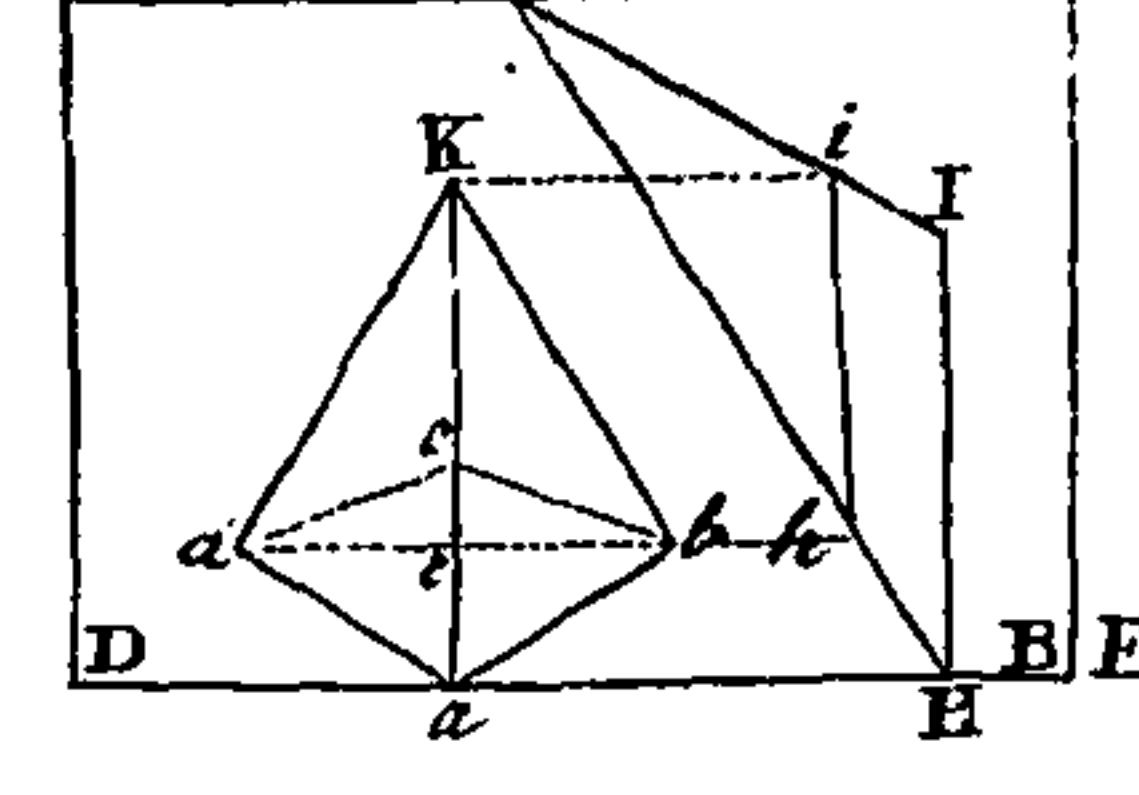


Fig. 6 Perspective

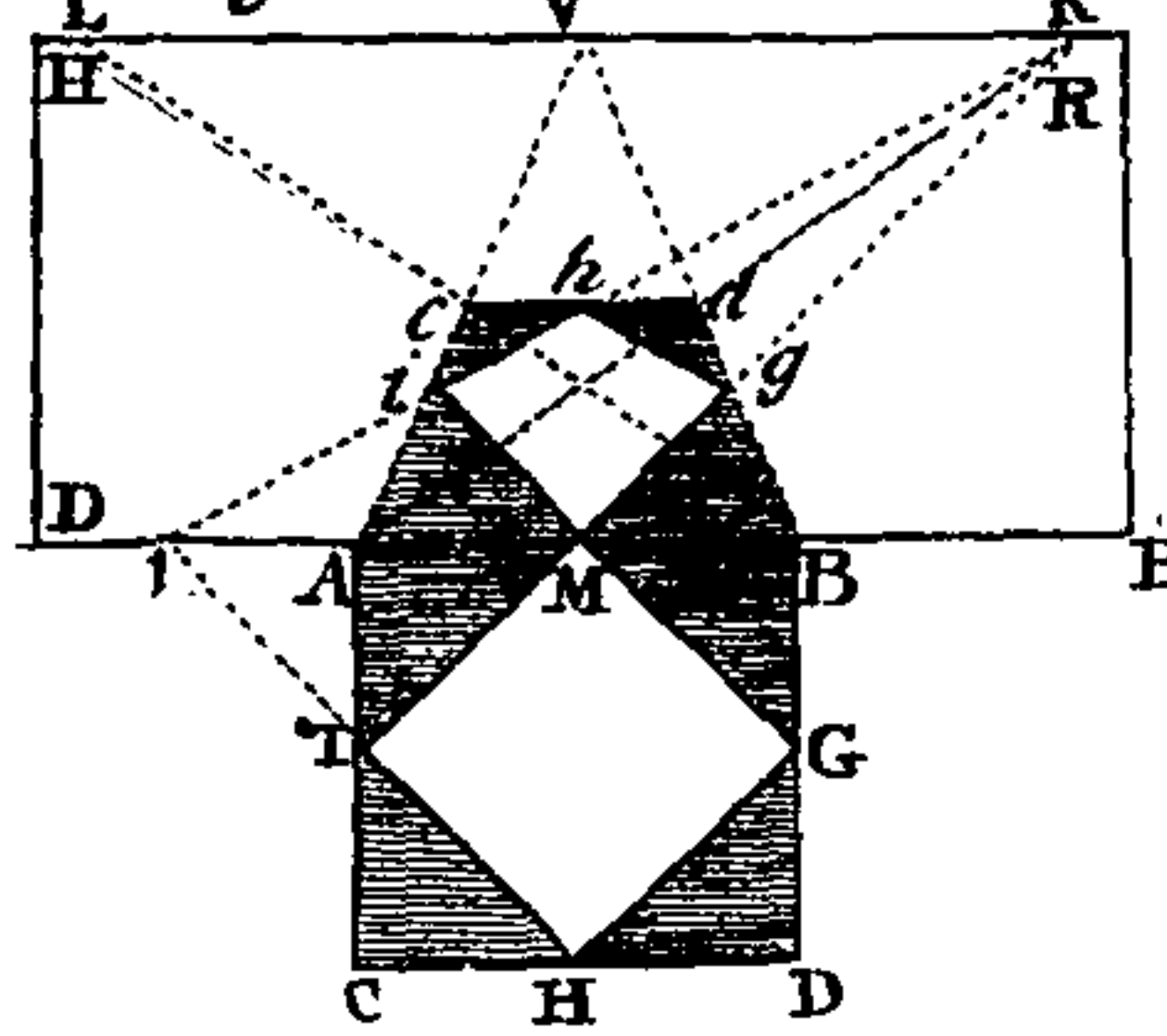


Fig. 6. Scenography

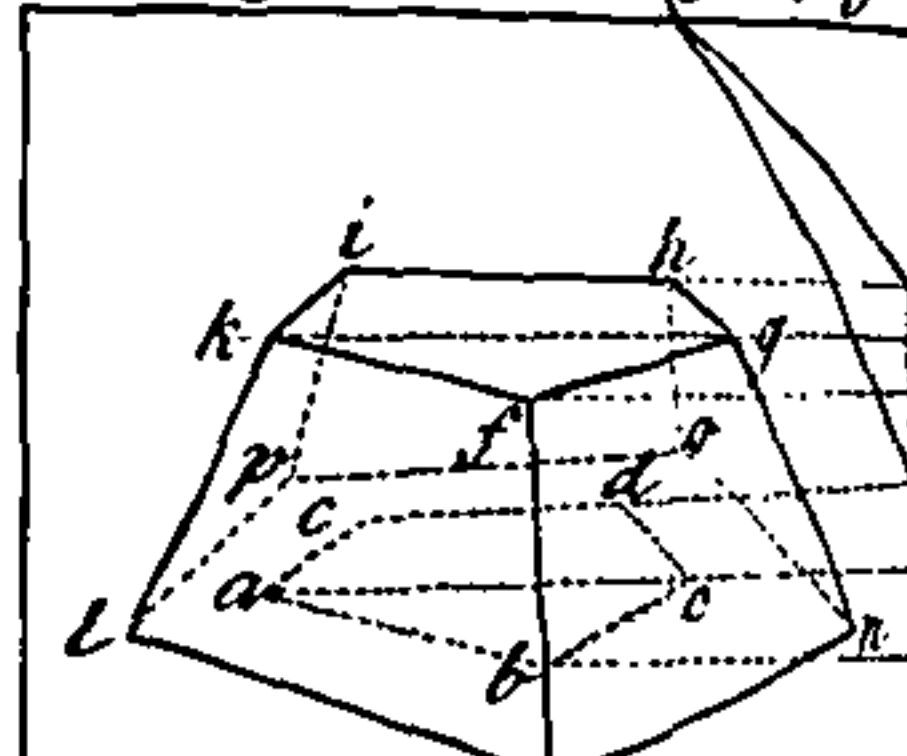


Fig. 7 Perspective

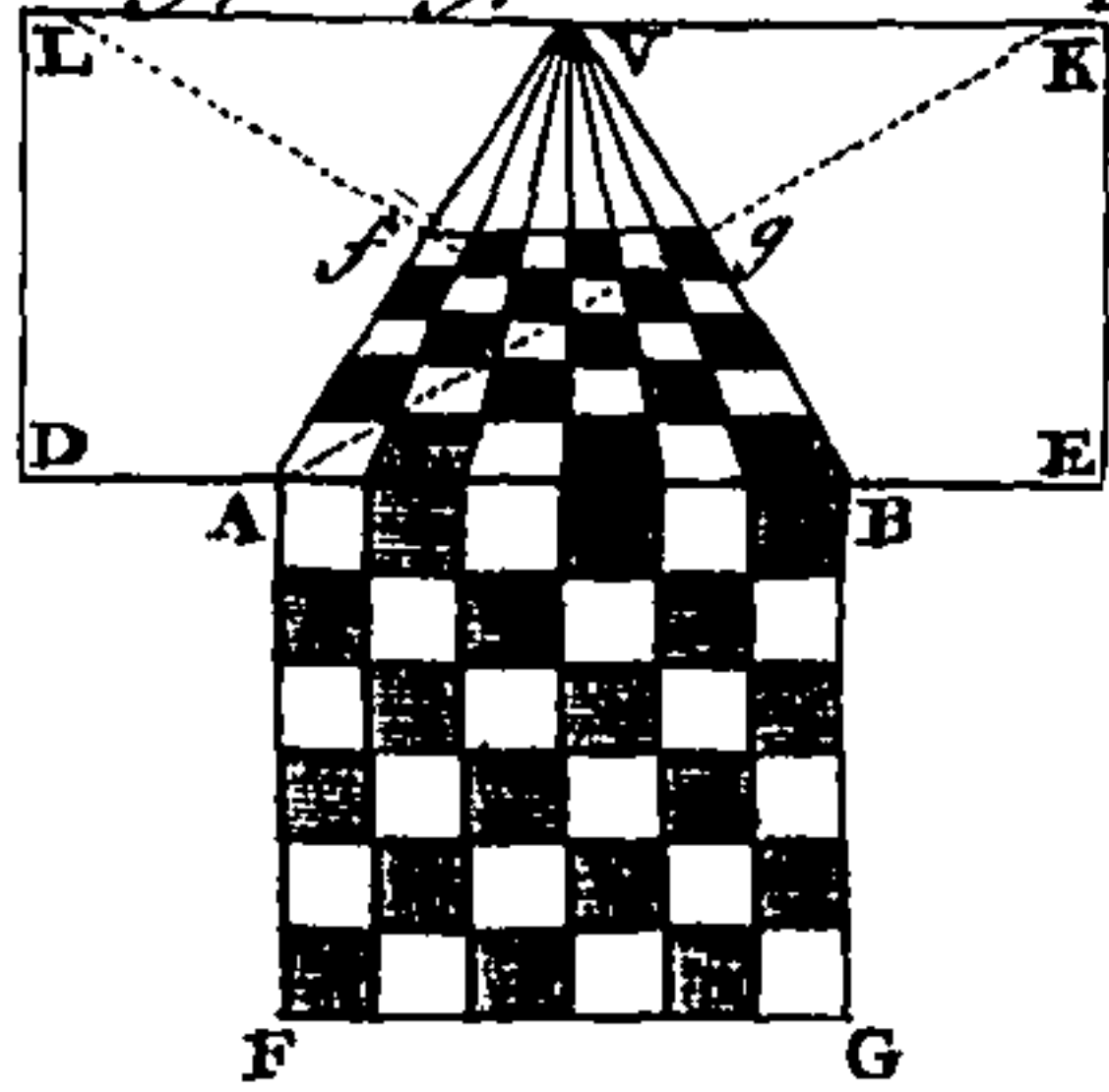


Fig. 7 Scenography

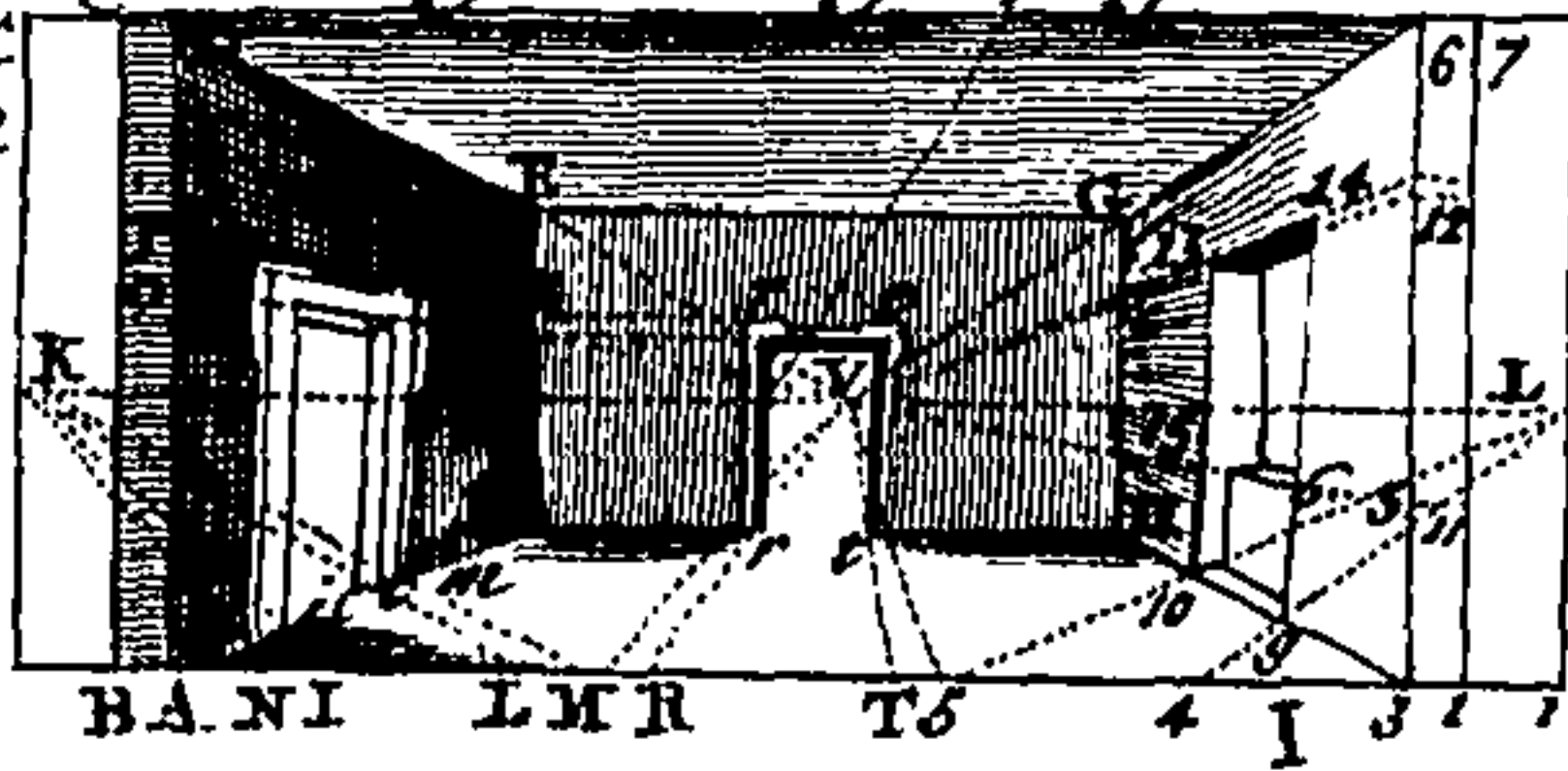


Fig. 8 Shadow

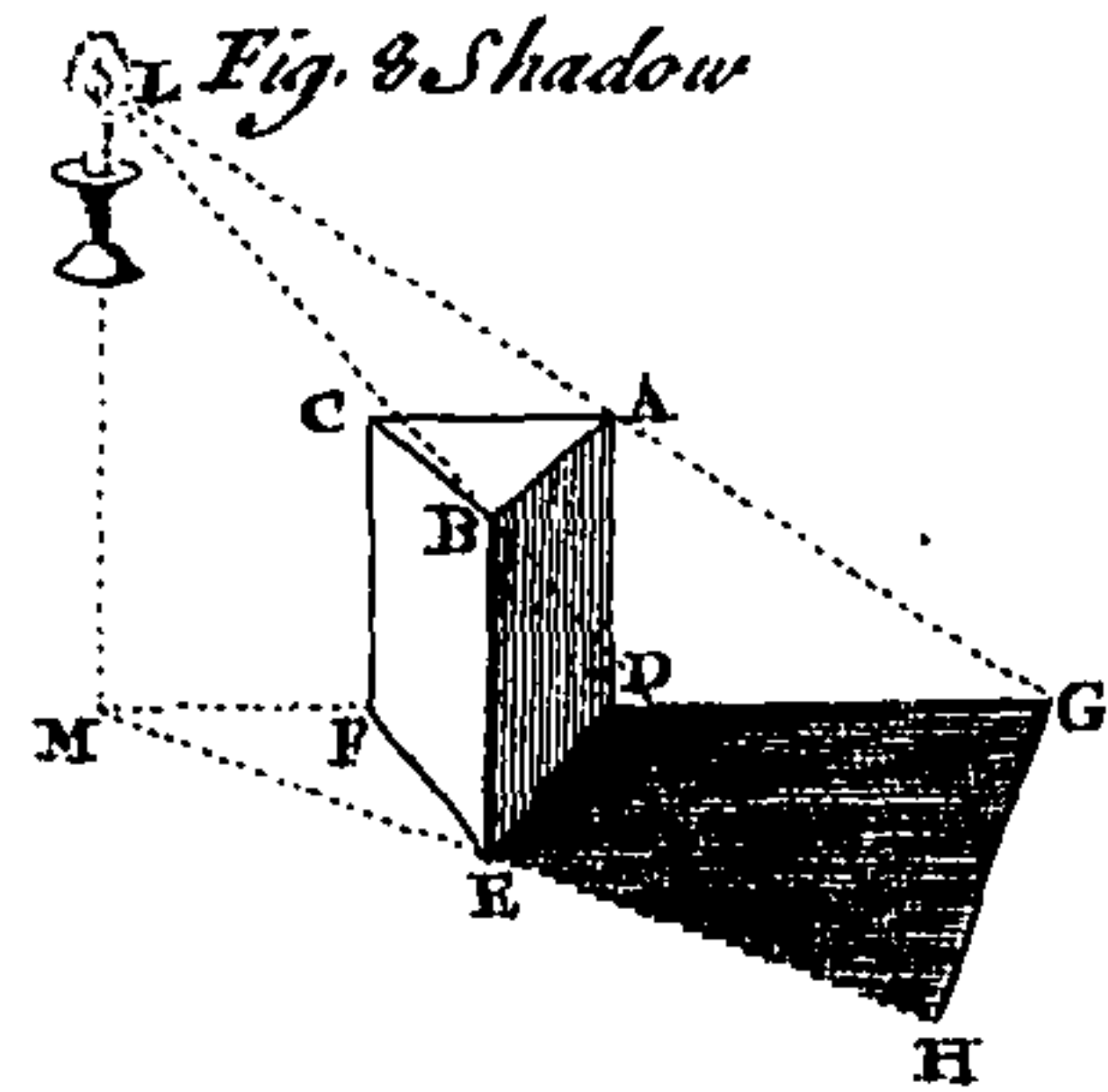


Fig. 8 Perspective

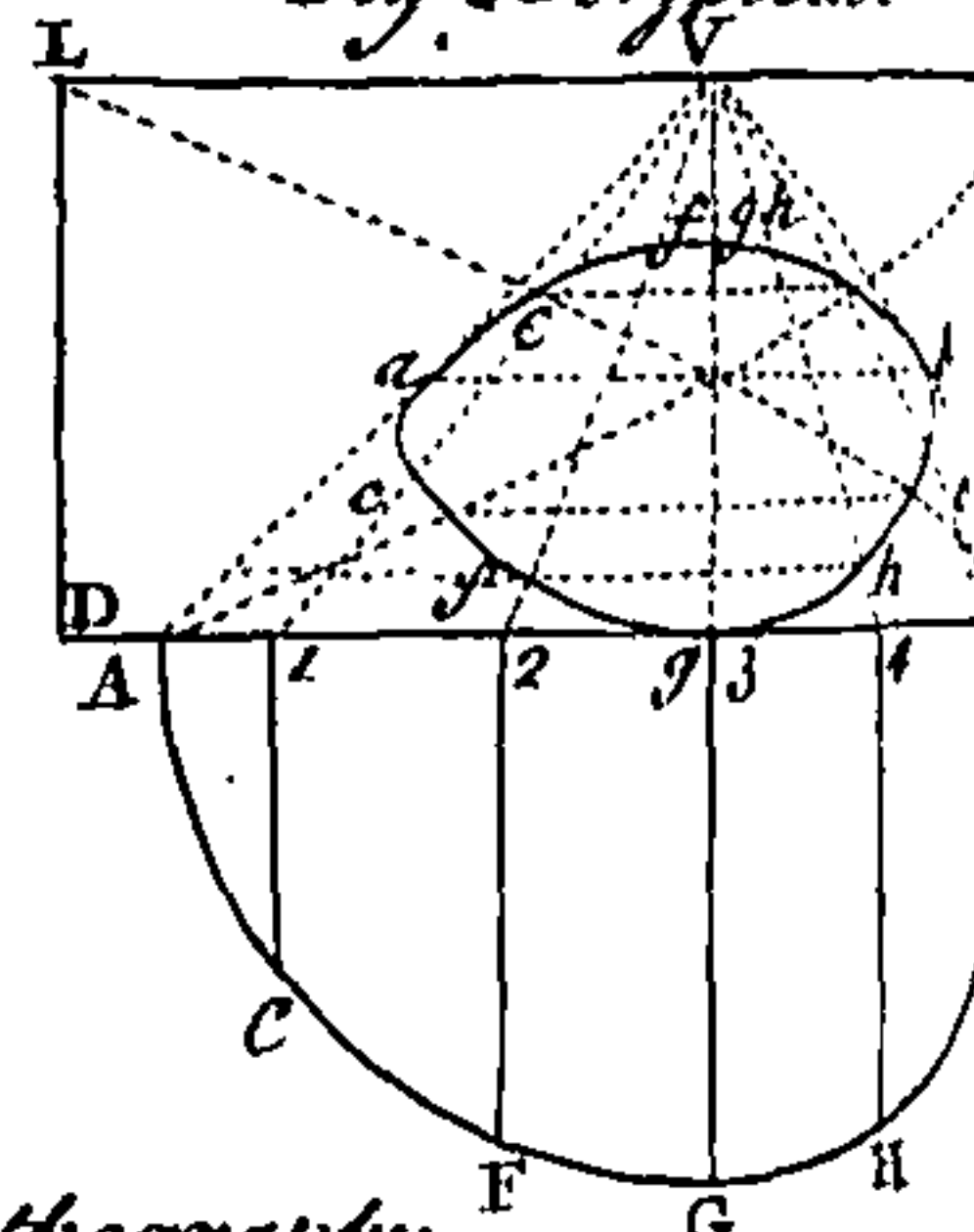


Fig. 10 Perspective.

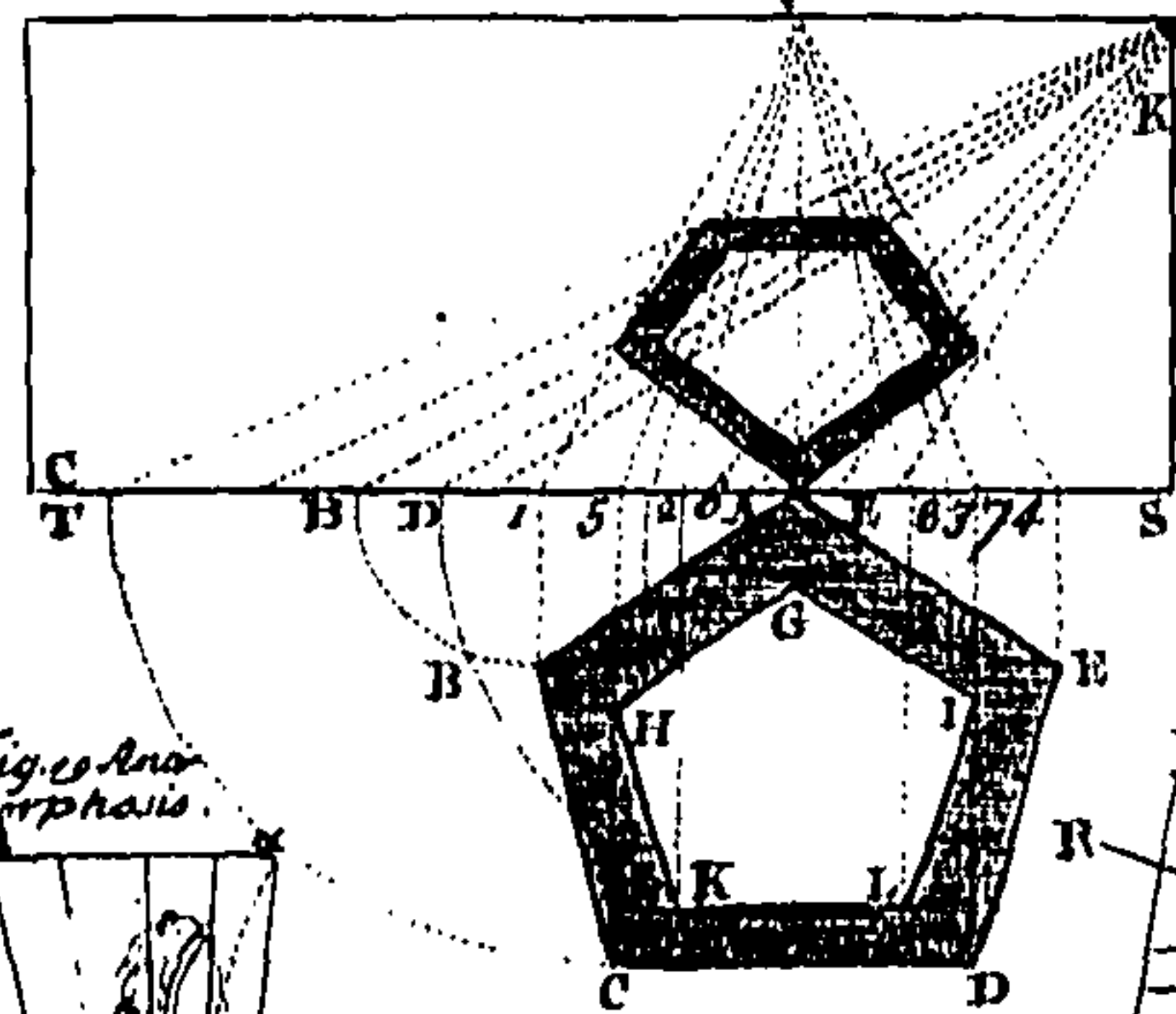


Fig. 12. line of distance

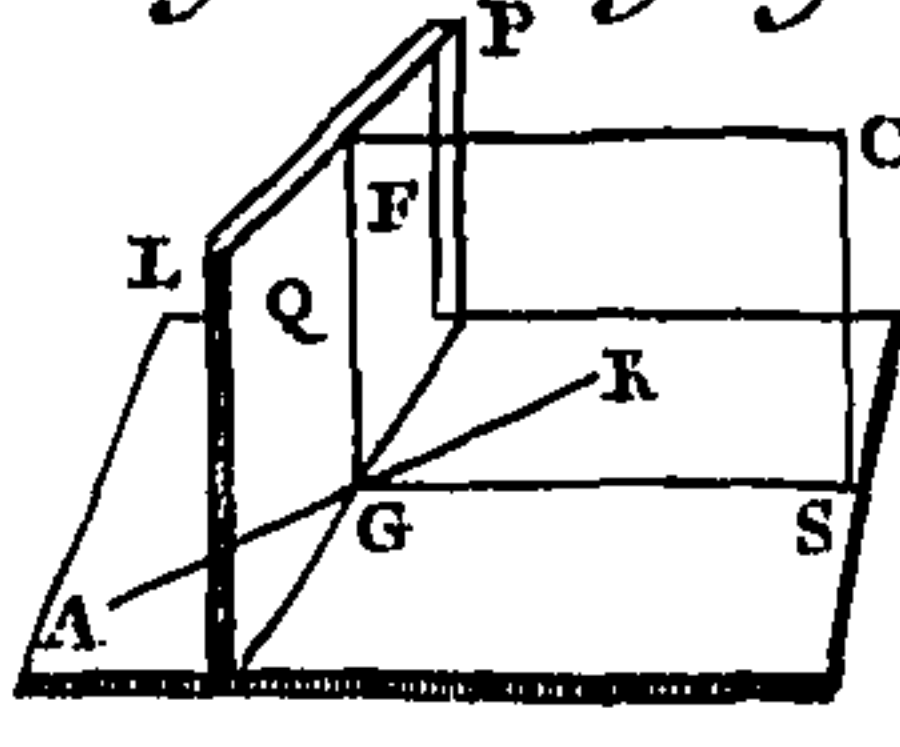


Fig. 13 Orthography of Building

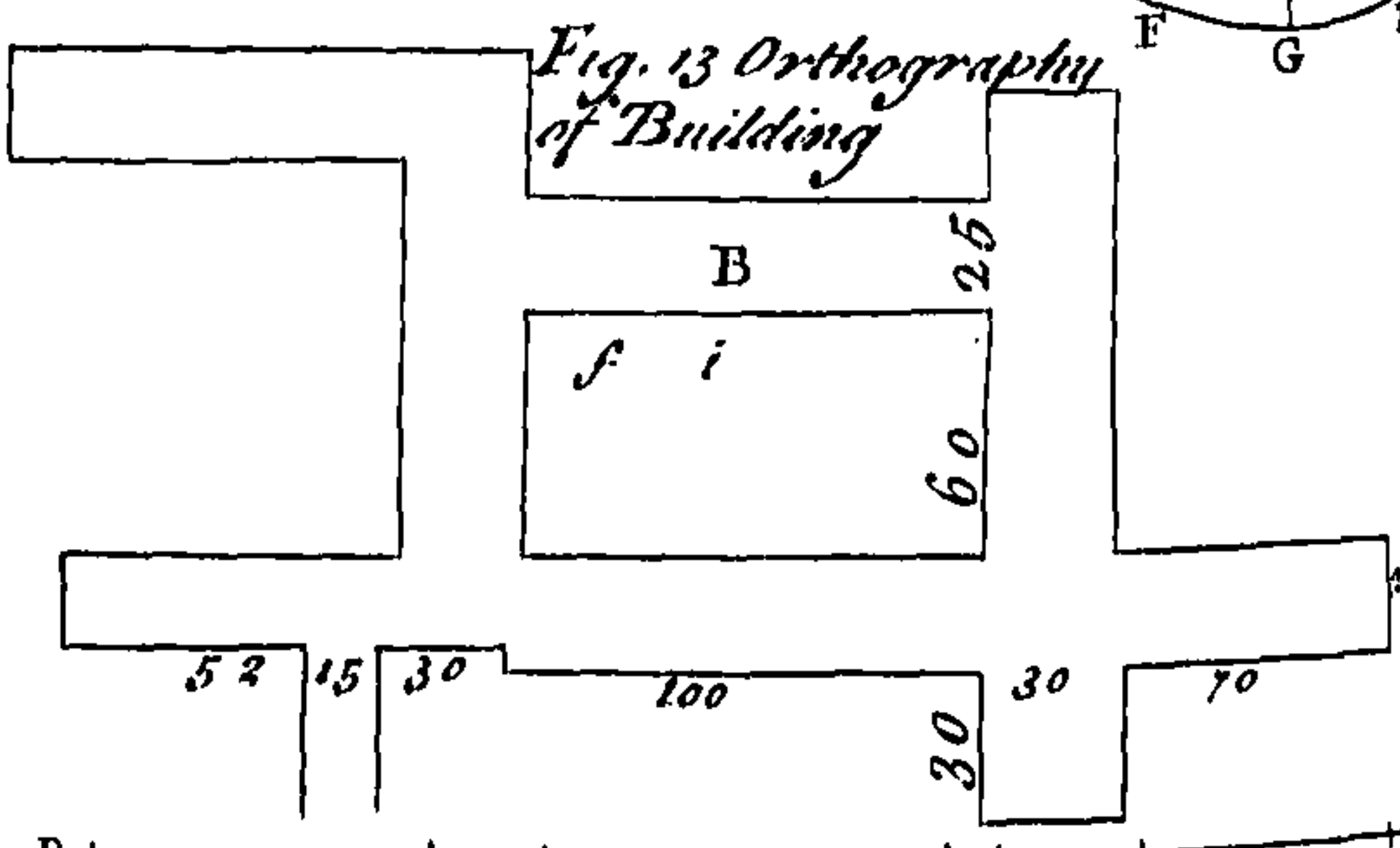


Fig. 14 Perspective of Building

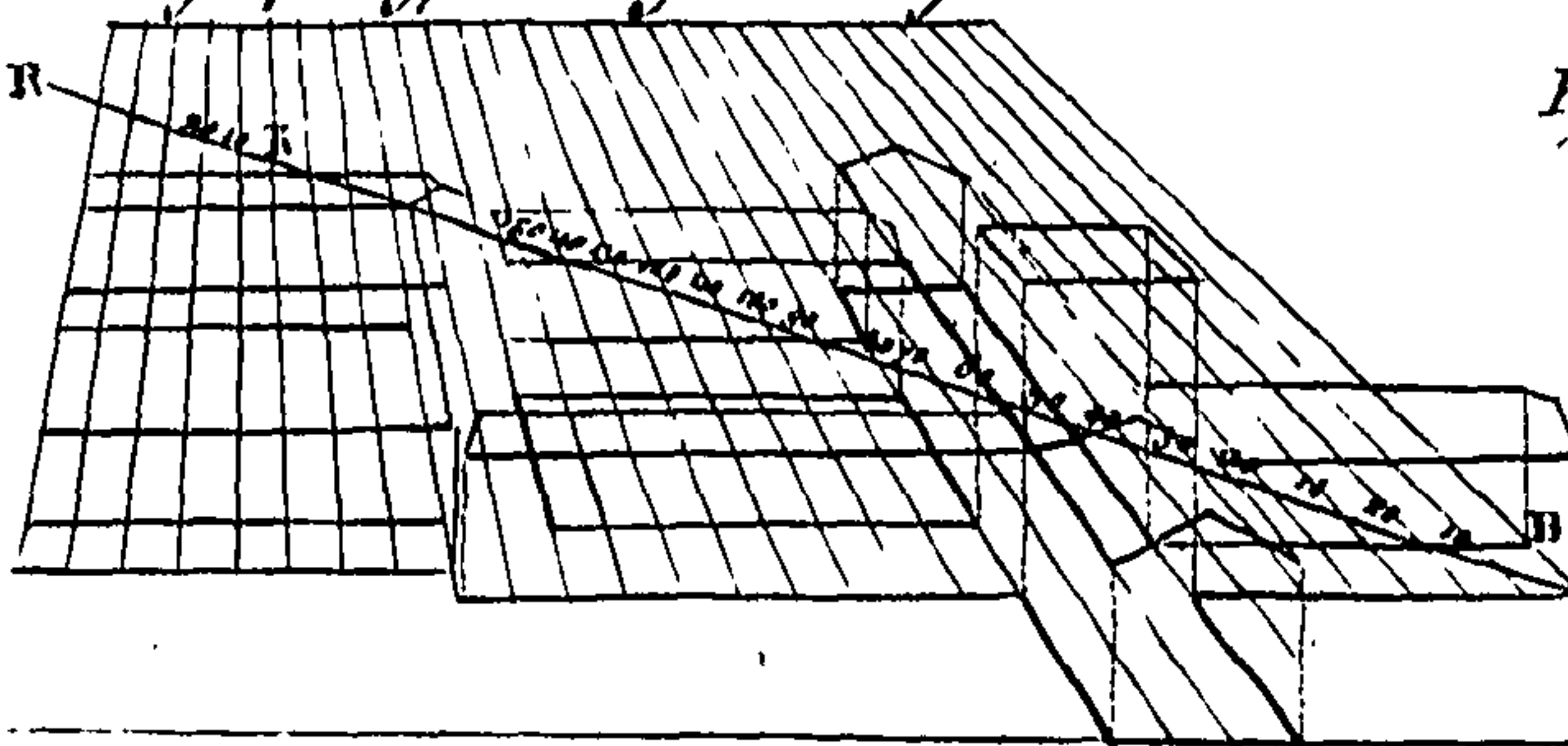


Fig. 15. defigning

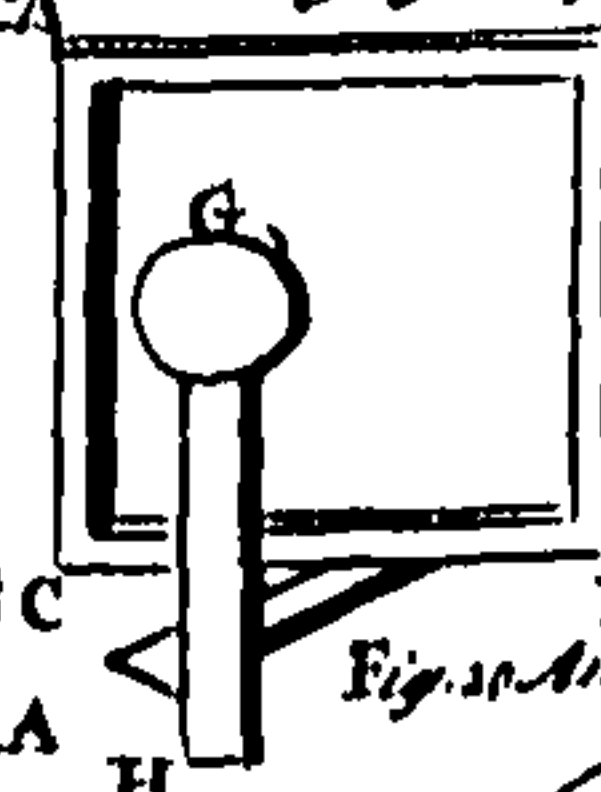


Fig. 17 Orthographic Projection

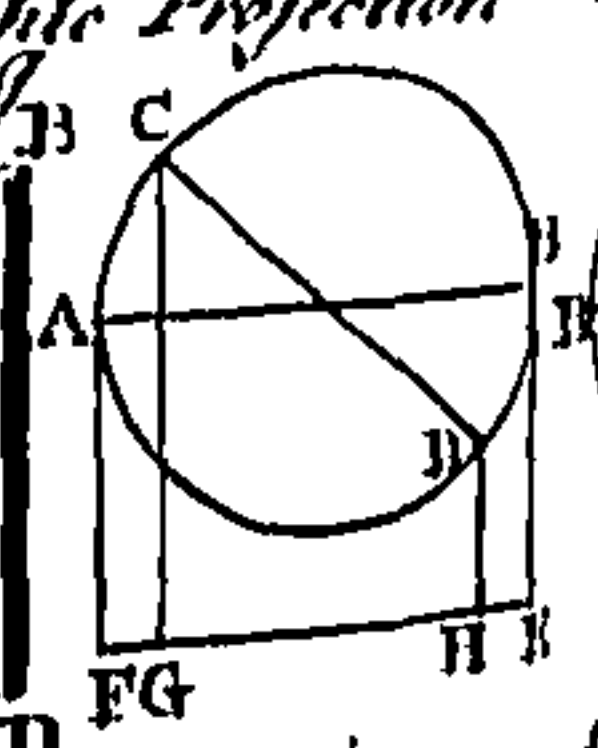


Fig. 18 Anamorphosis

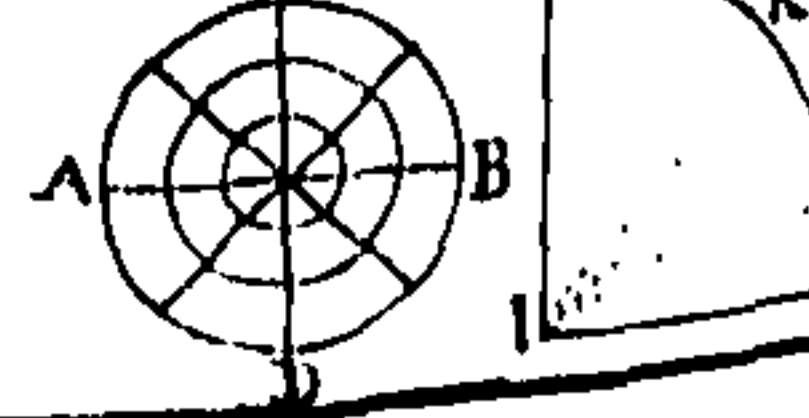


Fig. 19 Anamorphosis





5. And that the Height of a Point appearing on the Plane, is to the Height of the Eye, as the Distance of the objective Point from the Plane, to the Aggregate of that Distance and the Distance of the Eye.

*Ichnographic.* PERSPECTIVE; or the Laws of the Projection of Plane Figures.

### Perspective of a Point.

To exhibit the Appearance of an objective Point, H. (Fig. 2.) From the given Point, draw a Perpendicular to the fundamental Line  $DE$ . From the fundamental  $DE$  cut off  $IK = IH$ ; thro' the Point of Sight  $F$  draw a horizontal Line  $EP$ ; and make  $FP$  equal to the Distance of the Eye  $SL$ : Lastly from the Point  $I$  to the Point of Sight  $F$  draw  $FI$ ; and from  $K$  to the Point of Distance  $P$ , the Line  $PK$ . The Intersection  $b$  is the Appearance of the objective Point. See POINT.

Hence, 1. Since, the Appearance of the extreme Points of a right Line being given, the Appearance of the whole Line is given; the Ichnographic Projection of any Rectilinear Figure may be had by this Method. See RECTILINEAR.

And, 2. Since any Number of Points of a Curve Line may by this means be projected on the Perspective Plane; the Projection of Curve Lines may likewise be effected after the same manner. See CURVE.

3. Therefore, this Method will likewise suffice for Mixtilinear Figures; and is consequently universal.

There are indeed other Methods deliver'd by other Authors, but this is the most usual. To conceive its force and effect, it will be proper to illustrate it with some Examples.

### Perspective of a Triangle.

To find the Appearance of a Triangle,  $ABC$ , (Fig. 3.) whose Base  $AB$  is parallel to the fundamental Line  $DE$ . To the fundamental Line  $DE$  draw a Parallel at an Interval equal to the Altitude of the Eye. Assume a fundamental Point  $V$ , opposite to this either directly or obliquely, as the Case requires. Transfer the Distance of the Eye from  $V$  to  $K$ . From the several Angles of the Triangle  $ACB$ , let fall Perpendiculars  $A_1, C_2, B_3$ : set off these Perpendiculars upon the fundamental Line  $DE$  opposite to the Point of Distance  $K$ . From 1, 2, 3, draw right Lines to the fundamental or principal Point  $V_1, V_2, V_3$ . From the Points  $A, B$  and  $C$  of the fundamental Line  $DE$  draw other right Lines  $AK, BK, CK$ , to the Point of Distance  $K$ .

Since  $a, b$ , and are the Appearances of the Points  $A, B$  and  $C$ ; The right Lines  $ca, ab$  and  $bc$ , being drawn,  $abc$  will be the Appearance of the Triangle  $ACB$ .

After the same Manner is a Triangle projected on a Plane, where the Vertex  $C$  is opposed to the Eye: All here requir'd, is, that its Situation on the Geometrical Plane be changed; and the Vertex  $C$  turn'd towards the fundamental Line  $D$ .

### Perspective of a Square.

To exhibit the Appearance of a Square,  $ABDC$  (Fig. 4.) seen obliquely, and having one of its Sides  $AB$  in the fundamental Line. The Square being view'd obliquely assume the principal Point  $V$  in the horizontal Line  $HR$ , in such manner as that a Perpendicular to the fundamental Line may fall without the Side of the Square  $AB$ , at least, may not bisect it; and make  $VK$  the Distance of the Eye. Transfer the Perpendiculars  $AC$  and  $BD$  to the fundamental Line  $DE$ ; and draw the right Lines  $KB, KD$ , as also  $AV, VC$ . Then will  $A$  and  $B$  be their own Appearances; and  $c$  and  $d$  the Appearances of the Points  $C$  and  $D$ . Consequently  $Acdb$  is the Appearance of the Square  $ABDC$ .

If the Square  $ACBD$  shou'd be at a Distance from the fundamental Line  $DE$ ; which yet rarely happens in Practice; the Distances of the Angles  $A$  and  $B$  must likewise be transfer'd to the fundamental Line: As is evident from the preceding Problem. And since, even the oblique View is not very common; in what follows, we shall always suppose the Figure to be posited directly opposite to the Eye; unless, where the contrary is expressly mention'd.

4. To exhibit the Appearance of a Square  $ABCD$  (Fig. 5.) whose Diagonal  $AC$  is Perpendicular to the fundamental Line. Continue the Sides  $DC$  and  $CB$  till they meet the fundamental Line in 1 and 2. From the principal Point  $V$  set off the Distance of the Eye to  $K$  and  $L$ . From  $K$  to 1 and 2 draw right Lines  $K_1$  and  $K_2$ ; and from  $L$  to 1 and 2, the right Lines  $L_1, L_2$ . The Intersections of these Lines will exhibit the Appearance of the Square  $ABCD$  view'd Angle-wise.

5. To exhibit the Appearance of a Square  $ABCD$  Fig. 6. wherein another,  $IMGH$  is inscrib'd; the Side of the greater,  $AB$ , being in the fundamental Line; and the Diagonal of the less, Perpendicular to the Fundamental. From the principal Point  $V$ , set off, each way, on the horizontal

Line  $HR$ , the Distances  $VL$  and  $VK$ ; draw  $VA$  and  $VB$ ; and  $KA$  and  $LB$ ; then will  $Acdb$  be the Appearance of the Square  $ACDB$ . Produce the Side of the inscrib'd Square  $IH$ , till it meet the fundamental Line in 1; and draw the right Lines  $K_1$ , and  $K_2$ ; then will  $imgh$  be the Representation of the inscrib'd Square  $IMGH$ .

Hence is easily conceiv'd the Projection of any Figures inscrib'd in others.

### Perspective of a Pavement.

5. To project a Pavement consisting of square Stones, view'd directly. Divide the Side  $AB$  transfer'd to the fundamental Line Fig. 7. into as many equal Parts as there are square Stones in one row. From the several points of Division, draw right Lines to the principal Point  $V$ ; and from  $A$  to the Point of Distance  $K$ , draw a right Line  $AK$ ; and from  $B$  to the other Point of Distance  $L$ , draw another  $LB$ . Thro' the Points of the Intersections of the corresponding Lines, draw right Lines  $V$  on each Side, to be produced to the right Lines  $AV$ , and  $B$ . Then will  $Afgb$  be the Appearance of the Pavement  $AFGB$ .

### Perspective of a Circle.

6. To exhibit the Appearance of a Circle. 1. If the Circle be small, circumscribe a Square about it. Draw Diagonals and Diameters  $ba$  and  $de$  (Fig. 8.) intersecting each other at right Angles; and draw the right Lines  $fg$  and  $bc$  parallel to the Diameter  $de$  thro'  $b$  and  $f$ ; as also thro'  $c$  and  $g$  draw right Lines meeting the fundamental Line  $DE$  in the Points 3 and 4. To the principal Point  $V$  draw right Lines  $V_1, V_3, V_4, V_2$ ; and to the Points of Distance  $L$  and  $K$ , draw the right Lines  $L_2$  and  $K_1$ . Lastly connect the Points of Intersection,  $a, b, d, f, b, g, e, c$ , with the Arches  $a b, b d, d f, \&c$ . Thus will  $abdfbgeca$ , be the Appearance of the Circle.

If the Circle be large, on the Middle of the Fundamental  $AB$  (Fig. 9.) describe a Semicircle; and from the several Points of the Periphery,  $C, F, G, H, I, \&c$ . to the fundamental Line, let fall perpendiculars  $C_1, F_2, G_3, H_4, I_5, \&c$ . From the Points 1, 2, 3, 4, 5, &c. of  $AB$  draw right Lines to the principal Point  $V$ , as also a right Line from  $B$  to the Point of Distance  $L$ ; and another from  $A$  to the Point of Distance  $K$ . Thro' the common Intersections, draw right Lines as in the preceding Problem; thus shall we have the Points  $c, f, g, h, i$ , which are the Representations of these  $A, C, F, G, H, I$ , which being connected as before, give the Projection of the Circle.

Hence appears not only how any curvilinear Figure may be projected on a Plane; but also how any Pavement, consisting of any kind of Stones, may be delineated in Perspective.

Hence also, appears what Use the Square is of in Perspective, for even in the second Case we use a Square divided into certain Areolæ, and circumscribed about the Circle; tho' it be not delineated on the geometrical Plane in the Diagram.

### Perspective of a regular Pentagon.

7. To represent a regular Pentagon, having a broad Limb, terminated by Lines parallel thereto: 1°. From the several Angles of the exterior Pentagon  $AB, C, D, E$ , Fig. 10. to the fundamental Line  $TS$ , let fall Perpendiculars  $A_0, B_1, C_2, D_3, E_4$ ; which, as in the former, transfer to the fundamental Line. Connect the Points 1, 2, 3, 4 to the principal Point  $V$ ; and the Points 1, 2, 3, 4 to the Point of Distance  $K$ . Thus will the common Intersections represent the Appearance of the exterior Pentagon. 2. If now, from the inner Angles  $G, H, L, I$ , the Perpendiculars  $G_0, H_5, K_6, I_7, L_8$ , be in the like manner let fall; and the rest be done as in the former; we shall have the Representation of the inner Pentagon. The Pentagon  $ABCD E$ , therefore, with its Limb, is represented in Perspective.

This Problem is added for the sake of an Instance of the Projection of a Figure that has a broad Limb, or Edge.

It must be here observ'd, that if the Magnitudes of the several Parts of an Object, be given in Numbers, together with the Height and Distance of the Eye; its Figure is to be first constructed by a geometrical Scale; and the fundamental Point with the Point of Distance 1, to be determin'd by the same.

Nor is it always necessary, that the Object be delineated under the fundamental Line; in the Projection of Squares and Pavements 'tis best let alone. But where 'tis necessary, and Space is wanting; draw it a-part; find the Divisions in it, and transfer 'em to the fundamental Line in the Plane.

Threads being hung in the principal Point, and the Point of Distance, and stretch'd to the Points of the Divisions of the fundamental Line; the common Intersection of the Threads will give the Projection of the several Points without Confusion; a Thing much to be fear'd from the Multiplicity of Lines to be drawn.



*Scenographic Perspective; or the Projection of Bodies on a Plane.*

On the given Point C, (Fig. 11.) to raise a Perspective Altitude, answerable to the given objective Altitude P Q. On the fundamental Line, raise a Perpendicular P Q, equal to the given objective Altitude. From P and Q to any Point, as T, draw right Lines P T and Q T. From the given Point C draw a right Line C K, parallel to the fundamental Line D E; and meeting the right Line Q T, in K. In K, erect a Perpendicular to K C, viz. I K; this I K is the scenographic Altitude requir'd.

*Perspective of a Solid*

To exhibit the Scenography of any Solid. Find the Projection of its Base in the Ichnographic Perspective; and in the several Points thereof erect the Perspective Altitude: Thus will the Scenography of the Solid be finish'd, except for what relates to the Shadow; which must be superadded from the Laws of Shadows, deliver'd under the Article *Shadow*. For an Example.

To exhibit the scenographic Perspective of a Cube view'd Angle-wise: Since the Base of a Cube view'd Angle-wise, and standing on a geometrical Plane is a Square view'd Angle-wise; draw a Square on the perspective Plane, after the manner laid down above, raise the Side of the Square H I (Fig. 12.) perpendicularly in some Point of the fundamental Line D E; and to any Point V, of the horizontal Line H R, draw right Lines V I and V H. From the Angles *a*, *b*, and *c*; draw *c* 1, *d* 2 parallel to the fundamental Line D E. From the Points 1 and 2 raise L 1 and M 2 Perpendicular to the same. Lastly, Since H I is the Altitude to be rais'd in *a*, L 1 in *c* and *b* and M 2 in *d*; in *a* raise *f* a, Perpendicular to *a* E; and in *b* and *c*, raise *b* g and *c* e Perpendicular to *b* c 1; and lastly raise *d* h Perpendicular to *d* 2; and let *a* f be equal to H I, *b* g and *c* e to L 1 and *b* d to M 2; If then the Points *g*, *h*, *e*, *f* be connected by right Lines, the Scenography will be finish'd.

This Method is general; but its Application is not equally obvious in every Case; see it further illustrated under the Article SCENOGRAPHY.

PERSPECTIVE of Building, &c.

In the Practice of the Perspective of Building, &c. Great regard is had to the Height of the horizontal Line; all above the horizontal, being seen in the upper Part, and all above it in the under Part, whence Perspective becomes divided into the *high* and *low* Sight; both which will be well illustrated by what follows.

To represent a Building (v. g. Palace, College, &c.) in Perspective. 1. Take the Ichnography, or Ground-plat of the Building; its Lengths, Breadths, and Depths; by actual measuring. See ICHNOGRAPHY; and take its Altitude with a Quadrant. See ALTITUDE and QUADRANT.

2. Make a Scale divided into two or three hundred equal Parts, either actually, or so as that each division signifie ten Parts: By this Scale lay down the Ground-plat, as in Figure 13.

This done, having a long Rule, and a Square, which by sliding on the Rule helps you to draw your Perpendiculars easilier, reduce it into Perspective, in its Scenographic Appearance.

Then having drawn a Line towards the Bottom of the Paper for the Front or Base Lines; F I. Fig. 14. divide it into as many equal Parts as you find the Building has in the Ichnography, or more if you please: This will serve for a Scale to determine the several Heights, &c. and to these Divisions, with a black Lead Pencil draw Lines from the Centre, when you have chosen it; which Choice requires Judgement on two accounts.

For, if the Centre be too nigh the Front-line, then the Depth of the whole Building will fore-shorten too much; if too far off, it will not fore-shorten enough. This may be illustrated thus; set an open Tankard, or the like on a Stand, so as that it be a little lower than your Eye; if you be a great Distance from it, you can see very little or nothing into it; if you come nigher to it by degrees, you will perceive the farther Edge seem to be rais'd a little higher than that next you, so that you may see a little Way into it; if you come very nigh it, you see too deep into it more than can well be express'd in Picture. We shall therefore find some one Place, which we must conclude the most convenient for the Draught, and which may be in general determin'd to be as far off the Front-line as the Front-line is long: This Rule, tho' it has just grounds, yet we sometimes dispence with it *pro re nata*; that we may express Things with the better Appearance.

4. Consider how to place this Centre with such Advantage as that we may express those Things most, which we chiefly design to do; for as to the bottom and top Lines of the Sides of the Building that run from us in or nigh the direct Line to the Centre, tho' you see the upper Part very well,

yet the Sides that fall between the Ground-line and Top, fall so very near one another, that 'twould be very difficult to express Particulars in them; so that the Centre must be well chosen in reference to this.

Those Buildings therefore, you would see most of, must be plac'd as far off as you think convenient from the direct Line that runs to the Centre; and the farther they are, the plainer they are.

Place then those Things you would see least of, nighest the direct Line; and see whether the others fall according to your Mind; but this must be done after you have drawn your Diagonal, which is the next Thing.

5. Having pitch'd on your Centre, and having from it drawn Lines to every Division of the Front-line, you are to determine your Diagonal, A R, thus: Having with a pair of Compasses measur'd the Length of the Front-line, take your Compasses, and putting one Foot in the Centre, see where the other will reach in the Horizon: (on both Sides if you please) where it rests, from that Point draw a thwart Line from it to the last Division of the Front; and this will be truly drawn, or pretty nigh to the Truth. That this is so, you may consider how it falls in respect of the two last Centre-lines: For if where the next Line from the last is intersected by the Diagonal, you draw a Parallel to the Front between them, as at A 10. you will have a Rhombus; if then all the Sides be pretty equal, you may be sure you are nigh the right; but if the Sides that run toward the Centre be too long, then Things will not fore-shorten enough; if the Sides be not long enough, then they will fore-shorten too much.

6. After the Front-line is thus divided, the Centre fixt, and the Diagonal placed, take the Breadth of the Chappel A B, which in the Ichnography is shewn to be twenty Parts; because this Line is Perpendicular, it must run toward the Centre, therefore reckon twenty in the Diagonal, and the Rule laid parallel to the Front in that Point, will give you a Point in the Centre-line which will give the Breadth of the Chappel; Consequently a Line drawn from A. to B. puts it into the Ichnographic Perspective. The Length of the Chappel being seventy Divisions in the Front-line; reckon seventy from B. parallel to the Front-line, and there you will have a Point at C,---

The Depth of the Building from the Chappel Northward, being 115 from the Chappel, I reckon from D; (where it cuts the Diagonal at ten) onwards in the Diagonal; and at 115. in the Diagonal, with my Rule as before parallel in this Place in the Front, I have the Point Z. in the Central-line. Its Breadth being thirty, I reckon three Divisions, and there is the just Breadth there; and so on in every particular Part.

Having placed the Ichnography into Perspective, you may then give every Thing its proper Height thus:

7. The Height of the Chappel being 30, I reckon 30 in the Front-line, and with this Length by a Square clapt to the Front-line, I drop a Perpendicular to that Height, and so where the other Side of the Chappel is plac'd, having reckon'd the Height upon a supposed Parallel, there I draw another Line in that Height; then joining these several Heights by several Lines, you have the Profiles of each Building.

Now to diversifie these several Lines, that they confound you not, make the Ichnography, when you lay it into Perspective, in discontinued crooked Lines, the Heights in prick'd Lines, and the Tops of each Building in continued Lines, as the Centre-lines are, in the Table. You will likewise find the Centre, tho' 'tis not here express'd, as likewise the Point of Distance, by continuing the Diagonal up to the supposed Horizon where it and the Eye is placed.

Having done thus, your Art must be employ'd for the particular Expressions of Things, by drawing and shadowing, which is the Life of this half-form'd Figure, and which we leave to the Painter.

It remains that we speak of the *Low-sight*: Here we suppose the Horizontal just the Height of the Eye, about 5 Foot from the Basis; tho' 'tis generally plac'd higher, even to a third Part of the Height of the Building, that the Side Buildings may be express'd more gracefully.

The Diagonal is best determined by dividing the last Division of the Basis-line into 5 Parts at G. Fig. 14 taking 4 of these, sometimes the whole 5, because we determin'd before, that the Length of the Front-line was the Distance of the Eye in the Horizon to the Point of Distance: But here I take 4, and then make this the Distance in the Horizon between the Eye and the Point of Distance. You may then either graduate the Plan at the several Intersections of the Diagonal with the Centre-lines, or else suppose it so; and then raise the Buildings, as you will find by Perspectives enough of this Sort every where to be met with.

PERSPECTIVE, is also used for a Kind of Picture or Painting, frequently seen in Gardens, and at the Ends of Galleries; design'd expressly to deceive the Sight by representing the Continuation of an Alley, a Building, Landship, or the like.



**PERSPECTIVE** *Plane*, is a Glass, or other transparent Surface, suppos'd to be placed between the Eye and the Object, Perpendicular to the Horizon, unless the contrary be expressly mention'd. See **PLANE**.

Such is the *Plane*, *HI* (Fig. 15.) between the Eye *O* and the Object *ABC*, cutting the optic Rays in *a, b, c*. This, some call the *Section*; some the *Table*, and others the *Glass*. See **SECTION**.

**PERSPIRATION**, in Medicine, the Action of evacuating the Juices of the Body, through the Pores of the Skin. See **EVACUATION**, **PORE**, and **SKIN**.

When this Evacuation is copious enough to be perceiv'd by the Senses, as in sweat, the *Perspiration* is said to be *sensible*; where it escapes the Notice of the Senses, as is the Case in the ordinary State of the Body, the *Perspiration* is said to be *insensible*. See **SWEAT**.

The Word *Perspiration* used simply, and without any Adjective, is understood of *insensible Perspiration*. *Sanctorius*, the great *Paduan* Physician, was the First who took Notice of this Evacuation: To him we owe both the Invention and Perfection of the Doctrine of *insensible Perspiration*.

The Vessels thro' which the *Perspiration* is perform'd, lye obliquely open under the Squamæ or Scales of the Cuticle or Scarf-skin. They are inconceivably small: From a Calculation of *Leeuwenhoeck*, it appears that the Mouths of 125000 of 'em may be cover'd with a common Grain of Sand. See **CUTICLE**, **MILIARY Gland**.

Thro' these Vessels is continually transfusing a subtile Humour, from every Point of the Body, and throughout the whole Expanse of the Cuticle.

The Matter evacuated this way, is found by sure Experience to be more than equal to that evacuated all the other Ways, *i. e.* by Stool, Urine, &c. *Sanctorius* found in *Italy*, under the Circumstances of a moderate Diet, middle Age, and easy Life, that the Matter insensibly perspired was  $\frac{2}{3}$  of that taken in for Food: so that there only remain'd  $\frac{1}{3}$  for Nutrition, and the Excrements of the Nose, Ears, Intestines, Bladder, &c. See **EXCREMENT**.

The same Author shews, that as much is evacuated by *insensible Perspiration* in one Day, as by Stool in fourteen Days; particularly, that in a Night's Time, about sixteen Ounces is ordinarily sent out by Urine, four Ounces by Stool; and above forty Ounces by *insensible Perspiration*.

He also observes, that if a Man eat and drink 8  $\frac{1}{2}$  in a Day,  $\frac{5}{8}$  of it is spent in *insensible Perspiration*; and adds as to the Times, that within 5 Hours after eating there is perspired about  $\frac{1}{4}$  from the 5th to the 12th Hour about  $\frac{3}{4}$  and from the 12th to the 16th scarce half a Pound.

The Benefits of *insensible Perspiration* are so great, that without it, *Borelli* says, animal Life cou'd not be preserv'd.

The great Subtlety, Equability, and Plenty of the Matter thus perspired, its Increase after Sleep, &c. constitute the grand Symptoms of a perfect State of Health; and the chief Means of preserving the same. See **HEALTH**.

On the contrary, the departing from these is the first sure Sign, and perhaps Cause, of Diseases. See **DISEASE**.

*Perspiration* is performed, preserved, and encreased by the Viscera, Vessels, Fibres; by Motion or Exercise as far as the first Appearance of Sweat, by moderate Use of Venery; Sleep of 7 or 8 Hours, the Body well cover'd yet not loaden with Bed-cloaths, Cheerfulness, light fermented yet solid Food, not Fat; pure, cold, heavy Air, &c.

The contraries of all these, as also the Increase of the other Excretions, diminish, prevent, deprave it.

Hence we see the Cause, Effect, &c. of this perspirable Matter, its Use is preserving the Parts soft and flexible, in supplying what's lost, but chiefly in preserving the nervous Papillæ moist, fresh, lively, fit to be affected by Objects, and to transmit their Impressions. See **NERVE**, **SENSATION**, &c.

Too much *Perspiration* occasions weakness, swoonings, sudden Death; too little or none at all occasions the Vessels to dry, wither, and perish. Hence also the larger Emunctories, come to be obstructed; hence the Circulation is disturb'd, sharp Humours retain'd; hence Putridity, Crudity, Fevers, Inflammations, Imposthumes. See **DISEASE**.

To determine the State and Conditions of the *Perspiration*, so necessary for judging of those of the Body, *Sanctorius* invented a weighing Chair, whereby he examin'd the Quantity, Degree, &c. of *Perspiration* in several Circumstances of the Body, under several Temperatures of the Air, in the several Intervals of eating, drinking, sleeping, &c. See **WEIGHING Chair**.

Some of the more extraordinary Phenomena observ'd herewith, are; that for some time after eating the *Perspiration* is least of all. That between the 5th and 12th Hour after Meals *Perspiration* is greatest. That riding either on Horseback, in a Coach, or Ship, &c. brisk Motion on the Ice, &c. but above all, a brisk Friction of the Skin; promote *Perspiration* surprisngly. That in sweating the *Perspiration* is much less than at other Times: And that *Perspiration* is always much less in Women than Men.

**PERTICA** or **PERTICATA** *terre*, in our old Law Books, is the fourth Part of an Acre. See **ROOD**.

*Continet in integra superficie 40 perticas*. See **PERCH**.

**PER VISE** or **PAR VISE**, a Term in our old Law Books. *Fortescue* says, *Placitantes (scil post meridiem) se divertunt ad pervisum & alibi cum servientibus ad legem & aliis*. *Selden* in his Notes on *Fortescue*, defines this to be an Afternoon's Exercise, or Moot, which the Pleaders held for the Instruction of the younger Students; bearing originally the same Name with the *Parvisæ* in *Oxford*. See **MOOR**.

*M. Somner* says, that *Pervise* signifies *palatii Atrium vel area illa a fronte aule Westmonasteriensis, hodie the Palace-Yard*. See **PARADISUS**.

*Spelman* observes, that the Lawyers turn'd thither to meet their Clients not to hold Moors.

**PERVIGILIUM**, in Medecine. See **VIGILIA**.

**PERUVIAN-BARK**. See **CORTEX Peruvianus**.

**PES**, a long Measure, in *English*, better call'd a Foot. See **FOOT**.

*Pes Forestæ*. *Notandum est quod pes forestæ usitatus tempore Ric. Oysell in Arrentatione vassallorum, factus est, signatus & sculptus in pariete Cancellæ Ecclesiæ de Edwinstone & in Ecclesiâ B. Mariæ de Nottingham, & dictus pes continet in longitudine octodecim pollices, & in arrentatione quorundam Vassallorum Pertica 20, 21, & 24 pedum usa fuit, &c.*

*Pes Monetæ*, in ancient Records, signifies a true and reasonable Adjustment of the real Value of all current Coin. See **STANDARD** and **COIN**.

**PESA**, an old Law Term, for a Wey, or certain weight of Cheese, Wool, &c. See **WEY**.

**PESADE**, in the Manage, that Action taught a Horse, wherein he rises with his fore Feet, and bends 'em up to his Body, without stirring the hind Feet.

The *Pesade* is the first Lesson taught a Horse, in order to bring him to Curvetts, &c. unless he perform this well, he'll never go well in any Air, yet is he not to be taught it at the first Riding.

**PESAGE**, a Custom or Duty paid in certain Markets, &c. for weighing of Merchandises, or Wares. See **WEIGHING**.

**PESSARY**, in Medicine, a solid Medicament, of the Length and Thickness of the Finger, but a Pyramidal Form; convey'd into the natural Parts of a Woman to provoke, or put a Stop to the Menfes, or to prevent a Descent of the Matrix, or on other Occasions of those Parts.

At one End 'tis fasten'd to a little Ribbon, by which it may be drawn out at pleasure.

It consists of Cork, or other light Wood, or of a little Linen Bag, full of Pouders, incorporated with Wax, Oil, and Cotton; cram'd close together to make it solid enough for intromission.

The Word is form'd from *Greek πῆσος*, which signifies the same Thing.

**PESTILENCE**, in Medicine, a contagious Disease, usually mortal; popularly known under the Name of Plague. See **PLAGUE**.

The Word is form'd from the *Latin Pests*.

**PEST-house**, a Lazaretto or Infirmary, where Goods, Persons, &c. infected, or suspected to be infected with some contagious Disease, are disposed and provided for. See **LAZARETTO**.

**PESTILENTIAL Fevers**, among Physicians, are such as do not only afflict the Patient with a vehement Heat, but also a malignant and venomous Quality. See **FEVER**.

**PESTIS**. See **PLAGUE**.

**PETALA**, in Botany, the Leaves of a Flower; so call'd to distinguish 'em from the Leaves of the Plant. See **LEAF**.

By Flower is properly meant, That assemblage of Parts call'd *Stamina* and *Pistils*, which serve for propagation of the Kind. See **FLOWER**.

The colour'd Leaves which encompass those Parts, are in reality no more than Cases or Covers to secure and screen the generative Parts; unless, as *Mr. Bradley* conjectures, they may serve to secrete some fine Juice for the Nourishment of the Seed. See **GENERATION of Plants**.

The most easy Division of Flowers is into simple Flowers, *i. e.* those form'd of *Stamina* and *Pistils* only; and compound Flowers, whose *Stamina* and *Pistils* are encompass'd with *Petala*, call'd by *Dr. Grew* the *Foliation*, and by *Mr. Ray* *Folia*. See **FOLIATION**.

Compound Flowers again, are either encompass'd with a single *Petalum*, or Piece; or with several Pieces; the first of which are call'd *Monopetalous*, the second *Polypetalous* Flowers. See **MONOPETALOUS**, &c.

Again, from the regular or irregular Configuration of the *Petala*, *M. Jussieu* makes another Division of Flowers into Classes; as regular and irregular *Monopetalous*; regular and irregular *Polypetalous*, &c. See **POLYPETALOUS**.

Nature shews a World of Art in the folding up of the *Petala*, in the Perianthium, before they begin to blow or expand: Of these Foldings *Dr. Grew* notes the following Varieties, *viz.* the close Couch as in *Roses*; the concave Couch as in *Blattaria*



**Blattaria flore albo;** the single Plait as in Pease-blossoms; the double Plait as in Blue-bottles. The Couch and Plait together as in Marigolds, &c. The Row as in Ladies Bower; the Spire as in Mallows; and lastly the Plait and Spire together as in *Convolvulus Doronici Folio*.

The Calyx or Perianthium sometimes serves in lieu of *Petalala*. See **CALYX**.

The Word is form'd from the Greek *πέταλον* a Leaf; And in that Language serves indifferently for the Leaves of the Plant and the Flower.

**PETALISM, PETALISMUS** in Antiquity, a Kind of Exile, or Banishment for the Term of five Years. See **BANISHMENT**.

The *Petalism* at *Syracuse* was nearly the same Thing as the *Ostracism* at *Athens*; except that the latter was for 10 Years, and the former only for five. See **OSTRACISM**.

The *Petalism* was perform'd by the Peoples writing the Name of the Person condemn'd, on a Leaf; whence the Name, from *πέταλον*, Leaf.

**PETALOIDES**, a Name sometimes given to Urine, when it seems to have little Leaves or Scales in it. See **URINE**.

**PETAMINARIUS**, in Antiquity, a Name given to certain Persons who perform'd extraordinary Feats of Activity; took perillous Leaps, Vaults, &c.

The Word is form'd from the Greek *πέταμαι*, I fly.

Some Authors write it *Petiminarius*, and derive it from *Petimen*, which according to *Servius* signifies the Bunch of a Camel, in Allusion to the Manner wherein they bent the Body in exhibiting Postures, &c.

**PETARD**, in War, a Kind of Cannon, very short, narrow at the Breech, and wide at the Muzzle; made of Copper mix'd with a little Brass; or of Lead with Tin; usually about 11 Inches long, and seven and an half Broad at the Mouth; weighing from 50 to 60 Pound. See **CANNON** and **ORDINANCE**.

Its Charge is from five to six Pounds of Powder, which reaches to within three Fingers of the Mouth: The Vacancy is fill'd with Tow, and stopp'd with a Wooden Tampion; the Mouth being strongly bound up with Cloth tied very tight with Ropes.

'Tis fitted into a Wooden Plank that has a Cavity cut into it to receive the Mouth of the Gun; after the manner express'd in the Fig. 10. Tab. Fortification.

Its Use is in a clandestin Attack, to break down Gates, Bridges, Barriers, &c. to which it is hung, which it does by means of the Wooden Plank.

'Tis also used in Countermines to break thro' the Enemies Galleries, and give vent to their Mines.

Some, instead of Gun-powder for the Charge use one of the following Compositions, viz. Gun-powder 7 Pounds, Mercur. Sublimat. 1 Ounce, Champhor 8 Ounces; or Gun-powder 6 Pound, Mercur. Sublimat. 3 Ounces, and Sulphur 3; or Gun-powder 6, beaten Glass  $\frac{1}{2}$  an Ounce, and Camphor  $\frac{1}{4}$ .

*Petards* are sometimes also made of Wood, bound round with Iron Hoops.

The Invention of *Petards* is ascribed to the French *Hugonots* in the Year 1579: their most signal Exploit was the taking the City *Cabors* by their Means, as we are told by *d' Aubigne*.

**PETECHIÆ**, are Spots in the Skin, like Flea-Bites, which come out in some Fevers.

Hence *Peteckial* Fever is the spotted Fever, commonly so called. See **FEVER**.

**PETER-pence**, an ancient Levy, or Tax of a Penny on each House throughout *England*. See **TAX**.

It was call'd *Peter-pence*, because collected on the Day of St. *Peter ad vincula*; by the *Saxons* it was call'd *Rome Feoh* i. e. the Fee of *Rome*, and also *Rome-scor*, and *Rome-pennyng*, because collected and sent to *Rome*; and lastly it was call'd *Heath-Money*, because every Dwelling-house was liable to it, provided there were 30 Pence *vive pecunie* belonging to it; nay, and every religious House; the Abby of St. *Albans* alone excepted.

This *Peter-pence* was at first given as a Pension, or Alms, by *Ina* King of the West *Saxons*, in the Year 725, being then in Pilgrimage at *Rome*: And the like was done by *Offa* King of the *Mercians*, throughout his Dominions in 794.

It was not intended as a Tribute to the Pope, but chiefly for the Support of the *English* School or College at *Rome*: the Pope, however, went halves with the College; and at length swallow'd almost the Whole.

At first it was only an occasional Contribution; but became at last a standing Tax; being establish'd by the Laws of King *Canute*, *Edward* the Confessor, the Conqueror, &c.

The Bishops who were charg'd with the Collecting it, employ'd the rural Deans and Archdeacons therein. *Edward* the III. first forbade the Payment, but it soon return'd and continu'd till the Time of King *Henry VIII.* when *Polydore Virgil* resided there as the Popes Receiver-General.

**PETIT Cape.** See **CAPE**.

**PETIT Serjeanty**, in Law. See **SERJEANTY**.

**PETITIO induciarum**, in the civil Law, the same as *Impar lance* in common Law. See **IMPARLANCE**.

**PETITIO Principii**, in Logic, a begging of Principles; or a precarious supposing a Thing to be true, or taking it for granted, when it really remains either dubious, or else is expressly denied.

This we popularly call *begging the Question*.

**PETITION**, a Supplication in form, made by an Inferiour to his Superiour; especially to one having Jurisdiction. See **SUPPLICATION**.

**PETRA lana**, in our ancient Customs, a Stone of Wool. See **STONE**.

**PETRARIA**, in ancient Writers, is sometimes taken for a Quarry of Stones; and in other Places for a great Gun, call'd a *Petard*; 'tis often mention'd in old Records and Historians in both Senses.

**PETRE** Oil, the same as *Petroleum*. See **PETROLEUM**.

**PETRIFICATION**, or **PETRIFICATION**, in Physiology, the Action of converting Fluids, Woods, and other Matters into Stone. See **STONE**.

The Faculty of *petrifying* Wood is ascribed to several Springs, Lakes, &c. The ancient Naturalists mention a River whose Waters turn'd Bodies into Marble, by mere contact; nay, which being drunk *petrified* the Viscera of the Drinker.

*Flumen habent Cicones, quod potum saxea reddit Viscera, quod tactis inducit Marmora rebus.*

*Seneca* relates, that the Mud of this River is of such a Nature as to harden and glue together the Parts of Bodies. As, says he, the Dust of *Puzzioli*, by barely touching Water becomes Stone; so this Water, by touching any Solid, sticks, and grows to it: Whence Things cast into it, are immediately taken out Stones. *Pliny* adds very well, that Wood cast into this River, is presently found cover'd with a stony Bark or Rind; and subjoins the Names of several other Rivers which do the same; particularly the River *Silarus* near *Tarentum*, whose Waters are yet found very wholesome.

To *Pliny's* List we might add many more among ourselves; particularly the Lake *Lobmond* in *Scotland*, &c.

But, in effect, there does not seem any real Transmutation of the woody Nature into the Nature of Stone, in any of these Cases; all that is done is this, the Stony Particles which before floated in the Liquor are now lodged, and deposited in the Pores of these Substances, in such manner, and in such Plenty as to leave little else but the Appearance of a Stone.

*Petrifications* too, are frequently nothing else but incrustations of stony Particles, which surround the Bodies immerg'd, as Salts shoot upon and adhere to them. See **INCRUSTATION**.

*Varenius* has a Conjecture that Waters only petrify Woods by means of certain minute, sharp, and pointed Particles lodg'd therein, which cut the longitudinal Fibres of the Wood in an infinite Number of Points, and thus destroy the Form they were distinguish'd from Stone.

Near *Nacsiwar* is a little River, whose Water the People turn off into little Canals; where, in a little Time it *petrifies*; and of this *petrified* Water is built a large *Caravanfera* in the Neighbourhood.

*Petrifications* of Waters, or Juices of the Earth are incontestable. In the Place call'd *les Caves Gautieres* in *France*, the Water falling from the Upper-parts of the Cave to the Ground, immediately hardens into little Stones, of such Figures as the Drops falling either singly, or upon one another chance to exhibit.

Of this Kind of Caves we have several in *England*; Mr. *Derham* mentions one on the Top of *Bredon* hill in *Worcestershire*; to which we may add another call'd the *Ekeshole* in *Wibberlack* in *Westmoreland*; lin'd a-top with these stalactical Stones, hanging like Icicles; which are manifestly nothing else but Exudations or Exillations of some *petrifying* Juices out of the rocky Earth there. See **STALACTITES**. See also **LABYRINTH**.

The Word is form'd from the Greek *πέτρα* Stone, and the Latin *facio* or *facio* to become, to do.

**PETROBRUSSIANS**, a religious Sect, which arose in *France*, and the *Netherlands*, about the Year 1126; so call'd from their Leader *Peter Bruys* a Provincial.

The chief of *Bruys's* Adherents was a Monk, one *Henry*; from whom the *Petrobrussians* were also call'd *Henricians*.

*Peter* the venerable Abbot of *Clugny*, has an express Treatise against the *Petrobrussians*; in the Preface to which he reduces their Opinions to five Heads. 1. They denied that Children before the Age of Reason can be justified by Baptism; In regard, 'tis our own Faith that saves by Baptism. 2. That no Churches are to be built, but those that already are, to be pull'd down; an Inn being as proper for Prayer as a Temple, and a Stable as an Altar. 3. That the Cross ought to be pull'd down and burnt, in regard we ought to abhor the Instruments of our Saviour's Passion. 4. That Jesus Christ is not in the Eucharist, and that this Sacrament is vain. 5. That Sacrifices, Alms, Prayers, &c. don't avail the Dead.

*F. Langlois* objects Manichæism to the *Petrobrussians*; and says they maintain'd two Gods, the one Good, the other Evil; but this we rather esteem an Effect of his Zeal for the Catholic



Catholick Cause, which determin'd him to blacken the Adversaries thereof, than any real Sentiment of the *Petrobrussians*.

**PETROJOANNITES**, the Followers of *Peter John*, or *Peter Joannis*, i. e. *Peter* the Son of *John*, who liv'd in the XII. Century.

His Doctrine was not known till after his Death; when his Body was taken out of his Grave and burnt.

His Opinions were, that he alone had the Understanding of the true Sense wherein the Apostles preached the Gospel; that the reasonable Soul is not the Form of the Man; that there is no Grace infused by Baptism; that Jesus Christ was pierced with a Lance on the Cross ere he expir'd.

**PETROL**, **PETROLEUM**, q. d. *Petrie-oleum*, Oil of Rock; an Oleaginous Juice, issuing out of the Clefts of Rocks. See OIL.

Beside artificial and vegetable Oils, i. e. those drawn from Plants, &c. by Expression; there are also natural and mineral Oils issuing of themselves from the Entrails of the Earth; call'd by a common Name *Petrols*, or *Petrolea*.

These, according to all Appearance, must be the Work of subterraneous Fires, which raise, or sublime the more subtile Parts of certain bituminous Matters that lie in their Way. These Parts being condens'd into a Liquor by the Cold of the Vaults of Rocks, are there collected, and Ooze thence through Clefts and Apertures, which the Disposition of the Ground furnishes 'em withal.

**PETROL**, then is a Liquid Bitumen; only differing by its Liquidity from other Bitumens, as *Asphaltum*, *Jet*, &c. See **BITUMEN**.

The *Naphtha*, which is either a Liquid, or at least a very soft Bitumen, is much the same with the *Petrol*. See **NAPHTHA**.

Hitherto there has been little *Petrol* found, except in hot Countries. *Olearius* says he saw above 30 Springs of it near *Scamachia* in *Persia*: There are *Petrols* in the Southern Provinces of *France*; but the best are those in the Dutchy of *Modena*, first discover'd by *Ariosto* a Physician, in 1640, in a very barren Valley, 12 Leagues from the City of *Modena*.

There are three Canals dug with great Expence in the Rock; by which three different Kinds of *Petrol* are discharg'd into little Basons or Reservoirs: The first, as white, clear, and fluid as Water, of a brisk penetrating Smell, and not disagreeable; the second of a clear Yellow, less fluid, and a less brisk Smell than the White; the third a blackish Red of thicker Consistence, and a Smell more approaching that of Bitumen.

*M. Boulduc* has made several Experiments on the *Petrol*, describ'd in the Hist. of Acad. of Sciences M. DCC. XV. He observes, that he cou'd not raise any Phlegm or saline Spirit by any Distillation, either in *Balneo Mariæ*, or in a Sand heat: All that wou'd rise was Oil; at the Bottom of the Pellican remain'd an exceeding small Quantity of a thickish, brownish Matter.

Hence, to use *Petroleum* in Medicine, it must be prescrib'd just as it is. 'Tis a Remedy Nature has prepar'd to our Hands; it is found very warm and penetrating; and commend'd in many outward Complaints, Rheumatick and Arthritick Pains, and paralytick Limbs.

**PETRONEL**, a Sort of Harquebuss or Hand-gun. See **HARQUEBUSS**.

**PETROSA Ossa**, in Anatomy, two Bones of the Cranium. See **CRANIUM**.

The fifth and sixth Bones of the Skull are those of the Temples; so call'd a *Temporibus*, because they shew the Age of Man; the Hairs hereon turning grey before any of the rest. See **TEMPLES**.

Their Upper-part is squamous or Scaly, the lower *Petrous*, i. e. hard or stony, and hence they come here to be denominated *Petrosa*.

The *Ossa Petrosa* are the smallest proper Bones of the Cranium: Their Upper-part is Semi-circular, and their Lower of a Rocky Make. They are situated in the lateral and lower Parts of the Head; bounded a-top by the squamous Suture, which joins 'em to the *Parietalia*; behind by the *Lambdoides*, which joins them to the Occipital, and connects them to *Os Sphenoides*.

Each has two Sinus's before and behind the Sphenoidal: the Exterior lin'd with a Cartilage, receiving the Process of the lower Jaw; the Interior receives the Lower-part of the *Sinus Lateralis* of the *Dura Mater*.

Each again has four Processes; three External, and one Internal; of the External, the first is call'd *Zygomaticus* or *Os Jugale*; the second *Mastoides* or *Mammillaris*; the third *Styloides*, each whereof see under its proper Article. **ZYGOMATICUS**, &c.

The internal Process is properly call'd the *Os petrosum*: This is pretty long and large, containing the whole *Meatus Auditorius* and Cavity of the *Tympanum*. See **TYMPANUM** and **EAR**.

**PETTEIA** or **PETTIA**, in the ancient Musick, a *Greek* Term, to which we have no corresponding one in our Language.

The *Melopoeia*, i. e. the Art of arranging Sounds in Succession so as to make Melody, is divided into three Parts, which the *Greeks* call *Leipsis*, *Mixis*, and *Chresis*, the *Latins* *Sumptio*, *Mixtio*, and *Usus*; and the *Italians* *Presa*, *Mescolamento*, and *Uso*.

The last is also call'd by the *Greeks* *Perleia*, *Petteia*, and by the *Italians* *Pettia*.

*Petteia* or *Pettia*, then is the Art of making a just Discernment of all the Manners of ranging, or combining Sounds among themselves, so as they may produce their Effect, i. e. so as they may express the several Passions intended to be rais'd; thus, *E. gr.* it shews what Sounds are to be us'd, and what not, how often any of 'em are to be repeated, with which to begin, and with which to end, whether with a grave Sound to rise, or an Acute one to fall, &c.

'Tis the *Petteia* that makes the Manners of the Musick; it being this that chuses out this or that Passion, this that or Motion of the Soul to be awaken'd, and whether it be proper to excite it in this or that occasion.

The *Petteia* therefore is in Musick what the Manners are in Poetry. See **MANNERS**.

We don't see whence the Word shou'd have been taken by the *Greeks* unless from *Perleia* their Game of Chess; the musical *Petteia* being a Combination and Arrangement of Sounds, as Chess is of Pieces call'd *πέρλεα*, *Calculi*, Chess-Men.

**PETTY-Bag**, an Office in Chancery; the three Clerks whereof Record the Return of all Inquisitions out of every Shire, make all Patents of Customers, Gaugers, Controllers, &c. See **CHANCERY**.

**PETTY-Fogger**, from the *French* *Petite*, little, and the *Saxon* *foege* Wooer, Suiter, &c. A little, Stickling, Solicitor, or Jobber in Law-disputes, without either Skill or Conscience.

**PETTY-Larceny**, in Law, small Theft; or the stealing of Things under the Value of 12d. See **LARCENY**.

The Punishment, antiently, was sometimes the Loss of an Ear; sometimes Cudgelling: After *Edward III.* It was for along Time Whipping, but is now Transportation.

**PETTY Patees**, among Confectioners, a sort of small Pies, made of *March Panc*, and fill'd with sweet Meats.

**PETTY-Singles**, among Faulconers, are the Toes of a Hawk. See **HAWK**.

**PETTY-Tally**, in the Sea Language, a competent Allowance of Victuals, according to the Number of the Ships Company.

**PETTY-Treason**, in Law, the Crime of a Servant's killing his Master, a Wife's killing her Husband, a Child's killing his Parent, or a Clergyman's killing his Prelate to whom he owes Obedience. See **TREASON**.

The Punishment of *Petty-Treason* is, that the Criminal shall be drawn on a Sledge, or Hurdle to the Gallows, and there hanged.

The Punishment of *Petty-Treason* in a Woman is the same with that of High-Treason, viz. drawing and burning alive. See **PUNISHMENT**.

**PETUM**. See **NICOTIANA**.

**PEVETTS**, the Ends of the Spindle of a Wheel in a Watch. The Holes into which they run, are call'd *Pevett-Holes*. See **WATCH**.

**PEWTER**, a factitious Metal, used in domestick Utensils. The Basis of *Pewter* is Tin, which is converted into *Pewter* by the Mixture of six Pounds of Brass, and fifteen Pounds of Lead, with an hundred Weight of Tin.

Beside this Composition which makes the common *Pewter*, there are others for other Occasions; compounded of Tin, mix'd with *Regulus* of Antimony, *Tin-Glass* and Copper, in several Proportions. See **TIN**.

*Pewter* has occasionally serv'd for Money. In the *Philosoph. Transact.* *M. Putland* informs us, that *K. James II.* turn'd all the *Pewter* Vessels, &c. of the Protestants in *Ireland* he could seize, into Money; Half-Crowns were somewhat bigger than Half-pence, and other Pieces in proportion. See **MONEY** and **COIN**.

He order'd it to be Current in all Payments: Whence, our Author observes, People absconded for fear of being paid their Debts: He mentions Crown-pieces of this Metal, with this Legend on the Rim, *MELIORIS TESSARA FATI*.

**PHÆNOMENON**, in Physicks, an extraordinary Effect, or Appearance in the Heavens, or on Earth; discover'd by Observation of the Cælestial Bodies, or by physical Experiments; and whose Cause is not obvious. See **OBSERVATION**, **EXPERIMENT**, &c.

Such are *Meteors*, *Comets*, uncommon Appearances of Stars, and Planets, Earthquakes; such also are the Effects of the Magnet, Phosphorus, &c. See **METEORS**, **COMET**, **STAR**, **PLANET**, **EARTHQUAKE**, **MAGNET**.

'Tis a Maxim, that Hypothesis is best, which solves most *Phænomena*. See **HYPOTHESIS**.

The *Phænomena* of *Comets* are inconsistent with the Solidity of the Heavens, suppos'd in the *Ptolomaic* Hypothesis



and with the Plenitude of the Heavens asserted by the Cartesian. See PTOLEMAIC, PLENITUDE, &c.

The Word is form'd from the Greek *φαίω*, I appear.

Sir *Is. Newton* shews, that all the *Phenomena* of the heavenly Bodies, follow from the Attraction of Gravity, which intercedes those Bodies; and almost all the *Phenomena* of the lesser Bodies from the Attraction and Repulsion between their Particles: So simple is Nature. See GRAVITATION, ATTRACTION, COHESION, PARTICLE, &c.

PHAGEDÆNA, in Chirurgery, &c. a deep, bloated Ulcer, which eats and corrodes the neighbouring Parts; so call'd from the Greek *φάγεδα* of *φάγομαι* I eat. See ULCER.

Hence, *Phagedænic* Medicines; such as are used to eat off fungous, or proud Flesh, particularly,

PHAGEDÆNIC Water, in Chymistry, a Water drawn from quick Lime; to call'd from its Efficacy in the Cure of *Phagedænic* Ulcers. See LIME.

To prepare this Water; they put two Pounds of fresh quick-Lime in a large Earthen-pan, and pour upon it about ten Pounds of rain Water; these they let stand together two Days, stirring 'em frequently: At last, leaving the Lime to settle well, they pour off the Water by Inclination, filtrate it and put it up in a Glass Bottle, adding to it an Ounce of Corrosive Sublimate in Powder; which, of white becomes yellow, and sinks to the Bottom of the Vessel.

The Water being settled, is fit for Use, in the cleansing of Wounds and Ulcers, and to eat off superfluous Flesh: Especially in Gangrenes; in which Case may be added a third or fourth Part of Spirit of Wine. See GANGRENE.

The Ephemerides of the Academy of the *Curiosi Naturæ*, relate that *Phagedænic* Ulcers have been frequently cured with Sheeps Dung.

PHALANX, in Antiquity, a huge, square, compact Battalion, form'd of Infantry set close to one another, with their Shields join'd, and Pikes turn'd cross ways; insomuch that it was almost impossible to break them.

It consisted of 8000 Men: *Livy* says, that this sort of Battalion was invented by the *Macedonians*, and that it was peculiar to them; whence, among Writers, it is sometimes call'd the *Macedonian Phalanx*.

St. *Evremond* observes, that the *Macedonian Phalanx* had the Advantage of Valour and Strength over the *Roman Legion*. See LEGION.

PHALANX, is also applied by Anatomists, to the Rows of the small Bones of the Fingers, as if rang'd in order of Battle. See FINGER.

PHALEUCUS, in Poetry, a kind of Verse, in Use among the *Greeks* and *Latins*; consisting, like the Sapphic, of five Feet, the first a Spondee, the second a Dactyl, the three last Trochees. See VERSE, FOOT, SPONDEE.

The *Phaleucus* is very proper for Epigrams. *Catullus* excell'd in it. See EPIGRAM.

PHALLOPHORI, in Antiquity, a Name given at *Sicyon* to certain *Mimes*, who ran about the Streets smutted with black, clothed in Sheeps Skins, bearing Baskets full of various Herbs, as Chervil, Branca Ursina, Violet, Ivy, &c.

They danced in Cadence and were crown'd with Ivy, in honour of *Bacchus*.

The Word is form'd from the Greek *φαλλός* Skin and *φέρω* I bear.

PHALLICA, in Antiquity, Feasts, or Sacrifices celebrated at *Athens*, in honour of *Bacchus*. See FEAST.

The *Phallica* were instituted on the following Occasion: One *Pegasus*, a Citizen of *Elutheris*, having carried some Statues of *Bacchus* to *Athens*; drew the Laughter and Contempt of the *Athenians*. Soon after this they were seiz'd with an Epidemic Disease, and upon consulting the Oracle how to get free of it, they were answer'd that there was no Way but to receive *Bacchus* in Pomp: They did it, and thus instituted the *Phallica*; wherein, besides the Statues and Trophies of the God, they bore Figures of the Parts affected tied to *Thyrsi*.

PHANATIC, PHANATICUS, a *Visionary*; one who fancies, or thinks, he sees Spectres, Spirits, Apparitions, or other imaginary Objects, even when awake; and takes 'em to be real. See PHANTASY.

Such are Phrenetics, Necromancer, Hypochondriac Persons, and Lycanthropi. See PHRENETIC, HYPOCHONDRIAC, LYCANTHROPUS &c. See also WITCHCRAFT, IMAGINATION, &c.

Hence the Word is also applied to Enthusiasts, Pretenders to Revelation, new Lights, Prophecies, &c.

PHANTASM, PHANTASMA, PHANTOM, a Species of an Object perceiv'd by an external Sense, and retain'd in the Phantasy. See SPECIES and PHANTASY.

PHANTASY, or FANCY, the *Imagination*; the Second of the Powers, or Faculties of the sensitive or rational Soul, by which the Species of Objects receiv'd in by the common Sense, are retain'd, recall'd, further examin'd, and either compounded or divided. See IMAGINATION.

Others define the *Phantasy* to be that internal Sense or Power, whereby the Ideas of absent Things are form'd, and presented to the Mind, as if they were present. See SENSE.

The Organ of this Sense is vulgarly suppos'd to be the middle Part of the Brain; and its objects, all the Species communicated to it by the common Sense, by the comparing of which it frames infinite others to itself. See IMAGE.

In Melancholic, and mad Men this Faculty is very strong, representing many extravagant and monstrous Things; and framing its Images as lively as those of Sensation; whence the Visions and Deceptions those Persons are liable to. See PASSION, DELIRIUM, &c.

In Poets and Painters, that same Faculty is to be the predominant one; to enable 'em to feign, and pursue and execute their Fictions or Fables with more Strength, Consistency, &c. See FABLE, POETRY, &c.

In Men it is suppos'd to be subject to Reason, but in Brutes it has no Superior; this being the *Ratio Brutorum*, or what we call Reason in Brutes. See REASON and BRUTE.

The *Phantasy* is free from the Ligature or Suspension of Sleep, witness our Dreams, &c. See SLEEP and DREAM.

Some Philosophers use the Word *Phantasy*, in a more general Signification, viz. for what we usually call *Sensus Communis*, the common Sense. See COMMON SENSE.

PHANTASTIC, in Musick. PHANTASTIC Style, is a Style proper for Instruments; or a free, easy manner of Composition. See STYLE.

PHANTASTICAL Colours, is a Denomination given by the Peripateticks to those Colours exhibited by the Rainbow, or a Prism; as supposing 'em not to be real Colours; but only *Phantoms* or Deceptions of the Sight. See COLOUR.

But many Experiments of the Moderns, and particularly those of Sir *Isaac Newton* demonstrate the contrary; and prove them as real as any other Colours in Nature. See PRISM, and RAIN-BOW.

PHARISEES, a celebrated Sect among the ancient *Jews*; so call'd, say some, because separated from the rest by the Austerity of their Life, by their professing a greater Degree of Holiness, and a more religious Observation of the Law.

This is the Import of the Word *Pharis* in the Hebrew, or rather the *Chaldeæ* Tongue; whence is form'd the Greek *φαιοί* and the Latin *Phariseus*.

St. *Jerom*, and several of the *Rabbins* maintain this Etymology; which is very agreeable to the State and Character of the *Pharisees*; who were not only distinguish'd from the rest by their manner of Life, but by their Habit.

'Tis very difficult to fix the precise Origin of the *Pharisees*. The *Jesuite Serrarius* places their first Rise about the Time of *Ezras*; because 'twas then the *Jews* first began to have Interpreters of their Traditions. *Maldonat*, on the other Hand, will not have this Sect to have rose among the *Jews*, till a little before the Time of Christ. Others, perhaps with more probability, refer the Origin of the *Pharisees* to the Time of the *Maccabees*.

Be this as it will *Pharisaism* is still the prevailing Doctrine in the *Jewish* Religion; that huge Number of Traditions in the *Talmud* which bear so great a Sway among the *Jews*, coming all from the *Pharisees*. See TRADITION and TALMUD.

*Josephus*, who describes their Dogmata, says, that they attributed all to Destiny, and to God; so, however, as not to deprive Man of his free Agency; which *Sixtus* of *Sienna* thus explains: The *Pharisees* believ'd that all Things were done by Destiny, i. e. with Gods foreknowledge, and in Consequence of his immutable Decree; the Will of Man still remaining free and unaffected: *Fato, hoc est Dei prescientia & immobili decreto omnia geri; manente tamen libero humane libertatis sensu.*

They own'd the Immortality of the Soul, and a future State; but admitted at the same Time a kind of Metempsychosis, or Transmigration of Souls. See METEMPSYCHOSIS.

The *Pharisees* were great Sticklers for the allegorical or mystical Sense of the Scriptures; whence most of Converts made to Christianity among the *Jews* were of the *Pharisees*.

In effect, the *Pharisees* were in every Thing directly opposite to the *Saducees*. See SADUCEES.

PHARMACEUTICA, that part of Physick which directs the Use, Preparation, &c. of Medicines. See PHARMACY.

PHARMACOLOGY, a Treatise of Medicines; of the Art of preparing 'em, judging of 'em, &c. See PHARMACY.

PHARMACOPŒIA, a Dispensary; or a Treatise containing the Preparations of the several Kinds of Medicines, with their Uses, manner of Application, &c. See DISPENSARY.

We have various *Pharmacopæia's*; as those of *Bauderon*, *Quercetan*, *Zwelfer*, *Charras*, *Bates*, *Salmon*, *Lemery*, &c.

The latest and most rational, and that in most Esteem, is *Quincy's Pharmacopæia officinalis & extemporanea*.

The Word is form'd from the Greek *φάρμακον*, Remedy, and *ποιέω* facere, to make.

PHARMACOPOLA, an Apothecary; or a Person who prepares and sells Medicines. See APOTHECARY.

The Word is seldom used but by way of ridicule. It is form'd from the Greek *φάρμακον* and *πωλῶν* vendere, to sell.



**PHARMACUM**, a Medicament, or Medicine. See MEDICINE. Hence, **PHARMACY**, that Branch of Medicine which teaches the Choice, Preparation, and Mixture of Medicines. See MEDICINE.

**PHARMACY** is divided into *Galenical* and *Chymical*.

**Galenical PHARMACY**, call'd also simply *Pharmacy*, is that deriv'd to us from the Ancients; consisting in the Knowledge and Management of the several Parts of the  *Materia Medica*, now in the Hands of the Apothecaries. See **GALENICAL**.

The chief Obstacle in the Way of the Improvement of Physic, is the Physicians neglecting of *Pharmacy*.

**Chymical PHARMACY**, call'd also *Spagyric* and *Hermetical*, is that introduced by *Paracelsus*, who calls it *Ars distillatoria*; consisting in the resolving of mixed Bodies, into their component Parts, in order to separate the usefess and Ill, and collect and exalt the Good. See **CHYMISTRY**.

The Word is deriv'd from the Greek *φάρμακον* *Remedy*.

— *Simples*, vulgar, familiar, easily prepar'd, readily procur'd *Simples*, *Pliny* well observes, were the only Remedies intended by Nature: so soon as Fraud was got into the World, and Men began to live by their Wits; Shops were soon set up; and Life offer'd every Man to Sale. Straight, innumerable Compositions; endless, inexplicable Mixtures, are cri'd up; *Arabia* and *India* are crowd'd into a Draught; and a Plaster for a little Ulcer fetch'd from the red Sea. When as the proper Remedies are those the Poor every Day feed on.

— *Hist. Nat. lib. 24. c. 1.*

**PHAROS**, **PHARE**, or **PHANAL**, a *Light-house*; a Pile rais'd near a Port, where a Fire is kept burning in the Night to guide and direct Vessels near at Hand.

The *Pharos* of *Alexandria* was antiently very famous, in so much as to communicate its Name to all the rest; the *Colossus* of *Rhodes* serv'd as a *Pharos*.

*Osannam* says, *Pharos* antiently signified a Streight, as the *Pharos* or *Pharo* of *Messina*. See **STREIGHT**.

**PHARSANG**, or **PARASANG**, a *Persian* Measure of 40, 50, or 60 Furlongs. See **PARASANG**.

**PHARYNX**, in Anatomy, the upper Opening of the *Oesophagus* or Gullet, situate at the Bottom of the Fauces. See **OESOPHAGUS**.

The *Pharynx* is that Part particularly call'd the *Gula* or the *Throat*. It being in this Part of the Gullet the Action of Deglutition commences, and where 'tis chiefly perform'd. It is assist'd by three Pair of Muscles which compose the *Pharynx*. See **DEGLUTITION**.

The first call'd the *Stylopharyngeus* serves to draw up and dilate the *Pharynx*; the second the *Pterygopharyngeus* serves to constrict it; the third, which is call'd the *Oesophagus* serves to close it; see each under its proper Article. **STYLOPHARYNGEUS**, &c.

The Word in the original Greek *φαρυγξ* signifies the same.

**PHASES**, in Astronomy, the several Appearances, or Quantities of Illumination of the Moon, Venus, Mercury and the other Planets; or the several manners wherein they appear illuminated by the Sun. See **PLANET**.

The Variety of *Phases* in the Moon is very remarkable. Sometimes she Increases, sometimes Wanes, sometimes is bent into *Horns*, and again appears like a Semi-circle, at other Times is *Gibbous*, and presently resumes a full circular Face. See **CRESCENT**, **FALCATED**, **GIBBOUS**, &c.

For the Theory of the *Lunar-Phases*. See **MOON**.

As to the *Phases* of Venus, the naked Eye does not discover any; but the Telescope does. *Copernicus* antiently prophesied, that after Ages wou'd find that Venus underwent all the Changes of the Moon; which Prophecy was first fulfill'd by *Galileo*, who directing his Telescope to Venus, observ'd her *Phases* to emulate those of the Moon; being sometimes full, sometimes horn'd, sometimes gibbous. See **VENUS**.

And Mercury does the same — all the Difference between these, and those of the Moon; is, that when these are full the Sun is between them and us; whereas, when the Moon is full, we are between her and the Sun. See **MERCURY**.

The Word is form'd from the Greek *φαίω*, *appareo*, I appear.

*Saturn* puzzled the Astronomers a long Time with his strange Variety of *Phases*. *Hevelius* and others found him 1. *Monospherical*. 2. *Trispherical*. 3. *Spherico-angulated*. 4. *Ellipico-angulated*. 5. *Spherico-cuspidated*: But *Huygens* shews, that those monstrous *Phases* are all owing to the Imperfection of their Telescopes. That great Author assist'd by the best Telescopes noted three principal *Phases*; viz. Jan. 16, 1656. he was round, Octob. 13, *Brachiated*, and Decemb. 17, 1657. *Angulated*. See **SATURN**.

To determine the *Phases* of an Eclipse for any given Time.

Find the Moon's Place in her visible Way for that Moment; and thence, as a Centre, with the Interval of the Moons Semi-diameter, describe a Circle. Find in like manner the Sun's Place in the Ecliptic, and thence, with the Semi-diameter

of the Sun describe another Circle: The Intersection of the two Circles shews the *Phases* of the Eclipse, the Quantity of Obscuration, and the Position of the Cusps or Horns. See **ECLIPSE**.

**PHEONS**, in Heraldry, the Barbed Heads of Darts and Arrows; usually represented of the adjoining Figure. Sable, a Fesse Ermine between three *Pheons*, by the Name of *Eger-ton*.



**PHIAL**, **PHIALA**, a little Glass-bottle, popularly call'd a *Vial*.

The Word is form'd of the Greek *φιάλη* which signifies the same Thing.

**PHIDITIA**, or **PHILITIA**, in Antiquity, Feasts celebrated with great Frugality at *Lacedemon*.

The *Phiditia* were held in public Places, and in the open Air; Rich and Poor assist'd at 'em a like; and on the same footing; their Design being to keep up Peace, Friendship, and a good Understanding, and Equality among all the Citizens great and small.

*Bernegger* says, they who attended at this Feast, each brought a Bushel of Flower, eight Measures of Wine, call'd *Corus*, and five Minze of Cheese, and as much Figs.

The *Phiditia* of the Greeks were much the same with the *Charistia* at *Rome*. See **CHARISTIA**.

**PHILADELPHUS**, in Antiquity, a Title, or Sur-name, bore by several ancient Kings; form'd from the Greek *φίλος* Friend, loving and *ἀδελφός* Brother, *q. d.* who loves his Brother.

*Ptolemy Philadelphus* erected a Library at *Alexandria*; and furnished it with 50000 Volumes, by the Advice, and with the Care of *Demetrius Phalareus*. See **LIBRARY**.

It was the same *Philadelphus*, that procur'd the Greek Version of the Books of *Moses*, call'd the *Septuagint*. See **SEPTUAGINT**.

Father *Chamillart* has a Medal of the Queen of *Comagenes*, which bears the Title of *Philadelphus*; without any other Name. *M. Vaillant* also tells us that *Philip* King of *Syria* had the Title of *Philadelphus*.

**PHILANTHROPY**, a Love of Mankind; a general Benevolence toward the Species. See **BENEVOLENCE**.

**PHILAUTIA**, **PHILAUTY**, in the Schools, *self Love*; a vicious Complaisance for a Man's self. From the Greek *φίλος*, *amicus*, and *αὐτός*, *ipse*.

**PHILIPPICKS**, in Literature, a Name given to the Oration of *Demosthenes* against *Philip* King of *Macedon*. See **ORATION**.

The *Philippicks* are esteem'd the Master-pieces of that great Orator: *Longinus* quotes Abundance of Instances of the Sublime from 'em; and points out a thousand latent Beauties therein. In effect, that Pathetic wherein *Demosthenes* excell'd, the frequent Interrogations and Apostrophe's wherewith he attack'd the Indolence of the *Athenians*, where cou'd they be better employ'd? How much Delicacy soever there be in the Oration against *Leptinus*, the *Philippicks* have yet the Advantage over it, were it only on account of the Subject, which gives *Demosthenes* so fair a Field to display his chief Talent, we mean with *Longinus*, that of moving and astonishing.

*Dionysius Halicarnassensis* ranks the Oration on the *Halonese* among the *Philippicks*, and places it the 8th in Order; but tho' the Authority of that great Critic be of no small Weight; yet, that Force and Majesty wherewith *Cicero* Characterises the *Philippicks* of *Demosthenes* seems to exclude the Oration on the *Halonese* out of the Number; and authorise the almost universal Opinion of the Learned, who reject it as spurious.

*Libanius*, *Photius* and others; and above all the Languidness of the Style, and the Lowness of the Expressions which reign throughout the Whole, father it on *Hegesippus*.

*M. Tournell* has given an excellent French Translation of the *Philippicks*.

'Tis an extraordinary Thing to see so much Spirit in a Translation: so much of the Strength and Energy of *Demosthenes*, in a modern Tongue; and that too so weak a one as the French.

**PHILLIPICK** is also applied to the fourteen Orations of *Cicero* against *Marc Anthony*. — 'Twas *Cicero* himself that gave 'em this Title in his Epistles to *Brutus*; and Posterity have found it so just that it has been perpetuated to our Times.

*Juvenal* calls the Second the *Divine Philippick*, and witnesses it to be of great Fame, *Conspicue Divina Philippica Fame*. That Orator's entitling his last and most valued Orations after the *Philippicks* of *Demosthenes*, shews the high Opinion he had of 'em.

*Cicero's Philippicks* cost him his Life; *M. Anthony* having been so irritated with 'em, that when he was arriv'd at the *Trinovrate*, he procur'd his Murther, cut off his Head, and stuck it up in the very Place whence the Orator had deliver'd the *Philippicks*.

**PHILIPPISTS**, the Followers of *Philip Melancthon*.



That Reformer having strenuously oppos'd the *Ubiquists*, who arose in his Time; and the Dispute growing still hotter after his Death: The University of *Wirtemberg*, who espoused *Melanchthon's* Opinion, were call'd by the *Flaccians*, who attacked it, *Philippists*. See *UBIQUIET*.

**PHILIZERS**, or **FILAZERS**, Officers in the *Nisi Prius* Office, who make out all Process upon Original Writs, (which are made out by the Curstors, such as *Capias*, *alias*, & *plures*, &c.) and to whom the original Writs are brought after returned by the Sheriff, as well for their Warrants in suing out such *Capias*, &c. on them, as for them to fill with the *Custos Bre-vium*. See **FILAZERS**.

It is to be observed, that the Subject cannot bring any Action in this Court by original in Debt, but must proceed by Bill; and where an Action is brought in this Court by Original, if the Defendant for Delay, or thro' any Mis-entry, or mistake in the Proceedings or Return of Process, is advis'd to bring a Writ of Error; the Writ of Error must be returnable in Parliament, and not in the Exchequer-chamber, as are other Writs of Error upon Actions which are brought in this Court by Bill.

**PHILO**, a Term originally *Greek*, form'd of *φίλος*, *amicus*, Friend, Lover; used in Composition in several Words in our Language. As,

**PHILO-ELUTHERUS**, a Lover of Liberty; of *φίλος*; and *ἐλευθέρως*, *liber*, free.

**PHILOLOGY**, a Science, or rather Assemblage of several Sciences, consisting of Grammar, Rhetorick, Poetry, Antiquities, History, and Criticism.

*Philology*, is a Kind of Universal Literature, conversant about all the Sciences, their Rise, Progress, Authors, &c. See **LITERATURE**.

*Philology*, makes what the *French* call the *Belles lettres*. Antiently, *Philology* was only a part of Grammar. See **GRAMMAR**.

*Eratosthenes*, Library Keeper at *Alexandria*, was the first who bore the gay Title of *Philologus*, according to *Suetonius*; or that of *Critick*, according to *Clemens Alexandrinus*. He lived under *Ptolemy Philadelphus*, and died in the 146th *Olympiad*. See **CRITICISM**.

The Word is form'd from the *Greek* *φίλος*, and *λόγος*, Lover of Discourse, or Words.

**PHILOMATH**, **PHILOMATHES**, a Lover of the Mathematicks, &c. See **MATHEMATICKS**.

**PHILONIUM**, in Pharmacy, an Opiate, whereof there are two Kinds; the *Roman* and the *Persian Philonium*. See **OPIATE**.

The *Roman*, call'd also the great *Philonium*, took its Name from the Physician *Philo* who invented it. It consists of the Seeds of *Jusquiamus*, *Poppy*, and other Ingredients. 'Tis used to promote Sleep, against Colds, Colicks, &c.

The *Persian Philonium* consists of several Ingredients, among which are *Opium*, *Terra sigillata*, *Lapis Hematites*, *Castor*, and *Saffron*. 'Tis used to stop Hemorrhages, Dysenteries, &c.

**PHILOPATOR**, in Antiquity, a Title, or Sur-name, assumed by several of the Kings of *Egypt* and *Syria*.

*Ptolemy Philopator* succeeded *Ptolemy Evergetes*; and had for his Successor *Ptolemy Philometer*. See **EVERGETES**.

The *Syrians* had their *Seleucus Philopator*, *Antiochus Philopator*, &c.

**PHILOSOPHER**, a Person well versed in *Philosophy*; or who makes Profession of, or applies himself to the Study of Nature and Morality. See **PHILOSOPHY**.

The Sects of *Philosophers* are very numerous; and their Dogmata, or Tenets very contradictory. See **SECT**.

*Helmout* and some of the Chymists denominate themselves *Philosophers by Fire*. See **CHYMISTRY**.

The Alchymists and Adepti are frequently denominated the *Philosophers* by way of Eminence. See **ALCHYMI**, &c.

**PHILOSOPHERS STONE**, the great Object of Alchymy, is a long sought-for Preparation, which shall transmute impurer Metals, as *Tin*, *Lead*, and *Copper* into *Gold* and *Silver*. See **TRANSMUTATION**.

There are three ways whereby the Alchymists have attempted to arrive at the making of *Gold*: The first by *Separation*; for every Metal yet known, contains some Quantity of *Gold*: Only, in most, the Quantity is so little that it wont defray the Expence of getting it out.— The second by *Maturation*; for the Alchymists hold *Mercury* to be the Basis and Matter of all Metals; that *Quicksilver* purg'd from all heterogeneous Bodies wou'd be much heavier, denser and simpler than the Native *Quicksilver*; And that by subtilizing, and purifying and digesting it with much Labour, and long Operations, it may be converted into pure *Gold*. This Method of *Maturation* is only for *Mercury*. The other Metals it is ineffectual for, on two accounts: 1°. Because their Matter is not pure *Mercury*, but has other heterogeneous Bodies adhering to it. And 2°. by reason the Digestion whereby *Mercury* is turn'd into *Gold* wou'd not succeed in other Metals, in regard they had not been long enough in the Mines. Weight is the individual and inimitable Character of *Gold*, &c.

Now *Mercury* has ever some Impurities in it; and those Impurities are lighter than *Mercury*. Cou'd those be purged quite out, as it does not appear impossible but they might, *Mercury* wou'd be as heavy as *Gold*; and what is as heavy as *Gold* is *Gold*, or at least is very easily made *Gold*. See **GOLD**.

The third Method is, that of *Transmuting*; or of turning of all Metals readily into pure *Gold*, by melting 'em in the Fire, and casting a little Quantity of a certain Preparation into the fused Matter; upon which, the *Faces* immediately retire, are volatiliz'd and burnt, and so carried off; and the rest of the Mass turn'd into pure *Gold*. Now, that which works this change in the Metals is call'd the *Philosophers-stone*. See **TRANSMUTATION**.

Whether this third Method be possible or not is very hard to say. We have so many Testimonies of Persons, who on all other Occasions speak perfect Truth, that 'tis somewhat hard to say they lye in this, that they have been Masters of of the Secret. All required is to do that by Art which Nature does in many Years and Ages. For *Lead* and *Gold* do but differ little in Weight. Therefore there is not much in *Lead* beside *Mercury* and *Gold*. Now, if I had any Body which wou'd so agitate all the Parts of *Lead*, as to burn all that is not *Mercury* therein; and had some *Sulphur* to fix the *Mercury*; wou'd not the Mass remaining be converted into *Gold*? There is nothing in Nature so heavy as *Lead*; *Gold* and *Mercury* only excepted. 'Tis evident, therefore, there is something in *Lead* that comes very near to *Gold*. But in *Lead* there is some heterogeneous Matter independent both of *Mercury* and *Gold*. If now 19 Ounces of *Lead* be dissolved by the Fire, and 8 Ounces be thus destroyed; we shall have good *Gold*; the Ratio of *Lead* to *Gold* being as 11 to 19. If then the *Philosophers-stone* can purify the mercurial Metal in *Lead*, so as nothing shall remain but the pure mercurial Body, and you can fix and coagulate this, by means of *Sulphur*; out of 19 Ounces of *Lead* you will have 11 of *Gold*. Or, if you reduce the *Lead* from 11 to 14, you will then have converted it into *Mercury*; and if you further purify this *Mercury* from 14 to 19 you will have *Gold*; provided you have but a *Sulphur* to fix and coagulate it withal. Such is the Foundation of the *Philosophers-stone*; which the Alchymists contend to be a most subtile, fix'd, concentrated Fire, which as soon as it melts with any Metal, does by a magnetick Virtue immediately unite itself to the mercurial Body of the Metal, volatilizes and cleanses off all that is impure therein, and leaves nothing but a Mass of pure *Gold*. See **ELIXIR**, **METAL**, **MERCURY**, &c.

**PHILOSOPHERS Tree**, a Chymical Preparation, call'd also *Arbor Diane*, *Diana's Tree*. See **DIANA'S Tree**.

**PHILOSOPHICAL**, something that relates to *Philosophy*. See **PHILOSOPHY** and **PHILOSOPHER**.

Thus we say a *Philosophical Thesis*, a *Philosophical Principle*, a *Philosophical Definition*, &c.

**PHILOSOPHICAL Month**.

**PHILOSOPHICAL Tree**.

**PHILOSOPHICAL Transactions**.

} See } **MENSTRUUM.**  
} **TREE.**  
} **TRANSACTIONS.**

**PHILOSOPHICAL Egg**, among the Chymists, is a thin Glass Vessel, or Bubble, of the Shape of an Egg; with a long Neck or Stem; used in Digestions. See **DIGESTION**.

**PHILOSOPHIZING**, the Act of considering some Object of our Knowledge; examining its Properties, and the Phenomena it exhibits; enquiring into their Causes or Effects, and the Laws thereof: the whole conducted according to the Nature and Reason of Things; and directed to the Improvement of Knowledge.

The Rules of *Philosophizing*, *Regula Philosophanti*, as establish'd by Sir *Isaac Newton*, are; 1. That no more Causes of a natural Effect be admitted than are true, and suffice to account for the Phenomena thereof.— This agrees with the Sentiments of most Philosophers, who hold that Nature does nothing in vain; and that it were vain to do that by many things which might be done by fewer.

2. Natural Effects, therefore, of the same Kind, proceed from the same Causes. Thus *E. gr.* the Cause of Respiration is one and the same in Man and Brute; the Cause of the Descent of a Stone, the same in *Europe* as in *America*; the Cause of Light the same in Culinary Fire, and in the Sun; the cause of Reflection the same in the Planets as the Earth.

3. Those Qualities of Bodies which are not capable of being heighten'd, and remitted, and which are found in all Bodies where Experiments can be made; must be look'd on as universal Qualities of all Bodies. See **QUALITY**.

Thus the Extension of Body is only perceiv'd by our Senses, nor is it perceiv'd in all Bodies: But since it is found in all that we have Perception of, it may be affirm'd of all. So we find that several Bodies are hard; and argue that the Hardness of the Whole only arises from the Hardness of the Parts: Whence we infer that the Particles, not only of those Bodies which are sensible, but of all others, are likewise hard. Lastly, If all the Bodies about the Earth gravitate towards the Earth, and this according to the Quantity of Matter in each; and the Moon



Moon gravitates towards the Earth, also, according to its Quantity of Matter, and the Sea again gravitates towards the Moon; and all the Planets and Comets gravitate toward each other: It may be affirm'd universally, that all Bodies gravitate toward each other in the Creation. This Rule is the Foundation of all *Philosophy*.

**PHILOSOPHY**, *ΦΙΛΟΣΟΦΙΑ*, the Knowledge or Study of Nature and Morality, founded on Reason and Experience. See **KNOWLEDGE**.

*Philosophy* owes its Name to the Modesty of *Pythagoras*, who refused the Title *σοφός*, *wise*, given to his Predecessors *Thales*, *Pherecydes*, &c. as too assuming; and contented himself with the Appellation of *φιλόσοφος*, *quasi φιλὸς τῆς σοφίας*, a Friend or Lover of *Wisdom*.

*Claudian* rather derives the Name from *φιλία*, Study, and *σοφία*, *q. d. Studium sapientie*. *Pythagoras*, says he, conceiving that the Application of the human Mind, ought rather to be call'd *Study* than *Science*; set aside the Appellation *Wise*, and in lieu thereof took that of *Philosopher*: For having discoursed with great Judgment and Learning before *Leontius* King of the *Phliassii*; that Prince ask'd him what Art he profess'd; or in what Points his Wisdom chiefly lay? To which he answer'd, that he neither understood any Art, nor was he a *σοφός*, but a *φιλόσοφος*. Which Title *St. Augustin* observes, took so well with other Authors; that whoever excelled in any thing relating to Wisdom or Knowledge had no other Appellation. Accordingly, *Socrates*, *Plato*, &c. ever refrain'd from the swelling Title of *Sophos*. See **SOPHIST**.

The Word *Philosophy* is used in various Significations among ancient and modern Writers: In its laxer Sense, it signifies the *Love of Truth*; thus *Plato* frequently calls it *Philoteia*.— In other Places it signifies the *Knowledge of many Things*: Thus *Zeno* calls *Philosophy* *κατάληψις* *Comprehension*; because comprehending all Truth: Agreeable to which is *Cicero's* Definition of *Philosopher*, *viz.* He who studies to know the Natures and Causes of all Things human and divine, and to attain to every good Rule and Method of Life.

In a stricter Sense, *Philosophy* is frequently confin'd to some Science, or Branch of Science, *v. g.* to *Logic*, as we find it in *Plato* and *Aristotle*; to *Physicks*, or the Knowledge of Nature, in which Sense it was chiefly used in the *Ionian* School; and to *Ethicks*, or the Rules of Morality; Thus *Clemens Alexand.* relates, that among the Greeks there are *Philosophers who hold Disputes about Virtue*.

Agreeably hereto *Pythagoras* defines *Philosophy*, a *Meditation of Death*; by which, according to *Plato* and *Clemens* is meant an Abstraction or Retirement from the Body; which *Apuleius* thus explains: *A Philosopher is to study nothing so much as to set his Soul at Liberty from its Correspondence with the Body*: Thus *Cicero* calls *Philosophy* *Ars vitæ*, and *Seneca*, *lex vitæ*; and thus *Plutarch*— *Constancy, Fidelity, and a sound Mind, are the real Philosophy*; all the other Parts of *Wisdom, tending any other Way, are Pretinences and Curiosities*: And in this Sense it was, that *Philosophy* chiefly flourish'd in the School of *Socrates*, afterwards call'd the *Academick School*, and among the *Stoicks*. See **ACADEMICK** and **STOICK**.

Lastly, *Philosophy* is frequently used by *Pythagoras* and *Plato* for *Metaphysicks*, or the Knowledge of God; which *Plato* calls the true *Philosophy*, others the *Prima Philosophia*; and in respect whereof, the *Platonists* call all other *Philosophy*, *Nicturnal*, *νυκτερινή φιλοσοφία*.

*Gale* includes all the several Ideas hitherto deliver'd, under this one general Definition: *Philosophy* is the Knowledge of things Notional, Natural, Moral, and Supernatural, first granted by God to our first Parents, and transmitted to us for the Honour of the Creator, and the Good of the Universe.

That Definition of *Epietetus* is pretty comprehensive: *Philosophy* consists in three Things; the Practice of Precepts, the Reason of Precepts, and the Proof of Precepts.

Some have given the following Epithets to the ancient *Philosophy*, under its several Stages: *Philosophy*, say they, became *Impious* under *Diagoras*; *Vicious* under *Epicurus*; *Hypocritical* under *Zeno*; *Impudent* under *Diogenes*; *Covetous* under *Demochares*; *Voluptuous* under *Metrodorus*; *Fantastical* under *Crates*; *Scurrilous* under *Menippus*; *Licentious* under *Pyrrho*; *Quarrelsome* under *Cleanthes*, &c.

The several Dogmata maintain'd by the several *Philosophers*, are infinite: *Cicero* makes no scruple to aver, that There is nothing in the World, how absurd soever, but has been maintain'd by one *Philosopher* or other.— From the first Broachers of new Opinions, and the first Founders of Schools, *Philosophy* is become divided into innumerable *Secls*; some Ancient, and others Modern; such are the *Platonists*, *Peripateticks*, *Epicureans*, *Stoicks*, *Pyrrhonians* and *Academicks*; and such are the *Cartesians*, *Newtonians*, &c. See the Rise, Doctrines; &c. of each *Secl* under its proper Article **PLATONIST**, **PERIPATETICK**, **EPICUREAN**, **STOICK**, **PYRRHONIAN**, **ACADEMIC**, **CARTESIAN**, **NEWTONIAN**, &c.

*Philosophy* may be divided into two Branches, or consider'd under two Habitudes, *Theoretical* and *Practical*.

*Theoretical*, or *Speculative* **PHILOSOPHY**, is that employ'd in mere Contemplation, and which terminates therein. Such is *Physicks*, which is a bare Contemplation of Nature, and natural Things. See **PHYSICKS**.

*Theoretical Philosophy*, again, is usually subdivided into three, *viz.* *Pneumaticks*; *Physicks*, or *Somaticks*; and *Metaphysicks*, or *Ontologia*.

The First considers Beings abstracted from all Matter; its Object are Spirits; their Nature, Properties, Effects, &c. See **SPIRIT** and **PNEUMATICKS**.

The Second considers Matter and material Things; its Objects are Bodies, their Properties, Laws, &c. See **BODY** and **PHYSICKS**.

The Third extends to each indifferently; its Objects are either Body or Spirit. See **METAPHYSICKS**.

In the Order of our Discovery, or Arrival at the Knowledge of 'em, *Physicks* is first, then *Metaphysicks*; the third arises from the two consider'd together: After an Acquaintance with God, ourselves, and natural Bodies, we come to consider what is common to 'em all, the Attributes that agree to all, and thus form a Sort of universal *Philosophy*, or *Doctrine de Ente* in general. See **ONTOLOGY**, **ENS**, **ESSENCE**, &c.

But in teaching, or laying down these several Branches to others, we observe a contrary Order; beginning with the most Universal, and descending to the more Particular. And hence we see why *Peripateticks* call *Metaphysicks*, and the *Cartesians* *Pneumaticks*, the *prima Philosophia*.

Others prefer the Distribution of *Philosophy* into four Parts, *viz.* 1. *Pneumaticks*, which considers, and treats of Spirits. 2. *Somaticks*, of Bodies. The third compounded of both, *Anthropology*, which considers Man, in whom both Body and Spirit are found. The 4. *Ontology*, *i. e.* which treats of what is common to all the other three.

*Practical* **PHILOSOPHY**, is that which lays down the Rules of virtuous and happy Life; and excites us to the Practice thereof.

*Practical Philosophy*, is properly *Ethicks* alone, or the Method of leading a virtuous and happy Life: Yet, most Authors divide it into two, answerably to the two Sorts of human Actions to be directed thereby, *viz.* *Logicks*, which govern the Operations of the Understanding. See **LOGICKS** and **UNDERSTANDING**.

And *Ethicks* properly so call'd, which direct those of the Will. See **ETHICKS** and **WILL**.

*Natural* **PHILOSOPHY** } See { **NATURAL**.  
*Moral* **PHILOSOPHY** } See { **MORAL**.

**PHILOSOPHY** is also frequently used for the particular Doctrine, or System of Opinions, broach'd by some considerable Philosopher, and espoused and adhered to by his Followers. See **SYSTEM** and **HYPOTHESIS**.

In this Sense we say the

*Mosaic*  
*Epicurean*  
*Aristotelian*  
*Platonic*  
*Cartesian*  
*Newtonian*  
*Hermetical*

**PHILOSOPHY**. See

**MOSEIC**  
**EPICUREAN**  
**PERIPATETIC**  
**PLATONIC**  
**CARTESIAN**  
**NEWTONIAN**  
**HERMETICAL**.

**PHILOSOPHY** is also used for a certain Manner of Philosophizing; or certain Principles, upon which all the Enquiries thereby made, do turn.

In this Sense we say

*Corpuscular* or *Atomical* **PHILOSOPHY**.

*Mechanical* **PHILOSOPHY**.

*Experimental* **PHILOSOPHY**.

} See

**CORPUSCULAR**.  
**MECHANICAL**.  
**EXPERIMENTAL**.

**PHILOSOPHY**, again, is consider'd with regard to the Age, or the Place wherein it was taught.

In this Sense we say

*Scholastick* or *School* **PHILOSOPHY**. See **SCHOLASTICK**.  
*New* **PHILOSOPHY**, &c.

**FILTRATION**, or **FILTRATION**, the Separation of the finer Part of a Fluid, from the Coarser; by passing it through a *Filtre*, *viz.* a Linnen Cloth, Shammy Skin, Brown Paper, or the like. See **FILTRATION**.

**FILTER**, **FILTRE**, **FIELTRUM**, in Pharmacy, &c. a Strainer, or Filtre. See **FILTRE**.

**FILTER**, or **FILTRE**, is also used for a Drug, or Preparation, which 'tis pretended will excite Love. See **CHARM**.

*Filters*, are distinguish'd into *true* and *spurious*: The *spurious* are Spells or Charms, supposed to have an Effect beyond the ordinary Laws of Nature, by some magick Virtue; such are those said to be given by old Women, Witches, &c. See **MAGIC** and **WITCHCRAFT**.

The



The true *Philtres* are those supposed to work their Effect by some natural and magnetical Power.

There are many grave Authors who believe the Reality of these *Philtres*; and alledge matter of Fact in Confirmation of their Sentiments: among the rest, *Van-Helmont*, who says, that upon holding a certain Herb in his Hand for some time, and taking afterwards a little Dog by the Foot with the same Hand; the Dog follow'd him wherever he went, and quite deserted his former Master.

He adds that *Philtres* only demand a Conformation of *Mumia*; and on this Principle accounts for the Phenomena of Love transplanted by the Touch of an Herb; for, says he, the Heat communicated to the Herb, not coming alone, but animated by the Emanations of the natural Spirits; determines the Herb towards the Man, and identifies it to him: Having, then received this Ferment, it attracts the Spirit of the other Object magnetically, and gives it an amorous Motion. See *MUMIA* and *TRANSPLANTATION*.

But this is mere Cant; and all *Philtres*, whatever Facts may be alledg'd, are mere Chimera's.

Naturalists ascribe an Effect somewhat of Kin to that of a *Philtre* to *Cantharides*, taken inwardly; these, 'tis true, tend to excite love, or rather Lust: but 'tis Lust in the General, not determin'd to any particular Object; and they do it no otherwise than by irritating the Fibres of the Nerves and Muscles, by whose Action the *Emissio Seminis* is effected. See *CANTHARIDES*.

The Word *Philtre* is form'd from the Greek *φίλεω* to love.

*PHIMOSIS*, in Medicine, a Disease of the *Penis*, wherein the Preputium is glued, or strongly constringed upon the Glans; so as not to be capable of being drawn back, to uncover the Glans. See *GLANS* and *PREPUCE*.

The Word is also used for a Disease of the Eyes, wherein the Eye-lids are so bound together by the Mediation of some glutinous Matter, as not to be open'd.

The Word is Greek, and properly signifies a Ligature with Packthread, *εὐλκωσις*, denoting Packthread.

Sometimes a *Phimosis* conceals Shankers on, or about the Glans; and sometimes is so violent as to prevent the flowing out of the Matter, whence it causes an Inflammation or Morfication of the Part.

The Cure of a Paraphimosis in no ways differs from that of a *Phimosis*, except in the Use of Injections; and in both Cases, if they still prove obstinate, the Prepuce must be cut, in order to reduce it to its natural State or Situation.

*PHLEBOTOMY*, in Medicine and Chirurgery, *Bleeding*; or the Art or Operation of letting Blood. See *BLOON*.

The Word is compounded of the Greek *φλέψ*, Vein, and *τέμνω*, to cut.

*Phlebotomy* is a Manner of Evacuation of the utmost Importance in Medicine, an Idea of its Effects, with the Reason of its Use may be conceiv'd from what follows.

'Tis evident the Blood thrown out of the Heart, while it strikes upon the antecedent Blood, and drives it forwards, transfers to it Part of its own Motion, and is therefore so much retarded in its own Motion. Hence, if Blood be drawn out of the Basilic Vein of the right Arm; the succeeding Blood, or that carried by the axillary Artery, or right Subclavian, will be less hinder'd in its Motion, than it was before that Vein was open'd; for Part of the Blood being taken away by the opening of that Vein, there remains behind a lesser Quantity in the axillary Vein, or less is contained between the farther Extremity of the axillary Artery and the Heart, than was before: therefore the Blood being let out by the Vein, the Remainder in the Artery will be less impeded in its Motion than before. See *PULSE*.

Hence the Blood of that Artery which communicates with the Vein that is opened, will flow with a greater Velocity after the Aperture is made than before. Consequently, while the Blood is flowing out of the Vein in the Arm, that thrown out of the Heart into the Aorta, will find less Resistance in the ascending Trunk, than in the Descending; and will therefore flow faster in the Ascending, than in the descending Trunk: And thence too it will find less Resistance in the right Subclavian Artery than in the left.

Lastly, it hence appears, that the Blood being let out of a Vein in the right Arm, the remaining Blood in the right axillary Artery runs with a greater Velocity into the Artery of that Arm that is contiguous to it, than through the thoracic Artery, or the right Scapulary, which is likewise contiguous to it; because, when the Blood is not supposed to be drawn out from any Vein corresponding to the thoracic Artery, or into which this discharges itself, there is proportionally a greater Impediment to the Motion of the Blood in the thoracic Artery, than in that of the Arm. But because the Velocity of the Blood in the subclavian Artery, or the right Axillary, is greater than in the Left; the Velocity in the right Thoracic will also be greater than in the left thoracic Artery. Hence it is manifest, that the Blood being let out of a Vein in the right Arm; the greatest Velocity of the remaining Blood will be in the Artery of that Arm, because it immediately empties its Blood into the Vein that is opened; and the next

greatest Velocity will be in the thoracic Artery, or Scapulary of the same Side, going out from the axillary Artery. But the Velocity of the Blood will be far less in the brachial Axillary, and thoracic Artery on the left and opposite Side; and least of all in the Arteries arising from the descending Trunk of the Aorta.

On this View it may easily be gathered, what is to be done in the several Circumstances of *Blood-letting*: For instance, if we would prevent the Increase of any Humour from the Blood stagnating in the left Leg, or bring it about, that as little Blood as possible, should flow to that Leg in any given space of Time; first, Blood is to be taken from the Arm or Leg of the right Side, because this is truly making what is call'd a *Revulsion*.

Again, if Blood be drawn away on the same Side, and from some Vein that receives the Blood from a Branch of that Trunk which transmits it to the swell'd Part; it will occasion a greater Derivation of Blood to that Limb.

As to what relates to the whole Habit; in all Lentors and Viscidities, if there be a due Strength and Elasticity remaining in the Solids, *Phlebotomy* will make the remaining Blood circulate the faster, and become thinner and warmer; but in a Plethora, from Debauch, and too large Quantities of spirituous Nourishment, or from a Diminution of Perspiration, where the Blood yet retains its natural Fluxility, *Phlebotomy* will make the remaining Mass circulate slower, and become cooler.

In the former Case, a Diminution of the Resistance in the Blood-Vessels, will increase the contractile Powers of those Vessels, and make them beat faster, and circulate their Contents with greater Velocity; but in the latter Case a Diminution of the Quantity of a spirituous Blood will lessen the Quantity of Spirit secreted in the Brain, the Consequence of which will be that the Heart and Arteries will not contract so often nor so strongly as before, and therefore the Blood will move slower, and become cooler. See *HEART* and *ARTERY*.

And on these Things depend the whole Doctrine of *Blood-letting*. See *EVACUATION*.

*PHLEGM*, in Chymistry, is an aqueous and insipid Fluid, supposed to be found in all natural Bodies; coinciding with what the other Philosophers call *Water*. See *WATER*.

*Phlegm* makes the 4th of the Chymical Elements, or Elementary Principles. See *PRINCIPLE* and *ELEMENT*.

In the Distillation of Vinegar, as also of all Minerals and inodorous Vegetables, *Phlegm* comes out first; in that of Wine last. See *DISTILLATION*.

This *Phlegm* is supposed to be the common Vehicle and Diluter of all solid Bodies; and in proportion to its Quantity in the Mixture, are the other Parts more languid and disabled in their Attractions; yet, on the Chymists Principles, *Phlegm* shou'd be a Principle of Action; as being necessary to the Dissolution of the Salt in Bodies, without which the Salt must remain inactive. See *SALT*.

It is much to be question'd whether this *Phlegm* can ever be procured without any Mixture of other Matters; that which has the least must come nearest to the Nature of a Principle; and on that account Rain-water shou'd afford it most.

*Phlegm*, *Boerhaave* observes, drawn by Distillation from Vegetables, does always carry with it some what of the Smell of the Vegetable, which it derives partly from the Oil, and partly from the Spirit residing therein. The same *Phlegm*, by frequently reiterated Distillations, lays aside most of this Smell, and approaches nearer to pure Water, but never becomes perfectly such. Add, that the purest distill'd Water, if expos'd a few Days to the Sun, is much changed, and render'd turbid.

That *Phlegm* is not an elementary Body, *Mr. Boyle* argues from its different Powers and Properties; the *Phlegm* of Wine, and most Liquors, have Qualities that make them differ from mere Water, and from one another; the *Phlegm* of Vitriol that Author observes is an effectual Remedy against Burns; and a valuable Nostrum for dissolving hard Tumours; that of Vinegar will extract a Saccharine Sweetness out of Lead, and even dissolve Corals with long Digestion; and that of Sugar of Lead, is said to dissolve Pearls.

In Effect, the Characters which serve to denominate a Fluid, *Phlegm*, or Water, among the Chymists, are Insipidity and Volatility; yet, Quick-silver has all these, which no Body pretends to be *Phlegm*. Add, that it appears from several Experiments, that Water itself, by repeated Distillations, may be converted into Earth. Yet Water, the same Author observes, has a much fairer Pretence to be an Element, than any of the *tria prima*.

Add, that as to the Qualities which occasion that Name to be given any visible Substance, viz. its being Fluid, Insipid, and inodorous; we have never yet seen any of these separated Substances, which the Chymists call *Phlegm*, perfectly destitute both of Taste and Smell.

Common Salt, and several other saline Bodies distilled ever so dry, will each yield a large Quantity of *Phlegm*; which can no other way be accounted for, but from this, that among the various Operations of the Fire, on the Matter of a Concrete, several Particles of that Matter are reduc'd to a shape



Shape and Size, requisite to compose such a Liquor as the Chymists call *Phlegm*, or Water.

*PHLEGMA*, in the Animal Oeconomy, is one of the four Humours, whereof the Ancients supposed the Mass of Blood to consist. See HUMOUR, and BLOOD.

*Phlegm* is the same that is otherwise called *Pituita*. See PITUITA.

*PHLEGMAGOGUE*, a Medicine proper to purge, *Phlegm* or *Pituita*. See PURGATIVE.

*Agaric*, *Hermodyctyls*, *Turbith*, &c. are *Phlegmagogues*. The Word is form'd from the Greek *φλέγμα*, *pituita*, and *to drive*.

*PHLEGMATIC*, a Temperament wherein *Phlegm*, or *Pituita*, is the prevailing Humour. See TEMPERAMENT and *PHLEGM*.

*Phlegmatic* Constitutions are subject to Rheums, Defluxions, &c. See CONSTITUTION.

*PHLEGMON*, in Medicine, a general Name for all Tumors form'd of the Blood. See TUMOR.

An Inflammation, attended with a considerable swelling of the Part, constitutes a *Phlegmon*. See INFLAMMATION.

If the Blood be good, and laudable, and only peccant in Quantity, 'tis call'd a *true Phlegmon*.

When corrupted and adulterated with Bile, or *Pituita*, 'tis call'd a *bastard Phlegmon*; in which case it participates of the *Erysipela*, *Oedema*, or *Schirrus*.

The Blood here extravasated produces a Heat, Redness, Tension, Renitency, Pulsation, and great Pain.

The Bubo, Carbuncle, Furuncle, Pustles, and other Tubercles arising from the Blood, are all reducible to the *Phlegmon*. See BUBO, CARBUNCLE, &c.

The Ophthalmia, Parotides, Squinancy, and even Pleurisy and Peripneumony, are Species of the *Phlegmon*. See each under its proper Article.

The Word is form'd from the Greek *φλέγμα*, to cause an Inflammation.

*PHLOGOSIS*, in Medicine, a Degree of the Ophthalmia. When the Inflammation of the Eye is light and gentle it is call'd a *Phlogosis*; when very severe, *Chemosis*. See OPHTHALMIA.

*PHLYACOGRAPHIA*, among the Ancients, a merry and burlesque Imitation of some grave and serious Piece; particularly a Tragedy travestied into a Comedy. See TRAVESTY.

The *Phlyacography* was the same thing with the *Hilarody*, or *Hilarotragedy*. See HILARODY.

There were several Kinds of *Phlyacography*; which had their several Names. See *Salmasius* on *Solin*.

The Parodies which have been made of some Parts of the best Poets, as the *Virgil Travesty* of *Scarron* and *Cotton*; the *Rival Queens* of *Cibber*, from the *Rival Queens* of *Lee*; some Pieces of Opera's, the Musick whereof is applied to low and ridiculous Words, come under the Notion of *Phlyacographies*.

The Word is form'd from the Greek *φλυτζάνη*, *nugari*, to trifle.

*PHLYCTÆNÆ* or *PHLYCTENES*, little white itching Vesiculæ, arising on the Skin, chiefly between the Fingers, and about the Wrist, and full of a limpid Serum.

They sometimes degenerate into the Itch, and sometimes into Tetters. See ITCH, &c.

They are cured like other cutaneous Eruptions. See PSORA and PUSTLE.

*PHLYCTENÆ* are also little ulcerous Vesicles, arising sometimes on the Adnata, sometimes on the Cornea, of the Eye, like so many little Bladders full of Water; popularly call'd *Blisters in the Eyes*.

They shew like Grains of Millet; and when produced by a sharp corroding Humour, occasion violent Pain: The Pustles on the *Adnata* are red; those on the *Cornea* blackish, if near to the Surface, but whiter if deeper.

They are cured by Excipients and Exsiccants.

*PHLYSTENE* or *PHLYSTENÆ*, in Medicine, a Disease which produces Bubo's, full of a serous Humour. See BUBO.

The *Phlystene* is a kind of Pox.—The Bubo's it occasions are sometimes big, livid, pale, black, or any Colour different from that of the natural Flesh.—When pierc'd, the Flesh frequently appears ulcerated under 'em.

They are usually occasion'd by a hot, sharp Humour, and arise on all Parts of the Body; but are most dangerous on the *Cornea* of the Eye.

The Word is form'd from the Greek *φλύω*, *φλύζω* of *φλύω*, *ebullio*, I boil, bubble, &c.

*PHOENIGMA*, a Medicine which raises Redness, with Blisters, on the Places it is applied to. See BLISTER, &c.

Such are Mustard-Seed, Pepper, Vesicatories, &c. See VESICATORY, SINAPISM, &c.

*Phoenigma's* are applied to draw the Humour to the Part they are applied on, and divert it from the Part affected. See REVULSION.

The Word is form'd from the Greek *φένιξ*, red.

*PHOENIX*, in Astronomy a Constellation of the Southern Hemisphere; unknown to the Ancients, and invisible in our Northern Parts. See CONSTELLATION.

The Constellation took its Name, and Form from that of a Bird famous among the Antients; but generally look'd upon the by Moderns as fabulous.

The Naturalists speak of it as single, or the only one of its Kind: They describe it as of the Size of an Eagle; its Head finely crested, with a beautiful Plumage; its Neck cover'd with Feathers of a Gold Colour, and the rest of its Body Purple, only the Tail white intermix'd with Carnation; and its Eyes sparkle like Stars.—They hold that it lives five or six hundred Years, in the Wilderness: That when thus advanced in Age, it raises itself a funeral Pile of Wood and Aromatic Gums; then it lights it with the wafting of its Wings, and thus burns itself; and from its Ashes arises a Worm, which in time grows up to be a *Phoenix*.

Hence the *Phœnicians* gave the Name *Phoenix* to the Palm-Tree, by reason when burnt down to the very Root, it rises again fairer than ever.

*PHONASCIÆ*, the Art of forming the human Voice. See VOICE.

In ancient Greece, there were Combats, or Contests, establish'd for the Voice, as well as other Parts of the *Gymnastice*. See GYMNASTICK.

These Combats were still held in the Time of *Galen*; and it was these that brought the *Phonascia* into Vogue.

The Word is form'd from the Greek *φωνή*, Voice.

Hence the Masters of this Art, or those who taught the Art of managing the Voice, were call'd *Phonasci*; under whose Tutorage were put all those destin'd to be Orators, Singers, Comedians, &c.

*PHONICKS*, the Doctrine, or Science, of Sounds; otherwise call'd *Acousticks*. See ACOUSTICKS.

The Word is deriv'd from the Greek *φωνή*, Sound.

*Phonicks* may be considered as an Art, analogous to Opticks; and may be divided, like that, into *direct*, *refracted* and *reflected*.

These Branches the Bishop of *Ferns*, in allusion to the Parts of Opticks, denominates *Phonicks*, *Diaphonicks*, and *Cataphonicks*.

*Phonicks* is improvable both with regard to the Object; and with regard to the Medium or Organ.

As to the Object, *Sound*, it may be improved both with regard to the begetting, and the propagating of Sounds;

The first, in speaking, or pronouncing, in whistling, or singing, or hollowing, or luring, which are all distinct Arts and all improvable.—The second by the Position of the sonorous Body.

With regard to the *Medium*, *Phonicks* may be improved by the Thinness and Quiescency thereof, and by the sonorous Body being placed near a smooth Wall, either plain or arch'd, especially cycloidally or elliptically; hence the Theory of Whispering-Places. See WHISPERING.

Add to these, that by placing the sonorous Body near Water, its Sound is mollified; that by placing it on a Plain, the Sound is convey'd to a greater Distance than on uneven Ground, &c. See SOUND.

As to the Organ, the *Ear*: It is help'd by placing it near a Wall, (especially at one End of an Arch, the Sound beginning at the other;) or near the Surface of Water, or of the Earth.

And by Instruments, as the *Stentoraphonicon*, or Speaking-Trumpet. See SPEAKING-TRUMPET.

By an Instrument to help weak Ears, as Spectacles do Eyes; by an Instrument to take in vastly remote Sounds, as Telescopes do Objects; by a Microphone, or magnifying Ear-Instrument; by a Polyphone or multiplying Ear-Instrument. See EAR, &c.

*Cataphonicks*, or Reflected Hearing, may be improved by several Kinds of artificial Echoes; for in general, any Sound falling either directly or obliquely, on any dense Body, of a smooth Surface, whether plain or arch'd, is beat back again, or reflected, *i. e.* does eccho more or less. See ECCHO.

*PHOSPHORUS*, a Matter which shines, or even burns, spontaneously, and without the Application of any sensible Fire. See FIRE and LIGHT.

The Word is form'd from the Greek *φῶς*, Light, and *φέρω*, I carry.

*Phosphorus* is either *Natural* or *Artificial*.

*Natural PHOSPHORI* are Matters which become luminous at certain Times, without the Assistance of any Art, or Preparation.

Such are the Glow-Worms, frequent in cold Countries; Flies, and other shining Insects, in hot Countries; rotten Wood, the Eyes, Blood, Scales, Flesh, Sweat, Feathers, &c. of several Animals; Diamonds when rubb'd after a certain manner; Sugar and Sulphur when pounded in a dark Place; Sea-Water, and some Mineral-Waters when

briskly



briskly agitated; a Cat's or Horse's Back, duly rubb'd with the Hand, &c. in the Dark; nay, Dr. Croon tells, that upon rubbing his own Body briskly with a well warm'd Shirt, he has frequently made both to shine; and Dr. Sloane adds, that he knows a Bristol Gentleman and his Son, both whose Stockings will shine after much walking.

All Natural Phosphori have this in common, that they don't shine always, and that they never give any Heat. See NOCTILUCA.

But that which of all Natural Phosphori has occasioned the most Speculation is the Barometrical or Mercurial Phosphorus.

Barometrical or Mercurial PHOSPHORUS.—M. Picard first observed that the Mercury of his Barometer, when shaken in a dark Place, emitted Light; with this Circumstance, that in shaking the Mercury with Rapidity, sometimes above and sometimes below its Equilibrium with the Air, the Light is only seen when below it, where it appears as if adhering to the upper Surface.

But this Light is not found in the Mercury of all Barometers, which occasions a great Difficulty.

M. Bernoulli, upon examining the Circumstances of this Phænomenon, invented a Solution of the same: He imagines that upon the Mercury's descending, the Vacuum in the Tube increasing, there issues out of the Mercury to fill up this Excess of Vacuity, a very fine subtile Matter before dispers'd throughout the Pores of this Mineral; and that at the same time there enters thro' the Pores of the Tube another finer Matter: Thus, the first Matter emitted out of the Mercury and collected over its Surface striking impetuously against that received from without, has the same Effect with Des-Cartes's first Element against the second; that is, produces the Motion of Light. See LIGHT.

But why, then, is not the Phænomenon common to all Barometers? To this he answers, That the Motion of the subtile Matter out of the Mercury may be weaken'd, and prevented by any heterogeneous Matter collected on its upper Surface into a Kind of Pellicle; so that the Light should never appear but when the Mercury was perfectly pure.

This Reasoning was confirm'd from the Experiments of several Barometers which he made according to this Plan; but the Royal Academy of Sciences, who repeated the Experiments with Barometers made after the same manner, did not meet with the same Success; the Light being found in some not in others.

M. Homberg therefore conjectured, that the Difference consisted in the different Qualities of the Quicksilver: In some, he observ'd, they used Quick-Lime to purify it; in others, Steel-Filings. The Mercury, then, raising in the Distillation, and passing thro' the Lime, might take away Parts thereof, capable, by their extreme Smallness, to lodge in its Interstices. Hence, as Quick-Lime always retains some fiery Particles, 'tis possible, in a Place void of Air, where they swim at Liberty, they may produce this Lustre.

Mr. Hawksbee has several Experiments of the Mercurial Phosphorus—passing Air forcibly thro' the Body of Quicksilver placed in an Exhausted Receiver, the Parts were violently driven against the Side of the Receiver, and gave all around the Appearance of Fire; continuing thus till the Receiver was half full again of Air.

From other Experiments he found, that tho' the Appearance of Light was not producible by agitating the Mercury in the same Manner in the common Air; yet that a very fine Medium nearly approaching to a Vacuum was not at all necessary.

And, lastly, from other Experiments he found, that Mercury enclos'd in Water, which communicated with the open Air, by a violent shaking of the Vessel wherein it was enclosed, emitted Particles of Light in great plenty, like little Stars.

By including the Vessel of Mercury, &c. in a Receiver, and exhausting the Air, the Phænomenon was chang'd; and, upon shaking the Vessel, instead of Sparkles of Light the whole Mass appear'd one continued Circle of Light.

Artificial PHOSPHORI are such as owe their luminous Quality to some Art, or Preparation.

Of these there are three Kinds: The first burns and consumes every combustible it touches; the other two have no sensible Heat.

The first, or Burning Phosphorus, may be made of Urine, Blood, Hairs, and generally of any Part of an Animal that yields an Oil by Distillation.—The Matter it is most easily drawn from is human Urine.

'Tis of a yellowish Colour, and of the Consistence of hard Wax, in the Condition 'tis left by the Distillation; And in this State is call'd Phosphorus Fulgurans, from its Coruscations; and Phosphorus Smaragdinus, because its Light is frequently green or blue, especially in Places that are not very dark; and solid Phosphorus from its Consistence.

It dissolves in all Kinds of distill'd Oils; and in that state is call'd liquid Phosphorus.

It may be ground in all kinds of fat Pomatums; in which Case it makes a luminous Unguent.

So that the Phosphorus fulgurans, Smaragdinus, Solid and Liquid Phosphorus, and Luminous Unguent, are all the same Drug, under different Circumstances.

It was invented by Mr. Kunkel, Chymist of the Elector of Saxony; brought into France by M. Kraft, a Physician of Dresden, by whom it was communicated to Mr. Boyle.

In 1676, M. Elzholz publish'd a Treatise expressly on it, at Berlin; and in 1680, Mr. Boyle publish'd another in English under the Title of Noctiluca. See NOCTILUCA.

M. Homberg first made of it at Paris in 1679, and communicated the Method of Preparation to the Publick.

Preparation of the Solid Phosphorus, or Phosphorus of Urine.

Evaporate a good Quantity of Urine of Beer-Drinkers to the Consistence of Honey. Cover it up in an Earthen Vessel, and set it three or four Months in a Cellar to ferment and putrify.—Mix a double quantity of Sand, or Powder of Pot-shards with one Part of this Urine; put it into a Retort, fitted to a long-neck'd Receiver, with two or three quarts of Water.—Distil it in a naked Fire in a reverberatory Furnace; at first gently; after two Hours, augment the Fire gradually, till all the black fetid Oil be drawn off.—Raise the Fire to the highest degree; upon which white Clouds will come into the Receiver and fix by little and little on one side, in form of a yellowish Skin; and another part will precipitate to the Bottom in Powder.—Keep the Fire thus violent for three Hours till no more Fumes arise.—Let all cool, and unloose the Vessels; and throwing more Water into the Receiver shake all well about to loosen what sticks to the Sides.—Pour the whole into a Glass-Vessel to settle.

The Volatile Salt will now dissolve in the Water, and the Phosphorus and Oil sink to the Bottom; pour off the Water, and gathering the remaining Matter together, put it into a Glass-Vessel with a little fresh Water; and digest it in a Sand-Heat stirring it from Time to Time with a wooden Spatula.

By this means the Phosphorus will separate from the Oil, and sink to the Bottom: Pour off the Oil, and make up the Phosphorus, while hot, into Sticks for Use.

Boerhaave gives us other Ways of preparing Phosphorus. Recent Urine, he observes, digested three or four Days in a tall Glass, with a Heat no greater than that of a healthy Man, grows red, fetid, and cadaverous: This digested Urine being put to distil in a Retort, yields a clear fetid Liquor, then a yellow volatile Salt, which evaporated to the Consistence of a Sapa, and mix'd with four times its Weight of dry Sand, and the Distillation continued in a cover'd Retort, there successively comes over, by greater and greater degrees of Fire, a fetid brown Oil, bluish Fumes, and a gross shining Matter which sinks in Water, and is the solid Phosphorus.

To make it more directly, and to the best Advantage, it may be proper to take a sufficient Quantity of human Urine, afforded by a Person not much given to drink Wine, and exhale it away in an open Vessel to a Rob, or the Consistence of Honey; then set it to putrify for half a Year, and upon Distillation it will afford a large Proportion of Salt; after which, if six times its own Quantity of Sand, or Brick-Dust, be added to the Remainder, and the Distillation be continued, as in the Case last mentioned, the Phosphorus will fall into the Water.—Or it may commodiously be prepared, by suffering the Rob of Urine to digest for two Years in an open Vessel in the open Air; during which time a slimy, fæculent, unctuous, earthy Matter will fall to the bottom; which being frequently wash'd with pure Water, wherein it will not dissolve, will leave a white Matter behind it, neither of an Alkaline, Acid, Saline, or Terrestrial, nor scarce of an unctuous Nature; and this is of it self a proper Matter for the making of Phosphorus by Distillation with Sand.

Properties of the solid Phosphorus.

1<sup>st</sup>, With this Phosphorus one may write on Paper, as with a Pencil, and the Letters appear like Flame in the dark; yet in the Light nothing appears but a dim Smoak.

2<sup>dly</sup>, A little Piece rubb'd between two Papers, takes Fire instantaneously.—If Care be not taken in the Management of it, there is danger of burning the Fingers, the Phosphorus being exceedingly inflammable. See FIRE.

3<sup>dly</sup>, Its burning is very vehement, and penetrates deeper into the Flesh than common Fire; and 'tis very difficult to be extinguish'd.

M. Cassini happening to press a Piece in a Cloth between his Fingers, the Cloth immediately took Fire; he endeavour'd to put it out with his Foot, but his Shoe caught the Flame, and he was obliged to extinguish it with a Brass-Ruler, which cast forth Rays in the Dark for two Months after. The



The *Solid Phosphorus* never spoils, provided it be kept in a Phiol full of Water; that in form of an Unguent does not keep so well; and the *Liquid Phosphorus* worst of all. The *Liquid Phosphorus* is made by digesting in Horse-Dung, a little Bit or some Scrapings of the *Solid*, for two Days, in Oil, or Essence, of Cloves, Oil of Turpentine, or the like. After Dissolution the Oil will be so impregnated with it, that upon opening the Bottle, the Matter will appear on a Flame.

#### Experiments with the Liquid Phosphorus.

By washing the Face, Hands, or the like, with the *Liquid Phosphorus*, Dr. Stare tells us, they will be made to shine very considerably in the Dark, and the Lustre thereof be communicated to adjacent Objects, yet without any Offence to the Skin.

As soon as a Candle is brought in, the Shining disappears, and no Change perceivable.

This *Phosphorus* emits frequent Flashes like Lightning, even when close stopp'd; especially in warm Weather. Hence Mr. Boyle takes occasion to draw a Parallel between Lightning and *Phosphorus*.

The second Kind of *Artificial Phosphorus*, is a Preparation of a Stone call'd the *Bolonian Stone*, from a City of that Name in *Italy* nigh which it is found.

The first who undertook to make this Stone luminous, was a Chymist of that City call'd *Vincenzo Casciarolo*.

*Poterus, Licetus, &c.* have described the Process, but mistakenly: M. *Homburg*, who made a Journey to *Italy* expressly to learn the Preparation, first communicated the same to M. *Lemery*, who publish'd it in the 7th Edition of his Chymistry. See the Method under the Article *BOLONIAN Stone*.

This *Phosphorus* has not any sensible Heat; and only becomes luminous after being expos'd to the Sun, or the Day-light, when it resembles a burning Coal, and preserves its Light five or six Minutes in the dark, during which Time it dwindles; and to recover its Light must be expos'd afresh to the Air.

The third Kind of *Phosphorus* call'd the *Hermetic Phosphorus* or *PHOSPHORUS Balduini*, is a Preparation of *English Chalk*, with *Aquafortis* or Spirit of Nitre by the Fire.

This makes a Body considerably softer than the *Bolonian Stone*; but it has all the Qualities thereof.

It has its Name from its Inventor *Balduin*, a German Chymist, call'd *Hermes*, in the Society of the *Natura Curiosorum*, whence its other Name *Hermetic*.

Some of the late Chymists have hit on other Sorts of *Phosphori*.

Monf. *Homburg*, in a Process upon the Fecal Matter, happening to calcine it with Alum, accidentally produced a new *Phosphorus*, in form of a Powder, the least quantity of which taken out of a close Vessel, and expos'd to the Air upon a Piece of Paper, in a Moment's Time would take Fire, and set the Paper a smoking, and presently burn it or any combustible Matter it came near.

This it would do, equally by Night and Day; and without rubbing or heating, or mixing it with any other thing to promote the Inflammation; in which he observes, it differ'd from all the artificial *Phosphori* hitherto known. For that *e. gr.* of Urine, requires a small Degree of Warmth to enable it to shine, or take Fire; and the *Bolonian Stone*, and *Phosphorus Balduini* only shine by Day-Light.

In Effect, M. *Lemery* the younger has at length discover'd that there is scarce any Animal or Vegetable Matter but will afford *Phosphorus*.—This he experienced in the Seeds *Farinæ*, Honey, Sugar, Leaves, Flowers, Woods, Roots and Oils of divers Plants; the Blood and Flesh of Calves, Sheep, Flies, Worms; the Yolks of Eggs, &c. The human Skull, Bones, Fat, Nails; and the Dung of all Animals.

The principal thing added to all these Matters to make *Phosphorus* of them, is Alum, which is indispensibly requisite; nor can any other Salt how near a-kin soever hereto, even tho' it yield the very same Principles, be substituted hereto. As to the Means, or the Operation whereby it is to be made, Calcination appears to be the essential Part.

#### Physical Cause of the Phenomena of Phosphorus.

As to the *Rationale* of the Effects, it may be observ'd, that in most of the *Natural Phosphori*, there is a brisk Attrition or Friction concern'd; which we may suppose either to give the minute Parts of the Substance the proper Motion and Agitation necessary to convert them into Fire, if Fire be so producible, (as *Bacon, Boyle, Newton*, and the generality of the *English Philosophers* have supposed it is) or to expel and emit the Particles of Fire naturally contained in them. See FIRE, FLAME, FRICTION, ATTRITION, &c.

In the *Fartitious* Sorts, we may note, that a long Process by Fire is usually required, wherein the Matter under-

goes divers Cotions, Torrefactions, Calcinations, Distillations, &c. in the Course whereof a considerable Quantity of Fire must necessarily be imbibed, and may possibly be retain'd therein.

In that *e. gr.* prepared of the Fecal Matter, M. *Homburg* observes, the aqueous Part of the Substance must necessarily have all been evaporated, with the greatest Part of the Oil and volatile Salt, leaving Pores or Vacuities in the Places they possess'd; so that what remains, is a spongy Tissue of Earth and fix'd Salt, having nothing in its Loculi, or Cavities, but some of the Matter of the Fire which has been arrested and detain'd therein; much as in Quick-Lime.

This being supposed, we know that the fix'd Salt, which is here pretty copious, will readily absorb the Moisture of the contiguous Air; and the sudden Introduction of such Moisture into the Pores of the Powder must produce a Friction, which may excite a small Degree of Heat; and this join'd with what Fire was there already laid up, may make a Heat sufficient to give Fire to the small Remains of Oil too closely link'd with the Salt to have been carried off by the Calcining Fire: So that we have here every thing necessary to Heat and Light. See HEAT, &c.

What confirms this Doctrine is, that if the Powder be kept in a Vessel not sufficiently close; the Air, insinuating by Degrees, moistens and saturates the Powder; but so slowly, as not to produce Friction enough to set it on Fire; so that it is spoilt, and disabled from taking Fire ever after: much as Quick-Lime, which after it has lain some time in the Air, ceases to grow hot even by the Affusion of Water.

The Reason why Quick-Lime, which contains a deal of Particles of Fire, as well as our Powder, does not conceive Heat by the Access of the Air, or the Ingress of its Moisture into the Pores thereof, but that Water must be thrown thereon, is, that the Quick-Lime being more thoroughly calcined retains too little fix'd Salt to imbibe the Moisture readily and copiously enough to excite the necessary Friction.

And the Reason why Quick-Lime does not produce a Flame, as the Powder does, even when Water is cast on it, is, that it did not retain enough of the Oily Matter to afford Flame: For if Oil be mix'd with it, a Flame will readily ensue. *Mem. de l'Acad. An. 1711.*

*PHOSPHORUS* in Astronomy, is the Morning-Star, or the Planet *Venus*, when she goes before the Sun. See VENUS.

The *Latins* call it *Lucifer*. The *French*, *Etoile de Berger*. The *Greeks*, *Phosphorus*, from *φῶς*, Light, and *φέρω* I bear, bring.

*PHOTASCIATERICA*, a Term some Authors use for the Art of Dialling. See DIALLING.

The Names is derived hence, that the Art not only shews the Hours by the Shadows of a Gnomon; whence it is call'd *Sciaterica*, from *σῆα*, Shadow; But sometimes also by means of the Sun's Light, as in Spot-Dials, Reflecting-Dials, &c. from *φῶς*, *Lux*, Light. See DIAL.

*PHOTINIANS*, a Sect of ancient Hereticks, who denied the Divinity of *Jesus Christ*. See HERETICK.

They took their Name from *Photinus* their Chief, Bishop of *Sirmium*, and Disciple of *Marcellus*.

He maintained, as *Leo* tells us in one of his Sermons, that *Jesus Christ* was true Man, but not true God, nor born before all Ages; that he only began to be *Christ* when the *Holy Ghost* descended upon him; and that he was call'd *only Son*, for no other Reason but because the Virgin had no other.

He was convicted of his Error, and deposed by a Synod of *Arians* held at *Sirmium* in 351.

*PHRASE, PHRASIS*, in Grammar; a certain elegant Fashion or Manner of Speech, peculiarly belonging to this or that Occasion, this or that Art, or this or that Language.

Thus we say an *Italian Phrase*, an *Eastern Phrase*; a Poetical Phrase, or Rhetorical Phrase. See IDIOM.

A few elegant Phrases, pertinently applied, are an Ornament of Discourse; but if they come too thick they have an ill Effect, and make the Style favour of Affectation. See STYLE.

The Word *Phrase* is sometimes also used for a short Sentence, or small Set or Circuit of Words constructed together. See SENTENCE.

In this Sense Father *Buffier* divides Phrases into *Compleat* and *Incompleat*.

*Phrases* are *Compleat* where there is a Noun and a Verb, each in its proper Function, *i. e.* where the Noun expresses a Subject, and the Verb the thing affirm'd of it.

*Incompleat Phrases* are those where the Noun and Verb together only do the Office of a Noun; consisting of several Words without affirming any thing, and which might be express'd in a single Word.

Thus, *that which is true*, is an *incompleat Phrase*, which might be express'd in one Word, *Truth*: as, *that which*



is true satisfies the Mind; or Truth satisfies the Mind.  
**PHRASEOLOGY, PHRASEOLOGIA**, a Collection of the Phrases, or elegant Expressions, in any Language. See **PHRASE**.

**PHRENES**, in Anatomy, the *Diaphragm*. See **DIA-PHRAGM**.

It was thus call'd by the Ancients, from *φρῆν*, Mind; as imagining this the Seat of the rational Soul. Hence

**PHRENESIS, PHRENSY**, or *Distraction*. See **PHRENITIS**.

**PHRENETIC Nerves**, call'd also *Diaphragmatic and Stomachic Nerves*, are nervous Branches derived from the Cervical Nerves, which joining in a Trunk, run through the Mediastinum undivided, till arriving near the Diaphragm, they again divide, and send off divers Branches, some into the muscular, others into the tendinous Part thereof. See **NERVE** and **DIA-PHRAGM**.

**PHRENIC Vessels**, is a Term applied to a Vein, and some Arteries of the human Body; from their passing through the Diaphragm.

The *Phrenic Artery* arises out of the descending *Aorta*, and distributes itself into the Diaphragm and Pericardium. See **ARTERY, AORTA, &c.**

The *Phrenic Veins* are two Veins which the Descending *Cava* receives immediately after its piercing the Diaphragm. See **VEIN CAVA**.

**PHRENITIS, PHRENESIS, PHRENSY**, in Medicine, a constant and vehement Delirium, or Distraction; accompanied with an acute Fever, raving, waking, &c. See **DELIRIUM**.

It differs from the *Mania*; and *Melancholly*, in that these are without Fevers. See **MANIA, &c.**

It has its Name from *φρῆν*, *Mens*, the Understanding; or as some will have it from *φρῆν*, the Diaphragm, in regard the Ancients supposed it to have its Seat in that Part. See **DIA-PHRAGM**.

Physicians generally make the *Phrenitis* to consist in an Inflammation of the Meninges of the Brain; and distinguish it from the *Paraphrenitis*, which they suppose to be an Inflammation of the Diaphragm. See **PARAPHRENITIS**.

*Willis* will have them the same Disease, and both to consist in an Inflammation of the Animal Spirits. He only distinguishes them as the Inflammation arises from the *Cerebrum* alone, or from the *Cerebrum* and *Cerebellum* together; and concludes, that they both arise after a Fever, from the boiling Blood's throwing its adust Recrements into the Brain.

*Boerhaave* makes the *Phrenitis* either *true*, wherein the *Cerebrum*, or Meninges, or both, are inflamed; or *symptomatic*, where the Matter of a Fever is translated into the *Cerebrum*.

The true one either kills on the third, fourth, or fifth, or seventh Day; or changes into a *Mania*, *Lethargy*, *Comus*, &c. Tremors, Gnashing of the Teeth, grumous Blood distilling from the Nose, are Prognosticks of Death.

The Disease is oftentime the Effect of Inflammatory or Malignant Fevers; tho' it sometimes also arises from a Suppression of the natural Evacuations, as the *Menses*, &c.

The Cure is the same as of an *Apoplexy*; but where the Evacuations are concern'd, they must first be rectified. See **APOPLEXY**.

**PHRYGIAN Mode**, in Music. See **MODE**.

**PHRYGIANS, PHRYGES, or PHRYGASTES**, as *S. Epiphanius* calls 'em, were ancient Hereticks, a Branch of the *Montanists*; so call'd from *Phrygia* a Place where they abounded.—They esteem'd *Montanus* their Prophet; and look'd on *Maximilla* and *Priscilla* as great Prophetesses. See **MONTANISTS**.

This Spirit of Prophecy, or rather Enthusiasm, was their distinguishing Character. In the Business of the Trinity they were orthodox.

**PHTHIRIASIS**, in Medicine, the *Morbus Pedicularis*, or Louzy Disease, wherewith Children, and even sometimes Adults are afflicted. See **PEDICULARIS**.

Its Cause is in the Seeds of that Vermin laid in the Cuticle, which here happening to prove a proper *Nidus*, cherishes and fosters the Seed so as to hatch it. See **WORMS**.

The Linnen Cloths used by Goldsmiths to wipe their Vessels with after gilding, are excellent against the *Phtthiriasis* by reason of the Mercury they contain, when applied by rubbing the Child's Head.

The Word is form'd from the *Greek φθῆρ*, Louse.

**PHTHISIS**, in Medicine, in its general Sense, is any kind of Consumption of the Body, in what part soever it be seated, or from what Cause soever it arise. See **CONSUMPTION**.

Thus we have a *Nervous Phthisis*, *Renal Phthisis*, *Dorsal Phthisis*, *Pulmonary Phthisis*, &c.

But, in its proper Sense, *Phthisis* is restrain'd to a *Pulmonary Consumption*, or a Consumption arising from an Ul-

cer or other Disorder of the Lungs, accompanied with a slow hectic Fever, which wastes, extenuates, and consumes the muscular Flesh. See **LUNGS, &c.**

*Sydenham* observes, that the hectic *Phthisis* usually has its Origin in the Winter's Cold; from a sharp Humour trickling down upon the Lungs, where, like a Catarrh, it irritates them so as to raise a Cough. See **COUGH**.

This by degrees brings on other Symptoms; as a Spitting, first of a viscid *Pituita*, then a heavy fetid *Pus*, then of pure Blood, and sometimes of the very Substance of the Lungs rotted by a long Exulceration; with Night-Sweats, falling of the Hair, and a colliquative Flux which is soon followed by Death.

The same Author adds, that *Phthisis* kills two thirds of those that die of Chronic Diseases. See **CHRONIC**.

In the last Stage of the *Phthisis* the Nose appears sharp, the Eyes hollow, the Temples fallen, the Ears cold and contracted, the Skin about the Forehead hard and dry, and the Complexion greenish, or livid, &c. which is call'd the *Facies Hippocratica*.

Among the Causes of the Disease may also be reckon'd Intemperance as it brings on a Plethora or Cacoehymia, Peripneumonies, Asthma's, Pleurifies, &c. *Morton* adds, that the *Phthisis* frequently arises from an ill Conformation of the Breast; which is either *Natural*, as when the Breast is too narrow, the Neck too long, &c. or *Accidental*, where there happens a Curvity or Distortion of the Breast;—among the Symptoms he reckons a *Nausea*, or Reaching, with a Heat in the Palms of the Hands, and Redness in the Cheeks, all after Eating.

For the Cure;—*Sydenham* orders the Defluxion on the Lungs, in the first Stage, to be abated by Blood-letting, &c. and Pectorals to be used, accommodated to the various States of the Diseases, viz. Incrassatives, Attenuatives, to assuage the Hectic, &c. with Emulsions, Asses-Milk, &c. and Balsamicks, to cure the Ulcer.

But the chief Assistance in this Disease is from riding constantly on Horseback, where the Patient need not confine himself to any Laws of Diet, &c. This alone, he adds, is almost as sure a Cure for a *Phthisis*, as the *Cortex* for an Intermitting Fever. See **EXERCISE**.

*Dr. Baynard* recommends Butter-Milk as an admirable Succedaneum to Asses-Milk:—*Sylvius* says, he knows of no Medicine, either internal or external, so good against fresh Ulcers of the Lungs, as Balm of Sulphur, especially when prepared with Oil of Anise. See **SULPHUR**.

*Estmuller* observes, that the Cough of *Phthical* People is at first only Stomachal; at length it becomes Pulmonary. He adds, that Vomitories are good in a beginning *Phthisis*, Purgatives by all means to be avoided; and commends the Use of Medicines made of Tobacco, not only as they promote Expectoration; but as Vulnerary.

'Tis a common Observation, that in those Countries where they burn Turf, People are rarely affected with the *Phthisis*; which *Willis* ascribes to the Sulphur abounding therein, and recommends Tincture of Sulphur as the best Remedy he knows of in any Cough without a Fever; adding, that a Suffumigation, or Smother, of Sulphur and Arsenic has frequently proved a Cure in the most desperate *Phthisis*.

*Bonetus* holds the *Phthisis* to be contagious; and that there are frequently Instances of its being communicated by Cloaths, Linnen, Beds, &c.

*Pitcairn* recommends *Mercurius Dulcis*, in the Beginning of a *Phthisis*. And *Barbette* and *Colbatch* assert, that, contrary to the Opinion of most Authors, they have frequently used Acids with Success in *Phthitics*. See **HAETIC, &c.**

The Word is form'd from the *Greek φθῆσις*, Corruption, Attenuation, &c.

**PHYGETHLON**, in Medicine, is defined by *Celsus*, a hard flat Tumor, somewhat resembling a Pustle; occasioning an intense Pain, and sometimes a Fever. See **TUMOR**.

The *Phygethlon* only differs from the *Phyma*, in that it does not rise so high; it ripens very slowly, and produces but little Pus. See **PHYMA**.

The *Latins* call it *Panis*, or *Pannus*, and sometimes *Panicula*.—*Gorreaus* defines the *Phygethlon*, a *Phlegmon* arising on the glandulous Parts, especially about the Neck, Armpits, and Inguen; which last is call'd a *Bubo*. See **PHLEGMON, &c.**

The *Phygethlon* has the same Causes, and the same Symptoms with the common *Bubo*. See **BUBO**.

It frequently arises after Fevers, and Pains of the Belly, and is cured like other Inflammations.

The Word is derived from the *Greek φῦσις*, I engender.  
**PHYLACTERY**, in Church-History, a Slip of Parchment, wherein was wrote some Text of Holy Scripture, particularly of the Decalogue; which the more devout People among the *Jews* wore on the Forehead, the Breast, or the Neck, as a Mark of their Religion.



In the general, the Ancients gave the Name *Phylactery* to all kinds of Charms, Spells, or Characters which they wore about them, as Amulets, to preserve 'em from Dangers or Diseases. See CHARM, AMULET, &c.

The Primitive Christians also gave the Name *Phylacteries* to the Frames wherein they inclosed the Relicks of their dead.

PHYMA, or PHYMUS, in Medicine, a roundish pointed Tumor, arising on the Glandular Parts, especially under the lower Jaw. See TUMOR.

The *Phyma* is smaller and smoother, less red and painful, than the *Phygethon*. See PHYGETHLON.

It is easily cured in Children; more difficultly in Adults, but in those it is more rare. It is remedied by assisting Nature in the Work of Maturation; as, by a suppurating Cataplasim, &c.---It is supposed to have its Rise from a pituitous Blood; and is most common in Children, where it frequently arises from too tight Bandages.

Goraeus observes, that some make *Phyma* a general Name for all Tumors, or Apofthumes, that mature and suppurate readily, of what kind soever, or in whatsoever glandulous Part they arise. See APOSTHUME.

PHYSIC, or PHYSICK, the Art of Healing; properly called *Medicine*.

For the Rise, Progress, Division, &c. of *Physic*; See MEDICINE.

The Word is form'd from the Greek *physis*, Nature; in regard Medicine consists principally in the Observation of Nature. See PHYSICKS.

PHYSICAL, something belonging to, or really existing in Nature. See PHYSICKS.

In this Sense we say a *Physical Point*, in opposition to a Mathematical one which only exists in the Imagination. See POINT.

A *Physical Substance*, or Body, in opposition to Spirit, or Metaphysical Substance, &c. See SUBSTANCE, &c.

PHYSICAL, or sensible Horizon. See HORIZON.

PHYSICIAN, a Person who professes Medicine, or the Art of Healing. See MEDICINE.

The Ancients distinguished their *Physicians* into various Classes or Sects:—As, *Methodical Physicians*, those who proceeded in a certain regular Method, founded upon Reason; deducing Consequences therefrom, to particular Cases. See METHODICAL.

*Dogmatical Physicians*, those who laid down Principles, and reason'd from those Principles, and from Experience. See DOGMATIC.

*Empirical Physicians*, those who kept wholly to Experience, and excluded all Use of Reason in Medicine.—Such was *Scrapim*, *Apollonius*, *Glaucus*, &c. See EMPIRICAL.

Again, *Clinical Physicians* were those who visited their Patients a-bed, to examine their Cases. See CLINIC.

In opposition to the *Empirists*, who sold their Medicines in the Streets, &c.

They had also their *Astrological Physicians*, *Botanic Physicians*, *Anatomical Physicians*, *Chirurgeons*, *Iatraliptes*, or those who applied external Unctions and Frictions, &c.

*Cosmetick Physicians* for the Complexions; *Ophthalmic Physicians* for the Eyes; *Vulnerary Physicians* for Wounds, &c.

Among the Moderns, a general *Physician* includes almost all these several Kinds: Regular *Physicians* are contra-distinguished from *Empirical Physicians*, who prescribe at random; having one or two Remedies which serve in all Diseases. See EMPIRICAL.

*Galenic Physicians* are those who prescribe gentle, natural and ordinary Medicines. See GALENICAL.

*Spagyric* or *Chymical Physicians* are those who prescribe violent Medicines drawn from Minerals, &c. by Fire. See SPAGYRICAL and CHYMICAL.

PHYSICKS, by the *Latins* call'd *Physica*, the *Greeks* *phusika*, and by us frequently *Physiology*, or *Natural Philosophy*; is the Doctrine of Natural Bodies, their Phenomena, Causes, and Effects; their various Affections, Motions, Operations, &c. See PHILOSOPHY and NATURE.

Mr. Locke would likewise have *God*, *Angels*, and *Spirits*, come under *Physicks*, which more usually are referr'd to *Metaphysics*. See METAPHYSICKS.

The Word is derived from *physis*, Nature. See PHYSIOLOGY.

The Origin of *Physicks* is referr'd by the *Greeks*, to the Barbarians, viz. the *Brachmans*, *Magi*, and the *Hebrew* and *Egyptian Priests*. See BRACHMANS, MAGI, &c.

From these it was derived to the *Greek Sages* or *Sophi*, particularly *Thales*, who is said to have first profess'd the Study of Nature in *Greece*. See SOPHI.

Hence it descended into the *Pythagoric*, *Platonic*, and *Peripatetic Schools*; whence it was propagated into *Italy*, and thence thro' the rest of *Europe*; tho' the *Druids*, *Bards*, &c. had *Physicks* of their own. See PYTHAGOREAN, PLATONIC, and PERIPATETIC; see also DRUID, BARD, &c.

*Physicks* may be divided, with regard to the manner where in it has been handled, and the Persons by whom, into

1<sup>o</sup> *Symbolical*, such was that of the old *Egyptians*, *Pythagoreans* and *Platonists*, who delivered the Properties of Natural Bodies under Arithmetical and Geometrical Characters, and Hieroglyphics. See SYMBOL, GEOMETRY, HIEROGLYPHIC, &c.

2<sup>o</sup> *Peripatetic*, or that of the *Aristotelians*, who explain'd the Nature of things by Matter, Form, and Privation, Elementary and Occult Qualities, Sympathies, Antipathies, Attractions, &c. See ARISTOTELIAN, &c.

3<sup>o</sup> *Experimental*, which enquires into the Reasons and Natures of Things from Experiments; such as those in Chymistry, Hydrostatics, Pneumatics, Opticks, &c. See EXPERIMENT, &c.

This has been much cultivated since the Time of my Lord Bacon; and continues to be so, with good Success.

The Experiments of the Academists of *Cimento*, of the Royal Society, of the Royal Academy, and even of private Persons, particularly Mr. Boyle, Sir J. Newton, Mr. Hawksbee, &c. have been of infinite Service in *Physicks*; and 'tis to these, in great measure, that the Advantage of the modern Philosophy above the ancient is due.

4<sup>o</sup> The *Mechanical* or *Corpuscular*, which explains the Appearances of Nature from the Matter, Motion, Structure, and Figure of the Bodies, and their Parts; all according to the settled Laws of Nature and Mechanics. See CORPUSCULAR and MECHANICAL.

PHYSIOGNOMICKS, a Term used by some Physicians and Naturalists, for such Signs as are taken from the Countenance to judge of the State, Disposition, &c. of the Body and Mind. See SIGN and PHYSIOGNOMY.

PHYSIOGNOMY, the Art of knowing the Humour, Temperament, or Disposition of a Person, from Observation of the Lines of the Face, and the Characters of its Members, or Features.

*Baptista Porta* and *Robert Fludd* are the top modern Authors on *Physiognomy*.—The ancient ones are the *Sophist Adamantius*, and *Aristotle*; the *Physiognomy* of which last we have translated into Latin by *de Lacuna*.

The Word is form'd from the Greek *physis*, Nature, and *gnoma*, I know.

There seems to be something in *Physiognomy*; and it may perhaps bear a much purer Philosophy than what these Authors were acquainted withal.—This, at least, we dare say, that of all the fanciful Arts of the Ancients, disused among the Moderns, there is none has so much Foundation in Nature as this.

There is an apparent Correspondence between the Face and the Mind; the Features and Lineaments of the one are directed by the Motions and Affections of the other: there is even a peculiar Arrangement of the Members of the Face, a peculiar Disposition of the Countenance, to each particular Affection; perhaps to each particular Idea of the Mind. See PASSION.

In effect, the Language of the Face, *Physiognomy*, is as copious, nay, perhaps, as distinct and intelligible, as that of the Tongue, *Speech*.—Thanks to bounteous Nature, she has not confined us to one only Method of conversing with each other, and of learning each other's Thoughts; we have several: We don't wholly depend on the Tongue, which may happen to be bound; and the Ear, which may be deaf; but in those Cases we have another Recourse, the Countenance and the Eye; which afford us this further Advantage, that by comparing the Reports of the Tongue, (a Member exceedingly liable to deceive) with those of the Face, the Pervariations of the former may be detected.

The Foundation of *Physiognomy* is this: The different Objects that present themselves to the Senses, nay, the different Ideas that arise in the Mind, do each make some Impression on the Spirits; and each an Impression correspondent or adequate to it's Cause; therefore each a different Impression.

If it be ask'd how such an Impression should be effected; 'tis easy to answer, that it follows from the Oeconomy of the Creator, who has fix'd such a Relation between the several Parts of the Creation; to the end we may be apprized of the Approach or Recess of things useful or hurtful to us.

If this be'n't philosophical enough, take the manner in the *Cartesian* Language, thus: The Animal Spirits moved in the Organ by an Object, continue their Motion to the Brain; whence that Motion is propagated to this, or that particular part of the Body, as is most suitable to the Design of Nature; having first made a proper Alteration in the Face, by means of its Nerves, especially the *Pathetici* and *Oculorum Motorii*.

The Face, here, does the Office of a Dial-Plate; the Wheels and Springs within-side the Machine actuating its Muscles, shew what is next to be expected from the striking Part. Not that the Motion of the Spirits is continu'd all the Way by the Impression of the Object; the Impression prob-



bably terminates in the Medulla of the Brain, the common Fund of Spirits; the rest Dr. Gwither imagines may be effected much after the same manner as the Air is convey'd into the Pipes of an Organ, which being uncover'd, the Air rushes in, and when the Keys are let go stopp'd again. See *CONSENT of Parts*.

Now if by repeated Acts, or the frequent entertaining of a favourite Passion, or Vice, which natural Temperament has hurried one to, or Custom dragg'd; the Face is often put in that Posture which attends such Acts; the Animal Spirits will make such patent Passages thro' the Nerves, (in which the Essence of a Habit consists; see *HABITUDINE*;) that the Face is sometimes unalterably set in that Posture; (as the *Indian* Religious are by a long continued sitting in strange Postures in their Pagods) or at least falls insensibly and mechanically into that Posture, unless some present Object distort it therefrom, or Dissimulation hide it. See *FAÇON*.

This Reasoning is confirm'd by Observation: Thus we see great Drinkers, with Eyes generally set to the Nose; the adducent Muscles being oft employ'd to put 'em in that Posture, to view their lov'd Liquor in the Glass in the time of Drinking; whence those Muscles are also denominated the *bibitory Muscles*.

Thus also lascivious Persons are remarkable for the *Oculorum morbilis petulantia*, as *Petronius* calls it.

Hence we may account for the *Quakers* expecting Face, waiting the Spirit; the melancholly Face of most Sectaries; the studious Face of Men of great Application of Mind, &c.

Were our Observation a little more strict and delicate, we might doubtless not only distinguish Habits, and Tempers but even Professions—In effect does there need much Penetration to distinguish the fierce Look of the veteran Soldier, the contentious Look of the practis'd Pleader, the solemn Look of the Minister of State, &c.

**PHYSIOLOGY**, the Doctrine of Nature, or Natural Bodies; call'd also *Physicks*, and *Natural Philosophy*. See *PHYSICKS*, &c.

The Word is form'd of *φύσις*, Nature, and *λόγος*, Discourse, Reason.

It is to be observ'd, that the Word *Physiology* properly denotes only an internal reasoning or discoursing, which stops or terminates in the Speculation, or abstract Contemplation of its Object, viz. Natural Appearances, their Causes, &c. and does not direct or prescribe Rules for the making of natural things, e. gr. Stones, Plants, &c.

In this View Chymistry does not properly belong to *Physiology*, but is a kind of a counter-part thereto, as imitating or mimicking Nature, rather than considering and explaining her. See *CHYMISTRY*.

**PHYSIOLOGY** is particularly used for a Branch of Medicine, which considers Nature with Regard to the Cure of Diseases; particularly the human Body, its Parts, Structure, Health, Life, Functions, Oeconomy, &c. See *MEDICINE*.

*Physiology*, in this Sense, is the same with what we otherwise call the Doctrine of *Animal Oeconomy*. See *OECONOMY*.

**PHYTOLOGY** a Discourse upon Plants; or a Description of their Forms, Kinds, Properties, &c. See *PLANT*.

The Word is compounded of the *Greek* *φυττον*, Plant, and *λόγος*, Discourse, or *λέγω*, scribo, I describe, rehearse.

**PIA Mater**, in Anatomy, call'd also *Mater tenuis*, and *Meninx tenuis*, a fine Coat, or Membrane, immediately investing the Brain. See *MATER*, *MENINX* and *BRAIN*.

**PIACHE**, **PIAZZA**, a cover'd arched Walk, or Portico. See *PORTICO* and *PIAZZA*.

**PIASTER**, a *Spanish* Money, more ordinarily call'd *Piece of Eight*. See *PIECE of Eight*.

**PIAZZA**, in Building popularly call'd *Piache*, an *Italian* Name for a Portico. See *PORTICO*.

The Word literally signifies a broad open Place, or Square; whence it became applied to the Walks, or Portico's around them.

**PICA**, in Medicine, call'd also *Atalacia*, a Depravation of Appetite, which makes the Patient absurdly cover things unfit for Food, or incapable of nourishing; as, Coals, Ashes, Plaister, Salt, Lime, Chalk, Vinegar, Pepper, &c. See *APPETITE*.

The *Pica* is frequent in Girls, and Women with Child; Men are more rarely affected with it.—The Disorder is seldom original; but usually an Effect of an Hypochondriacal Infirmary in Men; and a Chlorosis, Stoppage of the Menstrues, or their Eruption about the second Month of Pregnancy, in Women: Sometimes it is hereditary in Children, from some Cause affecting the Mother. See *MONSTER*.

The Disease is usually supposed to have its Rise from a vitious Ferment of the Stomach; to which may be added Disorders of the Imagination, occasioned by ill Examples and ridiculous Prejudices. See *IMAGINATION*.

In the *Philosophical Transactions*, Dr. *Fairfax* gives us an Instance of a Woman in *Stow Market*, who was invited by

her *Pica* to suck the Wind out of Bellows; which, as often as she cou'd she took into her Body with open Mouth, forcing it in by blowing with both Hands, the Bellows inverted.—He adds, he knew another in the same Circumstances whom nothing would satisfy but crackling Cinders under her Feet.

Something like this has also been found in Brutes.—The last mentioned Author mentions a Greyhound Bitch, who 5 or 6 Days before casting her Whelps, long'd for another Bitch's Whelps, and eat them all up; and would have eat the Bitch herself. Thus it is that Sows are sometimes known to eat up whole Litters of Pigs.

The usual Remedies in the *Pica* are Bleeding, Purging, Vomiting, and Chalybeats.

**PICA**, in Printing. See *PRINTING Letter*.

**PICARDS**, a Religious Sect, who arose in *Bohemia*, in the XVIth Century; so call'd from their Author, one *Picard*.

He drew after him a great Number of Men and Women, pretending he would restore them to the primitive State of Innocence wherein *Adam* was created; and accordingly himself assumed the Title of the *New Adam*.

Under this Pretence he taught his Followers to abandon themselves to all Impurity; making them believe that therein consisted the Liberty of the Sons of God; and that all those not of their Sect were in Bondage.

He first began in *Germany*, and the *Low Countries*; persuading many to go naked, and giving them the Name of *Adamites*.—After this, seizing an Island, he fix'd himself and his Followers therein; appointed his Women to be common, but allowed none to enjoy them without his Permission. So that when any Man desired a Woman he carried her to *Picard*, who gave him leave in these Words, *Go, increase, multiply and fill the Earth*.

At length, *Zisca*, the Great General of the *Hussites*, so famous for his Victories over the Emperor *Sigismund*, struck with their Abominations, march'd against them; and making himself Master of their Island, put them all to Death, except two, whom he spared to inform himself of their Doctrine.

**PICKAGE**, or **PICAGE**, from the *Latin* *Pica*; an ancient Custom, or Duty, paid at Fairs and Markets, for breaking the Ground and pitching up Stalls, or Standings.

This Profit of *Picage* was usually given or granted in Charters for holding a Fair, or Market.

**PICKET**, or **PICQUET**, or **PIQUET**, in Fortification, a Stake sharp at one End, and usually shod with Iron; used in laying out the Ground, to mark the several Measures and Angles thereof.

There are also larger *Pickets*, drove into the Earth to hold together Fascines, or Faggots, in any Work cast up in haste.

**PICKETS** are also Stakes drove into the Ground by the Tents of the Horse, in a Camp, to tie their Horses to; and before the Tents of the Foot, where they rest their Muskets or Pikes round about them in a Ring.

When an *Horsenian* hath committed any considerable Offence, he is often sentenced to *stand on the Picket*; which is to have one hand drawn up as high as it can be stretch'd, and thus to stand on the Point of a *Picket*, or Stake, only with the Toe of his opposite Foot; so that he can neither stand or hang well, nor ease himself by changing Feet.

**PICKETS** are also Stakes with Notches towards the Top, to which are fastened the Cordages of Tents.—Thus, to plant the *Picket*, is to encamp.

**PICKET** in Gaming. See *PICQUET*.

**PICKLE**, a Brine, or Liquor, ordinarily compos'd of Salt, Vinegar, &c. sometimes with the Addition of Spices, &c. wherein Meats, Fruits, &c. are preserv'd and season'd.

**PICKLE** is also used substantively for a Fruit, Root, Leaf, or other Vegetable Matter, prepared in *Pickle*, to be used by way of Sauce, &c.

They pickle Artichokes, Mushrooms, Ashen-Keys, Barberries, Asparagus, Beans, Broom-Buds, &c.

**PICQUEERING**, **PICKERRING**, or **PICKEROONING**, a little flying War, or Skirmish, which the Soldiers make when detach'd from their Bodies, for Pillage, or before a main Battle begins.

**PICQUET**, or **PICKET**, a celebrated Game at Cards, in Use throughout the polite World. See *GAME* and *CARDS*.

It is play'd between two Persons, with only thirty two Cards; all the Duces, Threes, Fours, Fives, and Sixes, being set aside.

In reckoning at this Game every Card goes for the Number it bears, as a Ten for ten; only all Court-Cards go for eleven, and the Ace for ten: And the usual Game is 100 up.—But in playing, the Ace wins the King, the King the Queen, and so down.

Twelve Cards are dealt around, usually by two and two; which done, the Remainder are laid in the middle: If one of the Gamblers find he has not a Court-Card in his Hand, he is to declare he has *Carte blanche*, and tell how many Cards he will lay out, and desire the other to discard, that



he may shew his Game, and satisfy his Antagonist that the *Carte blanche* is real; for which he reckons ten.

Each Person discards *i. e.* lays aside a certain Number of his Cards, and takes in a like Number from the Stock.—The first, of the 8 Cards, may take 5, 6, or 7; the Dealer, all the Remainder if he pleases.

After discarding, the eldest Hand examines what Suit he has most Cards of; and reckoning how many Points he has in that Suit; if the other have not so many in that or any other Suit he tells one for every Ten of that Suit.—He who thus reckons most is said to win the Point.

The Point being over, each examines what Sequences he has of the same Suit, *viz.* how many *Tierces*, or Sequences of three, *Quartes* or fours, *Quintes* or fives, *Sixiemes* or sixs, &c. For a Tierce they reckon three Points, for a Quart four, for a Quinte fifteen, and for a Sixieme sixteen, &c. And the several Sequences are distinguished in Dignity by the Cards they begin from: Thus, Ace, King, and Queen, are call'd Tierce major; King, Queen, and Knave, Tierce to a King; Knave, Ten, and Nine, Tierce to a Knave, &c. and the best Tierce, Quart, or Quint, *i. e.* that which takes its Descent from the best Card, prevails; so as to make all the others in that hand good, and destroy all those in the other hand.—In like manner a Quart in one hand sets aside a Tierce in the other.

The Sequences over, they proceed to examine how many Aces, Kings, Queens, Knaves, and Tens, each holds; reckoning for every three of any sort, three: But here, too, as in Sequences, he that with the same Number of Threes, has one that is higher than any the other has, *e. g.* Aces, has all his others made good hereby, and his Adversary's all set aside.—But four of any sort always set aside three.

All the Game in Hand being thus reckoned, the Eldest proceeds to play; reckoning one for every Card he plays above a Nine; and the other follows him in the Suit; and the highest Card of the Suit wins the Trick.—Note, unless a Trick be won with a Card above a Nine, (except the last Trick) nothing is reckon'd for it; tho' the Trick serves afterwards towards winning the Cards: And that he who plays last does not reckon for his Cards unless he wins the Trick.

The Cards being play'd out, he that has most Tricks reckons ten for winning the Cards.—If they have Tricks alike neither reckons any thing.—The Deal being finish'd, and each having mark'd up his Game, they proceed to deal again as before, cutting afresh each time for the Deal.

If both Parties be within a few Points of being up, the *Carte blanche* is the first thing that reckons; then the Point; then the Sequences; then the Threes; then the tenth Cards.

He that can reckon 30 in hand, by *Carte blanche*, Points, Quintes, &c. without playing, e'er the other has reckon'd any thing; reckons ninety for them;—and this is call'd a *Répique*;—if he reckons above 30, he reckons so many above 90.

If he can make up 30, part in hand and part by play, e'er the other has told any thing, he reckons for them 60.—And this is call'd a *Picque*. Whence the Name of the Game.

He that wins all the Tricks, instead of 10, which is his Right for winning the Cards, reckons 40,—and this is call'd a *Capot*.

**PICTSWALL**, in Antiquity, a famed Piece of Roman Work, begun by *Adrian* the Emperor, on the Northern Bounds of England, to prevent the Incursions of the *Picts* and *Scots*. See **WALL**.

At first it was made only of Turf, strengthened with Palisadoes; till the Emperor *Severus*, coming in Person into Britain, built it with solid Stone, reaching eighty Miles in Length, from the *Irish* to the *German* Sea, or from *Carlisle* to *Newcastle*; with Watch-Towers garrison'd at the Distance of a Mile from each other.

It was ruined several Times by the *Picts*, and often repaired by the *Romans*.—At last *Actius*, a Roman General, rebuilt it of Brick; and the *Picts* ruining it the Year following, it was no longer regarded, but as a Boundary between the two Nations.

The Wall was eight foot thick, and twelve high from the Ground; it run on the Northside of the Rivers *Tyne* and *Inghing*, up and down several Hills; the Tract or Remains of it is to be seen this Day in many Places both in *Cumberland* and *Northumberland*.

**PICTURE**, a Piece of Painting; or a Subject, represented in Colours, on Canvas, Wood, or the like, and inclosed in a Frame. See **PAINTING**.

**PIEPOUNDER-COURT**, an ancient Court, mention'd in many of our Statutes, to be held in Fairs; for the rendering of Justice to Buyers and Sellers; and the Redress of Grievances arising therein. See **FAIR**.

It had its Name either because most ordinarily held in Summer, and the that Suiters hereat were chiefly Country-Clowns, with dusty Feet, call'd by the *French*, *pieds poudreux*; or from the Expedition intended in the hearing of Causes

proper thereto, e'er the *Dust* went off the Plaintiff and Defendant's Feet.

The *Saxons* call'd it *ceapung-gemot* *i. e.* a Court of Merchandise; or for the Decision of Disputes relating to buying and selling.—*Doctor* and *Student* observe that it is only held during the Continuance of the Fairs, &c.

**PIECE**, in Commerce, signifies, sometimes, a whole; and sometimes, only a Part of a whole.

In the first Sense, we say, a *Piece of Cloth*, of *Velvet*, &c. meaning a certain Quantity of Yards, regulated by Custom; being yet entire and not cut. See **CLOTH**.

In the other Signification we say, a *Piece of Tapestry*, meaning a distinct Member wrought a-part, which with several others make one Hanging. See **TAPESTRY**.

A *Piece of Wine*, of *Cyder*, &c. is a Cask full of those Liquors.

**PIECE**, in matters of Money, signifies, sometimes, the same thing with *Species*; as when we say this Piece is too light, &c. See **SPECIES**.

Sometimes, by adding the Value of the Species, 'tis used to express such as have no other particular Name; as, a *Piece of 8 Rials*, a *Piece of 25 Sols*, &c.

In *England* the *Piece* is sometimes used for twenty Shillings Sterling; and sometimes for a Guinea. See **GUINEA**, and **POUND**, and **STERLING**.

**PIECE of Eight**, or *Piafter*, is a Silver Money, first struck in *Spain*, afterwards in other Countries; and now current in most Parts of the World. See **COIN**.

It has its Name *Piece of Eight*, or *Rial of Eight*, because equal to 8 Silver Rials. See **RIAL**.

Its Value is nearly on the same Foot with the *French* Crown; *viz.* 4s. 6d. Sterling.—In 1687, the Proportion of the simple Rial to the Piafter was changed; and in lieu of 8 Rials they gave 10.—At present the Reduction is on its ancient Standard.

There are two kinds of Piafters or *Spanish* Crowns; the one struck at *Potosi*, the other at *Mexico*: These latter are a little Matter heavier than the former, but in return they are not quite so fine.

The *Piece of Eight* has its Diminutions; *viz.* the Demi-Piafter, or *Piece of 4 Rials*; the Quarter, or *Piece of 2*; the half Quarter, and the Sixteenth.—The Exchange between *Spain* and *England* is made in *Pieces of Eight*. See **EXCHANGE**.

*Piece*, is also a kind of Money of Account, or rather a manner, of accounting used among the Negroes of the Coast of *Angola* in *Africa*. See **MONEY**.

The Price of Slaves, and other Commodities, here negotiated, as also the Duties paid the petty Kings, are estimated on both sides in *Pieces*.

Thus, these Barbarians requiring 10 *Pieces* for a Slave; the Europeans in like manner value the Money, or Merchandise, to be given in Exchange, in *Pieces*. See **COMMERCE**.

Ten *Anabastes*, *e. g.* are 1 *Piece*; a Barrel of Powder of ten Pounds, 1 *Piece*; a Piece of blue Salempouris, 4 *Pieces*; ten brass Basons, 1 *Piece*.

**PIECE**, in Heraldry, is an Ordinary, or Charge. See **ORDINARY**.

The honourable *Pieces* of the Shield are the Chief, fess, bend, pal, bar, Cross, Saltier Chevron; and in general all those which may take up one third of the Field, when alone, in what manner soever it be.

**PIECES**, in the Military Art, are Cannons, or great Guns, used at Sieges, &c. call'd *Pieces of Ordnance*, *battering Pieces*, &c. See **ORDNANCE**, **CANNON**, &c.

*Field-Pieces* are those placed in the Front of an Army. &c. See **FIELD-PIECES**.

**PIEDOUCH**, in Architecture, a little Stand, or Pedestal, either long or square, enrich'd with Mouldings; serving to support a Bust, or other little Figure. See **PEDESTAL**, **BUST**, &c.

The Word is *French*; form'd from the *Italian*, *peduccio*, little foot.

**PIEDROIT**, in Architecture, a *Peer*; or a kind of square Pillar, part whereof is hid within a Wall. See **PEER** and **PILLAR**.

The only thing wherein it differs from a Pilaster, is, that the latter has a regular Base and Capital, which the other wants. See **PILASTER**.

**PIEDROIT** is also used for a Peer, or Jaumb of a Door, or Window; comprehending the Chambrante, Chamfering, Leaf, &c. See **DOOR**, **WINDOW**, &c.

**PIERCED**, in Heraldry, is when an Ordinary is perforated, or struck through, shewing, as it were, a Hole in it.

This *Piercing* is to be expressed in Blazon, as to its Shape: Thus if a Cross have a square Hole, or Perforation in the Center, it is blazon'd, *Square Pierced*, which is more proper than quarterly pierced, as *Leigh* expresses it; and accordingly the *French* call it *Perce de en quarre*—When the Hole, or Perforation, is round, it must be expressed *Round Pierced*; which *Gibbon*, in *Latin* calls *Perforation*, because all Holes made with Piercers, or Augers, are round.—If the Hole in the Center



Center be in the Shape of a Lozenge, it is expressed *Pierced Lozenge ways*.

All Piercings must be of the Colour of the Field, because the piercing implies the showing of that which is under the Ordinary, or Bearing.—Tho' when such Figures appear on the Center of a Cross, &c. of another Colour, the Cross is not to be supposed *pierced*, but that the Figure on it is a Charge, and must be accordingly blazoned. See CROSS, &c.

PIERCED, among Farriers, to pierce a Horse's Shoe lean, is to pierce it too near the Edge of the Iron.—To pierce it fat, is to pierce it further in.

PIES, in our ancient Law Books. *Freres Pies*, were a sort of Monks, so called because they wore black and white Garments, like Magpies.—They are mentioned by *Walsingham*, p. 124. *In quodam veteri cœmeterio, quod fuerat quondam fratrum, quos Freres pies veteres appellabant.*

PIESTRUM, *miserum*, an Instrument wherewithal to beat in pieces the Bones of the Head, in drawing a Child out of the Womb.

PIETANTIA, a *Pittance*; or Portion of Victuals distributed to the Members of a College, upon some great Festivals. See PITANCE.

PIETISTS, a Religious Sect lately sprung up among the Protestants of Germany.

The *Pietists* seem to be a kind of mean, between the Quakers of England, and the Quietists of the Romish Church. See QUIETIST and QUAKER.

Their Author was *Spencerus*, from whom they learnt to despise all Ecclesiastical Polity, all School Theology, all Forms and Ceremonies; and to give themselves up to Contemplation and the mystic Theology. See MYSTIC.

The *Pietists* are esteemed *Adiaphorists*, or Indifferentists, i. e. in the German way of talking, they receive and allow of all Sects among Protestants, particularly the Calvinists; contrary to the Practice of other Lutherans.—Hence a Lutheran of *Dantzick* defines *Pietism* an Assemblage of the Hypotheses, or Systems, of *Anabaptists*, *Schwebnckfeldians*, *Weigelians*, *Rathmannians*, *Labadists*, *Quakers*, &c. who under Pretence of a new Reformation, and in hopes of better Times, set aside the *Augsburg Confession*.

The same Author charges them not only with Schism, but with Heresy; in that they believe with the *Donatists*, that the Effect of the Sacraments depends on the Piety and Virtue of the Minister; that Creatures are Emanations from the Substance of God; that a State of Grace is a real Possession of the Divine Attributes, and a true Deification; that one may be united to God, tho' he deny the Divinity of *Jesus Christ*; that all Error is innocent, provided the Will be but sincere; that Preventing-Grace is natural, and that the Will begins the Work of Salvation; that one may have Faith without any Supernatural Assistance; that all Love of the Creature is original; that a Christian may avoid all Sin; that one may enjoy the Kingdom of God in this World.

These things we find charg'd on the *Pietists*, in a Book intitled, *Manipuli Observationum Antipietisticarum*.—Indeed this looks like polemical Exaggeration, at least 'tis certainly so with regard to a good part of them.

In effect there are *Pietists* of several kinds; some are in gross Illusions, and carry their Errors to the overturning a good part of the Christian Doctrine; others are only visionaries; and others very honest good People, who disgusted with the Coldness and Formality of other Churches, and charm'd with the fervent Piety of the *Pietists*, are attach'd to their Party, without giving into the grossest of their Errors.

PIG of Lead. See FOTHER and LEAD.

PIGER *Henricus*, *Slothful Henry*, a slow distilling Chymical Furnace; call'd also *Athamor*. See ATHAMOR and FURNACE.

PIGMENTS, *PIGMENTA*, Preparations used by Painters, Dyers, &c. to impart Colours to Bodies, or to imitate particular Colours. See COLOUR.

When Glass is stained, or coloured, as in Painting on Glass, or for the counterfeiting of Gems, or Precious Stones; the *Pigment* is usually of a Metalline, or a Mineral Nature. See ENAMEL; see also PAINTING on Glass.

PIGMY, or PYGMY, *πυγμα*, the Length, or Extent, between the Elbow and the Extremity of the Hand; the Fist being shut; popularly call'd *Cubit*. See CUBIT.

Hence the Name has pass'd to a diminutive People of *Thrace*, much talk'd of in old Authors; said to have generated at five Years of Age, and to have been old at eight; famous for their War with the Cranes, which makes the Subject of a fine Latin Poem of Mr. Addison.

The Word is derived from the Greek *πυγμα*, *Cubit*.

PIKE, an offensive Weapon, consisting of a Shaft of Wood, twelve or fourteen Foot long; headed with a flat, pointed Steel.

The Pike was a long time in use in the Infantry, to enable them to sustain the Attack of the Cavalry; but is now taken from them, and the Bayonet, which screws on at the End of the Carabine, substituted in its Place.

Yet the Pike still continues the Weapon of Foot-Soldiers, who fight Pike in hand, salute with the Pike, &c.

Pliny says the *Lacedemonians* were the Inventors of the Pike.—The *Macedonian Phalanx* was a Battallion of Pikemen. See PHALANX.

The Name Pike is said to be derived from a Bird call'd by the French *Pie*, by us Wood-Pecker, whose Bill is so sharp as to pierce Wood like an Auger.—*Du Cange* derives it from the base Latin *Pica*, or *Picca*, which *Turnebus* supposes to have been so call'd *quasi Spica*, because resembling a kind of Ear of Corn. *Octavius Ferrarientis* derives it a *spiculo*.

M. Fauchet says, 'tis the Pike gave Name to the *Picards*, and *Picardy*, which he will have to be modern, and to have been given on occasion of that People's renewing the use of the Pike, the Etymology whereof he fetches from the French *piquer*, to prick: others will have the Name *Picard* to have been given that People by reason of their Readiness to pick Quarrels, call'd in French *Piques*.

PIKE, in Commerce.—To treat with the Pike, *à la pique*, is a kind of Commerce which the Europeans hold with certain savage Nations, wherein they are to keep on their Guard, and as it were Sword in Hand.—Thus it is we treat with the Savages of Canada, &c. and some Negroe Nations on the Coast of Africa.

Treating with the Pike, is also a kind of prohibited Traffic which the English and Dutch maintain in several Parts of the Spanish West Indies, near the Colonies which those two Nations have in the *Caribbee Islands*.

Perhaps it should be call'd *Treating at the Pike*, i. e. the Vessel at Anchor; in regard this Commerce, which is prohibited on Pain of Death, is only practis'd in Roads where Vessels lie at Anchor, waiting for the Spanish Merchants, who sometimes by Stealth, more frequently with the Connivance of the Governors, &c. come to exchange their Gold Pieces of Eight, *Cochineal*, &c. for the European Merchandizes.

Some will have it treating at the Pike, i. e. at a Pike's Length, or Distance; by reason of the Distance Strangers are obliged to keep at. See COMMERCE.

PILA or PILE, among our ancient Writers, denotes the Arms-side of a Piece of Money. The Denomination arose hence, that anciently this Side bore an Impression of a Church built on Piles. *Eleta lib. 1. cap. 39.* He who brings an Appeal of Robbery or Theft against another, must shew the certain Quantity, Quality, Price, Weight, Number, Measure, Valorem & Pilum; where *Pilum* signifies *figuram Montis*.

PILA, *Peer*, in Building, a Massive of Masons Work in manner of a Pillar; usually hexagonal. See PEER.

Such are those serving as Fulcra, to separate and support the Arches of a Stone Bridge, or the Beams of a wooden Bridge.

The Peers of a Stone Bridge are not to be less than one sixth Part of the Arch, nor more than a fourth. See BRIDGE.

The Word comes from the Latin, *Pila*, used in the same Sense by *Vitruvius*; and this, probably, from *πῖλον*, *regis coarctum*.

*Evelyn* observes, that *Pila* and their *Quadrats*, as we see them in ancient Altars and Monuments, were used for Inscriptions; but the shorter and more massy serve for Arches and Buttresses to solid Work.—They were sometimes made half circular: But the Ancients prefer'd those pointed at right Angles, as best able to resist the Current.

PILASTER, in Architecture, a square Column, sometimes insulated, but more frequently let within a Wall, and only shewing a fourth or fifth Part of its Thickness. See COLUMN.

The Pilaster is different in different Orders; it borrows the Name of each Order, and has the same Proportions and the same Capitals, Members, and Ornaments, with the Columns themselves. See ORDER.

Pilasters are usually without either Swelling or Diminution, as broad at top as at the bottom; tho' some of the modern Architects, as M. *Mansard*, &c. diminish them at top, and even make them swell in the middle, like Columns; particularly when placed behind Columns. See DIMINUTION.

Pilasters, M. *Perrault* observes, like Columns, become of different Kinds, according to the different Manner wherein they are applied to the Wall.—Some are wholly detached, call'd by *Vitruvius*, *Parastata*; others have three Faces clear out of the Wall; others two; and others only one; all call'd by *Vitruvius*, *Antæ*. See ANTA and PARASTATA.

Insulate Pilasters are but rarely found in the Antique.—The chief Use they made of Pilasters was at the Extremities of Portico's, to give the greater Strength to the Corners.

There are four principal Things to be regarded in Pilasters: viz. their Projecture out of the Wall, their Diminution, the Disposition of the Entablature when it happens to be common to them and to a Column, and their Flutings and Capitals.

1<sup>o</sup> Then, the Projecture of Pilasters which have only one Face out of the Wall, is to be one eighth of their Breadth: at most not above one sixth. When they receive Imposts against



against their Sides, the Projecture may be a Quarter of their Diameter. See PROJECTURE.  
 2<sup>o</sup> *Pilasters* are but seldom diminish'd, when they have only one Face out of the Wall.---Indeed where they stand in the same Line with Columns, and the Entablature is continued over both, without any Break, the *Pilasters* are to have the same Diminution with the Columns; that is to say, on the Face respecting the Column; the Sides being left without any Diminution.  
 3<sup>o</sup> *Pilasters* are sometimes fluted, tho' the Columns they accompany be not; and, on the other hand, the Columns are sometimes fluted, when the *Pilasters* that accompany them are not.

The Flutings of *Pilasters* are always odd in Number, except in half *Pilasters*, meeting at inward Angles; where four Flutings are made for three, &c. See FLUTING.

4<sup>o</sup> The Proportions of the Capitals of *Pilasters*, are the same as to Height with those of Columns, but differ in Width, the Leaves of the former being much wider, because *Pilasters*, tho' of equal Extent, have only the same Number of Leaves for their Girt, viz. Eight.---Their usual Disposition is to have two in each Face, in the lower Row, and in the upper Row one in the middle, and two halves in the Angles, in the Turns whereof they meet.---Add to this, that the Rim of the Vase or Tambour is not strait as the lower Part is, but a little circular and prominent in the middle. See CAPITAL, &c.

In *Pilasters* that support Arches, the Proportions, *Palladio* shews, must be regulated by the Light they let in; and at Angles, by the Weight they are to sustain. For which Reason, says Sir Henry Wotton, a rustic Superficies best becomes them.

*PILASTER-Brick*. See BRICK.

*PILCHARD Fishing*. See *Pilchard* FISHING.

*PILE*, in Antiquity, a Pyramid built of Wood, whereon were laid the Bodies of the deceased, to be burnt. See BUSTUM; see also FUNERAL, BURNING, &c.

*PILE* is also used in Building, for great Stakes ram'd into the Earth for a Foundation to build upon in marshy Ground. See FOUNDATION; see also PALLIFICATION.

*Amsterdam*, and some other Cities are wholly built upon *Piles*. The Stoppage of *Dagenham-Breach* is effected by *Dove-tail Piles*, i. e. *Piles* mortais'd into one another, by a *Dove-tail Joint*. See DOVE-TAIL.

*PILE* is also used, among Architects, for a Mass, or Body, of Building.

*PILE, PILA*, in Coinage, is the Punchion, or Matrice, which, in the old way of coining with the Hammer, contained the Arms, Cross, or other Figures and Inscriptions, to be struck for the Reverse of the Species. See COIN and SPECIES.

Accordingly we still call the Arms Side of a Piece of Money, the *Pile*, and the Head the Cross; because in the ancient Monies, a Cross usually took the Place of the Head in ours. See COINING.

Hence the Game of *Cross* and *Pile*.

Some will have it call'd *Pile, Pila*, because on this side, in our ancient Coins, there was an Impression of a Church built on *Piles*.---In some ancient Writings *Pila* is used to signify the particular Figure or Impression of Money.---Thus *Elera*; *He who bring an Appeal of Robbery, or Theft, against another, must shew the certain Quantity, Quality, Price, Weight, Number, Measure, Value, and Pile*.

*PILF*, in Heraldry, an Ordinary, in form of a Point inverted, or a Stake sharpen'd; contracting from the Chief, and terminating in a Point towards the Bottom of the Shield, somewhat in manner of a Wedge.

It is form'd probably in Imitation of the *Roman Pilum*, which was a tapering Dart about five Feet long, and sharpened at the Point with Steel.

The *Pile* is born inverted, engrailed, &c. like other Ordinaries, and issues indifferently from any Point of the Verge of the Escutcheon.---*He beareth a Pile Gules, by the Name of Chandois*.

*PILES*, in Medicine, a Disease, by Physicians, call'd *Hæmorrhoids*. See HÆMOR-

RHOIDS.

*PILETTUS*, in our ancient Forest Laws, *Et quod Forestarii sui non portabunt sagittas barbatus sed pilettos*. *Charta Rogeri de Quincy*: where the Word imports such Arrows as had a round Knob a little above the Head, to hinder them from going far into the Mark; from the *Latin Pila*, which signifies any round thing like a Ball.

*PILGRIM, PELGRIM*, of the *Teutonic Pilgram*, the *French Pelerin*, or the *Italian Pelerigno*, of the *Latin Peregrinus*, one who travels thro' foreign Countries to visit holy Places, and to pay his Devotion to the Reliques of dead Saints. The Humour of going on Pilgrimage anciently prevail'd exceedingly; particularly about the Time of the *Croisades*. See CROISADE and CROISE.

Several of the principal Orders of Knighthood were established in Favour of *Pilgrims* going to the *Holy Land*, to se-

cure them from the Violences and Insults of the *Saracens* and *Arabs*, &c. such as the Order of the *Knights Templars*, the *Knights Hospitallers*, *Knights of Malta*, &c. See ORDER, TEMPLAR, MALTA, &c.

*PILLAGE*, among Builders, is sometimes used for a square Pillar, standing behind a Column to bear up the Arches, having a Base and Capital as a Pillar has. See PILLAR.

*PILLAR*, in Architecture, a kind of irregular Column, round and insulated; deviating from the Proportions of a just Column. See COLUMN.

*Pillars* are always either too massive or too slender for a regular Architecture. In effect, *Pillars* are not restrained to any Rules; their Parts and Proportions are arbitrary.

Such e. gr. are the *Pillars* which support *Gothic Vaults* and Buildings, &c.

A square *Pillar* is a massive Work, call'd also a *Peer* or *Piedroit*, serving to support Arches, &c. See *PEAR* and *PIEDROIT*.

*Butting Pillar* is a Buttress, or Body of Masonry, raised to prop or sustain the Shooting of a Vault, Arch, or other Work. See BUTTRESS.

*PILLAR*, in the Manage, signifies the Centre of the Volta, Ring, or Manage-Ground, round which a Horse turns; whether there be a wooden Pillar placed therein or not.

There are also other *Pillars* in Manages on the Circumference or Side; placed at certain Distances by two and two.---To distinguish these from that of the Center, they are called the *two Pillars*.

When these latter are spoken of, it is usual to say, *Work the Horse between the two Pillars*.---When the former, it is call'd, *working round the Pillar*.

The Use of the *Pillar* in the Center, is for regulating the Extent of Ground, that the Manage upon the Volts may be perform'd with Method and Justness; and that they may work in a Square by Rule and measure upon the four Lines of the Volts; and also to break unruly high mettled Horses, without endangering the Rider.

The *two Pillars* are placed at the Distance of 2 or 3 Paces the one from the other.---The Horse is put between these, to teach him to raise before, and yerk out behind; and put himself upon rais'd Airs, &c. either by the Aids or Chastisement.

*PILLE of Foddray*, or *PILL of Fouldrey*, in the County of *Lancaster*, a Defence built on a Creek of the Sea, call'd *Pille*, by the Idiom of the County, for a Pile or Fort built for the Safe-Guard or Protection of any Place.

This *Pile* was erected there by the Abbot of *Fornesse*, in the first Year of *Edm. III. Camb. Brit. Rex*.---*Dedimus Henrico Comiti Northumb. Insulam, Castrum, Pelam & Dominium de Man*, &c. Rot. Pat. i Hen. IV.

*PILLORY* was anciently a Post erected in a cross Road, by the Lord, as a Mark of his Seignior, with his Arms on it, and sometimes a Collar to tie Criminals to.

At present, *Pillory* is a wooden Machine, whereon certain Criminals, as Perjurors, &c. are fastened, and exposed to the publick Derision. See PUNISHMENT, PERJURY, &c.

In the Laws of *Canutus* 'tis called *Healschang*.---Sir Henry Spelman says 'tis *supplicii machina ad ludibrium, magis quam pœnam*.

'Twas peculiarly intended for the Punishment of Bakers who should be caught tripping in the Weight or Fineness of their Bread.---In old Charters it is called *Collistrigium*. See COLLISTRIGIUM.

The *Pillory* in *Paris* is in the middle of a round Tower, with Openings on every side.---'Tis moveable on an Axis, or Arbor; round which the Executioner gives the Criminal the Number of Turns appointed in Court; stopping him at each Opening to shew him to the People.---'Twas intended for several Kinds of Criminals, particularly fraudulent Bankrupts; and all who made a Cession, or Surrender of their Effects to their Creditors, were obliged to make some Turns round the *Pillory* on Foot with a green Cap on. See BANKRUPT, CSSION, &c.

*PILLULA, PILL*, in Pharmacy, a Form of Medicine, taken dry; resembling a little Ball; invented in favour of such as cannot a-way with Medicinal Draughts; as also to keep in Readiness for occasional Use without decayling.

*Pills* are of various Kinds, Anodyne, Somniferous, Laxative, Aperitive, Hystric, Antinephritic, &c. but principally Cathartic.

The Basis of *Pills* is usually Aloes; with which are mix'd Agaric, Turbith, Hermodactyls, Senna, Rhubarb, Mercury, Storax, &c.

*Perpetual Pills, Pillule perpetue*, are Regulus of Antimony made up into *Pills*; thus call'd, because being swallowed and voided 50 times, they will purge every Time with undiminish'd Force. See ANTIMONY.

The *Alocephagine* or *Aromatic Pills* of *Mesue*, are usually call'd *Polychrestes*, as being supposed to collect the Humours from all Parts, to enable Nature to cast 'em out more easily.



*Bechic Pills*, are a sort of *Pills* good against Coughs, so call'd from the *Greek* *Βήχ*, Cough.—They are also call'd *Nypoglottrides*, because left to dissolve under the Tongue.

*Pills* are usually wrapp'd up in Leaf-Gold, in Sugar, or the like, to prevent the ill Taste being perceived.

They take their Name from the *Latin*, *Pila*, Ball.

**PILOT**, **PILOTE**, by the *Dutch* call'd **PILOOT**, the *Italians* **PILOTA**, the *Spaniards* **PILORO**, in Navigation, an Officer on board a Ship, who watches her Course, and directs it. See **COURSE**, **SAILING**, &c.

There are two kinds of *Pilots*; the one a *Coasting Pilot*, well acquainted with the Coasts, Ports, Roads, Bars, Sands, &c. and who commands in Sight thereof. See **COASTING**.

The other an Officer who makes Observations and takes Altitudes out at Sea, uses the Quadrant, Fore-Staff, watches the Compass, &c. See **OBSERVATION**, **ALTITUDE**, &c.

There are also *Pilots* of Havens, Rivers, &c. call'd *Lochmans*. See **LOCHMAN**.

The *Pilot* is always the second Person in the Ship; whether it be a Man of War, or a Merchant-Man.—In the former the Captain is the first, the *Pilot* the second. In a Merchant-Ship, the Master is the first, the *Pilot* after him. The *Pilot* is also the Steersman, who stands at the Helm, and manages the Rudder. See **STEERAGE**, **HELM**, and **RUDDER**.

*Menage* derives the Word *Pilot* from *Prorita*, *q. d.* he who governs the Prow, or Head. Others fetch it from the old *French*, *Pile*, Ship.

**PIMENTO**, **PIMENTA**, or *all-Spice*; an Aromatic Grain; call'd also *Guinea-Pepper*. See **PEPPER**.

**PIN**, in Commerce, a little necessary Utensil, chiefly used by the Women in adjusting of their Dress.

The Form and Application of this little Moveable need no Description; but its Consumption, and the Number of Hands it employs, are too considerable to be pass'd by unnoted.

*Pins* are now altogether made of Brass-Wiar blanch'd: Formerly they likewise made them of Iron-Wiar, which being blanch'd like the others pass'd, for Brass; but the ill Effects of those *Pins* has quite discarded their Use.—The *French* however could not be driven off from 'em, without several Arrets of Parliament. By a Sentence of the Lieutenant de Police, July 1695, the Seizure of some Millions of those *Pins* was confirm'd, and the *Pins* condemn'd to be burnt by the common Executioner.

The *Pins* most esteemed in Commerce are those of *England*; those of *Bordeaux* are next, then those made at *Rugle*, *Naigle*, and some Places in *Normandy*.

The Perfection of *Pins* consists in the Stiffness of the Wiar, and its blanching, in the Heads being well turn'd, and the Points filed.

The *London* pointing and blanching are the most esteemed; because after forming the Points on the Stone, they smooth them again on the Polisher; and in blanching use fine Tin well calcin'd, and sometimes Silver-Leaves prepared by the Gold-Beaters; whereas in other Parts they use a Mixture of Tin, Lead, and Quicksilver, which not only blanches worse than the former, but is also dangerous, by reason of the ill Quality of that Mineral, which renders a Puncture with a *Pin* thus blanch'd very difficult to cure.

The Consumption of *Pins*, and the Number of Artificers employ'd in the Manufacture thereof are incredible. In *Paris* alone there were anciently above 1000 People employ'd in it, at present there are none; yet is there every Year sold above 50000 Crowns worth of the *Pin-Wiar*, to the *Pinmakers* of the neighbouring Places, all brought thither from *Stockholm*.—In the little Town of *Rugle* in *Normandy*, there are computed at least 500 Workmen employ'd in the *Pin-Manufacture*; the whole City being peopled therewith.

Notwithstanding that there is scarce any Commodity cheaper than *Pins*, there is none that passes thro' more Hands e'er they come to be sold.—They reckon 25 Workmen successively employ'd in each *Pin*, between the drawing of the Brass-Wiar, and the sticking of the *Pin* in the Paper.

*Pins* are distinguished by *Numero's*, the smallest call'd from N<sup>o</sup> 3, 4, 5. thence to the 14th; whence they are only accounted by two to two, viz. N<sup>o</sup> 16, 18, and 20, which is the largest Size.

Beside the white *Pins*, there are also black ones made for Mourning, from N<sup>o</sup> 4, to N<sup>o</sup> 10.—These are usually of Iron-Wiar.

Lastly, there are *Pins* with double Heads, of several *Numero's*, used by the Ladies to fix the Buckles of their Hair for the Night, without Danger of being disturb'd by their pricking, &c.

One of the Article of the Statutes of the ancient *Pinmakers* of *Paris*, was, That no Master should open more than one Shop for the Sale of his Wares, except on *New-Year's-Day*, and the Eve thereof: This we mention in an Age of Luxury and Profusion, to recollect the agreeable Simplicity of our Forefathers, who contented themselves with giving *Pins* for New-Years-Gifts.

Hence the Custom of still giving the Name *Pin*, or *Pin-Money*, to certain Presents which accompany the most considerable Bargains; in which 'tis usual to give something towards the *Pins* of the Wife, or Children, of the Person with whom the Bargain is struck.

*Ad PINNAS bibere*, is a Method of drinking, used among the *Danes* in *England*.—The Custom was to fix a *Pin* in the Side of a wooden Cup or Bowl; which *Pin*, each Guest was to drink bare, upon Penalty of forfeiting.

*PIN-and-Web*, a horny Induration of the Membranes of the Eye, not greatly unlike a Cataract. See **CATARACT**.

The *Pin* and *Web* is the same with what we otherwise call *Pannus*, *Unguis*, *Pterygium*, &c. See **PANNUS**, **PTERYGIUM**, &c.

*PIN-Wheel*, of a Clock, the same with the striking Wheel. See **WHEEL** and **CLOCK**.

**PINDARIC**, in Poetry, an Ode form'd in Imitation of the manner of *Pindar*. See **ODE**.

The *Pindaric* Manner is distinguish'd by the Boldness and Height of the Flights, the Suddenness and Surprisingness of the Transitions, and the seeming Irregularity, Wildness, and Enthusiasm of the whole.

*Pindar*, whence the manner takes its Name, was of *Thebes*. He flourish'd about 478 Years before *Christ*; and was contemporary with *Aeschylus*: What we have remaining of his is a Book of Odes, all in Praise of the Victors at the *Olympian*, *Pythian*, *Nemean*, and *Isthmian* Games; whence the first is entitled the *Olympians*, the second the *Pythians*, the third the *Nemeans*, and the fourth the *Isthmians*.

*Pindar* is full of Force and Fire; his Thoughts sententious, his Style impetuous; his Sallies daring, and frequently running as it were at random: he affects a beautiful Disorder, which is the Effect of the greatest Art.

The supposed Irregularity of his Numbers has made several of his Imitators imagine themselves *Pindaric* Poets, by the meer Wildness and Irregularity of their Verses.—None of our Writers seem to have succeeded in the *Pindaric* Character, but Mr. *Cowley*.

In a *Pindaric* Ode, the Plan of the whole is to be drawn first, and the Places mark'd out where the elegant Sallies and Wandrings may best be, and how the Returns may be justly made to the Subject.

**PINCHING**, in Gardening, a sort of pruning; perform'd by nipping or breaking off the Branches, or Sprigs of a Plant, or Tree, between the Nails of two Fingers. See **PRUNING**.

Most Gardeners hold, that *pinching* contributes to the Abundance of the Fruit, as well as of the Branches; and say, that young Shoots, thus lopp'd, are less apt to grow black and die, than when cut with a pruning Knife.

The Season for *pinching* is chiefly in *April* or *May*, sometimes 'tis also practis'd in *June* and *July*.

*Pinching* is most usual in Melons, Cucumbers, &c. *Quinryne* also prescribes it for Fruit-Trees.

It is chiefly to be practis'd on the large Branches towards the Top of the Tree, which are useless and yet consume a great Quantity of good Sap. It must rarely be practis'd on the large Branches below; which ought always to be preserv'd for the Winter's pruning, that they may yield others the following Year, fit to fill the empty Places.—Nor must the Operation of *pinching* be perform'd on the tender Shoots; because having only just Sap enough for themselves, when they come to put forth more Branches in the Place where they are *pinch'd*, the small Stock of Sap allotted them being divided, will starve them.—The Operation is perform'd within two or three Eyes of the Branch they grow out of.

The Effect of *pinching* is, that instead of one useless, perhaps hurtful, Wood-Branch, a vigorous Tree will put forth two or three at the Eyes remaining; and the Sap being thus divided, the Branches may be less, and fit for Wood and Fruit.

**PINCHING**, in the Manage, is when, the Horse standing, the Rider holds him fast with the Bridle-hand, and applies the Spurs just to the Hairs of his Sides, without pricking him.

*Pinching* is accounted an Aid, spurring a Correction. See **AID**.

**PINEA**, or **PIGNE**, in Commerce, a Term used in *Peru* and *Chili*, for a kind of light, porous Masses, or Lumps, form'd of a Mixture of Mercury and Silver-Dust from the Mines. See **SILVER**.

The Ore, or Mineral of Silver, being dug out of the Veins of the Mine, is first broke, then ground in Mills for the Purpose, driven by Water with Iron Pestles of 200 Pound-Weight.—The Mineral thus pulveriz'd, is next sifted, then work'd up with Water into a Paste, which when half dry, is cut into Pieces, call'd *Cuerpo's*, a Foot long; weighing each about 2500 Pound.

Each *Cuerpo* is again kneaded up with Sea-Salt, which dissolving incorporates with it.—They then add Mercury, from 10 to 20 Pound for each *Cuerpo*, kneading the Paste a-fresh till the Mercury be incorporated therewith. This Office



Office being exceedingly dangerous, by reason of the ill Qualities of the Mercury, is the Lot of the poor Indians. See MERCURY.

This Amalgamation is continued for 8 or 9 Days: Some add Lime, Lead, or Tin Ore, &c. to forward it; and in some Mines they are obliged to use Fire.—To try whether or no the Mixture and Amalgamation be sufficient, they wash a Piece in Water; and if the Mercury be white, it has had its Effect, if black it must be further work'd.

When enough, it is sent to the Lavatories, which are large Basins that empty successively into one another.—The Paste &c. being laid in the uppermost, the Earth is then wash'd from it into the rest by a Rivulet turn'd upon it; an Indian all the while stirring it up with his Feet, and two other Indians doing the like in the other Basins. See LAVADERO.

When the Water runs quite clear out of the Basins, they find the Mercury and Silver at Bottom, incorporated.—This Matter they call *Pella*, and of this they form the *Pinea's* by expressing as much of the Mercury as they can; first by putting it in woolen Bags and pressing and beating it strongly; then by stamping it in a kind of wooden Mould of an Octagonal Form at bottom whereof is a Brass-Plate pierced full of little Holes.

The Matter being taken out of the Mould is laid on a Trier, under which is a large Vessel full of Water; and the whole being cover'd with an earthen Head, a Fire is made around it.

The Mercury still remaining in the Mass is thus reduc'd into Smoak, and at length condensing is precipitated into the Water, leaving behind it a Mass of Silver Grains of different Figures, which only joining or touching at the Extremes render the Matter very porous and light.

This, then, is the *Pinea's* or *Pigne's* which the Workmen endeavour to sell secretly to the Vessels trading to the South Sea; and from which those who have ventur'd to engage in so dangerous a Commerce have made such vast Gains.—Indeed the Traders herein must be very careful, for the Spanish Miners are errant Knaves, and to make the *Pignes* weigh the more, make a Practice of filling the middle with Sand or Iron. See COMMERCE, PIKE, &c.

PINEAL, PINEALIS, in Anatomy, a Name which *Des Cartes* gives to a Gland in the third Ventricle of the Brain; from its Resemblance to a Pine-Apple. See GLAND and BRAIN.

This Gland he makes the *Sensorium*, or Seat of the reasonable Soul. See SENSORIUM.

Other Authors call it *Conoides* and *Conarium*. See CONARIUM.

PINGUEDO, among Anatomists, that sort of Fat of Animals lying next under the Skin. See FAT.

PINION, in Mechanicks, an Arbor, or Spindle, in the Body whereof are several or Notches, into which catch the Teeth of a Wheel that serves to turn it round. Or a *Pinion* is a lesser Wheel, which plays in the Teeth of a larger. See WHEEL.

In a Watch, &c. its Notches (which are commonly 4, 5, 6, 8, &c.) are call'd *Leaves*, and not Teeth as in other Wheels. See WATCH.

*Pinion of Report*, is that *Pinion* in a Watch which is commonly fix'd on the Arbor of the great Wheel, and which in old Watches used to have but four *Leaves*; it drives the Dial-Wheel, and carries about the Hand. See WATCHWORK.

The Quotient, or Number of Turns to be laid upon the *Pinion of Report*, is found by this Proportion: As the Beats in one Turn of the great Wheel, are to the Beats in an Hour; so are the Hours of the Face of the Clock, (*viz.* 12, or 24) to the Quotient of the Hour-Wheel, or Dial-Wheel divided by the *Pinion of Report*, that is, by the Number of Turns which the *Pinion of Report* hath in one Turn of the Dial-Wheel: which in Numbers is 26928 : 20196 :: 12 : 9.

Or rather thus; as the Hours of the Watches going, are to the Numbers of the Turns of the Fusy; so are the Hours of the Face, to the Quotient of the *Pinion of Report*.—If the Hours be 12, then 16 : 12 :: 12 : 9. But if 24, the Proportion is 16 : 12 :: 24 : 18.

This Rule may serve to lay the *Pinion of Report* on any other Wheel, thus: As the Beats in one Turn of any Wheel, are to the Beats in an Hour; So are the Hours of the Face, or Dial-Plate of the Watch, to the Quotient of the Dial-Wheel, divided by the *Pinion of Report*, fixed on the Spindle of the aforesaid Wheel. See CALCULATION.

PINK, or *Flute*, a Vessel used at Sea, mast'd and rigged like other Ships; only that she is built with a round Stern; the Bends and Ribs compassing so, as that her Sides bulge out very much. See VESSEL.

This Disposition renders the *Pinks* difficult to be boarded; and also enables them to carry greater Burdens than others.

They are often used for Store-Ships and Hospital-Ships in the Fleet.

PINK among Painters, a sort of yellow Colour. See YELLOW and PAINTING.

PINNA, a Latin Word signifying a Feather. See FEATHER.

It is also used figuratively in divers Arts, to express things which bear some Resemblance, in Form, to Feathers; as the Fins of Fishes, &c. See FIN.

PINNA *Auris*, in Anatomy. See EAR.

PINNA *Nasi*, the same as *Ala Nasi*. See NOSE.

PINNACE, a small Vessel, with a square Stern, having Sails and Oars, and carrying three Masts; chiefly used as a Scout for Intelligence, and for landing of Men. See VESSEL.

One of the Boats belonging to a great Man of War, serving to carry the Officers to and from the Shore, is also called the *Pinnace*. See BOAT.

PINNACLE, in Architecture, the Top, or Roof, of a House, terminating in a Point. See ROOF.

The Word comes from the Latin *Pimia*, or *Pinnaculum*.—This kind of Roof among the Ancients was appropriated to Temples; their ordinary Roofs were all flat, or in the Platform Way. See PLATFORM.

'Twas from the *Pinnacle*, that the Pediment took its Rise. See PEDIMENT.

PINNATA *Folia*, from *Pinna*, a Feather, in Botany, are such Leaves of Plants, as are deeply jagged, cut, or indented, resembling a Feather in Shape. See LEAVES.

PINNING, in Building, the fastening of Tiles together, with Pins of Heart of Oak; for the Covering of a House, &c. See TILES and COVERING.

PINT, a Vessel or Measure used in estimating the Quantity of Liquids, and even sometimes of dry things. See MEASURE.

The English Pint is twofold; the one for Wine-Measure, the other for Beer and Ale-Measure.

The Wine Pint contains a full Pound, *Avoir-du-pois*, of common running Water; two Pints make a Quart, two Quarts a Pottle, two Pottles a Gallon, &c. See GALLON, QUART, &c.

The Paris Pint is estimated at one sixth of the ancient Congius; and contains two Pounds of common Water: It is divided into Chopines, which some call Septiers; the Septier into two Demi-Septiers, the Demi-Septier into two Poissons, each Poisson containing 6 Cubic Inches.—Two Pints make a Quart, *Quarteau*, which some call a Pot: The Pint of S. Denis is almost double that of Paris.

*Budaus* derives the Word *Pint* from the Greek *πινθα*, *Ménage*, from the German *Pinte*, a little Measure of Wine; *Nicod* from the Greek *νικω*, to drink.

PINTLE, among Gunners, an Iron Pin which serves to keep the Cannon from recoiling. See CANNON, ORD-NANCE, RECOIL, &c.

PINTLES, in a Ship, are Hooks by which the Rudder hangs to the Stern-Post. See RUDDER, &c.

PIONEER, in War, a Labourer employ'd in an Army, to smooth the Roads, pass the Artillery a-long, dig Lines and Trenches, Mines, and the other Works.

*Ménage* derives the Word from the Latin *Peditones*, and *Pconarii*; or from *Pconibus*, a People of Asia, whose principal Employment was to dig the Earth in Mines, &c.

PIP, PEP, or PEPPIA, a Disease among Poultry; consisting of a white thin Skin or Film, that grows under the Tip of the Tongue, and hinders their feeding.

It usually arises from want of Water, or from drinking Puddle-Water, or eating filthy Meat.—It is cured by pulling off the Film with the Fingers, and rubbing the Tongue with Salt.—Hawks are particularly liable to this Disease. See HAWK.

PIPE, in Building, &c. a Canal or Conduit for the Conveyance of Water, and other Liquids. See CANAL.

Pipes for Water, Water-Engines, &c. are usually of Lead, Iron, Earth, or Wood.—Those of Timber are usually either Oak or Alder. See TIMBER.

Those of Iron are cast in the Forges; their Length about two Foot and a half; several of which are piec'd together, by means of four Screws at each End, with Leather, or old Hat between them to stop the Water.

Those of Earth are made by the Potters.—These are fitted into one another, one End being always made wider than the other.—To join them the closer, and prevent their leaking, they are cover'd with Pitch and Tow.—Their Length is usually about the same with that of the Iron Pipes.

The Wooden Pipes are bored with large Iron Augers of different Sizes, succeeding one another from less to larger; the first pointed, the rest form'd like Spoons, increasing in Diameter from one Inch to six.—They are fitted into the Extremities of each other, and are sold by the Foot.

Leaden Pipes are of two kinds the one solder'd, the other not solder'd: For the Construction of each Kind whereof, see PLUMBERY.

For the PIPES of Organs: See ORGAN.

PIP is also a popular Machine used in the smoking of Tobacco; consisting of a long slender Tube, made of Earth or Clay; having at one End a little Vase, or Furnace, call'd the



the *Boul*, for the Reception of the Tobacco; the Fumes whereof are drawn by the Mouth thro' the other End. See TOBACCO.

*Pipes* are made of various Fashions, long, short, plain, work'd, white, varnish'd, unvarnish'd, of various Colours, &c.—The *Turks* use *Pipes* three or four Foot long, made of Rushes, or of Wood bor'd; at the End whereof they fix a kind Nut, of bak'd Earth, which serves as a Boul, and which they take off after smoking.

The Word is borrowed from the *Latin* *Pipa*.

*PIPE* is also a Vessel, or Measure, for Wine, and Things measured by Wine-Measure. See MEASURE.

The *Pipe*, or Butt, contains two Hogheads, four Barrels, or 126 Gallons; and is computed to weigh about 9 Hundred, 2 Quarters, and 17 Pound. See HOGSHEAD, &c.

The *Pipe* is little used in *France*, except in *Anjou* and *Poitou*, where it consists of two Boisseaux, equal to a Muid and half of *Paris*; the Muid consisting of 36 Septiers, and the Septier of 8 Pints.

*PIPE*, *PIPA*, in Law, is a Roll in the Exchequer, call'd also the *Great Roll*. See ROLL and EXCHEQUER.

*PIPE-Office*, is an Office wherein a Person call'd the *Clerk of the Pipe* makes out the Leases of Crown-Lands, by Warrant from the Lord-Treasurer, or Commissioners of the Treasury, or Chancellor of the Exchequer. See CLERK of the *Pipe*.

All Accounts of Sheriffs, &c. are made up by the Clerk of the *Pipe*, and he gives the Accomptants their *Quietus est*. To this Office are brought all Accompts which pass the Remembrancer's Office, and Remain there; that if any stated Debt be due from any Person, the same may be drawn down into the great Roll of the *Pipe*; upon which the Comptroller issues out a Writ, call'd, The *Summons of the Pipe* for Recovery thereof. See REMEMBRANCER.

All Tallies which vouch the Payment of any Sum contained in such Accompts, are examined, and allowed by the chief Secondary of the *Pipe*. See TALLY.

Besides the Clerk, in this Office are eight Attornies, or sworn Clerks, and a Comptroller.

*PIRATE*, a Person, or Vessel, that robs on the high Seas, or makes Descents on the Coasts, &c. without the Permission or Authority of any Prince or State. See PRIVATEER.

When *Pirates* are caught they are usually hang'd up without Remission, or any formal Trial; sometimes in the next Port; sometimes on board the Vessel that takes them.

In different Parts they are differently denominated; as in the *West Indies*, *Buccaneers*, *Free-boaters*, &c.—In the *Mediterranean*, *Corsairs*, &c. See BUCCANEER, CORSAIR, &c.

*Alexander* reproaching a *Pirate* with his Condition; was answered, If I am a *Pirate*, 'tis because I have only a single Vessel; had I a Fleet I should be a mighty Conqueror.

The Word comes from the *Greek* *πῦρ*, Fire, because they use to burn the Ships, Houses, &c. of the Islands where they make Descents.

*PIRATE* was also anciently used for the Person to whose Care the Mole, or Peer, of a Haven, in *Latin* *Pera*, was intrusted. See PEER.

Sometimes, too, according to *Spelman*, it was used *pro milite maritimo*; for a Sea-Captain or Soldier.

*Affer* in the Life of King *Alfred*, tells us, *jussit naves longas fabricari, impositis qua piratis in illis vias maris custodiendas commisit*.

*PIRETHRA*, or *PYRETHRA*, or *PIRETRY*, or *PELLITORY*, a Medicinal Root brought from *Tunis*, of a hot, discutient Quality, used as an Alexipharmic and Phlegmagogue; as also to assuage the Toothach; and in the Composition of Vinegar.

'Tis of a moderate Length, the Thickness of the little Finger, greyish without, whitish within, and of a sharp, burning Taste.

'Tis pretended it took its Name from *Pyrrhus* King of *Epirus*; but there is no great Occasion for having recourse to a Mystery; its burning Quality being sufficient to give it the Name *Pirethra*, from the *Greek* *πῦρ*, Fire. It must be chosen new, dry, hard to break, &c.

It is call'd a Salivary Root, because being held in the Mouth its Pungency promotes the Evacuation of Saliva.

*PIROUETTE*, or *PIROUET*, in the Manage, a Turn or Circumvolution which a Horse makes, without changing his Ground.

*Pirouettes* are either of one Tread or *Piste*, or of two.—The first is an entire short Turn which the Horse makes upon one Tread, and almost in one Time; in such manner as that his Head comes to the place where his Tail was, without putting out his Haunches.—In the *Pirouette* of two Treads, or *Pistes*, he takes a small Compass of Ground, almost his Length; and marks both with the fore-part and the hind. See PISTON.

The Word is *French*, and literally signifies *Whirligig*.

*PIS-ASPHALTUM*, a Compound of Bitumen and Pitch; See BITUMEN, &c.

There are two Kinds; the one Natural, the other Artificial.

The Natural is the same with what we otherwise call *Asphaltum*, or *Jewish Pitch*. See ASPHALTUM.

The Artificial is prepared with equal Parts of the *Jewish-Pitch* and common Black-Pitch melted together. See PITCH.

This latter Kind is what is usually sold in the Shops for the former.—The Coarseness of the black Colour, and the Fetidness of the Smell serves to distinguish it.

The Ancients used both kinds in embalming their Dead. See EMBALMING.

The Word is form'd from the *Greek* *πίσας*, Pitch; and *ασφαλτος*, Bitumen.

*PISCARY*, in our ancient Statutes, the Liberty of Fishing in another Man's Waters. See FISHING.

*PISCES*, in Astronomy, the twelfth Sign, or Constellation of the Zodiac. See SIGN and CONSTELLATION.

The Stars in *Pisces*, in *Ptolomy's* Catalogue, are 38. In *Tycho's*, 33. In the *Britannic Catalogue*, 109.—The Longitudes, Latitudes, Magnitudes, &c. whereof are as follow.

Stars in the Sign PISCES.

| Names and Situations of the Stars.  | Right Asc. | Longit. | Latitud. | Magn. |
|---|------------|---------|----------|-------|
|   |            |         |          |       |
| In the Mouth of the South. Fish.  | 11         | 06 22   | 7 22 49  | B 6   |
|   | 12         | 06 15   | 6 51 40  | B 6   |
|   | 12         | 04 48   | 6 01 09  | B 6   |
|   | 14         | 15 56   | 9 03 19  | B 4   |
|   | 14         | 41 18   | 7 01 31  | B 6   |
| South. of two in the hind part of the Head North. in the hind part of the Head. Preced. of two in the Belly. A small one contiguous to it. Preced. in the Back. | 17         | 03 44   | 7 16 43  | B 4   |
|   | 18         | 42 17   | 8 32 36  | B 5   |
|   | 18         | 34 33   | 4 26 26  | B 5   |
|   | 18         | 35 20   | 4 16 40  | B 6   |
|   | 20         | 52 27   | 9 01 58  | B 5   |
| 15.   | 17         | 56 47   | 1 22 54  | B 6   |
|   | 18         | 16 05   | 2 04 20  | B 6   |
|   | 18         | 48 28   | 1 46 36  | B 6   |
|   | 19         | 13 58   | 1 24 53  | B 6   |
|   | 20         | 34 43   | 3 37 54  | B 6   |
| 15.   | 21         | 05 46   | 4 15 31  | B 6   |
|   | 23         | 18 38   | 7 12 12  | B 5   |
|   | 22         | 16 36   | 3 25 07  | B 5   |
|   | 26         | 00 11   | 11 07 22 | B 7   |
|   | 23         | 56 55   | 4 32 43  | B 5   |
| 20.   | 21         | 48 21   | 1 19 43  | A 6   |
|   | 23         | 41 07   | 2 01 47  | B 6   |
|   | 24         | 59 44   | 3 28 57  | B 6   |
|   | 22         | 47 44   | 2 11 39  | A 6   |
|   | 27         | 22 55   | 6 58 13  | B 6   |
| 25.   | 23         | 57 34   | 3 07 49  | A 5   |
|   | 28         | 14 55   | 6 22 15  | A 5   |
|   | 24         | 53 04   | 2 57 45  | A 5   |
|   | 23         | 42 36   | 5 42 33  | A 5   |
|   | 29         | 49 12   | 7 57 50  | B 6   |
| 30.   | 29         | 38 45   | 7 31 43  | B 5   |
|   | 24         | 36 38   | 5 46 55  | A 5   |
|   | 2          | 26 23   | 9 12 37  | B 6   |
|   | 2          | 37 16   | 6 36 03  | B 6   |
|   | 2          | 45 08   | 5 54 26  | B 6   |
| 35.   | 5          | 04 06   | 11 05 36 | B 6   |
|   | 3          | 11 38   | 6 24 02  | B 7   |
|   | 6          | 18 45   | 13 12 04 | B 6   |
|   | 6          | 46 18   | 12 55 03 | B 6   |
|   | 3          | 39 16   | 5 27 36  | B 6   |
| 40.   | 6          | 09 48   | 10 09 08 | B 6   |
|   | 7          | 01 13   | 10 41 48 | B 6   |
|   | 2          | 16 10   | 0 44 49  | A 6   |
|   | 4          | 36 55   | 4 30 42  | B 6   |
|   | 9          | 57 40   | 15 06 45 | B 6   |
| 45.   | 9          | 16 43   | 13 37 31 | B 6   |
|   | 8          | 43 31   | 12 16 56 | B 7   |
|   | 9          | 08 47   | 11 39 13 | B 7   |
|   | 5          | 49 42   | 3 10 38  | B 6   |
|   | 11         | 18 56   | 15 23 53 | B 6   |
| 50.   | 8          | 50      | 0 10     | B 7   |
|   | 10         | 08 47   | 10 21 41 | B 7   |
|   | 13         | 25 40   | 15 42 24 | B 7   |
|   | 12         | 26 42   | 9 38 42  | B 6   |
|   | 11         | 08 49   | 6 22 25  | B 7   |
| 55.   | 14         | 16 36   | 13 19 58 | B 7   |
|   | 9          | 12 22   | 1 31 48  | B 7   |
|   | 14         | 57 38   | 14 30 43 | B 7   |
|   | 9          | 37 31   | 1 37 28  | B 7   |
|   | 9          | 49 17   | 2 09 44  | B 4   |
| Preced. of the bright Stars in the Line   | 13         | 34 02   | 10 44 49 | B 6   |
|   |            |         |          |       |



| Names and Situations of the Stars.   | Sign. | Longit. | Latitud. | Mag.  |
|--|-------|---------|----------|-------|
| 60   |       |         |          |       |
| Preced. of 3 in the Head of the North. Fish.)  | 18    | 17 46   | 20 30 43 | B 6   |
| Middle of those in the Head.   | 15    | 43 29   | 12 17 13 | B 6   |
| East of 3 in the Head of the North. Fish.  | 19    | 23 22   | 19 29 38 | B 6   |
| Preced. of 2 against the Eye of the North. Fish.)  | 20    | 33 53   | 20 57 08 | B 6   |
| Middle of the bright Stars in the South. Line.)  | 22    | 53 41   | 23 03 47 | B 5   |
| 65   |       |         |          |       |
| Preced. of 3 in the Fin of the Back.   | 13    | 12 11   | 1 04 07  | B 4   |
| 70   |       |         |          |       |
| Subseq. against the Eye of the North. Fish.)   | 16    | 23 36   | 7 23 22  | B 6   |
| Middle, in the Fin of the Back.  | 12    | 46 09   | 1 10 40  | A 6   |
| 75   |       |         |          |       |
| Upper, in the Fold of South. Line.   | 19    | 06 00   | 13 21 08 | B 5   |
| East of 3 in the Fin of the Tail.  | 15    | 43 21   | 5 31 13  | B 6   |
| North, of 2 against the Mouth of North. Fish.)   | 23    | 46 30   | 23 06 23 | B 5   |
| South, of the same.  | 12    | 41 48   | 1 55 32  | A 6   |
| 80   |       |         |          |       |
| That follow the Fin of the Back.   | 24    | 04 18   | 22 47 51 | B 6   |
| South, of 2 in the Belly.  | 19    | 18 25   | 12 28 46 | B 6   |
| East of 3 bright ones in the South. Line.)   | 12    | 06 37   | 4 49 08  | A 7   |
| 85   |       |         |          |       |
| South, of 2 in the Fold of South. Line.  | 13    | 37 12   | 1 30 24  | A 5   |
| North, in the Belly.   | 19    | 17 47   | 11 18 09 | B 6   |
| Another following it.  | 24    | 27 32   | 21 59 06 | B 6   |
| 90   |       |         |          |       |
| Preced. of the contiguous in the bend- ing of the Line) Subseq. of the same. to the Tail of) the North. Fish.) | 23    | 58 26   | 20 42 19 | B 5   |
| 95   |       |         |          |       |
| East of those in North. Line before the North, of 3 in North. Line.  | 12    | 52 27   | 4 40 45  | A 7   |
| Middle of those in the North. Line.  | 20    | 11 43   | 12 25 29 | B 5   |
| 100  |       |         |          |       |
| East of those in South, Line before the Knot.)   | 13    | 21 16   | 4 50 30  | A 7   |
| 105  |       |         |          |       |
| That next the Knot in the North. Line. before the Knot in South. Line.   | 22    | 08 31   | 15 29 02 | B 5   |
| 110  |       |         |          |       |
| That next the Knot of each the two Lines.  | 15    | 32 13   | 0 13 25  | A 4   |
|  | 18    | 53 15   | 7 39 27  | B 7   |
|  | 15    | 32 53   | 0 51 50  | A 6 7 |
|  | 15    | 00 04   | 4 17 13  | A 6   |
|  | 24    | 27 10   | 17 26 56 | B 5   |
|  | 25    | 25 21   | 18 39 53 | B 6   |
|  | 21    | 40 54   | 8 20 43  | B 7   |
|  | 22    | 45 12   | 9 22 03  | B 5   |
|  | 22    | 52 27   | 9 23 58  | B 5   |
|  | 17    | 56 00   | 3 34 52  | A 7   |
|  | 18    | 56 45   | 1 57 39  | A 6 7 |
|  | 23    | 14 23   | 8 17 49  | B 6 7 |
|  | 18    | 46 40   | 3 04 25  | A 5   |
|  | 22    | 29 20   | 5 21 07  | B 4 3 |
|  | 23    | 11 35   | 4 20 47  | B 6   |
|  | 22    | 35 18   | 1 52 05  | B 5 4 |
|  | 24    | 41 39   | 5 51 46  | B 8   |
|  | 23    | 50 06   | 3 40 32  | B 7   |
|  | 24    | 42 55   | 5 38 07  | B 6 7 |
|  | 21    | 10 37   | 4 43 12  | A 5   |
|  | 26    | 47 42   | 9 01 34  | B 6 7 |
|  | 27    | 14 27   | 8 36 20  | B 8   |
|  | 23    | 24 40   | 1 38 58  | A 5   |
|  | 23    | 11 18   | 7 55 45  | A 5   |
|  | 24    | 42 05   | 8 35 05  | A 6 7 |
|  | 25    | 02 33   | 9 05 10  | A 3   |

**PISCIS Volans**, in Astronomy, is a Constellation of the Southern Hemisphere, unknown to the Ancients, and invisible to us in these Northern Regions. See CONSTELLATION.

**PISCINA**, in Antiquity, *Fish-Pond*; a large Basin, in an open publick Place, or Square; where the Roman Youth learnt to swim; and which was surrounded with a high Wall, to prevent the casting of Filth into it. See SWIMMING.

**PISCINA** was also the square Basin in the middle of a Bath. See BATH.

The Word is form'd from the *Latin Piscis*, Fish; because Men here imitated Fishes in swimming; and because Fishes were actually kept in some of them.

**PISCINA Probatia**, was a Pool, or Reservoir of Water, near the Court of Solomon's Temple; so call'd from the *Greek πεισιν*, Sheep, because they here wash'd the Beasts destin'd for Sacrifice. See SACRIFICE.

By this *Piscina* it was that our Saviour wrought the miraculous Cure of the Paralytic.

**Daviler** observes, there are still remaining five Arches of the Portico, and part of the Basin of this *Piscina*.

**PISCINA**, or *Lavatory*, among the *Turks*, is a large Basin in the middle of the Court of a Mosque, or under the Portico's that encompass it. See MOSQUE.

Its Form is usually a long Square, built of Stone or Marble, furnish'd with a great Number of Cocks; wherein the Musulmen wash themselves before they make their Prayers; as being persuaded that Ablution effaces Sin. See AB- LUTION.

**PISSELAUM Indicum** seems to be what passes in the Shops for *Barbadoes Tar*.—It has a strong Smell not unlike the common Tar, and is not very pleasant to Sight or Taste. It is accounted a good Balsamick, and where the Stomach

can dispense with it will do great Service in many Disorders of the Breast, which has also been experienced of common Tar. See TAR.

**PISTACHO**, or *Pistachia Nut*, a Fruit brought from several Parts of *Asia*, chiefly *Aleppo* and *Persia*.—When wrapt in all its Coats, 'tis of the Size of a green Almond; but when stript of all but its Shell it resembles a small Nut. The Kernel is red without and green within, its Taste very agreeable.

The Tree that produces it is a kind of Turpentine Tree: The Nuts are to be chosen new, heavy, and full; as to those that are broken, such as have kept their Colours best are to be prefer'd; for as to the Size 'tis a Fancy.

*Pistachos* are aperitive, proper to give Vigour, and are used in Emulsions, &c. in Phthical and Nephritical Cases. They also enter several Ragoufts; are comfited, made into Con- serves, &c.

The Word is form'd from the *Latin Pistacium*, of the *Greek πισιν*; whence according to *Menage* the City *Pis- tatus* took its Name.

There is likewise a kind of false *Pistacho*, brought from the *Caribbee Islands*, which some confound with the real ones, tho' very different, both with regard to the Plant that produce them, and their Quality. The Plant does not grow above a Foot high. Nor does the Fruit grow on the Branches, but is found in Pods adhering to the Root.—The Pod sometimes only contains a single Nut, which it re- sembles an Olive; but usually, several; and in that Case they are irregular. The Substance is white, compact and heavy.

This Fruit is rarely eat raw, because of the ill Effects it produces; 'tis usually roasted or comfited; is used in Ra- goufts; and to make Ratifia's.

**PISTE**, in the Manage, the Track, or Tread, which a Horse makes upon the Ground he goes over; and which may be either single or double.

If the Rider makes him go but an ordinary Gallop, in a Circle, or rather Square, he will make but one; if he ei- ther makes him gallop with his Haunches in, or go *Terra à Terra*, he will make two *Pistes*, one with the fore-part, another with the hind.—And the same if the Rider makes him passage, or go side ways, either in a strait Line, or up- on a Circle.

The Word is *French*, and literally signifies a Track.

**PISTIL**, in Botany, a little upright Part in the middle of the Calyx, or the Leaves of Flowers; call'd also the *Style*. See STYLE.

The *Pistil* is an essential Part of a Flower; and the prin- cipal female Organ of Generation; it being in this that the Seeds or young Plants are form'd. See FLOWER.

It arises from the Pedicle of the Flower, or the Center of the Calyx, and at length becomes the young Fruit, which is sometimes hid in the Calyx, and sometimes quite out. See FRUIT, CALYX, &c.

The Figure of the *Pistil* is very different in different Flow- ers: Sometimes 'tis a little Stalk, which enlarges at the two Ends like a Pestle; sometimes 'tis a mere Stamen or Thread: Sometimes 'tis round, sometimes square, triangular, oval, &c.

Almost all *Pistils* are furnish'd at top, either with fine Hairs, which make a kind of Velveting; or with little Fila- ments disposed in Plumes; or are be-set with little Vesicles full of a glutinous Juice.

Some Flowers have several *Pistils*; or rather the *Pistils* ter- minate in several Branches, or Horns, which have their Rise from as many young Fruits, or as many different Capsulae, containing Seeds.

All these *Pistils*, or whatever Form they be in, have certain Apertures at their Tops, or certain Clefts continued the whole Length, to the Base or Embryo's of the Fruit.—This is very visible in the Lilly, Daffodil, and Melon, by cleaving the *Pistils* length-wise, or cutting them transversely.—If af- ter cutting the *Pistil* of the Lilly, you immerge one Extre- mity in Water, and suck thro' the other End, the Water will rise thro' it, as through a Pipe.

By opening the *Pistils* in their different States or Growths, it appears evidently, that 'tis these form the young Fruits; and contain within them the Embryo's of the Seeds; whe- ther those Seeds be diffused thro' the whole Length of the *Pistil*; or whether they be all inclosed in its Base: And that they are always open a-top, and perforated, either more or less sensibly, to the Bottom: Though this Cavity is frequent- ly effaced as the young Fruit grows; and sometimes a Part of the *Pistil*, which *Malpighi* calls the *Style*, or Needle, dries and falls off.

The *Pistil*, we have observed, is the Female Organ of Generation; its Base does the Office of the *Uterus*, or Womb, in Women; and its Length that of the *Vagina*. See UTERUS and VAGINA.

It is encompassed with the Stamina, the Apices whereof are full of a fine Dust, call'd the *Farina Fecundans*; which bursting its Vesicule, or Apices, when mature, is shed on the upper Part of the *Pistil*, and thence convey'd by the

9 Y

Cavity.



Cavity thereof to the Base or Uterus; where being fed with a fine Juice, separated by the Flowers, it grows, expands, and thus forms the Embryo of a young Fruit. See STAMINA, FARINA, &c.

For a more distinct Account of the Process of Generation of Plants. See PLANT.

PISTOL, a little Fire-Arm; bore at the Saddle-Bow, the Girdle, or in the Pocket. See FIRE-ARM.

The Pistol is said to have taken its Name from *Pistoya* a City in Italy; where, as *Faucher* tells us, they were first made.—*Borel* derives the Word from *Fistula*, Pipe, the Barrel of this Piece bearing some Resemblance to a Flute, &c.

PISTOLE, or *Doublon*, in Commerce, a Gold Coin, struck in Spain, and several Parts of Italy, Switzerland, &c. See COIN.

It has its Augmentations, and Diminutions; which are *Quadruple Pistoles*, *Double Pistoles*, and *Half Pistoles*.

The Pistole is about the same Weight, Fineness, and Value, with the French Louis d'ors, viz. equal to Sixteen Shillings and Six Pence, Sterling.

In Spain the Pistole is accounted equal to four Pieces of Eight, 32 Rials, 1088 Maravedis, old Money; 1360 Maravedis, new Money; and 2040 Maravedis of Billon, the old Money current at Seville, Cadix, in Andalusia, &c. being 25 per Cent. better than the imaginary Money they reckon by at Madrid, Bilbao, &c. which Augmentation was made by Charles II. in 1686. to prevent the Exportation of Money out of the Kingdom. See MONEY.

Most of the Exchanges in Italy are made on the Foot of the Pistole. See EXCHANGE.

PISTON, a Part, or Member in several Machines, particularly Pumps, Air-Pumps, Syringes, &c. call'd also *Embolus*, and popularly the *Sucker*. See EMBOLUS.

The Piston of a Pump is a short Cylinder of Metal, fitted exactly to the Cavity of the Barrel or Body; and which being work'd up and down alternately therein, raises the Water; and when rais'd presses it again, so as to make it force up a Valve, wherewith it is furnished, and so escape thro' the Nose of the Pump. See PUMP.

The Pistons of Air-Pumps, Syringes, &c. See described under AIR-PUMP, and SYRINGE.

PIT and Gallows, in our ancient Customs. See FURCA & FOSSA.

PITANCIARIUS, an Officer in the ancient Monasteries, whose Business it was to provide and distribute the Portions of Herbs and Meat, amongst the Monks. See PIR-TANCE.

PITCH, *Pix*, a kind of tenacious Juice, or Gum, drawn from fatty Woods, chiefly Pines and Firs; used in Shipping, in Medicine, and various other Arts.

Pitch is properly a Juice of the Bark; and is conceived to be no other than the Oil thereof inspissated and turned black, farther than in the Balm. See BARK and BALM.

The Method of drawing, or procuring, it, is by cleaving the Tree into little Billets, which they lay in a Furnace having two Apertures, thro' one of which the Fire is put, and thro' the other the Pitch is gathered; which oozing from the Wood runs along the bottom of the Furnace into Basins or Receptacles for the Purpose.—The Smoke which is here very thick, gives it the black Colour we find it withal.—Some will only have our common Pitch to be the last Running, and Tar to be the first. See TAR.

*Wheeler* gives us another Manner of drawing Pitch, used in the Levant.—A Pit is dug in the Ground two Ells in Diameter a-top, but contracting as it goes deeper: This they fill with Branches of Pine, cloven into Shivers.—The top of the Pit is then covered over with Fire, which burning down to the bottom, the Pitch distils and runs out at a Hole made therein.

Pitch acquires different Names according to its different Preparations, Colours, and Qualities. As it distils from the Wood it is called *Barras*, but afterwards assumes a double Name, the finest and clearest being called *Galipot*, and the coarser, *marbled Barras*.

Of the Galipot is made what we call *white Pitch*, or *Burgundy Pitch*, which is nothing but the Galipot melted with Oil of Turpentine; tho' some will have it a native Pitch, distilling from a Resinous Tree growing in the Mountains of the *Franche-Compte*.

Of the same Galipot is likewise prepared what we call *Rosin*; by boiling the Pitch to a certain Consistence, and making it up in Cakes. See ROSIN.

The black Pitch, which is what we properly call Pitch, is the liquid Galipot burnt and reduced into the Form and Consistence we see it in by mixing Tar with it while hot.

The best is that brought from Sweden and Norway.—Its Goodness consists in its being of a shining black, dry, and brittle.

Naval Pitch, *Pix Navalis*, is that drawn from old Pines, rang'd and burnt like Charcoal.—This, with the Mixture of Tow or beaten Cables, serves for the pitching of Vessels.

Naval Pitch is also that scraped from off the Sides of old

Vessels; and which is supposed to have acquired an additional Virtue, by means of the Salt-Water.—It serves to make Plasters; tho' 'tis certain the Apothecaries usually substitute the common black Pitch in its stead.

Greek Pitch, or Spanish Pitch, is that boild in Water till it have lost its natural Smell; upon which it becomes dry and pliable.

The Ancients call'd it *Colophony*, from *Colophon* a City in Greece, whence great Quantities were brought. See COLOPHONY.

Oil of PITCH, *Oleum Picinum*, is an Oil procured from Pitch, by separating the aqueous Matter that swims a-top of the melted Pitch.—This for the great Virtues attributed to it also call'd *Balm of Pitch*.

PITCH, in Building, is the Angle, a Gable End, and consequently the whole Roof of a Building, is set to. See GABLE.

If the Length of each Rafter be  $\frac{1}{2}$  of the Breadth of the Building; the Roof is said to be *true pitch*.

If the Rafters are longer, 'tis said to be a *high* or *steep* pitch'd Roof; if shorter, which seldom happens, it is said to be a *low* or *flat* pitch'd Roof. See ROOF, RAFTER, &c.

PITCH is also a Sea-Term.—When a Ship falls with her Head too much into the Sea, or bears against it so as to endanger her Top-Masts, they say, she will *pitch her Masts by the board*.

PITCHING-Pence, a Duty, commonly of one Penny, paid for pitching or setting down every Sack of Corn, or Pack of Merchandize, in a Fair or Market.

PITH, *Pir*, or *Pitre*, the inward, central Part of a Tree, or Plant; answering to the Medulla, or Marrow, of an Animal. See PLANT, TREE, &c.

Some will have the Circulation of the Sap to be effected by means of the Pith; others by the Bark; and others by the Wood. See SAP, CIRCULATION, &c.

PITHIA, and PITHIAN. See PYTHIA and PYTHIAN.

PITT, *Cavea*, of a Theatre, all that Space between the Amphitheatre, or Galleries, and Theatre or Stage; call'd by the Ancients *Orchestra*, and by the French *Pantere*. See THEATRE, &c.

This being the most commodious Part, it was here the Roman Senate was placed. See ORCHESTRA.

It has its Name *Pitt*, in Latin *Cavea*, from its being sunk below the Level of the Stage. See STAGE.

PITTACIUM, *πικτιον*, in Chirurgery, a Name which some Authors give to a little Cloth spread with a Salve, to be laid on a Part affected.

PITTANCE, or PITANCE, *Pirtance*, *Pitanica*, the Commons, or Allowance of Meat, be it Fish, Flesh, or the like, stately eaten at Meals, besides Bread.

The Word is not much used except among Religious, and those who live in College or Community.—*Du Cange* derives it from *Pinebantia*, used in the lower Latin for a Monachal Portion given to two Monks in the same Dish, consisting of something better than Pulse.

Hence we sometimes also find it denote a Meal, or Commons, better than ordinary; such as is allowed in Communities on Feast Days.

Others derive the Word *a pietate*; and others, with *Salmasius*, from *Pittacia*, a Mess, or Portion, allowed the Soldiers, mentioned in several Laws of the *Theodosian Code*.—'Tis added, that the Word *Pittacia* properly signified a Title, or written Label, added a-top of the Vessels, to shew what was within-side, or how it was intended.

PITUITA, one of the four Humours found in the Bodies of Animals, on which their Temperament is commonly supposed to depend. See HUMOUR and TEMPERAMENT.

The Pituita, call'd also Phlegm, is properly the most viscid, and glutinous Part of the Blood, separated in the largest Glands, where the Contortions of the Arteries are greatest, and give the greatest Retardation to the Blood's Velocity; as in the Glands about the Mouth and Head. See SECRETION and PHLEGM.

The Class of Phlegmagogues, as Manna, &c. are supposed to purge Pituita. See PHLEGMAGOGUE, PURGATIVE, MANNA, &c.

The Physicians give several Epithets to the Pituita, according to its Condition or Qualities, as *Saline*, *Pituita Gypsosa*, *Acid*, &c.

The Pituita is supposed to be the prevailing Humour in cold, heavy, slow People, inclined to Seriousness and Study; as the Bile in those inclined to War, &c. See PHLEGMATIC.

The Pituita discharged at the Nostrils, is separated in the Membrane that lines the Cavities of the Nose, Cheeks, &c. See NOSE.

Its Use is to keep the Membrane soft, and defend it from Injuries of extraneous Bodies, especially those of the Air, which passes this Way in Inspiration when the Mouth is shut.



**PITUITARY Gland** is a Gland in the Brain, somewhat difficult to be seen without removing it out of its Place. See BRAIN.

It is of the Size of a very large Pea, in the Sella of the Os Sphenoides, under the Infundibulum, wherewith it communicates; receiving from it a Lympha, or Juice, which the Infundibulum derives from the Plexus Choroides and pitheal Gland; and from this Lympha does the Gland take its Name. See INFUNDIBULUM, &c.

It also filtrates a Juice itself; separating from the Blood, a white Liquor very subtil, and apparently very spirituous. See SPIRITS.

M. Littré observes a Sinus, or Reservoir, of Blood, which touches this Gland; and which is open to it in the Place of Contact, so that the Gland lies partly in the Blood. — This, that Author takes to do the Office of a *Balneum Mariae*, in keeping the Gland in the Degree of Warmth necessary for the Discharge of its Functions.

This Gland is found in all Quadrupeds, Fishes, and Fowls, as well as in Men.

M. Littré gives an Instance of a tedious Disease, and at length Death, arising from an Obstruction and Inflammation of this Gland.

**PIVOT**, a Foot, or Shoe of Iron, or other Metal, usually conical, or terminating in a Point; whereby a Body, intended to turn round, bears on another fix'd at Rest, and performs its Circumvolutions.

Large Gates, &c. usually turn on *Pivots*. — The Ancients tell us, they had Theatres in *Rome* that held Eighty thousand People; which yet turn'd on a single *Pivot*. See THEATRE and AMPHITHEATRE.

**PLACARD**, or **PLACART**, or **PLACAERT**, a foreign Term, frequent in Gazettes, tho' scarce yet naturaliz'd.

It signifies a Leaf, or Sheet of Paper, stretch'd and applied upon a Wall, or Post. — Edicts, Regulations, &c. are to be made publick in *Placards*.

The Word *Placard* is also used for a Libel, or Lampoon. — At *Rome*, *Placards* against the Pope are frequently fix'd in the Night-time, to the Statue of *Pasquin*. See PASQUINADE.

**PLACARD**, in Architecture, the Decoration of the Door of an Apartment; consisting of a Chambranle, crown'd with its Frieze or Gorge; and its Corniche sometimes supported by Consoles. See DOOR.

**PLACARD**, in our Customs, a Licence whereby a Person is permitted to shoot in a Gun, or to use unlawful Game. See GAME.

**PLACE**, *Locus*, in Philosophy, that Part of immovable Space which any Body possesses. See BODY and SPACE.

*Aristotle* and his Followers, divide *Place* into External and Internal.

*Internal Place* is that Space or Room which the Body fills or contains. — *External* is that which includes or contains the Body; call'd by *Aristotle*, the first or concave and immovable Surface of the ambient Body.

'Tis controverted in the Schools, whether *Internal Place* be a real Entity, or only an imaginary Being; i. e. whether it be any thing intrinsically; or only an Aptitude and Capacity of receiving Bodies.

Some maintain it a positive Being, Incorporeal, Eternal, Independant, and Infinite; and assert it to be no other than the Immenfity of the Godhead.

The *Cartesians*, on the contrary, hold *Internal Place*, abstractly consider'd, to be no other than the very Extension of the Bodies contained therein; and therefore in no wise different from the Bodies themselves.

The Schoolmen likewise dispute whether *External Place* be movable or immovable. Its Immobility is argued from this Consideration, that what moves must necessarily leave its *Place*, which it cannot do if it go along with the movable. Others charge an Absurdity on this Opinion of *Aristotle*, viz. That hence it follows, that a Body really at rest is continually shifting *Place*: A Tower, for instance, on a Plain, or a Rock in the middle of the Sea, in regard the one and the other are continually inclosed with new Air or new Water, must be said to be in Motion, or to change *Place*.

To solve this Difficulty, and ward off the Absurdity which follows from *Aristotle's* laying down *External Space* as immovable; infinite Expedients have been had recourse to. — The *Scorists* contend for *Place's* being immovable, by Equivalence. — Thus, when the Wind blows, the Air which invests the Surface of the Tower does indeed recede, but then other similar and equivalent Air takes place. — The *Thomists* chuse to deduce the Immobility of *External Place*, from keeping the same Distance from the Center, and the Cardinal Points of the World. — The *Nominalists*, from a Correspondence with certain virtual Parts of the Divine Immenfity.

The *Cartesians* deny *External Place* to be either a surrounding Surface, or a Body surrounded, or a mean Term

between the two; and conceive it to be the Situation of a Body among adjacent Bodies consider'd as at rest. — Thus the Tower shall be deem'd to remain in the same *Place*, tho' the ambient Air be changed, since it retains the same Situation, with regard to the neighbouring Hills, Trees, and other Parts of the Earth.

Sir *Isaac Newton* better and more intelligibly distinguishes *Place* into *Absolute* and *Relative*.

*Absolute* and *Primary Place* is that Part of infinite and immovable Space which a Body possesses. See ASSURANCE.

*Relative* or *Secondary Place* is the Space it possesses consider'd with regard to other adjacent Objects. — Dr. *Clarke* adds another kind of *relative Place*, which he calls *relatively common Place*, and defines it that part of any movable or measurable Space which a Body possesses, which *Place* moves together with the Body. See MOTION.

*Place*, Mr. *Locke* observes, is sometimes likewise taken for that Portion of infinite Space possess'd by the material World; tho' this, he adds, were more properly call'd Extension. See EXTENSION.

The proper Idea of *Place*, he says, is the relative Position of any thing, with regard to its Distance from certain fix'd Points; whence we say, a thing has or has not chang'd *Place*, when its Distance is not alter'd with respect to those Bodies.

For the *Vision* of *PLACE*. See VISION.

**PLACE**, in Opticks, or *Optic PLACE*, is the Point to which the Eye refers an Object. See OPTIC.

Thus the Points D and E (*Tab. Optics, fig. 68.*) to which two Spectators in D and E refer the Object C, are call'd *Optic Places*. See VISION.

Here, if a right Line joining the *Optic Places* D and E, be parallel to a right Line passing thro' the Eyes of the Spectators A, B; the Distance of the *Optic Places* D, E will be to the Distance of the Spectators A and B, as the Distance of one of the *Optic Places* from the *Place* of the Object E C, to the Distance of the other Spectator from the same Object A C.

*Optic PLACE* of a Star, is a Point in the Surface of the Mundane Sphere, as C or B, (*Tab. Astronomy Fig. 27.*) wherein a Spectator in E, or T, sees the Center of the Star S. See STAR and PLANET.

This is divided into *true* and *apparent*.

*True* or *real Optic PLACE* is that Point of the Surface of the Sphere, B, wherein a Spectator, placed in the Center of the Earth C, sees the Center of the Star or Phænomenon. — Or a Point among the fix'd Stars, determined by a Line drawn from the Center of the Earth, through that of the Star, and terminated in C among the Stars. See SPHERE.

*Apparent* or *visible Optic PLACE* is the Point of the Surface of the Sphere, wherein a Spectator, placed on the Surface of the Earth E, sees the Center of the Star S. — Or a Point found by a Line passing from the Spectator's Eye through the Star, and terminated in the Sphere of the Stars.

The Distance between the two *Optic Places* is what we call the *Parallax*. See PARALLAX.

**PLACE** of the Sun, a Star, or Planet, simply, denotes, the Sign and Degree of the Zodiack, which the Body is in. See SUN, STAR, &c.

Or, it is that Degree of the Ecliptic, reckoned from the Beginning of *Aries*, which the Planet's, or Star's Circle of Longitude cuts; and therefore coincides with the Longitude of the Sun, Planet, or Star. See LONGITUDE.

As the Sine of the Sun's greatest Declination,  $23^{\circ} 30'$ : to the Sine of any present Declination given or observed, v. g.  $23^{\circ} 15'$ : : so is Radius : 10. To the Sine of his Longitude  $81^{\circ} 52'$ ; which if the Declination were North, would give  $20^{\circ} 52'$  of *Gemini*, If South  $20^{\circ} 52'$  of *Capricorn*, for the Sun's *Place*. See PLANET.

*Moon's PLACE* is that Point of her Orbit wherein she is found at any Time. See MOON and ORBIT.

This, by reason of the great Inequalities in the Lunar Motions, which render a Number of Equations and Reductions necessary e'er the just Point be found, is of various kinds; viz. her *fictitious Place*, which is the Moon's *Place* once equated; her *Place nearly true*, which is her *Place* twice equated; and the Moon's *true Place*, which is her *Place* thrice equated. See EQUATION.

*Eccentric PLACE* of a Planet in its Orbit, is the *Place*, or Point of its Orbit, wherein a Planet would appear if seen from the Sun.

Thus suppose NEOR the Ecliptic, NPOQ the Planet's Orbit, the Sun in S, the Earth in T, and the Planet in P: the right Line SP expresses the *Eccentric Place* in the Orbit.

*Heliocentric PLACE*, of a Planet, or its *PLACE* reduced to the Ecliptic, or the *Eccentric Place* in the Ecliptic, is that Point of the Ecliptic to which a Planet, view'd from the Sun, is referr'd. See HELIOCENTRIC.

This coincides with the Longitude of a Planet view'd from the Sun. See LONGITUDE.

Thus



Thus the right Line RS (*same Fig.*) designs the *Heliocentric Place*, or *Place* reduc'd to the Ecliptic.

*Geocentric Place* is that Point of the Ecliptic, to which a Planet view'd from the Earth is referr'd. See *GEOCENTRIC*.

Thus, *NEOR* (*same Fig.*) representing the Ecliptic, &c. *TR* will represent the *Geocentric Place*.

*Place* of Radiation, in Optics, is the Interval, or Space in a Medium or transparent Body, thro' which any visible Object radiates. See *RADIATION*, &c.

*Place*, in Geometry, is a Line used in the Solution of Problems; more usually call'd by the *Latin* Name *Locus*.

See the Doctrine of *Geometrical Places*, under the Article *Locus*.

*Place*, in War, is a general Name for all kinds of Fortresses, where a Party may defend themselves; and may be defined to be a *Place* so disposed, as that the Parts which encompass it defend and flank one another. See *FORT* and *FORTIFICATION*.

A *strong Place*, is a *Place* flank'd and cover'd with Bastions. See *BASTION*.

*Regular Place*, is that whose Angles, Sides, Bastions, and other Parts are equal; and is usually denominated from the Number of its Angles, as a *Pentagon*, a *Hexagon*, &c. See *PENTAGON*, *HEXAGON*, &c.

*Palma nova*, built by the *Venetians*, is a *Dodecagon*. See *DODECAGON*.

*Irregular Place* is that whose Sides and Angles are unequal.

*Place* of Arms, in Fortification, is a strong City, or Town, pitch'd upon for the chief Magazine of an Army. See *ARMS*.

*Place* of Arms in a City, is a large open Spot of Ground, where the Garrison holds its Rendezvous at Reviews, and in Cases of Alarm, to receive Orders from the Governor. See *GARRISON*.

*Place* of Arms in a Siege is a spacious Place cover'd from the Enemy, where the Soldiers are kept ready to sustain those at work in the Trenches, and to be commanded to the Places where they are wanted.

*Place* of Arms particular, in a Garrison, is a Place near every Bastion, where the Soldiers, sent from the grand Place to the Quarters assigned them, relieve those that are either upon the Guard, or in fight.

*Place* of Arms without, is a Place allowed to the Covert Way, for the planting of Cannon, to oblige those who advance in their Approaches to retire.

*Place* of Arms in a Camp, is a large Space at the Head of the Camp, for the Army to be rang'd in and drawn up in Battalia.

There is also a *Place* for each particular Body to assemble in. See *CAMP*.

*Place* of Arms of a Troop, or Company, is the Spot of Ground on which the Troop, or Company, is drawn up. See *TROOP*, &c.

*Place*, among Logicians, Orators, &c. is the Seat of an Argument, or that from which it is taken. See *ARGUMENT* and *TOPIC*.

There are two sorts of *Places*, viz. *Inartificial* and *Artificial*.—The first, the *Place* of Testimony, Authority, &c. The second, that of Reason; as when we argue from Universals; *e. gr.* from Genus, Species; from Causes, as the End, Efficient, Matter, Form, &c.

*Common Place*. See *COMMON Place*.

*Place* of Units, Tens, &c. See *UNIT* and *NUMERATION*.

*PLACENTA*, in Anatomy, a softish Mass, found in the Womb of a pregnant Woman; wherein the Ancients supposed, the Blood was purified and prepared for the Nourishment of the Fœtus. See *FOETUS*.

Hence they also call'd it *Hepar Uterinum*, the Liver of the Womb; as if it did the Office of a Liver in preparing the Blood. See *LIVER*.

It is call'd by the Moderns *Placenta*, *q. d.* *Cake* or *Cheese-Cake*; because in Form of a Cake.

The *Placenta* is supposed by some to be only a Mass of coagulated Blood; for in the pressing, or washing it, it dissolves; and its real Use to be, to serve as a Pillow for the Umbilical Vessels to rest on. See *UMBILICAL*.

Its Figure is not unlike that of a Plate without Brims; three quarters of a Foot over, and sometimes a Foot. It is round, generally Concave or Convex. The Concave Side adheres to the Uterus, and is uneven, having divers Protuberances and Pits, by which it makes Impressions upon, and receives them from, the Uterus.—Its Place in the Uterus, whatever some pretend, is not certain.

In Women, unless in case of Twins, &c. there is but one: However, the Number generally answers the Number of the Fœtus.—In some Brutes, especially Oxen or Sheep, they are very numerous, sometimes near an hundred, even for one Fœtus, small, and resembling pretty large conglomerate Glands.

From the external or concave Side, which likewise has its Protuberances, tho' cover'd with a smooth Membrane, issue the Umbilical Vessels, which are in great Plenty distributed thro' the whole Substance of it. See *UMBILICAL*.

Some even imagine this Part to be nothing else but a Plexus of the Vein and Arteries; by whose Extremities opening into the Sides of the Hypogastrick Vessels, the Circulation is perform'd between the Mother and the Fœtus; for that side of the *Placenta*, which adheres to the Womb, appears to be nothing but the Extremities of an infinite Number of small Threads, which, in Labour, dropping out of the Pores in the sides of the Hypogastrick Blood-Vessels, into which they had insinuated themselves, is the occasion of the flowing of the Lochia, 'till the Uterus collapses, or the Pores, by the natural Elasticity of the Vessels, contract by Degrees. See *LOCHIA*.

'Tis a great Dispute among the Anatomists of the Royal Academy of Paris, whether the *Placenta* have any external Coat, whereby it is connected to the Womb.—M. Mer maintains it has none; and that nothing hinders the Blood of the Mother from passing out of the Womb into the *Placenta* and thence to the Fœtus: In which Opinion he is seconded by M. Robault. Mess. Vieussens and Winslow maintain the contrary; in a subsequent Memoir M. Robault endeavours to shew, that the *Placenta* is no particular Part, but only a Portion of the Chorion condens'd or thicken'd. See *CHORION*.

*PLACITA*, Pleas, a Term frequent in our Laws and Customs. See *PLEA*.

Originally, *Placita* signified certain publick Assemblies, of all Degrees of Men, wherein the King presided, and where the great Affairs of the Kingdom were consulted upon.

These Assemblies were call'd *Placita generalia*; because *Generalitas universorum majorum tam Clericorum quam Laicorum ibidem conveniebat*.—And, hence, the Decrees, Ordinances, Sentences, &c. of the Assembly were also call'd *Placita*.

*Sim. Dunelmensis* tells us they were held in the open Fields; for, says he, *Nullam oportet Regem in literis assignare curiam, quia ubi rex judicat in aperto, ibi est Curia sua*. See *COURT* and *CURIA*.

Some will have these *Placita generalia*, and *Curia Regis*, to be much the same with what we now call a *Parliament*. See *PARLIAMENT*.

The Lords Courts came hence also to be call'd *Placita generalia*, tho' oftener *Curie generales*; because all their Tenants and Vassals were obliged to appear in them. See *LORD VASSAL*, &c.

We also meet with *Placitum nominatum*, for the Day appointed a Criminal to appear in and make his Defence, *Leg. Hen. I.*—And *Placitum fractum*, *i. e.* when the Day is laps'd.

My Lord Coke derives the Word a *placendo*, *quia bene placitare super omnia placet*. Indeed this seems a very fanciful Definition; and others have more Reason in deriving it from the *German Plats*, or the *Latin Plateis*, Fields, or Streets, where these Assemblies were originally held.

*PLACITARE*, in the old Law-Books, signifies to plead Causes. See *PLEADING*.

*Mos placitandi ante conq. estum, fuit coram aldermanno, & proceribus, & eorum Hundredariis, sc. Baronibus, Majoribus, Melioribus, Senioribus & Urbanis*. *Ms. in Bibl. Cott. sub Tit. Vitellius*.

Hence, *Placitator*, a Pleader.—*Ralph Flambard* is recorded to be *totius Regni Placitator*, in *William* the second's Time.

*PLACITUM*, in Law, a Sentence of the Court; or an Opinion, Ordinance, or Decree. See *SENTENCE*, *DECREE*, *CANON*, &c.

*PLAFOND*, or *PLATFOUND*, in Architecture, the Ceiling of a Room, whether it be flat or arched; lin'd with Plaster, or Joiners-Work, and frequently enriched with Paintings, &c. See *CEILING*.

*PLAFOND* is also more particularly used for the Bottom of the Projecture of the Larmier of the Corniche; call'd also *Soffit*. See *SOFFIT* and *LARMIER*.

*PLAGIARY*, in Philology, *Author-Theft*; or the Practice of purloining other Peoples Works, and putting them off for a Man's own.

Among the *Romans*, *Plagiarius* was properly a Person who bought, sold, or retain'd, a free Man for a Slave; so call'd, because the *Flavian* Law condemned such a Person to be whipp'd, *ad plagam*. See *SLAVE*.

*Thomasius* has an express Treatise *de plagio literario*; wherein he lays down the Laws and Measures of the Right which Authors have to one anothers Commodities.—*Dictionary-Writers*, at least such as meddle with Arts and Sciences, seem exempted from the common Laws of *Astum* and *Tuum*; they don't pretend to set up on their own bottom, nor to treat you at their own Cost.

Their Works are supposed, in great Measure, Assemblages of other Peoples; and what they take from others they do it avowedly, and in the open Sun.—In effect, their Quality gives



gives them a Title to every thing that may be for their purpose, wherever they find it; and if they rob, they don't do so, otherwise, than as the Bee does, for the publick Service. Their Occupation is not pillaging, but collecting Contributions; and if you ask them their Authority, they'll produce you the Practice of their Predecessors of all Ages and Nations. See DICTIONARY.

**PLAGUE, PESTIS, PESTILENCE**, a very acute, destructive, malignant, and contagious Disease; usually proving mortal. See DISEASE.

The *Plague* is commonly defined by a malignant Fever; but *Diemerbroek* thinks the two ought to be distinguished; the Fever not being the Essence, but only a Symptom, or Effect, of the *Plague*. See FEVER.

The *Plague* is reckoned by *Dr. Lister*, and many others, as an Exotic Disease, never bred or propagated in *England*, but always imported from abroad, and particularly from the *Coasts of Asia* the lesser, *Egypt*, &c. where it is familiar.—*Sydenham* observes, that it rarely infests *England* oftener than once in 40 Years; but, thro' the Mercy of God, 'tis now 60 Years since we have been visited.

The Origin, and Cause of the *Plague* has been a celebrated Subject of Controversy among Physicians.—The Disorder is generally supposed to be communicated by the Air; but now, and in what manner the Air becomes thus deadly, is the Question. Some will have Insects the Cause of *Plagues* as of Blights; which being brought in Swarms from other Parts by the Winds, are taken into the Lungs in Respiration, mix with the Blood and Juices, and attack and corrode the Viscera. See BLIGHT.

*Mr. Boyle* attributes it principally to the Effluvia or Exhalations breathed into the Atmosphere, from noxious Minerals. See EXHALATION, &c.

The Air, in effect, is depraved in far more Places than improved, by being impregnated with subterraneous Expirations.—Indeed among the Minerals known to us, there are many more noxious than wholesome; and the Power of the former to do Mischief, is more efficacious than of the latter to do good, as we guess by the small Benefit Men receive in point of Health, by the Effluvia of any Mineral or other known Fossil, in comparison of the great and sudden Damage often done by the Expirations of Orpiment, Sandarack, and white Arsenic. See POISON.

Amongst the various sorts of Particles wherewith the Atmosphere is replete, some may be so small, and solid, or so conveniently shaped, as to enter many of the numerous Orifices of the minute Glandules of the Skin, or at other Pores thereof. Thus, tho' neither Paper, nor Bladder, be pervious to the Elastic Parts of the Air; yet may either of them be easily penetrated by other Corpuscles of the Atmosphere; and *Mr. Boyle* has prepared a dry Body, which being inclosed in either, would, without wetting or discolouring or any ways sensibly altering them, pass in a trice thro' the Pores thereof, in such Plenty, as to exert a manifest Operation on Bodies placed at some Distance beyond them.

This is confirmed from the sudden Check almost every Summer given to the *Plague* at *Grand Cairo*; for since morbid Causes operate more effectually than curative ones, it seems more than probable, that Exhalations ascending from under Ground, may produce pestilential Fevers, and the *Plague* itself; since the Corpuscles which impregnate the *Egyptian* Air upon the swelling of the *Nile*, put a speedy stop not only to the Contagion, but to the Malignity of the *Plague*, assisted even by the Summer's Heat, which there is excessive. See INUNDATION.

'Tis possible there may be noxious Minerals in a Country, that are not often able to produce Pestilences; they may be in Strata, or Beds, so deep, that even a small Earthquake shall not affect them, tho' a more violent Shock may. See STRATA, EARTHQUAKE, &c.

And hence may we account for the *Plague's* raging in some Parts of *Africa* once in thirty, or once in a hundred Years; since there may be periodical Paroxysms, or grand and vehement Commotions in subterranean Parts, tho' not yet observed in them.

'Tis probable peculiar kinds of venomous Exhalations may sometimes be emitted, especially after Earthquakes; and thus occasion mortal Diseases in Animals of one kind and not of another, and in this or that Place, and not elsewhere.—*Fernelius* gives us an Account of a *Plague*, or Murrain, in 1514, which invaded none but Cats. *Dionysius Halicarnassensis* mentions a *Plague* which attacked none but Maids: And that which raged in the Time of *Gentilis* killed scarce any Women, and very few but lusty Men. *Boterus* mentions another *Plague*, which assaulted none but the younger sort; and we have Instances of the same kind of a later standing. *Cardan* speaks of a *Plague* at *Basil*, with which the *Switzers*, and not the *Italians*, *Germans*, or *French* were infected; and *Joh. Utenhovius* takes notice of a cruel *Plague* at *Copenhagen*, which, tho' it raged among the *Danes*, spared the *Germans*, *Dutch*, and *English*, who went with all Freedom, and without the least Danger, to the Houses of the infected.

The *Plague*, according to *Sydenham*, usually begins with a Chilliness, and shivering, like the Access of an intermitting Fever; then comes on a Nausea, with vehement Vomiting, an intense Pain about the Region of the Heart, as if pinch'd in a Press, and a burning Fever, which continually preys on the Patient, 'till either Death, or the Eruption of some Bubo, Parotis, or other Tumor, in the Inguina or Axillæ, or behind the Ears, relieve him, and discharge the Matter of the Disease. Sometimes, indeed, it attacks without any Fever; purple Spots appearing all at once; the certain Signs of present Death; but this rarely happens except at the beginning of some terrible *Plague*. It has also been known to make its first Appearance in Tumors, without any Fever, or other violent Symptom.

Heaviness, Pain in the Stomach Head and Back, Cardialgy, broken Sleep, Anxiety, Alteration in the Look, Difficulty of breathing, Hiccough, Syncope, Delirium, convulsive Twitchings, Diarrhæa, Eyes sunk or inflamed, Tongue black and dry, vehement Drought, fetid Breath, Carbuncles, Spots livid purple green, &c. are also Symptoms usually attending this Disease.

A great deal depends on the Circumstances of the Tumors, or *Plague Sores*: as they appear, and increase, the Fever abates; and as they sink, or diminish, renews again. When they happen about the Time of the Crisis, and suppurate kindly, they are good Prognosticks of a happy Recovery. See CRISIS.

In Acute Diseases, says *Hippocrates*, Prognosticks are ever fallacious. However, in the terrible *Plague* at *Nimeguen*, *Diemerbroek*, who attended the Sick through the whole Progress thereof, relates, That those taken ill about New and Full Moon rarely escaped; that Faintings, Swoonings, and Palpitations of the Heart, were usually deadly Signs; an intermitting Pulse always mortal; Drowsiness, Sneezings, tremulous Motions, Doting, sore Throat, &c. were ill Omens: Pleurifies, always mortal; Costiveness a good Sign; a Diarrhæa almost constantly fatal: Bloody Stools or Urines always presaged ill.

As to the Cure, Physicians are much divided. It is generally attempted with Alexipharmachicks and Cardiacs, with the Assistance either of Sudorifics, or Phlebotomy, or both.—Many eminent Physicians, both ancient and modern, highly commend Blood-letting; *Sydenham*, particularly, says, that if used copiously, and in time, it never yet did harm; but that Sudorifics often prove pernicious: *Diemerbroek*, on the contrary, with other very experienced Writers, protest against Phlebotomy as very dangerous, and often deadly; The chief Hopes they build in Diaphoretics and Sudorifics; Emetics and Purgatives are absolutely forbid: and yet *Dr. Sayer* used the former with good Success, in the Beginning of the Disease in the *Plague* at *London*, Ann. 1640. See ALEXIPHARMIC, &c.

The Juice of Lemons is commended as of singular Efficacy in the *Plague*, and pestilential Fevers. *Piso* relates that it is the principal Remedy of the *Indians*, and protests he never knew any thing come up to it. *Dr. Harris* observes that the same is what the *Turks* have principally Recourse to.—Camphor is also much extoll'd. This, *Etmuller* assures us, was the Basis of *Heinsius's* Antipestilential Oil, who had a Statue erected to him when dead, in the City of *Verona*, for the Service he had done hereby.—It was prepared of equal Quantities of Camphor, Citron Bark, and Amber.—The Viperine Salt and Rob of Elder-Berries are also commended.

For Preservatives against this Disease, they are usually summ'd up in the popular Distich;

*Hæc tria labificam tollunt abverbia pestem,  
Atrox, longe, tarde, cedo, recede, redi.*

Canteries, and especially Issues, and Setons in the Inguina, are found of great Service in preserving from Infection. A Piece of Myrrh held in the Mouth in contagious Places, is also commended. But *Diemerbroek* assures, that there is nothing better in this Intention, than smoking Tobacco; but he adds, that it was only so to such as had not made the Practice familiar to them. The other Preservatives used by that great Author, were the *Rad. Helenii*, Cardomums; White-Wine Vinegar, and Chearfulness; and when he found his Spirits low, as if the Disease were taking Possession, a Cup of generous Wine, sometimes to a Degree of Drunkenness.

**PLAGUE Water, Aqua Epidemica**, is one of the Compound Waters of the Shops. See WATER.

**PLAIN**, an Epithet applied to various Things, generally importing them to be smooth, even, level, or superficial, or simple, or obvious, or the like.

In this Sense the Words stand opposed to rough, solid, labour'd, enrich'd, &c.

It is a Maxim in Heraldry, that the plainer the Coat the nearer to Antiquity.—Plain Coats are such as are least encumber'd. See COAT, &c.



**PLAIN Figure**, in Geometry, is an uniform Surface, from every Point of whose Perimeter, right Lines may be drawn to every other Point in the same. See **FIGURE**; see also **PLANE** and **SURFACE**.

**PLAIN Angle** is an Angle contain'd under two Lines, or Surfaces. See **ANGLE**.

It is so call'd in contradistinction to a solid Angle. See **SOLID**.

**PLAIN Triangle** is a Triangle included under three right Lines, or Surfaces; in opposition to a spherical, and a mixt Triangle. See **TRIANGLE**.

**PLAIN Trigonometry** is the Doctrine of plain Triangles, their Measures, Proportions, &c. See **TRIGONOMETRY**.

**PLAIN Glass, Mirror, &c.** in Optics, is a Glass or Mirror, whose Surface is flat or even. See the **Phænomena** Laws of plain Mirrors, under the Article **MIRROR**.

**Plain Mirrors** are what we popularly call *Looking-Glasses*; see the manner of grinding, polishing, and preparing them, under the Article *Looking-Glass* **GRINDING**.

**PLAIN Tyle.** See **TYLE**.

**PLAIN Scale**, is a thin Ruler, whereon are graduated the Lines of Chords, Sines, Tangents, Secants, Leagues, Rhumbs, &c. of ready Use in most Parts of the Mathematicks, chiefly in Navigation. See **LINE**, &c.

See its Description and Use under the Article **SCALE**.

**PLAIN Chart**, in Navigation, is a Sea-Chart, wherein the Meridians and Parallels are represented by parallel straight Lines; and where, of Consequence, the Degrees are the same in all the Parallels of Latitude.

See the *Properties, Construction, &c.* of this **Chart** under the Article **CHART**.

**PLAIN Sailing**, in Navigation, is the Art of working the several Cases and Varieties in a Ship's Motion, on a plain Chart. See **PLAIN CHART**.

*Plain Sailing* is founded on the Supposition of the Earth being a Plane or flat; which, tho' notoriously false, yet Places being laid down accordingly, and a long Voyage broke into many short ones; the Voyage may be tolerably perform'd by it, near the same Meridian.

In *Plain Sailing* it is imagined, that by the Rhumb-Line, Meridian, and Parallel of Latitude, there always will be formed a Right-angled Triangle; and that so posited, as that the Perpendicular may represent Part of the Meridian, or North and South Line, containing the Difference of Latitude: The Base of the Triangle, represents the Departure; and the Hypothenuse the Distance sailed.—The Angle at the Top is the Course, and the Angle at the Base the Complement of the Course; any two of which, with the Right-Angle being given, the Triangle may be protracted, and the other three Parts found. See **TRIANGLE**.

For the *Doctrine of Plain Sailing*, see **SAILING**.

**PLAIN Table**, in Geometry, &c. an Instrument used in the Surveying of Land; whereby the Draught, or Plan, is taken on the Spot, without any future Protraction or plotting. See **SURVEYING**, **PLOTTING**, &c.

The *Plain Table*, represented *Tab. Surveying, Fig. 31.* consists of a Parallelogram of Wood, about 15 Inches long and 12 broad; round this goes a Boxen jointed Frame, by means whereof a Sheet of Paper is fasten'd tight to the Table, so as Lines may be conveniently drawn upon it.

On each side the Frame, which may be put on either side upwards, towards the inward Edge, are Scales of Inches, subdivided, for the ready drawing of Parallel Lines.—Beside which, on one side are projected the 360 Degrees of a Circle, from a Brass Center in the middle of the Table, (each Degree halved) with two Numbers to every 10th Degree, the one expressing the Degree, the other its Complement to 360, to save Subtraction: On the other side are projected the 180 Degrees of a Semicircle, from a Brass Center in the middle of the Table's Length, and at  $\frac{1}{2}$  of its Breadth; each Degree halv'd, and every Tenth noted with two Numbers, viz. the Degree and its Complement to 180°.

To one side of the Table is fitted a Compass, for placing the Instrument by; and the whole is fix'd by a Socket, upon a three legg'd Staff for a Stand, on which it is turn'd round, or fasten'd by a Screw, as occasion requires.—Lastly, to the Table belongs an Index, which is a Ruler at least 16 Inches long, and 2 broad; and usually graduated with Scales, &c. and having two Sights perpendicularly placed on its Extremities. See **SIGHT**, **STAFF**, **BALL**, and **SOCKET**, &c.

#### Use of the P L A I N-Table.

To take an Angle by the Plain Table: Or to find the Distance of two Places accessible from the same third.—Suppose *DA, DS* (*Tab. Surveying, fig. 32.*) the sides of the Angle required; or *AB* the Distance required. Place the Instrument horizontally as near the Angle as possible; and assume a Point in the Paper on the Table, v. g. *C*. To this Point apply the Edge of the Index, turning it about this and that way, 'till thro' the Sights you see the Point *B*, and in this Situation of the Ruler, draw by its Edge the Line *C E*

indefinitely. After the same manner turn about the Index, on the same Point, 'till thro' the Sights you see the Point *A*; and draw the right Line *cd* indefinitely.—Thus have you the Quantity of the Angle laid down.

Measure the Lines *c A, c B*, with a Chain; (see **CHAIN**) and from a Scale, set off the Measures thus found, (see **SCALE**) on the respective Lines; which suppose to reach from *c* to *a*, and from *c* to *b*.—Thus will *cb* and *ca* be proportional to *c B* and *c A*.

Transfer the Distance *ab* to the same Scale, and find its Length; the Length thus found, will be the Length, or Distance, of *AB* required.

2° To find the Distance of two Places, one whereof is inaccessible, by the Plain Table.—Suppose the Distance required *AB*; (*Fig. 33.*) and *A* the accessible Point 1° Place the Plain Table in *C*; look thro' the Sights 'till you see *A* and *B*; and draw *ac* and *cb*. Measure the Distance from your Station to *A*; and set it off from the Scale, upon *ca*. 2° Remove the Table to *A*, where place it so, as that the Point *a* representing *A*, and the Index laid along the Line *ac*, you see, backwards, the former Station *C*. (*Note*, in this fixing the Instrument, lies the Use of the Compass; for the Needle will hang over the same Degree of the Card in the first and the second Case; so that some set the Instrument by the Needle alone; others only use it to shorten the Trouble, by bringing the Instrument nearly to its due Position by means thereof; and then fixing for good by the Back-Sight.) 3° The Instrument fix'd, turn the Sights to *B*; and draw the Line *ab*. 4° On the Scale, measure the Interval *ab*; which will be the Distance of *AB* required.

3° To find the Distance of two inaccessible Places by the Plain Table.—Suppose the Distance of *AB* (*Tab. Surveying, Fig. 34.*) required. 1° Choosing two Stations in *C* and *D*; in the first *C*, place the Plain Table; and thro' the Sights look to *D, B* and *A*; drawing by the Edge of the Index, the Lines *cd, cb, ca*.—2° Measure the Distance of the Stations *CD*; and set this off, from a Scale, on *cd*.—3° Removing the Table from *C*, fix it in *D*; so as the Point *d* hanging over the Place *D*, and the Index lying along the Line *cd*, thro' the Sights you see the former Station *C*. The Instrument thus fix'd, direct the Sights to *A* and *B*, and draw the right Lines *da* and *db*. Lastly, find the Distance of *ab*, on the Scale; this will be the Distance of *AB* required.

After the same Manner, may the Distance of any Number of Places be found from two Stations; and thus may a Field, part of a Country, &c. be survey'd.

4° To take the Plot of a Field from one Station, whence all the Angles may be seen; with the Plain Table.—Placing the Instrument in the Station, assume a Point in the Paper, to represent the same, v. g. *C*. (*Fig. 21.*) Laying the Edge of the Index to this Point; direct it to the several Angles of the Field, *ABCDEF, &c.* and draw indefinite Lines by its Edge, towards every Angle, viz. *Ca, Cb, Cc, &c.* measure the Distance of each Angle from the Station, viz. *CA, CB, CC, CD, &c.* and from a Scale set it off from *C* on its corresponding Line; the Extremities hereof will give Points, which being connected by Lines will represent the Field.

5° To take the Plot of a Field, Wood, or the like, by going round the same; with the Plain Table.—Place the Instrument horizontally at the first Angle, v. g. *A*. The Needle on the Meridian of the Card; and assuming a Point on the Paper, to represent it, to that Point lay the Index, directing it 'till thro' the Sights you see a Mark in the Angle *B*. And draw an indefinite Line along it; measure the Distance of *A* and *B*, and from a Scale set it off on the Line thus drawn; the Extremity of this Distance will represent the Point *B*. Remove the Instrument to *B*, where set it so as that the Needle hang over the Meridian of the Card; and so on the Index lying along the Line last drawn, you see the former Station *A* thro' the Sights: here fasten it, lay the Index to the Point *B*, and turn it, 'till thro' the Sights you see the next Angle *C*; in this Situation draw a Line as before, measure the Distance *BC*, and set it off from a Scale on the Line.—Remove the Instrument to *C*, where, fixing it by the Needle, and the Back-Sight, as before, turn the Index on the Point *C*, 'till you see the next Angle *D*; draw the Line, measure, and set off the Distance *CD* as before, and remove the Plain Table to *E*; where fix it, as before, look to the next Angle *F*, draw the Line, measure, and set off the Distance, &c.

In this manner having compass'd the whole Field, you'll have its whole Perimeter plotted on the Table; which may be now cast up and its Contents found, as in the Article of **SURVEYING**.

#### Manner of shifting Paper on the Plain Table.

When in large Parcels of Ground, the Plot is found to exceed the Dimensions of the Plain Table, and to run off from the Paper; the Sheet must be taken off the Table, and a fresh one put on; The way of managing which shifting, is as follows.—Suppose *H, K, M, Z*, (*Fig. 35.*) the Limits of the



*Plain Table*; so that having laid down the Field from A to B, thence to C and D; you want room, the Line DE running off the Paper: Draw as much of the Line DE as the Paper will well hold, viz. DO. And by means of the Divisions on the Edge of the Frame, draw the Line PQ thro' O, parallel to the Edge of the Table HM; and thro' the Point of Intersection O, draw ON parallel to MZ. This done, take off the Frame, remove the Sheet, and clap a fresh one on it in its stead; drawing on it a Line RS near the other Edge parallel thereto. Then lay the first Sheet on the Table, so as the Line PQ lie exactly on the Line RS, to the best Advantage, as at O. Lastly, draw as much of the Line OD, on the fresh Sheet, as the Table will hold; and from O continue the Remainder of the Line D, to E. From E proceed with the Work as before to F, G, and A.

*Use of the Plain Table, as a Theodolite, Semicircle, or Circumferentor.*

The great Inconveniency of the *Plain Table* is, that its Paper renders it impracticable in moist Weather. Even the Dew of the Morning and Evening is found to swell the Paper considerably, and of consequence to stretch and distort the Work.—To avoid this Inconvenience, and render the Instrument useful in all Weathers; by leaving off the Paper, and setting up a Pin in the Centre, it becomes a *Theodolite*, a *Semicircle*, or a *Circumferentor*, and practicable like them.

The *Plain Table* stripp'd of its Paper, becomes either a *Theodolite*, or a *Semicircle*, or as that side of the Frame which has the Projection of the Degrees of a Circle, or a *Semicircle*, is turn'd upwards. If it be to serve for a *Theodolite*; the Index, which as a *Plain Table* turns on any Point as a Center, is constantly to turn about the Brass Center Hole in the Middle of the Table.

If for a *Semicircle*, it must turn on the other Brass Center Hole; in both Cases 'tis done by means of a Pin rais'd in the Holes.

When the *Plain Table* is to serve as a *Circumferentor*; screw the Compass to the Index, and both of them to the Head of the Staff, with a Brass Screw-Pin fitted for the Purpose; so as the Staff and Table standing fix'd, the Index, Sights, &c. may be turn'd about and *vice versa*.

To take an Angle by the *Plain Table*, considered as a *Theodolite*.—Suppose the Quantity of the Angle EKG (Fig. 20.) required. Place the Instrument at K, the *Theodolite* Side of the Frame upwards, laying the Index on the Diameter. Turn the whole Instrument about, the Index remaining on the Diameter, 'till thro' the Sights you spy E. Screw the Instrument fast there, and turn the Index on its Center, 'till thro' the Sights you spy G.

The Degree here cut on the Frame by the Index, is the Quantity of the Angle sought; which may be laid down on Paper by the Rules of common Protraction. See PROTRACTION.

Thus may you proceed to do every thing with the *Plain Table*, as with the common *Theodolite*. See THEODOLITE.

To take an Angle with a *Plain Table*, considered as a *Semicircle*.—Proceed in the same manner with the Instrument consider'd as a *Semicircle*, as when considered as a *Theodolite*; only laying the Semicircular Side upwards, and turning the Index on the other Center Hole in the middle of the Length, and at about  $\frac{1}{4}$  of the Breadth of the Table. See SEMICIRCLE.

To take an Angle with the *Plain Table*, considered as a *Circumferentor*.—Suppose the former Angle EKG required. Place the Instrument at K, the Flower-de-luce towards you. Direct the Sights to E, and observe the Degree cut by the South End of the Needle which suppose 296. Turn the Instrument about, the Flower-de-luce still towards you, and direct the Sight to G, noting the Degree cut by the other End of the Needle, which suppose 182. Subtract the less from the greater, the Remainder 114° is the Quantity of the Angle sought. If the Remainder chance to be more than 180° then it must be again subtracted from 360. This second Remainder will be the Angle required; which may be protracted, &c. as under the Article PROTRACTION.

Thus may you proceed to do every thing with the *Plain Table*, as with the common *Circumferentor*. See CIRCUMFERENTOR.

*PLAIN Number*, is a Number that may be produced by the Multiplication of two Numbers into one another.—Thus 20 is a *plain Number*, produced by the Multiplication of 5 into 4. See NUMBER.

*PLAIN Problem*, in Mathematicks, is such an one, as cannot be solved Geometrically, but by the Intersection either of a Right Line and a Circle; or of the Circumferences of two Circles. See PROBLEM.

Such is the Problem following.—Given, the greatest Side, and the Sum of the other two Sides, of a Right-angled Triangle; to find the Triangle.—Such also is this, To describe a Trapezium that shall make a given Area of four given

Lines. Such Problems can only have two Solutions, in regard a Right Line can only cut a Circle, or one Circle cut another in two Points.

*PLAIN Place*, in Geometry, *Locus planus*, or *Locus ad planum*, a Term which the ancient Geometricians used for a Geometrical Locus, when it was a right Line, or a Circle; in opposition to a solid Place, which was an Ellipsis, Parabola, or Hyperbola.

These *plain Loci* the Moderns distinguish into *Loci ad rectam*, and *Loci ad Circulum*. See LOCUS.

*PLAIN*, in Heraldry, is sometimes used for the Point of the Shield, when coup'd square; a Part remaining under the Square, of a different Colour, or Metal, from the Shield.

This has been sometimes used as a Mark of Bastardy, and call'd *Champagne*: For when the legitimate Descendants of Bastards have taken away the Barr, Fillet, or Traverse bore by their Fathers, they are to cut the Point of the Shield, with a different Colour call'd *Plain*. See BASTARD, DIMINUTION.

*PLAIN*, or *PLANE*, in Perspective, in Mechanics, Astronomy, &c. See PLANE.

*PLAIN T*, in Law, is the propounding or exhibiting any Action, real or personal, in Writing. See ACTION.

Hence, the Party making this *Plaint*, is call'd Plaintiff. See PLAINTIFF.

*PLAINTE*, in the ancient Customs of France, was a Request, or Petition, presented to the King, against the Judges of the Provinces, and afterwards against Bailiffs and Seneschals; for denying Justice, or for rendering Judgment contrary to the Laws of the Realm.

For in those Days there was no Appeal from their Decisions; but they all pronounced at the last hand: So that the *Plainte* was not directed against the Party, but against the Judge; who was ajourn'd to see his own Sentence declared null.

This was a kind of Supplement to the Way of Appeals, which was then shut up.—These *Plaines*, in the Capitularies of Charlemagne, are call'd *Blasphemia*.

*PLAIN T I F F*, in Law, he that sues, or complains, in an Assize, or in an Action personal; as, in an Action of Debt, Trespass, Deceit, Detinue, and the like. See ACTION.

*PLAISTER*, in Building. See PLASTER, MORTAR, &c.

*PLAISTER*, in Medicine. See EMPLASTER.

*PLAIT*. See FOLD.

*PLAN*, a Representation of something drawn on a Plane. See PLANE; see also MAP, CHART, &c.

Such are Maps, Charts, Ichnographies, &c. See PLANISPHERE.

*PLAN*, in Architecture, &c. is particularly used for a Draught of a Building, such as it appears, or is intended to appear, on the Ground; shewing the Extent, Division, and Distribution of its Area into Apartments, Rooms, Passages, &c. See BUILDING.

The *Plan* is the first Device or Sketch the Architect makes; it is also call'd the *Ground-Plot*, *Plot-Form*, and *Ichnography* of the Building. See ICHNOGRAPHY, &c.

The *Geometrical Plan* is that wherein the solid and vacant Parts are represented in their natural Proportion.

*Rais'd Plan* is that where the Elevation, or Upright, is shewn upon the *Geometrical Plan*, so as to hide the Distribution. See ELEVATION.

*Perspective Plan* is that conducted and exhibited by Degradations, or Diminutions, according to the Rules of Perspective. See PERSPECTIVE.

To render the *Plans* intelligible, 'tis usual to distinguish the Massives with a black Wash. The Projectures on the Ground are drawn in full Lines, and those supposed over them in dotted Lines. The Augmentations or Alterations to be made, are distinguished by a Colour different from what is already built; and the Feints of each *Plan* made lighter as the Stories are rais'd.

In large Buildings 'tis usual to have so many several *Plans* for the first three Stories.

For the *Perspective* of a *PLAN*. See PERSPECTIVE.

*PLANCERE*, in Architecture, the under Part of the Corona, or Drip; making the superior Part of the Cornice, between two Cymatiums. See CORONA, CORNICE, &c.

*PLANE*, or *PLAN*, *PLAIN*, *PLANUM*, in Geometry, a *plain Figure*; or a Surface, lying evenly between its bounding Lines. See PLAIN.

*Wolfius* defines it a Surface, from every Point of whose Perimeter a Right Line may be drawn to every other Point in the same.

As the right Line is the shortest Extent from one Point to another; so is a *Plane* the shortest Extension between one Line and another. See LINE and SPACE.

*PLANS* are frequently used in Astronomy, &c. for imaginary Surfaces, supposed to cut, and pass thro' solid Bodies; and on this Foundation it is that the whole Doctrine of Conic Sections and of the Sphere turn. See SECTION.

When



When a *Plane* cuts a *Cone* parallel to one of its sides, it makes a *Parabola*; when it cuts the *Cone* parallel to its Base, it makes a *Circle*. See *CONICKS*.

The *Sphere* is wholly explained by *Planes*, imagin'd to cut the *Celestial Luminaries*, and to fill the *Areas* or *Circumferences* of their *Orbits*. See *SPHERE*.

Astronomers shew, that the *Plane* of the *Moon's Orbit* is inclined to the *Plane* of the *Earth's Orbit*, or the *Ecliptic*, by an Angle of about 5 Deg. and passes thro' the *Center* of the *Earth*. See *ORBIT*.

The *Intersection* of this *Plane* with that of the *Ecliptic*, has a proper *Motion* of 3' 11" each *Day*, from *East* to *West*; so that the *Nodes* answer successively to all the *Degrees* of the *Ecliptic*, and make a *Revolution* round the *Earth* in about 19 *Years*. See *NODE*.

The *Planes* of the *Orbits* of the other *Planets*, like that of the *Ecliptic*, pass thro' the *Center* of the *Sun*.—The *Plane* of the *Orbit* of *Saturn*, is inclined to the *Ecliptic* by 2° 33' 30", and cuts it, at present, in the 22d *Degree* of *Cancer* and *Capricorn*. See *INCLINATION*; see also *MOON* and *PLANET*.

The *Centre* of the *Earth*, then, being in the *Plane* of the *Moon's Orbit*, the *Circular Section* of that *Plan* in the *Moon's Disk*, is represented to us in *Form* of a *Right Line* passing thro' the *Center* of the *Moon*.—This *Line* is inclined to the *Plane* of the *Ecliptic* by 5° when the *Moon* is in her *Nodes*: But this *Inclination* diminishes as that *Planet* recedes from the *Nodes*; and at three *Degrees* distance, the *Section* of the *Moon's Orbit* in its *Disk*, becomes parallel to the *Plane* of the *Ecliptic*. The same *Appearances* attend the primary *Planets*, with regard to the *Sun*.

But the *Case* is very different in the *Planets* seen from one another, especially from the *Earth*.—The *Planes* of their *Orbits* only pass thro' the *Center* of the *Earth* when they are in their *Nodes*: In every other *Situation*, the *Plane* is rais'd above the *Orbit* of the *Planet*, either to the *North* or the *South*. And the *Circular Section* of the *Plane* of the *Orbit* on its *Disk*, or in the *Orbit* of one of its *Satellites*, does not appear a *Right Line*, but an *Ellipsis*, broader or narrower as the *Earth* is more or less elevated above the *Plane* of the *Orbit* of the *Planet*.

**PLANE**, in *Mechanicks*.—A *Horizontal PLANE*, is a *Plane* level or parallel to the *Horizon*. See *HORIZON*.

The determining how far any given *Plane*, &c. deviates from a *Horizontal* one, makes the whole *Business* of *Leveling*. See *LEVELLING*.

*Inclined PLANE*, in *Mechanicks*, is a *Plane* which makes an *oblique Angle* with an *Horizontal Plane*. See *OBLIQUE*.

The *Doctrine* of the *Motion* of *Bodies* on *Inclined Planes* makes a very considerable *Article* in *Mechanicks*; the *Substance* whereof is as follows:

#### *Laws of the Descent of Bodies on an INCLINED PLANE.*

If a *Body* be placed on an *inclined Plane*, its relative *Gravity* will be to its absolute *Gravity*, as the *Length* of the *Plane*, e. gr. *AC* (*Tab. Mechanicks*, *Fig. 58.*) to its *Height* *AB*. See *GRAVITY*.

Hence, 1° Since the *Ball D* only gravitates on the *inclined Plane*, with its relative *Gravity*; the *Weight L*, applied in a *Direction*, parallel to the *Length* of the *Plane*, will retain or suspend it, provided its *Weight* be to that of the *Ball*, as the *Altitude* of the *Plane* *BA* is to its *Length* *AC*.

2° If the *Length* of the *Plane* *CA* be taken for the whole *Sine*; *AB* will be the *Sine* of the *Angle* of *Inclination* *ACB*.—The absolute *Gravity* of the *Body*, therefore, is to its respective *Gravity* applied on the *inclined Plane*; and therefore, also, the *Weight D* to the *Weight L* acting according to the *Direction* *DA* which sustains it; as the whole *Sine* to the *Sine* of the *Angle* of *Inclination*.

3° Hence the respective *Gravities* of the same *Body* on different *inclined Planes*, are to each other as the *Sines* of the *Angle* of *Inclination*.

4° The greater therefore the respective *Gravity* is, the greater is the *Angle* of *Inclination*.

5° As, therefore, in a vertical *Plane*, where the *Inclination* is greatest, viz. perpendicular, the respective *Gravity* degenerates into absolute; so in a horizontal *Plane*, where there is no *Inclination*, the respective *Gravity* vanishes.

II. To find the *Sine* of the *Angle* of *Inclination* of a *Plane*, on which a given *Power* will be able to sustain a given *Weight*.—Say, as the given *Weight*, is to the given *Power*, so is the whole *Sine* to the *Sine* of the *Angle* of *Inclination* of the *Plane*. Thus, suppose a *Weight* of 1000 be to be sustained by a *Force* of 50; the *Angle* of *Inclination* will be found 2° 52'.

III. If the *Weight L* descend according to the perpendicular *Direction* *AB*, and raise up the *Weight D* in a *Direction* parallel to the *inclined Plane*; the *Height* of the *Ascent* of *D* will be to that of the *Descent* of *L*, as the *Sine* of the *Angle* of *Inclination* *C*, to the whole *Sine*.

Hence, 1° The *Height* of the *Descent* *CD* of the *Weight L* is to the *Height* of *Ascent* *DH* of the *Weight D*, reciprocally as the *Weight D* to the equivalent *Weight L*.

2° Since then  $CDL = DH \cdot D$ , and the *Actions* of the equiponderating *Bodies* *D* and *L* are equal; the *Moments* of the *Weights* *D* and *L* are in a *Ratio* compounded of their *Masses*, and *Altitudes*, thro' which they ascend or descend in a *Plane*, either inclined or perpendicular.

3° The *Powers* that raise *Weights* thro' *Altitudes* reciprocally proportional to them, are equal.—This *Des Cartes* assumes as a *Principle* whereby to demonstrate the *Powers* of *Machines*. Hence we see why a loaded *Waggon* is drawn with more *Difficulty* on an *inclined* than an *horizontal Plane*; as being press'd with a *Part* of the *Weight* which is to the whole *Weight* in a *Ratio* of the *Altitude* to the *Length*.

IV. *Weights* *E* and *F*, equiponderating upon *inclined Planes* *AC* and *CB* of the same *Height* *CD*, are to each other as the *Lengths* of the *Planes* *AC* and *CB*.

*S. Stevinus* gives a very pretty *Demonstration* of this *Theorem*, which, for its *Easiness* and *Ingenuity*, we shall here add.—Put a *Chain*, whose *Parts* do all exactly weigh in *Proportion* to their *Length*, over a *Triangle*, *GIH*: (*Fig. 59.*) 'Tis evident the *Parts* *GK* and *KH* do balance each other. If then *IH* did not balance *GI*, the præponderating *Part* would prevail; and there would arise a perpetual *Motion* of the *Chain* about *GIH*; but this being absurd, it follows, that the *Parts* of the *Chain* *IH* and *GI*; and consequently all other *Bodies* which are as the *Lengths* of the *Planes* *IH* and *I*, *G* will balance each other.

V. A heavy *Body* descends on an *inclined Plane*, with a *Motion* uniformly accelerated. See *ACCELERATION*.

Hence, 1° The *Spaces* of *Descent* are in a duplicate *Ratio* of the *Sines*, and likewise of the *Velocities*; and therefore in equal times increase according to the unequal Numbers 1, 3, 5, 7, 9, &c.

2° The *Space* pass'd over by a heavy *Body* descending on an *inclined Plane*, is subduple of that which it would pass over in the same *Time*, with the *Velocity* it has acquired at the *End* of its *Fall*.

3° Heavy *Bodies*, therefore, descend by the same *Laws* on *inclined Planes*, as in perpendicular *Planes*. Hence it was, that *Gallileo*, to find the *Laws* of perpendicular *Descent*, made his *Experiments* on *inclined Planes*, in regard of the *Motions* being slower in the latter than the former; as in the following *Theorem*.

VI. The *Velocity* of a heavy *Body* descending on an *inclined Plane*, at the *End* of any given *Time*; is to the *Velocity* which it would acquire in falling perpendicularly, in the same *Time*; as the *Height* of the *inclined Plane* is to its *Length*.

VII. The *Space* pass'd over by a heavy *Body* on an *inclined Plane* *AD*, (*Fig. 60.*) is to the *Space* *AB*, it would pass over in the same time in a perpendicular *Plane*: As its *Velocity* on the *inclined Plane* is to its *Velocity* in the perpendicular *Descent*, at the *End* of any given time.

Hence, 1° The *Space* pass'd over in the *inclined Plane*, is to the *Space* it would descend in the same time in the perpendicular *Plane*, as the *Altitude* of the *Plane* *AB* to its *Length* *AC*; and therefore as the *Sine* of the *Angle* of *Inclination* to the whole *Sine*.

2° If, then, from the *Right Angle* *B*, a *Perpendicular* be let fall to *AC*;  $AC : AB :: AB : AD$ . So that in the same time wherein the *Body* would fall perpendicularly from *A* to *B*; in an *inclined Plane* it will descend from *A* to *D*.

3° The *Space*, therefore, of perpendicular *Descent* being given in the *Altitude* of the *Plane* *AB*; by letting fall a *Perpendicular* from *B* to *AC*, we have the *Space* *AD* to be pass'd over in the same time on the *inclined Plane*.

4° In like manner, the *Space* *AD*, pass'd over on the *inclined Plane*, being given; we have the *Space* *AB*, thro' which it would descend perpendicularly in the same time, by raising a *Perpendicular* meeting the *Side* of the *Plane* in *B*.

5° Hence in the *Semicircle* *ADEFB*, the *Body* will descend thro' all the *Planes* *AD*, *AE*, *AF*, *AC*, in the same time; viz. in that time wherein it would fall thro' the *Diameter* *AB*, supposing that perpendicular to the horizontal *Plane* *LM*.

VIII. The *Space* *AD*, pass'd over in an *inclined Plane* *A*, being given; to determine the *Space* which would be pass'd over in any other *inclined Plane* in the same time.

From the *Point* *D* erect a *Perpendicular* *DB*, meeting the *Altitude* *AB* in *B*; then will *AB* be the *Space*, thro' which the *Body* would fall perpendicularly in that time. Wherefore if from *B* a *Perpendicular* *BE* be let fall to the *Plane* *AF*; *AE* will be the *Space* in the *inclined Plane* which the *Body* will pass over, in the same time wherein it falls perpendicularly from *A* to *B*; and consequently *AD* will be the *Space* in the other *inclined Plane* *AC*, which it passes thro' in the same time.

Hence,



Hence, since AB is to AD, as the whole Sine to the Sine of the Angle of Inclination C. And AB is to AE as the whole Sine to the Sine of the Angle of Inclination F; the whole Sine to the Sine of the Angle of Inclination F; the Spaces AD and AE, which the Body will pass over in the same Time on different inclined Planes, are as the Sines of the Angles of Inclination, C and F, and reciprocally as the respective Gravities on the same Planes. And consequently, reciprocally as the Lengths of Planes equally high AC and AF.—Whence the Problem may be resolved various Ways by Calculation.

IX. The Velocities acquired in the same time on different inclined Planes, are as the Spaces pass'd over in the same Time.—Hence, also, they are as the Sines of the Angles of Inclination C and F; reciprocally as the respective Gravities on the same Planes; and reciprocally as the Lengths of equally high Planes, AC and AF.

X. A Body descending on an inclined Plane AC, when it arrives at the horizontal Line CB, has acquired the same Velocity which it would have acquired in a perpendicular Descent AB, to the same horizontal Line CF.

Hence, 1<sup>o</sup> A heavy Body descending thro' different inclined Planes, AC, AG, AF, has acquired the same Velocity when it arrives at the same horizontal Line CF.

Hence also a Body continuing its Descent thro' several contiguous inclined Planes acquires the same Velocity which it would acquire in descending perpendicularly to the same horizontal Plane.

XI. The Time of Descent along an inclined Plane AC, is to the Time of perpendicular Descent thro' AB, as the Length of the Plane AC, to its Altitude AB: But Times of Descents thro' different inclined Planes equally high AC and AG, are as the Lengths of the Planes.

XII. If the Diameter of a Circle AB, (Fig. 60.) be parallel to the horizontal Line LM; a Body will descend from any Point of the Periphery D, E, or C to B, along an inclined Plane DC, EB, and CB, in the same Time wherein it will descend thro' the Diameter AB. Hence,

XIII. The Descents of a Body thro' a Semicycloid DEF, (Fig. 61.) and thro' any Arch thereof BAK, are always equidurnal, or perform'd in the same Time; on which Principle is built the Doctrine of Pendulums vibrating in a Cycloid. See CYCLOID and PENDULUM.

#### Laws of the Ascent of Bodies on Inclined Planes.

I. If a Body ascend in a Medium void of Resistance, in any Direction, whether perpendicular, or along an inclined Plane; its Motion will be uniformly retarded. See RETARDATION.

Hence, 1<sup>o</sup> A Body ascending either perpendicularly or obliquely, in such a Medium passes over a Space which is subduple of that it would pass over in the same Time on a horizontal Plane, with an uniform Celerity equal to that it has at the Beginning of its Motion.

2<sup>o</sup> Such Spaces, therefore, perform'd in equal Times, decrease in a retrograde Order, as the uneven Numbers 7, 5, 3, 1: and therefore the Ascent is so much impeded; consequently, when the impress'd Force is exhausted, the Body will descend again by the Force of Gravity.

3<sup>o</sup> They are therefore, inversely, as the Spaces describ'd in the same Times by a Body descending thro' the same Altitude.—For, suppose the Time divided into four Parts; In the first Moment, the Body A descends thro' the Space 1, and B ascends thro' 7; in the second, A descends thro' 3, B ascends thro' 5, &c.

4<sup>o</sup> Hence, a Body rising with an impress'd Force, ascends to that Altitude, from which it must fall to acquire that Velocity in falling, wherewith it ascended.

5<sup>o</sup> Hence, by falling it acquires a Force to rise again to the Height whence it fell. See PENDULUM.

II. The Time wherein a Body ascends to a given Altitude, being given; to determine the Spaces pass'd over each Moment.—Suppose the same Body to descend from the same Altitude in the same time; and find the Spaces pass'd over each Moment. (See MOTION.) These, taken inversely, are the same with the Spaces of Ascent required.

Suppose, v. g. a Body projected perpendicularly, to ascend thro' a Space of 240 Feet in 4 Seconds; and the Spaces of Ascent perform'd in the several Times required? If, now, the Body had descended, the Descent in the first Minute had been 15 Feet, in the second 45, in the third 75, in the fourth 105, &c. The Descent therefore will be in the first Moment 105, in the second 75, &c.

III. If a Body descend either perpendicularly thro' DA, (Fig. 61.) or in any other Surface FED, and with the Velocity it has there acquired, again ascend along another Surface DC, at Points equally high, e. gr. at G and H, and Q and D, it will have the same Force and the same Velocity.

Hence, if a Body descend along any Surface, FED, and again ascend along another similar and equal Surface DGC; 'tis the same as if it pass'd over the several Parts of the same Line twice.

Whence, the Times of Ascent and Descent thro' equal Spaces are equal.

On this Principle is founded the Construction and Use of Pendulums. See PENDULUM and OSCILLATION.

PLANE of Gravity, or Gravitation, is a Plane supposed to pass thro' the Center of Gravity of the Body; and in the Direction of its Tendency; that is, perpendicular to the Horizon. See GRAVITY and GRAVITATION.

PLANE of Reflection, in Catoptrics, is a Plane which passes through the Point of Reflection; and is perpendicular to the Plane of the Glass, or reflecting Body. See REFLECTION.

PLANE of Refraction is a Plane drawn thro' the incident and refracted Ray. See REFRACTION.

Perspective PLANE, is a plain pellucid Surface, ordinarily perpendicular to the Horizon, and placed between the Spectator's Eye and the Object he views; thro' which the optic Rays, emitted from the several Points of the Object, are supposed to pass to the Eye, and in their Passage to leave Marks that represent them on the said Plane. See PERSPECTIVE.

Such is the Plane HI; (Tab. Perspective Fig. 1.) some call it the Table, because the Draught, or Perspective of the Object, is supposed to be thereon; others, the Section, from its cutting the visual Rays; and others, the Glass, from its supposed Transparency.

Geometrical PLANE, in Perspective, is a Plane parallel to the Horizon, whereon the Object to be delineated is supposed to be placed.

Such is the Plane LM. (Fig. 1. Tab. Perspective)—This Plane is usually at right Angles with the Perspective Plane.

Horizontal PLANE, in Perspective, is a Plane passing thro' the Spectator's Eye, parallel to the Horizon, cutting the Perspective Plane when that is perpendicular to the Geometrical one, at right Angles.

Vertical PLANE, in Perspective, a Plane passing thro' the Spectator's Eye, perpendicular to the Geometrical Plane; and usually parallel to the Perspective Plane. See VERTICAL.

Objective PLANE, in Perspective, is any Plane situate in the horizontal Plane, whose Representation in Perspective is required. See OBJECT.

PLANE of the Horopter, in Optics, is a Plane that passes thro' the Horopter, AB, (Tab. Optics Fig. 67.) and is perpendicular to a Plane passing thro' the Optic Axes IGH. See HOROPTER.

PLANE of the Projection, in the Stereographic Projection of the Sphere, is the same with the perspective Plane, which see. See also PROJECTION, &c.

PLANE of a Dial, or Dial PLANE, the Surface whereon a Dial is drawn. See DIAL.

We have Horizontal, Vertical, Inclining, Declining, Reclining, Deinclining, Direct, &c. Dial Planes. See INCLINING, DECLINING, RECLINING, DIRECT, &c.

PLANE Glass, Mirror, &c. See PLAIN Glass, Mirror, &c.

PLANE, in Joinery, &c. an Edge-Instrument, used to pare or shave Woods smooth, even, &c.

It consists of a Piece of Wood, very smooth at bottom, serving as a Stock, or Shaft; in the middle whereof is an Aperture, thro' which passes a Steel Edge, or Chissel, obliquely placed, and very sharp, which takes off the Inequalities of the Wood it is slid along.

The Plane acquires various Names according to its various Forms, Sizes and Uses: as, 1<sup>o</sup> The Fore-Plane, which is very long, and is that commonly first used. The Edge of its Iron is not ground streight, but rises with a Convex-Arch in the middle, to bear being set the ranker; its Use being to take off the greater Irregularities of the Stuff, and to prepare it for the Smoothing Plane.

2<sup>o</sup> The Smoothing Plane is short and small, its Iron, fine; it takes off the greater Irregularities left by the Fore-Plane, and prepares the Wood for the Jointer.

3<sup>o</sup> The Jointer is the longest of all; its Edge very fine, not standing out above a Hair's Breadth; it comes after the Smoothing-Plane, and is chiefly intended to shoot the Edge of a Board perfectly streight for jointing smooth Tables, &c.

4<sup>o</sup> The Strike-Block is like the Jointer, but shorter; its Use, to shoot short Joints, &c.

5<sup>o</sup> Rabbet-Plane, used to cut the upper Edge of a Board, strait or square, down into the Stuff; so as the Edge of another, cut after the same manner, may join in with it on the Square; it is also used to strike Fascia's in Mouldings. Its Iron is full as broad as its Stock, that the Angle may cut strait; and it delivers its Shavings at the Sides, not, like the others, at the Top.

6<sup>o</sup> The Plow, a narrow Rabbet-Plane, with the Addition of two Staves, whereon are Shoulders, and on the Shoulders a Fence.—Its Use is to plow a narrow square Groove on the Edge of a Board, &c.

7<sup>o</sup> Moulding-Planes; of these there are various Kinds, to A accommo-



accommodated to the various Forms and Profiles of the Mouldings; (See MOULDING) as the *Round Plane*, the *Hollow*, the *OG*, the *Snipe's Bill*, &c. which are all of several Sizes, from half an Inch to an Inch and half. See MOULDING, &c.

To use the *Moulding Planes* on soft Wood, as Deal, Pear-Tree, &c. they set the Iron to an Angle of  $45^{\circ}$  with the Base or Sole of the Plane. On hard Wood, v. gr. Ebony, Box, &c. they set to an Angle of  $80^{\circ}$ ; sometimes quite upright. To work on hard Wood, the Edge or Basil is ground to an Angle of 18 or 20 Deg: on soft Wood, to an Angle of about  $12^{\circ}$ . For the more acute the Basil, the smoother the Iron cuts; but the more obtuse, the stronger.

PLANE, among Fowlers.—To *plane*, is to fly or hover as a Bird does, without moving its Wings. See FLYING, HAWK and HAWKING.

PLANET, PLANETA, in Astronomy, a Celestial Body, revolving round the Sun as a Centre, and continually changing its Position, with respect to the other Stars; whence its Name *πλανήτης*, Wanderer; in opposition to a fix'd Star. See STAR.

The Planets are usually distinguished into *Primary* and *Secondary*.

The *Primary* PLANETS, call'd also, simply, *Planets*, by way of Eminence, are those which move round the Sun as their proper Center.—Such are *Saturn*, *Jupiter*, *Mars*, the *Earth*, *Venus*, and *Mercury*.

*Secondary* PLANETS are such as move round some *Primary Planet*, as their respective Center, in the same manner as the *Planets* do round the Sun.—Such are the *Moon* moving round our *Earth*; and those others moving round *Saturn* and *Jupiter*, properly call'd *Satellites*. See the Doctrine of *Secondary Planets*, under the Article SATELLITES.

The Planets, or *Primary Planets*, are in Number six; which are again distinguished into *Superior* and *Inferior*.

The *Superior* PLANETS are those further off the Sun than our *Earth* is.—Such are *Mars*, *Jupiter*, and *Saturn*.

The *Inferior* PLANETS are those nearer the Sun than our *Earth*, and situate between the *Earth* and Sun.—Such are *Venus* and *Mercury*. See the Order, Position, &c. of the Planets represented to the Eye, Tab. Astronomy, Fig 44.

The Planets are represented by the same Characters as the Chymists use to represent their Metals by, on account of some supposed Analogy between those celestial and subterraneous Bodies. See METAL and CHARACTER.

*Saturn* is represented by the Character ♄.—This Planet, by reason of its great Distance appears to the Eye with a feeble Light.—It performs its Revolution round the Sun in about 30 Years. See SATURN.

*Jupiter*, mark'd ♃, is a bright resplendent Star, finishing its Course round the Sun in about 12 Years. See JUPITER.

*Mars*, characteris'd ♂, is a ruddy fiery colour'd Planet, finishing its Course in about two Years. See MARS.

*Venus*, ♀, is the brightest of all the Planets, constantly attending the Sun, and never distant from him above 47 Degrees.—It finishes its Course in about seven Months. See VENUS.

When it goes before the Sun, 'tis call'd *Phosphorus*, and *Lucifer*; and when it follows him *Hesperus*. See PHOSPHORUS, &c.

*Mercury*, ☿, a little bright Planet, the Sun's constant Companion, from whose side it never departs above  $28^{\circ}$ , and by that means usually hid in his Splendor.—It performs its Course in about three Months. See MERCURY.

To which we now add, *Tellus*, the *Earth*, mark'd ⊕ or ♂, performing its Course about the Sun, between *Mars* and *Venus*, in the Space of a Year. See EARTH.

From these Definitions, a Person may easily distinguish all the Planets.—For if after Sun-set he see a Planet nearer the East than the West, he may conclude 'tis neither *Mercury* nor *Venus*; and may determine whether 'tis *Saturn*, *Jupiter*, or *Mars*, by the Colour and Light: By which also he may distinguish between *Mercury* and *Venus*.

#### Nature of the PLANETS.

From the several Phases and Appearances of the Planets, they are found to be all perfectly like the Moon; which, we have shewn to be perfectly like our *Earth*; whence it follows, that the Planets, too, are dark, opaque, spherical, &c. Bodies, like our *Earth*. See MOON.

This may be shewn almost a to Demonstration.—1<sup>o</sup> *Venus*, observ'd with a Telescope, is rarely found full, but with variable Phases like those of the Moon; her illumined Part still turn'd towards the Sun, viz. toward the East when she is the Morning-Star, and the West when the Evening-Star.—And the like Phases are observ'd in *Mercury* and *Mars*.

2<sup>o</sup> *Gassendus* first, and after him others, have observed *Mercury* on the Face of the Sun, a-cross which he appeared to pass like a black round Spot. See TRANSIT.—*Norrox* in 1639, also observ'd *Venus* in the Sun; where she made the same Appearance.

3<sup>o</sup> *De la Hire*, in 1700, with a Telescope of 16 Foot, discover'd Mountains in *Venus*, larger than those of the Moon. See MOUNTAIN.

4<sup>o</sup> *Cassini* observ'd two Spots in *Venus*; four in *Mars*, likewise observ'd by *Campani*; and several, at several times, in *Jupiter*: and from his Observations of these Spots found that they had a Rotation round their Axes; and even determin'd the Velocity of that Rotation, or the Period wherein it was effected, v. g. That of *Jupiter*, 9 Hours 56'. That of *Mars* 24 Hours 40'. And that of *Venus*, 24 Hours. That of SPOT.—And since the Sun, Moon, Jupiter, Mars, Venus, and the Earth, are found to revolve on their Axes, i. e. to have a diurnal Rotation; no doubt *Mercury* and *Saturn* have the same; tho' the great Nearness of the former to the Sun, and the great Distance of the latter, prevent any Spots from being observ'd on them, whence that Rotation might be demonstrated.

5<sup>o</sup> In *Jupiter* are observ'd two Swaths, or Belts, brighter than the rest of his Disk, and moveable; sometimes found in one part sometimes in another, sometimes broader sometimes narrower. See BELT.

6<sup>o</sup> In 1609 were first observ'd three little Stars, or Moons, moving about *Jupiter* by *Sim. Marius*; and in 1610 the same were observ'd by *Gallileo*: These are now frequently observ'd to disappear in a clear Sky, when *Jupiter* happens to be diametrically interposed between them and the Sun.—Whence it appears they are void of Light, at such Time when the Sun's Rays, intercepted by *Jupiter*, cannot be propagated to them in right Lines; and hence also, that, like the Moon, they are opaque Bodies, illumined by the Sun; and hence, again, since *Jupiter* does not illumine his Satellites when found behind him, he himself, in that Part turn'd from the Sun, may be argu'd to be void of Light.

7<sup>o</sup> When *Jupiter's* Moons are diametrically interposed between *Jupiter* and the Sun, there is seen a round Spot on *Jupiter's* Disk, which is sometimes larger than the Satellite itself.—Whence it appears, that the Satellites are opaque Bodies, illumined by the Sun, that they project a Shadow upon the Sun, and that the round Spots seen in *Jupiter* are the Shadows of the Satellites. Whence, also, the Interfection of the Shadow being found to be a Circle, the Shadow must be conical; and therefore the Figure of the Satellites, at least as to Sense, is spherical.

8<sup>o</sup> The *Earth* being between *Jupiter* and the Sun; if, at the same time, any of the Satellites happen to be between *Jupiter* and the Sun, it is lost in *Jupiter's* Light; tho' sometimes appearing like a black Spot.—This Phænomenon has been frequently observed by *Cassini* and *Maraldi*, who have likewise noted very considerable Alterations in the apparent Magnitudes of the Satellites; for which no Reason could be given from the Distance of *Jupiter*, the Sun, or the Earth: e. gr. That the fourth, which is usually seen the smallest, is sometimes the largest; and the third, which is usually the largest, sometimes the smallest.—Hence, as the Satellites are illumined by the Sun, even then when immerg'd in *Jupiter's* Light, yet do appear obscure, there must be some Alterations in their Atmospheres, to prevent the Sun's Rays being equally reflected from every Part of their Surface; which must likewise be the Cause why their Shadow is sometimes larger than themselves.

Now, to sum up the Evidence,—1<sup>o</sup> Since in *Venus*, *Mercury*, and *Mars*, only that Part of the Disk illumined by the Sun, is found to shine; and, again, *Venus* and *Mercury*, when between the *Earth* and the Sun, appear like dark Spots or Maculæ, on the Sun's Disk; 'tis evident, that *Mars*, *Jupiter*, and *Mercury*, are opaque Bodies, illumined with the borrow'd Light of the Sun. And the same appears of *Jupiter*, from its being void of Light in that Part to which the Shadow of the Satellites reaches, as well as in that Part turn'd from the Sun; and that his Satellites are opaque, and reflect the Sun's Light, is abundantly shewn. Wherefore since *Saturn*, with his Ring and Satellites, do only yield a faint Light, fainter considerably than that of the fix'd Stars; tho' these be vastly more remote; and than that of the rest of the Planets: 'tis past doubt, he, too, with his Attendants, are opaque Bodies.

2<sup>o</sup> Again, since the Sun's Light is not transmitted thro' *Mercury* and *Venus*, when placed against him; 'tis plain they are dense opaque Bodies; which is likewise evident of *Jupiter*, from his hiding the Satellites in his Shadow; and, therefore, by Analogy, the same may be concluded of *Saturn*.

3<sup>o</sup> From the variable Spots in *Venus*, *Mars*, and *Jupiter*, 'tis evident those Planets have a changeable Atmosphere; which changeable Atmosphere may, by a like Argument, be infer'd of the Satellites of *Jupiter*; and therefore, by similitude the same may be concluded of the other Planets.

4<sup>o</sup> In like manner, from the Mountains observed in *Venus*; the same may be supposed in the other Planets.

5<sup>o</sup> Since then *Saturn*, *Jupiter*, both their Satellites, *Mars*, *Venus*, and *Mercury*, are opaque Bodies, shining with the Sun's borrow'd Light, are furnish'd with Mountains, and encompass'd



encompass'd with a changeable Atmosphere; they have, of consequence, Waters, Seas, &c. as well as dry Land, and are Bodies like the Moon, and therefore like the Earth.

Q. E. D. And hence, nothing hinders but that the Planets may be concluded to be inhabited.

As to the Planetary Inhabitants; *Huygens* in his *Cosmotheoros* argues very plausibly for their Existence, from the similitude of the Planets with our Earth; those, like this, being opaque, dense, uneven, round, heavy, illumined and warm'd by the Sun; having Night and Day, Summer and Winter, &c.

*Wolfius* deduces something relating hereto from Arguments of another kind.—Thus *e. gr.* 'Tis scarce to be doubted, that the Inhabitants of *Jupiter* are much larger than those of the Earth; and in effect of the Giant Kind. For it is shewn in Optics, that the Pupil of the Eye dilates in a strong Light, and contracts in a weak one; wherefore, since in *Jupiter* the Sun's Meridian Light is much feebler than on the Earth, by reason of *Jupiter's* greater Distance from the Sun; the Pupil will need to be much more dilatible in the Inhabitants of *Jupiter*, than in those of the Earth. But the Pupil is observ'd to have a constant Proportion to the Ball of the Eye; and the Eye to the rest of the Body so that in Animals, the larger the Pupil the larger the Eye, and the larger the Body.

To ascertain the Size of these jovial Inhabitants, it may be observ'd that the Distance of *Jupiter* from the Sun, is to the Earth's Distance from the same, as 26 to 5; the Intensity of the Sun's Light in *Jupiter* is to its Intensity on the Earth, in a duplicate Ratio of 5 to 26; but 'tis found by Experience, that the Pupil dilates in a Ratio greater than that wherein the Intensity of Light decreases; otherwise, a Body at a great Distance might be seen as clearly as a nearer: The Diameter, therefore, of the Pupil in its greatest Dilatation, in *Jupiter*, is to its Diameter in the like state in the Earth, in a Ratio greater than that of 5 to 26.—If then we put it, as 10 to 26, or as 5 to 13: since the ordinary Stature of the Inhabitants of the Earth is computed at 5 English Feet, 4 Inches and  $\frac{3}{8}$ ; (which *Wolfius* tells us is his own Height) the ordinary Stature of *Jupiter's* Inhabitants will be found 14 Feet  $\frac{2}{3}$ , which is very nearly the size of the Giant *Og*, mention'd by *Moses*, whose Iron Bed was 9 Cubits long and its Breadth 4. See GIANT.

#### The Motion of the PLANETS.

That the Planets do all revolve round the Sun as their Center, and not round the Earth, is evident from a thousand Phenomena.—1° The Orbit wherein *Venus*, *e. gr.* moves, does certainly encompass the Sun, and therefore in describing that Orbit, the Planet must turn round the Sun. See ORBIT.

That her Orbit includes the Sun, appears hence that she is sometimes above the Sun, sometimes below it, sometimes beyond it, and sometimes on this side; all which are evident from the Circumstances of her Phases. See PHASES.

That she does not move round the Earth is no less apparent from her being ever observed in the same Quarter with the Sun, never receding from him above 45°.—She never therefore comes to be in opposition to the Sun; no, not to be in a Quartile Aspect, or to have a Quarter of the Heavens between them; both which, like the Earth, she must frequently have, did she attend and move round the Earth.

2° That *Mercury* revolves round the Sun appears in like manner from his Phases, which resemble those of *Venus* and the Moon; and from its Neighbourhood to the Sun, from whom *Mercury* never recedes so far as *Venus* does.

3° That the Orbit of *Mars* includes the Sun, is evident from that Planet's being found both in Conjunction and Opposition with the Sun; and in both Cases shining with a full Face.—Indeed, from the same Circumstances it appears, that the Orbit of *Mars* encompasses the Earth; but then, it follows, likewise, from *Mars's* Diameter appearing seven times as big when in Opposition, as when in Conjunction, that he is seven times nearer the Earth, in the latter than the former Position. The Earth therefore is far from being the Center of *Mars's* Motion; but *Mars* is ever nearly at the same Distance from the Sun.—Again, *Mars* view'd from the Earth moves very irregularly; is sometimes seen to proceed slower, sometimes faster; sometimes stands still, sometimes goes backward; (the Reasons whereof, see under the Article OPTIC Irregularity) but view'd from the Sun, will ever appear to move with the same constant uniform Tenor; whence 'tis evident, he respects the Sun, not the Earth, as the Center of his Motion.

4° The same Appearances whence *Mars* is shewn to revolve round the Sun as a Center, are likewise observ'd in *Jupiter* and *Saturn*; whence the same Conclusion may be made of them.

Lastly, that the Earth revolves round the Sun, as a Center, is evident from her Place which we have observ'd to be between the Orbits of *Mars* and *Venus*; and from the Pha-

nomena of the superior Planets view'd therefrom.—If the Earth stood still we should never see those Planets either stationary or retrograde; the Earth therefore moves, but it is still found between the Orbits of *Mars* and *Venus* which encompass the Sun; therefore the Earth too encompasses the Sun.

To this Astronomical Demonstration, may be added a Physical Demonstration, of the Earth's Motion from *Sir Isaac Newton*.—It appears from abundant Observation, that either the Earth turns round the Sun, or the Sun round the Earth, so as to describe equal Area's in equal times: But he demonstrates, that Bodies revolving about one another by such Law, do of Necessity gravitate towards each other. (See GRAVITATION. Whence if the Sun gravitate to the Earth, Action and Re-action being still equal, the Earth will likewise gravitate toward the Sun. (See RE-ACTION.) But he proves, further, that two Bodies gravitating towards each other, without directly approaching one another in right Lines, must both of them turn round the common Center of Gravity of both.—The Sun and Earth, therefore, do both revolve round one common Center.—But the Earth being but a Point in comparison of the Sun, the common Center of Gravity of the two, will be within the Sun's Body, and not far from its Center.—The Earth, therefore, revolves round a Point, within the Body of the Sun; and therefore round the Sun. See EARTH and SUN.

The Orbits of the Planets are all Ellipses; one of whose Foci is in the Sun.—This, *Kepler* first found from *Tycho's* Observations; before him all Astronomers took the Planetary Orbits for eccentric Circles. See ORBIT, ELLIPSIS, ECCENTRIC.

The Planes of these Orbits do all intersect in the Sun; nor are their Extremities far a-part.—In effect, they are but little inclined to one another; and the greatest Angle any of them makes with the Plane of the Earth's Orbit, *i. e.* of the Ecliptic, is that of *Mercury*, which lies at an Angle of 6° 52'; that of *Venus* is 3° 23'; that of *Mars* 1° 52'; that of *Jupiter* 1° 20'; and that of *Saturn* 2° 30'.

The Line wherein the Plane of each Orbit cuts that of the Earth, is call'd the Line of the Nodes; and the two Points wherein the Orbits themselves touch that Plane, the Nodes. See NODE.

The Distance between the Center of the Sun, and the Center of each Orbit, is call'd the Eccentricity of the Planet. See ECCENTRICITY.

And the Angle at which each Plane cuts that of the Ecliptic, the Inclination of the Plane. See PLANE, INCLINATION, and ECLIPTIC.

To account for the Motion of the Planets about the Sun; there needs nothing but to suppose an uniform projectile Motion, in strait Lines, at first given them; and a Power of Attraction or Gravitation, such as we observe in all the great Bodies in our System.—For a Body A, (*Tab. Astronomy, Fig. 6.*) proceeding uniformly along the Line AB; will, by the Intervention of the attracting Body C, be every Moment diverted out of its rectilinear, and bent into a curvilinear, Path; according to the Laws of Central Forces. See CENTRAL Force.

If, then, the projectile Motion be perpendicular to a Line CA, drawn from the attracting Body C; and its Velocity so proportion'd to the Force of Attraction of A, as that the centripetal and centrifugal Forces are equal, *i. e.* that the Conatus to fall to the central Body C, in a right Line, AC; and that to proceed in the Direction of the Tangent, AB, balance each other: The Body will revolve in a circular Orbit AB, *y, s, &c.* See CENTRIPETAL and CENTRIFUGAL.

'Tis not improbable, that at the Beginning, this was the State of things; and that the Velocities impress'd on the several Planets were so combin'd with their respective Masses and Distances from the Sun at which they were to roll; as that their Momenta should counter-balance the Sun's attractive Force, and be precisely counter-balanced thereby: whence the primitive Orbits must have been perfect Circles, from which they don't even now deviate very far; the Eccentricity of the Earth's Orbit being only  $\frac{1}{400}$  of its Semidiameter. See ECCENTRICITY.

If the Planet's projectile Motion be not perfectly adjusted to the Sun's Attraction; the Orbit described will be an Ellipsis.—If it be too swift, the Orbit will be greater than a Circle, and the nearer Focus coincide with the central Body; if too slow, the Orbit will be less than a Circle, and the further Focus coincide with the central Body.

Indeed the Form of the Planetary Orbits, does not only depend on the Adjustment of the first projectile Velocity with the Sun's Attraction, but also on the Direction wherein that Motion was originally impress'd.—If that Direction were according to the Tangent AB, as above supposed, and the central Forces exactly balanced, the Orbit would be circular; but if that Direction were oblique, in any manner, whether ascending to or descending from the Sun, the Planet, notwithstanding any Adjustment of its Velocity to the Attraction, would be an Ellipsis. See PROJECTILE.

The



The Motions of the *Planets* in their elliptic Orbits are not equable, by reason the Sun is not in their Centers but their Focus.—Hence they move, sometimes faster and sometimes slower, as they are nearer or further from the Sun; but yet these Irregularities are all certain, and follow according to an immutable Law.—Thus; suppose the Ellipsis BEP, &c. (Tab. *Astronomy*, Fig. 61.) the Orbit of a *Planet*; and the Focus S, the Sun's Place; AP the Axis of the Ellipsis, is called the *Line of the Apfides*; the Point A the *higher Apfide* or *Aphelion*; P the *lower Apfide* or *Perihelion*; SC the *Eccentricity*; and ES the mean Distance of the *Planet* from the Sun. See APSIS, APHELION, PERIHELION, &c.

Now the Motion of the *Planet* in its Perihelion, is swiftest; in its Aphelion, slowest; at E the Motion as well as the Distance is mean, *i. e.* such as would describe the whole Orbit in the same time it is really described in.

The Law whereby the Motion is regulated in every Point of the Orbit, is, that a *Line*, or *Radius*, drawn from the Center of the Sun to the Center of the *Planet*, and thus carried along, with an angular Motion, does always describe an Elliptic Area proportional to the Time.—Suppose, *e. gr.* the *Planet* in A, and thence in a certain Time to proceed to B; the Space or Area the Ray SA describes, is the Triangle ASB; when, at length the *Planet* arrives at P, if from the Center of the Sun S there be drawn SD, in such manner as that the elliptic Area PSD is equal to that ASB; the *Planet* will here move thro' the Arch PD, in the same time wherein it moved thro' the Arch AB; which Arches are unequal, and nearly in a reciprocal Proportion to their Distance from the Sun. For from the Equalities of the Areas it follows, that the Arch PD must exceed AB as much as SA exceeds SP.

This Law was first demonstrated by *Kepler*, from Observation; and is since accounted for from *Phyicks*: And to this all Astronomers, now, subscribe, as of all others that which best solves the Planetary Phænomena.

#### Computation of a PLANET'S Motion and Place.

As to the Periods and Velocities of the *Planets*, or the Times wherein they perform their Courses; they are found to have a wonderful Harmony with their Distances from the Sun, and with one another. The nearer each *Planet* is to the Sun, the quicker still being its Motion; and its Period the shorter.—The great Law they here all immutably observe is, that the Squares of their periodical Times are as the Cubes of their Distances from the Centre of their Orbits. See PERIOD, DISTANCE, &c.

This Law we owe to the Sagacity of *Kepler*, who found it to obtain in all the primary *Planets*; as Astronomers have since found it to do in the secondary ones. See SATELLITE.

*Kepler* deduced this Law, meerly from Observation and Comparison of the several Distances of the *Planets* with their Periods: The Glory of investigating it from Physical Principles, is due to Sir *Isaac Newton*, who has demonstrated that, in the present state of things, such a Law was inevitable. See GRAVITATION.

A *Planet*'s Motion or Distance from its Apogee, is call'd the mean Anomaly of the *Planet*; and is measur'd by the Arch, or Area, it describes in the Time.—When the *Planet* arrives at the middle of its Orbit, or the Point G, the Distance or Time is call'd the true Anomaly.—When the *Planet*'s Motion is reckon'd from the first Point of *Aries*, 'tis call'd its Motion in Longitude, which is either mean, *viz.* such as the *Planet* would have were it to move uniformly in a Circle; or true, which is that wherewith the *Planet* actually describes its Orbit, and measur'd by the Arch of the Ecliptic it describes. See ANOMALY, LONGITUDE, &c.

Hence may the *Planet*'s Place in its Orbit for any given Time after it has left the Aphelion, be found.—For suppose the Area of the Ellipsis so divided by the Line SG, that the whole elliptic Area may have the same Proportion to the Area ASG as the whole periodical Time wherein the *Planet* describes its Orbit, has to the Time given: In this Case G will be the *Planet*'s Place in its Orbit. See PLACE.

The Phenomena of the inferior *Planets*, are their Conjunctions, Elongations, Stations, Retrogradations, Phases, and Eclipses. See CONJUNCTION, ELONGATION, STATION, RETROGRADATION, &c. under their respective Articles.

The Phenomena of the superior *Planets* are the same with those of the inferior; with an Additional one, *viz.* Opposition. See OPPOSITION, &c.

The particular Phenomena, Circumstances, &c. of each *Planet*, see under the Name of the respective *Planet*, &c.

The general Proportions, Diameters, Surfaces, Solidities, Distances, Gravities, Degrees of Light, &c. of the several *Planets*; see under the Articles SOLAR SYSTEM, DIAMETER, SEMIDIAMETER, &c.

PLANETARY, something that relates to the *Planets*.

In this Sense we say Planetary Worlds, Planetary Inhabitants, &c. See PLANET.

PLANETARY System, is the System, or Assemblage of the *Planets*, primary and secondary, moving in their respective Orbits, round their common Center, the Sun. See SOLAR SYSTEM.

PLANETARY Hours in Chronology. See HOUR.

PLANIMETRY, PLANIMETRIA, that Part of Geometry which considers Lines and plain Figures; without any Consideration of Heights or Depths. See GEOMETRY; see also LINE and FIGURE.

The Word is particularly restrained to the Mensuration of Planes, or Surfaces; in opposition to Stereometry, or the Mensuration of Solids. See MEASURING.

PLANISPHERE, a Projection of the Sphere and the several Circles thereof, on a Plane; as, upon Paper, &c. See PLANE, SPHERE, and PROJECTION.

In this Sense, Maps of the Heavens and the Earth, wherein are exhibited the Meridians, and other Circles of the Sphere, are called Planispheres. See MAP.

PLANISPHERE is sometimes consider'd as an Astronomical Instrument, used in observing the Motions of the heavenly Bodies; consisting of a Projection of the Celestial Sphere upon a Plane, representing the Stars, Constellations, &c. in their proper Situations, Distances, &c. See STAR and CONSTELLATION.

Such is the Astrolabe, which is a common Name for all such Projections. See ASTROLABE.

In all Planispheres, the Eye is supposed to be a Point viewing all the Circles of the Sphere, and referring them to a Plane whereon the Sphere is as it were flatten'd.—This Plane is call'd the Plane of the Projection.

A Perspective Plane is only a Plane of Projection placed between the Eye and the Object, so as to contain all the Points which the several Rays drawn from the Object to the Eye impress thereon. (See PERSPECTIVE Plane.)—But in Planispheres, or Astrolabes, the Plane of the Projection is placed beyond the Object; which is the Sphere.

The Plane of the Projection is always some of the Circles of the Sphere. See CIRCLE.

Among the infinite Number of Planispheres, which the different Planes of Projection, and the different Positions of the Eye, would furnish; there are two or three that have been prefer'd to the rest.—Such are that of *Ptolomy*, where the Plane of Projection is parallel to the Equator.—That of *Gemma Frisius*, where the Plane of Projection is the Colure, or Solstitial Meridian, and the Eye the Pole of the Meridian.—That of *John de Royas*, a Spaniard, whose Plane of Projection is a Meridian, and the Eye placed on the Axis of that Meridian, at an infinite Distance. This last is call'd the *Analemma*. See ANALEMMA.

The common Defect of all these Projections is, that they distort and alter the Figures of the Constellations, so as it is not easy to compare them with the Heavens; and that the Degrees in some Places are so small, that they afford no Room for Operation.

All these Faults *M. de la Hire* has provided against in a new Projection, or Planisphere; where 'tis propos'd the Eye shall be so placed, as that the Divisions of the Circles projected shall be sensibly equal in every Part of the Instrument.—The Plane of his Projection is that of a Meridian.

PLANO-Concave Glass, or Lens, is that, one of whose Surfaces is concave, and the other plain. See GLASS.

The Concavity is here supposed to be spherical, unless the contrary be express'd.—For the Properties, Grinding, &c. of Plano-Concave Lens's, see LENS; see also GRINDING, &c.

PLANO-Convex Glass, or Lens, is that, one of whose Surfaces is convex, and the other plain. See CONVEX.

The Convexity is supposed to be spherical, unless the contrary be express'd. For the Properties, Grinding, &c. of Plano-Convex Lens's. See LENS, &c.

PLANT, PLANTA, an Organical Body, consisting of a Root, essentially, and probably too, a Seed; and producing usually Leaves, a Stem, Branches, and Flowers. See ROOT, &c.

Or, a Plant may be defined, in *Boerhaave*'s manner, to be an Organical Body composed of Vessels and Juices; to which Body belongs a Root or Part whereby it adheres to some other Body, and particularly the Earth, from which it derives the Matter of its Life, and Growth. See VEGETABLE.

A Plant is distinguished from a Fossil by its being organical, and consisting of Vessels and Juices; (See FOSSIL) and from an Animal, by its adhering to another Body, and deriving its Nourishment therefrom. See ANIMAL.

Plant is a general Name, under which are comprized all vegetable Bodies, as Trees, Shrubs, and Herbs. See TREE, SHRUB, and HERB.

From the Observations of *Malpighi*, *Dr. Grew*, *M. Reaume*, *Bradley*, and others, there appears a great Similitude between the Mechanism of Plants, and Animals; the Parts of the former seem to bear a constant Analogy to those of the latter; and the Vegetable and Animal Oeconomy appear both form'd on the same Model.—To give an Idea hereof



hereof, it will be necessary to describe the Parts whereof Plants consist.

### Structure and Oeconomy of PLANTS.

The Parts of Plants are—1<sup>o</sup> The Root, a spongy Body, whose Pores are disposed to admit certain humid Particles prepared in the Ground: On the Size of the Vessels and Pores of the Root, the Quality of the Root as compos'd of to depend.—*Boerhaave* considers the Root as compos'd of a Number of absorbent Vessels, analogous to the Lacteals in Animals. And *M. Reneaume* takes it to do the Office of all the Parts in the Abdomen which minister to Nutrition; as the Stomach, Intestines, &c. See ROOT.

2<sup>o</sup> The Wood, which consists of Capillary Tubes, running parallel from the Root throughout the Stalk.—The Apertures of these Tubules are ordinarily too minute to come under the cognizance of the Eye; unless in a Piece of Charcoal, Cane, or the like. These Tubes *Mr. Bradley* calls Arterial Vessels; it being thro' these that the Sap rises from the Root. See WOOD.

3<sup>o</sup> Beside these, are other larger Vessels, disposed on the out side of the Arterial Vessels between the Wood and the inner Bark, and leading down to the Covering of the Root. These the same Author calls the Venal Vessels, and supposes them to contain the liquid Sap found in Plants in the Spring, &c. See VEIN, SAP, &c.

4<sup>o</sup> The Bark, which is of a spongy Texture, and, by many little Strings passing between the Arteries, communicates with the Pith. See BARK.

5<sup>o</sup> The Pith, or Pecten, which consists of little transparent Globules, chain'd together somewhat like the Bubbles that compose the Froth of Liquor. See PITH.

Add, that the Trunk and Branches of a Tree bear a Resemblance to the exterior Members or Limbs of an Animal, which it may subsist without, tho' their rotting and Mortification frequently occasion a total Destruction thereof.—Accordingly, we find the like Effects from the wounding or lopping of a Tree, as that of a Limb, viz. an Extravasation, Callus, &c.

Now, for the Oeconomy or Use of these Parts.—The Root having imbibed the saline and aqueous Juices of the Earth, and fill'd itself therewith for the Nourishment of the Tree; those are put in Motion by Heat, i. e. are made to evaporate into Steam, which from the Root enters the Mouths of the Arterial Vessels, and mounts to the top with a force answerable to the Heat that puts it in Motion.—By this means it gradually opens the minute Vascules roll'd up in the Buds, and expands them into Leaves.—Now, as all Vapours, upon feeling the Cold, naturally condense; so this, when arrived at the extreme Parts of the Arteries, i. e. the Buds of the Tree, meeting the cold Air condenses into a Liquor, in which Form it returns by its own Weight, thro' the Venal Vessels, to the Root; leaving behind it such Parts of its Juice, as the Texture of the Bark will receive, and requires for its Sustenance.

Thus does the Juice continue to circulate; till the Winter's Cold congealing it into the Consistency of a Gum, it stagnates in the Vessels; in which State it remains till the fresh Warmth of the succeeding Spring puts it in Motion again: upon which it renews its former Vigour, pushes forth Branches, Leaves, &c.

This short View of the Vegetable Oeconomy will bear some further Illustration; there being several curious Points here couched, and, as it were, folded up in *Semine*.—The Principle, then, whereby the Root, after imbibing its Food, determines it to mount upward, contrary to its natural Gravity, is somewhat obscure: Some will have it effected by means of the Pressure of the Atmosphere, in the same manner as Water is rais'd in Pumps: But this is precarious, as being founded on a Supposition that the absorbent Tubules are void of Air; besides, that the Atmosphere could not raise the Juice 32 Foot high, whereas there are Trees much higher. See ATMOSPHERE.—Others have recourse to the Principle of Attraction, and suppose the Power that raises the Sap in Vegetables to be the same with that whereby Water ascends in Capillary Tubes, or in Heaps of Sand, Ashes, or the like; but neither will this alone suffice to raise Water to the Tops of Trees. See ATTRACTION, ASCENT, CAPILLARY, &c.

One would suspect, therefore, that the first Reception of the Food, and its Propagation thro' the Body, were effected by different Means; which is confirmed by the Analogy of Animals. See FOOD, HEART, &c.

The Motion of the Nutricious Juices of Plants is produced much like that of the Blood in Animals, by the Action of the Air; in effect, there is something equivalent to Respiration throughout the whole Plant. See RESPIRATION.

The Discovery of this we owe to the admirable *Malpighi*, who first observed that Vegetables consist of two Series or Orders of Vessels.—1<sup>o</sup> Those abovementioned, which receive and convey the alimential Juices; answering to the Ar-

teries, Lacteals, Veins, &c. of Animals.—2<sup>o</sup> Tracheæ; or Air-Vessels, which are long hollow Pipes, wherein Air is continually received and expelled, i. e. inspired and expired; within which Tracheæ, the same Author shews, all the former Series of Vessels are contained. See TRACHEA.

Hence it follows, that the Heat of the Year, nay, of a Day, of a single Hour, or Minute, must have an effect on the Air included in these Tracheæ, i. e. must rarify it, and consequently dilate the Tracheæ; whence also must arise a perpetual Spring, or Source of Action, to promote the Circulation in Plants. See HEAT, RAREFACTION, &c.

For, by the Expansion of the Tracheæ, the Vessels containing the Juices, are pressed; and by that Means the Juice contained is continually propelled and so accelerated; by which same Propulsion, the Juice is continually comminuted and rendred more and more subtle, and so enabled to enter Vessels still finer and finer; the thickest Part of it being at the same time secreted and deposited into the lateral Cells, or Loculi of the Bark, to defend the Plant from Cold, and other external Injuries. See BARK.

The Juice having thus gone its Stage, from the Root to the remote Branches, and even the Flower; and having in every Part of its Progress deposited something both for Aliment and Defence; what is redundant passes out into the Bark, the Vessels whereof are inosculated with those where in the Sap mounted; and thro' these it redescends to the Root, and thence to the Earth again.—And thus is a Circulation effected. See CIRCULATION of the Sap.

Thus is every Vegetable acted on by Heat during the Day-time, especially while the Sun's Force is considerable; and the Sap-Vessels thus squeez'd and pressed, and the Sap protruded, and raised, and at length evacuated, and the Vessels exhausted: And in the Night again, the same Tracheæ being contracted by the Cold of the Air, the other Vessels are eased and relaxed, and so disposed to receive fresh Food for the next Days Digestion, and Excretion.—And thus Plants may be said to eat and drink in the Night-time. See NUTRITION.

The Vessels or containing Parts of Plants, consist of meer Earth, bound or connected together by Oil, as a Gluten; which being exhausted by Fire, Air, Age, or the like, the Plant moulders, or returns again into its Earth, or Dust.—Thus in Vegetables burnt by the intensest Fire, the Matter of the Vessels is left entire, and indissoluble by its utmost Force; and, consequently, is neither Water, nor Air, nor Salt, nor Sulphur, but Earth alone. See EARTH.

The Juice, or Sap, of a Plant, is a Humour furnished by the Earth, and changed in the Plant; consisting of some fossil Parts, other Parts derived from the Air, and Rain; and others from putrified Animals, Plants, &c. consequently, in Vegetables are contained all kind of Salts, Oil, Water, Earth; and probably all kinds of Metals too, inasmuch as the Ashes of Vegetables, always yield somewhat which the Loadstone attracts. See IRON, MAGNET, &c.

This Juice enters the Plant in Form of a fine and subtle Water, which the nearer it is to the Root, the more it retains of its proper Nature; and the further from the Root, the more action it has sustained, and the nearer it approaches to the Nature of the Vegetable. See DIGESTION.

Consequently, when the Juice enters the Root, the Bark whereof is furnished with excretory Vessels fitted to discharge the excrementitious Part; it is earthy, watry, poor, acid, and scarce oleaginous at all. See SAP.

In the Trunk and Branches it is further prepared; tho' it still continues acid, as we see by the tapping or perforating of a Tree in the Month of February, when it distils a watry Juice apparently acid. See TAPPING.

The Juice being hence carried to the Germs, or Buds, is more concocted; and here having unfolded the Leaves, these come to serve as Lungs for the Circulation and further Preparation of the Juice.—For those tender Leaves being exposed to the alternate Action of Heat and Cold, moist Nights and hot scorching Days, are alternately expanded and contracted; and the more on the account of their reticular Texture. See LEAVES.

By such means the Juice is still further altered and digested; as it is further yet in the Petala, or Leaves of the Flowers, which transmit the Juice, now brought to a further Subtility, to the Stamina.—These communicate it to the Farina, or Dust in the Apices; where having undergone a further Maturation, it is shed into the Pistil; and here having acquired its last Perfection, it give Rises to a new Fruit or Plant. See PETALA, STAMINA, APICES, FARINA, PISTIL, &c.

### Generation of PLANTS.

The Generation of Plants does also bear a close Analogy to that of some Animals; particularly such as want Local Motion; as Mussels, and other immoveable Shell-Fish, which are Hermaphrodites, and contain both the Male and Female Organs of Generation. See HERMAPHRODITE.



The Flower of the *Plant*, for all its Finery, is found to be the Pudentum, or principal Organ of Generation; but the Use of so much Mechanism, and so many Parts has been but little known.—We shall instance in a Tulip.

Its Flower consists of six *Petala*, or Leaves; from the Bottom whereof, at the middle, arises a kind of Tube called the *Pistil*; and around this are disposed pretty fine Threads called *Stamina*, arising likewise from the Bottom of the Flower, and terminating in little Bunches at top, call'd *Apices*, replete with a fine Dust call'd *Farina*.—For the further Explanation of the Parts of Generation see *PISTIL*, *STAMEN*, *FARINA*, &c.

This is the general Structure of the Flowers of *Plants*, tho' diversified infinite Ways, and to such degree, that some have no sensible *Pistil*, others no *Stamina*; others have *Stamina* without any *Apices*; and what exceeds all the rest some *Plants* have no Flowers.—But, allowing the Structure now represented to be, as in effect it is, the most common; and that these Parts which seem wanting are usually only less apparent: The Generation of *Plants*, in general, may be well accounted for.

The Fruit is usually at the Basis of the *Pistil*, so that when the *Pistil* falls, with the rest of the Flower, the Fruit appears in its stead.—Indeed, frequently, the *Pistil* is the Fruit itself; but still they have both the same Situation in the Center of the Flower, whose Leaves disposed around the little Embryo, only seem destined to prepare a fine Juice in their little Vessels, for its Support, during the little Time they last, and it requires: tho' Mr. *Bradley* takes their chief Use to be to defend the *Pistil*, &c.

The *Apices* of the *Stamina* are little *Capsulae*, or Bags full of a *Farina* or Dust, which upon the *Capsulae* growing ripe and bursting, fall out.

M. *Tournefort* took this Dust to be only an Excrement of the Food of the Fruit, and the *Stamina* to be no more than a kind of excretory Ducts, which filtrated this useless Matter, and thus discharg'd the Embryo-*Plant*. But Mr. *Morland*, M. *Geoffroy*, and others, find nobler Uses for this Dust.—According to their System, 'tis this Dust that falling on the *Pistil* fecundifies the Grain or Fruit inclosed therein; and hence they call it the *Farina fecundans*.—Thus the *Farina* should be the Male Part of the *Plant*, and the *Pistil* the Female.

Mr. *Bradley*, at the bottom of the *Pistil* of the Lilly, observes a Vessel which he calls the *Uterus*, or *Womb*, wherein are three Ovaries fill'd with little Eggs, or Rudiments of Seed, like those found in the Ovaria of Animals; which, he adds, always decay and come to nothing, unless impregnated by the *Farina* of the same *Plant*, or some other of the same Kind.—The *Stamina*, he says, serve for the Conveyance of the Male Seed of the *Plant*, to be perfected in the *Apices*; which when ripe, bursting forth in little Particles like Dust, some of them fall into the Orifice of the *Pistil*, and are either conveyed thence into the *Utricle*, to fecundify the female Ova, or lodg'd in the *Pistil*, where, by their magnetic Virtue, they draw the Nourishment from the other Parts of the *Plant* into the Embryo's of the Fruit, making 'em swell, grow, &c.

The Disposition of the *Pistil*, and the *Apices* about it, is always such, as that the *Farina* may fall on its Orifice.—'Tis usually lower than the *Apices*; and when we observe it to be grown higher, we may conjecture the Fruit has begun to form itself, and has no further occasion for the Male Dust. Add to this, that as soon as the Work of Generation is over, the Male Parts, together with the Leaves, fall off, and the Tube leading to the *Uterus* begins to shrink. Nor must it be omitted, that the top of the *Pistil* is always either cover'd with a sort of Velvet Tunicle, or emits a gummy Liquor, the better to catch the Dust of the *Apices*.—In Flowers that turn down, as the *Acanthus*, *Cyclamen*, and the *Imperial Crown*, the *Pistil* is much longer than the *Stamina*; that the Dust may fall from their *Apices* in sufficient Quantity on the *Pistil*.

This System favours much of that admirable Uniformity found in the Works of Nature; and carries with it all the seeming Characteristicks of Truth; but 'tis Experience alone must determine for it.—Accordingly, M. *Geoffroy* tells us, that all the Observations he had ever made, the *Plant* was rendered barren, and the Fruits became abortive, by cutting off the *Pistils* before the Dust could impregnate them; which is since confirm'd by other Experiments of Mr. *Bradley*.

In many kinds of *Plants*, as the Willow, Oak, Pine, Cypress, Mulberry-Tree, &c. the Flowers are sterile, and separate from the Fruit. But these Flowers, M. *Geoffroy* observes, have their *Stamina* and *Apices*, whose *Farina* may easily impregnate the Fruits, which are not far off.

Indeed there is some Difficulty in reconciling this System to a Species of *Plants* which bear Flowers without Fruits, and another Species of the same Kind and Name which bear Fruits without Flowers; hence distinguish'd into *Male* and *Female*: of which kind are the Palm-Tree, Poplar, Hemp, Hops, &c.—For how should the *Farina* of the Male, here come to impregnate the Seed of the Female?

M. *Tournefort* conjectures, that the fine Filaments, Tomentum, or Down, always found on the Fruits of these *Plants*, may serve instead of Flowers, and do the Office of Impregnation.—But M. *Geoffroy* rather takes it, that the Wind, doing the Office of a Vehicle, brings the *Farina* of the Males to the Females.

In this opinion he is confirm'd by a Story in *Jovianus Pontanus*; who relates, That in his Time there were two Palm-Trees, the one Male, cultivated at *Brindes*, the other Female, in the Wood of *Otrantum*, 15 Leagues apart; that this latter was several Years without bearing any Fruit; as it might see (says the Poet) the Male Palm-Tree at *Brindes*, it then began to bear Fruit in abundance.

Here, M. *Geoffroy* makes no doubt, the Tree then only began to bear Fruit, because in a Condition to catch on its Branches the *Farina* of the Male, brought thither by the Wind.

For the manner wherein the *Farina* fecundifies; M. *Geoffroy* advances two Opinions.—1<sup>st</sup> That the *Farina* being always found of a sulphurous Composition, and full of subtle penetrating Parts, (as appears from its sprightly Odour) falling on the *Pistils* of the Flowers; there resolves, and the subtlest of its Parts penetrating the Substance of the *Pistil* and the young Fruit, excite a Fermentation sufficient to open and unfold the young *Plant* inclosed in the Embryo of the Seed.—In this Hypothesis the Seed is supposed to contain the *Plant* in Miniature, and only to want a proper Juice to unfold its Parts and make them grow.

The 2<sup>d</sup> Opinion is, that the *Farina* of the Flower is the first Germ, or Bud of the new *Plant*, and needs nothing to unfold it and enable it to grow, but the Juice it finds prepared in the Embryo's of the Seed.

These two Theories of Vegetable Generation, the Reader will observe, bear a strict Analogy to those two of Animal Generation: viz. either that the young Animal is in the *Semen Masculinum*, and only needs the Juice of the Matrix to cherish and bring it forth; or that the Animal is contained in the Female Ovum, and needs only the Male Seed to excite a Fermentation, &c. See CONCEPTION, GENERATION, &c.

M. *Geoffroy* rather takes the proper Seed to be in the *Farina*; inasmuch as the best Microscopes don't discover the least Appearance of any Bud in the little Embryo's of the Grains, when examined before the *Apices* have shed their Dust.—In leguminous *Plants*, if the Leaves and *Stamina* be removed, and the *Pistil*, or that Part which becomes the Pod, be viewed with the Microscope, e'er yet the Flower be opened; the little green transparent Vesiculae, which are to become the Grains, will appear in their natural Order; but still shewing nothing else but the mere Coat, or Skin of the Grain. If the Observation be continued for several Days successively, in other Flowers, as they advance, the Vesiculae will be found to swell, and by degrees to become replete with a limpid Liquor; wherein, when the *Farina* comes to be shed, and the Leaves of the Flower to fall, we observe a little greenish Speck, or Globule, floating about at large.—At first there is not any Appearance of Organization in this little Body; but in time, as it grows, we begin to distinguish two little Leaves like two Horns. The Liquor diminishes insensibly, as the little Body grows, till at length the Grain becomes quite opake; when, upon opening it, we find its Cavity fill'd with a young *Plant* in Miniature; consisting of a little Germ or *Plumula*, a little Root, and the Lobes of the Bean or Pea.

The manner wherein this Germ of the Apex enters the Vesicula of the Grain, is not very difficult to determine.—For, besides that the Cavity of the *Pistil* reaches from the top, to the Embryo's of the Grains, those Grains, or Vesiculae, have a little Aperture corresponding to the Extremity of the Cavity of the *Pistil*, so that the small Dust, or *Farina*, may easily fall thro' the Aperture into the Mouth of the Vessels, which is the Embryo of the Grain.—This Cavity, or Cicatrice, is much the same in most Grains, and 'tis easily observed in Pease, Beans, &c. without the Microscope. The Root of the little Germ is just against this Aperture, and 'tis thro' this it passes out when the little Grain comes to germinate.

The Process of Nature in the Generation of Vegetables, and the Apparatus she has contrived for that Purpose are so curious, and withal so little and so lately known among us, that we shall illustrate them further with Figures; taking the Melon for our Example, in regard the Parts of Generation are here very distinct.

By the way it must be observed, that tho' the Melon contains both Sexes, yet the Disposition of the Organs differs, here, from the general one above rehears'd in the Instance of the Tulip: In effect, in the Melon are two distinct Flowers; or Blossoms, the one doing the Male Office, the other the Female; which we shall therefore call the *Male* and *Female Flower*.



Fig. 13. (*Tab. Nat. History*) represents the Male Flower, of the Melon, the Leaves being stripp'd from off the Circle FF;—A B E represent the Head, placed in the Center of the Flower, and form'd of the Circumvolutions of the Apices B, and sustained by four Columns G G G G. The Part B of the Head represents the Circumvolutions of the Apices while yet shut; and the Part E represents them open, and covered with the Farina, which they before contained, but which is diffused on the outside when the Plant arrives at Maturity. Each Apex forms a kind of Canal separate by a Partition into two. A Grain of the Farina is represented by D. —Fig. 14. H, in the former Figure, represents the Pedicle that sustains the Flower, and which in the Male-Flower produces nothing.

Fig. 15. represents the Female Flower or Blossom of the Melon, or that which bears the Fruit.—The Leaves are stripp'd off the Circle FF, as before, the better to shew the other Parts. The Knot of the Flower, or the Embryo of the Fruit is represented by A. The Pistil is represented by B B; and is only a Continuation of the Embryo of the Fruit A. The top of the Pistil spreads, in B B, into several oblong Bodies, each separable into two Lobes. These Bodies are very rough, furnish'd with Hairs and little Vesicles proper to catch the Dust of the Male Flower, and to conduct them to the Mouths of the Canals, which communicate as far as the Cells of the Grains contained in the young Fruit. Upon cutting the Pistil transversely in its smallest Part, we find as many Canals as there are Divisions in its Head; which Canals correspond to as many little Cells, each including two Orders of Grains, or Seeds, ranged in a spongy Placenta.

This Doctrine of Generation, affords us a Hint how to alter, improve, &c. the Taste, Form, Flowers, Quality of Fruits, &c. viz. by impregnating the Flower of one, with the Farina of another of the same Class.

To this accidental coupling and intermixing it is, that the numberless Varieties of new Fruits, Flowers, &c. produced every Day; with many other Phænomena in the vegetable Kingdom; are to be ascribed. See MULE.

The Affectation of Perpendicularity observed in the Stalks or Stems of Plants, as well as in their Branches and Roots makes a fine Speculation.—'Tis a Phænomenon never attended to till very lately. The Cause is very subtle, and has employ'd the Wits of several of the present Set of Philosophers, particularly *Astruc, de la Hire, Dodart, and Parent*; see their several Systems under the Article PERPENDICULARITY.

Nor is that constant Parallelism observed in the Tufts of Trees, to the Soil or Ground they grow upon; a Circumstance to be over-look'd. See PARALLELISM.

For the Fecundity of Plants, &c. See FECUNDITY, &c.

#### Distribution of PLANTS.

Plants may be divided, with regard to the manner of their generating, into 1° *Male*, or such as bear no Fruit or Seed, and have only the Male Organ of Generation, viz. the Farina.—Of this kind are the Male Palm-Tree, Willow, Poplar, Hemp, Nettle, and Hop-Tree.

2° *Female*, or such as bear Fruit, and have the female Organ, viz. the Pistil, or Uterus, but want the Farina.—Such are the female Palm, Willow, Poplar, &c.

3° *Hermaphrodites*, or such as have both male and female Parts, the Farina and Pistil.

These are again subdivided into those in whose Flower both Sexes are united; as the Lilly, Gilliflower, Tulip, and much the greater Part of the vegetable Species; whose Pistil is surrounded by the Stamina.—And those whose male and female Parts are distinct, and at a Distance from each other; such is the Rose, whose Uterus is beneath the Petala; the Melon, and all of the Cucumber Kind, which have their male and female Flowers a-part; and all Fruit, Nut, and Mast-bearing Trees, as the Apple, Plum, Gooseberry; the Walnut, Hazle, Philbud, Oak, Beech, Pine, Cypress, Cedar, Juniper, Mulberry, Plantane, &c. which have Catkins.

Plants may be again distinguished, with regard to their Food, and the Element they live in; into—1° *Terrene*, which are those that live only on Land; as Oaks, Beech, &c.

2° *Aquatic*, which live only in Water; either in Rivers, as the Water-Lilly, Water-Plantane, &c. or in the Sea, as the Fucus, Coral, Coralline, &c.

3° *Amphibious*, which live indifferently either in Land or Water; as the Willow, Alder, Minths, &c.

Plants are again distributed, with regard to their Age or Period, into 1° *Annual*, which are those whose Root is form'd and dies in the same Year; such are the leguminous Plants, Wheat, Rye, &c. 2° *Bisannuals*, which only produce Flowers and Seeds, the second or even third Year after their being rais'd, and then die; such are Fennel, Mint, &c. 3° *Perennial*, which are those that never die after they have once bore Seed; of these some are Ever-Greens, as the Asarabacca, Vio-

let, &c. others lose their Leaves one Part of the Year, as Fern, Colts-foot, &c.

Plants again are distinguished with regard to their Magnitude, &c. into; 1° *Trees*, Arbores; as the Oak, Pine, Fir, Elm, Sycamore, &c.—2° *Shrubs*, Suffrutes; as the Holly, Box, Ivy, Juniper, &c. and—3° *Herbs*, as Mint, Sage, Sorrel, Thyme, &c. See TREE, SHRUB, and HERB.—But this Division is rather popular, than just and philosophical.

The Botanists give us more accurate and minute Arrangements, or Distributions, of the Vegetable Kingdom, into Classes, Genera, Species, &c. with regard to their Nature, Characters, &c. 'Tis a Point they are not well agreed upon from what Consideration the Division into Genera is best taken; some, as *Gesner, Columna, Tournefort, &c.* chusing the Flower and Fruit; and others taking in the Roots, Leaves, Stems, &c. See farther under the Article GENUS.

Our ingenious Mr. Ray distributes Plants into 25 Genera, or Classes, under the following Denominations.

1° *Imperfect Plants* which are such as appear to want the Flower and Seed.—Such are, Corals, Sponges; Fungus's, Truffles, Moss. See CORAL, SPONGE, MUSHROOM, TRUFFLE, and MOSS.

2° *Plants producing an imperfect Flower, and whose Seed is too small to be discerned by the naked Eye*;—such are Fern, Polypody, &c. See FLOWER.

3° *Those whose Flowers want Petala*;—such are Hops, Hemp, Nettles, Docks. See PETALA, HOPS, &c.

4° *Those with a compound Flower, and which emit a milky Juice when cut or broke*; as Lettuce, Dandelion, Scurry, &c. See COMPOUND FLOWER.

5° *Those with a compound Flower of a discous Form, and whose Seed is winged with Down*; as Colts-foot, Flea-bane, &c. See WINGED.

6° *Herba capitata*, or those whose Flower is composed of long fistulous Flowers gathered into a round Head, and covered with a scaly Coat; as the Thistle, great Burdock, Blue-bottle, &c.

7° *Corymbiferous Plants* with a discous Flower, but no Down; as the Daisy, Yarrow, Corn-Marygold, &c. See CORYMBUS.

8° *Plants with a perfect Flower, but only one Seed to each Flower*, as Valerian, Agrimony, Burnet, &c.

9° *Umbelliferous Plants*, with a Flower of five Petala; and two Seeds to each Flower, See UMBELLÆ.—This being a large Genus is subdivided into seven Species, viz. those with a broad flat Seed like a Leaf, as wild Garden Parsnip: with a longish and larger Seed, swelling in the middle, as Cow-weed, and wild Chervil: with a shorter Seed, as Angelica: with a tuberos Root, as the Earth-nut: with a small striated Seed, as Caraways, Saxifrage, and Burnet: with a rough hairy Seed, as Parsly, and wild Carrot: with intire Leaves subdivided into Jags, as Senicle, and Thoro-Wax.

10° *Stellate Plants*, whose Leaves grow round the Stalks, at certain Intervals, in form of Stars; as Mug-Weed, Madder, &c. See STELLATE.

11° *Rough leaved Plants*, which have their Leaves placed alternately, or in no certain Order along the Stalks; as Hounds-Tongue, Mouse-Ear, &c.

12° *Suffrutes, or Verticillate Plants*, whose Leaves grow by pairs, on their Stalks, one Leaf right against another, the Flower being monopetalous, and usually in form of a Helmet; as Thyme, Mint, Pennyroyal, Vervain, &c. See VERTICILLATE.

13° *Polypermous*, or those with many naked Seeds, at least five, succeeding their Flower; as Crows-foot, Marsh-Mallows, Cinquefoil, Strawberries, &c. See POLYSPERMIOUS.

14° *Bacciferous Plants*, or such as bear Berries; as Briony, Honey-suckle, Solomon's-Seal, Lilly of the Valley, Nightshade, Asparagus, &c. See BACCIFEROUS, BERRY, &c.

15° *Multisiliquous, or Corniculat Plants*, which after each Flower produce several long slender Siliquæ, or Cases where-in their Seed is contained; as Orpine, Navel-wort, Bears-foot, Columbines, &c. See MULTISILIQUOUS, &c.

16° *Vasculiferous Plants*, or those with a Monopetalous Flower, and which, after each Flower, have a Vessel beside the Calyx, containing the Seed; as Henbane, Bindweed, Rampions, Fox-Glove, Eye-Bright, &c. See VASCULIFEROUS, &c.

17° *Those with an uniform tetrapetalous Flower*, bearing their Seeds in oblong siliquous Cases; as Stockgilly-Flower, Mustard, Radish, &c.

18° *Vasculiferous Plants*, with a seeming tetrapetalous Flower, but of an anomalous or uncertain kind, and in reality only monopetalous, falling off altogether in one; as Speedwell, Fluellin, Plantane, yellow and wild Poppy, &c.

19° *Leguminous Plants*, or such as bear Pulse, with a Papilionaceous Flower, consisting of four Parts joined at the Edges; as Pease, Beans, Vetches, Tares, Lentils, Liquorice, Trefoil, &c. See LEGUMINOUS.



20° *Vasculiferous Plants*, with a *pentapetalous* or five headed Flower; as Maiden-Pinks, Campions, Chickweed, St. Johns-Wort, Flax, Primrose, Wood-Sorrel, &c.

21° *Plants with a true bulbous Root*; as Garlick, Daffodil, Hyacinth, Saffron, &c. See BULB.

22° Those whose *Roots approach nearly to the bulbous Form*; as Flower-de-luce, Cuckoo-pint, Bastard Hellebore, &c.

23° *Culmiferous Plants*, with a grassy Leaf, and an imperfect Flower, having a smooth hollow jointed Stalk, with a long sharp pointed Leaf at each Joint, and the Seeds contained in a chaffy Husk; as Wheat, Barley, Rye, Oats, and most kinds of Grass. See CULMIFEROUS.

24° *Plants with a grassy Leaf, but not Culmiferous*, with an imperfect or stameneous Flower; as Rushes, Cats-Tail, &c.

25° *Plants whose Place of Growth is uncertain*; chiefly Water-Plants, as the Water-Lilly, Milk-Wort, Mouse-Tail, &c.

For the *Transmutation of one Species of Plants into another*. See TRANSMUTATION, DEGENERATION, &c.

The Properties and Virtues of *Plants* have been observed by some Naturalists to bear an Analogy to their Forms.—In the *Philosophical Transactions*, we have a Discourse of Mr. James Pettiver, to shew, That *Plants* of the same or like Figure, have the same or like Virtues and Uses.—Thus, the Umbelliferous Tribe, he observes, have all a Carminative Taste and Smell, are powerful Expellers of Wind, and therefore good in all flatulent Disorders.—The Galleate or Verticillate Kind are a Degree warmer, and more powerful than the last, and therefore may be reputed Aromatick, being proper for Nervous Disorders.—The Tetrapetalous Kind are hot like the two former, but exert their Power in a different Way, viz. by a Diuretick Volatile Salt, which makes them of Use in Chronical Diseases, Obstructions, Cachymias, &c.

PLANTA, in Anatomy, the lowest Part, or Sole of the Foot of Man. See FOOT and SOLE.

PLANTAGNET, in History, an Addition, or Surname, bore by many of our ancient Kings. See SURNAME, &c.

The Term *Plantagenet* has given infinite Perplexity to the Criticks and Antiquaries, who could never settle its Origin and Etymology.—'Tis allowed it first belonged to the House of Anjou, and was brought to the Throne of England by Henry II. where his Male Posterity preserved it till the Time of Henry VII. a Space of above 400 Years.

'Tis disputed who it was that first bore the Name. Most of our English Authors conclude, that our Henry II. inherited it from his Father Geoffrey V. Earl of Anjou, Son of Fulk V. King of Jerusalem, who died in 1144.—This Geoffrey they will have the first of the Name; and our Henry II. the Issue of Geoffrey by Maud only Daughter of Henry I. the second.

Yet Menage will not allow Geoffrey to have bore the Name; and in effect the old Annalist of Anjou, J. Bourdigne, never calls him so.—The first, Menage adds, to whom he gives the Appellation, is Geoffrey third Son of this Geoffrey V.

Yet must the Name be much more ancient than either of these Princes, if what Skinner says of its Origin and Etymology be true.—That Author tells us, that the House of Anjou derived the Name from a Prince thereof, who having kill'd his Brother to enjoy his Principality, took to Repentance, and made a Voyage to the Holy Land to expiate his Crime; disciplining himself every Night with a Rod made of the Plant Genêt, Genista, Broom; whence he became nick-named *Planta-genêt*.

Now, 'tis certain that our Geoffrey made the Tour of Jerusalem; but then he did not kill his Brother; nor did he go there out of Penance, but to assist King Amauris his Brother.—Who then should this Prince of the House of Anjou be? Was it Fulk IV? 'Tis true he dispossest his elder Brother Geoffrey, and clapt him in Prison, but did not kill him; nay, Bourdigne observes, he was even released out of the same by his Son Geoffrey V. already mentioned.

Further, this Fulk did make a Journey to Jerusalem, and that, too, partly out of a penitential View; we are assured by Bourdigne, he did it out of Apprehension of the Judgments of God and eternal Damnation, for the great Effusion of Christian Blood, in the many mortal Battles he had been in.—The Annalist adds, that he made a second Voyage; but 'twas to return God Thanks for his Mercies, &c. To which we may add, that Fulk was never call'd *Plantagenet*; so that what Skinner advances appears to be a Fable.

There is another common Opinion which appears no better founded; and 'tis this, that the Name *Plantagenet* was common to all the Princes of the House of Anjou, after Geoffrey V; whereas in Fact the Name was only given to a few; and that, as it should seem, to distinguish them from the rest. Thus Bourdigne never applies it to any but the third Son of Geoffrey V; and distinguishes him by this Appellation from the other Princes of the same Family.—Tho' 'tis certain it was likewise given to the elder Brother, Henry of England, as before observed.

PLANTARIS, in Anatomy, a Muscle which has a fleshy Beginning, from the back part of the external Protuberance of the Thigh-bone, and descending a little way between the Gemellus and Soleus, becomes a long and slender Tendon, which marches by the inside of the great Tendon over the Calcis to the bottom of the Foot; and expands itself under the Sole, upon the Musculus perforatus, to which it adheres closely, as the Palmaris does in the Hand. See FOOT, PALMARIS, &c.

Some reckon this among the Extenders of the Foot. See EXTENSOR.

PLANTATION, in the Colonies, a Spot of Ground which some Planter or Person arrived in a new Colony, pitches on to cultivate and till for his own Use. See COLONY.

PLANTING, in Agriculture and Gardening, the setting of a Tree, or Plant, taken up from its former Place, in a new Hole or Pit proportionable to its Bulk; throwing fresh Earth over its Root, and filling up the Hole to the Level of the other Ground. See PLANT, TRANSPLANTING, GARDENING, &c.

PLANTING an Orchard. See ORCHARD.

PLANTING of Forest-Trees. See SEMINARY, TREE, &c.

PLANTING of Wall-Fruit-Trees.—After 2 Years Growth in the Nursery, Stone-Fruit, being first inoculated or grafted, are ready for Removal; which is best done in October or November.

To prepare the Soil for its new Guest; a Hole is dug 2 foot deep; or if the Soil be not very good, the Pit is made shallower, and Earth rais'd above it.—With the Soil dug up they frequently mix either a rich Soil from elsewhere; or a Manure, so as the Mixture be at least as rich as the Soil out of which the Plant came.

The Hole being half fill'd up with this Compost, it is trodden down, to afford a firm Rest to the Root, all the Extremities whereof are cut off, and the Tree fitted to the Wall by cutting off such Branches as grow directly either towards or from-wards the Wall, and leaving only the side Branches, which are to be nailed to it.

This done, the Tree is set in its Hole, as far from the Wall as is consistent with the Heads spreading thereon; that the Root may have the more room backwards, and the Hole then fill'd up with the Compost.

If the Soil be poor 'tis proper to manure round the Tree; and in the end of February, to cover it with Fern or Straw.—'Twill be necessary to prune and nail the Tree to the Wall, at least twice or thrice every Year. See WALL-Fruit.

Reverse-PLANTING, is a Method of Planting wherein the ordinary Position of the Plant, or Shoot, is inverted; the Branches being set in the Earth, and the Roots reach'd into the Air.

Agricola mentions this monstrous Way of planting, which he assures us succeeds very well in most, or all sorts of Fruit-Trees, Timber-Trees, &c. foreign and domestick.

Bradley affirms us to have seen a Lime-Tree in Holland growing with its first Roots in the Air, which had shot out Branches in great Plenty; at the same time that its first Branches were turned into Roots and fed the Tree.

The industrious Mr. Fairchild has practis'd the same at home; and gives us the following Directions for the Performance thereof.

Chuse a young Tree of one Shoot, of Alder, Elm, Willow, or any other Tree that takes root readily by living. Bend the Shoot gently down till the extreme Part be in the Earth, and so let it remain till it has taken good Root.—This done, dig about the first Root, and gently take it up out of the Ground till the Stem be nearly upright, in which state stake it up.

Then prune the Roots, now erect'd in the Air, from the Bruises and Wounds they received in being dug up; and anoint the pruned Part with a Composition of 4 Parts of Bees-Wax, 2 of Rosin, and 2 of Turpentine, melted together and applied pretty warm.—Then prune off all the Buds or Shoots upon the Stem, and dress the Wounds with the same Composition, to prevent any collateral Shootings; and leave the rest to Nature. See FECUNDITY.

PLANTING, in Architecture, denotes the disposing of the first Courses of solid Stone on the Masonry of the Foundation, laid level according to the Measures, with all the Exactness possible. See FOUNDATION, BUILDING, HOUSE, &c.

PLASM, PLASMA, a Mould, wherein any Metal, or such like running Matter, which will afterward harden, is cast. See MOULD; see also PLASTIC.

PLASTER, or PLAISTER, in Building, a Composition of Lime, sometimes with Hair, sometimes with Sand, &c. to parget or cover the Nudities of a Building. See PARGETING.

PLASTER of Paris, is a Fossil-Stone, of the Nature of a Lime-stone; serving many Purposes in building; and used likewise in Sculpture, to mould and make Statues, Bas-reliefs



Reliefs, and other Decorations in Architecture. See **STONE, STATUE, &c.**

It is dug out of Quarries, in several Parts of the Neighbourhood of *Paris*; whence its Name.—The finest is that of *Montmartre*.

This *Plaster* is of two kinds, viz. *Crude*, or in the Stone; and *burnt*, or beaten.

The *crude* is the native *Plaster* as it comes out of the Quarry; in which state 'tis used as Shards in the Foundations of Buildings.

The *burnt Plaster* is a Preparation of the former, by calcining it like Lime in a Kiln or Furnace, and then beating it into Powder, and diluting and working it. See **LIME, &c.** In this state it is used as Mortar or Cement in Buildings.

See **MORTAR.**

This, when well sifted and reduced into an impalpable Powder; is used to make Figures and other Works of Sculpture; and is besides of some Use in taking out Spots of Grease, &c. in Stuffs and Silks. See **FIGURE, SCULPTURE, &c.**

In the *Plaster-Quarries* is also found a kind of false Talc, wherewith they counterfeit all kinds of Marble. See **MARBLE, GYPSUM STUC, &c.** See also **PLASTICE.**

**PLASTIC-Virtue**, a Faculty of forming, or fashioning any thing. See **FACULTY.**

The Word comes from the *Greek πλαστικη*, of *πλασσω*, fingo, I fashion, form, &c.

Some of the ancient *Epicureans*, and perhaps the *Peripatetics* too, imagined, a *Plastic Virtue* to reside in the Earth; or at least to have anciently resided therein; and that 'twas by means hereof and without any extraordinary Intervention of a Creator, that it first put forth Plants, &c. See **EARTH, WORLD, &c.**

Nay, some of them, whether seriously or not we don't undertake, taught, that Animals, and even Man, were the Effect of this *Plastic Power*. See **PLATONIST, PERIPATETIC, &c.**

**PLASTICE**, or the *PLASTICK Art*, a Branch of Sculpture; being the Art of forming Figures of Men, Birds, Beasts, Fishes, Plants, &c. in Plaster, Clay, Stuc, &c. See **SCULPTURE, PLASTER, &c.**

The Workmen concerned herein are called *Plaste*.

*Plastice* differs from Carving, in that here the Figures are made by Addition of what wants: But in Carving always by Subtraction of what is superfluous. See **CARVING.**

The *Plastic Art* is now chiefly used among us in Fret-Work-Cielings; but the *Italians* apply it to the Mantlings of Chimnies with great Figures. See **FRET-WORK, CIELING, &c.**

**PLAT**, a popular Term among Mariners, &c. for a Sea Chart. See **CHART.**

**PLATA, PLATE**, in Commerce, a *Spanish* Term, signifying Silver; as Vellon, which they pronounce Veillon, signifies Copper. See **SILVER, COIN, &c.**

These two Terms are not only used to express the Species of those Metals struck in *Spain*, but also to distinguish between several of their Monies of Account.—Thus they say a Ducat of *Plata*, and a Ducat of Vellon; a Rial of *Plata*, and a Rial of Vellon; which Denominations augment and diminish the Value by almost one half; 34 Maravedis of *Plata* being equal to 63 of Vellon; and the Piece of Eight being only 272 Maravedis of *Plata*, but 510 of Vellon. See **DU-CAT, PIECE of Eight, RIAL, and MARAVEDIS.**

**PLATE**, in Commerce, denotes Gold or Silver wrought into Vessels for domestick Uses. See **GOLD, SILVER, MARK, PUNCHION, &c.**

**PLATE**, in Heraldry, is a round, flat Piece of Silver, without any Impression; but as it were form'd ready to receive it.

The Term is used only by *English* Heralds: for in other Nations they are known by the Name of Bezants, Argent. See **BEZANTS.**

**PLAT-BAND**, in Gardening, a Border, or Bed of Flowers, along a Wall, or the side of a Parterre; frequently edg'd with Box, &c. See **BORDER, PARTERRE, EDGING, &c.**

**PLAT-BAND**, in Architecture, is any flat square Moulding, whose Height much exceeds its Projecture. See **MOULDING.**

Such are the Faces or Fasciæ of an Architrave, and the Plat-band of the Modillions of a Cornich. See **ARCHITRAVE, CORNICH, &c.**

The *Plat-band* is signified in *Vitruvius*, and others, by the Words *Fascia, Tania*, and *Corfa*. See **FASCIA, TENIA, &c.**

**PLAT-BAND**, of a Door or Window, is used for the Lintel, where that is made square, or not much arch'd. See **LINTEL.**

These *Plat-bands* are usually cross'd with Bars of Iron, when they have a great Bearing: But 'tis much better to ease them by Arches of Discharge built over them. See **DOOR, WINDOW, &c.**

**PLAT-BANDS** of *Flutings*, the Lifts or Fillets between the Flutings of Columns. See **FLUTING.**

**PLAT-FORM**, in War, is a Place prepared on the Ramparts, to raise a Battery of Cannons upon. See **RAMPART, BATTERY, &c.**

It is made by the heaping up of Earth on the Rampart; or by an Arrangement of Madriers, rising insensibly for the Cannon to roll on; either in a Casemate, or on an Attack in the Out-works.

**PLATFORM**, in Architecture, is a Row of Beams, which support the Timber-Work of a Roof, and lie on the top of the Wall, where the Entablature ought to be raised.

The Word is also used for a kind of Terrass-Walk, or even Floor, on the top of a Building, from whence we may take a fair Prospect of the adjacent Country.

Hence an Edifice is said to be cover'd with a *Platform*, when it is flat a-top, or has no Ridge. See **ROOF.**

Most of the Oriental Buildings are thus cover'd; as were all those of the Ancients.—*Cesar* was the first among the *Romans* who procured Leave to Build his House with a Ridge, or Pinnacle. See **PINNACLE.**

**PLATFORM**, or *Orlop*, in a Man of War, is a Place on the lower Deck, abaft the Main-Mast, and round about the main Capstan; where Provision is made for the wounded Men, in time of Service.—It is between the Main-Mast and Cockpit.

**PLATONIC**, something that relates to *Plato*, his School, Philosophy, Opinions, or the like. See **PLATONISM.**

**PLATONIC Bodies**, are the same with what we otherwise call *Regular Bodies*. See **REGULAR Bodies.**

**PLATONIC Love**, denotes a pure spiritual Affection, subsisting between the different Sexes, abstracted from all carnal Appetites, and regarding no other Object but the Mind, and its Beauties; or a sincere disinterested Friendship, subsisting between the same Sex, abstracted from any selfish Views, and regarding no other Object but the Person.

The Term took its Rise from the Philosopher *Plato*, a strenuous Advocate for each Kind. See **PLATONISM.**

The World has a long time laugh'd at *Plato's* Notions of Love and Friendship.—In effect, they appear arrant Chimeras, contrary to the Intentions of Nature, and inconsistent with the great Law of Self-Preservation; which Love and Friendship are both ultimately resolvable into. See **PASSION.**

**PLATONIC Year**, or the *great Year*, is a Period of Time determined by the Revolution of the Equinoxes; or the Space wherein the Stars and Constellations return to their former Places, with regard to the Equinoxes. See **YEAR, STAR, PRECESSION of the Equinoxes, &c.**

The *Platonic Year*, according to *Tycho Brahe*, is 25816; according to *Ricciolus* 25920; according to *Cassini* 24800 Years.

This Period, which is more than five times the Age of the World, once accomplish'd; it was an Opinion among the Ancients, that the World was to begin a-new, and the same Series of things turn over again. See **PERIOD.**

**PLATONISM**, the Doctrine and Sentiments of *Plato* and his Followers, with regard to Philosophy, &c. See **PHILOSOPHY.**

The Founder of this System of Philosophy, *Plato*, the Son of *Aristocles*, was an *Athenian*; born about the Year of the World 3625; who after having spent his Youth in Exercises of the Body, Painting, and Poetry, became a Disciple of *Socrates*.—After his Master's Death, he applied himself to *Cratylus* and *Hermogenes*; 'till being a Master of the *Greek* Philosophy, he travelled into *Italy*, where he learnt that of the *Pythagoreans*. See **PYTHAGOREAN.**

Thence he proceeded into *Egypt*; where, in thirty Years Residence he became fully acquainted with the Secrets of the *Egyptian* Priests. See **SYMBOL.**

At his Return to *Athens* he began to retale the Stock of Learning he had collected, among his Countrymen; philosophizing daily in the Academy, a delicious Villa in the Neighbourhood of that City. See **ACADEMY.**—And hence his Disciples were called *Academicks*.

In *Physicks*, he chiefly followed *Heraclitus*; in *Ethicks* and *Politicks*, *Socrates*; in *Metaphysicks*, *Pythagoras*.

After his Death, two of the principal of his Disciples, *Aristotle* and *Xenocrates*, continuing his Office, and teaching, the one in the Academy, the other in the Lyceum; form'd two Sects, under different Names, tho' in other respects the same; the one retaining the Denomination of *Academicks*; see **ACADEMICK.** The other assuming that of *Peripatetics*. See **PERIPATETICK.**

In after-times, about the first Ages of the Christian Church; the Followers of *Plato* quitted the Title of *Academicks*, and took that of *Platonists*.

'Tis supposed to have been at *Alexandria* in *Egypt* that they first assumed the new Title; after having restored the ancient Academy, and re-establish'd *Plato's* Sentiments; which in process of Time had many of them been laid aside.



*Porphyry, Plotin, Iamblichus, Proclus, and Plutarch*, are those who acquired the greatest Reputation among the Greek Platonists. And among the *Latins, Apuleius, and Chalcidius*.—Among the *Hebrews, Philo Judæus*.—The modern Platonists own *Plotin* the Founder, at least the Reformer, of their Sect.

The *Platonic Philosophy* appears very consistent with the *Mosaic*; and a great Party of the primitive Fathers follow the Opinions of that Philosopher, as being favourable to Christianity.—*Justin* is of Opinion, *Plato* could not learn many things he has said in his Works, from mere Natural Reason; but thinks he might have learnt them from the Books of *Moses* which he read when in *Egypt*.

Hence *Numenius, the Pythagorean*, expressly calls *Plato* the *Attic Moses*; and upbraids him with Plagiarism in that he stole his Doctrine about the World and God, from the Books of *Moses*.

*Theodoret* says expressly, that he has nothing good and commendable about the Deity, and his Worship, but what he stole from the *Hebrew Theology*; and *Clemens Alexandrinus* calls him the *Hebrew Philosopher*.

*Gale* is very particular in his Proof of the Point, that *Plato* borrowed his Philosophy from the Scriptures, either immediately, or by means of Tradition; and, beside the Authority of ancient Authors, brings some Arguments from the thing itself.—As, *e. gr.* *Plato's* Confession that the *Greeks* borrowed their Knowledge of the one infinite God, from an ancient People, better and nearer to God than they; by which People, our Author makes no doubt, he meant the *Jews*: from his Account of the State of Innocence; as, that Man was born of the Earth, that he was naked, that he enjoy'd a truly happy State, that he conversed with Brutes, &c.—In effect, from an Examen of all the Parts of *Plato's* Philosophy, Physical, Metaphysical, and Ethical; this Author finds in every one, evident Characters of its sacred Original.

As to the Manner of the Creation, *Plato* teaches that the World was made according to a certain Exemplar, or Idea, in the Divine Architect's Mind. And all things in the Universe, in like manner, he shews, do depend on the Efficacy of eternal Ideas.

This Ideal World is thus explained by *Didymus*: "*Plato* supposes certain Patterns, or Exemplars of all sensible things, which he calls *Ideas*; and as there may be various Impressions taken off from the same Seal; so is there a vast Number of Natures existing from each Idea." This Idea he supposes to be an eternal Essence, and to occasion the several being in Nature to be such as itself is: And that most beautiful and perfect Idea which comprehends all the rest, he maintains to be the World.

Further, *Plato* teaches that the Universe is an intelligent Animal, consisting of a Body and a Soul.—The first Matter whereof this Body was form'd, he observes, was a rude indigested Heap, or Chaos: Now, adds he, the Creation was a mixt Production; and the World is the Result of a Combination of Necessity and Understanding, *i. e.* of Matter, which he calls Necessity, and the Divine Wisdom.

For the *Anima Mundi*, or Soul of the World; see *ANIMA MUNDI*.

The Principles, or Elements, which *Plato* lays down, are Fire, Air, Water, and Earth. See *ELEMENT*.

He supposes two Heavens, the *Empyrean*, which he takes to be of a fiery Nature, and to be inhabited by Angels, &c. And the *Starry Heaven*, which he teaches is not adamantine or solid, but liquid and spirable. See *HEAVEN*.

His *Phylicks*, or Doctrine *de Corpore*, is chiefly laid down in his *Timæus*; where he argues on the Properties of Body, in a Geometrical Manner; which *Aristotle* takes occasion to reprehend in him.—His Doctrine *de Mente* is delivered in his 10th Book of *Laws*, and his *Parmenides*.

*St. Augustin* commends the *Platonic Philosophy*; and even says, that the *Platonists* were not far from Christianity: He adds, that the Generality of the new Platonists of his Time embraced the Faith.

*Justin Martyr* professes, that *Plato's* Doctrine was of the utmost Advantage to him, in helping him to believe the Mysteries of the Christian Faith.—To which it may be added, that it was in good Measure by *Plato's* Help that *Origen* confuted *Celsus*. See *TRINITY*, &c.

Indeed the late Author of *Platonisme dévoilé*, carries things to an extravagant Length when he contends, that the Dogmas of our Religion are only the Opinions of *Plato*; that the Fathers give us nothing of the Mysteries thereof but what they learnt from him; and that Christianity is only a palpable Platonism.—To which Opinion *M. le Clerc* seems a little inclined. See *GOD, FATHERS*, &c.

**PLATONISTS.** See *PLATONISM*, and *ACADEMICKS*.

**PLATTOON**, in War, a small, square Body of 40 or 50 Men, drawn out of a Battalion of Foot, and placed between the Squadrons of Horse, to sustain them; or in Embuscades, Streights, and Defiles, where there is not room

for whole Battallions, or Regiments.—*Plattoons* are used when they form the hollow Square to strengthen the Angles. See *MUSQUETIER, HOLLOW Square, BATTALLION*, &c.

The Grenadiers are generally posted in *Plattoons*. See *GRENADIER*.

The Word is form'd, by Corruption, of the French *Pe-laton*, a Bottom, or Clue of Thread.

**PLATTS**, on board a Ship, are flat Ropes, made of Rope-Yarn, and woven one in another. See *ROPE*, &c.

Their Use is to save the Cable from galling in the Haufe; or to wind about the Flukes of the Anchors, to save the Pendant of the Fore-sheet from galling against them.

**PLATYSMA**, *Myoides*, in Anatomy. See *QUADRATUS Genæ*.

**PLAY**, *Lusus*. See *GAME*, and *GAMING*.

**PLAY**, in Poetry, &c. See *DRAMA, TRAGEDY, COMEDY*, &c.

**PLAY-House**. See *THEATRE, AMPITHEATRE*, &c.

**PLEA**, *Placitum*, in Law, that which either Party in a Cause alledgeth for himself in Court. See *PLACITUM, CAUSE*, and *COURT*; see also *PLEADING*, &c.

*Pleas*, are either of the Crown, or Common *Pleas*.

*Pleas of the Crown*, are all Suits in the King's Name, for Offences committed against his Crown and Dignity, or against his Crown and Peace.—Such are Treasons, Felonies, Misprisions of either, and Mayhem. See *TREASON, FELONY*, &c.

*Edward I.* enfeoffed *Walter de Burgo* in the Land of *Ulster* in Ireland, &c. excepting the *Pleas of the Crown*, viz. Rape, willful Firing, and Treasure-trove. *Cam. tit. Ireland*.

*Common Pleas* are those agitated between common Persons; tho', by the Definition above laid down, they should comprise all other except those there enumerated, notwithstanding the King be a Party.

*Plea* may farther be divided into as many Branches as *Action*; in as much as they are in reality the same thing. See *ACTION*.

There is also *Foreign Plea*, whereby Matter is alledged in any Court, that ought to be tried by another.—As if one lay Bastardy to another in a Court-Baron. See *FOREIGN*.

*Pleas of the Sword*.—*Ranulph* Earl of *Chester*, 2<sup>o</sup> Hen. III. granted to his Barons of *Cheshire*, an ample Charter of Liberties, *exceptis placitis ad gladium meum pertinentibus*.

The Reason of the Exception was, that *William the Conqueror* gave the Earldom of *Chester* to his half-Brother *Hugh*, commonly called *Lupus*, Ancestor of this *Ranulph*, *Tenere ita libere ad Gladium, sicut ipse Rex tenuit Angliam ad Coronam*.

Accordingly in all Indictments for Felony, Murther, &c. in the County Palatine, the Form was, *Contra pacem Domini Comitatus, gladium & dignitatem suam; or contra dignitatem Gladii Cestrie*.—Such were the *Pleas of the Dignity of the Earl of Chester*. See *GLADIUS*.

*Court of Common Pleas*, call'd also *Common Bench*. See *COMMON Pleas*.

**PLEADING**, a Discourse spoke at the Bar, in Defence of the Cause of a Party. See *PLEA* and *BAR*.

From the Time of the Conquest, all *Pleading* was perform'd in *French*, 'till the Time of *Edward III.* when it was appointed that the *Pleas* should be *pleaded* in *English*, but to be enter'd, or recorded, in *Latin*. See *LATIN*.

At *Athens*, and even in *France* and *England*, it was prohibited to have any form'd or prepared *Pleading*, or to confuse the Court with long artificial Harangues; only, in important Matters, 'twas the settled Custom to begin the *Pleading* with a Passage in holy Scripture. See *TEXT*.

'Tis but of late Years that Eloquence was admitted to the Bar; and it may be said there is scarce any Nation in Europe where it is less practiced or encouraged than among us.—The Elocution of the Bar, like that of the Pulpit, despises the Rules of Rhetoric. See *ACTION, ELOQUENCE, ORATORY*, &c.

**PLEADINGS** are properly the Allegations of the Parties to the Suits, made after the Count, or Declaration. See *DECLARATION*.

In this Sense the *Pleadings* express what is contained in the Bar, Replication, and Rejoinder; and not what is in the Declaration itself.—Hence Defaults in the Matter of Declaration, are not comprized within the *Mispleading*, or insufficient *Pleading*, which only extends to that committed in the Bar, Replication, or Rejoinder. See *BAR, REPLICATION*, and *REJOINDER*.

**PLEASURE**, the Effect of a Sensation or Perception agreeable to the Mind, or of the Gratification of some Appetite. See *APPETITE, SENSATION*, &c.

*Pleasures* may be distinguished into two Kinds.—The first, those which anticipate, or go before, the Reason; such are all agreeable Sensations.—These are popularly called *Pleasures of Sense, or of the Body*. See *SENSE*.

The second are those which do not precede or anticipate either the Senses or Reason.—These we call *Pleasures of the Mind*.—Such is the Joy arising from a clear Perception of some



Some future Good, or confused Sensation of a present one.

See MIND.

For an instance of either.—A Man frequently finds *Pleasure* in eating a Fruit he was before unacquainted withal: This is *anticipating Pleasure*, which he feels e'er he knows the Fruit to be good.

On the other hand, a hungry Hunter expects, or perhaps actually finds, *Visceral*; where the Joy he conceives, is a *Pleasure* that follows from the Knowledge of his present or future Good. See PAIN.

*Pleasure* and *Pain* seem to be no other than Engines in Nature's Hand; whereby we are directed to consult our own Preservation, and avoid our Ruin.—To things that may contribute to the one, as Food, Venery, &c. she has annexed *Pleasure*; and to those that may conduce to the other, as Hunger, Diseases, &c. *Pain*: She durst not leave it to our Discretion, whether we'd preserve and propagate the Species or not; but, as it were, constrains us to both: Were there no *Pleasure* in eating, nor *Pain* in Hunger, what Numbers would be starved, thro' Negligence, Forgetfulness, or Slothfulness. What is it induces People to the Office of Generation, but *Pleasure*? without this the World had scarce subsisted to this Time.

Among the Multiplicity of things to be done, and to be avoided for the Preservation of animal Life, &c. how should we have distinguished between the one and the other, but for the Sensations of *Pleasure* and *Pain*? These are not only Spurs, to urge us on, but also Guides to direct us whether we are to go. Wherever Nature has fix'd a *Pleasure*, we may take it for granted, she there enjoins a Duty; and something is to be there done, either for the Individual or the Species.

Hence it is that our *Pleasures* vary at different Stages of Life; the *Pleasures*, e. gr. of a Child, a Youth, a grown Man, an old Man, &c. all tending to those particular things required by Nature in that particular State of Life, either for the Preservation, simply, or for that and Propagation, &c.

Hence, from the different Constitutions of the Body, at different Ages, it were very easy to account for all the particular Tastes and Pleasures thereof: Not by deducing the *Pleasures* mechanically from the Disposition of the Organs in that State; but by considering what is necessary for the Perfection, and well-being of the Individual in that State, and what it is to contribute to that of the Species.—In a Child, e. gr. mere Preservation in the present State is not enough; it must likewise grow: to bring this to pass, Nature has made the Returns of Hunger, &c. more frequent, as well as more acute; and the *Pleasures* of feeding more exquisite. And that the Excess of Aliment in Proportion to the Bulk of the Body may be dispens'd withal, she has made one of the great *Pleasures* of that State, to consist in a Series of sportive Exercises, by means whereof the Parts of the Body come to be opened and expanded, and arrive at Maturity. This done, the *Pleasures* that conducted thereto disappear; and others suited to the new State, succeed. See NATURAL Inclination; see also PASSION.

For the *Pleasures* of Beauty, Music, &c. See BEAUTY, MUSIC, &c.

PLEBEIAN, PLEBEIUS, a Person of the Rank of the Populace, or Common People. See POPULACE, and COMMON.

The Term is chiefly used in speaking of the ancient Romans, who were divided into *Senators*, *Knights*, and *Plebeians*. See SENATOR, KNIGHT, &c.

PLEBANUS, was anciently the Title of a Rural Dean. See RURAL Dean.

The Denomination arose hence, that these Deaneries were then affixed to the *Plebana*, or chief Mother-Church within such a District, which at first was usually ten Parishes.

The Term seems also to have been used for a Parish-Priest, of such a large Mother-Church, as was exempt from the Jurisdiction of the Ordinary, so that he had the Authority of a Rural Dean committed to him by the Archbishop, to whom the Church was immediately subject.

PLEBISCITUM, among the Romans, a Law enacted by the Common People, at the Request of the Tribune, or some other Plebeian Magistrate. See LAW.

The Word *Plebiscitum* is particularly applied to the Law which the People made, when upon a Misunderstanding with the Senate, they retired to the *Aventine Mount*. See CIVIL Law.

PLEDGE, PLEGIUS, or PLEGGs, in Common-Law, a Surety, or Gage, either real or personal, which the Plaintiff finds to prosecute his Suit. See GAGE and SURETY.

The Word is sometimes also used for *Frank Pledge*, which see. See also PLEDGERY.

To *Pledge*, in Drinking, denotes to warrant, or be Surety to one that he shall receive no harm while he is taking his Draught.

The Phrase is referr'd by our Antiquaries, to the Practice of the *Danes*, heretofore in England, who frequently used to

stab, or cut the Throats of the Natives while they were drinking.

PLEGERY, or PLEGGERY, Suretiship, or an Undertaking, or answering, for another. See SURETY and PLEDGE.

The Appellant shall require the Constable and Mareschal to deliver his Pleggs, and to discharge them of their *Plegger*; and the Constable and Mareschal shall ask leave of the King to acquit his Pleggs, after that the Appellant is come into the Lists to do his Devoir. *Orig. Jur. ex Vet. Cod. MS. in Bibl. Selden.*

PLEGIIS *acquietandis*, a Writ that lies for a Surety, against him for whom he is Surety, in case he pay not the Money at the Day. *Fitz. Nat. Brev.*

PLEDGET, in Chirurgery, a kind of flat Tent, made, not to enter a Wound, but to be laid upon it, to imbibe the superfluous Humours, and keep it clean and dry. See TENT and WOUND.

PLEIADES, in Astronomy, an Assemblage of seven Stars, in the Neck of the Constellation *Taurus*. See STAR.

They are thus call'd from the Greek *πλεῖν*, *navigare*, to sail; as being terrible to Mariners, by reason of the Rains and Storms that frequently rise with them.

The *Latins* call them *Vergillie*, from *Ver*, Spring; because of their rising about the Vernal Equinox. See VERGILIE.

The largest is of the third Magnitude, and call'd *Lucida Pleiadum*. See their several Longitudes, Latitudes, Magnitudes, &c. under the Article TAURUS.

Poetical PLEIADES, is a Name which the Greeks gave to seven celebrated Poets, flourishing under the Reign of *Ptolemy Philadelphus*.

In Imitation of the Greeks, *Ronsard* form'd a *Pleiades* of the French Poets, under the Reign of *Henry II.*—It consisted of *Daurat*, *Ronsard*, *du Bellay*, *Beilieu*, *Baif*, *Tyard*, and *Jodelle*.

On the same Model, some of their Authors are projecting a new *Pleiades* of the Latin Poets of the present time; But they are not yet agreed about the Names of those that are to compose it; much less on him who shall be the *Lucida Pleiadum*.—*M. Baillet* has named *F. Rapin*, *F. Commire*, *F. de la Rue*, *M. de Santeuil*, *M. Menage*, *M. du Perier*, and *M. Petit*.

PLENARTY, in Law, a Term used in Matters of Benefices, in opposition to *Vacancy*. See VACANCY, VACATION, &c.

Institution is a good *Plenary* against a common Person, but not against the King, without Induction. See INSTITUTION. *Coke on Litt.*

PLENARY, something compleat, or full.—Thus we say the Pope grants *Plenary Indulgences*, i. e. full and entire Remissions of the Penalties due to all Sins. See INDULGENCE.

The Word is form'd of the Latin *Plenus*, of *plenus* full.

PLENILUNIUM, in Astronomy, that Phase or state of the Moon popularly call'd the *Full-Moon*. See MOON.

The Word is a Compound of the Latin *plenus*, and *Luna*.

PLENIPOTENTIARY, a Person who has full Power and Commission to do any thing.

The Word is chiefly understood of the Ministers or Embassadors sent from Princes or States, to treat of Peace, Marriages, and other important Matters. See MINISTER, EMBASSADOR, &c.

The first thing done in Conferences of Peace, is, to examine the Powers of the *Plenipotentiaries*. See TREATY.

The Word is compounded of *plenus* full, and *Potentia* Power.

PLENITUDE, the Quality of a thing that is full; or that fills another.

In Physic, it is chiefly used for a Redundancy of Blood and Humours. See REPLETION.

Physicians reckon two kinds of *Plenitude*.—The one call'd *ad Vires*, when the Abundance of the Blood oppresses the Patient's Strength.

The other *ad Vasa*, when it fills the Vessels too much; swelling to a Degree of bursting. See PLETHORA.

PLENUM, in Physics, a Term used to signify that state of things, wherein every Part of Space, or Extension, is supposed to be full of Matter.—In opposition to a *Vacuum*, which is a Space supposed devoid of all Matter. See VACUUM.

The *Cartesians* adhere firmly to the Doctrine of an absolute *Plenum*.—This they do on this Principle, that the Essence of Matter consists in Extension; from whence, indeed, the Consequence is very easy, that wherever there is Space or Extension, there is Matter. See EXTENSION.

But this Principle we have shewn to be false; and therefore the Consequence drawn from it falls to the Ground. See MATTER.

But



But that there is a real Vacuum in the Nature of things, is likewise demonstrated by Arguments *a posteriori*, under the Article VACUUM.

**PLEONASM, PLEONASMUS**, in Rhetoric, a Figure of Speech, whereby we make use of Words seemingly needless and superfluous, in order to express a Thought with the greater Force and Energy. Such is, *I saw it with my own Eyes*, &c. See FIGURE.

The *Pleonasm* is call'd by the *Latins*, *Redundancy*. See REDUNDANCY.

**PLEONASM**, in Grammar, is usually defined a Fault in Discourse, wherein we say more than needs,—As, *he heard it with his Ears*.

*M. Vaugelas* will not allow the Phrase, *I saw it with my own Eyes*, to be a *Pleonasm*; inasmuch as there are no superfluous Words in it; none but what are necessary to give a stronger Assurance of the thing affirmed.—'Tis sufficient that one of the Phrases say somewhat more than the other, to avoid the Imputation of a *Pleonasm*.

In effect, tho' we give the Name *Pleonasm* to any thing that is not necessary, or that enters the Discourse independently of the Sense, or Construction; yet there are frequently Words which in that View would be impertinent yet are used to good purpose to give a greater Force, or Grace to Discourse.

*He spoke with his Mouth*, is a *Pleonasm* in *English*; 'tis none in *Latin*; *Virgil* says, *sic ore locutus*.—Some *French* Authors deny *unir ensemble*, to unite together, to be a *Pleonasm*.

The Word is form'd from the *Greek* πλεονασμός, *Super-Abundancy*.

**PLEKOTICKS**, in Medicine, a kind of Remedies, otherwise call'd *Incarnatives*. See INCARNATIVE.

The Word is form'd from the *Greek* πλεω, I fill.

**PLETHORA**, in Medicine, such an Abundance of any good and laudable Humour as proves hurtful to the animal Functions. See HUMOUR, &c.

*Plethora* is chiefly understood of the Blood; tho' sometimes of the other Humours. See BLOOD.

The *Plethora* is the Consequence of a good Chylification, Sanguification, &c. attended with a too sparing Discharge by Perspiration, &c.

It is usually described as either *ad vires*, or *ad vasa*. See PLENITUDE.

The *Plethora* is chiefly produced in a Body whose Organs of Digestion are strong, Blood-Vessels lax, Diet full of good Juice, Temperament sanguine, Mind at ease and indolent, at a middle Age, and in a moist Air.—It renders Heat and Motion intolerable; stretches the great Vessels, and compresses the smaller. And hence Stiffness, and Heaviness, and on the least occasion, Ruptures in the Vessels, Suffocations, &c. See DISEASE.

*Dr. Freind* makes the Catamenia, or Menfes, the mere Result of a *Plethora*; and will have them only an Evacuation for Relief against the Quantity of the Blood, which he supposes to be natural to Women, from the Humidity of their Temperature, the Smallness of their Vessels, &c. Hence a Coarction in the Blood-Vessels, of a Superfluity of Aliment remaining over and above what is excreted by the common Ways. See MENSES.

**PLEVIN**, in Law, a Warrant, or Assurance. See REPLEVIN, WARRANT, &c.

**PLEURA**, in Anatomy, a Membrane which lines the Breast and encloses all the Parts contained therein; being of the same Figure and Extent with the Thorax itself, and of the same Substance with the Peritonæum. See THORAX.

'Tis very fine and thin, yet manifestly double; thickest about the Back, where it is fastened to the Ligaments of the Vertebrae.—In the middle of the Thorax it is doubled, which Duplication forms what we call the *Mediastinum*, which divides the Thorax longitudinally into two Parts. See MEDIASTINUM.

The Use of the *Pleura* is to defend the Inside of the Thorax, and render it smooth, that the Lungs may not be hurt in their Motion. See LUNGS.

The Word is derived from the *Greek* πλευρά, *Side*. The *Latins* call it *Succingens*.

**PLEURITIS, PLEURISY**, in Medicine, a violent Pain in the Side, attended with an acute Fever, a Cough, and a Difficulty of breathing.

The *Pleurisy* arises from an Inflammation of some Part of the *Pleura*, to which is frequently joined that of the exterior and superficial Part of the Lungs. See INFLAMMATION and PLEURA.

It usually arises upon cooling too hastily, after violent Heat; as by drinking cold Water, lying open to the Air, &c.

This Inflammation seizes any part of the Integuments of the Thorax, viz. either the *Pleura* or *Mediastinum*; and therefore the pricking Pain may be felt in any Part of the Thorax: but the place it most ordinarily infests is the Side; sometimes the right, sometimes the left, sometimes higher, sometimes lower.

This makes what we call the *Pleuritis vera*, or true or internal *Pleurisy*; in opposition to the *Notha*, or *spurious* or external *Pleurisy*, which is a Pain in the Side, without any Fever, and frequently without any Cough; and is supposed to arise from a sharp Serosity lodg'd on the *Pleura*, or higher among the intercostal Muscles.

The great Remedy in the true *Pleurisy* is copious and repeated Bleeding. In Adults, *Sydenham* observes, it is seldom cured with less than the Loss of forty Ounces of Blood.—By omitting Phlebotomy the Patient is frequently suffocated.

The *Pleurisy* sometimes succeeds another Fever; occasion'd by a Precipitation of the Febrile Matter upon the *Pleura*.

When it rises to an Imposthume, it is call'd *Empyema*. See EMPYEMA.

When it happens in the *Mediastinum*, or *Diaphragma*, it is call'd *Paraphrenitis*. See PARAPHRENITIS.

*Etmuller* recommends Sudorifics in the *Pleurisy*; and observes, that much more Regard is to be had to the Sputum that attends the Cough than the Urine.—*Baglivi* notes, that *Pleurisies* are frequently occult; and gives this Method of discovering them.—Make the Patient lie on his right or left Side, and bid him breath strongly and Cough: If he feel any Pain or Heaviness after it, he's certainly pleuritick.—The same Author adds, that a hard Pulse is a certain Attendant of the *Pleurisy*.

*Riverius* gives us Instances of notable Cures perform'd herein by Cupping and Scarification.

**PLEXUS**, in Anatomy, a Name common to several Parts in the Body, consisting of little Vessels interwove in form of Net-work. See VESSEL.

The Nerves, in their Progress, form several *Plexus's*; especially the *Par Vagus*, or eight Pair, the Intercostals, and the fifth. See NERVE.

The *Par Vagus*, at its Intersection with the intercostal Nerve, forms the *Plexus Gangliiformis* superior and inferior. See GANGLIOFORMIS.—A Branch of this Nerve joining near the Heart, with others from the Intercostals, form the *Plexus Cardiacus superior*. See CARDIACUS.—A little further it sends off several Branches, which reuniting, form the *Plexus Pneumonicus*. See PNEUMONICUS.—In each Trunk of the Intercostal, before it arrives at the Thorax, are two *Plexus Gangliiformes*, call'd *Plexus Cervicales*.—When arrived in the Thorax, it receives three or four Twigs from the Vertebral Nerves, together with which it constitutes the *Plexus Intercostalis*, whence descending into the Abdomen, it forms that famous Piece of Network, call'd on the Right Side *Plexus Hepaticus*, and on the Left *Plexus Splenicus*.—From the Hepatic *Plexus* arise a Number of Branches, proceeding some to the Liver, others to the Panchreas, others to the Capsula of *Glisson*, and other larger ones to the Right Kidney.—The Splenic *Plexus* sends out Branches to the left Part of the Ventricle and Panchreas, the Spleen, the left Atrabiliary Capsula and left Kidney.—Lastly, several Branches both from the Hepatic and Splenic *Plexus* passing along the Mesenteric Arteries, especially the upper to which they serve as a kind of Cover, form the *Mesenteric Plexus*, which bears some Resemblance to a Sun, from the Circumference whereof proceed several little Branches or Threads in manner of Rays, continued thence to the Intestines; tho' still accompanying the Arteries. See MESENTERIC, &c.

**PLEXUS Choroides** is a wonderful Contexture of small Arteries and Veins, and, as some say, Lymphaticks, in the Brain, on each side of the *Thalami Nervorum Opticorum*, and just over the Pineal Gland. See CHOROIDES and BRAIN.

It is sometimes also call'd *Plexus Reticularis*, from its net-like Structure. See RETICULARIS.

**PLICA**, in Medicine, a Disease of the Hair, peculiar to Poland, and hence denominat'd *Polonica*; tho' there are Instances of it in Hungary, *Assatia*, Switzerland, &c. See HAIR.

The *Plica* is a severe, malignant, and dangerous Disease, wherein the Hair of the Head is matted and gl'd together beyond all Possibility of being extricated; attended with a grievous Disorder of all the Limbs of the Body; and before the Hair become complicated, a violent Pain; a Sweat usually attending it.

An unseasonable cutting off of the Hair in this Case is dangerous; nor is there any proper and adequate Remedy for the Disease yet discover'd.

**PLIGHT**, in our old Law-Books, a Term which signifies sometimes, the Estate with the Habitude and Quality of the Land; tho' sometimes it extends to the Rent-Charge, and a Possibility of a Dower. *Cokes Inst. fol. 221.*

**PLINTH**, in Architecture, a flat square Member, in form of a Brick; whence its Name.

The Word comes from the *Greek* πλινθος, *Brick*. The *Plinth* is used as the Foot, or Foundation of Columns; being that flat square Table, under the Mouldings of the Base and Pedestal, at the Bottom of the whole Order; seeming to have been originally intended to keep the bottom



bottom of the primitive wooden Pillars from rotting. See **BASE, PEDESTAL, COLUMN, &c.**  
**PLINTH** is also called *Orlo*. See **ORLO**.  
 The *Plinth* is also called *Orlo*. See **ORLO**.  
**Plinth** calls the *Tuscan Abacus, Plinth*; from its resembling a square Brick. See **ABACUS**.  
**Plinth of a Statue, &c.** is a Base, or Stand, either flat, round, or square; serving to support a Statue, &c. See **STATUE, &c.**

**PLINTH of a Wall**, is a Term used for two or three Rows of Bricks advancing out from the Wall; or, in the general, for any flat high Moulding, serving in a front Wall to mark the Floors; or to sustain the Eaves of a Wall, and the Larmier of a Chimney. See **WALL, &c.**

**PLOCE**, in Rhetoric, a Figure whereby a Word is repeated, by way of Emphasis; in such manner as not only to express the subject, but the Quality thereof.

Cruelty! yes, Cruelty beyond all Example. See **REPETITION**.

**PLOK-Penin**, a Term used in the publick Sales at *Amsterdam*, or a little Sum given to the last Bidder.

The *Plok-Penin* is a kind of Earnest, whereby 'tis signified, that the Commodity is adjudg'd to him. See **EARNEST**.

The *Plok-Penin* differs according to the Quality of the Commodity, and the Price of the Lot.—Sometimes it is arbitrary, and depends on the Pleasure of the Buyer; and sometimes regulated by the Ordinances of the Burgo-masters.

For instance, the *Plok-Penins* of French Wines are fix'd at two Florins; those of *Frontignac* at 20 Sols; those of *Rheims* at two Florins; those of Vinegar at 20 Sols, and those of Brandy at 30.

There are also Merchandizes where there are no *Plok-Penins*; and others where 'tis double to what we have mentioned.

**PLOT**, or **PLOTT**, in Gardening. See **GREEN-Plot, GRASS-Plot, &c.**

**PLOTT**, in Dramatic Poetry, the Fable of a Tragedy or Comedy; or the Action represented therein. See **FABLE** and **ACTION**.

*Plot* is more particularly used for the Knot or Intrigue which makes the Difficulty, and Embarrass of a Piece. See **KNOT** and **INTRIGUE**.

The unravelling puts an end to the *Plot*. See **UNRAVELLING**.

**PLOTT**, in Surveying, the Plan, or Draught, of any Parcel of Ground, *e. gr.* a Field, Farm, or Manor, survey'd with an Instrument, and laid down in the proper Figure and Dimensions. See **PLOTTING**.

**PLOTTING**, among Surveyors, the Art of describing, or laying down on Paper, &c. the several Angles and Lines of a Tract of Ground survey'd by a Theodolite, or the like Instrument, and a Chain. See **SURVEYING**.

In surveying with the Plain-Table, the *Plotting* is saved; the several Angles and Distances being laid down on the Spot as fast as they are taken. See **PLAIN-Table**.

But in working with the Theodolite, Semicircle, or Circumferentor, the Angles are taken in Degrees; and the Distances in Chains and Links. See **THEODOLITE, CIRCUMFERENTOR, &c.**

So that there remains an After-Operation, to reduce those Numbers into Lines; and so to form a Draught, Plan, or Map. See **MAP**.—This Operation is call'd *Plotting*.

*Plotting*, then, is perform'd by means of two Instruments, the Protractor, and *Plotting-Scale*.—By the first, the several Angles observed in the Field with a Theodolite, or the like, and entred down in Degrees in the Field-Book, are protracted on Paper in their just Quantity. See **PROTRACTOR**.

By the latter, the several Distances measured with the Chain, and entered down, in like manner in the Field-Book, are laid down in their just Proportion. See **PLOTTING-Scale**.

Under those two Articles, are found, severally, the Use of those respective Instruments in the laying of Angles and Distances: We shall here give their Use conjointly, in the *Plotting* of a Field, survey'd either with the Circumferentor, or Theodolite.

#### Method of PLOTTING, from the Circumferentor.

Suppose an Inclosure, *e. gr.* ABCDEFGHK (Tab. Surveying Fig. 21.) to have been survey'd: And the several Angles, as taken by a Circumferentor in going round the Field, and the Distances as measured by a Chain, to be found entered in the Field-Book, as in the following Table:

|   | Deg. | Min. | Cha. | Link. |   | Deg. | Min. | Cha. | Link. |
|---|------|------|------|-------|---|------|------|------|-------|
| A | 191  | 00   | 10   | 75    | F | 324  | 30   | 7    | 54    |
| B | 297  | 00   | 6    | 83    | G | 98   | 30   | 7    | 54    |
| C | 216  | 30   | 7    | 82    | H | 71   | 00   | 7    | 78    |
| D | 325  | 00   | 6    | 96    | K | 161  | 30   | 8    | 22    |
| E | 12   | 00   | 9    | 71    |   |      |      |      |       |

1<sup>o</sup> On a Paper of the proper Dimensions, as LMNO (Fig. 31.) draw a Number of parallel and equidistant Lines, representing Meridians, express'd in dotted Lines.—Their Use is, to direct the Position of the Protractor; the Diameter whereof must always be laid either upon one of them, or parallel thereto; the Semicircular Limb downwards for Angles greater than 180°, and upwards for those less than 180°.

The Paper thus prepared;—assume a Point on some Meridian, as A, whereon lay the Centre of the Protractor, and the Diameter along the Line.—Consult the Field-Book for the first Angle, *i. e.* for the Degree cut by the Needle at A, which the Table gives you, 191°.

Now, since 191° is more than a Semicircle or 180°, the Semicircle of the Protractor is to be laid downwards; where, keeping it to the Point, with a *Protracting-Pin*, make a Mark against 191; thro' which Mark, from A, draw an indefinite Line Ab.

The first Angle thus protracted, again consult the Book, for the length of the first Line A B.—This you find 10 Chains 75 Links.—From a convenient Scale, therefore, on the *Plotting Scale*, take the Extent of 10 Chains, 75 Links, between the Compasses; and setting one Point in A, mark where the other falls in the Line Ab, which suppose in B: draw therefore the full Line A B, for the first side of the Inclosure.

Proceed then to the second Angle: and laying the Center of the Protractor on the Point B, with the Diameter as before directed, make a Mark, as c, against 297°, the Degrees cut at B; and draw the indefinite Line Bc.—On this Line, from the *Plotting Scale*, as before, set off the length of your second Line, *viz.* 6 Chains 83 Links; which extending from B to the Point C, draw the Line B C; for the second Side.

Proceed now to the third Angle or Station: Lay then the Center of the Protractor, as before, on the Point C, make a Mark as d against the Number of Degrees cut at C, *viz.* 216. draw the indefinite Line Cd, and thereon set off the third distance, *viz.* 7 Chains 82 Links; which terminating *e. gr.* at D, draw the full Line C D, for the third Side.

Proceed now to the fourth Angle, D; and laying the Center of the Protractor, over the Point D, against 325° the Degree cut by the Needle, make a Mark e; draw the dry Line De, and thereon set off the Distance 6 Chains 96 Links, which terminating in E draw D E for the fourth Line: And proceed to the fifth Angle, *viz.* E.

Here the Degrees cut by the Needle, being 10° 24', (which is less than a Semicircle) the Center of the Protractor must be laid on the Point E, and the Diameter on the Meridian, with the semicircular Limb turn'd upwards.—In this situation make a Mark, as before, against the Number of Degrees, *viz.* 12° 24', cut by the Needle at E; draw the dry Line E f, on which set off the fifth Distance, *viz.* 9 Chains, 7 Links, which extending from E to F draw the full Line F F for the fifth side of the Inclosure.

After the same manner proceeding orderly to the Angles F, G, H, and K; placing the Protractor, making Marks, against the respective Degrees, drawing indefinite dry Lines, and setting off the respective Distances, as above, you'll have the *Plott* of the whole Inclosure A B C, &c.

#### Method of PLOTTING from the Theodolite.

It must be observ'd, that in this Process, the stationary Lines, *i. e.* the Lines wherein the Circumferentor is placed to take the Angles, and wherein the Chain is run to measure the Distances, are, properly, the Lines here plotted.—When, therefore, in surveying, the stationary Lines are at any distance from the Fence or Boundaries of the Field, &c. Off-sets are taken, *i. e.* the distance of the Fence from the stationary Line is measured at each Station; and even at intermediate Places, if there prove any considerable Bends in the Fence.

In *Plotting*, therefore, the stationary Lines being laid down, as above; the Off-sets must be laid down from them, *i. e.* Perpendiculars of the proper Lengths let fall at the proper Places from the stationary Lines. The Extremes of which Perpendiculars being connected by Lines, give the *Plott* desired.

If instead of going round the Field, the Angles and Distances have been all taken from one Station; the Process of *Plotting* is obvious, from the Example above: All here required, being to protract, after the manner already described, the several Angles, and Distances, taken from the same stationary Point in the Field; from the same Point or Center on the Paper.—The Extremities of the Lines thus determined, being thus connected by Lines; will give the *Plott* required.

If the Field have been survey'd from two Stations; the stationary Line, to be first plotted, as above; then, the Angles and Distances taken from each, to be laid down from each respectively.



The Method of *Plotting*, where the Angles are taken by the Theodolite, *i. e.* by *Back-sight* and *Fore-sight*, (as 'tis call'd, see BACKSIGHT, &c.) is somewhat different.—To prepare the Angles for *plotting*, the Quantity of each must first be found; by subtracting the Degrees of the Foresight and Back-sight from each other: The Remainder is the Angle to be protracted. See THEODOLITE.

The Use of parallel Lines is here excluded, and instead of laying the Protractor constantly on, or parallel to, Meridians; its Direction is varied at every Angle.—The Practice is thus: Suppose the former Inclosure to have been survey'd with the Theodolite, after the manner of Back-sight and Fore-sight; and suppose the Quantity of each Angle to be found by Subtraction. An indefinite Line is drawn at random as AK Fig. 21; and on this the measured Distance, *e. gr.* 8 Chains, 22 Links, set off, as in the former Example. If now the Quantity of the Angle A have been found 140°; the Diameter of the Protractor is to be laid on the Line AK, with the Center over A, and against the Number of Degrees, *viz.* 140, a Mark made, an indeterminate dry Line drawn thro' it, and the Distance of the Line AB laid down from the Scale thereupon.

Thus we gain the Point B; upon which laying the Center of the Protractor, the Diameter, along the Line AB; the Angle B is protracted, by making a Mark against its Number of Degrees, drawing a dry Line and setting off the Distance BC as before.

Then proceed to C; laying the Diameter of the Protractor on BC, the Center on C protracts the Angle C, and draw the Line CD: Thus proceeding, orderly, to all the Angles and Sides, you'll have the Plot of the whole Inclosure ABC, &c. as before.

**PLOTTING Scale**, a Mathematical Instrument usually of Wood, sometimes of Brass, or other Matter; and either a Foot, or half a Foot long. See SCALE.

It is denominated from its Use in plotting of Grounds, &c. See PLOTTING.

On one side of the Instrument (represented *Tab. Surveying*, Fig. 32.) are seven several Scales, or Lines, divided into equal Parts.—The first Division of the first Scale is subdivided into ten equal Parts, to which is prefix'd the Number 10, signifying that 10 of those Subdivisions make an Inch; or that the Divisions of that Scale are Decimals of Inches.

The first Division of the second Scale is likewise subdivided into 10, to which is prefix'd the Number 16, denoting that 16 of those Subdivisions make an Inch.—The first Division of the third Scale is subdivided in like manner into 10, to which are prefix'd the Number 20.—To that of the fourth Scale is prefix'd the Number 24; to that of the fifth 32; that of the sixth 40; that of the seventh 48; denoting the Number of Subdivisions equal to an Inch, in each, respectively.

The two last Scales are broke off before the end, to give room for two Lines of Chords mark'd by the Letters *cc.* See CHORD.

On the back side of the Instrument is a Diagonal Scale, the first of whose Divisions, which is an Inch long if the Scale be a Foot, and half an Inch, if half a Foot, is subdivided, diagonally, into 100 equal Parts.—At the other end of the Scale is another Diagonal Subdivision, of half the length of the former, into the same Number of Parts, *viz.* 100. See DIAGONAL.

Next the Scales, is a Line divided into hundredth Parts of a Foot, number'd 10, 20, 30, &c. and a Line of Inches subdivided into tenth Parts mark'd 1, 2, 3, &c.

#### Use of the PLOTTING Scale.

1. *Any Distance being measured with the Chain, to lay it down on Paper.*—Suppose the Distance to be 6 Chains 50 Links. Draw an indefinite Line; set one foot of the Compasses at Figure 6 on the Scale, *e. gr.* the Scale of 20 in an Inch, and extend the other to 5 of the Subdivisions, for the 50 Links: This Distance being transferr'd to the Line, will exhibit the 6 Chains, 50 Links, required.

If 'tis desired to have 6 Chains 50 Links take up more or less Space, take 'em off from a greater or lesser Scale, *i. e.* from a Scale that has more or fewer Divisions in an Inch.

To find the Chains and Links contain'd in a right Line, *e. gr.* that just drawn, according to any Scale, *e. gr.* that of 20 in an Inch.—Take the Length of the Line in the Compasses; and applying it to the given Scale, you'll find it extend from the Number 6 of the great Divisions, to 5 of the small ones: hence the given Line contains 6 Chains 50 Links.

**PLOUGH**, or **Plow**, in Agriculture, a popular Machine for the breaking up of Ground; consisting of a Train or Carriage, with two large Irons; the one pointed the other edg'd; serving to cut and open the Ground, and draw Furrows therein. See AGRICULTURE, PLOUGHING, &c.

The Parts of the Plough are, the *Plough-Beam*, the

*Handle*, *Tail*, *Stiles*, *Hales* or *Staves*, *Neck* or *Share-beam*, *Earth-board*, *Mould-board*, *Breast-board*, *Furrow-board*, *Shield-board*, &c. The *Sheath*, *Share-Iron*, *Coulter*, *Plough-Pin* and *Collar-Links*, *Plough-Pillow* and *Bolster*, and sometimes *Wheels*.

The Structure and Contrivance of the *Plough* is various in various Kinds of Grounds: A particular Description of all would be endless.—The most usual are

1° The *double wheel'd Plough* used throughout *Hertfordshire*, &c.—This is apparently one of the best, strongest, and of easiest Draught, of any; and suits all kinds of Lands except miry Clays in Winter; which are apt to clog the Wheels, which are about 18 or 20 Inches high; and the Furrow-Wheel sometimes larger than the other.

2° The *Lincolnshire Plough* is singular in its Shape, and very good for Marsh or Fenny Lands, subject to Weeds and Sedges, but free from Stones; by reason of its Coulter and the Largeness of its Share, which is often a Foot broad and very sharp.

3° The *Sussex single Wheel Plough* is of a clumsy Make, very wide in the Breach; so that the Draught of it must be very hard.—It is chiefly remarkable for its Shape.

4° The *Caxton or Trenching Plough*, invented to cut Drains about *Caxton* in *Cambridgeshire*, in stiff miry Clay-Grounds.—It is larger than ordinary, and has two Coulters one before the other; which bending inwards cut each Side of the Trench.—The Mould-board is three times the usual Length, to cast the Turf a great way off from the Trench.

It cuts a Trench a Foot wide at bottom, a Foot and half at top, and a Foot deep; and is drawn with twenty Horses.

5° The *Dray-Plough* is the most common.—It is made without either Wheel or Foot; of an easy Draught; best in Winter, for miry Clays, where the Land is soft.

6° The *Spanish Plough* varies much in its make from our common *Ploughs*. 'Tis a kind of Semicircle, pitch'd on one End, with the convex Side turn'd to the Plowman, and the concave Side (a little inclined) to the Horse. Its Tail is in a right Line with the Share.

With this *Plough* and one Horse the *Spaniards* plough two or three Acres of their light Ground in a Day.

7° The *Colchester Plough* is a fine light Wheel *Plough*, with which two Horses will cut up two Acres of their light Land in a Day.—It is peculiar for its Iron Earth-board made rounding, which turns the Turf better than any other *Plough* yet invented.

8° One *Wheel Plough* may be used in almost any kind of Ground; being lighter and nimbler than other *Wheel-Ploughs*.

9° The *Double Plough*. In this, there is one *Plough* fix'd to the side of another; so that by means of four Horses and two Men a double Furrow is plough'd, the one by the side of the other.

10° Add to these another kind of *Double Plough*, whereby two Furrows are plough'd at once, one under another, by which the Earth is stirr'd up 12 or 14 Inches Depth, which is of great Benefit.

**PLOUGH**, among Bookbinders, is a Tool wherewith they cut the Leaves of Books smooth. See BOOK-BINDING.

**PLOUGH-Monday**, the next Monday after *Twelfth-day*, when the Plough-men in the North Country draw a *Plough* from Door to Door, and beg *Plough-Money* to drink.

**PLOUGHING**, one of the principal Operations in Agriculture, perform'd with the *Plough*. See PLOUGH.

*Ploughing* is principally either that of *Laves*, or of *Fallows*.—*Ploughing of Laves* is the first cutting up of Grass-Ground for Corn; which is usually done in *January*, when the Earth is wet and the Turf tough, so as to hold turning without breaking; in which the Perfection of this kind of ploughing consists.

*Ploughing of Fallows*, call'd also *fallowing*, is a Preparing of Land by *ploughing*, long before it be plough'd for Seed.—This is a considerable Benefit to Lands, few of which will bear above two Crops successively without such Respite. Hence Landlords use to bind their Tenants to it once in 3 Years.

When this is done twice, 'tis call'd *twifallowing*, when thrice *trifallowing*, &c.

The first is as soon as the Husbandman has done sowing his Corn; and this is to be very shallow, well turn'd, and clapp'd close together.—The second is in *June*; when they go the full Depth.—The third, about the beginning of *August*.—If it rise full of Clods they harrow it down; but soon *strick* Size, or plough it up again into Ridges.

In *Staffordshire*, beside the three Summer *Fallows*, they usually give their Land a Winter *fallowing*. *Pliny* commends the *ploughing* of Lands four times; and so does *Virgil*:

*Ille demum seges votis respondet avari  
Agricola bis qua solem, bis frigora sensit.*

Georg. lib. 1.



This is an ancient Piece of Husbandry, known to the Poets, and Virgil recommends it: witness those Verses of Virgil.  
*Altemis idem consue, cassare Novales,*  
*Et segnem patiuntur sibi dulcescere campum.*  
 Georg. lib. 1.

**PLOW**, or **PLOW**, in Navigation, an ancient Mathematical Instrument, made of Box, or Pear-tree, used to take the Height of the Sun or Stars, in order to find the Latitude. See **HEIGHT**, **LATITUDE**, &c.

It admits of the Degrees to be very large, and is much esteemed by many Artists; tho' now generally disused among us. See **ALTITUDE**.

**PLOW-Land**, or **PLOUGH-Land**. See **CARUCATA** **Terra**.

**PLOW-Alms**, a Duty anciently of a Penny, paid to the Church for every **Plough-Land**, or Hide of Land. See **HIDE**.

*De qualibet Carucata juncta inter Pascha & Pentecostem unum denarium, qui dicitur Plou-Almes.* Monast. Ang.

**PLUG**, a large wooden Peg wherewith to stop the Bottom of a Cistern, Cask, Pipe, or the like.

**PLUMAGE**, the Feathers, or Covering of Birds; For the Mechanism, &c. whereof, see **FEATHER**.

In Falconry, **Plumage** is particularly understood of the Feathers under a Hawk's Wing. See **HAWK** and **HAWKING**.

The Falconers also give their Hawks Parcels of small Feathers to make them cast; and these they call **Plumage**. See **CASTING**.

**PLUMB**, in Matters of Spicery. See **CURRENTS** and **RAISINS**.

**PLUMB-Line**, a Term among Artificers for a Perpendicular Line. See **PERPENDICULAR**.

It is thus call'd because usually described by means of a Plummet. See **PLUMMET**.

**PLUMBAGO**, among the Ancients, was the Oar of the Black-Lead, used in making Pencils for designing, &c. See **BLACK-LEAD**.

Pomet adds, that **Plumbago** was the Sea-Lead of the Ancients; who, he notes, took that Drug for a Production of the Sea, not a Mineral, as it really is; but this is scarce credible.

**PLUMBERY**, the Art of casting, preparing, and working Lead; and of using it in Buildings, &c. See **LEAD**.

The Word is form'd of the Latin **Plumbum**, Lead.

The Lead used in **Plumbery** is furnish'd from the Lead-Works in large Ingots, or Blocks, call'd **Pigs** of Lead, ordinarily weighing about an hundred Pounds a-piece.

As this Lead melts very easily, 'tis easy to cast Figures hereof, of any kind, by running it into Moulds of Brasses, Clay, Plaster, &c. See **FOUNDRY** and **STATUE**.

But the chief Article in **Plumbery**, is the Sheets and Pipes of Lead.—'Tis these make the Basis of the Plumbers Work in Building; the Process of these, therefore, we shall give a Description of:

#### Method of casting large Sheets of Lead.

The Lead destined for this use is melted in a large Cauldron or Furnace, usually built with free-Stone and Earth, fortified on the out-side with a Massive of Shards and Plaster. At the bottom hereof is a Place sunk lower than the rest, wherein is disposed an Iron Pot, or Peel, to receive what may remain of the Metal after the Sheet is run. The Furnace is so rais'd above the Area of the Floor as that the Iron Pot just rests thereon.

To Use the Furnace they heat it with Wood laid within it; that done they throw in the Lead, pell-mell with the burning Coals, to melt.—Near the Furnace is the Table, or Mould, whereon the Lead is to be cast.—It consists of large pieces of Wood, well jointed, and bound with Bars of Iron at the ends. Around it runs a Frame, consisting of a Ledge or Border of Wood two or three Inches thick, and one or two high from the Table. The ordinary Width of the Tables is from three to four Foot; and their Length from 18 to 20 Foot.

The Table is cover'd with fine Sand; prepared, by moistening it with a Watering-Pot, then working it with a Stick; and at last, to render it smooth and even, beating it flat with a Mallet, and planing it with a Ruler or Slip of Brass.

Over the Table is a kind of Rake of Wood, which bears and plays on the Edges of the Frame by means of a Notch cut in either End thereof; and so placed, as that between it and the Sand is a Space proportionable to the intended Thickness of the Sheet.—The Use of this Rake is to drive the Matter, while yet liquid, to the Extremity of the Mould.

A-top of the Table is an Iron Pan, Peel, or Shovel, bearing, before, on the Edge of the Table itself, and behind

on a Trestle somewhat lower than the Table.—Its Use is in conveying the Metal into the Mould; and the Design of its oblique Disposition is, that it may by that means be able to retain the Metal, and keep it from running off at the fore-side, where it has no Ledge.—Some of these Peels are big enough to hold fifteen or sixteen hundred Weight of Lead, and even more.

Things being thus disposed, with a large Iron Ladle they take out the melted Lead, Coals and all, out of the Furnace; and with this, mix'd as it is, fill the Iron Peel.—When full; they take out the Coals, and clear the Lead with another Iron Spoon pierced after the manner of a Scummer.

This done, they hoist up the lower Part of the Peel by its Handle; upon which the liquid Matter running off and spreading it self on the Mould, the Plumber conducts and drives it to the Extremity of the Table by means of the Rake, which the Workman passes along the Ledges, and thus renders the Sheet of an equal Thickness.—The Sheets thus cast there remains nothing but to edge them, i. e. to take off the two Sides with a Plane, in order to render them smooth and strait.

#### Method of casting thin Sheets of Lead.

The Table or Mould here used is of a Length and Breadth at discretion, only ledg'd on one side.—Instead of Sand they cover it with a Piece of woollen Stuff, nailed down at the two Ends to keep it tight; and over this lay a very fine linnen Cloth.—The Feet of the Table are uneven, so that it does not stand horizontal, but moderately inclined.

Great Regard is had to the Lead while melting, that it have the just Degree of Heat, so as it may run well, yet not burn the Linnen.—This they judge of by a Piece of Paper; for if the Paper take fire in the liquid Lead, 'tis too hot, and if it be not shrunk and scorched a little, 'tis not hot enough.

Being then in its just degree, they have a Rake, but different from that described in the former Article; as serving both for Peel and Rake, to contain, and to conduct the liquid Lead.—'Tis in effect a wooden Box without any bottom, only closed on three Sides. It is pretty high behind, but the two sides, like two acute Angles, still diminish to the tip, from the Place where they are joined to the third or middle Piece where they are of the same Height therewith, viz. 7 or 8 Inches high.—The Width of the middle makes that of the Rake, which again makes that of the Sheet to be cast.

The Rake is placed a-top of the Table, which is, before, cover'd in that Part, with a Paste-board that serves as a bottom to the Box, and prevents the Linnen from being burnt while the liquid Lead is pouring in.—The Rake is so disposed on the Table, as that the highest Part looks to the lower end of the Table, and the two sloping Sides to the higher End.

The Rake is now fill'd with Lead according to the Quantity to be used; which done, two Men, one at each side the Table, let the Rake descend down the Table, or else draw it down with a Velocity greater or less, as the Sheet is to be more or less thick; the Thickness of the Sheet still depending on the Promptitude wherewith the Rake slides down the Inclining Mold.

These fine smooth Sheets of Lead are sometimes used between the Joints of large Stones in great Buildings, &c.

#### Method of making Pipes without folding.

To make these Pipes they have a kind of Furnace, consisting of a large Iron Furnace or Cauldron, supported on a pretty high Iron Stand. The Cauldron is encompassed with a Massive of Bricks and Loam; only leaving a Mouth or Passage for the Conveyance of Wood underneath, and lighting the Fire; and another little Aperture behind, to serve as a Vent-hole.

In this Furnace they melt the Lead, after first heating it with a Fire underneath: To forward the Fusion they put in burning Faggots along with the Metal.—The Metal is skimmed and laden off with the Instruments mentioned above.

Near the Furnace is a Bench, furnish'd at one End with a little Mill, with Arms or Levers to turn it withal.—A strong Girt, arm'd with an Iron Hook at one Extremity, is fastened by the other to the Axis of the Mill, around which it turns when in Motion. On this Bench the Moulds of the Pipes are placed horizontally; and the Mill and the Girt serve to draw out the Iron Core after the Pipe is cast.

The Moulds of these Tubes are of Brasses, and consist of two Pieces which open and shut by means of Hooks and Hinges their inner Calliber, or Diameter, is according to the Size of the Pipe to be made; their Length is usually two Foot and a half.

In the middle is placed a Core, or round Piece of Brass or Iron, somewhat longer than the Mould, and of the Thickness



ness of the Inner Diameter of the Pipe.—This Core is pass'd thro' two Copper Rundles, one at each end of the Mould, which they serve to close, and to these Rundles is join'd a little Copper Tube about two Inches long, and of the Thickness the leaden Pipe is intended to be of.—By means of these Tubes the Core is retained in the middle of the Cavity of the Mould.

The Core being in the Mould, with the Rundles at its two Ends, and the Lead melted in the Furnace, they take it up in a Ladle and pour it into the Mould by a little Aperture at one End, made in form of a Funnel.

When the Mould is full, and the Metal cold, they pass the Hook of the Girt into a Hole at the End of the Core, and turning the Mill with the Hand, draw out the Core.—They then open the Mould, and take out the Pipe.

If they desire to have the Pipe lengthened; they put one End thereof in the lower End of the Mould, and pass the End of the Core into it; then shut the Mould again and apply its Rundle and Tube as before, the Pipe just cast serving for Rundles, &c. at the other End.

Things thus replaced, they pour in fresh Metal into the Mould; thus repeating the Operation till they have got a Pipe of the Length required.

#### *Pipes made of Sheet-Lead soldered.*

The Plumbers have wooden Cylinders, or Rollers, of the Length and Thickness required; and on these they form their Pipes, by wrapping the Sheet around 'em; soldering up the Edges all along, thus.—After grating the Lead well with a Grater, they rub Rosin over the Part thus grated; then pour on it some Solder melted in a Ladle, or else melt it with a hot folding Iron, smearing those Parts where they would not have the Solder catch with Chalk, or the Soil of the Hand.

The Solder which the Plumbers use, is a Mixture of two Pounds of Lead with one of Tin. See SOLDER, see also TIN and TINNING.

PLUMBUM. See LEAD.

PLUMBUM-ustum, among Chymists, a Composition made of two Parts of Lead, and one Part of Sulphur. See LEAD.

PLUME Allum, Alumen Plumosum. See ALUM.

PLUMES, a Set or Bunch of Ostrich-Feathers, pull'd out of the Tail and Wings, and made up to serve for Ornament in Funerals, &c.

PLUME, in Falconry, is the general Colour or Mixture of the Feathers of a Hawk; which shews her Constitution. See HAWK.

When a Hawk seizes her Prey and dismanthles it of its Feathers, she is said to *plume* it.

The Word is form'd of the Latin *Pluma*, Feather.

PLUME, or PLUMULE, in Botany, a little Member of the Grain, or Seed of a Plant; being that which in the Growth of the Plant becomes the Stem or Trunk thereof. See SEED and STEM.

The *Plume* is inclosed in a Cavity form'd in the Lobes on Purpose for its Reception.—'Tis almost of the same Colour with the *Radicle*, or little Root, on the Basis whereof it is sustain'd. See RADICLE.

The *Plume* is the first Part that appears out of the Earth; as, in effect, 'tis the Part that first appears out of the Membrane or Cover of the Seed; there being a Hole over against it in the Membrane, thro' which it makes its Escape.

'Tis the Appearance of the *Plume* without the Cavity of the Grain, that makes what we call the *Bud* or *Germ* of a Plant. See GERMINATION; see also PLANT.

The *Plume* is so call'd, because consisting of several Pieces bound together in manner of a Feather.—In Corn, the *Plume* is that which after the *Radicle* is shot forth, shoots out towards the smaller End of the Seed; whence some call it the *Acrospire*. See ACROSPIRE, MALT, &c.

PLUMMET, PLUMB-Rule, or PLUMB-Line, an Instrument used by Masons, Carpenters, &c. to draw Perpendiculars withal; in order to judge whether Walls, &c. be upright, Planes, horizontal, and the like.

It is thus call'd from a Piece of Lead, *Plumbum*, fastened to the End of a Thread or Cord, which usually constitutes this Instrument.

Sometimes the String descends along a Ruler of Wood or Metal rais'd perpendicularly on another; in which Case it becomes a Level. See LEVEL.

At Sea the *Plummet* is used by the Pilot to sound the Depth of the Sea. See SOUNDING.

PLURAL, in Grammar, a particular Inflection of Nouns, and Verbs, whereby they come to express a Plurality or Number of things. See NUMBER.

The *Latins*, *English*, &c. have only two Numbers, *Singular* and *Plural*; the *Greeks* and *Hebrews* have three, *Singular*, *Dual*, and *Plural*. See DUAL.

In *Latin*, &c. both Nouns and Verbs have usually distinct Terminations to their different Numbers; in *English*, Nouns

Substantives usually become plural by the Addition of *s* or *es* to the Singular. See SINGULAR.

Nouns Adjectives are the same in both Numbers; and in Verbs, the Number is distinguish'd by that of the Pronouns. See NUMBER, ADJECTIVE, VERB, PRONOUN, &c.

PLURALITY, a discrete Quantity, consisting of two, or a greater Number.

A *Plurality of Worlds* is a thing which Mr. *Huygens* has endeavour'd to prove in his *Cosmotheoros*.—The same is likewise contended for in a very pretty Treatise of M. *Fontenelle*, under that Title.

See the chief Arguments for a *Plurality of Worlds*, under the Articles MOON, PLANET, and EARTH.

The greatest Absurdity in the Pagan Theology, is, the *Plurality of Gods*. See GOD.

The *Plurality of Benefices* is a thing tolerated in the Church, but never approved of. See BENEFICE.

'Twas the Smallness of some Benefices that first gave occasion to *Pluralities*; for an Ecclesiastic not being able to subsist on a single one, was allowed to hold two: at length the Number increased without Bounds.

The Abuse was endeavour'd to be remedied at the Council of *Lateran* under *Alexander III.* and *Innocent III.* when the holding more than one Benefice was expressly forbid by a Canon; but the same Canon granting the Pope a Power to dispense with it in Favour of Persons of distinguish'd Merit, there were so many found a Title to this Merit, that the Prohibition became useless.

In *Germany*, the Pope grants Dispensations for possessing a *Plurality of Benefices*, on Pretence that the Ecclesiastic Princes there, need large Revenues to bear up against the Protestant Princes.

PLUS, in *Algebra*, a Term commonly used for *major*, more.

Its Character is +. See CHARACTER.

Thus  $4 + 10 = 14$  is read, four, *plus*, or more, 10, is equal to 14. See QUANTITY; see also ADDITION, &c.

PLUSH, in Commerce, &c. a Kind of Stuff, having a Sort of Velvet Nap or Shag on one Side; composed of a Woof of a single woollen Thread, and a double Warp, the one Wool, of two Threads twisted, the other Goats-hair.

*Plush* is manufactured like Velvet, on a Loom with three three Steps or Treddles.—Two of these separate and depress the woollen Warp, and the third raises the Hair-Warp; upon which the Workman throwing the Shuttle, passes the Woof between the woollen and Hair-Warp; and, afterwards, laying a brass Broach under that of the Hair, he cuts it thereon with a Knife destined for that Use, conducting the Knife on the Broach which is made a little hollow, all its Length; and thus gives the Surface of the *Plush* an Appearance of Velvet. See VELVET.

Some ascribe the Invention of *Plush* to the *English*; others say it was first made in *Holland*, and particularly at *Harlem*.—Be this as it will; 'tis certain, the *French* are the People who make the most of it; there being several very considerable *Plush Manufactures* at *Amiens*, *Abbeville*, and *Compiègne*.

There are other Kinds of *Plush*, all of Silk; some of which have a pretty long Nap on one Side, some on both.

PLUSH, among Botanists, a Name given to the middle of Roses, Anemonies, &c. call'd *Thrum*, or *Thrummy Heads*; by others, *hairy Heads*, *Buttons*, *Boss*, *Tuft*, or *Wort*.

PLUVIAL, PLUVIALIS, anciently signified a Hood, or Cloak, which Ecclesiastics, chiefly Religious, wore in the Country; to shelter themselves from the Rain: by the *Latins* call'd *Pluvialis Lacuna*.

The Word is now used in the *Romish Church*, for a large Hood wore by the Chantor and Sub-Deacon, at Mass and Vespers, &c.—It covers the whole Man, and is fixed before with two Clasps.

PLUVIUS, in Antiquity, an Attribute of *Jupiter*; implying him the Author of Rain: *q. d.* he that sends Rain. See RAIN.

Among the *Basso Relievo's* of the *Antonine Column*, in the Place where the Miracle of the Thundering Legion is represented; we see a flying Man in the Air, his Arms spread out, and with a very long Beard, which seems to dissolve into Rain.—The Learned take this to be a Representation of *Jupiter Pluvius*. See FULMINATING Legion.

PNEUMATICKS, PNEUMATICS, call'd also PNEUMATOLOGY and PNEUMATOSOPHY, the Doctrine and Contemplation of Spirits and Spiritual Substances. See SPIRIT.

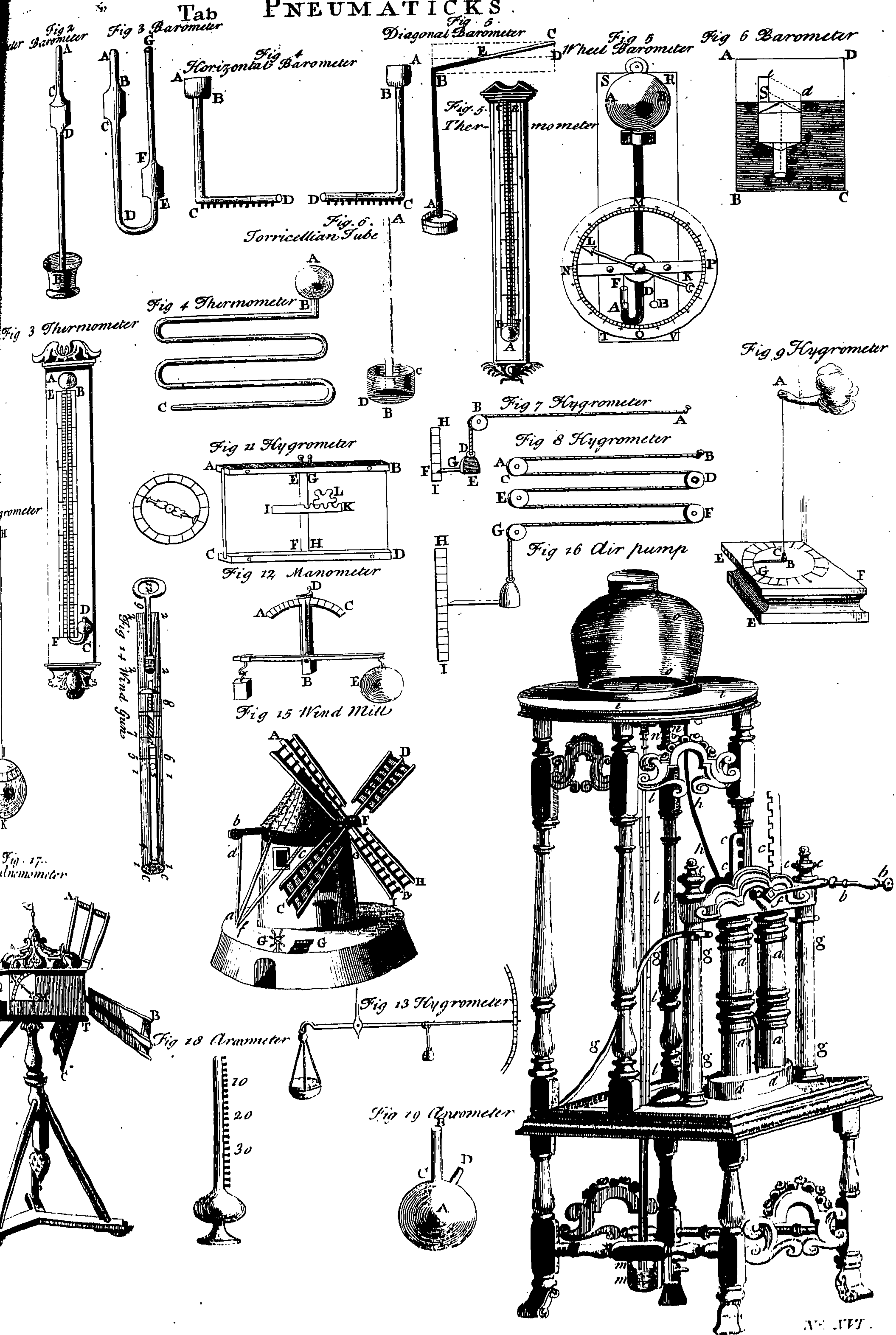
The Word is form'd of the *Greek πνευμα*, Spiritus, Breath; whence, from the different Acceptations of that Word, either as an incorporeal Substance, or as Air, there arise two sorts of *Pneumaticks*.

PNEUMATICKS, in the Schools, is frequently used for the Doctrine of Spirits; as God, Angels, the human Mind. See SPIRIT, GOD, ANGEL, SOUL, &c.

In



# PNEUMATICKS.





In this Sense the Word coincides with what we otherwise call *Metaphysics*. See *METAPHYSICKS*.

*PNEUMATICKS* is more commonly used among us, for the Doctrine of the *Air*; or the Laws wherein that fluid is condens'd, rarified, gravitates, &c. See *AIR*.

Some make *Pneumaticks* a Branch of *Mechanicks*; because it considers the *Air* in Motion, with the Effects thereof.—Tis certainly a Sister of *Hydrostaticks*; the one considering

the *Air* in the same manner that the other does *Water*. See *AIR* in the same manner.

*MECHANICKS*, and *HYDROSTATICKS*.

*Wolffius*, in lieu of *Pneumaticks*, uses the Word *Aerometry*, &c. the Doctrine of *Measuring the Air*. See *AEROMETRY*.

The Doctrine and Laws of *Pneumaticks* will be found under the Articles, *AIR*, *ATMOSPHERE*, *ELASTICITY*, *GRAVITY*, *COMPRESSION*, *CONDENSATION*, *RAREFACTION*, *EXPANSION*, &c.

*PNEUMATICK Engine*, *Machina Pneumatica*, the *Air-Pump*. See *AIR-PUMP*.

*PNEUMATOCELE*, in Medicine, a flatulent or Windy *Hernia*; or a Tumor of the Membranes of the Testicles, proceeding from pent up Vapours; and attended with a tenfiv Pain. See *HERNIA*.

Sometimes, one of the *Testes* only is thus inflated, sometimes both, and sometimes likewise the *Scrotum*. See *TESTICLE*.

This *Hernia* is of all others the lightest, and least dangerous.—It is cured by Discutients internally, and Fomentations and Cataplasms externally.

The Word is form'd from the *Greek πνεύμα*, Wind, and *ζώνη*, Tumor.

*PNEUMATOMACHII*, ancient Hereticks so call'd because they oppos'd the Divinity of the Holy Spirit; placing him in the Number of Creatures. See *Epiphanius*.

*PNEUMATOSIS*, a Term which some Authors use for the Generation or Formation of Animal Spirits, in the Brain. See *SPIRIT* and *BRAIN*.

*PNEUMONICKS*, Medicines proper in Diseases of the Lungs, where Respiration is affected. See *LUNGS*, *RESPIRATION*, &c.

Of this Number are *Sulphur*, *Lung-wort*, *Hyssop*, *Ground-ivy*, and *Cats-foot*; used in *Phthyses*, *Asthma's*, *Peripneumonies*, *Pleurisies*, &c. See *ASTHMATIC*, *ANTIPHTHISIC*, &c.

The Word is form'd from the *Greek πνεύμα*, Lungs, or *πνεύμα*, Spiritus, Breath.

*POCK*. See *POX*.

*POCKET of Wool*, is half a Sack. See *PACK of Wool*.

*POD*, probably of the *Dutch Boede* or *Bode*, an Habitation; the Husk of any Pulse. See *PULSE*.

*PODAGRA*, in Medicine, the Gout in the Feet. See *GOUT*.

It is thus called from the *Greek πούς*, Foot, and *ἀγρεύω*, I seize.

*PODAGRA dentium*, sometimes, tho' with Impropiety enough, is used for the *Tooth-ach*. See *ODONTALGIA* and *TOOTHACH*.

*PODESTATE*, or *PODEST*, a Magistrate, or Officer of Justice and Policy, in a free City.

The Word is originally *Italian*, *Podesta*; and is chiefly used for certain Magistrates of *Venice* and *Genoa*, whose Function is to administer Justice in those Republicks.

The *Podestate* in *Venice* corresponds to the *Prætor* in ancient *Rome*; tho' Appeals lie from his Decisions, to the New Auditors, or the new Civil Quaranty. See *QUARANTIA*.

*PODEX*, in Anatomy, &c. the same as the *Anus*, or Fundament. See *ANUS*.

*PODOMETER*, or *PEDOMETER*. See *PEDOMETER*.

*POEM*, *POEMA*, a Composition in Verse, of a due Length and Measure. See *VERSE*.

Poems are of as many kinds as there are Branches of Poetry. See *POETRY*.

We have *Epic-Poems*, *Dramatic-Poems*, &c. See *EPIC*, *DRAMATIC*, *LYRIC*, &c.

*POESY*, *POESIS*. See *POETRY*.

The Word is form'd from the *Greek ποίησις*, of *ποιέω*, facio, fabricor, fingo, I make, I frame, I invent.

Hence, *Alchymy*, or the Art of making Gold, was anciently call'd *Poesy*, *Chrysopoesy*, &c. See *ALCHYMY*, &c.

*POETICAL*, something that relates to Poetry or Poets. See *POETRY* and *POET*.

In this sense we say, a *Poetical Genius*, a *Poetical Phrase*, *Poetical Licence*, *Poetical Fury*, &c.

*POETICAL Justice*, is chiefly used in respect of the Drama, to denote a Distribution of Rewards and Punishments to the several Persons, at the Catastrophe or close of the Piece, answerable to the several Characters they have appear'd in.

Whatever Difficulties and Distresses the Virtuous and Innocent may labour under, and how prosperously soever it may go with the wicked, in the Course of the Piece; the Poet usually takes care to give each of 'em their due e'er he parts with them.—Tis controverted whether this Piece of Justice

be indispensable, and whether it mayn't be allowed to have Virtue oppress'd and Vice flourishing? See *TRAGEDY*, &c.

Most Languages have their *POETICAL Words*, which are never used on other Occasions.—These prove of great Advantage to the Poets; who are hereby enabled to raise the Style and Diction into the *Poetical Character*, with the greater Ease.

The *French* lament the want of a Set of such Words in their Language; for want hereof their Poetry appears in a too familiar Garb, not sufficiently distinguished from the common Language. 'Tis too reserved; not being allowed any Boldnesses, or Flights, but what might pass in Prose.

To this, in good measure, is attributed the little Success their Authors have met withal in the *Epic Way*. See *FRENCH*.

*EPIC*, &c.

*POETICAL Rising and Setting*. See *RISING* and *SETTING*.

The ancient Poets referring the rising, &c. of the Stars to that of the Sun; make three kinds of rising and setting; viz. *Cosmical*, *Acronycal*, and *Heliacal*. See each under its proper Article *COSMICAL*, &c.

*POETICKS*, *POETICE*, the Doctrine of Poetry; or the Laws and Rules of conducting Pieces or Compositions of Poetry. See *POETRY*.

*Aristotle's Poetics* is a Work infinitely valued; and *M. Dacier's* Comment thereon is one of his best Pieces.—*Horace*, *Vieta*, *Vossius* and *Scaliger*, have likewise published *Poetics* in *Latin*. The Duke of *Buckingham*, in *English*: And *Menardiere*, *Hedelin*, and *Despreaux* in *French*.

*POET*, *POETA*, an Author who composes Poems, or Discourses in Verse. See *POETRY* and *VERSE*.

*Cicero* relates it as a Saying of *Democritus* and *Plato*, that there could be no good Poet *sine afflatu furoris*, without a Tincture of Madness; and *Aristotle* calls Poets expressly, *Maniaci*, *Maniacs*, *Madmen*. See *ENTHUSIASM*.

*M. Spanheim* tells us, that the Arab-Authors are more poetically given than those of any other People; and adds, that that there are more Verses among the *Arabians* than among all the other Nations put together.

The Word *Poeta*, *Poet*, signifies *Maker*; whence the Poets were anciently call'd *Fatists*.—The Name they were properly denoted by among the *Romans*, was *Vates*, which signifies *Prophet*. See *PROPHET*.

By a Law of the Emperor *Philip*, inserted in the *Code L. 10. T. 52*. Poets are expressly excluded from the Immunities granted the Professors of all other Sciences.

*Homer*, *Virgil*, *Milton*, and *Tasso*, are the chief, almost the only just, *Epic Poets*.—*Sophocles*, *Euripides*, *Shakespear*, *Otway*, and *Racine*, *Tragic Poets*.—*Aristophanes*, *Menander*, *Plautus*, *Terence*, *Fletcher*, *Johnson*, *Moliere*, &c. *Comic Poets*.—*Horace*, *Cowley*, and *Malherb*, *Lyric Poets*.—*Juvenal*, *Perfius*, *Regnier*, *Boileau*, *Dryden*, and *Oldham*, *Satyrick Poets*. See *EPIC*, *TRAGIC*, *COMIC*, &c.

*POETRY*, *POESY*, the Art of composing Poems, or Pieces in Verse. See *POEM* and *VERSE*.

The Word is form'd from the *Greek ποίησις*; of *ποιέω*, facio. See *POESY*.

If a Verse be consider'd as a mere Series of just six Feet following one after another in the same Line; Poetry and Versification will appear two very different Things: But *Bossu*, in his Idea of Verse, includes Cadences, peculiar Constructions Arrangements and Expressions, unknown in common Discourse; and above all, a certain noble, bold, elevated, metaphorical Turn and manner of Diction.—These, he observes, are so essential to Poetry, that without them the most exact Arrangement of long and short Syllables, makes little else but a kind of measur'd Prose: whereas these, in a Discourse that has no poetical Feet or Measures, do yet give it the poetical Character, and make it a kind of *unmeasured Poetry*.

The Rules of Poetry and Versifying are taught by Art, and acquired by Study; but this Force and Elevation of Thought, which *Horace* calls *something divine*, and which alone makes the Poetry of any Value, must be derived from Nature; or, according to *Aristotle*, from some happy Transports to which that Author gives the Name of Madness *Εὐφροσύνη* *ἢ* *Ποιητικὴ ὄρεξις*, *ἢ* *Μανία*.—But there must ever be conceived a just solid Judgment at the Head of this Fury of the Poets Imagination.

Hence, the Critic concludes that, the End of Poetry is to please; its Cause, either the Excellence of the Poet's Genius, or a poetical Fury, and Transport of the Soul manageable by the Judgment; its Matter, long and short Syllables, and Feet compos'd hereof, with Words furnish'd by Grammar; and its Form, the Arrangement of all these things in just and agreeable Verse, expressing the Thoughts and Sentiments of the Author after the manner already mentioned.

But, after all, how narrow are these Bounds, if we consider Poetry in the Light wherein the Works of *Homer* and *Virgil* have set it? What is here laid down pretends to no Praise which a mere Translator may not rise to, and which the War of *Cataline* might not merit if turn'd out of the Prose of *Salust*.—Tis with reason, therefore, that we distinguish the



the low and simple, from the grand Poetry; by giving the former the Title of *Verseification*: and that we make Poetry and *Verseification* two distinct Arts. In effect, there is not more difference between Grammar and Rhetoric, than between the Art of making Verses and that of inventing Poems. See *VERSEIFICATION*.

The Grand Poetry, then, consists principally in Fiction, or the Inventions of Fable; in the expressing of things by Allegories and Metaphors; and in the inventing of Actions under which the Truths which the Poet has to teach, may be agreeably disguis'd. See *FABLE*.

In this view, scarce any Poems retain the Nature and Essence of the grand Poetry, but the *Epopæa*, *Tragedy* and *Comedy*; the rest, be they *Elegies*, *Satires*, *Song*, or what they will, come under *Verseification*.

The antient Eloquence, 'tis observ'd, was full of Mysteries and Allegories.—The Truth was by them usually disguis'd under those ingenious Inventions call'd Fables, *q. d. Words*; as if there were as much difference between these fabulous Discourses of the Learned, and the common Language; as between the Speech peculiar to Man, and the Voice of Brutes. See *FABLE*.

At first, Fables were chiefly used in treating of the Divine Nature, after the manner they then conceived of it: This occasioned the first Poets to be called Divines, and Poetry the Language of the Gods.—The divine Attributes they separated into a Number of Persons; by reason the Weakness of the human Mind could not conceive so much Power, and so much Action, in a simplicity so strict and indivisible as that of God. See *GOD*.

Nor could they speak of the Operation of this almighty Cause, without speaking likewise of its Effects.—They therefore added Physicks to their Theology, handling both after the same Manner, without quitting their Veils or Allegories. See *ALLEGORY*.

Now, Man being the most considerable of all the Works of the Deity; and there being nothing so proper for Poets, or of such general Use to Mankind, as such a Subject; they therefore added Ethicks to the former, and treated the Doctrine of Manners in the same way as they had done Divinity and Physiology.—And hence arose the *Epopæa*, or Epic Poem. See *EPIC*.

The Epic Poets have done, with regard to Morality, just the contrary of what the Divine Poets did for their Theology.—As the too great Diversity of Divine Actions and Perfections, so little proportionate to our Understanding, occasioned the latter to divide the single Idea of the simple Essence of God into several Persons under different Names; as *Jupiter*, *Juno*, *Neptune*, &c. So, on the contrary, the Nature of Moral Philosophy, which never gives any Rules for particular things, occasioned the Epic Poets to unite in one single Idea, in the same Person, and even in a single Action, whatever of the like kind occurs in different Persons, and different Actions.

Thus, says *Aristotle*, Poetry teaches Moral Philosophy, not by reciting historically what *Alcibiades* has done, or suffered; but by proposing what such a Person, whom the Poet calls by any Name he pleases, would necessarily or probably have done or said on the like occasion.—'Tis in this manner, it represents either the unhappy Consequences of Designs ill concerted, of wicked Actions, &c. or the Reward of good Actions, and the Pleasure reap'd from a Design laid in Virtue, and conducted by Prudence.

Thus, according to our Critic, the poetical Actions and Persons are all feign'd, allegorical, and universal; not historical and singular.—This is likewise the Sentiment of *Horace*, who adds, that Poets teach Morality as well as Philosophy; but the Preference herein he gives to *Homer*. See *MANNERS*.

This Advantage of the Poets over mere Philosophers arises hence, that all Poetry is an Imitation.—Now Imitation is a thing extremely natural; and hence this manner of proposing things becomes better fitted to engage the Auditors. Again, Imitation is an Instruction given by Examples; and Examples are the more proper to persuade, in regard they prove the thing possible.—In effect, Imitation is so much the Nature of Poetry, that *Aristotle* tells us 'tis to this the Art owes its Rise. See *IMITATION*.

But the Poets by becoming Philosophers did not cease to be Divines; on the contrary, the Morality they taught obliged them frequently to introduce the Deity in their Works; and the Share so august a Being had in the Action, obliged the Poet to make it grand, important, and conducted by Persons of Kings and Princes. See *MACHINE*.

Add to this, that it likewise obliged the Poets to think, and speak after a manner elevated above the common Pitch of Men, and to equal, in some measure, the divine Persons he introduced; and to this purpose serv'd the poetical, figurative Language, and the Majesty of Heroic Verse.

To convey their Truths to the best Advantage, and adapt them to the particular Purposes they were intended for;

Poets found out various Forms.—Hence the *Epopæa* and *Drama*.

*Epic Poetry* is more for the Manners and Habitudes, than the Passions; these last rise all at once, and their Violence is but of a short Duration; but the Habitudes are cooler and more gentle, and rise and fall more slowly. See *HABITUDE*.

The Epic Action, therefore, could not be restrained to a Day, or two, as that of the *Drama*; a longer and a juster Space was required for this, than for *Tragedy*, which is only for the Passions.—And hence arose a still greater difference between *Tragedy* and the *Epopæa*.

For the Tragic Violence required a stronger and more lively Representation than the Epic; and accordingly it consists wholly in the Action, the Poet never speaking; as he does in the *Epopæa*, where there are no Actors.

The Laws of Epic and Dramatic Poetry; See under *EPIC*, *CHARACTER*, *INVOCATION*, *DRAMATIC*, *THEATRE*, *TRAGEDY*, *COMEDY*, *ACT*, *SCENE*, *CHARACTER*, *SENTIMENT*. For the lower Poetry, see each under its proper Article, *ODE*, *SONG*, *EPIC*, *GRAM*, *ELEGY*, *SATIRE*, &c.

*POINT*, *PUNCTUM*, in Geometry, is defined by *Euclid* to be, that which has no Parts, or is indivisible. See *PART*, *INDIVISIBLE*, &c.

*Wolfius* defines it, that which terminates itself on every side; or which has no Terms or Boundaries distinct from itself. See *TERM*.

This is what we otherwise call the *Mathematical Point*; and is only conceived by the Imagination; yet is it in this that all Quantity begins and ends; the Flux or Motion of the *Point* generating a *Line*, that of a *Line* a *Surface*, &c. See *QUANTITY*; see also *LINE*, &c.

Hence some define a *Point* to be Inceptive of Magnitude. See *INCEPTIVE* and *MAGNITUDE*.

A *Line* can only cut another in a *Point*. Any three *Points* being given, out of a right *Line*, a *Circle*, or part of a *Circle*, may be drawn that shall pass thro' them all. See *CIRCLE*.

To draw a parallel *Line*, a *Perpendicular*, a *Tangent*, &c. to a given *Point*, are popular Problems in Geometry. See *PERPENDICULAR*, *PARALLEL*, &c.

#### Proportion of Mathematical Points.

'Tis a current Maxim, that all Infinites, whether infinitely great or infinitely small, are equal; yet is the Maxim false in both Cases.—Dr. *Halley* shews several infinite Quantities which are in a finite Proportion to one another; and some infinitely greater than others. See *INFINITE QUANTITY*.—The like, the Honourable Mr. *Robartes* shews of infinitely small Quantities, viz. *Mathematical Points*.

He demonstrates, for instance, that the *Points* of Contact between *Circles*, and their *Tangents*, are in a subduplicate Proportion to the *Diameters* of the *Circles*. That the *Point* of Contact between a *Sphere* and a *Plane* is infinitely greater than that between a *Circle* and a *Tangent*; and that the *Points* of Contact in *Spheres* of different Magnitude are to one another as the *Diameters* of the *Spheres*. See *CONTACT*, &c.

*POINT* of contrary *Flexure*, in the higher Geometry, is a *Point* of a *Curve*, wherein it is bent, or inflected to a Part contrary to that it before tended to: so, e. gr. as to turn its Convexity towards its Axis, or any other fix'd *Point* which before it turn'd its Concavity towards. See *CURVE*.

If the *Curve* turn back again towards the *Point* whence it first set out, the *Point* of the *Flexure* is particularly call'd the *Point* of *Regression*, or *Retrogradation*. See *RETROGRADATION* of *Curves*.

*Wolfius* illustrates the Use of the *Calculus* differentials in finding the *Point* of *Contrary Flexion* in various kinds of *Curves*. See *FLEXION*.

*POINT*, *Punctum*, in Physicks, is the smallest, or least sensible Object of Sight, mark'd with a Pen, *Point* of a Compass, or the like. See *OBJECT*.

This is what we popularly call a *Physical Point*; which in reality has Parts; tho' those Parts are not here regarded.—Of such *Points* does all *Physical Magnitude* consist. See *MAGNITUDE*.

This *Physical Point* coincides with what Mr. *Locke* calls the *Point sensible*, and which he defines to be the least Particle of Matter, or Space, we can discern.—He adds, that to the sharpest Eye this is seldom less than 30 Seconds of a *Circle*, whereof the Eye is the Centre. See *VISION*.

*POINT*, in Grammar, is a Character used to mark the Divisions of a Discourse. See *CHARACTER*.

The *Point* proper, is what we otherwise call a *Full-Stop*, or *Period*, and serves to denote the Sense compleat, and the Period ended. See *PERIOD*.

Two *Points* usually mark the middle of a *Period*, and shew a Construction compleat, and the Sense to be perfect, yet



yet intimating something to come after it;—this we call a *Colon*. See *COLON*.

A *Point* with a *Virgula*, call'd a *Semicolon*, marks a Sense less compleat than the *Colon*; tho' Authors seem to use them indifferently; nor are Grammarians agreed about their precise Difference. See *SEMICOLON*.

The *Virgula*, call'd *Comma*, marks a Sub-division of a Member of a Period. See *COMMA*.

A *Point of Interrogation*, as? marks something to be pronounced in a higher Tone, as intimating a Question ask'd. See *INTERROGATION*.

A *Point of Admiration*! marks a sudden Surprize and Wonderment. See *ADMIRATION*.

Our *Points* and Accents were entirely unknown to the Ancients. And in the ancient *Greek* Manuscripts, the whole seems wrote with the same stroke of the Pen; the Words and Letters being join'd throughout.

In after-times, *Points* were invented and added a-top of the Letters, to shew when the Sense was finish'd; hence the Grammarians coming to retouch the old Manuscripts thought fit to add the *Points* and Accents.—*Salmasius* affirms, that he has even observed, plainly, where they have been added, by the difference of Hands. See *ACCENT*.

*POINTS*, in the *Hebrew* Learning, are certain Characters, which, in the Writings of that Language, serve to mark the Vowels; which, in effect, are only *Points*. See *VOWEL*.

The Antiquity of the *Points* in the *Hebrew* Tongue makes the Subject of a celebrated Controversy among the Learned; some maintaining their Origin to be the same with that of the *Hebrew* Language; and others asserting them to have been first introduced by *Esdra*, after the *Babylonish* Captivity, when he compiled the Canon, transcribed the Books into the present *Chaldee* Character, and restored the Purity of the *Hebrew* Text.

Others will have them invented by the Doctors of the School of *Tiberias*, usually called the *Massorettes*, five or six hundred Years after Christ.—The Rabbin *Elias Levita* was the first who started this question in the last Century; and maintain'd them to have been an Invention of the *Massorettes*, for the Ease of those who were to learn the *Hebrew* Tongue. See *MASSORETES*.

This Sentiment was espous'd by *Capella*, to whom adher'd *Luther*, *Calvin*, *Casaubon*, *Scaliger*, &c.—*Buxtorf* attack'd *Capella* violently on this Article, and gain'd a great Number of Divines on his Side, who took the Alarm; imagining it a grievous Wound to the holy Text, to allow the Vowel-Points to have been added by the *Massorettes*, and not to have been found in the ancient Text; because without these 'tis very difficult to fix the reading thereof.—Yet in the *Samaritan* Text there is no *Point* or Vowel, nor in many of the most ancient *Hebrew* Manuscripts. See *HEBREW*, &c.

*POINT*, in Musick, a Mark or Note anciently used to distinguish the Tones. See *NOTE*.

Hence we still call it *Simple Counter-Point*, when a Note of the Bass, answers precisely to that of the Treble; and *Figurative Counter-Point*, when a Note is syncop'd, and one of the Parts makes several Inflections of the Voice or Tone, while the other only makes one. See *COUNTER-POINT*.

We still use a *Point* to raise the Value of a Note, and prolong its Time by one half, e. gr. a *Point* added to a *Semibreve*, instead of two Minims, makes it equal to three. See *TIME*, and *CHARACTERS in Musick*.

*POINT*, in Astronomy, is a Term applied to certain Parts or Places mark'd in the Heavens; and distinguished by proper Epithets.

The four Grand *Points* or Divisions of the Horizon, viz. the *East*, *West*, *North*, and *South*, are call'd *Cardinal Points*. See *CARDINAL*; see also *EAST*, *WEST*, &c. each under its proper Article.

The *Zenith* and *Nadir* are the *Vertical Points*. See *VERTICAL*, *ZENITH* and *NADIR*.

The *Points* wherein the Orbits of the Planets cut the Plane of the *Ecliptic*, are call'd the *Nodes*. See *NODE*.

The *Points* wherein the Equator and *Ecliptic* intersect, are call'd the *Equinoctial Points*. See *EQUINOCTIAL*.—Particularly, that whence the Sun ascends towards the North-Pole, the *Vernal Point*; see *VERNAL*: And that by which he descends to the South-Pole, the *Autumnal Point*. See *AUTUMNAL*.

The *Points* of the *Ecliptic*, where the Sun's Ascent above the Equator, and Descent below it, terminate, are call'd the *Solstitial Points*; see *SOLSTITIAL*.—Particularly, the former of them the *Estival* or *Summer Point*, see *SUMMER*; the latter the *Brumal* or *Winter Point*, see *WINTER*, &c.

*POINT*, in Navigation and Geography.—*Points of the Horizon*, or of the *Compass*, are certain *Points* form'd by the Intersections of the Horizon, with Vertical Circles. See *HORIZON*.

The Number of these *Points*, therefore, is really the same with that of the *Points* conceiv'd in the Horizon, i. e. infi-

nite: Tho' in Practice we only distinguish 32 of them. See *COMPASS*.

Some use *Point*, for the Intersection of a Vertical Circle, with a Circle parallel to the Horizon; and even some, for the Segment of a Vertical intercepted between the Meridian and Horizon, or a Circle parallel thereto.

The *Points* are shewn by right Lines drawn from a *Point* assumed in a horizontal Plane.

So that a *Point of the Compass*, is popularly taken for a 32d Part of the whole; or for an Arch of 11 Degrees 15 Minutes; half of which, viz. 5° 38' is call'd a *half a Point*; and half of that, or 2° 49' a *Quarter Point*. See *COMPASS*.

These *Points of the Compass* are divided into Cardinal and Collateral.

*Cardinal Points* are the Intersections of the Horizon and Meridian, call'd the *North* and *South Points*; and the Intersections of the Horizon with the Prime Vertical, call'd the *East* and *West*. See *NORTH*, *SOUTH*, &c.

These coincide with what the *Latins* call *Cardines Mundi*; and are a Quadrant, or 90 Degrees, distant from each other. See *CARDINAL*.

*Collateral* or *Intermediate Points*, are those lying between the *Cardinal Points*.—Which are either *Primary*, viz. those equidistant from the two Cardinals, as North-East, South-West, &c.

Or *Secondary*, which are again, either of the *first Order*, viz. such as are equidistant from a Cardinal and the next Primary, as North-North-East; or of the *second Order*, i. e. equidistant between a Cardinal or Primary, and first Secondary, as North-East by North.

The *Primary Collateral Points*, therefore, are 45° distant from the Cardinals; the first Secondaries 22° 30' from the Cardinal and next Primary Collateral; and the Secondaries of the *second Order* 11° 15' from a Cardinal, or first Collateral, and a Second. See *COLLATERAL*.

*POINT*, among men, is also used for a Cape, or Head-Land, jetting out into the Sea. See *CAPE*.

They say, two *Points* of Land are one in another, when they are so in a right Line against each other, as that the innermost is hindered from being seen by the outermost.

*POINT*, in Perspective, is a Term used for various Parts or Places, with regard to the Perspective Plane. See *PERSPECTIVE Plane*.—Such are, the

*POINT of Sight*, or *View*, or of the *Eye*, is a *Point* on the Plane, as F, (*Tab. Perspective Fig. 12.*) mark'd out by a right Line BF, drawn from the Eye, perpendicular to the Plane, call'd also the *Principal Point*. See *VISION*; see also *PRINCIPAL*.

This *Point* is in the Intersection of the Horizontal and Vertical Planes. See *PLANE*.

Some Authors call the *Point* wherein the Eye is actually placed, and where all the Rays terminate, as O, the *Point of Sight* or *Vision*; and define the *Principal Point* to be that wherein all the Lines drawn from the horizontal Plane to the Line of View or Distance, terminate. See *PRINCIPAL*.

*POINT of Distance* is a *Point*, v. gr. P or Q, in the horizontal Line PQ, at the same Distance from the principal *Point* F, as the Eye O, is from the same. See *DISTANCE*.

*Third POINT* is a *Point* taken at Discretion in the Line of Distance, wherein all the Diagonals drawn from the Divisions of the Geometrical Plane, concur.

*Objective POINT*, a *Point* on a Geometrical Plane, whose Representation is required on the Perspective Plane.

*POINT*, in Opticks—The *POINT of Concourse*, or *Concurrence*, is that wherein converging Rays meet; more usually call'd the *Focus*. See *FOCUS*.

*POINT of Dispersion*, is that wherein the Rays begin to diverge; usually call'd the *Virtual Focus*. See *VIRTUAL*.

*POINT of Incidence*, is a *Point* on the Surface of a Glass, or other Body, wherein a Ray falls. See *INCIDENCE*.

*POINT of View*, with regard to Building, Painting, &c. is a *Point* at a certain Distance from a Building, or other Object, wherein the Eye has the most advantageous View, or Prospect of the same.

This *Point* is usually at a Distance equal to the Height of the Building.—For an instance,—To consider with Judgment, the whole of the famous Church of the *Invalides* at *Paris*; we must not stand at above 340 Foot distance from it, which is nearly its Height. To be able to judge of the Ordinance of its Facade or Frontispiece, and the Regularity of its Order, the Eye should be as far off as the Frontispiece is high, viz. 100 Foot.

But to examine the Correctness of its Profiles, and the Spirit of its Ornaments; the Eye should only be distant the Height of the *Doric Order*, which is about 40 Foot; if it be nearer, the Parts too much shortened will appear out of Proportion.

A Vague or indeterminate *Point* has a different Effect from the *Point of View*; in that, in looking at a Building from an indeterminate *Point*; the Eye can only form an Idea of the Magnitude of its Mass, by comparing it with other Buildings adjacent to it.

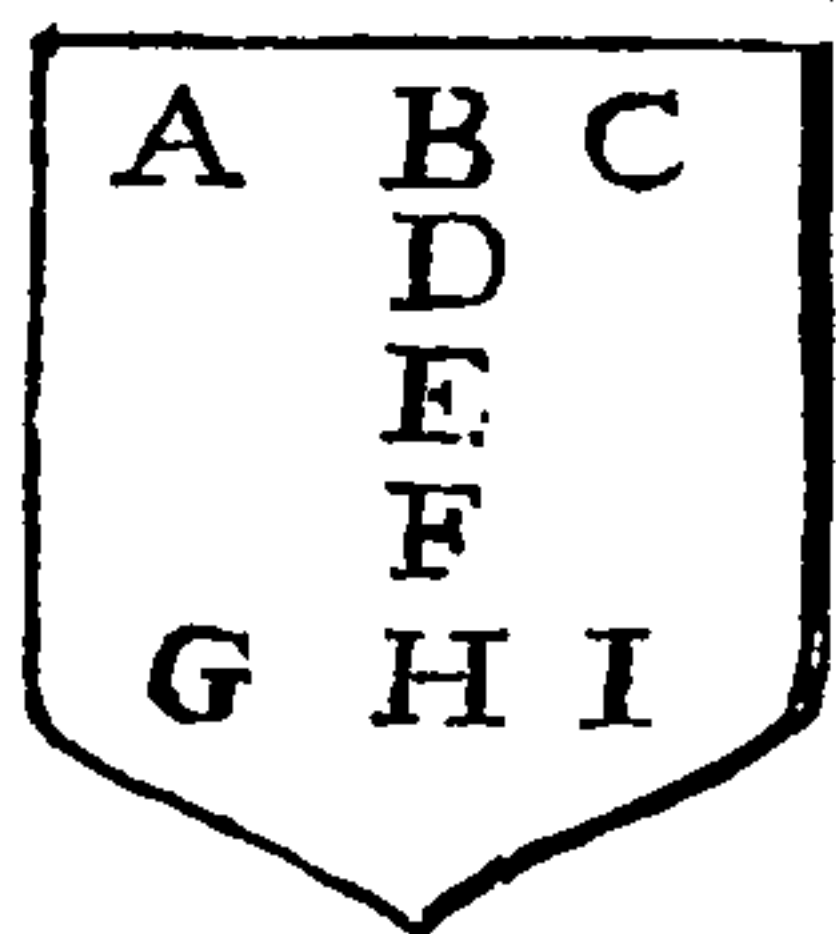


**POINT of Reflexion**, is a *Point* on the Surface of a Glass or other Body whence a Ray is reflected. See REFLEXION.

**POINT of Refraction**, is a *Point* in the Surface of a Glass or other refracting Surface, wherein the Refraction is effected. See REFRACTION.

**POINTS**, in Heraldry, Divisions of the Escutcheon into several Squares, sometimes to the Number of 9, sometimes to 15; some whereof are of one Colour or Metal, the others of another; called also *Equipollent Points*.

There is also another Division of the Escutcheon into *Points*, which have several Names and Values, according to their several Places.



There are nine Principal *Points* in an Escutcheon; as mark'd in the Figure adjoining—A represents the *dexter Chief Point*.—B the *middle Chief Point*.—C the *sinister Chief*.—D the *Honour Point*.—E the *Fess Point*, call'd also the *Center*.—F the *Navil or Navel Point*.—G the *Dexter Base*.—H the *Sinister Base*.—I the *precise middle Base*. See each further described in its Place.

*Colombiere* makes the *Points* and their Situations symbolical.—As the several

Bearings in an Escutcheon are so many Types representing the commendable Actions of the Person they are given to; so the Escutcheon itself represents the Body of the Man that perform'd them, and the *Points*, or Parts, signified by these Letters, the principal Parts of his Body.—Thus, A, B, C represent the Head, in which the three great Faculties reside: D, the Neck where Ornaments are chiefly bore: E, the Heart, &c. See ESCUTCHEON.

**POINT** is also an Ordinary, something like the Pile, rising from the bottom of the Escutcheon to the Top; very narrow, and only taking up two Thirds of the Point of the Escutcheon.—When it thus rises from the Base, it is peculiarly call'd *Point-in-point*.

*Point inverted*, is when it descends from the Chief downwards; possessing two thirds of the Chief, but diminishing as it approaches the Point of the Escutcheon, tho' without touching it.

*Point en Band*, or *Point en Barre*, is when the *Point* is placed transverse, in the Situation of a Bend or Bar.—When it comes from the Sides of the Escutcheon, it is also call'd a *Point Dexter* or *Sinister*, according to its Situation.

The *Point Dexter* is commonly reputed an Abatement due to a Braggadocio.—*Point-Champion-Ten* due for killing a Prisoner after Quarter demanded.—*Point in Point*, a Diminution belonging to a Coward.—*Point plain*, an Abatement belonging to a Lyar, &c. See ABATEMENT, DIMINUTION, &c.

**POINT** is also used in Heraldry, for the lower part of the Escutcheon, which usually terminates in a Point. See ESCUTCHEON.

In the *French Arms* the Flower de Lys's are two in Chief and one in *Point*.

**POINT**, is also an Iron or Steel Instrument, used with some Variety in several Arts.

Engravers, Etchers, Wooden Cutters, Stone Cutters, &c. use *Points* to trace their Designs on the Copper, Wood, Stone, &c. See ENGRAVING, ETCHING, &c.

Statuaries, &c. have likewise *Points* in manner of little Chisels, used in the first forming or sketching out their Works. See STATUE, FOUNDERY, &c.

Turners work or fashion their common Works between two *Points* fastened to the Puppets.—Lapidaries have Iron *Points*, to the Ends whereof are fastened Pieces of Diamonds, serving to pierce the precious Stones withal. See TURNING, LAPIDARY, &c.

**POINT**, in the Manufactories, is a general Term used for all kinds of Laces wrought with the Needle;—Such are *Point de Venice*, *Point de France*, *Point de Genoa*, &c. which are distinguish'd by the particular OEconomy and Arrangement of their *Points*.

The Word is sometimes also used for Lace wove with Bobbins; as, *English Point*, *Point de Malines*, *Point de Havre*, &c.

**POINT**, in Poetry, is a brisk lively Turn, or Conceit, usually found or expected, at the Close of an Epigram. See EPIGRAM.

**POINT-Blank**, in Gunnery, denotes a Shot or Bullet to go directly forward, in a strait Line, to the Mark; and doth not move in a Curve, as Bombs and highly elevated random Shots do. See MORTAR, PROJECTILE, GUNNERY, &c.

**POINTED**—A Cross *pointed*, is that which has the Extremities turn'd off into Points by strait Lines. *Colombiere* calls it *aiguisee*. See CROSS.

**POINTING the Cable**, is a Sea-Term, denoting the untwisting it at the End, and lessening the Yarn, and twisting them again, making all fast with a Piece of Marline, to keep it from rayelling out. See CABLE.

**POINTING**, in Grammar, the Art of dividing a Discourse, by Points, into Periods and Members of Periods; to facilitate the Pronunciation and Understanding thereof. See PUNCTUATION.

**POINTING**, among Seamen, the marking on the Chart in what Point or Place the Vessel is. See CHART, RHUMS, &c.

All the Difficulty in *pointing* a Chart arises from our Ignorance of the Longitude.—The Pilot easily finds the Latitude by taking the Height of the Pole; but for the Longitude there is no coming at it but by Computation which is ever uncertain. See LONGITUDE, LATITUDE, SAILING, &c.

**POINTING**, in War, the levelling or directing of the Cannon or Mortar-Piece, so as to play against any certain Point. See LEVELLING, CANNON, ORDNANCE, MORTAR, PROJECTILE, &c.

This is done by means of a Quadrant with a Plummet. See GUNNERS QUADRANT.

**POISON**, in Medicine, a malignant Quality in some Animal, Vegetable or Mineral Body, which renders it hurtful, and even mortal to those who take it.

Some define a *Poison* to be any thing taken inwardly, whose Properties are contrary to those of a Food, or to what they should be in order to Nutrition. See FOOD.

*Poisons* are of various kinds; and operate in various manners: some by dissolving the Blood, others by coagulating it; and others by corroding and destroying the solid Parts. See BLOOD, DISSOLUTION, COAGULATION, CORROSION, &c.

Some attack, equally, all the Parts; some only a particular one.—Thus the *Lepus Marinus* is an Enemy to the Lungs, *Cantharides* to the Bladder, &c.

Some again, which prove *Poison* to Man serve for Food to other Animals.—Thus *Mandragora* and *Jusquiamus* feed Hogs, kill Man; and thus that deadly *Poison* Hemlock is wholesome for Goats, Bustards, and, as *Galen* says, for Starlings too. The *Cassida* Plant, Sir *Hans Sloane* tells us, poisons, unprepared; but prepared is the very Bread of the *West Indies*; particularly *Jamaica* and the hotter Parts; and is used to victual Ships.

Nay, what is more, some *Poisons* are not only Food, but even Physick to other Animals.—In the *Phil. Transact.* we have an Instance of a Horse troubled with the Farcy, which could not be cured by the most famed Remedies, which yet cured himself in a short time, by feeding greedily on Hemlock.—*Fontanus* tells us of a Woman who eat Hemlock for some time to procure Sleep; and with very good Effect; tho' repeated Doses of Opium had no Operation.

Dr. *Tanc. Robinson*, in a Letter to Mr. *Ray*, gives an Account of several poisonous Plants, which if truly corrected, or exactly dosed, he says, may prove the most powerful Remedies known.—Thus the Hellebores incorporated with a Sapo, or Alkaly-Salts alone, are successful in Epilepsies, Vertigo's, Palsies, Lethargies, and Mania's. Dose from *ej.* to *ss.* The Roots of *Cicuta*, *Assarum*, and *Napellus*, in Agues and periodical Pains: Dose *ej.* to *ss.* The *Hyoscyamus* in Hemorrhagies, violent Heats and Inflammations: Dose *ej.* to *ss.* The *Semen Stramonie* is a good Anodyne, useful in Vigilia's, Rheumatisms, Hysterical Cases, &c. Dose *ej.* to *ss.* *Elaterium*, *Soldanella* & *Gratiola*, in Hydropic Cases. Opium corrected loses its Narcotic Quality, and is safely given in great Doses in convulsive Cases, Fluxes, Catarrhs, &c.

The Word *Poison* is derived from the Latin *Potio*, Draught, and was antiently used in an innocent Sense. See POTION.

Physicians distinguish three Kinds of *Poisons*: *Animal Poisons*; i. e. those drawn from Animals; as the *Viper*, *Asp.*, *Scorpion*, *Lepus Marinus*, &c. See VIPER.

*Vegetable Poisons*, as *Aconite*, *Cicuta*, or *Hemlock*, *Hellebore*, *Napellus*, &c. See ACONITE, CICUTA, HELLEBORE, &c.

And *Mineral Poisons*, as *Arsenic*, *Corrosive Sublimate*, *Cerule*, *Orpiment*, *Realgal*, &c. See ARSENIC, &c.

The Theory of the Effects, Operations, &c. of *Animal Poisons*, is very accurately and mechanically delivered by Dr. *Mead*; in those remarkable Cases, the Bites of a *Viper*, *Tarantula*, and a *mad Dog*. See his Doctrine under the respective Articles, TARANTULA, VIPER, and HYDROPHOBIA.

The Operation of *vegetable Poisons*, see deliver'd under the Article OPIATES.

As to *Mineral Poisons*, they all bear so much Analogy to that made of Quicksilver in the common Sublimate, that their Operation will easily be conceiv'd from what we have already laid down under the Heads, MERCURY and SUBLIMATE.

They are all more or less dangerous, as their Salts receive a greater or less Force from the metallick Particles; and hence, as the most virulent may be mitigated by breaking the Points of the saline Crystals; the most innocent Minerals may become corrosive by combining them with Salts, as is seen in the Preparations of Silver, Antimony, Iron, &c. See MERRITS, GROTTO, &c.

The general Remedies against *Poisons* are known by the Name of *Antidotes*, *Alexipharmicks*, *Alexiterials*, &c. See ANTIDOTE, ALEXIPHARMIC, &c.



**COUNTER-POISON**, See **COUNTER-POISON**.  
To **POISON** a Piece, among Gunners, is the same as to clog and nail it up.

**POISONING**, in Law, the Crime of administering Poison to a Person.

This, by a Law of *Henry VIII.* was made High-Treason; but that Law was afterwards repealed; and the Punishment made for it was to be put alive into a Cauldron of Water, and boild to Death.—At present it is only Felony without Benefit of Clergy. See **PUNISHMENT**.

**POLAR**, something belonging to the Poles of the World. See **POLE**.

In this Sense we say, *Polar Virtue, Polar Tendency, &c.*

See **POLARITY**.  
**POLAR Circles**, are two Circles parallel to the Equator, at the Distance of 23 Deg. from each Pole; serving to mark the beginning of the Frigid Zone. See **CIRCLE** and **ZONE**.

The *Polar Circles* are particularly denominated from their respective neighbouring Poles, the *Arctic* and *Antarctic*. See **ARCTIC** and **ANTARCTIC**.

**POLAR Dials** are those whose Planes are parallel to some great Circle passing through the Poles, or to some one of the Hour-Circles; so that the Pole is neither elevated above, nor depressed below the Plane.

Such Dial therefore can have no Center, and consequently its Style, Substyle, and Hour-Lines are parallel. See **PLANE**.

This therefore will be an Horizontal Dial to those who live under the Equator or Line.

To construct a *POLAR Dial*. See **DIAL**.

**POLAR Projection** is a Representation of the Earth or Heavens, projected on the Plane of one of the Polar Circles. See **PROJECTION**.

**POLARITY**, the Quality of a Thing considered as having Poles. See **POLE**.

By heating an Iron Bar, and letting it cool in a vertical Posture, it acquires a *Polarity*.—The lower End becomes the North End; the upper the South. See **IRON**.

Iron Bars acquire a *Polarity*, by being kept a long time in an erect Posture, even without Heating.—Thus the Bars of Windows, &c. are frequently found to have Poles. Nay a Rod of Iron acquires a *Polarity*, by the mere holding it erect; the lower End in that Case attracting the South End of a magnetic Needle; and the upper the North End.—But these Poles are mutable, and shift with the Situation of the Rod. See **MAGNET** and **MAGNETISM**.

**POLE**, **POLUS**, in Astronomy, the Extremity of the Axis whereon the Sphere revolves. See **AXIS** and **SPHERE**.

These two Points are called, by way of Excellence, the *Poles of the World*. See **WORLD**.

The Word is form'd from the Greek *πολις, vertere*, to turn.

*Wolfius* defines the *Poles*, those Points on the Surface of the Sphere through which the Axis passes: such are the Points P Q, (*Tab. Astronomy, Fig. 52.*)—whereof, that visible to us, or rais'd above our Horizon P, is called the *Arctic* or *North Pole*; and its Opposite Q, the *Antarctic* or *South Pole*. See **ARCTIC** and **ANTARCTIC**.

**POLE** in Geography, is the Extremity of the Earth's Axis; or the Points on the Surface of our Globe, thro' which the Axis passes. See **EARTH**.

Such are the Points P Q, (*Tab. Geography, Fig. 7.*) whereof that Elevated above our Horizon P, is called the *Arctic* or *North Pole*; and its Opposite Q, the *Antarctic* or *South Pole*. See **GLOBE**.

Dr. *Halley* shews, that the solstitial Day, under the *Pole*, is as hot as under the Equinoctial, when the Sun is in the Zenith; in regard all the 24 Hours of that Day under the *Pole*, the Sun's Beams are inclined to the Horizon with an Angle of  $23\frac{1}{2}$  Degrees; whereas, under the Equinoctial, tho' he becomes vertical, yet he shines no more than 12 Hours, and is absent 12 Hours.—besides, that for 3 Hours 8 Minutes of that 12 Hours he is above the Horizon there, he is not so much elevated as under the *Pole*. See **HEAT**.

The *Altitude or Elevation of the Pole*, is an Arch of the Meridian, intercepted between the *Pole* and the Horizon. See **ALTITUDE**.

To find this Elevation is a very popular Problem in Astronomy, Geography, and Navigation; This and the Latitude of the Place being ever the same. See **LATITUDE**.

To observe the **ALTITUDE of the POLE**.

With a Quadrant, observe both the greatest and least Meridian Altitude of the *Pole-Star*. See **MERIDIAN**.

Subtract the least from the greatest, and divide the Difference by two; the Quotient is the Star's Distance from the *Pole*; which added to the lesser Altitude found, gives the Elevation of the *Pole* required.

Thus M. Couplet the younger, at *Ulyssippo*, in 1697, at the

End of *September*, observ'd the greatest Meridian Altitude  $40^{\circ} 5' 40''$ . The smallest;  $36^{\circ} 28' 0''$ . The Difference whereof is  $4^{\circ} 37' 40''$ ; one half whereof,  $2^{\circ} 18' 50''$ , added to the less, gives  $38^{\circ} 46' 50''$ . The Altitude of the *Pole* of *Ulyssippo*. See **ALTITUDE**.

The Altitude of the *Pole*, together with the Meridian Line, being the Basis of all Astronomical Observations; to determine it with the greater Accuracy, the Meridian Altitudes must be corrected from the Doctrine of Refractions; hereafter delivered. See **REFRACTION**, **MERIDIAN**, &c.

By Means hereof, M. Couplet subtracting  $1' 25''$  in the proposed Example, leaves the corrected Altitude  $38^{\circ} 45' 25''$ .

Hence 1. The Altitude of the *Pole* being subtracted from  $90^{\circ}$ , leaves the *Altitude of the Equator*. See **EQUATOR**.

2. If the greatest Meridian Altitude of this Star exceed the Altitude of the Equator, the latter subtracted from the former, leaves the Declination of the Star Northward; If the Altitude of the Star be less than that of the Equator, the former subtracted from the latter leaves the Star's Declination Southward. See **DECLINATION**.

Dr. *Hook*, and some others, imagined, the Height of the *Pole*, and the Position of the Circles of the Heavens, in respect of those on the Earth, to be changed from what they anciently were: But M. *Cassini* thinks there is no Ground for such Surmise; but that all the Difference we now find in the Latitudes of Places, &c. in respect of the ancient Accounts, arises from the Inaccuracies of the ancient Observations.

Indeed 'tis no wonder they should err in their Observations, considering what Instruments they used: He adds, 'tis probable there may be some Variation in the Height of the *Pole*; but thinks this never exceeds two Minutes; and that even this will vanish, after it is arrived to its highest Difference. See **EQUATOR**, &c.

**POLE**, in Sphericks, is a Point equally distant from every Part of the Circumference of a greater Circle of the Sphere; as the Center is in a plain Figure. See **CENTER**.

Or, *Pole* is a Point  $90^{\circ}$  distant from the Plane of a Circle, and in a Line passing perpendicularly thro' the Center, called the Axis. See **CIRCLE**.

The Zenith and Nadir are the *Poles* of the Horizon.—The *Poles* of the Equator are the same, with those of the Sphere or Globe. See **ZENITH**, **NADIR**, &c.

**POLES** of the Ecliptic are Points in the Solstitial Colure  $23^{\circ} 30'$  distant from the *Poles* of the World. See **SPHERE**, **EQUATOR**, **HORIZON**, &c.

**POLES** in Magneticks, are two Points in a Loadstone; corresponding to the *Poles* of the World; the one pointing to the North, the other to the South. See **MAGNET**.

If the Stone be broke in ever so many Pieces, each Fragment will have its two *Poles*.—If a Magnet be bisected by a Line perpendicular to the Axis; the two Points before join'd will become opposite *Poles*, one in each Segment.

To touch a Needle, &c. that Part intended for the North End is touch'd with the South *Pole* of the Magnet, and that intended for the South End with the North *Pole*. See **NEEDLE**.

A Piece of Iron acquires a *Polarity*, by only holding it upright, &c. See **POLARITY**. But its *Poles* are not fix'd; but shift, and are inverted as the Iron is.—A fix'd North *Pole* may be made all the Ways a fix'd South *Pole* is made; but not *vice versa*; and whatever Way we get a fix'd South *Pole*, 'tis always weaker than a fix'd North *Pole* got the same Way.

Fire destroys all fix'd *Poles*; but strengthens the mutable ones. See **FIRE**.

The End of a Rod being heated, and left to cool Northward, Dr. *Gilbert* says, becomes a fix'd North *Pole*; if Southward, a fix'd South *Pole*: yet this does not hold in all Cases.—If the End be cool'd held downward or to the Nadir, it acquires somewhat more Magnetism, than if cool'd horizontally towards the North. But the best Way is to cool it a little inclined to the North. Repeated Ignitions don't avail more than a single one.

Dr. *Power* says, that if we hold a Rod Northwards, and hammer the North End in that Position; it will become a fix'd North *Pole*; and, contrarily, if you hammer the South End.—What is said of Hammering is to be likewise understood of Filing, Grinding, Sawing; nay, a gentle rubbing, provided it be continued long, will produce *Poles*. See **FRICTION**.

The more heavy the Blows are, *ceteris paribus*, the Magnetism is the stronger.—A few hard Blows do as much as many. Old Drills and Punches are fix'd North *Poles*, because almost constantly used downwards. New Drills are either mutable *Poles* or weak North *Poles*. Drilling with such a one Southward horizontally, 'tis a Chance if you produce a fix'd South *Pole*, much less if you drill South downwards; but if you drill South upwards, you make a fix'd South *Pole*.

A weak fix'd *Pole* may degenerate into a mutable one in a Day; nay in a few Minutes, by holding it in a Position contrary to its *Pole*. The Loadstone itself will not make a



fix'd *Pole* in any Iron. 'Tis required the Iron have a length, if it be thick. Mr. *Ballard* tells us, that in six or seven Drills made before his Face, the Bit of each became a North *Pole*, merely by hardening.

*POLE* of a *Glass* in Opticks, is the thickest Part of a Convex, or the thinnest of a Concave *Glass*. See CONVEX and CONCAVE.

If the *Glass* be truly ground, the *Pole* will be exactly in the Middle of its Surface. See OPTIC, GLASS, GRINDING, &c.

This is sometimes also called the *Vertex* of the *Glass*. See VERTEX.

*POLE* in Surveying, is a Measure, containing 16 Foot and an half; called also *Perch*. See PERCH.

*POLE-Star*, or *POLAR-Star*, is a Star of the second Magnitude; the last in the Tail of *Ursa Minor*, or Little Bear. See *URSA MINOR*.

Its Longitude Mr. *Flamsteed* makes  $24^{\circ} 14' 41''$ , its Latitude,  $66^{\circ} 64' 11''$ .

The Nearness of this Star to the *Pole*, whence it happens that it never sets; renders it of vast Service in Navigation, &c. for determining the Meridian Line, the Elevation of the *Pole*, and consequently the Latitude of the Place, &c. See *POLE*; see also MERIDIAN and LATITUDE.

*POLEM*, *Anno* 4. *Edw.* IV. *cap.* 7. was a sharp or picked Top, set in the Fore-part of the Shoe or Boot. This Fashion was first taken up in the Time of King *William Rufus*; the Picks being made so long, that they were tied up to the Knees with Silver or Golden Chains: They were forbidden by *Edw.* IV. *Tunc fluxus Crinium, tunc luxus Vestium, tunc usus Calceorum cum arcuatis aculeis inventus est.* *Malm.* in Will II.

*POLEMICAL*, an Epithet applied to Books of Controversy; especially those in Divinity.

Hence also we say *Polemical Divinity*, for Controversial, &c. See DIVINITY.

The Word comes from the Greek *πολεμος*, War, Battle. — *Scaliger's* Exercitations against *Cardan* make a pure polemical Book.

*POLESCOPE*, in Opticks, a kind of crooked or oblique Prospective *Glass*, contrived for the seeing of Objects that don't lie directly before the Eye.

It was invented by *Hevelius*, in 1637, who gave it this Name from the Greek *πολεμος*, pugna; because it may be of Use in War, in Engagements, Duels, &c.

Something of this Kind are those now known among us under the Name of Ogling Glasses, or Opera-Glasses, thro' which one sees a Person in appearing to look at another.

#### Construction of the Polemoscope.

Any Telescope will be a *Polemoscope*, if the Tube be but crooked, like a rectangular Syphon A B D M (*Tab. Opticks*, Fig. 70.) And between the Object *Glass*, A B, and first Eye-*Glass* G H (if there be several) be placed a plain Mirror, in such manner as that the Mirror is inclined to the Horizon, at an Angle of  $45^{\circ}$ , and its reflected Image found in the Focus of the Eye-*Glass* G H.

For, by this means, Objects situate over against the Lens A B will appear the same as if the Mirror K were away, and the Object-*Glass* with the Objects were directly opposite to the Eye-*Glasses*.

If 'tis desired to look in at O, not at M, another plain Mirror, N must be added. See TELESCOPE.

*POLETA*, in our ancient Law-Books, signifies the Ball of the Foot. — *Tres orilli scindantur de pede anteriori sine Poleta.* *Mat. Par.* *Anno* 1215. See EXPEDITATE.

*POLICY*, or *POLITY*, the Laws, Orders, and Regulations prescribed for the Conduct and Government of States and Communities. See GOVERNMENT.

In the general, *Policy* is used in opposition to Barbarism. — Different States have different Kinds of *Policy*; thus the *Policy* of *Athens* differ'd from that of *Sparta*.

*Loyseau* observes, that *Policy* properly signifies the Course and Administration of Justice in a City. — The Direction of the *Policy* of *London* is in the Hands of the Lord-Mayor. See MAYOR.

At *Paris* they have a *Chamber of Policy*, where People are verbally accused for Contraventions of *Policy*.

Some divide *Policy* into two Parts, *Agaronomy*, that relating to the Affairs of Merchandise; and *Astinomy*, that concerning the Civil and Judiciary Government of the Citizens: Some add a third Branch, viz. what relates to the Ecclesiastical Government. See ECCLESIASTICAL.

Bishop *Hooker* has a fine Treatise of the Laws of Ecclesiastical *Polity*.

The Word is of Greek Original; being derived from the Greek *πολις*, Civitas, City.

*POLICY* of Assurance, or Insurance of Ships, is a Contract or Convention whereby a Person takes upon himself the Risques of a Sea-Voyage; obliging himself to make good the Losses and Damages that may befall the Vessel, its Equipage, Tackle, Victualling, Lading, &c. either from Tem-

pests, Shipwrecks, Pirates, Fire, War, Reprizals, &c. in Part or in whole; in Consideration of a certain Sum of Seven, Eight, or Ten per Cent. more or less, according to the Risk run; which Sum is paid down to the Assurer by the Assuree, upon his signing the *Policy*. See ASSURANCE.

There are some Assurances for the Going, some for the Returning, and some for both; or for a limited Time; though some maintain, that the Time ought never to be limited, in that the Contract thereby becomes Usurious.

The *Policy* is to contain the Name and Dwelling of the Person assured; his Quality, whether as Proprietor or Agent; the Effects, Name of the Vessel, and of the Master; those of the Place where the Goods are to be laden or unloaded; the Port whence and whither, the Time, the Risques, and the Conditions.

If the Vessel or Merchandizes assured be lost, the Assuree must notify the same by an Act in form; declaring he surrenders the whole to the Assurer, on his paying the Sum assured in the Time expressed.

The Origin of these Assurances is ascribed to the Jews, at the Time they were expelled France, in 1182; who are said to have used this as a Means to facilitate the transporting of their Effects.

The Term *Policy* is Spanish, and comes from *Polica*, Schedule; but the Practice comes from the Italians and the Lombards, who, again, derived it originally from the Latin *Policatio*, Promise. — Some say, the Merchants of *Marseilles* were the first who set on Foot this Kind of Commerce.

Anciently, *Policies* were given by Word of Mouth, called *Policies of Credit*; it being supposed the Assurer would enter them in his *Leidger*: but of late that Honesty is become less frequent among Traders, they have been constantly in Writing.

The Grand Mart for the Assurance of Ships is the City of *Amsterdam*. 'Tis here not only the Dutch Traders assure their Vessels, but, what is infinitely more considerable, such is the Riches, Reputation, &c. of the Inhabitants, as to engage the Generality of Merchants of other Countries to prefer them to their own Countrymen, and to assure with the Dutch, when it would be much easier for them to find Assurers at Home, or in the Ports where the Vessels are laden.

The Number of Assurers at *Amsterdam* is not above Fifty or Sixty Persons; yet is their Wealth and Character such, that a Man never fails of an Assurer, be the Countries or Ports what they will, the Cargo ever so rich, or the Dangers ever so imminent.

*POLICY* of Assurance, or Insurance of Houses, is an Instrument form'd on the Model of that for Vessels; whereby a Person, or Community of Persons, take on themselves the Risques and Damages that may befall Houses, their Furniture, in whole or in Part, &c. from Fire; on Consideration of a certain Sum or Sums, to be paid by the Assurer, according to the Terms of the Agreement. See ASSURANCE.

The Assurance from Fire is now a popular Piece of Commerce; and we have a Number of Societies erected into Corporations, for that very Purpose. See FIRE-OFFICE.

*POLICY* of Assurance of Lives, is an Instrument whereby a Society of Persons erected into a Corporation, &c. oblige themselves to pay a certain Sum of Money, e. g. an Hundred Pounds upon the Death of a Person whose Life they assure; in Consideration of a Sum of Money, e. g. one Guinea, paid Quarterly, to the Assurers during the Life of the said Person assured.

The *Policy* is under the Seal of the Office, and entitles the Person, in whose Favour 'tis granted, to make good his Claim, according to the Tenor of the Articles, or By-Laws of the Society.

There have also been lately set on Foot, *Policies* of Assurance of Horses, from Death, Damages in Travelling, Diseases, being stolen, &c. In which Cases the Assurers are to make them good to the Assurees, &c.

*POLICY* in Letter-Foundry, is sometimes used, for a Rule that regulates the Number of Letters of each Kind in a compleat Font; i. e. to determine how many, in Proportion to the whole Set, there are to be of each particular Kind. See LETTER, &c.

For instance, in a Font of an hundred thousand Characters, there are to be a thousand for the *a*, five thousand for the *e*, three thousand for the *m*, thirty only for the *k*, as many or a little more for the *x*, the *y*, and *z*; and in Proportion for the other Letters, the great and little Capitals, the initial Letters, Points, Comma's, double Letters, &c. See LETTER-FOUNDRY.

*POLIOPTRUM*, or *POLYOPTRON*, in Opticks. See POLYOPTRON.

*POLISHER*, an Instrument call'd also a *Burnisher*, used for polishing and burnishing Gold, Silver, and other Metals, when gilt or silver'd; and Matters of other Kinds proper to take a Polish. See BURNISHER and POLISHING.

The *Polisher* is different in the different Arts and Manufactories. — The Gilders use an Iron *Polisher* to prepare



their Metals before Gilding, and the Blood Stone to give them the bright Polish after Gilding. See GILDING.

The *Polisher* used by the Makers of Spurs, Bits, &c. is part Iron, part Steel, and part Wood.—The Instrument consists of an Iron Bar, with a wooden Handle at one End, and a Hook at the other, to fasten it to another Piece of Wood held in the Vice, while the Operator is at Work. In the Middle of the Bow, within side, is what they properly call the *Polisher*, which is a triangular Piece of Steel with a Tail, whereby it is riveted to the Bow.

What the Cutlers call their *Polishers*, are a kind of wooden Grindstones (if we may be allow'd the Word) made of Walnut-tree, an Inch thick, and of a Diameter at Pleasure. They are turn'd by the Great Wheel; and 'tis on these they polish and smooth their Works with Emery and Putty.

The *Polishers* used in the Manufactures of Glass are very different from all these.—They consist of two Pieces of Wood, the one flat, cover'd with old Hat; the other long and half round, is fasten'd on the former, whose Edge it exceeds on both Sides by some Inches, which serve the Workman to take hold of, and to work it backwards and forwards by. See GLASS.

The *Polishers* used by Spectacle-Makers are Pieces of Wood a Foot long, seven or eight Inches broad, and an Inch and half thick, cover'd with old Castor-Hat, whereon they polish the Shell and Horn Frames their Spectacle Glasses are to be set in. See SPECTACLE.

POLISHING, the Art of giving a Gloss, Lustre, or Brilliant to a thing, particularly a precious Stone, Marble, Glass, Mirror, or the like. See LUSTRE, &c.

POLISHING of Glasses, Lens's, &c. succeeds the Grinding thereof. See GRINDING; see also GLASS, LENS, &c.

The *Polishing* of a Mirror is the last Preparation given it, with Emery or Putty. See MIRROR.

For the *Polishing* of Diamonds, &c. see DIAMOND, &c.

POLITICAL, something that relates to Policy or Civil Government. See POLICY and GOVERNMENT.

In this Sense we say, *Political Interests, Political Views, Political Discourses, &c.*

The Word is form'd from the Greek *πολις*, *Civitas*, City.

POLITICAL *Arithmetick* is the Application of arithmetical Calculations to *Political Uses*; as, the publick Revenues, Number of People, Extent and Value of Lands, Taxes, Trade, Commerce, Manufactures, or whatever relates to the Power, Strength, Riches, &c. of any Nation, or Commonwealth. See ARITHMETICK.

The chief Authors who have attempted Calculations of this Kind, are Sir William Petty, Major Grant, Dr. Halley, Dr. Davenant, and Mr. King; and the principal Points settled by each hereof are as follows.

According to Sir William Petty's Computations, tho' the Land of Holland and Zealand be not above 1000000 Acres, nor that of France less than 80,00000, yet the former are near a third Part as rich and strong as the latter.—That the Rents of Lands in Holland are to those in France, as 7 or 8 to 1.—That the People of Amsterdam are  $\frac{2}{3}$  of those of Paris or London; which, according to him do not differ above a 20th Part from one another.—That the Value of the Shipping of Europe is about Two Millions of Tuns, whereof the English have 500000, the Dutch 900000, the French 100000; the Hamburgers, Danes, Swedes, and Dantzickers have 250000; and Spain, Portugal, Italy, &c. about as much.—That the Value of Goods exported yearly from France into all Parts, is quadruple of that exported into England alone, and consequently in all about 5000000: What is exported out of Holland into England is worth 300000 *l.* and what is exported thence into all the World 1800000 *l.*—That the Money yearly raised by the French King, in Time of Peace, is about 6  $\frac{1}{2}$  Millions Sterling; And that the Monies raised in Holland and Zealand are about 2100000 *l.* And in all the Provinces together about 3000000 *l.*—That the People of England are about 6000000, and their Expences at 7 *l.* per Annum a Head, 42000000 *l.* or 800000 *l.* a Week.—That the Rent of the Lands is about 8 Millions, and the Interests and Profits of the personal Estates as much.—The Rent of Houses in England 4000000 *l.* That the Profits of the Labour of all the People is 26000000 *l.* yearly.—That in Ireland the People amount to about 1200000.—That the Corn spent in England, at 5 *s.* the Bushel for Wheat, and 2 *s.* 6 *d.* for Barley, amounts to Ten Millions per Annum.—That the Navy of England (then) required 36000 Men to man it, and other Trade and Shipping about 48000.—That in France, to manage the whole Shipping Trade, there are required 15000 Men. That the whole People of France are about Thirteen Millions and a half; and those of England, Scotland, and Ireland, together, about Nine Millions and a half.—That in the three Kingdoms are about 20000 Churchmen; and in France above 270000.—That in the Dominions of England above are 40000 Seamen, and in France not above 10000.—That in England, Scotland, and Ireland, and all other Dominions depending thereon, there was then

about 60000 Tun of Shipping; which is worth about Four Millions and a half in Money.—That the Sea-Line round England, Scotland, and Ireland, and the adjacent Isles, is about 3800 Miles.—That in the whole World are about 300 Millions of People; whereof those with whom the English and Dutch have any Commerce, are not above 80 Millions.—That the Value of Commodities traded for in the whole is not above 45000000. That the Manufactures exported out of England amount to about 5000000 *l.* per Annum. Lead, Tin, and Coals to 500000 *l.* per Ann.—That the Value of the French Commodities (then) brought into England did not exceed 1200000 *l.* per Ann.—That the whole Cash of England, in current Money, was then about 6000000 *l.* Ster.

Dr. Davenant gives some good Reasons, why many of Sir Wm. Petty's Numbers are not to be entirely depended upon; and therefore advances others of his own, founded on the Observations of Mr. Greg. King.

Some of the Particulars are,—That the Land of England is 39 Millions of Acres.—That the Number of People, according to his Account, is about 5545000 Souls, they increasing about 9000 every Year, Allowances being made for Plagues, &c. Wars, Shipping, and the Plantations.—The People of London he reckons at 530000. Those in the other Cities and Market-Towns in England 870000, and those in the Villages and Hamlets at 4100000.—The yearly Rent of the Land he accounts to be 10,000000 *l.*—That of the Houses and Buildings 2,000000 *l.* per Ann.—The Produce of all Kinds of Grain he reckons to be worth 9,075000 *l.* in a Year moderately plenty.—The Rent of the Corn Lands annually, 2,000000 *l.* and the neat Produce above 9,000000 *l.*—The Rent of the Pasture, Meadows, Woods, Forests, Commons, Heaths, &c. 7,000000 *l.*—The annual Produce by Cattle, in Butter, Cheese, and Milk, he thinks, is about 2,500000 *l.*—The Value of the Wool yearly shorn about 2,000000 *l.*—Of Horses yearly bred about 250000 *l.*—Of the Flesh yearly spent as Food, about 3,350000 *l.*—Of the Tallow and Hides about 600000 *l.*—Of the Hay yearly consumed by Horses about 1,300000 *l.* Of Hay consumed by other Cattle 1,000000 *l.*—Of the Timber yearly fell'd for Building, 500000 *l.* Of the Wood yearly spent in Firing, &c. about 500000 *l.*—The Land of England to its Inhabitants is now about 7  $\frac{1}{4}$  Acres per Head.—The Value of the Wheat, Rye, and Barley, necessary for the Sustenance of England, amounts to at least 6,000000 *l.* Sterl. per Annum.—The Value of the Woollen Manufacture made here is about 8,000000 *l.* per Annum; and our Exports of all Kinds of the Woollen Manufacture amount to above 2,000000 *l.* per Ann.—The annual Income of England, on which the whole People live and subsist, and out of which Taxes of all Kinds are paid, is now about 43,000000 *l.*—that of France 81,000000 *l.* and that of Holland 18,250000 *l.*

Major Grant, in his Observations on the Bills of Mortality, computes that there are 39000 square Miles of Land in England.—That in England and Wales there are 4,600000 Souls.—That the People of London are about 640000; one fourteenth Part of the People of England.—That in England and Wales are about 10,000 Parishes.—That there are 25 Millions of Acres in England and Wales; viz. about 4 Acres to every Head.—That but 64 out of 100 of the Children born, are living at 6 Years old.—That but 40 of 100, are alive at 16 Years End.—That but 25 of 100 at 26 Years End.—That but 16 at 36 Years End.—That but 10 out of 100 at 46 Years End.—That but 6 out of 100 at 56 Years End.—That but 3 out of 100 at 66 Years End. And that but 1 out of 100 at 76 Years End.—And that London doubles itself in about 64 Years.

Sir William Petty, in his Discourse about Duplicate Proportion, further tells us, that it is found by Experience, that there are more Persons living between 16 and 26 than of any other Age; and laying down that as a Supposition, he infers, That the square Roots of every Number of Mens Ages under 16 (whose Root is 4) shews the Proportion of the Probability of such Persons reaching the Age of 70 Years.

Thus, It is 4 times more likely, that one of 16 Years Age lives to be 70, than a Child of one Year old.—It is thrice as probable, that one of 9 Years lives to be 70, as such a new-born Child, &c.—That the Odds is 5 to 4, that one of 25 dies before one of 16 Years.—That it is 6 to 5, (still as the square Roots of the Ages) that one of 36 Years old dies before one but of 25 Years of Age. And so on according to any declining Age to 70, compared with 4. 6: which is nearly the Root of 21, the Law-Age.

Dr. Halley has made a very exact Estimate of the Degrees of the Mortality of Mankind, from curious Tables of the Births and Burials, at the City of Breslau, the Capital of Silesia; with an Attempt to ascertain the Price of Annuities upon Lives.—From a Table which he has calculated thence, publish'd in the *Phil. Transf.* he derives the following Uses.

1<sup>o</sup>. To find in any Multitude or Body of People, the Proportion of Men able to bear Arms; which he reckons from 18 to 56 Years old; and accounts about  $\frac{1}{4}$  of the whole.—2<sup>o</sup>. To shew the



the different Degrees of Mortality, or rather Vitality, in all Ages; by which means he finds the Odds there is, that any Person of any Age doth not die in a Year's Time, or before he attains such an Age.—3°. To shew of what Number of Years it is an even Lay that such a Person shall die; and finds, for instance, that it is an even Lay, that a Man of thirty Years of Age lives between twenty seven and twenty eight Years.—4°. To regulate the Price of Insurance upon Lives. 5°. And the Valuation of Annuities upon Lives. 6°. How to value two or three Lives after the same Manner. See ANNUITY.

From the whole, he makes two very good Observations. 1. How unjustly we use to complain of the Shortness of our Lives; for that it appears, that one half of those that are born, do not live above seventeen Years.

2. That the Growth and Increase of Mankind is not so much stunted by any thing in the Nature of the Species, as it is from the curious Difficulty most People make of venturing on the State of Marriage: And therefore that Celibacy ought to be every way discouraged by all wise Governments; and those who have numerous Families of Children to be countenanced and encouraged by good Laws; such as the *Jus trium liberorum*, &c. among the Romans.

Farther Particulars relating to the Number of Births, and Burials, the Proportion of Males and Females, &c. See under the Article MARRIAGE, BIRTH, MALE, &c.

**POLITICKS**, POLITICE, the first Part of Oeconomy or Ethicks, consisting in the governing and regulating of States, for the Maintenance of the Publick Safety, Order, Tranquility, and good Morals. See ETHICKS, PHILOSOPHY, GOVERNMENT, &c.

My Lord Bacon divides *Politicks* into three Parts; with regard to the three grand Ends thereof, or the three Offices incumbent on those who have the Administration; viz. the Preservation of the State, the Happiness and Flourishing of the State, and the Enlargement of its Bounds, &c.

The two first Parts he observes are well handled by several Authors; but about the third there is a deep Silence.—He ranks this therefore in the Number of the *Desiderata*, and gives us a Specimen of an Essay to supply it.

We have several Systems of *Politicks* by Aristotle, Machiavel, Lipsius, &c. In which last we have nothing but Particles, and Conjunctions of the Author's own; the Body of the Book being all Quotations.

The Word is form'd from the Greek *πολις*, *Civitas*.

**POLITY**, or POLICY. See POLICY.

**POLIUM**, a medicinal Plant, which makes an Ingredient in the Treacle of Andromachus. See TREACLE.

It grows in mountainous Places, and is thence denominated *Montanum*.—The Tops of its Flowers are esteem'd Cephalick, proper to promote Urine and the Menfes, and to prevent Corruption.

It has its Name from the Greek *πολιδε*, *White*; in regard the Heads of the *Polium* of the Ancients, according to Dioscorides, and the Leaves according to Pliny, were white.

**POLI**, a Term used in ancient Writings for the Head. See HEAD.

The Word is doubtless form'd from *Pole*; this Part being as it were the Pole of the Microcosm. See POLE.

Hence, *to poll*, is to enter down the Names of Persons, who give their Votes or Voices at an Election. See VOTE, VOICE, SUFFRAGE, ELECTION, &c.

**POLLARD**, among Hunters, a Stag or Male Deer, which has cast its Head. See HEAD, HUNTING, &c.

**POLLARD**, or *Pollenger*, in Agriculture, an old Tree which has been often lopp'd. See TREE.

**POLL-Money**, or *Capitation*, a Tax imposed by Authority of Parliament, on the Person or Head; either on all indifferently, or according to some known Mark of Distinction, as Quality, Calling, &c. See TAX and CAPITATION.

Thus, by the Statute 18 Car. II. every Subject in the Kingdom was assess'd by the *Head* or *Poll*, according to his Degree; every Duke 100*l*. Marquis 80*l*. Baronet 30*l*. Knight 20*l*. Esquire 10*l*. &c. and every single private Person 12*d*.

This was no new Tax; as appears by former Acts of Parliament, particularly that Anno 1380, where, *Qui libet tam conjugatus quam solutus, utriusq; sexus, pro Capite suo solvere cogebatur*. Wallingh.

Camden, in his Remains, of Coins, says there was anciently a personal Tribute, call'd *Capitatio*, *Poll-Silver*, imposed on the *Poll*, or Person of every one; on Women from the Age of 12 Years, and on Men from 14.

**POLLUTION**, POLLUTIO, the Act of profaning a Temple or Holy Place. See PROPANATION.

The Romanists hold a Church to be polluted by the Effusion of Blood, or of Seed therein; and require its being consecrated a-new.

The Jews were held polluted by the touching of a dead Body, or of the Menfes of Women; and were to be purified in From. See the Laws hereof in Leviticus.

The Indians are so superstitious on the Head of Pollution,

that they break all the Vessels which those of another Religion have drunk out of, or even touch'd; and drain all the Water out of a Pond a Stranger has bath'd in.

**POLLUTION**, or *Self-POLLUTION*, is also used for the abusing or defiling of one's own Body, by Means of lascivious Frictions and Titillations, rais'd by Art, to produce an Emission. See EMISSION.

We read in Scripture, that *Err* and *Onan* were severely punish'd for having polluted themselves by spilling their Seed on the Ground; whence the Crime has been denominated by some Emperics, *Onania*. See ONANIA.

Of *Pollutions* some are *Voluntary*, others *Involuntary*, and *Nocturnal*.

*Nocturnal-POLLUTION* is an involuntary Emission of Seed, from a too great Turgescency of the Seminal Vessels, or from the Seed's being too sharp and irritating, or from a Weakness of the Parts. See SEED.

The Romish Church puts up Prayers in the Close of the Evening Office, to be preserved from *Nocturnal Pollution*.

**POLLUX**, in Astronomy, the Hind Twin; or Hind Part of the Constellation *Gemini*. See GEMINI.

**POLLUX** is also a Star of the 2d Magnitude in the Constellation *Gemini*, or the Twins. See GEMINI.

Its Place is in the Head of the Hind-Twin, named *Pollux*.—Its Longitude 18° 56' 09". Its Latitude 6° 39' 27" N.

**POLLUX** is also used in Meteorology. See CASTOR.

**POLTROON**, or *POLTRON*, a Coward, or Dastard; wanting Courage to perform any thing great, or noble. See COWARD.

The Word we borrow from the French, who, according to *Salmasius*, derive it a *Pollice truncato*; because antiently those who would avoid going to the Wars, cut off their Thumbs. See THUMBS.

But *Menage*, with more Probability, derives it from the Italian, *Poltrone*, and *Poltro*, a Bed; because timorous, pusillanimous People take Pleasure in lying a Bed.—He adds, that the Italian, *Poltro*, is again derived from the German, *Polster*, a Pillow or Cushion.

Others derive the Word from the Italian, *Poltro*, Colt; because of that Creature's Readiness to run away.

**POLTRON**, in Falconry, is a Name given to a Bird of Prey, when the Nails and Talons of his Hind-Toes are cut off, wherein his chief Force and Armour lay; in order to intimidate him, and prevent his flying at great Game. See HAWK and HAWKING.

**POLYACOUSTICKS**, Instruments contrived to multiply Sounds; as multiplying Glasses, or Polyscopes do Images of Objects. See PHONICKS, SOUND, &c.

The Word is compounded of the Greek *πολυ*, *much*, and *ακουω*, *audio*, I hear. See ACOUSTICKS.

**POLYANTHEA**, a famous Collection of Common-Places, in Alphabetical Order; of great Service to Orators, Preachers, &c. of the lower Class. See COMMON-PLACE.

Its first Author was *Dominic Nanni de Mirabella*.

The Word is form'd from the Greek, *πολυ*, *much*, and *ανθος*, *Flower*.—And is of much the same Significancy with *Anthology*, *Florilege*, &c. See ANTHOLOGY.

**POLYANTHUS**, or *Polyanthium*, is also used to denote a Plant, which bears or produces several or many Flowers. See PLANT and FLOWER.

The Word is compounded of *πολυ*, *multus*, *much*, and *ανθος*, *Flos*, *Flower*.

The Word is more particularly used for a Species of the Hyacinth.

**POLYGAMY**, a Plurality of Wives, or of Husbands, held by the same Man or Woman, at the same time. See WIFE and HUSBAND.

*Polygamy* is prohibited among Christians, but was allow'd by divine Appointment among the Jews; as it still is among the *Mahometans*.

Maj. Grant observes, that the Males and Females brought into the World are nearly on a Balance; only abating for a little Excess on the Side of the Males, to make up for the extraordinary Expence thereof in War, and at Sea: whence it follows, that Nature only intends one Wife, or one Husband for the same Person; since, if they have more, some others must go without any at all.—Hence he concludes, that the Christian Law, which prohibits, is more agreeable to the Law of Nature than the *Mahometan*, and we may add, than the *Jewish* Law, which tolerates, *Polygamy*. See MARRIAGE.

Yet *Selden* has proved, in his *Uxor Ebraica*, that Plurality of Wives was allow'd of, not only among the *Hebrews*, but almost among all other Nations, and in all Ages.—'Tis true, the ancient *Romans* were more severe in their Morals; and never practis'd it, tho' 'twas not forbid among them: And *Mark Anthony* is mentioned as the first who took the Liberty of two Wives. See CONCURVINE.

From that Time it became pretty frequent in the Empire, till the Reigns of *Theodosius*, *Honorius*, and *Arcadius*, who first prohibited it by express Law in 393.—After this the Emperor



Emperor *Valentinian*, by an Edict, permitted all the Subjects of the Empire to marry several Wives; nor does it appear from the Ecclesiastical History of those Times that the Bishops made any Opposition to this Introduction of Polygamy.

In effect, there are some even among the Christian Casuists who don't look on Polygamy as in itself criminal.—*Juvenius* observes, that the Prohibition of Polygamy is a positive Law, from which a Man may be exempted by sovereign Necessity.—*Baillet* adds, that the Example of the Patriarchs is the most pressing Argument in favour of Polygamy.

At London we had some Years ago an artful Treatise published in behalf of a Plurality of Wives, under the Title of *Polygamia Triumphatrix*; the Author whereof assumes the Name of *Theophilus Aletheus*; but his true Name was *Lyserus* a Native of Saxony.—It has been answered by several.

POLYGAMY is also used in the Canon Law, for a Plurality of Wives, tho' only had successively, or one at a Time. See WIFE.

In the *Romish* Church this still disqualifies a Man for the Episcopate. See BIGAMY.

The Word is form'd from the Greek *πολυ*, *multum*, and *υxor*, Wife.

POLYCHRESTON, POLYCHREST, in Pharmacy, a Medicine that serves for many Uses, or cures many Diseases. See PANACEA.

The Word is compounded of the Greek *πολυ*, *multum*, much, and *χρηστος*, *utilis*, useful.

SAL-POLYCHREST is a compound Salt, made of equal Parts of Salt-Petre and Sulphur, laid on a Crucible first heated red hot for the Purpose. See SALT.

POLYEDRON. See POLYHEDRON.

POLYGLOTT, or POLYGLOTTE, among Divines and Critics, a Bible printed in several Languages. See BIBLE.

It is thus call'd from the Greek *πολυ*, and *γλωσση*, Tongue.

The first Polyglott-Bible is that of Cardinal *Ximenes*, printed in 1515, at *Alcala de Henares*; and commonly call'd the Bible of *Complutum*, or *Complutensian Bible*.

It contains the Hebrew Text, the Chaldee Paraphrase on the Pentateuch, the Greek Version of the LXX. and the ancient Latin Edition. See PENTATEUCH, PARAPHRASE, &c.

In this Polyglott there is no other Latin Version from the Hebrew beside this last, but there is added another literal one from the Greek Septuagint.—The Greek Text of the New Testament is here printed without Accents, to bring it nearer to the Original of the Apostles, or at least to the most ancient Copies, wherein there are no Accents found. See ACCENT.

At the End is added an Apparatus of Grammars, Dictionaries, and Indices or Tables.—The chief Author, *Ximenes de Cincros*, Cardinal and Archbishop of *Toledo*, in his Dedication to Pope *Leo X.* observes, that it was necessary to give the Holy Scriptures in their Originals; there being no Translation, how perfect soever, that can render them perfectly.

The second Polyglott is that of *Philip II.* printed by *Plantin* at *Amwerp*, in 1572. and the Care of the Edition imposed on *Arias Montanus*.

In this, besides every thing in the Bible of *Complutum*, are added the Chaldee Paraphrases on the rest of the Old Testament beside the Pentateuch, with a Latin Translation of those Paraphrases. In this Polyglott is likewise a very literal Latin Version of the Hebrew Text, for the Use of those who have a mind to learn the Hebrew Language.

As to the New Testament, beside the Greek and Latin of the Bible of *Alcala*, in this Edition is added an ancient Syriac Version, both in Syriac and Hebrew Characters, with Points, to facilitate the reading thereof to those accustomed to read Hebrew.—To the Syriac is likewise added a Latin one, composed by *Guy le Fevre*, who had the Care of the Syriac Version of the New Testament.

Lastly, in the Polyglott of *Amwerp* is added a more copious Apparatus of Grammars, Dictionaries, &c. than in that of *Complutum*; with several little Treatises judg'd necessary for clearing up the more difficult Passages in the Text.

The third Polyglott is that of *M. Jay*, printed at *Paris* in 1645. which has this Advantage over that of *Philip II.* that it has the Syriac and Arabic Versions of the Old Testament with Latin Interpretations.—In the Pentateuch it has likewise the Hebrew and Samaritan Text; and the Samaritan Version in Samaritan Characters.

As to the New Testament, beside every thing in the Polyglott of *Amwerp*; here is added an Arabic Translation, with a Latin Interpretation.—But here wants the Apparatus, and the Grammars and Dictionaries, which are in both the former Polyglotts, which renders this great Work very imperfect.

The fourth Polyglott is that of *London*, printed in 1657, call'd *Walton's Polyglott*, from the Author of the Edition *Dr. Brian Walton* afterwards Bishop of *Winchester*.

This is indeed less magnificent than that of *M. Jay*; with regard both to the Size of the Paper, and the Beauty of the Characters; but is in all other respects preferable; being both much more ample and more commodious.

In this, the Vulgate is printed according to the revised and corrected Edition of *Clement VIII.* which is not done in that of *Paris*, where the Vulgate is printed as it stands in that of *Amwerp* before the Correction. See VULGATE.

It likewise contains an interlineary Latin Version of the Hebrew Text; whereas the *Paris* Edition has no other Latin Version from the Hebrew beside the common Vulgate: again, the Greek Septuagint printed in this Polyglott is not the same with that printed in the Bible of *Complutum*, which was retained in the Editions of *Amwerp* and *Paris*; but the Greek Text of the Edition of *Rome*: to which are added the various Readings of another very antient Greek Copy call'd the *Alexandrian*, because brought from *Alexandria*. See SEPTUAGINT.

The Latin Version of the Greek of the Seventy is that published by *Flaminius Nobilius*, by Authority of Pope *Sixtus V.* Add, that in this Polyglott are found some Parts of the Bible in *Ethiopian* and *Persian*, nothing whereof appears in any of the rest.

Lastly, this Edition has the Advantage of Preliminary Discourses call'd *Prolegomena*, on the Text both of the Originals, and Versions; with a Volume of various Readings of all the different Editions.

To the Number of Polyglotts may likewise be added the two Pentateuch's printed by the Jews of *Constantinople*, in four Languages; but all in Hebrew Characters.

In one of these Pentateuch's, printed in 1551, is found the Hebrew Text in large Characters; on one side whereof is the Chaldee Paraphrase of *Onkelos* in moderate Characters; and on the other side a Paraphrase in the *Persian*, composed by a Jew, one *Jacob de Tous*, so call'd from the City where he lived.—Beside these three Columns, the Arabic Paraphrase of *Saadias Gaon* is printed in small Characters a-top of the Pages; and at bottom is added the Commentary of *Raschi*.

The other Polyglott is printed at *Constantinople* in 1547; in three Columns like the former.—The Hebrew Text of the Law is in the middle, a Translation into the Vulgar Greek on one side, and a Spanish Translation on the other. These Versions are both in Hebrew Characters, with Points to determine the Pronunciation. A-top of the Page is added the Chaldee Paraphrase of *Onkelos*, and at the bottom the Commentaries of *Raschi*.

To these may be added as a seventh Polyglott, the Psalter published by *Aug. Justinian*, a Dominican, and Bishop of *Nebio*, at *Genoa* 1516; containing the Hebrew, Greek, Arabic, and Chaldee, with Latin Interpretations and Glosses. See PSALTER.

There are various other Editions of the Bible either in whole or in part, which might be rang'd under the Article of Polyglotts; tho' they are not so denominated—such are the *Hexapla*, and *Octapla*, of *Origen*. See HEXAPLA and OCTAPLA.

And the Bible of *Hutter* printed at *Hambourg*, in Hebrew, Chaldee, Greek, Latin, German, Saxon, Italian, French, Slavonic, Danish, &c. See BIBLE.

POLYGON, in Geometry, a multilateral Figure; or a Figure whose Perimeter consists of more than four Sides, and Angles. See FIGURE, PERIMETER, &c.

If the Sides and Angles be equal, the Figure is call'd a Regular Polygon. See REGULAR.

The Word is form'd from the Greek *πολυ* and *γωνι*, *Angle*.

Polygons are distinguish'd according to the Number of their Sides.—Those of five Sides are call'd *Pentagons*; those of six, *Hexagons*; those of seven, *Heptagons*; those of eight, *Octagons*, &c. The particular Properties, &c. of each whereof, see under its proper Article, PENTAGON, HEXAGON, &c.

#### General Properties of POLYGONS.

*Euclid* demonstrates these which follow.—1° That every Polygon may be divided into as many Triangles as it hath Sides. See TRIANGLE.

This is done by assaulting a Point as *F*, (*Tab. Geometry*, *Fig. 29.*) any where within the Polygon, and thence drawing Lines to every Angle *Fa*, *Fb*, *Fc*, *Fd*, &c.

2° The Angles of any Polygon taken together, make twice as many right ones, abating four, as the Figure hath Sides. See ANGLE.

Thus, if the Polygon have five Sides; the double of that is 10; whence subtracting 4 there remains 6 right ones.

3° Every Polygon circumscribed about a Circle is equal to a rectangled Triangle, one of whose Legs is the Radius of the Circle, and the other the Perimeter or Sum of all the Sides of the Polygon.

Hence, every Regular Polygon is equal to a Rectangle Triangle, one of whose Legs is the Perimeter of the Polygon, and



and the other a Perpendicular drawn from the Centre to one of the Sides of the Polygon. See TRIANGLE.

Hence also every Polygon circumscribed about a Circle is bigger than it; and every Polygon inscribed, less than the Circle.—The same likewise appears hence, that the thing containing is ever greater than the thing contain'd.

And hence again, the Perimeter of every Polygon circumscribed about a Circle, is greater than the Circumference of that Circle; and the Perimeter of every Polygon inscribed, less: whence it follows, that a Circle is equal to a Right Angle Triangle, whose Base is the Circumference of the Circle, and its Height the Radius; since this Triangle is less than any Polygon circumscribed, and greater than any inscribed. See CIRCUMSCRIBING.

Nothing therefore is wanted to the Quadrature of the Circle, but to find a right Line equal to the Circumference of a Circle. See CIRCLE, CIRCUMFERENCE, QUADRATURE, &c.

To find the Area of a Regular Polygon.—Multiply a Side of the Polygon, as A B, by half the Number of the Sides, e. gr. the Side of a Hexagon by 3. Again, multiply the Product by a Perpendicular let fall from the Centre of the circumscribing Circle to the Side A B; the Product is the Area required. See AREA.

Thus, suppose A B, 54; and half the Number of Sides  $2\frac{1}{2}$ ; the Product or Semiperimeter is 135. Supposing then the Perpendicular Fg, 29; the Product of these two, 3915, is the Area of the Pentagon required.

To find the Area of an irregular Polygon, or Trapezium.—Resolve it into Triangles; find the several Areas of the several Triangles, see TRIANGLE; the Sum of these is the Area of the Polygon required. See TRAPEZIUM.

To find the Sum of all the Angles in any Polygon.—Multiply the Number of Sides by  $180^\circ$ : From the Product subtract 360; the Remainder is the Sum required.

Thus in a Pentagon, 180 being multiplied by 5 gives 900; whence subtracting 360 there remains 540; the Sum of the Angles of a Pentagon.

Hence, if the Sum found be divided by the Number of Sides; the Quotient will be the Angle of a regular Polygon.

Or, the Sum of the Angles is more speedily found thus: Multiply 180 by a Number less by two than the Number of Sides of the Polygon; the Product is the Quantity of the Angles required: thus 180 being multiplied by 3, a Number less by 2, than that of its Sides; the Product is 540, the Quantity of Angles as before.

The following Table exhibits the Sums of the Angles in all rectilinear Figures, from a Triangle to a Dodecagon; and is of good use both for the describing of regular Figures, and for proving whether or no the Quantity of Angles have been truly taken with an Instrument. See REGULA, FIGURE, &c.

| Numb. Sides. | Sum. Ang. | Ang. of Reg. Fig. | Numb. Sides | Numb. Angl. | Ang. of Reg. Fig. |
|--------------|-----------|-------------------|-------------|-------------|-------------------|
| III          | 180°      | 60°               | VIII        | 1080°       | 135               |
| IV           | 360       | 90                | IX          | 1260        | 140               |
| V            | 540       | 108               | X           | 1440        | 144               |
| VI           | 720       | 120               | XI          | 1620        | 147 $\frac{1}{2}$ |
| VII          | 900       | 128 $\frac{1}{2}$ | XII         | 1800        | 150               |

To inscribe a regular Polygon in a Circle.—Divide 360 by the Number of Sides in the Polygon required, to find the Quantity of the Angle EFD. Set off the Angle at the Centre, and apply the Chord thereof E D, to the Periphery, as often as 'twill go.—Thus will the Polygon be inscribed in the Circle.

The Resolution of this Problem, tho' it be Mechanical; yet is not to be despis'd, because both easy and universal.—Euclid, indeed, gives us the Construction of the Pentagon, Decagon, and Quindecagon; and other Authors give us those of the Heptagon, Enneagon, and Hendecagon; but they are far from Geometrical Strictness.

Renaldinus lays down a Catholic Rule for the describing of all Polygons, which many other Geometricians have borrow'd from him; but Wagnerus and Wolfius have both demonstrated the Falsity thereof.

On a Regular Polygon to circumscribe a Circle: or to circumscribe a regular Polygon upon a Circle.—Bisect two of the Angles of the given Polygon A and E, by the right Lines A F and E F, concurring in F. And from the Point of Concourse with the Radius E F describe a Circle.

To circumscribe a Polygon, &c. Divide 360 by the Number of Sides required, to find e Fd; which set off from the Centre F, and draw the Line e d; on this Construct the Polygon as in the following Problem:

On a given Line, E D, to describe any given regular Polygon.—Find an Angle of the Polygon in the Table; and in E set off an Angle equal thereto, drawing E A = E D. Thro'

the three Points A E D describe a Circle. See CIRCLE. In this apply the given right Line as often as it will go.—Thus will the required Figure be described.

To inscribe or circumscribe a Regular Polygon, Trigonometrically.—Find the Sine of the Arch produced by dividing the Semi-Periphery 180 by the Number of Sides of the Polygon: the double of this is the Chord of the double Arch, and therefore the Side A E to be inscribed in the Circle.—If then the Radius of a Circle wherein, e. gr. a Pentagon is to be inscribed, be given in any certain Measure e. gr. 345. the Side of the Pentagon is found in the same Measure by the Rule of Three, Thus as Radius 10000 is to 1176 :: so is 345, to 4057. The Side of the Pentagon.—With the given Radius therefore describe a Circle; and therein set off the Side of the Polygon as often as 'twill go; thus will a Polygon be inscribed in the Circle.

To save the trouble of finding the Ratio of the Side of the Polygon to radius, by the Canon of Sines; we shall add a Table expressing the Sides of Polygons in such Parts whereof Radius contains 10000000. In practice, as many Figures are cut off from the Right-Hand, as the Circumstances of the Case render needless.

| Numb. Sides | Quantity Side | Numb. Sides | Quantity Side |
|-------------|---------------|-------------|---------------|
| III         | 17320508      | VIII        | 7653668       |
| IV          | 14142135      | IX          | 6840402       |
| V           | 11755705      | X           | 6180339       |
| VI          | 10000000      | XI          | 5634651       |
| VII         | 8677674       | XII         | 5176380       |

To describe a Regular Polygon, on a given right Line, and to circumscribe a Circle about a given Polygon, Trigonometrically.—Taking the Ratio of the Side to the Radius out of the Table; find the Radius in the same Measure wherein the Side is given. For the Side and Radius being had, a Polygon may be described by the last Problem. And if with the Interval of the Radius, Arches be struck from the two Extremes of the given Line the Point of Intersection will be the Centre of the circumscribing Circle.

POLYGON, in Fortification, is the Figure or Perimeter of a Fortress or fortified Place. See FORTIFICATION.

Exterior-POLYGON is a right Line drawn from the Vertex or Point of a Bastion, to the Vertex or Point of the next adjacent Bastion. See BASTION.

Such is the Line C F, *Fab. Fortification, Fig. 1.*

Interior-POLYGON is a right Line drawn from the Centre of one Bastion to the Centre of another, such is the Line G H.

Line of POLYGONS, is a Line on the French Sector, containing the homologous Sides of the first 9 regular Polygons, inscribed in the same Circle, i. e. from an Equilateral Triangle to a Dodecagon. See SECTOR.

POLYGONAL Numbers, in Algebra, are the Sums of Arithmetical Progressions, beginning from Unity. See SERIES, NUMBER, PROGRESSION, &c.

Polygonal Numbers are divided, with respect to the Number of their Terms, into Triangular, which are those whose difference of Terms is 1; quadrangular or square, where 'tis 2; Pentagonal, where 3; Hexagonal, where 4; Heptagonal, where 5; Octagonal, where 6, &c.

They have their Names from the Geometrical Figures into which Points corresponding to their Units, may be disposed e. gr. three Points corresponding to the three Units of a triangular Number may be disposed into a Triangle; and so of the rest. See TRIANGULAR, &c.

The Genesis of the several kinds of Polygonal Numbers from the several Arithmetical Progressions, may be conceived from the following Examples.

|                          |                               |
|--------------------------|-------------------------------|
| Arithmetical Progression | 1, 2, 3, 4, 5, 6, 7, 8        |
| Triangular Numbers       | 1, 3, 6, 10, 15, 21, 28, 36   |
| Arithmetical Progression | 1, 3, 5, 7, 9, 11, 13, 15     |
| Square Numbers           | 1, 4, 9, 16, 25, 36, 49, 64   |
| Arithmetical Progression | 1, 4, 7, 10, 13, 16, 19, 22   |
| Pentagonal Numbers       | 1, 5, 12, 22, 35, 51, 70, 92  |
| Arithmetical Progression | 1, 5, 9, 13, 17, 21, 25, 29   |
| Hexagonal Numbers        | 1, 6, 15, 28, 45, 66, 91, 120 |

The Side of a Polygonal Number is the Number of Terms of the Arithmetical Progression that are summ'd up to constitute it: And the Number of Angles is that which shews how many Angles that Figure has whence the Polygonal Number takes its Name.

The Number of Angles, therefore, in Triangular Numbers is 3. In Tetragonal 4. In Pentagonal 5, &c. consequently the Number of Angles exceeds the difference of Terms summ'd up, by two Units.

To find a Polygonal Number, the Side and Number of its Angles being given. The Canon is this.—The Polygonal Number



Number is the Semi-difference of the Squares of the Side into the Number of Angles; diminished by two Units; and of the Side itself into the Number of Angles diminished by four Units.

The Sums of *Polygonal Numbers* collected in the same Manner as the *Polygonal Numbers* themselves are out of Arithmetical Progressions; are called *Pyramidal Numbers*. See PYRAMIDAL.

**POLYGRAPHY, POLYGRAPHIA, POLYGRAPHICE**, the Art of writing in various unusual, Manners or Cyphers; as also of decyphering the same. See WRITING.

The Word is usually confounded with *Steganography* and *Cryptography*. See STEGANOGRAPHY and CRYPTOGRAPHY.

The Antients seem to have been very little acquainted with this Art; nor is there any Mark of their having gone beyond the *Lacedemonian Scytala*. See SCYTALA.

*Trithemius, Porta, Vigenere*, and Father *Niceron*, have wrote on the subject of *Polygraphy* or Cyphers. See CYPHER.

The Word is form'd from the Greek *πολυ*, *multum*, and *γραφον*, *scriptura*, *writing*.

**POLYHEDRON, POLYEDRON**, in Geometry, a Body comprehended under several Faces or Sides. See BODY and SOLID.

Such are all the five regular Bodies; viz. the Tetrahedron, Octahedron, Cube or Exahedron, Dodecahedron, and Icosahedron. See each under its proper Article.

If the Sides of the *Polyhedron* be regular Polygons, all similar and equal; the *Polyhedron* becomes a regular Body, and may be inscribed in a Circle. See REGULAR BODY, &c.

*Gnomonic POLYHEDRON*, is a Stone with several Faces, whereon are projected various kinds of Dials. See DIAL.

Of this kind that in the *Privy-Garden, London*, now gone to ruin, was anciently the finest in the World.

The Word is form'd from the Greek *πολυ*, *much*, and *ἑδρα*, *Seat*.

**POLYHEDRON, or POLYSCOPE**, in Opticks, is a Glass or Lens consisting of several plain Surfaces, disposed into a Convex Form; popularly call'd a *Multiplying-Glass*. See LENS and MULTIPLYING GLASS.

The Phænomena of the *Polyhedron* are as follow.

*Doctrine of the POLYHEDRON, or Multiplying-Glass.*

If several Rays, as EF, AB, CD, (*Tab. Opticks, Fig. 71.*) fall parallel on the Surface of a *Polyhedron*; they will continue parallel after Refraction. See RAY and REFRACTION.

If then the *Polyhedron* be supposed regular; LH, HI, IM, will be as Tangents cutting the Spherical Convex Lens in F, B and D; consequently Rays falling on the Points of Contact intersect the Axis.—Wherefore, since the rest are parallel to these, they also will mutually intersect each other in G.

Hence, if the Eye be placed where the parallel Rays decussate; Rays of the same Object will be propagated to it still parallel from the several Sides of the Glass. Wherefore since the Crystalline Humour, by its Convexity, unites parallel Rays; the Rays will be united in as many different Points of the Retina, *a, b, c*, as the Glass has Sides.

Consequently, the Eye, thro' a *Polyhedron*, sees the Object repeated as many times as there are Sides.—And hence, since Rays, coming from remote Objects, are parallel; a remote Object is seen as often repeated thro' a *Polyhedron* as that has Sides.

2. If Rays, AB, AC, AD, (*Fig. 72.*) proceeding from a Radiant Point A, fall on several Sides of a regular *Polyhedron*; after Refraction they will decussate in G; and proceed on a little diverging.

Hence, if the Eye be placed where the Rays coming from the several Planes, decussate; the Rays will be propagated to it from the several Planes a little diverging, i. e. as if they proceeded from different Points. But since the Crystalline Humour by its Convexity, collects Rays from several Points into the same Point; the Rays will be united in as many different Points of the Retina, *a, b, c*, as the Glass has Sides. Consequently the Eye being placed in the Focus G, will see even a near Object repeated as often thro' the *Polyhedron* as that has Sides.

Thus may the Images of Objects be multiplied in a Camera obscura; by placing a *Polyhedron* at its Aperture, and adding a Convex-Lens at a due Distance therefrom.—And it really makes a very pleasant Appearance, if a Prism be applied so as the colour'd Rays of the Sun refracted therefrom be received on the *Polyhedron*. Form by this means they will be thrown on a Paper, or Wall near at hand in little lucid Specks, much exceeding the brightness of any precious Stone; and in the Focus of the *Polyhedron*, where the Rays decussate, (for in this Experiment they are received on the convex Side) will be a Star of surprizing Lustre.

If Images be painted in Water-Colours in the Areolæ or little Squares of a *Polyhedron*, and the Glass applied to the

Aperture of a Camera obscura; the Sun's Rays passing thro' it will carry with them the Images thereof, and project them on the opposite Wall.

This Artifice bears a Resemblance to that other, whereby an Image on Paper is projected on the Camera, viz. by wetting the Paper with Oil, and straining it tight on a Frame; then applying it to the Aperture of the Camera obscura, so as the Rays of a Candle may pass through it upon the *Polyhedron*. See CAMERA.

To make an *Anamorphosis* or deform'd Image, which thro' a *Polyhedron* or *Multiplying Glass* shall appear regular and beautiful.

At one End of a Horizontal Table erect another at right Angles, whereon a Figure may be design'd; and on the other End erect another; to serve as a Fulcrum or Support, moveable on the horizontal one.—To the Fulcrum apply a Plano Convex *Polyhedron*, consisting e. gr. of 24 plain Triangles; let the *Polyhedron* be fitted in a Draw Tube, whereof that End towards the Eye to have only a very small Aperture, and a little further off than the Focus.—Remove the Fulcrum from the other perpendicular Table; till it be out of the Distance of the Focus; and that more, as the Image is to be greater.—Before the little Aperture place a Lamp; and trace the Luminous Areolæ projected from the Sides of the *Polyhedron*, with a black Lead Pencil, on the vertical Plane, or a Paper apply'd thereon.

In these several Areolæ, design the several Parts of an Image, in such manner as that when join'd together they may make one whole; lookinga-fresh, every now and then thro' the Tube, to guide, correct, &c. the Colours, and to see that the several Parts match aptly together.

The intermediate Space fill up with any Figures or Designs at Pleasure; contriving it so as that to the naked Eye the whole may exhibit some Appearance very different from that intended to appear through the *Polyhedron*.

The Eye, now, looking thro' the little Aperture of the Tube, will see the several Parts and Members dispers'd among the Areolæ to exhibit one continued Image; all the intermediate ones disappearing. See ANAMORPHOSIS.

**POLYHISTORES**. See HISTORY, POLYMATHY, &c.

**POLYMATHY, POLYMATHIA**, the Knowledge of many Arts and Sciences; or an Acquaintance with a great Number of different Subjects. See ENCYCLOPÆDIA.

The Word comes from the Greek *πολυ*, *multum*, and *μαθησις*, Knowledge, Learning.

*Lipsius, Scaliger, Kircher, Petavius, Politian, Salmasius*, &c. were famous for *Polymathy*.

Among the Ancients, such as were eminent this Way were called *Polyhistores*. See HISTORY.

*Polymathy* is frequently little more than a confused Heap of useless Knowledge occasionally detail'd, either pertinently or impertinently, for Parade.—The genuine *Polymathy* is an extensive Erudition, or a Knowledge of a great Number of Things, well digested, and applied to the Purpose, and never but out of Necessity.

**POLYMYTHY, POLYMYTHIA**, in Poetry, a Multiplicity of Fables, in an Epic or Dramatic Poem; in lieu of an Unity, or a single one. See FABLE, UNITY, &c.

*Polymythia* is a very great Fault.—It consists in assembling a Number of distinct Actions or Fables into one complex Body. See ACTION.

Such a Work *Bossu* compares to the *Batrachomymachia*; or one of the Fables of *Esop*: and such would be the Idea of a *Theseid*, an *Heracleid*, an *Achilleid*, or the like Poems, which should comprehend all the Actions of those Heroes; compared with the *Iliad*, or *Æneid*. See HERO, EPIC, &c.

**POLYNOMIAL**, or rather *Multinomial*, *Roots*, in Mathematics. See MULTINOMIAL and ROOT.

**POLYOPTRUM**, in Opticks, a Glass through which Objects appear multiplied, but diminished. See MULTIPLICATION.

The *Polyopttrum* differs both in Structure and Phænomena from the common *Multiplying-Glasses*, call'd *Polyhedra*. See POLYHEDRON.

The Word *Polyopttrum* is form'd from the Greek *πολυ*, *much*, *many*, and *οπτρον*, *I see*.

*Construction of the Polyopttrum.*

In a Glass, plain on both Sides, AB, (*Tab. Opt. Fig. 73.*) and about three Fingers thick, cut out spherical Segments, scarce a fifth Part of a Digit in Diameter.

If then the Glass be removed from the Eye, till you can take in all the Cavities at one View, you will see the same Object as if thro' so many several concave Glasses, as there are Cavities, and all exceedingly small.

Fit this, as an Object Glass, in a Tube ABCD, whose Aperture AB is equal to the Diameter of the Glass, and the other CD equal to that of an Eye Glass; e. gr. about a Finger's Breadth. The Length of the Tube AC to be accommodated to the Object and Eye-Glass, by Trial.



In CD fit a Convex Eye-Glass, or in lieu thereof a Meniscus, having the Distance of its principal Focus a little larger than the Length of the Tube; so that the Point, from which the Rays diverge after Refraction in the Object-Glass may be in the Focus.—If then the Eye be applied near to the Eye-Glass, a single Object will be seen repeated as often as there are Cavities in the Object-Glass, but still diminished.

**POLYPETALOUS**, in Botany, a Flower consisting of several Petala or Leaves. See PETALA.

The Covers or Defences of Flowers consist either of a single continued Petalon, thence call'd *monopetalous*; or of several distinct Pieces, call'd *Polypetalous*. See FLOWER and MONOPETALOUS.

The Word comes from *πολύ*, *multum*, and *πέταλον*, *Petalum*.

*Polypetalous* Flowers are either *regular* or *irregular*.—The *Regular*, according to some Botanists, are either those consisting of two Pieces, as the Cercea; or of four, thence called *Cross-Flowers*, as the Clove Tree; or of five, called *Umbelliferous*, as Fennel; or of six, as the White Lilly, thence call'd the *Lilly-kind*. See UMBELLIFEROUS, &c.

Those exceeding this Number, in any Quantity, equal or unequal, form a new Class of *polypetalous* Flowers, called the *Rose Kind*; among which are rank'd all those of three, four, five, or six Pieces, whose Fruits differ so from the rest, that 'tis required they be distinguish'd from them.

Such is the Flower of the Water Plantane, which tho' it has only three Leaves, yet by the Relation of its Seed with that of the Ranuncula, is ranged in this last Class.—Such, also, is the Flower of Tormentille; which by Reason of the Difference of its Fruit from the Siliquæ or Siliculæ of the Cross-Flowers, cannot be ranged among them.—Such also is the Pink, which tho' consisting of five Pieces, yet is excluded the Class of umbelliferous Plants, because its Fruit is not divided into two Parts.—Such, lastly, are the Flowers of some Ranuncula's, House-leek, and Anemonies; which though they have six Petala, yet never produce Fruits divided into three Lodges, as those of the Lilly Kind, and therefore cannot belong to their Class.

The *irregular polypetalous* Flowers are so called from the odd Figure and Disposition of their Petala, what Number of them so ever they have.

Such are those of two Pieces resembling two Chaps, as in Fumitory; or those of five Pieces resembling Butterflies, common to all leguminous Plants.

**POLYPODY**, in Botany, a Plant of the parasitaical Kind, popularly called Many-feet; of considerable Use in Medicine, &c. See PARASITE.

There are two Kinds.—*Common Polypody*, and *Polypody of the Oak*. The first usually grows on old Walls in the Country, among Moss, &c. the latter call'd also *Oak-fern* from the Resemblance it bears to Fern, grows on the Branches of that Tree, in the Places where they shoot or spread out, feeding on a little Earth collected there from the Dust blown about with the Wind, and water'd with the Rain.

*Polypody* of the Oak is much the better of the two.—It must be chosen new, well-fed, dry, brittle, of a Tan-red without, green within, of a sweet Taste resembling Liquorice.

The Root is what is chiefly used in Medicine, being esteem'd Cathartic; tho' Dr. Quincy says 'tis no more so than a common Detergent; in which Capacity it is much prescribed; in Medicated Ales against the Jaundice, Scurvy, Obstructions of the Viscera, Hypochondriacks, &c.

The Word is form'd from the Greek *πολύ*, and *πῦξ*, *Foot*, in regard the Root of the Plant clings to Walls and Trees, by a great Number of little Fibres like Claws.

**POLYPTON**, in Rhetorick, a Figure wherein the same Word is repeated in different Cases, Genders or Numbers, *i. e.* with different Terminations. See FIGURE.

Such is that of Cicero, *pro Arch. Sed pleni sunt omnes libri, plena sapientum voces, plena exemplorum vetustas.*

**POLYPUS**, in Medicine, a fleshy Tumor or Excrecence arising on the inside of the Nostrils, prejudicial to Respiration and Speech; call'd also, by way of Distinction, *Polypus Narium*. See NOSE, EXCRESCENCE, &c.

This *Polypus* arises by several Roots from the Os Cribosum, and hangs down, sometimes, as low as the Lip; growing, likewise, backwards, so as to stop the Hole of the Palate, whereby the Air and Pituita descend out of the Nose down into the Throat; and by this means strangles the Patient.

It has its Name from the resemblance it bears to the Fish *Polypus*, call'd in English, *Pourcontrol*, or many-feet.—Tho' some derive the Name from the Resemblance its Substance bears to that of the *Polypus*; and others, from the resemblance its many roots bear to the many feet of the Fish, &c.

If it have no Roots, or only one continued Root, it is call'd a *Sarcoma*; which is only a beginning *Polypus*. See SARCOMA.

*Polypus's* are chiefly found in scrophulous or cancerous Constitutions, along with Venereal Cases, Ulcers, Ozenas, &c.—Caustics, Causticks, emollient Fomentations, Extirpa-

tion, and disiective Powders and Lotions are the usual Remedies.

**POLYPUS**, is also used for a morbid Excrecence in the Heart; consisting of a tough Concretion of grumous Blood lodg'd therein. See HEART.

*Malpighi* gives a very accurate Description of this *Polypus*. In the right Ventricle of the Heart, he observes, 'tis usually larger, and of a paler Colour like Pituita, with reddish or blackish Streaks; in the left Ventricle it is smaller, blacker and denser.—He adds, that it seems to have a sort of Organization, and appears like a Congeries of Pellicles stretch'd over one another, which form a kind of nervous Compages.

*Polypus's* are frequently found upon opening the Bodies of Persons dying apoplectic; and are doubtless frequently the occasion of sudden Death.—They are seldom discover'd till they have dispatch'd the Patient.

'Tis a dispute among Physicians, whether *Polypus's* be produced any considerable time before, or always immediately after, Death.—Mr. Gould has an express Discourse in the *Philosoph. Transact.* to evince the former.

**POLYPUS of the Lungs**.—In the *Philosophical Transactions* Dr. Rob. Clarke gives us a very odd Instance of a Patient who cough'd up, at times, several hundred *Polypus's* of the Lungs.

They seem'd to have some Organization, and were all perfectly alike.—The Patient said, tho' they had no Life, he had frequently press'd a slimy matter out of the Body.

Dr. Lister observes, that such *Polypus's* are form'd in the remoter and deeper Branches of the *Aspera Arteria*, whence they are very difficult to get up.—The Patient abovemention'd never brought them up till after a continued coughing of half a Day and Night.

He adds, that they are nothing but viscous Excretions of the small Glands, hard bak'd in those Glands whose Form they receive.—M. Bussiere observes, they are frequently mistaken for pieces of the Blood-Vessels or Lungs.

**POLYPYRENEOUS Fruits**, in Botany, are such as contain several Kernels, or Seeds. See FRUIT.

They are thus call'd from the Greek *πολύ*, *much*, and *πυρην*, *Nucleus*, Kernel. See POLYSPERMOUS.

**POLYSCOPE**, a Multiplying-Glass, *i. e.* a Glass which represents one Object to the Eye, as if it were many; call'd also *Polyhedron*. See MULTIPLYING Glass and POLYHEDRON.

**POLYSPASTON**, **POLYSPAST**, in Mechanics, a Machine so denominated by *Vitruvius*; consisting of an Assemblage of several Pullies; used for raising of huge Weights in a little time. See MACHINE.

The Word comes from the Greek *πολύ*, and *παστῆς*; *q. d.* That may be turn'd many ways.

The Multiplication of Pullies in the *Polyspaston* is to very good purpose; it being demonstrated in Mechanics, that the Force required to sustain a Weight by means of a *Polyspaston*, is to the Weight itself, as Unity to the Number of Ropes, or of the Pullies; those Ropes or Pullies being supposed parallel to each other. See PULLEY.

Hence, the Number of Pullies, and the Power being given; the Weight that will be sustained thereby is easily found; *viz.* by multiplying the Power by the Weight.

*E. gr.* Suppose the Power 50 Pounds, and the Number of Pullies 5. The Weight they will balance is 250.

In like manner the Number of Pullies being given, together with the Weight sustain'd; the Power is found by dividing the Weight by the number of Pullies; Thus, if the Weight be 900 Pounds, and the Number of Pullies 6, the Power will be 150.

*Dechales* observes, that 'tis found by experience, that a moderate Man standing barely on the Ground will lift 150 Pound; whence the same Man by means of a *Polyspaston* consisting of 6 Pullies, will be able to sustain 900 Pounds.

The Power of the Pullies will be still exceedingly increased by joining several *Polyspastons*.

To find the Number of Pullies a *Polyspaston* is to consist of to raise a given Power.—Divide the Weight by the Power; the Quotient is the Number required.

Suppose, *e. gr.* the Weight 600 Pounds, and the Power 150; the Pullies will be 4, whose Diameters are to be all equal, supposing two of them upper and two lower, moveable on the same common Axes.

**POLYSPERMOUS**, in Botany, is applied to such Plants as have more than four Seeds succeeding each Flower without any certain Order or Number. See PLANT.

These, Mr. Ray makes a distinct kind of Herbs; calling them *Herba semine nudo polysperma*; where, by *Semine nudo* is meant such Seeds as do not put off spontaneously the Integuments or Coverings, which they either have, or appear to have, but fall off cover'd from the Mother-Plant. See SEMEN.

The Word is form'd from the Greek *πολύ*, *much*, and *σπέρμα*, *Seed*.

*Polyspermous Herbs* are subdivided into 1<sup>o</sup> Such as have a Calyx or Perianthium, consisting either first of three Leaves, and the Flower Tripetalous, as the Plantago Aquatica, and the Sagittaria, both Water-Plants; or the Flower Polypetalous, and the



the Calyx falling with it, as the *Chelidonium minus*; or remaining after the Flower is dropp'd, as in the *Hepatica* Mo-  
bilis. 2<sup>o</sup> Of five Leaves, in some deciduous with the Flow-  
er, as in the *Ranunculus*; in others Perennial, as in the *Hel-*  
leborus niger ferulaceus; or annual, as in the *Flos Adonis*.  
3<sup>o</sup> Of eight Leaves, as the *Malva* and *Alcea*. 4<sup>o</sup> Often Leaves  
as the *Carrophylla*, *Fragrarius*, *Pentaphyllum*, *Tormentilla*,  
as the *Althea*, and *Pentaphylloides*.

2<sup>o</sup> Such as have no Calyx, or Perianthium; as the *Clematis*,  
*Filipendula*, *Ulmaria*, *Anemone Nemorum*, *Pulsatilla*, &c.

**POLYSYLLABICAL** *Ecchoes*, those which repeat  
many Syllables, or Words. See *ECCHO*.

**POLYSYLLABLE**, in Grammar, a Word consisting  
of more than three Syllables. See *WORD* and *SYLLABLE*.

A Word of one Syllable is called a *Monosyllable*; one of  
two, *Disyllable*; one of three, *Trisyllable*; one of four or more,  
*Polysyllable*. See *MONOSYLLABLE*, &c.

The Word comes from the Greek *πολυ*, *multum*, and  
*συλλαβη*, *Syllable*.

**POLYSYNDETON**, in Rhetoric, a Figure consist-  
ing in an abundance of Conjunctions Copulative. See *FR-*  
*GURE* and *COPULATIVE*.

Such is, *Me, præ ceteris & colit & observat & diligit.*—  
In opposition to this stands *Asyndeton*. See *ASYNDETON*.

**POLYTHEISM**, the Doctrine or Belief of a Plurality of  
Gods. See *GOD*.

The Word comes from the Greek *πολυ*, *multum*, and *θεος*,  
*Deus*. See *IDOLATRY*, &c.

**POMADA**, an Exercise of vaulting the wooden Horse,  
by laying one Hand over the Pommel of the Saddle.

**POMATUM**, or *POMADO*, a Composition of Apples,  
with Lard and other fatty Substance; used by way of Un-  
guent on many Occasions, particularly for Diseases of the Skin,  
Pimples, Scuffs, &c. to soften the Hands, render the Skin  
smooth, the Complexion fresh, &c. See *UNGUENT*.

*Pomatums* are occasionally made with *Jessamines*, *Oran-*  
*ges*, *Jonquills*, *Tuberoses*, &c. i. e. they are perfumed with  
the Odours of those Flowers.

The best is said to be that prepared of Kid's Grease, *Pip-*  
*pins*, an Orange slic'd, with a Glas of Rose-Water, and  
half a Glas of White-wine, boil'd and strain'd, and at last  
sprinkled with Oil of sweet Almonds.

The Unguentum *Pomatum* prescribed in the College Dispen-  
sary consists of Hog's Lard, Sheep's Suet, the Apple call'd *Pome-*  
*water*, Rose Water, and Orrice Root, boil'd till the Apples  
are soft, strain'd and perfumed with Oil of Rhodium.

Dr. Quincy observes, that the Apple is of no Significancy  
at all in the Recipe; and that the common *Pomatum* sold  
in the Shops is only Lard beat into a Cream, with Rose-  
Water, and scented with Lemons, Thyme, or the like.

**POME**, among Gardeners.—To *Pome* is to grow or  
knit into a round Head, somewhat like an Apple.

Thus, they say a *Cabbage begins to Pome*, &c.—They  
sometimes use the Term to *cabbage* in the same Sense.

**POMEGRANATE**, *Granatum*, a medicinal Fruit, in  
Form of an Apple or Quince; full of Seeds or Kernels, en-  
clos'd within a reddish Pulp, sometimes sweet, sometimes  
acid. See *FRUIT*.

It is denominated from its Abundance of Grains or Ker-  
nels; q. d. *Pomum Granatum*, a Kernel'd Apple; or from the  
Country where it was anciently produced, viz. *Granada*.

The *Granada* Tree is of two Kinds; the one wild, which  
produces a Kind of Flowers used in Pharmacy, called *Ba-*  
*laustia*. See *BALAUSTIA*.

The other cultivated in Gardens; whereof there are a-  
gain two Kinds; the one only bearing Flowers; the other,  
both Flowers and Fruit.—The Flowers of each are in-  
closed in an oblong purple Calyx, resembling a Bell.

The Trees never grow high; their Branches are a little  
prickly; their Leaves resemble those of the greater Myrtle,  
and their Fruit, which is composed of a great Number of  
red angular Grains, sometimes sweet, sometimes sour, and  
sometimes vinous, according to the Quality of the Tree, are  
all inclos'd in little distinct Cells, and cover'd, in common,  
with a thick brownish Rind; over this grows a Kind of  
Crowning, of the same Nature with the Rind, form'd of a  
Production of the Calyx.

In the general, *Pomegranates* are not only agreeable to the  
Taste, but good for the Stomach; and of considerable Use  
in Medicine.

Of the Grains are made Syrups and Conserve; and the  
Rind, which is held very astringent, is an Ingredient in  
several Remedies and Ptisans, for Dysenteries, Diarrheas,  
Lienteries, Hæmorrhagies, and Relaxations of the Gums.

—The Ancients used the Rind as the Moderns do Sumac,  
in the Preparation of Leather.

The Rind ought always to be dry'd, after the Grains are  
taken out; that dry'd without scouping always tasting musty,  
and more likely to increase the Distempers than cure them.

As to the Conserve, there is but little of the true sold; being  
very difficult to make.—That which ordinarily passes for it is  
only Sugar melted down; to which they give the Colour and  
sharp Taste, with Cochineal, Cream of Tartar, and Alumin.

**POMEIS**, in Heraldry, are green Roundles; so called by

the *English* Herald, who express different colour'd Roundles  
by distinct Names. The *French*, who content themselves to  
denote the different Colour of the Roundle, call them *Tor-*  
*teaux Vert*. See *TORTEAUX*.

**POMIFEROUS**; q. d. *Apple-bearing*, in Botany, a  
Name given to those Plants which have the largest Fruit,  
and are cover'd with a thick hard Rind; by which they  
are distinguish'd from the *Bacciferous*, which have only a  
thin Skin over the Fruit. See *PLANT* and *BACCIFEROUS*.

The *Pomiferous* Kind have a naked monopetalous Flower,  
divided into five Partitions, and growing on the Top of the  
succeeding Fruit.—They are divided into 1<sup>o</sup>. *Capreolate*, or  
those creeping along the Ground, &c. by means of Ten-  
drills; as the *Cucurbita*, *Melo Cucumis*, *Cepo*, *Bellamina*,  
*Anguria*, and *Colocynthis*. See *CAPREOLI*.

And, 2<sup>o</sup>. without *Capreoli*, or Tendrils, as the *Cucurbi-*  
*ta Clypetea*, or *Melo-Cepo Clypeiformis*.

The Word is form'd from *Pomum*, Apple, and *fero*, I bear.

**POMMEE**, or *POMMETTE* in Heraldry.—a *Cross-Pom-*  
*mee* or *Pommette*; call'd also a *Trophee*, is a Cross with a  
Ball or Knob at each End. See *CROSS*.

**POMMEL**, or *PUMMEL* in the Manage; a Piece of Brass  
or other Matter a-top and in the Middle of the Saddle-Bow;  
to which are fasten'd the Holsters, Stirrup Leathers, &c. See  
*SADDLE*.

*Pommel* is also a round Ball of Silver, Steel, or the like,  
fix'd at the End of the Guard and Grasp of a Sword; to serve  
in some measure as a Counterpoise.

*Balzac* observes, that there are still extant Charters and  
Privileges granted by *Charlemaign*, and sealed with the *Pom-*  
*mel* of his Sword, which, ordinarily, he promises to defend  
with the same Sword. See *SEAL*, *SIGNATURE*, &c.

**POMP**. See *CIRCUS*, *CAVALCADE*, &c.

**POMPHOLYX**, or *white Calamine*, in Pharmacy, the  
Flowers of Brass; or a white, light and friable Substance,  
found adhering to the Lid or Covercle of the Crucibles or  
Furnaces, wherein Copper is melted with Calamine Stone,  
for the making of Brass. See *BRASS*, *CALAMINE*, &c.

It is esteem'd deterfive and deficcative, tho' only apply'd  
externally; and much used in divers Kinds of Fevers: tho'  
its Violence requires its being used with great Precaution.

The Apothecaries sometimes call it *Nil* or *Nihili Album*,  
and sometimes *white Tutty*, in regard of its Resemblance  
thereto in Virtue. See *TUTTY*.

The Word is form'd from the Greek *πομπη*, q. d. *Bub-*  
*ble arising on Water*.

**POMUM Adami**, in Anatomy, a Protuberance in the  
Fore-part of the Throat. See *THROAT*.

Some fancy it thus called upon a strange Conceit, that a  
Piece of the forbidden Apple, which *Adam* eat, stuck by the  
Way, and was the Occasion of it.

In reality, it is only the Convex Part of the first Carti-  
lage of the Larynx, called *Scutiformis*. See *LARYNX* and  
*SCUTIFORMIS*.

**POND**, in Geography, a little Lake, which neither re-  
ceives nor emits any River. See *LAKE* and *RIVER*.

**PONDERARE**, in our ancient Customs, a Method  
of curing sick Children.

The Practice was, *ponderare*, to weigh, the sick Child, at  
the Tomb of some Saint, counterpoising, or ballancing the Scale  
with Money, Wheat-Bread, or any other thing the Parents  
were willing to offer to God, his Saints, or the Church.—  
But a Sum of Money was always to make Part of the Coun-  
ter-balance. By this Means the Cure was effected.—*Ad se-*  
*pulchrum Sancti, Nummo se ponderabat.*—

**PONDUS**, *Weight*. See *WEIGHT*.

**PONDUS**, in ancient Records, is a Duty paid to the King ac-  
cording to the Weight of Merchandizes. See *POUNDAGE*.

**PONDUS Regis**, the Standard-Weight, anciently appoint-  
ed by the King. See *STANDARD*.

**PONE**, a Writ, whereby a Cause depending in the  
County, or other inferior Court, is removed to the *Com-*  
*mon Pleas*. See *WRIT*, &c. *COURT*, &c.

**PONE per Vadium**, is a Writ commanding the Sheriff to  
take Surety of one for his Appearance at a Day assign'd.  
See *SURETY*, *VADIUM*, &c.

**PONIARD**, a little pointed Dagger, very sharp-edg'd;  
bore in the Hand, or at the Girdle, or hid in the Pocket.

The *Poniard* was anciently in very great Use, but is now in  
good measure set aside, except among Assassins. See *ASSASSIN*.

Sword and *Poniard* were the ancient Arms of Duellists;  
and are said to continue still so among the *Spaniards*.—The  
Practice of Sword and *Poniard* still make a part of the Ex-  
ercise taught by the Masters of Defence.

The Word is form'd from the *French* *Poignard*, and that  
from *Poignee*, Handful.

**PONS Varolii**, or *Varolii*, or *PONS Cerebri*, in Anatomy,  
the upper Part of a Duct in the third Ventricle of the Brain;  
situate in the Cerebellum, and leading to the Infundibulum.  
See *BRAIN*, *VENTRICLE*, *INFUNDIBULUM*, &c.

It is thus called from its Discoverer *Varolius*, an Italian  
Physician, who flourish'd in the University of Padua about  
the Year 1572.



**PONTAGE**, a Contribution towards the Maintenance Repairing, and Rebuilding of Bridges. See **BRIDGE**.

This was, antiently, one of three general National Charges, whence no Person of any Degree whatever was exempted.

The three Things call'd *Trinoda Necessitas*, whence, *In-gulfus* tells us, *Nulli possunt laxari*, were, the Expedition to the Wars, the Building of Castles, and the Building and Repairing of Bridges. See **TRINODA**.

Mr. Selden, in his Notes on *Eadmerus*, observes, that *ne quidem Episcopi, Abbates, & Monachi immunes erant*.—And *Mat. Paris* adds, Anno 1244, that in all Grants of Privileges to the Monasteries, those three Things were always excepted, for the Publick Good, and that the People might be better able to resist an Enemy.

**PONTAGE** is also a Due antiently belonging to the Lord of the Fee, for Persons or Merchandizes, that pass over Rivers, Bridges, &c. call'd in the later Latin *Pontagium*, or *Pontomagium*, Pontage.

**PONTIBUS reparandis**, a Writ directed to the Sheriff, willing him to charge one or more to repair a Bridge, to whom it belongs.

**PONTIFICAL**, **PONTIFCALE**, a Book of the Rites and Ceremonies belonging to Pontiffs, Bishops, Popes, &c. See **RITUAL** and **CEREMONIAL**.

**PONTIFICALIA**, the Robes and Ornaments, wherein a Bishop performs Divine Service. See **EPISCOPAL**.

**PONTIFICAT**, the State or Dignity of a Pontiff.

*Cesar* reform'd the Calendar in the Time of his Pontificate. See **CALENDAR**.

The Concordat was pass'd in the Pontificate of *Leo X.* See **CONCORDAT**.

There was a Pontificate that only lasted twenty four Hours.

**PONTIFEX**, **PONTIFF**, *High-Priest*; a Person who has the Intendence and Direction of divine Worship, as the offering Sacrifices and other Religious Solemnities. See **PRIEST**, **SACRIFICE**, &c.

The Romans had a College of Pontiff, and over those a Sovereign Pontiff, or *Pontifex Maximus*, instituted by *Numa*; whose Function it was to prescribe the Ceremonies each God was to be worshipped withal, compose the Rituals, direct the Vestals, and for a good while to preform the Business of Augury; till on some superstitious Occasion he was prohibited intermeddling therewith. See **AUGUR**.

He consecrated the Statues of the Gods, e're they were put up in Temples; blest'd the Figures of some of *Jove's* Thunderbolts, to preserve the People from Harms; and compiled their Statutes. See **ANNALS**.

The Jews too had their Pontiff or High-Priest; and among the Romanists the Pope is still stiled the Sovereign Pontiff. See **POPE**.

Authors differ about the Etymology of this Word: Some derive it from *posse facere*, that is, from the Authority the Pontiffs had to sacrifice; others, as *Varro*, from *Pons*, because they built the Sublucial Bridge, that they might go and offer Sacrifice on the other side of the *Tiber*.

**PONTON**, or **PONTOON** in War, a little floating Bridge, made of Boats and Planks. See **BRIDGE**.

The Ponton is a Machine consisting of two Vessels, at a little Distance, join'd by Beams; with Planks laid cross for the Passage of the Cavalry, the Canon, Infantry, &c. over a River, an Arm of the Sea, &c.

The late invented Ponton is of Latten, furnish'd with an Anchor, &c. to fix it.—To make a Bridge several of these are disposed two Yards asunder, with Beams a-cross them, and over those, Boards.

They are also link'd to each other, and fasten'd on each Side the River, by a Rope rung thro' a Ring in each of their Heads, and fix'd to a Tree or Stake on either Shore.—The whole makes one firm, uniform Bridge, over which a Train of Artillery may pass.

*Cesar* and *Aulus Gellius* both mention Pontons; but theirs were no more than a Kind of square flat Vessels, proper for the carrying over of Horse, &c. Ours however take their Names from them; those Authors call them *Pontones*, of *Ponto*.

**PONT-Volant**, q. d. *Flying Bridge*; a Kind of Bridge used in Sieges; made of two small Bridges laid one over another, and so contrived by means of Cords and Pullies placed along the Sides of the under Bridge, that the upper may be push'd forwards, till it joins the Place where it is fix'd: the whole Length of both however not to be above five Fathom long, least they should break with the Weight of the Men. See **BRIDGE**.

**POOL**, is properly a Reservoir of Water, supply'd with Springs, and discharging the Overplus by Sluices, Defenders, Weirs, and other Cause-ways. See **SLUICE**, &c.

**MILL-POOL** is a Stock of Water, by whose Force, &c. the Motion of a Mill is effected. See **MILL**.

**POOP**, *Puppis*, the Stern or uppermost Part of a Ship's Hull. See **PUPPIS** and **STERN**.

**POPE**, **PAPA**, the Chief or Head of the Roman Catholic Church. See **PAPA**.

Father *le Coigne* in his Annals observes, from *St. Jerom*,

*St. Cyprian, St. Gregory, St. Augustin, and Sidonius Apollinaris*; that the Title *Pope* was antiently given to all Bishops. See **BISHOP**.

They were also address'd under the Term *Holiness*, and *Beatitude*; and their Churches call'd *Apostolical* Sees. See **HOLINESS**, **APOSTOLICAL**, &c.

He adds, that 'twas only in the Eleventh Century, that *Gregory VII.* first appointed, in a Synod held at *Rome*, that the Title *Pope* should be restrain'd to the Bishop of *Rome*, as a particular Distinction and Prerogative.

In the Council of the Lateran, held under *Innocent III.* the Pope was declared *Ordinary of Ordinaries*. See **ORDINARY**.

The Pope is chose by the Cardinals, out of their own Body. See **ELECTION**, **CARDINAL**, &c.

His See is at *Rome*, whence he issues out his Orders, call'd *Briefs* and *Bulls*, throughout the Catholic World. See **BULL**, &c.

History mentions a Pope, *Joan*.—The Reality hereof has been oppos'd and defended by many learned Men.—The Tradition might possibly take its Rise from the Weakness of Pope *John VIII.* in restoring *Photius* to his Communion, and owning him as true Patriarch: For he hence got the Appellation of Woman; as that Prince call'd King *Mary* did, by leaving himself to be govern'd by *Q. Mary* his Wife. See **KING** and **QUEEN**.

*M. Spanheim*, Professor of Theology at *Leiden*, has lately wrote very amply on the Subject; and shews it to be a Question *de facto*, scarce determinable at this Time of Day.

**POPE**, **PAPA**, among the Romans, was the Name of certain Inferior Officers, or Ministers of Sacrifice. See **SACRIFICE**.

The Business of the *Papa* was to whet the sacrificing Knife, to bind the Victim, prepare the Water, and other Necessaries, to smite the Victim, &c.

They did their Office naked to the Girdle, and crowned with Laurel.

**POPLES** in Anatomy, that Part where the Thigh is joined to the Tibia. See **THIGH** and **TIBIA**.

**POPULICANI**, *Populicani*, or **PUBLICANS**, a Name given in the West to the *Manichees*; or to a particular Branch thereof, called in the East *Paulicians*. See **PAULICIAN**.

**POPLITEA**, in Anatomy, is the third Vein of the Leg. See **VEIN**.

It arises from the Heel, where it is form'd out of several Branches, coming both from the Heel and Ankle.

It lyes pretty deep in the Flesh; and ascending up to the Ham, terminates in the Crural Vein. See **CRURAL**, &c.

**POPLITÆUS**, or *Sub-POPLITÆUS*, a Muscle, which arises from the external and inferior Protuberance of the Thigh-Bone, and passing over the Joint obliquely, is inserted into the superior and internal Part of the Tibia.—It assists in bending of the Leg, and turns it inwards. See **LEG**.

**POPPY**, *Papaver*, a medicinal Plant, famed for its Narcotic Quality. See **NARCOTIC**.

There are divers Kinds; some wild, some cultivated, white, purple, scarlet; &c. But those most used are the white, *Papaver Hortense semine albo*; and black, *Papaver Hortense semine nigro*.

The Heads of these Plants are of singular Virtue to promote Sleep, assuage Pain, &c. they stop Diarrhæas, Hemorrhages, &c.

Of the Juice of these is prepared the *Meconium* sold in the Shops. See **MECONIUM**.

The Opium brought from *Turky* is an Extract of the Juice of *Turky Poppies*. See **OPIMUM**.

**POPULAR**, **POPULARIS**, something relating to the People.

The Roman Nobility was distinguish'd into two Factions; the *Optimates*, who adhered strenuously to the Ministry, the Senate, &c. in opposition to the People.

And the *Populares*, who favour'd the Rights and Pretensions of the People, in opposition to the Noblesse.

**POPULAR Diseases**, are such as become common, and run thro' the Body of the People, call'd also *Epidemic Diseases*. See **EPIDEMIC**.

*Hippocrates* has wrote expressly *de Morbis Popularibus*. See **DISEASE**.

**POPULAR Errors**, are such as People imbihe from one another, by Custom, Education, and Tradition, without having consider'd the Reasons or Foundations thereof. See **ERROR**.

**POPULEUM**, or **POPULNEUM**, in Pharmacy, an Unguent prepared of the Buds of black Poplar, Violet Leaves, Navel-wort, and Lard, bruised and macerated; to which are added Bramble-tops, Leaves of black Poppies, Mandragora, Henbane, Nightshade, Lettice, and Burdock, boil'd in Rose-water, and strain'd.

It is much used as a Cooler, in Burns, Scalds, and all Sorts of Inflammations; and to assuage arthritic Pains.

**PORRACEOUS**, in Medicine, a Term applied to the Bile, when its Colour is green, approaching that of a Leek. See **BILE**.

The Word is form'd from the Latin, *Porrum*, Leek. **POR**;



**PORCELAIN, or PURCELAIN**, a delicate sort of Earthen-Ware, chiefly manufactured in *China*, and thence, also, call'd *China*, or *China-Ware*; but brought into *Europe* from other Parts of the East, especially *Japan*, *Siam*, *Surat*, and *Persia*. See **PORTERS-Ware**.

*Scaliger*, and *Cardan*, tho' generally of contrary Sentiments, are yet agreed, that what the *Romans* call'd *Vasa Myrrhina*, which were first seen at *Rome* in *Pompey's* Triumph, and which afterwards became so very precious; were the same with the *Porcelain* of our Times. See **MYRRHINE**.

This may be true: But if the Opinion be only founded on *Pliny's* Description of these Vessels, one would rather take 'em for a kind of precious Stones, of a whitish Colour, but variously vein'd and variegated; found in some Parts of *Persia*.

Be this as it will, 'tis certain both those Authors are mistaken, when they tell us, that *Porcelain* is made of Egg and Oyster Shells beaten small, and buried under ground for 80 or 100 Years. The Account we shall here give, will put that out of question.

'Tis not known who was the Inventor of *Porcelain*; the *Chinese* Annals, which use to contain every thing in any wise memorable, are perfectly silent about it; nor do we know much more of the Time of its Invention. Only, 'tis certain it must have been before the beginning of the fifth Century: The Annals of *Feouldam* relating, that from the second Year of the Reign of the Emperor *Tam*, about the Year of Christ 442, the Workers in *Porcelain* of that Province had alone furnish'd the Emperors therewith.

There is *Porcelain* made in several Provinces of *China*; particularly those of *Fou Kien*, *Canton*, and *Kimtetchim*; but that of the last is most esteem'd.

The *Chinese* call the *Porcelain*, *Tbski*: The word *Porcelain* is but little known there, except among a few Workmen and Merchants; and, seems derived from the Portuguese *Porcellane*, a Cup, or Porringer.

*Porcelain* makes a very curious Article in Commerce, and even in Natural History. Its Manufacture has hitherto pass'd for a Mystery in *Europe*: and that in spite of all the Endeavours of the Jesuit-Missionaries to penetrate into the Secret. The Veil, however, is at length drawn; and in a Letter of *F. Entrecolles* to *F. Orry*, from *Joatcheou*, dated September the 1st, 1712, and lately published in *French*, the whole Process is described in all its Circumstances; with an Extract whereof we shall here gratify the curious Reader.

*The Art of making Porcelain, or China-Ware; from a Letter of F. d'Entrecolles, a Jesuit-Missionary in China.*

In the Manufacture of *Porcelain*, there are four essential things to be consider'd; viz. The Matter it is made of. The Art of forming the Vessels, and other Works. The Colours wherewith it is painted. And, lastly, the Baking, or giving it the proper degree of Fire. Each of which will make the Subject of a several Article.

*Matter, whereof Porcelain, or China-Ware, is made.*

There are two kinds of Earths, and as many kinds of Oils or Varnishes used in the Composition of *Porcelain*. The first Earth, call'd *Kaolin*, is beset with glittering Crystals; the second, call'd *Petunsa*, is a plain white, but exceedingly fine, and soft to the Touch. They are both found in Quarries twenty or thirty Leagues from *Kimtetchim*, a City which produces the finest *Porcelain-Works* in all *China*; and hither these Earths, or rather Stones, are brought in an infinite Number of little Barks, incessantly passing up and down the River *Joatcheou* for that purpose. The *Petunsa's* are brought in form of Bricks; having been cut out of the Quarries, where they are naturally Pieces of a very hard Rock. The white of the best *Petunsa* is to border a little on green.

The first Preparation of these Bricks, is to break and pound 'em, first into a coarse Powder with Iron-Mallets; then in Mortars with Pestles that have Stone-Heads, arm'd with Iron, and wrought either with the Hand, or with Mills.

When the Powder is almost render'd impalpable, they throw it in a large Urn full of Water, stirring it briskly about with an Iron Instrument. After the Water has rested a little while, they skim off from the Top a white Substance form'd there, of the thickness of four or five Fingers; and dispose of this Scum or Cream in another Vessel of Water. They then stir again the Water of the first Urn, and again skim it, and thus alternately till there remain nothing but the Gravel of the *Petunsa's* at bottom; which they lay a-fresh under the Mill, for a new Powder.

As to the second Urn, wherein are put the Skimmings of the first; when the Water is well settled, and become quite clear, they pour it off; and with the Sediment, collected at bottom in form of a Paste, fill a kind of Moulds: whence, when almost dry, they take it out, and cut it into square Pieces, which are what they properly call *Petunsa's*; reserving 'em to be mix'd with the *Kaolin* in the Proportion hereafter assign'd.

These Squares are sold by the hundred, but 'tis very rare to meet with 'em un-falsify'd: The Workmen, who, like the rest of the *Chinese*, are errant Knaves in their Dealings, usually mixing Refuse along with 'em; so that they are usually obliged to purify 'em e'er they can be employ'd.

The *Kaolin*, which is the second Earth used in *Porcelain*, is much softer than the *Petunsa*, when dug out of the Quarry; yet is it this, which, by its mixture with the other, gives the Strength and Firmness to the Work. *F. Entrecolles* observes, that some *English* or *Dutch*, having procured some *Petunsa's* to be bought, privately; upon their attempting to make *Porcelain* at their Return into their own Country, could not succeed for want of taking *Kaolin* along with it. Which the *Chinese* being apprised of, said, drolling, "That the *Europeans* were wonderful People to go about to make a Body, whose Flesh was to sustain "itself without Bones."

The Mountains whence the *Kaolin* is dug, are cover'd without-side with a reddish Earth; the Mines are deep, and the Matter is found in Glebes, or Clods, like the Chalk in ours. The Author is of opinion, that the white Earth of *Malta* is not much different from the *Kaolin*, except that it wants the silver'd Particles. The Preparation of *Kaolin* is the same with that of the *Petunsa's*, except that the Matter being less hard, less Labour is required.

The Oil or Varnish, which makes the third Ingredient in *Porcelain*, is a whitish, liquid Substance, drawn from the hard Stone whereof the *Petunsa's* are form'd; that which is whitest, and whose Stains are the greenest, being always chosen for this purpose.

The Manner of preparing the Oil, is thus: The *Petunsa's* being wash'd, undergo the same Preparations as for making the Squares; excepting that the Matter of the second Urn is not put in Moulds, but the finest Part of it taken to compose the Oil. To an hundred Pounds of this Matter they cast a Mineral Stone call'd *Chekao*, resembling our Alum: this Stone is first heated red-hot, and thus reduced in a Mortar into an impalpable Powder; and serves to give the Oil a Consistence; which, however, is still to be kept liquid.

The Oil of Lime makes the fourth Ingredient; the Preparation whereof is much more tedious and circumstantial. They first dissolve large Pieces of quick Lime, and reduce it to a Powder by sprinkling Water on it; on this Powder they lay a Couch of dry Fern, and on the Fern another of the slack'd Lime, and thus alternately, till they have got a moderate Pile; which done, they set fire to the Fern: the whole being consumed, they divide the Ashes that remain on new Couches of dry Fern; setting 'em on fire as before. And this they repeat five or six times successively, or even more; the Oil being still the better as the Ashes are oftner burnt.

In the Annals of *Feouldam* 'tis said, instead of Fern they antiently used the Wood of a kind of Medlar-Tree; and that 'twas this gave the antient *Porcelains* that admirable Hue, which the Moderns cannot come up to for want of that Wood. 'Tis certain, however, the Quality of the Fern and Lime contribute very much to the goodness of the Oil.

A Quantity of these Ashes of Fern and Lime are now thrown into an Urn full of Water; and to an hundred Pounds of Ashes is added a Pound of *Chekao*, which dissolves therein. The rest being performed after the same manner as in preparing the Earth of the *Petunsa's*; the Sediment found at the bottom of the second Urn, and which is to be kept liquid, is what they call the Oil of Lime; which the *Chinese* esteem as the Soul of the former Oil, and which gives the *Porcelain* all its Lustre. This Oil is easily sophisticated by adding Water to increase the Quantity; adding at the same time proportionably of the same *Chekao* to maintain the Consistence. Ten Measures of Oil of *Petunsa* usually go to one of Lime. To have the Mixture just, the two Oils should be equally thick.

*Manner of forming the Vessels, and other Works of Porcelain.*

The first thing is to purify the *Petunsa* and *Kaolin*; which, for the first, is done after the manner already described in preparing the Squares. For the second, as its softness makes it dissolve easily, 'tis sufficient, without breaking it, to plunge it in an Urn full of Water in an open Basket. The



Dregs that remain are perfectly useless, and are emptied out of the Work-house when a quantity is got together.

These Work-Houses are properly vast Yards wall'd round, with Sheds, and other Conveniencies for the Workmen to work under; as well as other Buildings for 'em to live in: It is almost inconceivable what number of Persons are employ'd in these Works; there being scarce a Piece of *Porcelain* but passes thro' above twenty hands, e'er it come to the Painter's Work-House; and above sixty e'er it be brought to Perfection.

To make a just Mixture of *Petunsa* and *Kaolin*, regard must be had to the Fineness of the *Porcelain* to be made: For the finer *Porcelains*, they use equal Quantities; four Parts of *Kaolin* to six of *Petunsa*, for moderate ones; and never less than one of *Kaolin* to three of *Petunsa*, for the coarsest.

The hardest Part of the Work is the Kneading and Tewing the two Earths together; which is done in a kind of large Basons, or Pits, well paved and cemented, wherein the Workmen trample continually with their Feet, relieving one another, till the Mass be well mixed, grow hard, and become of the Consistence required to be used by the Potter.

The Earth, when taken out of the Basons, is kneaded a second time, but piece-meal, and with the Hands, on large Slates for the purpose; and on this Preparation, in effect, it is, that the Perfection of the Work depends; the least heterogeneous Body remaining in the Matter, or the least Vacuity that may be found in it, being enough to spoil the whole. The smallest Grain of Sand, nay, sometimes a single Hair, shall make the *Porcelain* crack, splinter, run, or warp.

The *Porcelain* is fashion'd or form'd either with the Wheel, like Earthen-Ware; or in Moulds. See POTTERY. Smooth Pieces, as Cups, Urns, Dishes, &c. are made with the Wheel. The rest, *i. e.* such as are in Relievo, as Figures of Men, Animals, &c. are form'd in Moulds, but finish'd with the Chissel.

The large Pieces are made at twice; one half of the Piece is rais'd on the Wheel by three or four Workmen, who hold it till it have acquired its Figure; which done, they apply it to the other half, which has been form'd in the same manner; uniting the two with *Porcelain-Earth*, made liquid by adding Water to it, and polishing the Juncture with a kind of Iron Spatula.

After the same Manner it is that they join the several Pieces of *Porcelain* formed in Moulds, or by the Hand; and after the same Manner they add Handles, &c. to the Cups and other Works form'd with the Wheel.

The Moulds are made after the Manner of those of our Sculptors, *viz.* of divers Pieces which severally give their respective Figure to the several Parts of the Model to be represented; and which are afterwards united to form a Mould for an entire Figure. The Earth they are made of is yellow and fat, dug out of its proper Quarries, whereof there are abundance about *Kimtetchim*. It is kneaded like glaz'd Earth, and when sufficiently mellow, fine, and moderately dry, heating it stoutly, they form it into Moulds, according to the Works required, either by Hand, or on the Wheel. These Moulds are sold very dear, but last a long time. See MOULD.

All the Works made in Moulds are finish'd by the Hand, with several Instruments proper to dig, smooth, polish, and to touch up the Strokes that escape the Mould; so that 'tis rather a Work of Sculpture than of Pottery. There are some Works whereon Relievo's are added, ready made, as Dragons, Flowers, &c. Others that have Impressions in Creux; which last are engraven with a kind of Puncheons. In the general, all *Porcelain* Works are to be shelter'd from the Cold; their natural Humidity making 'em liable to break when they dry unequally.

To conceive the Number of Hands each Piece of *Porcelain* passes thro' e'er perfect; we shall close this Article with what F. *Entrecolles* instances of a common Cup, e'er it be fit for the Painter: The Cup begins with the Potter, who has the Management of the Wheel, where it acquires its Form, Height, and Diameter. This Operator has not above a Farthing *Sterling* for a Plate furnish'd with twenty six Cups; accordingly, they go out of his Hands exceedingly imperfect, especially towards the Feet, which are only uniform'd Lumps of Earth, to be afterwards cut with the Chissel when the Cup is dry. When it comes from the Wheel, the Cup is received by a second Workman, who fits it on its Base. A third takes it immediately from him, and applies it on a Mould to bring it to its true Form. This Mould is on a kind of Lathe. A fourth Workman polishes the Cup with a Chissel, especially about the Edges; and brings it to the thinness necessary to make it transparent; in doing which, he moistens it from time to time, lest its dryness should make it break. When of its proper thickness, another Workman turns it gently on a Mould, to smooth its inside; taking a deal of Care it be

done equably, lest any Cavity be form'd, or it warp. Other Workmen add, some, Ornaments in Relievo; others, Impressions in Creux; others, only Handles, as the quality of the Cup requires. At last, they round and hollow the Foot on the inside with a Chissel; which is the Function of a particular Artist, who does nothing else.

This Multiplicity of Workmen, so far is it from retarding the Work, that it is found, by Experience, to go on the faster for it; as well as to be the better done; each Workman, by a continual Attention to the same thing, becoming very dextrous at it: besides saving the time of changing Instruments, &c.

#### *Painting of Porcelain, and the Colours used therein.*

The *Chinese* Painters, especially those that meddle with human Figures, our Author observes, are all sorry Workmen: He adds, that the defect is scarce any where so sensible as in the *Hoapei*, or *Porcelain-Painters*, among whom, setting aside Flowers and Landscips, which are sometimes tolerable, the greatest Masters are not to be compared to ordinary Apprentices among the *Europeans*, for the Beauty and Justness of Design. But it is otherwise with the Colours these *Hoapei* use; which are so exceedingly lively and brilliant, that there is but little hopes our Workmen should ever come to vye with 'em.

The Painting Work is distributed among a great Number of Workmen, in the same Laboratory: To one it belongs to form the colour'd Circle about the Edges of the *Porcelain*; another traces out Flowers, which another paints: This is for Waters, and Mountains alone; that for Birds, and other Animals; and a third for human Figures.

There are *Porcelains* made of all Colours; both with regard to the Grounds, and to the Representations thereon. As to the Colours of Landscips, &c. some are simple; such are all Blues, which are those most usually seen in *Europe*; others are mixed up of several Tints; and others, again, heighten'd with Gold.

The *Blue* is made of *Lapis Lazuli*, prepared by burning it the space of twenty four Hours, in a Furnace, where it is buried up in Gravel, to the height of half a foot; when burnt, they reduce it into an impalpable Powder in *Porcelain* Mortars, not varnish'd, and with Pestles of the same Matter.

For the *Red*, they use Copperas, which they call *Haofai*; a Pound of this they put in a cover'd Crucible, in the Lid whereof is left a little Aperture, thro' which the Matter on occasion may be seen. The Crucible is heated with a Reverberatory Fire, till the black Smoke cease to ascend, and a fine red one succeeds it. A Pound of Copperas yields four Ounces of red Liquor, which is found at the bottom of the Crucible, tho' the finest part is that usually adhering to the Lid and the Sides of the Crucible.

Beside the natural Whiteness of the *Porcelain*, which is still improved by the Oil wherewith they cover it, they have an artificial White, serving for the Grounds of *Porcelains* of several Colours; and made of a transparent Flint calcined like the *Lapis Lazuli*, and mixed with pulverized Cerufs: The Proportion is an Ounce of the latter to half an Ounce of the former.

This Powder of Flint is likewise an Ingredient in most of the other Colours; *e. gr.* for *Green*, to three Ounces of *Tomboapien*, or Scoria of beaten Copper, they use half an Ounce of Powder of Flint, and an Ounce of Cerufs. *Violet* is made by adding a Dose of White to the Green already prepared; the more Green is added, the deeper is the Violet. For *Yellow*, they use seven Drachms of White, and three of the Copperas-Red.

Most of these Colours are mixed up with Gum-Water, for Application; a little Saltpetre, sometimes Cerufs or Copperas, but more usually Copperas alone, being first dissolved in the Water. Indeed for *Porcelains* that are to be quite red, the Colour is usually applied with Oil; with the common Oil of the *Porcelain*, or another made of the white Flints.

There is also another Red, call'd *blown Red*, because in reality applied by blowing with a Pipe, one of whose Orifices is cover'd with a very fine Gauze. The bottom of this Tube is lightly applied to the Colour wherewith the Gauze is smear'd; when, blowing against the *Porcelain*, it becomes all sprinkled over with little Points. This *Porcelain* is very rare, and of great Price.

*Black Porcelain*, which they call *Ommian*, has likewise its beauty: This Colour has a leady Cast, like our Metal-burning Mirrors; and is usually heighten'd with Gold. It is made of three Ounces of *Lapis Lazuli*, with seven of the common Oil of Stone; tho' that Proportion is varied, as the Colour is designed to be more or less deep. The Black is not given the *Porcelain* till it be dry, nor must the Work be put to the Fire till the Colour be dry.



The Gold is not apply'd till after the baking, and is rebaked in a Furnace for the purpose: To apply the Gold, they break and dissolve it in Water at the bottom of a *Porcelain*, till a thin gilded Cloud arise on the Surface; it is used with Gum-Water, and to give it a Body, they add three parts of Cerufs to thirty of Gold.

There is likewise a kind of *marbled Porcelain*, which is not made by applying the Marblings with the Pencil; but for Oil to varnish it withal, using that of white Flints, which hatches and cuts the Work with a thousand humorous Strokes, in manner of *Mosaic Work*. The Colour this Oil gives, is a white, somewhat ashy: The *Porcelain* is call'd *Tsoniki*.

There are several other kinds of *Porcelain*; but they are such as are rather for Curiosity than Use: The prettiest are the Magic *Porcelains*, whose Colours only appear when fill'd with some Liquor. These are made double: The outside is white, and all laid out in Compartments; the inside is a solid Cup, of colour'd *Porcelain*; tho' the Cup is sometimes of Glass, which has a better Effect than *Porcelain*. The Secret of these Magic *Porcelains*, which the Chinese call *Kiatzim*, is almost lost; yet F. *Entrecolles* has furnish'd us with the following Account.

The *Porcelain* to be painted thus, must be very thin; and the Colours, which in other *Porcelains* are apply'd on the Outside, are here apply'd on the Inside: When the Colour is dry, they lay over it a light Couch of a Size made of the *Porcelain* Earth; by which means the Colour is inclos'd between two earthen *Laminee*. When the Size is dry, they throw Oil within the *Porcelain*; and when it has enough, they return it to the Mould, and the Wheel, to render it as thin and transparent as possible. When dry, 'tis baked in the Common Furnace. The Colours here used are always the finest, and the Figures painted are Fishes; as the most suitable to the Liquor put within them, and in which they seem to swim.

The several Kinds of *Porcelains* above-mention'd, being quite painted, with their several Colours, and all the Colours dry, are to be polish'd, to prepare them to receive the Oil or Varnish; which is done with a Pencil of very fine Feathers, moisten'd with Water, and pass'd lightly over, to take off even the smallest Inequalities.

The Oiling or *Varnishing*, is the last Preparation of the *Porcelain*, before it be carry'd to the Furnace: This is apply'd more or less thick, and seldomer or oftener repeated, according to the Quality of the Work. For thin, fine *Porcelains*, they give two very thin Couches; to others one; but that one equivalent to the other two. There is a deal of Art in applying the Varnish; both that it be done equally, and not in too great quantity. The Couches on the Inside are given by Aspersions, i. e. by casting in as much Varnish as is necessary: Those on the Outside, by Immersion, or by plunging the Pieces in a Vessel of Oil.

It must be observ'd, that the Foot is not yet form'd, but continues in a mere Mass, till the Work has been varnish'd: 'Tis at length finish'd on the Wheel; and when hollow'd, a little Circle is painted in it, and sometimes a Chinese Letter. This Painting being dry, the Foot is varnish'd, and the Work now carry'd to the Furnace to be baked.

Our curious Author omits nothing; not even the Dexterity of the People, who carry the *Porcelain* to the Bake-house: He has been frequently surpriz'd, he tells us, to see a Man pass thro' several Streets full of People, with two very long, narrow Boards, rang'd with *Porcelains* on his Shoulders; still preserving the Equilibrium so accurately, as not to do any damage to so frail a Commodity.

#### Manner of Baking Porcelain.

There are two Kinds of Ovens used in baking of *Porcelain*: Large ones, for Works that are only to come to the Fire once, which is the common way; and small ones, for such as require a double baking. The large ones are two Chinese Fathoms deep, and almost four wide. They are form'd of a Mixture of three Earths; one whereof, Yellow and Common, makes the Basis; the two others are scarcer, and dug out of deep Mines, wherein People can only work in Winter. One of them, call'd *Jaoton*, is a very strong, stiff Earth; the other *Touton*, oily.

The Sides and Roof of the Ovens are so thick, that one may lay the Hand on them, when the Fire is at its height, without danger of burning. At the Top of the Vault, which is in form of a Tunnel, is a large Aperture to give vent to the Flames and Smoke, which mount up incessantly, as soon as Fire is once set to the Furnace. Beside the principal Aperture, there are four or five small ones around; which, by being open'd and shut, serve to augment or diminish the Heat: like the Holes in the Chymists Furnaces, call'd *Registers*. The Hearth, which takes up the whole Breadth of the Furnace, is placed in Front, precisely against the opening of the Door, and is two or

three Foot deep, and two broad; People passing over it on a Plank, to go into the Furnace to dispose the *Porcelain*.

As soon as the Fire is lighted, the Door is wall'd up; only leaving an Aperture for the Conveyance of Wood. Lastly, the Bottom of the Oven is cover'd with Sand, wherein part of the first *Porcelain* Cases are buried. The Furnace itself is usually placed at the Extremity of a long, narrow Vestible, which serves in lieu of Bellows; the cold Air and Wind being thus driven directly in the face of each Furnace.

Each Piece of *Porcelain* of any Note, is disposed, in the Furnace, in its separate Case, or Coffin. Indeed, as to Tea-Dishes, &c. the same Case serves for several. The Cases are all of the same Matter with the Furnace: They have no Lids; but serve each other mutually, the Bottom of a second Case fitting into the Aperture of the first; and thus successively, to the Top of each Column. Each Coffin, which is usually of a Cylindrical Form, that the Fire may communicate itself more equably to the *Porcelains* inclosed, has, at bottom, a little Lay of very fine Sand, cover'd over with Dust of *Kaolin*, that the Sand may not stick to the Work; and care is taken that the *Porcelain* may not touch the Sides of the Case. In the larger Cases, which hold the small Pieces; they leave the Middle vacant; in regard *Porcelains* placed there would want the necessary Heat. Each of these little Pieces is mounted on a little Mass of Earth, the thickness of two Crowns, cover'd with Powder of *Kaolin*.

F. *Entrecolles* observes, that the *Porcelains* are put in Cases, to prevent any Diminution of Lustre from the too violent Effect of a naked Fire; adding, that 'tis owing to these thick Veils, that the Beauty, or, as he calls it, the Completion of the *Porcelains*, is not tann'd by the Heat of the Fire.

As fast as the Cases are fill'd, a Workman ranges them in the Cavity of the Furnace; forming them into Piles or Columns; whereof those in the middle are at least seven Foot high: The two Cases at the bottom of each Column are left empty; because being partly sunk in the Sand, the Fire has the less effect on them; and for the same reason, the uppermost one is left empty. In this manner is the whole Cavity of the Furnace fill'd with Columns, excepting that part precisely under the grand Aperture.

In ranging the Cases, they observe always to place the finest Piles of *Porcelain* in the Centre; the coarsest at Bottom; and those that are high-colour'd, and consist of as much *Petunsa* as *Kaolin*, and wherein the worst Oil is used, at the Mouth.

These Piles are all placed very near one another, and are bound together at top, at bottom, and in the middle, by Pieces of Earth; in such manner, as that the Flame may have a free Passage among them, and insinuate equally on all sides: in which a great part of the Workman's Art lies, and on which the Perfection of the *Porcelain* much depends. Another thing to be observ'd, is, that a Furnace must never be set altogether with new Coffins; but half one, half t'other: the old ones at the bottoms and tops of the Pile, and the new ones in the middle. Indeed 'twere better to have them all burnt in a Furnace a-part, e'er they come to be used for *Porcelain*; as was antiently done. The Cases, our Author observes, are brought ready prepared from a large Village on the River, a League distant from *Kimtetchim*. E'er burnt, they are yellow; and afterwards of a dark red.

When the Furnace is fill'd, they wall up the Door; only leaving a little Aperture for the throwing in of little Pieces of Wood, a Foot long, but very slender, to keep up the Fire. 'Tis then heated, by degrees, for the space of a Day and Night; after which two Men, who relieve one another, continue to throw in Wood without any interruption. To know when the *Porcelain* is baked enough, they open one of the lesser Holes of the Furnace, and with a pair of Tongs take off the Lid of one of the Piles. If the Fire appear very brisk and clear, and the Piles equally inflam'd; and especially if the Colours of the *Porcelains* that are uncover'd, dart forth a noble Lustre; the Coktion is sufficient, they discontinue the Fire, and wall up what remain'd of the Door of the Furnace.

If the Furnace be only fill'd with small *Porcelains*, they take them out twelve or fifteen Hours after the Fire is extinct: If it be fill'd with larger, they defer opening it for two or three Days. In this the modern Practice differs from the antient; wherein the Door was not open'd till after ten Days for the large Pieces, and five for the small ones.

One thing very surprizing, and almost inconceivable, F. *Entrecolles* observes, is, that there are never found any Ashes on the Hearth of the Furnace; what Quantity of Wood soever is consum'd. He adds another thing, which with him passes for equally strange, that the Workmen employ'd about the Furnaces, stake their Thirst, by continually drinking hot Tea, with Salt dissolv'd in it.

The



The *Chinese* make another Kind of *Porcelain*, which they paint and bake twice; and for this second Baking they have a kind of little Ovens on purpose. When very small, they are made of Iron; otherwise, of a kind of Bricks an Inch thick, a Foot high, and half a Foot broad; made of the same Earth with the *Porcelain* Cases. The biggest of these Furnaces does not exceed five Foot in Height, and three in Diameter; and being made much in form of Bee-Hives, the Bricks are arch'd a little, to form the Curvity the better. The Hearth is of Earth half a Foot high, form'd of two or three Ranges of Bricks; and on this Mass is the Furnace built. Around the Furnace, at the distance of about half a Foot, is rais'd a Shell of common Bricks, join'd to the Furnace itself, by a kind of Arcboutant of Earth, which serve to strengthen it. They usually build four or five of these Furnaces at equal Distances from each other. At the bottom of the Shell are Holes to give Air to the Fire when lighted: A-top is an Aperture, which they cover up with a piece of the baked Earth, when the *Porcelains* are laid in the Furnace.

The *Porcelains*, here, are not inclos'd in Coffins, as in the common Furnaces; the Furnace, itself, serving that purpose; and being so exactly clos'd, that they receive no other Impression of the Fire, but that of the Heat of the Charcoal dispos'd in the Hearth, at the bottom of the Furnace, as well as a-top of the Vault, and in the Interval between the Furnace and the Shell, or Brick-Wall.

To prepare the *Porcelains* for a second Baking, they must have had their Varnish in the common manner, and have pass'd the great Furnace: In this State they are painted with various Colours, after which, without giving them any new Varnish, they are rang'd in Piles in the little Furnace; setting the little ones over the larger, in form of Pyramids.

This second Baking is sometimes intended to preserve the Lustre of the Colours the better, and at the same time to give them a kind of *Relievo*. But more usually, its Design is to hide defective Places, by covering them over with Colours: But the Artifice is easily found out, by passing the Hand over them.

When the Workman judges his *Porcelains* enough baked, he takes off the Piece that covers the Aperture; and if the Works appear glittering, and the Colours glowing, he takes out the Charcoal; and when the Furnace is cold, the *Porcelain* too.

How beautiful soever the modern *Porcelain* may be; the Taste for Antiquity, which reigns in *China*, as well as in *Europe*, gives the antient *Porcelain* a Value far above that of the modern: It must be own'd, the Antient seems finer as to the Matter, more perfect as to the Baking, and of a more pleasant Cast, both as to the White of the Ground, and the other Colours; yet 'tis certain the most able and discerning may be deceiv'd herein: And there are Workmen who make it their business to counterfeit the antient *Porcelain*, call'd *Koutom*, in the modern.

The Matter of these false *Koutoms* is a yellowish Earth, found near *Kimtetchim*: There is nothing particular in the first part of the Process, except that they are made thicker, and that they are varnish'd with an Oil drawn from the yellow Stone, mix'd with the common Oil, which gives them a kind of Sea-green Hue. When taken out of the Furnace, they throw it into a fatty Broth, made of Capons, &c. in which they boil it a second time; they then bury it in the filthiest Sink they can find for a Month or six Weeks, or more, according as they would give it the greater appearance of Antiquity. Besides their Thickness and their Colour, these false Antiques resemble the true ones in this; that they do not resound when struck, nor even give the least buz, when held to the Ear.

Notwithstanding the vast Quantity of *Porcelains* made in almost all the Provinces of the Empire of *China*; they still continue very dear; tho' not near so dear, as antiently. The *Chinese* Annals tell us of Times wherein a single Urn cost ninety or an hundred Crowns on the spot. What chiefly occasions the extraordinary Price of this Commodity, especially in *Europe*, is, beside the great Profits of the Merchants in *Europe*, and their Factors in *China*; that it rarely happens a Furnace succeeds throughout; that it is frequently quite spoilt, so that upon opening it, in lieu of fine *Porcelains*, is found a hard unform'd Mass, into which both the *Porcelains*, and their Coffins, are converted either by Excess of Heat, or some ill Qualities in the Matter.

Another reason of the Dearness of *Porcelain*, is, that the Ingredients it is made of, and the Wood wherewith it is burnt, grow more and more scarce: One may add a third reason for the excessive Price of *Porcelains* to the *Europeans*; and 'tis this, that most of those sent to *Europe* are form'd on new Models, frequently very odd, and difficult to succeed in; which, yet, for the smallest Defects, are turn'd on the Manufacturer's hands: and he not being able to dispose of them to the *Chinese*, because not to their

Taste, nor for their Use, is forc'd to charge the *Porcelain* he delivers, the higher, to pay himself for those refus'd.

The *French* have been these fifteen Years attempting to imitate *Porcelain*: The first Essays made at *Rouen*, we said to have succeeded tolerably well; and M. *Savary* tells us, are now carry'd to such a point in the Manufactures of *Passy*, and *St. Cloud*, that the *French Porcelains* want nothing to make them of equal Value with the *Chinese*, but to be brought five or six thousand Leagues. In effect, for the Fineness of the Grain of the Matter, the Beauty and Form of the Vessels, the Exactitude of the Design, and the Lustre of the Colours, at least the Blues, the *French* are not much behind the *Chinese*. But their grand Defect is in the White of the Ground, which is usually dingy and dull; and easily distinguishes itself from the pure sprightly White of the *Chinese*.

PORCELAIN, is also a kind of little white Sea-shell, found along with the Sponges; and current in several Parts of *Asia*, *Africa*, and *America*, by way of Money. See COIN.

Authors have hitherto been of opinion, that these Shells were the Matter whereof the *Porcelain*, or *China-Ware*, was made. They are of some use in Medicine, and are prescribed pounded or broken, in manner of Pearls. See PEARL.

PORCH, a kind of Vestible supported by Columns; much used at the Entrance of the antient Churches, Temples, &c. See VESTIBLE.

In the antient Architecture, *Porch* was a Vestible, or a Disposition of insulated Columns, usually crown'd with a Pediment, forming a Covert Place before the principal Door of a Temple or Palace.

When it had four Columns in Front, it was call'd a *Tetrapstyle*; when six, *Exastyle*; when eight, *Octostyle*; when ten, *Decastyle*, &c.

*Vitruvius* calls it *Pronaos* and *Prodomos*. When it has Iron Gates, it is call'd *Propyleum*.

PORE, a little Interstice, between the Particles of Matter which constitute Bodies; either empty, or fill'd with some insensible Medium. See BODY and MATTER.

Condensation, and Rarefaction, are only perform'd by closing and opening the Pores. See RAREFACTION and CONDENSATION.

The Transparency of Bodies is usually suppos'd to arise from their Pores being directly opposite to one another. See TRANSPARENCY.

The Matter of insensible Perspiration is convey'd thro' the Pores of the *Cutis*. See PERSPIRATION.

The Word *Pore* is form'd from the Greek *πορος*, *Aperture*, or *Duct*, thro' which a Thing passes.

Sir *Isaac Newton* shews, that Bodies are much more rare, and porous, than is commonly believ'd: Water, e. gr. is 19 times lighter, and consequently rarer than Gold; and Gold itself is so rare, as very readily, and without the least opposition, to transmit Magnetic Effluvia, and easily to admit Quicksilver into its Pores, and to let Water pass thro' it: for a concave Sphere of Gold hath, when fill'd with Water, and solder'd up, upon pressing with a great Force, let the Water squeeze thro' it, and stand all over its outside, in multitudes of small Drops like Dew, without bursting or cracking the Gold: whence it may be concluded, that Gold hath more Pores than solid Parts; and by consequence that Water hath above forty times more Pores than Parts. See GOLD.

The Magnet transmits its Virtues without any Diminution or Alteration, thro' all cold Bodies that are not magnetic; as Gold, Silver, Brass, Glass, Water, &c. See MAGNET.

The Rays of Light, let them be either Bodies actually coming to us from the Sun, or only Motions or Impressions upon the Medium, move in right Lines, and are hardly ever, unless by great chance, reflected back again in the same right Line, after their Impingence upon Objects; and yet we see that Light is transmitted to the greatest Distances thro' pellucid Bodies, and that in right Lines. See RAY, &c.

Now how Bodies should have Pores sufficient for these Effects, may be difficult to conceive, but not impossible: For Sir *Isaac* shews, that the Colours of all Bodies arise from their Particles being of such a determinate Size or Magnitude. Wherefore, if we conceive those Particles to be so dispos'd, as that there is as much Porosity, as there is of Matter; and in like manner those Particles to be compos'd of others much less, and that have as much interspers'd Vacuity or Space, as their Quantity of Matter amounts to; and so on, till we come to solid Particles without Pores: then, if in any Body there be (for instance) three of these Sizes of Particles, and that the last be of the solid, or least sort; that Body will have seven times as much Vacuity as solid Matter. If four such Degrees, and the last be least, and solid, that Body will have fifteen times



times as much Porosity as Solidity: If five such Degrees, it will have thirty-one times as much Space as Solidity: And if six Degrees, then it will have sixty-three times as much Vacuity, as solid Matter.

And perhaps in the wonderful Conformation and Fabrick of natural Bodies, there may be other Proportions of Space to Matter, to us wholly unknown; whence it is possible, there may be yet farther great Quantities of interspers'd Vacuity. See VACUUM.

PORES, in Anatomy, are certain permeable Spaces, between the Parts of the Skin; whereby we sweat, or perspire, &c. See CUTIS and PERSPIRATION.

The Pores are most remarkable in the Hands and Feet: By viewing the Palm of the Hand with a moderate Glass, after washing it well, we perceive innumerable little Ridges, of equal Size and Distance, running parallel to each other; especially on the Tips and Joints of the Fingers, &c. where they are regularly dispos'd into spherical Triangles and Ellipses.

On these Ridges stand the Pores, in even Rows, big enough to be seen by a good Eye without a Glass; but with one, every Pore looks like a little Fountain; and the Sweat may be seen to stand therein, clear as Rock-Water; and as often as it is wiped off, springs up again. See SWEAT.

The Pores are plac'd on the Ridges, not in the Furrows between them; that they might be less liable to be stopp'd by Compression: For the same reason, the Pores of the Hands and Feet are larger than the rest; those Parts being more us'd and press'd than the rest: and hence again, there are no Ridges on other Parts.

These Pores are a very convenient Out-let for the more noxious Parts of the Blood, which by the continual Use of the Hands, and Feet, are plentifully brought into them: Whence in Hypochondriac and Hyfteric People, there is a continual Burning in the Palms and Soles.

In the Stoppage or Constriction of the Pores of the Skin, consists that Disease we popularly call a Cold. See COLD.

In the *Philosophical Transactions*, we have an Instance of a Student near *Leyden*, much addicted to Astronomy, who spending many Nights in Star-gazing, had by the nocturnal Wet, and Cold, so obstructed the Pores of his Skin, that little or nothing exhaled from his Body; as appear'd hence, that the Shirt he had wore five or six Weeks, was then as white as if it had only been wore one Day. In the mean while, a Water was collected under the Skin, whereof he was afterwards cured.

PORIMA, in Geometry, a Theorem, or Proposition, so easily demonstrated, that it is almost self-evident. See AXIOM.

Such, *e. gr.* is this, That a Chord is wholly within the Circle.

On the contrary, an *Aporima*, is a Proposition so difficult, as to be almost impossible to be demonstrated; as the Quadrature of the Circle is now, and as the Squaring of any assign'd Portion of *Hippocrates's Lunes* formerly was.

The *Porima* coincides nearly with the *Lemma*, or Assumption. See LEMMA.

The Word is form'd from the Greek *πορευω*, a Thing easy to conceive; and which opens the way to something more difficult.

PORISMA, in Mathematicks, a general Theorem, or Canon, deduc'd from a local Problem. See THEOREM.

*Proctus* derives it from the Greek *πειρω*, to establish, and conclude, from something already done and demonstrated; and accordingly defines *Porisma*, a Theorem drawn occasionally from some other Theorem already demonstrated.

PORISTICK *Method*, in Mathematicks, is that which determines when, by what means, and how many different ways, a Problem may be solved. See PROBLEM and RESOLUTION.

PORPHYRY, in Natural History, &c. a precious Kind of Marble, of a brownish red Colour; frequently interspers'd with white Stains; antiently brought from *Egypt*, and exceeding all others in Hardness. See MARBLE.

The Art of cutting *Porphyry*, practis'd among the Antients, is lost. In effect, 'tis hard to conceive what kind of Tools they must have us'd for the fashioning of these huge Columns, and other *Porphyry*-Works found in some of the antique Buildings in *Rome*.

One of the most considerable Pieces, now remaining entire, is a Tomb of *Constantia*, Daughter of the Emperor *Constantine*, in the Church of *St. Agnes* without the Walls; ordinarily call'd, *The Tomb of Bacchus*, because of several Boys represented herein, playing among the Vine-Leaves. Add to this *Apollo's*, and the Busts of twelve Emperors, all in *Porphyry*, in the Palace of the *Tuilleries*.

Some of the antient Pieces appear to have been wrought with the Chissel, others with the Saw, others with Wheels, and others ground by degrees with Emery. Yet the modern Tools will scarce touch *Porphyry*: either the Antients,

therefore, had the Secret of tempering Steel better than we; or, as some incline to think, they had the Art of softening the *Porphyry*: Tho', 'tis more probable, that Time and Air have contributed to increase its Hardness.

Mr. *Addison* tells us, he saw a Workman at *Rome* employ'd in the cutting of *Porphyry*; but his Advances were exceedingly slow, and almost insensible.

All the way the *Italian* Sculptors have to work the Pieces of old *Porphyry* Columns still remaining (for the *Porphyry* Quarries are long since lost) is with a Brails Saw without any Teeth. With this, together with Emery and Water, they rub and wear, with infinite patience. See EMERY.

Yet have many excellent Persons endeavour'd to retrieve the antient Art, particularly *Leon Baptista Alberri*; who searching for the necessary Temper, says, he found Goats Blood the best of any: yet even this avail'd but little; for in working with Chissels temper'd herein, Sparks of Fire came much more plentifully, than Pieces of the Stone. By means hercof, the Sculptors were able to make a flat or oval Form; but could never attain to any thing like a Figure. See TEMPER.

'Tis true; in 1555, *Cosmo de Medici* is said to have distill'd a Water from certain Herbs, wherewith his Sculptor *Francesco Tadda*, gave his Tools such an admirable Hardness and Temper, as that he perform'd some fine Works with them; particularly, our Saviour's Head in *Demi-relievo*, *Cosmo's* Head, and his Dutchess's. Even the very Hair, and Beard, how difficult soever, are here well conducted; and there is nothing of the Kind, better in all the Works of the Antients: But the Secret seems to have died with him.

The *French* have lately found another Method of cutting *Porphyry*, viz. with an Iron Saw without Teeth, and *Grez*, or a kind of Free-Stone pulveriz'd, and Water. The Authors of this Invention pretend, they could form the whole Contour of a Column hereby; had they Matter to work on.

PORPHYRIANS, a Name given to the *Arians*, in the fourth Century; by Authority of *Constantine*. See ARIANS.

That Prince publishing an Edict against *Arius* and his Writings, declares, That as *Arius* has imitated *Porphyry* in composing Books against Religion, he deserves to be noted with his Infamy; and that as *Porphyry* is become the Reproach of Posterity, and his Writings suppress'd; so he wills, that *Arius* and his Followers be call'd *Porphyrians*, &c.

The Propriety of the Name seems to consist in this, that the *Arians* endeavour'd to restore Idolatry: For in saying that the Son, whom they call a begotten God, is a Creature; they put a Creature in the Rank of God: And only differ from the Heathens in this, that the one give the Quality of God to one Creature, the other to a great many.

PORPHYROGENETES, in Antiquity, a Name given the Children of the Eastern Emperors; implying, *born in the Purple*.

*Cedrenus* will have the Word to signify *born in the Palace of Porphyry*, a Palace so call'd in *Constantinople*.

PORRETANS, a Religious Sect, the Followers of *Gilbert de la Porree*, Bishop of *Poitiers*, condemn'd in the XIIth Century, for admitting a Physical Distinction between God and his Attributes; or, as *Marsham* says, for having wrote too curiously on the Subject of the Trinity: For his real Sentiments, we are not over well acquainted withal.

However, he gave occasion for those Suspicions, by maintaining that this Proposition, *Deus est bonitas*, is not true; unless reduc'd to this, *Deus est bonus*. And there are some Passages noted by *St. Bernard*, who wrote warmly against him, wherein he seems to admit a real Distinction between the Nature of God, and his Attributes.

The *Porretans* are set in opposition to the *Nominals*. See NOMINAL.

PORRIDGE, of *Porreau*, *French*, of *Porrum*, *Latin*, a Leek or Herb frequently put in Broth; a liquid Food of Herbs, Flesh, &c.

PORT, or *Haven*, a commodious Place situate on the Sea-Coast, or at the Mouth of a River, with depth of Water sufficient for Ships of Burthen, and convenient Bottom for Anchorage; where Vessels lie by, to load or unload; screen'd from the Wind, and safe from any Enterprize of Enemies; either by the disposition of the Place, or by means of a Mole, a Dike, or the like, with a Chain and Light-House.

Ports are either *Natural* or *Artificial*.

*Natural* are those which Providence seems to have form'd, for the Communication of Commerce.

*Artificial* Ports are those form'd with Moles or Projections into the Sea. See MOLT.

The *English* Coasts are exceedingly thin of Ports. *France* has the Advantage of all other Countries in the Number and



and Excellence of Ports ; that of *Brest* is the finest natural Port in the World, as that of *Dunkirk* was lately the strongest artificial one.

Ports de Barre are such as can only be enter'd with the Tide ; as that of *Goa*. Close Ports are those within the Body of a City ; as those of *Rhodes*, of *Venice*, *Amsterdam*, *Rockel*, *Bayonne*, and *St. John de Luz*.

Free Port, in Commerce, a Port open and free for Merchants of all Nations to load and unload their Vessels in, without paying any Duties or Customs. See FREE and DUTY.

Such is the Port of *Genoa*. The Emperor, since his being in possession of the States in *Italy*, formerly belonging to *Spain*, has seem'd determined to establish a Free-Port in some of the Cities he possesses on the *Adriatic Sea*.

*Marseilles* was declared a Free Port by an Edict of *Louis XIV.* bearing Date 5 March, 1669.

Free Port is also used for a total Exemption, and Franchise, which any Sett of Merchants enjoy, for Goods imported into a State, or those of the Growth of the Country, exported.

Such was the Privilege the *English* enjoy'd for several Years after their Discovery of the Port of *Archangel* ; and which was taken from 'em on account of the Regicide in 1648.

Port is also used for the Burthen of a Ship. See BURTHEN.

The Capacity of a Vessel is estimated in Tuns ; each whereof may contain about two thousand Pounds Weight of Sea-Water. When, then, we say a Vessel is of the Port or Burthen of a thousand Tuns ; it is not meant, as some imagine, that it bears so many Casks full of Merchandize ; but that the Sea-Water, which would be contained in the Space which the Capacity of the Vessel possesses in the Sea, weighs a thousand Tuns fill'd therewith, which at the rate of 2000 Pounds each, is as much as to say, it bears a Burthen of two Millions Weight.

Port is also used for the Court of the Grand Seigneur, or Emperor of the *Turks*.

Port is also used for a strong Wine brought from *Oporto*, or *Port-a-port* in *Portugal* ; whence its Name. See WINE.

Port of the Voice, in Music, the Faculty and Habitude of making the Shakes, Passages, and Diminutions ; wherein the Beauty of a Song, or piece of Music consists, and which the *Italians* comprehend under the Terms *Trilli*, *Gioppi*, *Strascini*.

*Bacilli* calls Port of the Voice, the translating or passing of a lower to a higher Note. It consists in three things : The lower Note, which is to be sustain'd ; the doubling made on the higher Note, and the sustaining of that same Note after it has been doubled. Some call it *Anticipation*.

PORT, among Sailors, the Larboard, or left Side of the Ship. See LARBOARD.

To Port the Helm, is to put the Helm on the left Side of the Ship. See HELM.

PORT GREVE, was antiently the principal Magistrate in several Maritime Towns ; thus called from the *Saxon*, Port, City ; and Greve, a Collector of Rents in divers Lordships at this day.

*Cambden* observes, that the chief Magistrate of *London* was antiently call'd Port-greve ; instead of whom, *Richard I.* ordained two Bailiffs ; and soon afterwards King *John* granted them a Mayor for their yearly Magistrate. See MAYOR.

The Charter of *William the Conqueror* to the City of *London* run thus : " *William King*, grete *William Bishop*, " and *Godfrey Port-greve*, and all the Burgeis within " *London*, *French* and *English*. I grant you that I will " that ye be all your Law-worth that ye were in *Edward's* " day the King. And I will that each Child be his " Fader's Eyer, and I will not suffer that ony Man you any " wrongs breed, and God you keepe."

PORTA, in Anatomy, or Vena PORTA, a very considerable Vein, employ'd in bringing the Blood from several Parts, by an infinite number of Branches which it is divided into, to the Liver, thro' the whole Substance whereof it is disseminated. See VEIN and LIVER.

The Vena Porta is form'd of two large Veins ; the Mesenteric and Splenic ; which are again form'd of several other minuter Veins coming from the Stomach, Intestines, Spleen, Epiploon, &c. See MESENTERIC and SPLENIC.

The Antients gave it the Name Porta, as imagining it to bring the Chyle, by its Mesenteric Branch, from the Intestines to the Liver ; but some of the Moderns have found another use for it.

It is remarkable of the Porta, that, after the manner of the Arteries, it shoots itself from a Trunk into Branches, and being at last lost in Capillaries, it delivers the Blood

into the Cava, by which it is immediately convey'd to the Heart. See CAVA.

The Porta is formed out of the concurrence of divers Veins, which, meeting together, make one of the most considerable Venous Trunks of the Body, as to its Bulk ; tho', contrary to the Course of other Veins, it runs not far in a Trunk, but is, as before observed, soon distributed again, by Ramifications, into the Liver.

This Vein is vulgarly divided into Branches without the Liver, and Branches within, and a Trunk intermediate : But this Division is not very clear, the Branches, as they are call'd, without the Liver, not being so properly Branches as Roots ; which have, by Anatomists, been dignify'd with distinct Names from the Parts whence they come.

The Veins which conspire towards the Formation of this Trunk, which having been described in their proper Places, or being to be described there, we shall not here enlarge upon ; are, from the Placenta Uterina, in a Fœtus, the Vena Umbilicalis ; from the Gall-Bladder the Cystice Gemelle ; from the upper Part of the Stomach the Pyloric, or Gastrica dextra, which goes to the Trunk ; the Gastrica major, and minor Sinistra from the Stomach, (of which the major is formed out of the Coronaria Ventriculi ; the Epiplois sinistra, and Postica from the Omentum ; the Vas, or Vasa brevia from the Stomach ; the Splenic from the Spleen : All which join to form the left, or Splenic Branch of the Porta.

The right, or Mesenteric Branch, consists of the Gastrica and Epiploica dextra, from the Stomach and Omentum ; the Duodena from the Duodenum and Jejunum ; the Hemorrhoidalis interna from the Intestinum Rectum and Colon ; the Mesaraics from the Mesentery.

By means of all these Vessels, the Porta receives the Blood from most of the Viscera of the Abdomen ; and, after the coalescence of its Branches, enters the Liver in a Trunk ; immediately under the Surface whereof, having first form'd a kind of a Sinus, it is divided into two principal Branches, and those again into five, which scatter innumerable Ramifications thro' the whole Substance of the Liver.

The true Use of this Vein, hitherto unknown, Dr. Keil thinks he has discover'd. And 'tis this : The Bile, says he, being to be mix'd with the Chyle, as it comes out of the Stomach into the Duodenum, could no where be so conveniently secreted from the Blood as where the Liver is placed. But if all the Branches of the Cœliac Artery carried all the Blood to the Liver from which the Gall was to be separated ; 'tis evident, considering the Nearness of the Liver to the Heart, and the intestine Motion of the Blood, that so viscid a Secretion as the Gall is, could never have been formed. See GALL.

Nature, therefore, is forced to alter her constant Method of sending the Blood to all Parts of the Body by Arteries : She here forms a Vein, by which she sends the Blood from the Branches of the Mesenteric and Cœliac Arteries to the Liver.

By this means the Blood is brought a great way about e'er it arrive at the Liver ; so that its Celerity being diminished, all the Corpuscles that are to form, may have time to attract one another, and unite e'er they come to their secreting Vessel. Keil's Anim. Secret. p. 36, Sec. See SECRETION.

PORTABLE, something easy of Carriage.

Books in 12<sup>o</sup> are valued for their being Portable ; easily put in the Pocket. This Machine is the better, as being Portable. Armies carry with 'em Portable Bridges, Portable Mills, Boats, Ovens, Forges, &c.

PORTABLE Barometer, a Barometer so contrived as that it may be carried from Place to Place without being disordered. See BAROMETER.

A Portable Barometer was an extraordinary thing a little while ago : At present the common Barometers are Portable ; being so made as that the Mercury may be screw'd quite up to the seal'd end of the Tube ; by which means it is secured from swagging, and so endangering the breaking of the Tube. A Contrivance for which we are indebted to Mr. Patrick.

PORTAL, in Architecture, a Term used for a little square Corner of a Room, cut off from the rest of the Room, by the Wainscot ; frequent in the antient Buildings, but now disused.

The Word seems a Diminutive of the French, Port, Door, Gate ; it being thro' this that they enter'd into the Room.

PORTAL is sometimes also used for a little Gate, Portella ; where there are two Gates of a different bigness. See GATE.

The Word sometimes also stands for a kind of Arch of Joiner's Work, before a Door.

PORTAIL, in Architecture, the Face or Frontispiece of a Church, view'd on the side wherein is the great Door. For-



*Portail* is also used for the great Door itself of a Palace, Cattle, &c.

**PORTATE**, in Heraldry, a *Cross-PORTATE* is a Cross which does not stand upright, as Crosses generally do ; but lies athwart the Escutcheon, in Bend, as if it were carry'd on a Man's Shoulder. See **CROSS**.

*Colombiere* tells us, it is by some call'd *Portée*, that is, carried ; because when our Saviour went to suffer Death, he was obliged to carry his Cross, which is always thus represented sloping, and inclin'd after this manner.

**PORTCULLICE**, *Herse*, or *Sarazine*, in Fortification, an Assemblage of several great Pieces of Wood laid, or joined a-cross one another, like an Harrow ; and at the bottom pointed at the end of each Bar with Iron.

These formerly used to hang over the Gate-ways of fortify'd Places, to be ready to let down in case of a Surprise, when the Enemy should come so soon, as that there was not time to shut up the Gates.

But now a-days the Orgues are more generally used, as being found much better. See **ORGUES**.

**PORT-Dieu**, among the *French*, is a Parish-Priest, whose Business is to carry the Viaticum, or Sacrament, to sick People. See **VIATICUM**.

**PORT-Royal**, a Term that makes a considerable Figure in the Republic of Learning. Its Origin is this :

*Philip Augustus* wandering from his Company in Hunting near *Chevreuse*, Westwards of *Paris*, found a little Chappel, where he put up, expecting some of his Attendants might meet him. This happening accordingly, he gave the Place the Name of the *King's Port*, *Port du Roi*, or *Port Royal* ; and to give thanks for his Deliverance, resolved to erect a Monastery there.

*Odo*, Bishop of *Paris*, apprized of his Intention, prevented him ; and, with the concurrence of *Mathilda*, Wife of *Matth. Montmorenci*, first Lord of *Marly*, built a Nunnery in 1204, filling it with *Cistercians*, who continued under the Jurisdiction of the General of that Order till the Year 1627 ; when they were removed to a House given 'em in the *Fauxbourg St. Jacques* at *Paris*.

In 1647, they quitted the Habit of *Cistercians*, and embraced the Institution of the perpetual Adoration of the Sacrament. In 1647, the Archbishop of *Paris* allowed 'em to remand some of their Religious to their former Abbey, and to re-establish the same.

Some time after, the Formulary of *Alexander VII.* being appointed to be subscribed throughout the Kingdom ; the Religious of *Port Royal* in the City sign'd it ; those remitted to the former Abbey scrupled it extremely, and at last only sign'd it with great Restrictions.

Still persisting in the same Sentiments, the King finding no way to reduce 'em but by dispersing 'em ; that was executed in 1709, and the Revenues given to the other Monastery.

Upon this Evacuation, several Ecclesiastics, and others, who had the like Sentiments with regard to the Subscription, as the Religious ; retir'd to *Port Royal*, and had Apartments there ; and there published several Books both on the Subject of this Dispute, and other Topics ; whence all who adhered to that Party, took the Name of *Port Royales*, and their Books, *Books of Port Royal*.

Hence we say the *Writers of Port Royal*, *Messieurs de Port Royal*, the Translations of *Port Royal*, the *Greek* and *Latin* Methods of *Port Royal*, which are Grammars of that Language.

**PORT-GLAIVE**, q.d. *Sword Bearer*, an Order of Knights in *Poland*, call'd by the *Latins* *Ensisferi*. See **KNIGHT**.

It was confirm'd by Pope *Innocent III.* and by him sent into *Livonia* to defend the Preachers of the Gospels against the Infidels at the first Conversion of that Country. Being too weak to effect that Business, they united themselves with the *Teutonic*, or *Marian* Knights, by the Pope's Authority ; and instead of Knights of the Sword, were call'd Knights of the Cross.

They separated again in the time of *Univus*, their Great Master, Anno 1541.

The *Teutonic* Knights being then dispossessed of *Trussia*, and the *Port-glaives* going into *Luther's* Opinions, soon dwindled away ; for in the Year 1557, they fell out with the Bishop of *Riga*, of the House of *Brandenburgh*, because he would not embrace their Notions ; and he, to secure his own Estate, put *Riga* into the hands of the *Polanders*.

Afterwards, the Knights having most of *Livonia* taken from them by the *Muscovites*, they put themselves under the Protection of *Sigismund Augustus*, King of *Poland*, Anno 1559 ; but *William* of *Furstembourg*, their Great Master, being betray'd by his own Mercenaries into the hands of the *Muscovites*, *Gothard* his Successor, following the Example of *Albert*, the Great Master of *Prussia*, transacted with the aforesaid *Sigismund* for the whole Estate, which he surrender'd to his own use in the Castle of *Riga*, together

with his Cross, the Seal of the Order, the Charters and Grants of the several Popes and Emperors, which concerned the same ; as also the Keys of the City and Castle of *Riga*, the Office of Great Master, the Rights of Coinage, and all the Powers and Privileges appertaining to it ; receiving back again from *Ratsevil*, the King's Commissioner, the Dukedom of *Courland* to him and his Heirs for ever.

**PORT-FIRE**, a Paper-Tube, about ten Inches long, fill'd with a Composition of Meal-Powder, Sulphur, and Saltpetre, ram'd moderately hard ; used to fire Guns and Mortars instead of Match. See **MATCH**.

**PORT-MANTEAU**, a piece of Joiner's Work, fasten'd to the Wall, in a Wardrobe, Armory, &c. proper for the hanging on of Cloaks, Hats, &c.

*Port-manteau* is also used for a Cloak-Bag, of Cloth, Leather, or the like, wherein the Cloak and other Habillments of Travellers are disposed, and laid on the Horse's Crupper.

*Port-manteau* is also an Officer under the King of *France*, whereof there are twelve : Their Business is to keep the King's Hat, Gloves, Cane, Sword, &c. to take 'em from him, and to bring 'em to him again when wanted.

The *Dauphin* has also his *Port-manteau*. Answerable to these are the Cardinal's *Cauditaries*, or Tail-Bearers.

The *Romish* Bishops have their *Port Croix*, *Port Mitres*, &c.

**PORT-VENT**, in an Organ, is a wooden Pipe, well closed, which serves to convey the Wind from the Bellows to the Sound-Board of the Organ. See **ORGAN**.

**PORT-CRAION**, a *Pencil-Case* ; an Instrument serving to inclose a Pencil, and to serve both as a Handle for holding it, and a Cover to make it portable.

'Tis usually four or five Inches long, and contrived so as the Pencil may be slid up and down it by means of a Spring and Burton. Its outside is filed into eight Sides or Faces, whereon are drawn the Sector-Lines : Its inside, round ; sometimes it is made round or cylindrical both without-side and within, and has its length divided into Inches and parts of Inches.

**PORT-LAST**, in a Ship, the Gun-wale. Hence when a Yard is down on the Deck, they say, the Yard is down a *Port-last*.

**PORTMANNIMOTE**, in old Records, the Portmen's Court, held in any City or Town.

**PORT-Ropes**, in a Ship, those which serve to haul up the *Ports* of the Ordnance.

**PORT-Sale**, *Ann. 35 Hen. 8. cap. 7.* is the Sale of Fish presently upon its Arrival in the Port or Haven. See **PORTMEN**.

**PORT-Nails**, in a Ship, such as are used to fasten the Hinges to the Ports. See **NAIL**.

**PORT-Holes**, in a Ship, are the Embasures, or Holes in the sides of the Vessel, thro' which the Muzzles of the Cannons are put. See **EMBRASURE**.

Large Ships have three Rows of *Port-Holes*, or Batteries ; each usually consisting of fifteen *Port Holes*.

In Storms, they use to shut up the *Port-Holes*, to prevent the Water's driving thro' them.

In *English*, *Dutch*, and *French* Ships, their Valves or Casements are fasten'd a-top of the Aperture ; in *Spanish* Vessels a-side of 'em.

**PORTER**, in the Circuit of Justices, is an Officer that carries a Verge, or white Rod before the Justice in *Eyre* ; so call'd à *portando Virgam*. See **VERGER**.

**PORTER of the Door of the Parliament House**, is a necessary Officer belonging to that High Court ; who enjoys the Privileges accordingly. *Crompt. Jurist.*

**PORTICO**, in Architecture, a kind of Gallery built on the Ground ; or a Piazza incompass'd with Arches, supported by Columns ; where People walk under Covert. See **PIAZZA**.

The Roof is usually vaulted, sometimes flat. The Antients call'd it *Lacunar*. See **LACUNAR**.

Tho' the Word *Portico* be derived from *Porta*, Gate, Door ; yet is it apply'd to any disposition of Columns which form a Gallery ; without any immediate relation to Doors, or Gates.

The most celebrated *Portico's* of Antiquity were those of *Solomon's Temple*, which form'd the *Atrium*, and encompass'd the Sanctuary : That of *Athens*, built for the People to divert themselves in ; and wherein the Philosophers held their Disputes and Conversations ; which occasion'd the Disciples of *Zeno* to be call'd *Stoicks*, from the *Greek*, *στωα*, *Porticus* : And that of *Pompey* at *Rome*, rais'd merely for Magnificence ; consisting of several Rows of Columns supporting a Plat-form of vast Extent : a Design whereof, *Serlio* gives us in his *Antique Buildings*.

Among the modern *Portico's*, the most celebrated is the Piazza of *St. Peter* of the *Vatican*. That of *Covent-Garden*, *London*, the Work of *Inigo Jones*, is also much admired.



**PORT-MEN**, the twelve Burgeſſes of *Ipswich* are thus call'd in the Stat. 13 *Eliz.* *Cambden* adds, that the Name was common to the Inhabitants of all the Cinque-Ports. See *QUINQUE PORTUS*.

**PORTMOTE**, ſignifies a Court kept in Port or Haven-Towns; as *Swain-Mote* in the Forest. It is call'd the *Portmote-Court*. See *PORT* and *COURT*.

*Portmotes* are alſo held in ſome Inland-Towns; as at *Knolſt* in *Cheſhire*.

The Word is form'd from the *Saxon*, *Porte*, Port, and *Gemot*, *Conventus*, Meeting.

**PORT-SOKA**, the Suburbs of a City, or a Place within the Liberties and Jurisdiction thereof.

The Word is form'd from the *Saxon*, *Port*, City; and *Soka*, Jurisdiction. *Conceſſi quod nullus de Civitate, vel Port-Soka ſua captus, &c.* *Sommer's Gavelkind*.

**PORTIO Dura**, and *Mollis*, in Anatomy, a Partition of the fifth Pair of Nerves of the Brain; which, before its egreſs out of the *Dura Mater* is apparently divided into two Branches; the one pretty tough and firm, call'd *Portio Dura*; the other ſoft and lax, call'd *Portio Mollis*. See *NERVE*.

**PORTIO**, *Portion*, a Part, or Division of any thing. See *PART* and *DIVISION*.

**PORTION**, in the Canon-Law, is that Allowance, or Proportion, which a Vicar ordinarily has out of a Rectory or Impropriation, be it certain, or uncertain. See *VICAR* and *IMPROPRIATION*.

**PORTIONER**. Where a Parſonage is ſerved ſometimes by two, ſometimes by three Miniſters, alternately; as *Bromyard*, *Burford*, &c. in *Shropſhire*; the Vicars or Incumbents are call'd *Portioners*; becauſe they have but their Portion, or Proportion of Tythes, or Profits of the Living.

**PORTLAND-Stone**, ſee *STONE*.

**PORTRAIT**, or **PORTRAITURE**, in Painting, the Representation of a Perſon, and eſpecially a Face, done from the Life. See *PAINTING*.

In this ſenſe we ſay, *Portrait-Painting*, in oppoſition to *Hiſtory-Painting*, where all Reſemblance of Perſon is diſregarded.

*Portraits* are uſually painted in Oil-Colours, ſometimes in Water; ſometimes in Miniature, with Crayons, Pens, Paſtels, &c. See *LIMNING*, *MINIATURE*, &c.

It was ſaid of a great Painter, who never ſucceeded in the Likeneſs, (Sir *Peter Lely*, if we miſtake not) that he made a great many fine Pictures, but all poor *Portraits*.

**PORUS Bilarius**, *Biliary Pore*, or *Hepatic Duſt*, in Anatomy, a Duſt, which, with the Cytic, or Cholecidic, forms the common Canal of the Bile. See *BILE*.

*Fallopius* was miſtaken in imagining that the *Porus Bilarius* carried the Bile into the Gall-Bladder. Its Office is to convey it into the Inteſtines, by the *Duſtus Communis*; for in blowing into it, that Inteſtine is found to ſwell. See *BILARY* and *DUCTUS Communis*.

**POSE**, in Heraldry, denotes a Lion, Horſe, or other Beaſt ſtanding ſtill, with all four Feet on the Ground; to denote thereby that it is not in a moving Poſture.

**POSITION**, in Phyſics, *Site*, or *Situation*; an Affection of Place, which expreſſes the Manner of any Body's being therein. See *BODY*, *PLACE*, &c.

**POSITION**, in Architecture, the Situation of a Building, with regard to the Points of the Horizon. See *BUILDING*.

*Vitruvius* directs the *Position* of a Building to be ſuch, as that the four Corners point directly to the four Winds.

**POSITION**, in Astronomy. The *Position* of the Sphere is either right, parallel, or oblique; whence ariſes the Inequality of our Days, Difference of Seasons, &c. See *SPHERE*.

*Circles of Position*, are ſix great Circles paſſing thro' the Interſection of the Meridian and Horizon, and dividing the Equator into twelve equal Parts. See *CIRCLE*.

The Spaces included between theſe Circles, are what the Astrologers call the *twelve Houſes*; and which they refer to the twelve Triangles mark'd in their Themes. See *THEME*.

Theſe Circles are represented on the Globe by the Semi-circle of *Position*. See *GLOBE*.

**POSITION**, in Dancing, the Manner of diſpoſing the Feet, with regard to each other.

There are four regular *Positions*: The firſt, when the Feet are join'd in a Line parallel to the Shoulders: The ſecond, when the Heels are perpendicularly under the Shoulders; and of conſequence, the width of the Shoulder a-part: The third, when one Foot is before the other, in ſuch manner, as that the Heel is in the Cavity form'd by the *Rotula* and *Carpus* of the Foot: The fourth, when one Foot is the width of the Shoulders a-part from the other; the Heel ſtill anſwering to the Cavity of the former: which is the only regular manner of Walking.

**POSITION**, in Arithmetic, a Rule ſo call'd, for *Suppoſition*.

Rule of *false Position*, or of *Falſhood*, conſiſts in the calculating on ſeveral falſe Numbers, taken at random, as if they were the true ones; and from the Differences found therein, determining the Number ſought.

*Position* is either *ſingle* or *double*.

*Single Position* is, when there happens in the Propoſition, ſome Partition of Numbers into Parts proportional; in which Caſe, the Queſtion may be reſolv'd at one Operation by this Rule:

Imagine a Number at pleaſure, and work therewith according to the Tenour of the Queſtion, as if it were the true Number; and what Proportion there is between the falſe Concluſion, and the falſe *Position*; ſuch Proportion the given Number, has to the Number ſought.

Therefore, the Number found by Argumentation, ſhall be the firſt Term of the Rule of Three; the Number ſuppos'd, the ſecond Term; and the given Number, the third. See *GOLDEN Rule*.

**POSITION Double**, is, when there can be no Partition in the Numbers to make a Proportion.

In this Caſe, therefore, you muſt make a Suppoſition twice; proceeding therein according to the Tenour of the Queſtion.

If neither of the ſuppos'd Numbers ſolve the Propoſition, obſerve the Errors, and whether they be greater or leſſer than the Reſolution requireth; and mark the Errors accordingly, with the Signs  $+$  and  $-$ .

Multiply, contrariwiſe, the one *Position* by the other Error; and if the Errors be both too great, or both too little, ſubſtract the one Product from the other, and divide the Difference of the Products by the Difference of the Errors.

If the Errors be unlike, as the one  $+$ , and the other  $-$ , add the Products, and divide the Sum thereof, by the Sum of the Errors added together. For the Proportion of the Errors, is the ſame with the Proportion of the Exceſſes or Defects of the Numbers ſuppos'd, to the Numbers ſought.

**POSITION**, in Geometry, &c. a Term uſed in contradinction to *Magnitude*, &c. Thus, a Line is ſaid to be *given in Position*, *Positione data*, when its Situation, Bearing, or Direction, with regard to ſome other Line, is given: On the contrary, a Line is given in *Magnitude*, when its Length is given, but not its Situation.

Sir *Iſaac Newton* ſhews how to find a Point, from which three Lines, perpendicularly let fall to three other Lines *given in Position*, have any given Ratio, &c.

**POSITION**, is alſo uſed for a Theſis, or Propoſition, maintain'd in the Schools. See *THESIS*.

**POSITIVE**, a Term of Relation; ſometimes oppoſ'd to Negative.

Thus, we ſay, the Commandments are ſome of them *Positive*, others Negative. See *NEGATIVE*.

*Positive* is alſo uſed in oppoſition to *Relative*, or *Arbitrary*.

Thus, we ſay, Beauty is no *positive* Thing, but depends on the different Taſtes of the People. See *RELATIVE*.

*Positive* is alſo uſed in oppoſition to *Natural*: Thus we ſay, a Thing is of *positive* Right; meaning, it is founded on a Law, which depends abſolutely on the Authority of him who gave it.

Thus, *e. gr.* the Prohibition of eating certain Beaſts, under the Old Law, was of *Positive* Right; the Command to honour Father, and Mother, of *Natural* Right. See *RIGHT*.

**POSITIVE Quantity**, in Algebra, a real, or affirmative Quantity; or a Quantity greater than nothing: thus call'd, in oppoſition to a privative or negative Quantity, which is leſs than nothing. See *QUANTITY*.

*Positive Quantities* are deſign'd by the Character  $+$  prefix'd to them, or ſuppos'd to be prefix'd. See *CHARACTER*.

**POSITIVE Degree**, in Grammar, is the Adjective in its ſimple Signification; without any Compariſon. See *DEGREE*.

Or, *Positive Degree*, is that Termination of an Adjective, which expreſſes its Subject ſimply, and abſolutely; without comparing it with any other. Thus, good, *bonus*, fair, *pulcher*, &c. are in the *positive Degree*; better, *faius*, in the Comparative. See *COMPARATIVE*.

**POSITIVE Theology**, is that which conſiſts in the ſimple underſtanding, or expounding of the Dogma's, and Articles of Faith; as contain'd in the Holy Scriptures, or explain'd by the Fathers and Councils; clear of all Diſputes and Controverſies. See *THEOLOGY*.

In this ſenſe, *Positive Theology* ſtands oppoſ'd to *Scholastic*, and *Polemical* Theology. See *SCHOLASTIC* and *POLEMICAL*.







*Herodotus* ascribes the Origin of *Posts* to *Cyrus* or *Xerxes*; but the *Posts* instituted by those Princes were no more than Couriers. See **COURIER**.

In effect, *Posts* on the present footing are but a modern Invention; tho' some go back as high as *Charlemaign*.

'Tis certain it was the Policy, or rather the Diffidence of *Louis XI.* of *France*, that they owed their Rise to; that uneasy Prince first settling them by an Ordonnance of the 19th of *June*, 1464. to be the sooner, and the more surely advertis'd of what pass'd in his own Kingdom, and in the neighbouring States.

From *France*, the Institution propagated itself, by degrees, thro' the several other Parts of *Europe*: In *Germany*, *Hornigk* observes, *Posts* were first settled by the Count de *Taxis* at his own Expence; in acknowledgment whereof, the Emperor *Matthias* in 1616, gave him, in Fief, the Charge of *Post-Matter* under him and his Successors.

In *England*, *Posts* were first establish'd by Act of Parliament 12 *Car.* 2. which enabled the King to settle a *Post-Office*, and appoint a Governour.

The *English Post-Office* is now manag'd by two Commissioners, who have under them about forty other Officers, of their own appointing, who are all sworn, and give Security for their faithful Discharge, &c. as the *Receiver*, *Comptroller*, *Accomptant*, six *Clerks* of the several Roads, a *Window-Man*, and sixteen *Sorters*, for the Inland Office. For the Foreign Office, are a *Comptroller* and *Alphabet-keeper*, six *Clerks*, and a Foreign Officer. Besides Solicitor and Clerks, and sixty-seven Letter-Carriers.

From this Office, Letters and Packets are dispatch'd every *Monday*, to *France*, *Spain*, *Italy*, *Germany*, *Sweden*, *Kent*, and the *Downs*; every *Tuesday* to all Parts of *England*, *Scotland*, and *Ireland*; also to *Holland*, *Germany*, *Sweden*, &c. every *Wednesday* to *Kent* only, and the *Downs*; every *Thursday* to all Parts of *England* and *Scotland*; as also to *France*, *Spain*, and *Italy*; every *Friday* to *Flanders* and *Holland*, *Germany*, *Sweden*, *Kent*, and the *Downs*; and every *Saturday* to all Parts of *England*, *Scotland*, and *Ireland*.

Again, Letters are return'd to *London* from all Parts of *England* and *Scotland*, *Wales* only excepted, every *Monday*, *Wednesday*, and *Friday*: From *Wales* every *Monday* and *Friday*; and from *Kent* and the *Downs*, every Day.

On this grand Office depend 182 *Post-Masters* in *England* and *Scotland*, who keep regular Offices in their Stages, and Sub-*Post-Masters* in their Branches.

Tho' the Number of Letters in *England* was antiently very inconsiderable; yet is it now so increased, that this Office, before the Addition of the *Penny-Post*, was farm'd at 50000 *l.* per *Ann.*

The Charge of a Letter of a Sheet of Paper 80 Miles, is 3 *d.* of two Sheets, 6 *d.* for above 80 Miles, a Sheet 4 *d.* two, 8 *d.* An Ounce of Letters for 80 Miles, 1 *s.* for above, 1 *s.* 6 *d.*

Note, The *Post* travels at the rate of 120 Miles in 24 Hours. For those who chuse to travel with the *Post*, Horses are ready, at the Rate of 3 *d.* per Mile, and 4 *d.* to the Boy every Stage.

The Great Mogul performs part of his *Postage* by Pigeons, kept in several places, for the Conveyance of Letters on extraordinary Occasions. They will carry them from one end of that vast Empire to another. The same Vehicles have been used by the *Dutch* in Sieges. And at this day, *Tavernier* observes, the Consul of *Alexandretta* sends News daily to *Aleppo*, in five Hours time, by means of Pigeons; tho' those two Places are three Days Journey on horseback a-part.

*Penny-Post*, a *Post* establish'd for the Benefit of *London*, and the Parts adjacent; whereby, any Letter or Parcel, not exceeding one Pound Weight, or ten Pound Value, is speedily and safely convey'd to and from all Parts within the Bills of Mortality, to most Towns and Villages within ten Miles of *London*.

This Office is managed by a *Comptroller*, under whom are an *Accomptant*, *Collector*, six *Sorters*, seven *Sub-Sorters*, and above an hundred Messengers.

*Posts*, in Sculpture, &c. Ornaments form'd after the manner of Rolls, or Wreathings; thus call'd, because they seem to run after one another.

Some are simple; others enrich'd, or flourish'd.

*Post*, after, is also a *Latin* Preposition, used, in Composition, with several *English* Words; and generally implying a Relation of *Posteriority*.

*Post Communion*, a Prayer which the Priest recites after the Communion. See **COMMUNION**.

*Post Diem*, a Fee, by way of Penalty, on a Sheriff, for his Neglect in returning a Writ after the Day assign'd. See **RETURN**.

For this the *Custos Brevium* has four Pence; whereas he has nothing, if it be return'd at the Day. See **WRIT**.

*Post-Nati*, in our Statutes, is particularly used for such

Persons as were born in *Scotland*, after the Accession of King *James I.* to the Crown of *England*.

7 *Jac.* 1. it was by all the Judges solemnly adjudg'd. That such Persons were no Aliens in *England*; as, on the contrary, the *Ante-Nati*, or those born in *Scotland* before that Accession, were Aliens here in respect to the Time of their Birth.

*Post-Natus* is also used by *Bracton*, *Fleta*, *Glanville*, &c. for the second Son: Thus in *Brompton*, lib. 2. *Est consuetudo in quibusdam partibus quod Post-Natus præferatur primogenito*.

*Post-poning*, the putting any thing after, or behind another; with regard either to the Order of Time, or Place.

Sometimes it is taken in an ill part; as when we say, The Book-binder has *post-poned* a Sheet, &c. of a Book.

*Post-Script*, an After-Thought, or Article added to a Letter or Memoir; containing something learnt, or recollected after the Subscription, or Conclusion of the Piece.

It is usually mark'd thus, *P. S.* The *Spectator* observes, that a Woman's Mind is ever better learnt from her *P. S.* than her Letter.

*Post Date*. See **DATE**.

*Post Disseisin*, a Writ given by the Statute of *Westminster*, for him who having recover'd Lands or Tenements, by *præcipe quod reddat*, upon Default or Reddition, is again disseiz'd by the former Disseizor. See **DISSEISIN**.

*Post Fine*, a Duty belonging to the King for a Fine formerly acknowledg'd before him, in his Court; paid by the Cognizee after the Fine is fully pass'd, and all things touching the same accomplish'd.

The Rate is so much, and half so much, as was paid to the King for the *Præ-Fine*; and is collected by the Sheriff of the County where the Land lies, and to be answer'd by him into the Exchequer. See **FINE**.

*Post Term*, a Fee, or Penalty; taken by the *Custos Brevium* of the Court of Common-Pleas only, for the filing any Writ by an Attorney, after the Term or usual Time in which such Writs are returnable: for which the *Custos Brevium* has twenty Pence. See **WRIT**.

**POSTEA**, in Law, a Return or Certificate of the Proceedings by *Nisi Prius* into the Court of Common-Pleas; after a Verdict; and there afterwards recorded.

**POSTSCENIUM**, in the antient Theatre. See **PARASCENIUM**.

*Post Prædicaments*, in Logic, are certain general Affections, or Properties, arising from a Comparison of *Prædicaments* with each other; or, Modes following the *Prædicaments*, and often belonging to many.

Such, according to *Aristotle*, are *Opposite*, *prius*, *simul*, *motus*, and *habere*; the three first of which are in all *Prædicaments*.

**POSTERIOR**, a Term of Relation, implying something behind, or that comes after another. In which sense it is used in opposition to *Prior* and *Anterior*.

The Back and Hips are the *Posterior Parts* of Man. *Aristotle* gives *Prior* and *Posterior* Analytics. A Date is *Posterior* to another, when it is later, or fresher. See **DATE**.

**POSTERIORITY**, in Law, a Term of Comparison and Relation in Tenure, opposite to *Priority*.

A Man holding Lands, or Tenements of two Lords, holds of his antienter Lord by *Priority*; and of his later Lord by *Posteriority*.

**POSTERN**, in Fortification, a false Door, usually made in the Angle of the Flank, or of the Curtain, or near the Orillon; descending into the Ditch, for the Convenience of private Sallies.

The Word is also used in the general for any private or back Door. *Potestas habere posternam in omni Curia penitus inibiatur, sed unicus si Ingressus*, &c. *Fleta*.

**POSTHUMUS**, or *Posthumous*, a Child born after the Death of his Father, or even of his Mother.

Among the *Romans*, *Posthumus* was also used for a Child born after the making of a Testament, which occasion'd the Testator to alter it.

The Word is compos'd of the *Latin*, *Post*, and *Humus*, ground. Hence the Word comes to be used figuratively for the Works of an Author that were not published till after his death.

**POSTILLA**, a Word antiently used for a Note, or Remark, wrote in the Margin of the Bible; and afterwards for a Note wrote in any other Book posterior to the Text.

*Trivet*, in his Chronicle, speaking of *S. Langton*, Archbishop of *Canterbury*, says, *Super Bibliam Postillas scripsit; & eam per Capitula quibus nunc utuntur moderni distinxit*; And that *Alexander* Bishop of *Chester*, *Super Psalterium Postillas scripsit*. *Knighton*, another of our Historians, speaking of one *Hugh*, Dominican and Cardinal, says, *Totam bibliam postillavit*.

**POSTING**, among Merchants, the putting an Account forward, from one Book to another. See **BOOK-KEEPING**.



**POSTIQUE**, or **Posric**, in Architecture, &c. An Ornament of Sculpture is said to be *Postique*, when it is added after the Work itself is done.

A Table of Marble, or other Matter, is also said to be *Postique*, when it is incrustated in a Decoration of Architecture, &c.

The Word is form'd from the *Italian*, *Posticcio*, added.

**POSTLIMINIUM**, **POSTLIMINY**, among the *Romans*, the Return of one who had gone to sojourn elsewhere, had been banish'd, or been taken by the Enemy; to his own Country, and State. Thus call'd, according to *Au. Gellius*, from *Post* and *limen*, *q. d.* a Return to the same *Limen*, i. e. the same Bounds or Threshold.

Some, from *Amm. Marcell.* will have it thus call'd, because Persons were restored to the House thro' a Hole in the Wall, *Post limen*, not by going over the Threshold, which was esteemed ominous.

*Postliminium* was also a Law whereby one recovered an Inheritance or other Matter that had been lost.

**POSTULATE**, in Mathematics, a clear, evident Proposition; wherein it is affirm'd or deny'd, that something may or may not be done. See **PROPOSITION**.

A thing immediately deduced from the Consideration of one single Definition, if it expresses something to agree, or disagree to another, is call'd an *Axiom*: If it affirm that something may or may not be done, it is call'd a *Postulate*.

Thus, *e. gr.* from the Genesis of a Circle, 'tis evident that all right Lines drawn from the Centre to the Circumference, are equal; since they only represent one and the same Line, in a different Situation: This Proposition, therefore, is esteem'd an *Axiom*. See **AXIOM**.

But, since it is evident from the same Definition, that a Circle may be described with any Interval, and from any Point; this is accounted a *Postulate*.

Axioms, and *Postulates*, therefore, seem to have nearly the same relation to each other, that Theorems and Problems have. See **THEOREM**, &c.

**POSTULATION**, in the Canon-Law, the Nomination of a Person to a Dignity in the Church; to which, by the Canons, he cannot be elected; as, for want of Age, of birth, because already possess'd of a Benefice incompatible therewith, or the like Impediment.

Thus the formal Election of such a Person being faulty, they are obliged to proceed by way of *Postulation*; that is, the Chapter beseeches the Person to whom the Confirmation of the Election belongs, to approve of it, tho' it be not Canonical.

The Person to whom the Supplication is made by the Protestants in *Germany*, is the Emperor; by the Papists, the Pope.

*Hicquesfort* observes, that when a part of the Chapter elects, and another *Postulates*, the Number of *Postulants* must be twice as great as that of the Electors, to bring the Matter to a *Postulation*.

**POSTURE**, in Painting, Sculpture, &c. the Situation of a Figure, with regard to the Eye; and of the several principal Members thereof, with regard to one another; whereby its Action is express'd. See **ATTITUDE**.

A good part of the Painter's Art consists in adjusting the *Postures*; in giving the most agreeable *Postures* to his Figures; in accommodating them to the Characters of the respective Figures, and the part each has in the Action; and in conducting them and pursuing them through-out.

*Postures* are either Natural, or Artificial. The former are such as Nature seems to have had a View to in the Mechanism of the Body; or rather such as the ordinary Actions and Occasions of Life lead us to exhibit, while young, and the Joints, Muscles, Ligaments, &c. flexible.

Artificial are those which some extraordinary Views, or Occasions lead us to exhibit: Such, *e. gr.* are those of our *Posture-Masters*.

A Painter would be strangely puzzled with the Figure of *Clark*, (the late famous *Posture-Master* of *Pall Mall*) in a History-piece. This Man, as we find in the *Philos. Transact.* had such an absolute Command of his Muscles, &c. that he could disjoint almost his whole Body; so that he impos'd on that great Surgeon, *Mullens*; who look'd on him in such a miserable Condition, he would not undertake his Cure. Tho' a well-made Man, he would appear with all the Deformities imaginable: Hunch-back'd, Pot-belly'd, Sharp-breasted, &c. He disjointed his Arms, Shoulders, Legs, and Thighs; and render'd himself such an Object of Pity, that he has frequently extorted Money, in quality of a Cripple, from the same Company he had the Minute before been in, in quality of a Comrade. He would make his Hips stand a considerable way out from his Loins; and so high as to invade the place of his Back. Yet his Face was the most changeable part about him; and shew'd more *Postures* than all the rest of him-

self; he could exhibit all the uncouth odd Faces of a Quaker's Meeting.

**POT-Ashes**, are properly the Ashes of certain Vegetables used in the making of Glafs and Soap. See **ASHES**.

Such are the Ashes of the Herb *Kali*, call'd also Salt-Wort, Glafs-Weed, &c. from its great use in Glafs-making. See **GLASS**.

*Pot-Ashes* are also call'd *Cineres clavellati*, and make the Basis of Salt-of-Tartar, and most of the lixivial Salts, as our Chymists of late manage 'em for Cheapness. See **KALI**, &c.

The *English* and *Dutch* make a considerable Commerce of *Pot-Ashes* which they bring from about the *Black Sea*; using great Quantities thereof in the Preparation of their Cloths, &c. those Ashes being found excellent to scour withal. See **FULLING**.

The Name *Pot-Ashes* is also popularly apply'd to all kinds of Ashes bought up and down the Country, and mixed together, for the making of green Glafs: But the best of *English Pot-Ashes* are those made of the smaller common Highway-Thistle; tho' all Thistles are good. Fern also makes excellent *Pot-Ashes*.

**POTABLE**, something that may be taken, or swallow'd, by way of Drink. See **DRINK**.

The Chymists talk much of *Potable Gold*, *Aurum Potabile*. See **AURUM** and **GOLD**.

**POTENT**, or **POTENCE**, in Heraldry, a Term for a kind of a Cross in the Figure adjoining. See **CROSS**.

He beareth Sable, a Cross *Potent*, Or, by the Name of *Aleyn*.

This Form represents the upper end of a Crutch; for antiently Crutches were call'd *Potents*.



**POTENTIA**, *Power*, or that whereby a thing is capable either of acting, or being acted on. See **POWER**.

Hence, Power is of two kinds, *Active*, and *Passive*.

*Active Power*, call'd also by a barbarous, but significant School-Term, *Operativity*, is the Efficacy, or Faculty of any Being, in virtue whereof something arises, or is produced by it. Such is the Power of speaking, in Man.

*Passive*, or *Receptive Power*, is a Capacity of receiving some Act; *e. gr.* the Capacity of Knowing a Man.

This is also call'd *Subjectiva Potentia*, Subjective Power.

*To exist in POTENTIA*, is used among the School-Writers, to denote that Existence which a thing has in a Cause capable of producing it, but which has not actually produced it: In which it stands opposed to Existence *in actu*. See **POSSIBILITY** and **EXISTENCE**.

**POTENTIAL**, in the Schools, is used to denote, and distinguish a kind of Qualities, which are supposed to exist in the Body *in Potentia* only; by which they are capable, in some manner, of affecting and impressing on us the Ideas of such Qualities, tho' not actually inherent in themselves.

In this sense we say *Potential Heat*, *Potential Cold*, &c. Brandy and Pepper, tho' cold to the Touch, are *Potentially* hot.

**POTENTIAL Cold** is a relative Term, by which we mean that such a thing is not actually cold to the Touch, but in its Effects and Operations, if taken inwardly. See **COLD**.

This Quality is supposed to arise from the Size, Shape, &c. of its component Particles, which give some check or retardation to the Blood's Motion, whereby it is less agitated, and upon which the sensible parts of the Body are not so briskly struck by it; the perception of which diminution or change of Motion in the Organs of Feeling, is call'd *Cold*.

Hence every thing that lessens the Blood's Motion, with relation to the Sensation before made, is cold; and every thing which increases it, may be call'd *Potential Heat*. See **HEAT**.

**POTENTIAL**, in Medicine, &c. Cauterics are either Actual, *viz.* a Button of red-hot Iron; or *Potential*, as Lime, and other Caustic Drugs. See **CAUTERY**.

**POTENTIAL**, in the Schools, is also used for something that has the Quality of a Genus. See **GENUS**.

*Grotius* uses the Phrase *Potential Parts of a State*, in opposition to the *Subjective Parts*.

By *Potential*, he means those Parts which have the Sovereign Power: By *Subjective*, those subject thereto; which are that, with regard to the Sovereign Power, that several Species are with regard to the Genus, whereof they are the subjective Parts.

For in the Schools, a *Potential Whole* is that which has its Parts under it, as a Genus has its Species; to distinguish it from an Actual Whole, which has its Parts in itself; as a Body composed of Matter and Form.

*Grotius* maintains, that tho' the Sovereign Power be one and indivisible, yet it may have several *Potential Parts*: For, as in the *Roman Empire*, there have been two *Potential Heads*, the one ruling in the East, the other in the West; yet the Imperial Authority all the while single and in-



**Indivisible** : So is it possible the Subjective Parts combining to give away their Sovereignty, may not give it in-tire, but reserve a part of it for certain Emergencies. In which Case the Subjective part becomes *Potential*. And thus there are two *Potential* parts, yet the Sovereignty single.

**POTENTIAL**, in Grammar, gives the Denomination to one of the Moods. See **MOOD**.

The *Potential* Mood is the same in Form, with the Sub-junctive ; but differs from it in this, that it hath always implied in it, either *possum*, *velo*, or *debeo* ; as *Roget*, that is *Rogare potest*, a Man may ask. See **SUBJUNCTIVE**.

It is sometimes called the permissive Mood, because it often implies a Permission, or Concession to do a thing ; as, *Habeat, valeat, vivat, cum illa Terent*.

**POTION**, a liquid Medicine, in form of a *Draught*, to be taken at one time.

There are purging *Potions*, Emetic *Potions*, Diaphoretic, Pectoral, Cephalic, Cardiac, Stomachic, Hysteric, Vulnerary, Carminative, &c. *Potions*.

**POTTERY**, the Art of making Earthen-Pots, and Vessels ; or, the Manufactory of Earthen-Ware. See **EARTH**.

The *Wheel* and *Lathe* are the Chief, almost the only Instruments, used in *Pottery* ; the first for large Works, the second for small : Tho, in reality, they are much the same as to the manner of using them.

The *Potter's Wheel* consists principally in its Nut, which is a Beam or Axis, whose Foot or Pivot plays perpendicularly on a Free-stone Sole or Bottom. From the four Corners a-top of this Beam, which does not exceed two foot in height, arise four Iron Bars, call'd the Spokes of the Wheel ; which forming diagonal Lines with the Beam, descend, and are fasten'd at bottom to the Edges of a strong wooden Circle, four foot in Diameter, perfectly like the Felloes of a Coach-Wheel, except that it has neither Axis nor Radii ; and is only join'd to the Beam, which serves it as an Axis, by the Iron Bars. The Top of the Nut is flat, of a circular Figure, and a foot in diameter. On this is laid a piece of glaz'd Earth, to be turn'd and fashion'd.

The Wheel thus disposed, is encompassed with four Sides of four different pieces of Wood, sustain'd on a wooden Frame : The hind-piece, which is that whereon the Workman sits, is made a little inclining towards the Wheel : On the fore-piece are placed the pieces of prepared Earth. Lastly, the side-pieces serve the Workman to rest his Feet against ; and are made inclining to give him more or less room, according to the Size of the Vessel to be turn'd. By his side is a Trough of Water, wherewith from time to time he wets his Hands, to prevent the Earth's sticking to 'em.

*To use the Wheel*. The Potter having prepared his Earth, and laid a piece of it suitable to the Work he intends, on the Top of the Beam ; sits down ; his Thighs and Legs much expanded, and his Feet rested on the side-pieces, as is most convenient.

In this Situation he turns the Wheel round, till it has got the proper Velocity ; when, wetting his Hands in the Water, he bores the Cavity of the Vessel, continuing to widen it from the middle ; and thus turns it into Form : turning the Wheel a-fresh, and wetting his Hands, from time to time.

When the Vessel is too thick, they use a flat piece of Iron with a Hole in the middle, and somewhat sharp on one Edge, to pare off what is redundant. Lastly, when the Vessel is finish'd, they take it off from the circular Head by a Wire pass'd underneath the Vessel.

The *Potter's Lathe*, is also a kind of Wheel, but simpler and slighter than the former. Its three chief Members are an Iron-Beam or Axis, three foot and an half high, and two Inches in Diameter ; a little wooden Wheel all of a piece, an Inch thick, and seven or eight in Diameter, placed horizontally a-top of the Beam, and serving to form the Vessel on ; and another larger wooden Wheel, all of a piece, three Inches thick, and two or three Foot broad, fasten'd to the same Beam at bottom, parallel to the Horizon. The Beam or Axis turns by a Pivot at bottom, in an Iron Stand.

The Workman gives the Motion to the Lathe with his Feet, by pushing the great Wheel alternately with each Foot ; still giving it a greater or less degree of Motion, as his Work requires.

They work with the Lathe, with the same Instruments, and after the same manner, as the Wheel.

But neither the one nor the other serve for any more than the forming of the Body of the Vessel, &c. The Feet, Handles, and Ornaments, if there be any, beside the Mouldings, being to be made and set on by Hand ; if there be any Sculpture in the Work, 'tis usually done in Earthen or Wooden Moulds, prepared by a Sculptor, un-

less the Potter have Skill enough to do it himself, which is very rare.

As to the Glazing, or Varnishing of the Work, 'tis usually done with mineral Lead, i.e. Lead pulveriz'd by throwing Charcoal-Dust into the melted Lead, and the Ashes of Lead ; which, in effect, are only its Scum and Scoria. See **LEAD**.

For the Chinese **POTTERY**, see **PORCELAIN**.

**POTTLE**, an English Measure, containing two Quarts. See **MEASURE**.

Two of these *Pottles*, in the Liquids, make a Gallon ; but in dry Measure three go to a Gallon. See **GALLON**.

**POUDER**, or **POWDER**, in Pharmacy, a dry Medicine pulveriz'd, or prepared by being broken and reduced into almost imperceptible Atoms, either in a Mortar, or by Chymical Operations, &c. See **PULVERIZATION**.

*Pouder of Viper*, Viperine Powder, has of late days come much in request. See **VIPERINE**.

*Stryptic Powder*, Sympathetic Powder, &c. See **STRYPTIC**, **SYMPATHETIC**, &c.

*Pouder for the Hair*, is Flower of Wheat, or Beans, well sifted and prepared, to give it an agreeable Odour.

That wherein Starch Grounds is mixed, is the worst. See **STARCH**.

*Jesuits Powder*, *Pulvis Patrum*. See **CORTEX Peruvianus**.

*Gun-Pouder*, see **GUN-Powder**.

*Pouder Chests*, in the Sea-Language, are Boards join'd in form of a Triangle, and fill'd with Gun-powder, Pebbles, &c. which they set fire to when the Ship is boarded by an Enemy, and soon make all clear before 'em.

**POUDERINGS**, in Building, a Term sometimes used for Devices serving to fill up vacant Spaces, in carv'd Works : As also, in Escutcheons, Writings, &c.

*Pouderings*, in Heraldry, see **FUR**.

**POULTICE**, or **POULTIS**, a Form of Medicine call'd also *Cataplasm*. See **CATAPLASM**.

**POULTRY**, see **FOWL**.

**POUNCE**, among Artificers, a little Heap of Charcoal-Dust, inclosed in some open Stuff ; to be pass'd over Holes prick'd in a Work, in order to mark the Lines or Designs thereof on a Paper placed underneath ; to be afterwards finish'd with a Pencil, a Needle, or the like.

*Pounce* is much used by Embroiderers, to transfer their Patterns upon their Stuffs ; by Lace-Makers, and sometimes also by Engravers, and Writing-Masters.

The Word is form'd from the *French*, *Pounce*, Pumice-stone ; in regard they antiently used Pumice-stone powder'd for this purpose.

**POUNCES**, in Falconry, the Talons, or Claws of a Bird of Prey.

**POUND**, a Weight, of a certain Proportion, much used as a Standard for determining the Gravities and Quantities of Bodies. See **WEIGHT**.

The Word is derived from the *Saxon*, *Pund*, *Pondus*, Weight.

We have two different *Pounds* in England ; the *Pound Troy*, and the *Pound Averdupois*.

The *Pound Troy* consists of 12 Ounces, each Ounce of 20 Penny-weights, and each Penny-weight of 24 Grains ; so that 480 Grains make an Ounce, and 5760 Grains a *Pound*. See **OUNCE**, &c.

This *Pound* is used in the weighing of Silver, Gold, precious Stones, all kinds of Grains, &c.

It is also used by the Apothecaries, tho' differently divided : Among them 24 Grains make a Scruple ; 3 Scruples a Drachm, 8 Drachms an Ounce, and 12 Ounces a *Pound*. See **SCRUPLE**, &c.

The *Pound Averdupois* consists of 16 Ounces ; but then the Averdupois Ounce is less by 42 Grains than the Troy Ounce, which amounts to nearly a 12th part of the whole ; so that the Ounce Averdupois only contains 438 Grains, and the Troy Ounce 480.

The difference whereof is nearly as that of 73 to 80 ; i.e. 73 Ounces Troy make 80 Ounces Averdupois. 112 Averdupois *Pounds* make the Hundred Weight, or Quintal. See **QUINTAL**.

By this *Pound* are weigh'd all large and coarse Commodities, Flesh, Butter, Cheese, Iron, Hemp, Lead, Steel, &c.

An Averdupois *Pound* is equal to 14 Ounces  $\frac{1}{2}$  of a *Paris* *Pound*. So that 100 of the former *Pounds* make 91 of the latter.

The *French* *Pound* contains 16 Ounces ; but one *French* *Pound* is equal to one *Pound* one Ounce  $\frac{1}{2}$  of an Averdupois *Pound* ; so that 100 *Paris* *Pounds* make 109 *English* Averdupois *Pounds*.

The *Paris* *Pound* is divided in two manners ; the first division is into two *Marc*s, the *Marc* into eight Ounces, the Ounce into eight *Gross*, the *Gross* into three *Deniers*, the *Denier* into twenty four Grains, each weighing a Grain of Wheat.



The second Division of the *Pound* is into two half *Pounds*; the half *Pound* into two Quarters; the Quarter into two Demi-quarters; the Demi-quarter into two Ounces; the Ounce into two half Ounces, &c.  
The first Division is usually follow'd in weighing Gold, Silver, and other precious Wares; and the latter in those of less value.

At Lyons the *Pound* is 14 Ounces. One hundred *Paris Pounds* make 116 *Lyons Pounds*.—At Venice, the *Pound* is equal to eight Ounces, three Quarters of the *French Pound*, &c.

For the several Pounds of the several Cities and Countries, their Proportion, Reduction, Division, &c. see WEIGHT.

*POUND* is also an imaginary Money, used in accounting; containing more or less, according to the several Names added to it, and the several Countries it is used in. See MONEY.

Thus in England we say a *Pound Sterling*; in France, a *Pound*, or *Livre Tournois* and *Paris*; in Holland and Flanders a *Pound*, or *Livre de Gros*, &c.

The Term took its rise hence, that the antient *Pound Sterling*, tho' it only contain'd 240 Pence, as ours does, yet each Penny being equal to five of ours, the *Pound* of Silver weigh'd a *Pound Troy*. See PENNY.

The *Pound Sterling*, or *English Pound*, contains twenty Shillings, the Shilling twelve Pence, and the Penny four Farthings. See SHILLING, PENNY, &c. See also COIN.

Antiently there were three ways of paying a *Pound* of Money into the Exchequer. 1°. The payment of a *Pound de numero*, which was just twenty Shillings in Tale. 2°. *Ad scalam*, which was 6 d. over and above the 20 s. 3°. *Ad pensam*, which was giving the full Weight of twelve Ounces.

The *French Pound*, or *Livre Tournois*, contains twenty Sols or Shillings, and the Sol 12 Deniers or Pence *Tournois*; which was the Value of an antient *French Coin* call'd *Franc*, a Term still synonymous with *Livre*. See FRANC.

The *Pound*, or *Livre Tournois* contains, in like manner, 20 Sols or Shillings, and the Sol 12 Deniers or Pence *Paris*. Each Sol *Paris* is equal to 15 Deniers *Tournois*; so that a *Pound Paris* is equal to 25 Sols *Tournois*. Thirteen one third Deniers *Tournois* is equal to a Penny *Sterling*; so that the *Pound Sterling* is equal to 13 *Pounds* or *Livres*, 6 Sols, and 8 Deniers of *French Money*; and the *Pound French* to 18 d. *English*; which is to be understood when the Exchange is on the foot of fifty four Pence *Sterling* for a *French Crown*, or *Ecu* of 60 Sols *Tournois*; which is the Par between France and England. See LIVRE and PAR.

The *Pound* or *Livre de Gros* of Holland is divided into 20 Shillings Gros, and the Shilling into 12 Pence Gros. It is equal to six Florins; the Florin valued at 24 Sols *Tournois*; supposing the Exchange on the footing of 100 Pence Gros for a *French Crown* of 3 *Livres Tournois*; so that the *Pound Gros* amounts to 10 Shillings and 11 Pence Farthing *Sterling*. The *Pound Gros* of Flanders and Brabant is divided like that of Holland; and like that too, is equal to three Florins: but the Florin is equal to 25 Sols *Tournois*; so that the *Flanders Pound* is equal to 7 *Livres*, 10 Sols *Tournois*, or 11 s. 3 d. *Sterling*.

Merchants, Factors, Bankers, &c. use Characters, or initial Letters to express the several kinds of *Pounds* of Account, as L. or L. St. *Pounds Sterling*. L. G. *Pounds Gros*; and L. or B. *Pounds Tournois*.

*POUND* is also an Inclosure, or strong Place, where Cattle distrained, or caught in any Trespass, are put till they are replevied or redeemed. See TRESPASS, REPLEVY, &c.

The *Pound* is either overt or close.

*POUND Overt*, or *Open Pound*, is that built upon the Lord's Walle; and thence also call'd the *Lord's Pound*; because he provides it for the use of himself and his Tenants.

*Pound Overt* also includes Back-fides, Court-Yards, Pasture-Grounds, or any Place whatever.

To this *Pound* the Owner of the Beasts impounded may come to give them Meat and Drink, without Offence of their being there, or his coming thither.

*POUND Close*, on the contrary, is such an one as the Owner cannot come to for the said purpose without Offence; as some close House, Castle, Fortrefs, &c.

*POUNDAGE*, a Subsidy granted to the King upon all manner of Merchandize, and of all Merchants, Denizens, and Strangers; whether imported, or exported. See DUTY.

It is call'd *Poundage*, because fixed at the Rate of so much per *Pound*; viz. one Shilling in every *Pound*, or 2 s.

It was first granted to Henry VI. for Term of his Life; and afterwards to K. Charles II. Anno 12 Car. 2.

*POUP*, *Puppis*, in Navigation, the hind-part of a Vessel, or that where the Helm is fixed; call'd also *Stern*. See STERN.

The *French* frequently call it *Quene*, Tail; because the Helm; here apply'd, serves the same purposes in a Ship as the Tail does to Fishes. See HELM.

It is divided into three or four Stories. The lowest, at the bottom of the Keel, is the Bisant Room: The second in the first Deck is for the Gunnery; here the Helm is usually found; tho' the Person who guides it, is above, and turns it by a Bar pass'd thro' a Hole: over this is the Captain's Apartment, before which is the Armory; wherein is the Compass, the Hour-Glass, &c. over this is the Pilot's Cabin, and that of some other Officers; over, is the Pharos or Lanthorn, with the Flag.

All these together form the *Poup-Castle*, or Hind-Castle; the outside whereof is richly adorned with Balconies, Galleries, Pilasters, Trophies, the Arms of the Prince, &c.

To have the Wind in *Poup*, is to have it behind, or favourable. See WIND.

Some Vessels have their *Poup* square, others round.

The Word is form'd from the *Latin*, *Puppis*.

In the Sea-Language, the *Poup* is strictly the Floor, or Deck over the Round-House, or Master's Cabin; being the highest part of her Hull a-stern.

*POUR-Partie*, or *Pour-Party*, in Law, a Term used in opposition to *pro Indiviso*. See *Pro Indiviso*.

To make *Pour-partie*, is to divide and sever the Lands that fall to Parceners; which before Partition, they held jointly and *pro Indiviso*.

*POUR-Presture*, in Law, is defined by *Glanville* to be, when any thing is unjustly occupied, that properly belong'd to the King; as in encroaching on his Grounds, obstructing the King's High-ways, diverting publick Rivers from their proper Course, or building any thing over the High-Streets of a City; and in the general, where any thing is done to the prejudice of the King's Tenements, High-ways, or Cities.

*Crompton* in his *Jurisd.* says, *Pour-presture* is properly when a Man takes to himself, or encroaches any thing which he ought not; whether it be in Jurisdiction, in Land, or in Franchise; and, generally, where any thing is done to the Nuisance of the King's Tenants.

Some Authors divide *Pour-presture* into three kinds: The first against the King, the second against the Lord, the third against a Neighbour.

*Pour-presture against the King*, lib. Nig. in Schac. fol. 38. is that happening thro' the Negligence of the Sheriff, or the long Continuance of Wars, &c. when those that have Lands near the Crown-Lands, inclose part of them, or lay them to their own.

*Pour-presture against the Lord*, is when the Tenant neglects to perform what he is bound to do for the chief Lord, or deprives him of his Right.

*Pour-presture against a Neighbour*, is a Nuisance against a Neighbour, &c. mention'd in the *Monast. Tem.* 1.

*POURSUIVANT*, a Messenger, antiently attending the King, in his Wars, or at Council-Table, or in the Exchequer; to be dispatch'd upon any Occasion or Message: as for the Apprehension of a Person suspected, or accused, &c.

Many of the Nobility, too, had their *Poursuivants*: A Knight Banneret was allow'd a *Poursuivant*, with the Consent of a Herald.

The Word is form'd from the *French* *poursuivre*, to pursue. There were also *Poursuivants* particularly employ'd in Martial Causes, call'd

*POURSUIVANTS* at Arms; a Term antiently apply'd to Gentlemen, who attended the Heralds, and aspir'd to their Office; to which they could not rise, till after seven Years Apprenticeship pass'd in this Quality. See HERALD.

They were entirely dependant on the Heralds, and assisted at their Chapter; officiating for them in preparing and assigning Tournaments, and all other parts of their Ministry.

They were baptiz'd at solemn Feasts with some gallant Name; as *Folicœur*, *Verluisant*, *Sansmentir*, &c.

Their Coats of Arms were different from those of the Heralds, and they bore plain Staffs without Ornament.

Of the great Number of *Poursuivants* antiently on foot, there are now only four remaining; viz. *Blue-Mantle*, *Rouge-Cross*, *Rouge-Dragon*, and *Portcullice*.

Their Business is to attend with the Heralds in marshalling and ordering public Solemnities, Funerals, Interviews, Cavalcades, &c. See COLLEGE of Arms.

*Upton*, de *Re Militari*, calls the *Poursuivants*, *Milites Linguales*; because, says he, their chief Honour was in *Custodia Lingue*.

He divides them into Foot and Horse *Poursuivants*, *Cursores Equitantes* & *Prosecutores*. Stow, speaking of Richard the Third's End, has these Words: "His Body was naked to the Skin; not so much as one Clout about him, and was trust'd behind a *Poursuivant* at Arms, like a Hog, or a Calf."



**POURVEYANCE**, the providing of Corn, Victuals, Fuel, and other Necessaries, for the King's House.

By a Stat. 12 Car. 2. no Person under colour of *Pourveyance* shall take any Timber, Cattle, Corn, or other Matter from any Subject, without his free Consent. See **POURVEYOR**.

**POURVEYOR**, an Officer of the Household, who provides Corn and other Victuals, &c. for the King's House; mention'd in *Magna Charta*, and several Statutes.

The Name of *Pourveyor* became so odious in times past, that by Stat. 36 Edw. 3. the heinous Name *Pourveyor* was chang'd into that of *Buyer*. The Office itself was much restrain'd by the Stat. 12 Car. 2. See **POURVEYANCE** and **ACHAT**.

**POUZZOL**, or **POZZOLANE**, a reddish Earth, used in Italy for Sand. See **SAND**.

The best is found about *Pouzzoli*, *Baye*, and *Cume*, in the Kingdom of *Naples*.

Mix'd with Lime, it makes the best Mortar in the World. See **MORTAR**.

It hardens and petrifies in Water: It penetrates black Flints, and whitens them. It is of particular service in making Moles, and other Buildings, in Maritime Places. *Agricola* takes it to be of an aluminous and sulphurous nature. See *Vitruvius*, *Pliny. de Lorm. &c.* who set a great Value on it.

**POWER**, *Potentia*, in Physics, a natural Faculty of doing or suffering any thing. See **POTENTIA**.

Mr. *Locke* explains the Origin of our Idea of *Power* to the following effect: The Mind being daily inform'd by the Senses, of the Alteration of the simple Ideas of things without; and reflecting on what passes within itself; and observing a constant Change of its Ideas, sometimes by the Impressions of outward Objects, upon the Senses; and sometimes by the Determinations of its own Choice: and concluding from what it has so constantly observ'd to have been, that the like Changes will for the future be made in the same Things, by the same Agents, and by the like Ways; considers, in one Thing, the possibility of having any of its simple Ideas chang'd; and in another, the possibility of making that Change: and so comes by that Idea, which we call *Power*.

Thus we say, Fire has a *Power* to melt Gold, and make it fluid; and Gold a *Power* to be melted.

*Power* thus consider'd, is two-fold, viz. as able to make, or able to receive any Change: the one may be call'd *active*, the other *passive Power*.

Of *passive Power*, all sensible Things abundantly furnish us with Ideas; nor have we of *active Power* fewer Instances: since whatever Change is observ'd, the Mind must suppose a *Power* somewhere able to make that Change.

But yet if we attentively consider it, Bodies, by our Senses, do not afford us so clear and distinct an Idea of *active Power*, as we have from Reflection on the Operations of our Minds. For all *Power* relating to Action; and there being but two sorts of Action, viz. Thinking and Motion; it may be consider'd whence we have the clearest Ideas of the *Powers*, which produce these Actions.

Of Thinking, Body affords us no Ideas at all; it is only from Reflection that we have that: neither have we from Body any Idea of the beginning of Motion. A Body, at rest, affords us no Idea of any *active Power* to move; and when it is set in motion itself, that Motion is rather a *Passion*, than an Action in it. The Idea of the beginning of Motion, we have only by Reflection on what passes in ourselves; where we find by Experience, that barely by willing it, we can move the parts of our Bodies, which before were at rest.

We find in ourselves a *Power* to begin or forbear, continue or end, several Actions of our Minds, and Motions of our Bodies, barely by a Thought or Preference of the Mind: This *Power*, which the Mind has, thus to order the Consideration of any Idea, or the forbearing to consider it; or to prefer the Motion of any part of the Body to its Rest, and *vice versa*, in any particular Instance, is what we call the *Will*. The actual Exercise of that *Power*, is that which we call *Volition*, or *Willing*. See **WILL**.

The Forbearance or Performance of that Action, consequent to such Order or Command of the Mind, is called *Voluntary*; and whatsoever Action is perform'd without such a Thought of the Mind, is call'd *Involuntary*. See **VOLUNTARY**, &c.

The *Power* of Perception, is what we call the *Understanding*. See **UNDERSTANDING**.

Perception, which we make the Act of the Understanding, is of three sorts; first, the Perception of Ideas in our Minds; the Perception of the Signification of Signs; and the Perception of the Agreement or Disagreement of any distinct Ideas. See **PERCEPTION**.

These *Powers of the Mind*, viz. of perceiving, and preferring, are usually call'd by another Name; and the ordinary

way of speaking is, that the *Understanding* and *Will* are two Faculties or *Powers* of the Mind. A Word proper enough, if used so, as not to breed any Confusion in Mens Thoughts, by being suppos'd (as there is room to suspect it has been) for some real Beings in the Soul, that perform those Actions of Understanding and Volition. See **FACULTY**.

From the Consideration of the Extent of the *Power* of the Mind over the Actions of the Man, which every one finds in himself, arise the Ideas of Liberty and Necessity.

So far as a Man has a *Power* to think, or not to think; to move or not to move, according to the Preference or Direction of his own Mind; so far is a Man free. See **LIBERTY**.

Wherever any Performance or Forbearance are not equally in a Man's *Power*; wherever doing or not doing will not equally follow upon the preference of his Mind; there he is not Free, tho' perhaps the Action may be Voluntary. See **NECESSITY**.

So that the Idea of Liberty, is the Idea of a *Power* in any Agent, to do or forbear any Action according to the Determination or Thought of the Mind whereby either of them is preferred to the other: where either of them is not in the *Power* of the Agent to be produced by him according to his Volition, there he is not at Liberty; that Agent is under Necessity. So that Liberty cannot be where there is no Thought, no Volition, no Will: But there may be Thought, there may be Will, there may be Volition, where there is no Liberty. Thus a Tennis-Ball, whether in motion by the Stroke of a Racker, or lying still at rest, is not by any one taken to be a free Agent; because we conceive not a Tennis-Ball to think, and consequently not to have any Volition, or Preference of Motion to Rest, or *vice versa*. So a Man striking himself or his Friend by a convulsive Motion of his Arm, which is not in his *Power* by Volition, or the Direction of his Mind, to stop or forbear; no body thinks, he has Liberty in this; every one pities him, as acting by Necessity and Constraint. Again, suppose a Man be carry'd, whilst fast asleep, into a Room, where there is a Person he longs to see, and be there lock'd fast in, beyond his *Power* to get out; he awakes, and is glad to see himself in so desirable Company, which he stays willingly in; that is, he prefers his staying to going away: Is not this Stay voluntary? No body will doubt it; and yet being lock'd fast in, he is not at liberty to stay, he has not freedom to be gone.

Liberty, therefore, is not an Idea belonging to Volition, or Preferring; but to the Person having the *Power* of doing, or forbearing to do, according as the Mind shall chuse or direct.

As it is in the Motions of the Body, so it is in the Thoughts of our Minds: Where any one is such, that we have *Power* to take it up, or lay it by, according to the Preference of the Mind, there we are at liberty.

A waking Man is not at liberty to think, or not to think, no more than he is at liberty, whether his Body shall touch any other or no: but whether he will remove his Contemplation from one Idea to another, is many times in his choice; and then he is, in respect of his Ideas, as much at liberty, as he is in respect of Bodies he rests on. He can at pleasure remove himself from one to another.

Yet, some Ideas to the Mind, like some Motions to the Body, are such, as in certain Circumstances it cannot avoid nor obtain their absence, by the utmost effort it can use: Thus a Man on the Rack is not at liberty to lay by the Idea of Pain, and entertain other Contemplations.

Wherever Thought is wholly wanting, or the *Power* to act or forbear according to the Direction of Thought, there Necessity takes place: This, in an Agent capable of Volition, when the Beginning or Continuation of any Action is contrary to the Preference of his Mind, is call'd *Compulsion*; when the hindering or stopping any Action is contrary to his Volition, it is call'd *Restraint*. Agents that have no Thought, no Volition at all, are in every thing necessary Agents.

**POWER**, in Mechanics, a Force, which being apply'd to a Machine, tends to produce Motion; whether it actually produce it or not. See **MACHINE**.

In the former Case, it is call'd a *moving Power*; in the latter, a *sustaining Power*.

If the *Power* be a Man, or a Brute, it is call'd an *animate Power*; if the Air, Water, Fire, Gravity, or Elasticity, and *inanimate Power*. See **MECHANICS**.

**POWER** is also used in Mechanics, for one of the six simple Machines; viz. the *Lever*, *Balance*, *Screw*, *Axis in Peritrochio*, *Wedge*, and *Pully*; which are particularly call'd the *Mechanic Powers*. See **MECHANIC POWER**.

See also each *Power* under its proper Article, **LEVER**, **BALANCE**, &c.

**POWERS**, in Pharmacy, the Result of a Combination or Union of the essential Oils with the Spirit of a Plant; where-



wherein, it is supposed, are contained all the principal Vir-  
tues thereof: whence the Name.

**POWER**, in the Feodal Jurisprudence, a Right which the  
Lord has to re-unite to his Fief, a Dependant Fee held of  
him; when the Vassal has alienated it; upon reimbursing  
the Money given for it, with the Legal Costs. See **FEE**.

The Lord is to exercise his *Power* over the Fee, within a  
Year after he has notice of the Fall; otherwise he loses it.

The Word is also used for the Right a Lord has to seize  
a Dependant Fee, to compel the Payment of all Dues, Ser-  
vices, &c.

**POWERS**, in Theology, a Term used among the Fathers,  
&c. for the sixth Order in the Hierarchy of Angels; com-  
mencing from Seraphim. See **SERAPHIM**.

These they suppose to be the Spirits who bridle and re-  
strain the *Power* of the Devils; preside over inferior Cau-  
ses; and prevent contrary Qualities from disturbing the  
Oeconomy of the World. See **HIERARCHY**.

**POWER**, in Optics. The *Power* of a Glass, is the Di-  
stance of the Convexity, from its solar Focus. See **FOCUS**.

**POWER**, in Arithmetic, the Produce of a Number mul-  
tiplied into itself. See **NUMBER**.

Thus the Produce of the Number 3, multiplied by itself,  
viz. 9, is the second *Power* of 3; the Factum of 9, mul-  
tiplied by 3, viz. 27, is the third *Power*; and the Product  
of 27, again multiplied by 3, viz. 81, is the fourth *Power*;  
and so on to Infinity. In respect hereof, the first Number,  
is called the *Root*, or *first Power*. See **ROOT**.

The second *Power* is call'd the *Square*; with respect to  
which, 3 is the Square-Root. See **SQUARE**.

The third *Power*, 27, is call'd the *Cube*; with respect to  
which, the 3 is the Cube-Root. See **CUBE**.

The fourth *Power*, 81, is call'd the *Biquadrate*, or *Qua-  
drato-Quadratum*; with respect to which, 3 is the Biqua-  
dratic Root. See **BIQUADRATIC**.

The Number which shews how oft the Root is multi-  
plied into itself, to form the *Power*; or how oft the *Power*  
is to be divided by its Root, to come at the Root, is call'd  
the *Exponent of the Power*. See **EXPONENT**.

The Moderns, after *Des Cartes*, are contented to distin-  
guish most of their *Powers* by the Exponents; as, *first, se-  
cond, third, &c.*

The particular Names of the several *Powers* were intro-  
duced by the *Arabs*; viz. *Square, Cube, Quadrato-Qua-  
dratum or Biquadrate, Surdesolid, Square of the Cube, se-  
cond Surdesolid, Quadrato-quadrato-quadratum, Cube of  
the Cube, Square of the Surdesolid, third Surdesolid, &c.*

The Names given by *Diophantus*, follow'd by *Vieta* and  
*Oughtred*, are, the *Side or Root, Square, Cube, Quadrato-  
quadratum, Quadrato-cubus, Cubo-cubus, Quadrato-qua-  
drato-cubus, Quadrato-cubo-cubus, Cubo-cubo-cubus, &c.*

The Characters wherewith the several *Powers* are de-  
noted, both in the *Arabic* and *Cartesian* Notation, are as  
follow.

|           |                |                |                |                |                |                |                |                |                 |      |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|------|
|           | 2              | 4              | 8              | 16             | 32             | 64             | 128            | 256            | 512             | 1024 |
| Arab. R   | q              | c              | bq             | s              | qc             | ss             | sq             | bc             | sr              |      |
| Cartes. a | a <sup>2</sup> | a <sup>3</sup> | a <sup>4</sup> | a <sup>5</sup> | a <sup>6</sup> | a <sup>7</sup> | a <sup>8</sup> | a <sup>9</sup> | a <sup>10</sup> |      |

Hence, to raise a Quantity to a given *Power*, or Digni-  
ty, is the same as to find the Factum arising upon its be-  
ing multiply'd a given Number of Times into itself: *E.*  
*gr.* to raise 2 to the 3d *Power*, is the same as to find the  
Factum 8; whose Factors are 2, 2, 2. See **SQUARE**,  
**CUBE**, &c.

*Powers* of the same Degree, are to one another in a  
Ratio of the Roots as manifold as their Exponent contains  
Units: Thus, Squares are in a duplicate Ratio; Cubes in  
a triplicate Ratio; Quadrato-quadrata, or fourth *Powers*,  
in a quadruple Ratio. See **RATIO**.

The *Powers* of proportional Quantities, are also propor-  
tional to one another. See **PROPORTION**.

From a given *Power* to extract the *Root*, or *Side*; is the  
same as to find a Number, *e. gr.* 2, which multiply'd any  
Number of times, *e. gr.* twice, produces the given *Power*,  
*e. gr.* the 3d *Power*, or 8. See **ROOT**.

To multiply or divide any *Power* by another of the same  
Root. 1<sup>o</sup>. For Multiplication, add the Exponents of the  
Factors; the Sum is the Exponent of the Factum. Thus:

|         |  |
|---------|--|
| Factors | $\begin{cases} x^3 & y^m & z^n & a^m & x^n \\ x^4 & y^m & z^n & a^r & x^s \end{cases}$ |
| Prod.   | $x^7 \quad y^{2m} \quad z^{2n} \quad a^{m+r} \quad x^{n+s}$                            |

2<sup>o</sup>. For Division, subtract the Exponent of the *Power* of  
the Divisor, from the Exponent of the Dividend; the Re-  
mainder is the Exponent of the Quotient. Thus:

|        |   |
|--------|---|
| Divid. | $x^7 \begin{pmatrix} x^3 \\ y^m \end{pmatrix} \begin{pmatrix} y^m \\ z^n \end{pmatrix} \begin{pmatrix} a^m \\ x^n \end{pmatrix} \begin{pmatrix} a^m \\ x^n \end{pmatrix}$ |
| Divis. | $x^4 \begin{pmatrix} x^3 \\ y^m \end{pmatrix} \begin{pmatrix} y^m \\ z^n \end{pmatrix} \begin{pmatrix} a^m \\ x^n \end{pmatrix} \begin{pmatrix} a^m \\ x^n \end{pmatrix}$ |

*M. de la Hire* gives us a very odd Property common to  
all *Powers*: *M. Carre* had observ'd, with regard to the

Number 6, that all the natural cubic Numbers, 8, 27,  
64, 125, whose Root is less than 6, being divided by 6,  
the Remainder of the Division is the Root itself: And if  
we go further, 216, the Cube of 6, being divided by 6,  
leaves no Remainder; but the Divisor 6, is itself the Root.  
Again, 343, the Cube of 7, being divided by 6, leaves 1;  
which, added to the Divisor 6, makes 7 the Root, &c.

*M. de la Hire*, on considering this, has found that all  
Numbers, rais'd to any *Power* whatever, have Divisors;  
which have the same effect with regard thereto, that 6 has  
with regard to Cubic Numbers.

For the finding of these Divisors, he discover'd the fol-  
lowing general Rule:

If the Exponent of the *Power* of a Number be even,  
*i. e.* if the Number be rais'd to the 2d, 4th, 6th *Power*,  
&c. it must be divided by 2; the Remainder of the Di-  
vision, in case there be any, added to 2, or to a Multi-  
ple of 2, gives the Root of this Number, corresponding  
to its *Power*, *i. e.* the 2d, 6th, &c. Root.

If the Exponent of the *Power* be an uneven Number,  
*i. e.* if the Number be rais'd to the 3d, 5th, 7th, &c.  
*Power*; the Double of this Exponent will be the Divisor,  
which has the Property mention'd.

Thus is it found in 6, double of 3, the Exponent of the  
*Power* of all the Cubes: Thus, also, 10 is the Divisor of  
all Numbers rais'd to the 5th *Power*, &c.

**POWER**, of an Hyperbola, in Conics, is the Square of the  
right Line CI, or AB (Tab. CONICS, fig. 27.)

The *Power* of the Hyperbola, is the sixteenth part of  
the Squares of the conjugate Semi-Axes; or the fourth  
part of the Squares of the conjugate Axes. See **HYPERBOLA**.

**POWER of the County**. See **POSSE COMITATUS**.

**POX**, in Medicine, a Disease, whereof the Physicians  
admit several kinds; as the *Small Pox, French Pox, Chicken  
Pox, and Swine Pox*.

*Small POX, Variolæ*, is a contagious Disease appearing  
on the *Cutis*, which it covers with Pustles or Ulcerous  
Eruptions, that leave Eschars behind 'em. Or, it is a ge-  
neral Eruption of particular Pustles tending to Suppuration.  
See **PUSTLE** and **SUPPURATION**.

The Origin of the Disease is uncertain: We find no  
mention of it before the *Arabic* Physicians. See **DISEASE**.

The *Small Pox* bear a great resemblance to the Measles;  
so that for the two or three first days 'tis difficult to distin-  
guish 'em: They both arise from an impure Blood, and  
corrupt Humours; with this difference, that in the *Small  
Pox*, the peccant Matter is more thick and viscid; in the  
Measles more subtil, hot, and bilious; and neither of  
'em are known to return after having pass'd 'em once. See  
**MEASLES**.

*Dolæus* says, that the Cause of the *Small Pox* is brought  
into the World with us; and lies hid till it find an oppor-  
tunity of bursting forth: He adds, that there is scarce one in  
many thousands that escapes it all his Life.

*Dr. Drake* observes, that the *Small Pox* not being founded  
in any permanent habitual Disposition, has its Period within  
a limited time necessary for the extrusion of the peccant  
Matter out of the Pores of the Skin. For the salt Serum  
of the Blood being in this Disease, by an accidental Fever,  
thrown out in great quantities on the Glands of the Skin,  
acts much after the manner of the *Lepra Arabum*; but  
when the Blood is despumated, the Scales dry, and fall off.  
So that he thinks it would be no great Impropriety to call  
the *Small Pox*, a temporary critical *Lepra*. See **LEPRA**.

The *Small Pox* are of two kinds; the *Distinct*, where  
the Pustles stand a-part; and the *Confluent*, where they  
run into one continued Cake.

The *distinct*, or regular *Small Pox*, *Sydenham* observes,  
begin with a Shuddering and Chilliness, which is succeeded  
by an intense Heat, violent Pain of the Head and Back,  
Vomiting, Drowsiness, especially in Children, and some-  
times Epileptic Fits; which shew the *Pox* to be ready to  
burst forth, and that they will be mild.

The Eruptions are usually on the fourth day; upon  
which the feverish Symptoms vanish, except that Adults  
are prone to sweat. The Pustles first appear in the Face,  
then the Neck, &c. They are at first reddish, by degrees  
swell and grow whiter; on the eleventh day the Swelling  
and Inflammation of the Face vanish; and the Pustles be-  
gin to wither. If ever this kind kill, 'tis on the fourteenth  
or fifteenth day.

The Symptoms of the *distinct Small Pox*, as enumerated  
by *Dr. Shaw*, are, 1. A Pain in the Head, Back, and *Scro-  
biculum Cordis*. 2. A Fever, which decreases as the Erup-  
tions increase, with redness of the Eyes. 3. *Nausea* and  
Retchings. 4. Little reddish Spots, or beginning Pustules,  
appearing on the Neck, Face, Breast, &c. about the third  
or fourth day inclusive, from the beginning of the Illness.  
5. Restlessness. 6. About the seventh or eighth day, other  
little red Spots usually appear between the growing  
Pustules. 7. The Pustules about the ninth day are at their  
State; being then generally as big as a large Pea, the  
Mat-



Matter in them well concocted, of a whitish Colour inclined to yellow; at which time, 8. The Patient is usually light-headed and feverish. 9. About the tenth day the Pustules begin to dry on the Face. 10. And about the fifteenth they appear shrunk, and begin to scale off; and now the danger is esteem'd to be over.

The *distinct* kind is here consider'd unattended with a Looseness, and other Symptoms, which sometimes happen in it, as well as in the other.

The *Confluent*, or *Flux Small Pox* have the same Symptoms with the *distinct*, only in a more violent degree: They usually come out on the third day; not separate, as in the *distinct* kind, but spread into one another; and at length appear all like one whitish Pellicle, over the whole Skin. After the eighth day, the Pellicle darkens. In Adults this kind is attended with a Salivation; in Children with a Diarrhæa. The Salivation frequently succeeds immediately after Eruption; the Diarrhæa later. The *Confluent* kind usually kill on the eleventh day.

The Symptoms of the *Confluent* kind, according to Dr. *Shaw*, are, 1. Violent Pain in the Head, Back, and *Scrobiculum Cordis*. 2. Nausea and Retching, with a Fever, which rather increases than decreases after the Eruption. 3. In Children a Diarrhæa, which usually precedes the Eruption, and attends the Distemper throughout. 4. A *Ptyalismus* in Adults, and but seldom a Diarrhæa. 5. Deliria, Convulsions, Hoarseness, Difficulty of Breathing, Fixedness of the Eyes, and Restlessness; which may also in a lesser degree attend the *distinct* sort. 6. The Spots are here more red, thick, and close than in the *distinct*; and the Spaces between them more inflamed and swell'd; purple or livid Spots also often appear in these Spaces; whence the *Small Pox with Purples*. At other times in these Spaces, or on the Heads of the Eruptions, appear Bladders full of clear Water, vulgarly call'd the *white Hives*. Lastly, these Eruptions are frequently depress'd in the middle; and there turn black; whence the *black Small Pox*.

The Eruptions often rise and sink in the Progress of the Distemper. They usually first appear about the fourth or fifth day, and come to their State about the fifteenth.

*Morton* divides the Disease into four Stages: The *Apparatus* or Preparation, from the time of the first Infection to the Eruption of the Pustles. The *Eruption*, which comprehends three States: *Eruption*; *Maturation*; and *Declension*, wherein the Pustles are first incrustated with a Scab, then wither and dry off.

When the Eruptions are very round, distinct, encompass'd with a red Margin, &c. they are said to be *benign*; otherwise *malignant*.

There are four degrees of Malignancy: *viz.* when they are universally confluent; particularly confluent; distinct, but very small and coherent; and distinct, with Petechiæ and miliary Eruptions. See *PETECHIÆ*, &c.

Dr. *Friend*, Dr. *Cade*, &c. recommend Purging and Phlebotomy after an imperfect Crisis of the *Small Pox*; *i. e.* where the Fever remains after the Pustles decline. Many oppose it: Indeed Reason seems on its side; but Prescription is against it. *Alabaravius*, in the first Stage of the *Small Pox*, prescribes Phlebotomy, even to a Swooning, and great Quantities of cold Water to be drunk. In the malignant *Small Pox*, Dr. *Lifter* found the Blood, when cold, excessively tender and friable, so as the softest Feather would easily divide its Globules. *Etmuller* says there is nothing to be more regarded than the Breath and Voice; where these are good, 'tis an excellent Sign. He adds that Horse-Dung is an admirable Medicine, in that it promotes Sweat, saves the Throat, &c.

A Method of managing the *Small Pox*, lately introduced from abroad, is by Inoculating them. For the Reason, Process, and Advantages whereof, see *INOCULATION*.

Why the *Small Pox* scarce ever visit a Person above once, is a famous Problem; long canvass'd, and with little success. Dr. *Drake* accounts for it very plausibly from the Alteration made in the Skin by that Disease. For the Distension the Glands and Pores of the Skin suffer therein is so great, that they scarce ever recover their Tone again, so as to be able any more to arrest the Matter in its Course outwards long enough, or in quantity enough, to create those Ulcerous Pustles which are the Diagnostics of the Disease. For tho' the same feverish Disposition should arise again in the Blood, yet the Passages thro' the Skin being more open, the Matter will never be stop'd, so as to exhibit the Appearance of the *Small Pox*.

Accordingly we find that in Persons severely handled with this Disease, the Face (which is usually the fullest, from the extraordinary obstruction the Matter meets with by the great Contipation of the Pores) seldom returns to its former Dimensions; which Enlargement he accounts for from the Dilatation of the *Arcole* of the Glands and Pores of the Skin, not from any Augmentation of the Substance itself.

What confirms this Hypothesis, is, that Nurses, &c.

who attend Persons sick of the *Small Pox*, are frequently a little affected with it; and have now and then two or three Eruptions: That they have no more, seems to follow from the free Course of the Matter thro' the Skin. With this, too, agrees that constant Observation, That People of coarse Skins, in whom the Pores are largest, are always more favourably treated by this Distemper than others; and that it constantly leaves fine Skins coarser than it found 'em.

This Solution would seem more probable, were it not that some have so very few of these Eruptions, perhaps not above twenty or thirty; which cannot fairly be allow'd so far to enlarge the Pores of the Skin.

Others hold, That in a genuine Eruption, the Cause of the Distemper is so far evacuated, as scarce to leave a possibility of a Return; and that if part of the original Cause did remain behind, it might, when the Air favours it, or when by other Accidents 'tis secreted from the Blood, appear in the form of Eruptions, and so prove to be the Measles, Chicken-Pox, &c.

It may, indeed, be objected, that these last mention'd often happen before the *Small Pox*: But whatever be the Cause of the *Small Pox*, the separating Power must be in such a determin'd Proportion, or it will fail to cause a regular *Small Pox*; and so acting proportionably, may produce any of the other Distempers just mentioned.

The *occasional Causes* of the *Small Pox* may be, 1. Some Alteration in the Air; since they happen most frequently about the Spring Season; and both in *Europe*, and elsewhere, are more Epidemical and Mortal at particular times. 2. From Fear; which appears more evident than easy to explain. 3. From Surfeits, as by eating any thing too chilling to the Blood, as Cucumbers, Oranges, &c. in hot Seasons, or when the Body is heated by Motion, the drinking of cold Liquors. 4. From too plentiful feeding. 5. From any over-heating the Blood, or too suddenly cooling it after it is heated, whereby a sudden Check is given to Perspiration; and this more especially if the Air favours such an Eruption.

As to the *prognostic Signs of the Small Pox*; 1. The sooner they appear in the Spring, and the more the Air is disposed to favour the Distemper, the more fatal they prove. 2. The confluent Species both in Adults and Children, is dangerous; and the more so, if attended with a suppression of Urine, Nausea, Retching, Delirium, purple Spots, Crytallines, bloody Urine, &c. after the Eruption; but the blackness of 'em is not dangerous before the Crisis. 3. Diarrhæa's in the confluent kind, are not so bad in Children as in Adults. 4. A *Ptyalismus* is a regular Attendant of the confluent kind in Adults from the sixth or seventh day till after the Crisis; and is so necessary, that if it stop suddenly, and return not for twenty four Hours, the Patient is supposed to be in great danger. 5. A Quinzy here is highly dangerous. 6. The Eruptions swelling, and sinking suddenly, are bad Signs. 7. The danger is not over till about the twentieth day in the confluent Species. But if the Eruptions be distinct, few, round, plump, rise full, and grow up sharp at the top; if the Sicknefs, Vomiting, &c. go off, or remit upon the appearance of the Eruptions, and the Patient be under no dreadful Apprehensions; the danger is usually over about the tenth day in the distinct kind. Convulsions attending the first Symptoms of the *Small Pox* in Children, are said to foreshew the appearance of Eruptions within twelve Hours; which then generally prove distinct, and the Patient does well. The *Small Pox* succeeding a Debauch in Liquors, or happening upon an irregular Course of Life, is usually mortal.

*Chicken POX*, a cutaneous Disease, frequent in Children, wherein the Skin is cover'd with Pustles like those of the *Small Pox*, as to Figure and Magnitude; and only distinguishable therefrom, in that those of the *Small Pox* appear with a redness and inflammation; and those of the *Chicken Pox* whiter, resembling *Vesiculæ* full of a serous Humour; which in three days time burst, and dry away, without any danger, and usually without any Fever.

The *Chicken Pox* and *Swine Pox* seem to be the *Small Pox* in a less degree, tho' they sometimes precede, and sometimes succeed the *Small Pox*. The Pustles appear to be of the same kind, only in the *Swine Pox* they are much larger, and in the *Chicken Pox* somewhat less than in the *Small Pox*. There commonly appear five or six, sometimes twenty or thirty on the Face, and but very few on the Body.

The Patient is very little indisposed, either before, at, or after their appearance; tho' the sudden sinking of them often causes some disorder; but 'tis presently relieved by a little Sack and Saffron, or a Dose of Treacle-Water.

Grown Persons seldom keep within Doors for either; and upon that account the Eruptions may continue the longer, because the cold Air is supposed to hinder their ripening; so that 'tis sometimes three Weeks or a Month before they totally disappear.



**French POX**, a contagious Disease contracted by a poisonous Humour, usually in Coition; and manifesting itself in Ulcers and Pains. See **VENEREAL Disease**.  
The *French* call it *Mal de Naples*, the *Neapolitan* Disease, because first observed among the Soldiery at the Siege of *Naples* under *Charles VIII.* The *Italians* call it *Mal Fran-*  
*Naples* under *Charles VIII.* The *Italians* call it *Mal Fran-*  
ces, and we the *French* Disease, because first caught by the  
*French*. The *Spaniards* call it *Sarva das Indias*, because  
first brought from the *West-Indies*.

**POYNING's Law**, an Act of Parliament made in *Ireland*, by *Henry VII.* whereby all the Statutes of force in  
*England* were made of force in *Ireland*; which before that  
time they were not.

Nor are any now in force there, made in *England* since  
that time.

The Law took its Name from *Sir Edward Poyning*, Lord  
Lieutenant at the time of its making.

**PRACTICE**, in Arithmetic, *PRACTICA Italica*, or *Ita-*  
*lian Usages*; certain compendious ways of working the  
Rule of Proportion, or **Golden Rule**. See **GOLDEN**  
**Rule**.

They were thus call'd from their expediting of *Practice*,  
and *Business*; and because first introduced by the *Mer-*  
*chants*, and *Negotiants of Italy*. See **RULE**.

The most useful of these *Practices* are as follow:

1°. Since the Use of the Rule of Three is to find a fourth  
Proportional, to three given Numbers; divide the first and  
second, or the first and third by some common Number, if  
that can be done exactly; and work with the Quotients in  
their stead: As in the following Example.

Price of 3 lb is 9 Shil. What's the Price of 7 lb?

$$\begin{array}{r} 3) \quad 1 \quad \quad 3 \quad \quad 3 \\ \hline \end{array}$$

Facit 21 Shil.

Price of 14 lb is 26 Shil. What's the Price of 7 lb?

$$\begin{array}{r} 7) \quad 2 \quad \quad 2) \quad \quad 1 \\ \hline \end{array}$$

Facit 13 Shil.

2°. If the first Term be 1, and the second an aliquot  
part of a Pound, Shilling, or Penny; divide the third by  
the aliquot Part: The Quotient is the Answer. Note, To  
find the aliquot part; those who cannot do it otherwise,  
may see the Table of aliquot parts of a Pound under the  
Article **MULTIPLICATION**.

E.g. If 1 Ell cost 10 Shil. What cost 957 Ells.

Facit l. 478:10s.

3°. If the first or third Number be 1; the other not ex-  
ceeding large; and the middle Term a Compound, i. e.  
consist of several Denominations; it may be wrought with-  
out Reduction thus:

Price of 1 lb is 3 s. 8 d. 3 q. What's the price of 5 lb?

5

Facit 18 s. 7 d. 3 q.

For 4 Farthings making a Penny, 5 times 3 Farthings make  
3 d. 3 q. and 12 Pence making 1 Shilling, five times eight  
Pence make 3 s. 4 d. which with 3 d. from the place of  
Farthings, make 3 s. 7 d. Lastly, five times 3 Shillings  
makes 15 Shillings, and with the 3 Shillings from the place  
of Pence, 18 s. The price required therefore is 18 s.  
7 d. 3 q.

4°. If the middle Term be not an aliquot, but an ali-  
quant part; resolve the aliquant part into its aliquot parts;  
divide the middle Term by the several aliquots, the Sum  
of the Quotients is the Answer. To find the aliquot parts  
contain'd in an aliquant; see the Table of aliquant parts of  
a Pound under the Article **MULTIPLICATION**.

For an Instance of this Rule:

If 1 Ell cost 15 Shil. What cost 124 Ells?

$$\begin{array}{r} \frac{1}{2} \quad \quad \quad \frac{1}{2} \quad 62 \\ \frac{1}{4} \quad \quad \quad \frac{1}{4} \quad 31 \\ \hline \end{array}$$

Facit 93 l.

5°. If the first, or second Term be 1; and in the for-  
mer case, the second, or third, in the latter the first, be  
resolvable into Factors; the whole Operation may be per-  
formed in the Mind without writing down any Figures: As  
in the following Example.

Price of 1 lb is 24 Shil. What is the price of 20 lb?

$$\begin{array}{r} 4 \quad \quad \quad 4 \\ 6 \quad \quad \quad 80 \\ \hline 6 \end{array}$$

Facit 48|0 s.—24 l.

6°. Where one of the given Numbers is 1; we have  
several compendious Usages, to save Multiplication, and  
Division. E.g.

If 9 Pounds cost 20 s. What does 1 Pound cost?

'Tis obvious the Sum required is had by adding to the  
tenth part of 20 s. viz. 2 s. the ninth part of that tenth,  
viz. 3 d. 2, and 2 of a Penny: The Answer therefore is  
2 s. 3 d. 2 and 2.

Again: If 5 lb cost 54 Shillings, What costs 1 lb?

Since 5 is half of 10; the double of the tenth part of the  
given price, viz. 10 s. 9 d. 2 q. is the Sum required.

Again: If 1 lb cost 18 d. What will 19 lb cost?

Since 19=20-1; from the given price doubled, and  
increased by a Cypher, viz. 360, subtract the simple 18;  
the Remainder is 342 d. = 28 s. 6 d. the Sum required.

7°. If two Terms of the same Denomination differ by  
an Unit, we have a peculiar kind of Compend; which  
will be clear from the following Examples. E.g. If 5  
lb cost 30 s. What will 4 lb cost?

Since the price of 4 lb is one fifth part short of that of  
5 lb. divide the given price 30 by 5; the Quotient 6 being  
subtracted from the Dividend; the Remainder, viz. 24 s.  
is the Sum required.

Again: If 8 lb cost 24 s. What cost 9 lb?

Since the price of 9 lb exceeds that of 8 by one eighth  
part; divide the given Price 24 by 8; and add the Quo-  
tient 3 to the Dividend; the Sum 27 is the Answer.

8°. Sometimes one may use several of these Compounds,  
or *Practices* in the same Question. E.g. If 100 lb cost  
30 s. 4 d. What costs 50 lb?

50) 2. 2

Facit 15 s. 2 d.

Again: 60 lb cost 4 s. What costs 2520?

$$\begin{array}{r} 6 \quad \quad \quad 42 \\ \hline 24 \quad \quad \quad 6 \\ 7 \quad \quad \quad 7 \\ \hline \end{array}$$

168 l.

**PRÆ**, a *Latin* Preposition, literally signifying *before*;  
used in Composition, with several Words in our Language,  
to denote the relation of Priority. See **PREPOSITION** and  
**COMPOSITION**.

Of late, our Writers, in Words thoroughly anglicized,  
for *præ* usually write *pre*, restraining the *Latin* Orthogra-  
phy to Words that are still *Latin*. Hence, for

|               |         |                   |
|---------------|---------|-------------------|
| PRÆADAMITE,   | } See { | PRÆADAMITE.       |
| PRÆCESSION,   |         | PRECESSION.       |
| PRÆCIPE,      |         | PRECIPE.          |
| PRÆCONTRACT,  |         | PRECONTRACT.      |
| PRÆCEPTORY,   |         | PRECEPTORY.       |
| PRÆDECESSOR,  |         | PREDECESSOR.      |
| PRÆDETERMINA- |         | PREDETERMINATION. |
| TION,         |         |                   |
| PRÆDESTINA-   |         | PREDESTINATION.   |
| TION,         |         |                   |
| PRÆDICTION,   |         | PREDICTION.       |
| PRÆDOMINANT,  |         | PREDOMINANT.      |
| PRÆEXISTENCE, |         | PREEEXISTENCE.    |
| PRÆFECTUS,    |         | PREFECT.          |
| PRÆEMPTION,   |         | PREEMPTION.       |
| PRÆTOR,       |         | PRETOR.           |
| PRÆTORIAN,    |         | PRETORIAN, &c.    |

PRÆCORDIA, the parts about the Heart; e. gr.  
the Pericardium, the Diaphragm, the Hypochondria, and  
even the Heart itself; with the Lungs, Spleen, &c. See  
**HEART**.

The Word is ordinarily used for the fore-part of the Re-  
gion of the Thorax. See **THORAX**.

*Pliny*, and some other Authors, use it for all the Viscera,  
or Entrails. *Præcordia vocamus uno nomine exta in Ho-*  
*mine*. See **VISCERA**.

One of the principal Differences between Men and  
Brutes, consists in this; that there is a greater Correspon-  
dence and Communication between the Head and Heart  
of the former than the latter: Which Correspondence is  
effected by means of a greater Number of Nerves, sent  
from the Brain to the Heart and *Præcordia*; Brutes only  
receiving Nerves to the *Præcordia* by the Branches of the  
*Par Vagus*; and Man, likewise, by the Intercostal Pair.

The Reason, *Dr. Willis* well observes, is, that Brutes  
being void of Discretion, and but little subject to Passions,  
need not, like Man, a double Passage for the Spirits, the  
one for the Service of the vital Functions, the other for  
the reciprocal Impression of the Affections. See **NERVE**,  
**SPIRIT**, **BRAIN**, &c.

**PRÆMIUM**, literally denotes a Reward, or Recom-  
pence.

Among Merchants, it is taken for that Sum of Money,  
viz. 8 or 10 per Cent. which is given to an Insurer, for in-  
suring the safe Return of any Ship, or Merchandize. See  
**POLICY of Insurance**.

The same Term is also used in the Money and Paper-  
Trade, for what is given for a thing above *Par*.

Thus, Lottery-Tickets, &c. are said to bear so much, e. gr.  
10 or 20 s. *Prem.* when they are sold for so much beyond  
the prime Cost at which the Government vendeth them.

**PRÆNOMEN**, among the *Romans*, a proper Name;  
or Name prefixed to the general Name of the Family;  
as, *Caius*, *Lucius*, *Marcus*, &c. See **NAME**.



The *Prænomen* answers to our Christian Name, *Peter*, *Paul*, &c.

It was not introduced among the *Romans* till long time after the *Nomen*. See *NOMEN*.

The Name of the Family was given their Children the Day after their Birth; but the *Prænomen* was not given 'em till they took the *Virile Habit*. See *VIRILE*.

*Varro* reckons up thirty *Prænomina* among the *Romans*. The usual ones may be reduced to eighteen.

The *Greeks* had no *Prænomina*; they had but one Name.

*PRÆPARANTIA Vasa*, in Anatomy, the *Spermatic Vessels*; or two Arteries, and as many Veins of the Testicles; thus call'd by the Antients, from an Opinion that the Seed began to be prepared herein. See *SPERMATIC Vessels*, *SEED*, and *GENERATION*.

*PRÆPOSITUS*, a Term frequently used in our Law-Books: *Præpositus Villæ* is sometimes used for the Chief Officer of the King in a Town, Manor, Village, or Reeve. See *PREFECT*.

*Præpositus Villæ* is sometimes also used for the Constable of a Town, or petty Constable. See *CONSTABLE*.

*Præpositus Ecclesiæ*, see *CHURCH-REVE*.

*Quatuor homines PRÆPOSITI*, in *Crompton*, &c. Four Men of each Town which are to appear before the Justices of the Forest, in their Circuit.

*PRÆPUTIUM*, *PREPUCE*, in Anatomy, the *Fore-Skin*; a prolongation of the *Cutis* of the *Penis*, covering the *Balanus*, *Glans*, or Extremity of the *Yard*. See *PENIS* and *GLANS*.

*Dr. Drake* observes, that Nature does not seem more various in any part of her Works than in the *Prepuce*; for the Figure and Proportion whereof, there does not seem any Standard.

Hence, probably, arose the necessity of Circumcision, so generally practised throughout the Oriental parts; not out of a view to Religion, but to Cleanliness, and to prevent Diseases which a detention of the Mucus of the *Sub-preputial* Glands might breed in those hot Countries. For even here the same Author adds, he has known some, who, having large *Prepuces*, call'd *Filbert-Prepuces*, have been frightened at the appearance of a Mucus oozing out upon a mere plenitude, from between the *Prepuce* and *Glans*; which 'tis probable the great Legislator of the *Jews* might have a view to in the first Institution of Circumcision. See *CIRCUMCISION*.

The Skin of the *Prepuce* is double; at the connexion of the internal Skin, to the other part, are several oval and roundish Glandules placed irregularly about the joining of the *Glans* to the *Corpora Cavernosa*, and on the *Glans* itself.

Their use is to separate a Liquor to render the agitation of the *Preputium* on the *Glans* easy. When this Liquor becomes rancid, as upon old Age, or Venereal Contacts, it excoriates the *Glans* and *Preputium*; and even sometimes contracts the latter, and renders it necessary to be divided to afford a passage to the *Glans*. See *PHIMOSIS* and *PARAPHIMOSIS*.

*PRÆSEPE*, in Astronomy, three Nebulous Stars, in the Sign *Cancer*, or the Crab; two of 'em of the 7th, the third of the 6th Magnitude. Their Longitudes, Latitudes, &c. see among those of the other Stars in *CANCER*.

*PRÆTER Naturam*, in Medicine, see *NATURE*.

*PRAGMATIC Sanction*, in the Civil Law, is defined by *Hottoman*, a Rescript, or Answer of the Prince, deliver'd by Advice of his Council, to some College, Order, or Body of People, upon their consulting him on some Case of their Community.

Such an Answer to a particular Person, is call'd simply *Rescript*. See *RESSCRIPT*.

The Word is form'd from the Greek *πρεγμα*, *Negotium*, *Business*.

The Term *Pragmatic Sanction* is chiefly used among the Modern Writers, for that famous Ordonnance of *Charles VII.* of *France*, published in 1268; containing a Regulation of Ecclesiastical Discipline, conformable to the Canons of the Council of *Basil*; and since used by the *Gallican Church*, as a Barrier against the Enterprizes and Encroachments of the Court of *Rome*.

The Scope of the *Pragmatic Sanction*, was to regulate the form of Elections made by the Clergy; to declare the Collations to belong to Ordinaries, the Prevention alone reserv'd to the Pope; to establish Prebends; to assign a Third of the Benefices to Graduates; to abolish Reservations, Annates, and other like Charges.

Pope *Pius II.* obtain'd an abrogation of this *Sanction* of *Louis XI.* On which occasion the Court of *Rome*, transported with Joy, dragg'd the *Pragmatic* thro' the Streets, whipping it all the way, as *Xerxes* antiently did the *Hellepont*. But the Parliament oppos'd this Abrogation with a great deal of Vigour, and refus'd its Consent to the last. So that maugre all the Efforts of *Rome*, the *Sanction* still

held in force; till the Concordat pass'd between Pope *Leo X.* and *Francis I.* in 1515, when the *Pragmatic Sanction* was abolish'd. See *CONCORDAT*.

The Parliament of *Paris* again oppos'd the Innovation, and refus'd to confirm the Concordat, and was not brought to give its Consent till after repeated Orders of the King; together with a secret Resolution taken always to judge conformably to the Tenor of the *Pragmatic Sanction*.

*PRAGMATICAL*, a Term sometimes used in the same sense as *Practical*, *Mechanical*, or *Problematical*.

Thus *Stevinus*, in his *Hydrostatical Elements*, calls certain Mechanical, or Practical Experiments, which he undertakes to instruct his Reader how to make, by the Name of *Pragmatical Examples*; and in the same sense it is sometimes used by other Naturalists.

*PRATIQUE*, or *PRATTICK*, in Commerce, a Negotiation or Communication of Commerce, which a Merchant-Vessel obtains in the Ports it arrives in, and the Countries it discovers.

Hence to obtain *Pratique*, is to obtain a Liberty to frequent a Port, to go a-shore, buy and sell, &c. We could never have any *Pratique* with the Inhabitants of *Nova Zembla*.

The Word is *French*, and signifies, literally, Practice.

*PRATIQUE* is particularly used for a Licence to traffic, granted to the Master of a Ship in the Ports of *Italy*, upon a Bill of Health; that is, a Certificate that the Place whence he came is not annoy'd with any infectious Disease.

*PRAXÆANS*, a Sect of Heretics, so call'd from their Author *Praxeas*.

This Heresiarch was of *Asia*, and lived in the second Century. He was at first a Disciple of *Montanus*, but quitted him, and soon after set up a Sect of his own; teaching, that there was no Plurality of Persons in the God-head; and that it was the Father himself that suffer'd on the Cross. Which Sentiment was afterwards adopted by the Monarchics, Sabellians, and Patripassians. See *SABELLIAN*, *PATRIPASSIAN*, &c.

*PRAYER*, in Theology, a Petition put up to God, either for the obtaining of some future Favour, or the returning of Thanks for a past one.

Divines distinguish three kinds of Prayer; *Vocal*, which is cloth'd in Words and Sounds to be utter'd with the Mouth; *Mental*, which is only form'd or conceiv'd in the Mind, and not deliver'd in Words; and *Ejaculatory*, which is a short, sudden flight without Study, Order, or Method. See *VOCAL*, *MENTAL*, &c.

The Mystic Divines, again, distinguish Prayer into *Active* and *Passive*. See *ACTIVE* and *PASSIVE*.

Among us, Prayer is frequently consider'd under the divisions of *Preconceiv'd* and *Extemporary*. Under the first come all set Forms, whether public or private, by which the Mind is directed in the Order, Manner, Expression, &c. of its Petitions. The second is that where the Mind is left to itself, its own Conduct, both as to Matter, Manner, Words, &c.

Common PRAYER, see *LITURGY*.

The *Romanists* also prefer Prayers to Saints, the Virgin, the Angel *Gabriel*, &c. See *SAINT*, *OFFICE*, *Ave Mary*, &c.

*PREACHING*, in Theology, the Declaration, or Promulgation of the Word of God, in public; by a Person authorized, and in a Place destined, for that purpose. See *SERMON*, *PRIEST*, *GOSPEL*, &c.

Antiently, none but Bishops were allow'd to preach. Now, not only Priests, but Deacons are qualify'd. See *BISHOP* and *DEACON*.

Bishop *Wilkins* has deliver'd the *Art of Preaching* in a Treatise call'd *Ecclesiastes*, or the Preacher. See *ECCLASIASTES*.

The Word is derived from the *Hebrew*, *Parashah*, *exposition*, he expounded.

The Religious of the Order of *St. Dominic* assume the Quality of *Preaching-Brothers*, Friars-predicant or predicants. See *DOMINICAN*.

*PREADAMITE*, *Præadamita*, a Term given to the Inhabitants of the Earth conceived, by some People, to have lived before *Adam*.

*Isaac de la Percyra* in 1655, published a Book to revive the Reality of *Præadamites*, by which he gain'd a considerable number of Profelytes to the Opinion; but the Answer of *Demarets*, Professor of Theology at *Groningen*, published the Year following, put a stop to its Progress, tho' *Percyra* made a Reply.

His System was this: The *Jews* he calls *Adamites*, and supposes 'em to have issued from *Adam*; and gives the Title *Præadamites* to the *Gentiles*, whom he supposes to have been a long time before *Adam*.

But this being expressly contrary to the first Words of *Genesis*, *Percyra* had recourse to the fabulous Antiquities of the *Egyptians* and *Chaldeans*, and to some idle Rabbins, who imagined there had been another World before that described by *Moses*.



He was apprehended by the Inquisitors in *Flanders*; and very roughly used; tho' in the Service of the *Dauphin*. But he appealed from their Sentence to *Rome*; whither he went in the time of *Alexander VII.* and where he printed a Retraction of his Book of *Preadamites*.

**PREAMBLE**, in Law, the beginning of an Act of Parliament, &c. serving, as it were, for a Key, to open the Intent of the Makers of the Acts, and the Mischiefs designed to be prevented or remedied thereby. See **ACT**.

**PREBEND**, *Præbenda*, the Portion a Prebendary receives out of the Estate of a Cathedral, or Collegiate Church. See **PREBENDARY**.

The Term *Præbend* is usually confounded with *Canonicate*, *Canonate*, or *Canonica*; yet there is a real difference. A *Præbend* is properly a Right which an Ecclesiastic has in a Cathedral or Collegiate Church where he officiates, to receive certain Ecclesiastical Revenues, and to enjoy certain Dues, either in Money or in kind; (so call'd à *Præbendo*, q. d. *afforded*, or *allowed* him; not à *Præbendo Auxilium*, or *Concilium Episcopo*) whereas a *Canonica* is a mere Title, or spiritual Quality, which a Person enjoys independent of any *Præstation*, or any temporal Revenue: So that the *Præbend* may subsist without the *Canonicate*; but the *Canonicate* is inseparable from the *Præbend*.

For it is not to the *Præbend* that the Right of Suffrage, and other spiritual Rights are annexed, but to the *Canonicate*; and when the *Præbend* is join'd to the *Canonicate*, it becomes spiritual by virtue of the *Canonicate* to which it is attach'd. See **CANONICA**.

Antiently the Pope created Canons with a Right of taking place in the Choir, a deliberative Voice in the Chapter, and an expectation of the first *Præbend* that should become vacant: But this was prohibited by the Council of *Trent*. Yet the Pope still confers the *Canonicate* without any *Præbend*, when he would confer a Dignity in a Church, for the obtaining whereof, 'tis required the Candidate be a Canon.

This they call a *Canonicate ad effectum*, and sometimes *ius ventosum*, which is no more than an empty Title confer'd purely to qualify a Man for a Dignity affected to the Capacity of Canon.

In some Churches there are *double Præbends*; and in others *Semi-Præbends*.

Originally the *Præbend* was only a Livery, or Portion of things necessary to Life, given daily; at present the Rents and Profits of the Church are divided into fixed Portions, call'd *Præbends*, which are enjoy'd independently. The nomination to *Præbends* is in the King. In *France* 'tis one of the honorary Rights of the King, on his joyful Accession to the Crown, to nominate to the first *Præbends* vacant by death in the Cathedral and Collegiate Churches.

*Præbends* are either *Simple*, or with *Dignity*: The latter are such, as, beside their *Præbends*, have some Jurisdiction annexed to 'em.

*Theological*, or *Divinity Præbend*, is a *Præbend* affected to a Doctor in Divinity, in each Cathedral and Collegiate Church throughout *France*, for preaching on Sundays, and making a public Lecture thrice a Week.

*Preceptorial Præbend*, a *Præbend*, the Revenues whereof are destined for the Support of a Preceptor or Master, who is obliged to instruct the Youth of the Place *gratis*. The *Canonicate* is not here necessary to the *Præbend*.

*Panormus* observes, that in the Cathedral-Church of *Chartres*, there are *Præbends* reserv'd to Laymen, and for the Subsistence of some Persons of Birth and Distinction.

**PREBENDARY**, an Ecclesiastic, who enjoys a *Præbend*. See **PREBEND**.

*Præbendaries*, and Canons of Cathedral and Collegiate Churches, have this in common, that they have each a Portion of the Revenues of the Church for their Subsistence; the one under the Title of *Præbenda*, *Præbend*; the other under the Title of *Canonica*, or *Canonicate*; and have each Places, and Voices in the Chapter: But they differ in this, that the former receives his Portion or *Præbend* in Consideration of his officiating and serving in the Church; but the latter without any such Consideration, merely by his being received into the Cathedral or College, *per assignatum stallum in Choro, & locum in Capitulo*. See **CANON**, &c.

**Golden PREBENDARY** of *Hereford*, call'd also *Præbendarius Episcopi*, is one of the twenty-eight minor *Præbendaries*, who has, *ex officio*, the first Canon's Place that falls.

He was antiently Confessor of the Bishop and Cathedral, and had the Altarages; on which account he was call'd the *Golden Præbendary*.

**PRECARIÆ**, or *Preces*, in our antient Law-Books, Day's-works, which the Tenants of certain Manors are bound to give their Lords, in Harvest-time; and which, in some places, are corruptly call'd *Bind-days*, for *Biden-days*, from the Saxon, *Bidan*, to pray.

*Baldwinus una bovata pro ii s. & dimid. & ii Gallinas & xx ova & iii Precarias in Autumno; uno cum homine, in arare, &c.* *Monast. Angl.*

*Magna Precaria*, was a great or general Reaping-day. The Lord of the Manor of *Harrow* in *Middlesex* had, 21 *Rich. 2.* a Custom, that by Summons of his Bailiff on a general Reap-day, then call'd *Magna Precaria*, the Tenants should do one hundred ninety-nine days Work for him; every Tenant that had a Chimney sending a Man.

**PRECARIOUS**, in Commerce, is properly a kind of Trade carried on between two Nations at War, by the Intervention of a third at Peace with 'em both.

Thus the *English* hold a *precarious* Commerce with the *Spaniards* by means of the *Portuguese*; when the two former Nations being at War, the third lends its Vessels, its Colours, and Name, to continue their Trade.

**PRECARIOUS**, in Jurisprudence, a Term used for a Fund or Stock, whereof a Person has not the full Propriety, whereof he cannot dispose absolutely, and which is moit of it borrow'd.

**PRECE Partium**, in Law, the Continuance of a Suit by consent of both Parties.

**PRECEDENCE**, **PRECEDENCY**, *Rank*, a Place of Honour, which a Person is entitled to in Companies; either for sitting or walking.

*Precedence* is either of *Courtesy*, or of Right, *de jure*.

The former is that due to Age, to Estate, &c. which is regulated by Custom and Civility; the latter is settled by Authority, and where broke in upon, gives an Action at Law. See **NOBILITY**.

The Point of *Precedency* is thus ordered by the Heralds.

After the King, the Princes of the Blood, *viz.* the Sons, Grandsons, Brothers, and Nephews of the King take place; then the Great Officers of the Church and Crown, *viz.* the ABp of *Canterbury*, then the Lord Chancellor, or Lord Keeper of the Great Seal; next the ABp of *York*; the Lord High Treasurer; the Lord President of the Privy Council; the Lord Privy-Seal: Next, Dukes, then Marquesses, Dukes eldest Sons, Earls, Marquesses eldest Sons, Dukes younger Sons, Viscounts, Earls eldest Sons, Marquesses younger Sons, Bishops, Barons, Viscounts eldest Sons, Earls younger Sons, Barons eldest Sons, Privy-Counsellors, Judges, Masters in Chancery, Viscounts younger Sons, Barons younger Sons, Knights Bannerets, Baronets, Knights of the Bath, Knights Batchelors, Colonels, Sergeants at Law, Doctors, Esquires, Lieutenant-Colonels, Majors, Captains, Batchelors of Divinity, Law, &c. Masters of Arts, Gentlemen, Yeomen, Tradesmen, Mechanicks.

*Note*, That great Officers of Court, of what degree soever they are, take place above all others of the same Degree or Order of Nobility; *viz.* the Master of the Horse, Lord Great Chamberlain of *England*, Lord High Constable of *England*, Lord Marshal of *England*, Lord Admiral of *England*, Lord Steward, and Lord Chamberlain of his Majesty's Household.

So the Secretaries of State, if Peers, take place of all of that Degree, except the Great Officers aforesaid.

Dukes, Marquesses, Earls, Barons, &c. not having any of the said Offices, take place according to the Seniority of their Creation.

The Ladies take place, or *Precedency*, according to the Degree of Quality of their Husbands.

**PRECEDENT**, in Law, an original, authentic Instrument, or Writing; serving as a Form to draw others by. See **ORIGINAL**, &c.

Hence *Precedent Books*, &c. full of Draughts of Deeds, Conveyances, &c. for Attorneys.

**PRECENTOR**, or **PRÆCENTOR**, a Dignitary in Cathedral Churches, popularly call'd the *Chanter*, or *Master of the Choir*. See **CHANTER**.

The *Præcentor* is so call'd, from the *Latin præ*, and *canto*; because he is supposed to lead the Choir, and sing before the rest.

**PRECEPT**, in Law, a Command in Writing, sent by a Chief Justice, Justice of Peace, or other like Officer, for the bringing of a Person, Records, or other Matters, before him.

**PRECEPT** is also used for the Command, or Incitement, whereby one Man stirs up another to commit Felony, Theft, &c. *Braeton, lib. 3. Tract. 2. cap. 19.* whence we may observe three Diversities of offending in Murder; *Preception*, *Fortia*, *Concilium*.

*Preception*, is the Intigation used before-hand; *Fortia*, the Assistance in the Fact; *Concilium*, the Advice either before or after. See **MURDER**.

**PRECESSION**, **PRÆCESSION**, in Astronomy, a Term apply'd to the Equinoxes, which, by a very slow insensible Motion, change their place; going backwards, or westward, *i. e.* in *antecedentia* as the Astronomers call it, or contrary to the Order of the Signs. See **EQUINOX**.

It is shewn, in the new Astronomy, that the Pole, the Solstices, the Equinoxes, and all the other Points of the Ecliptic, have a retrograde Motion; and are continually moving from East to West, or from *Aries* towards *Pisces*, &c. by means whereof, the Equinoctial Points are carry'd further



further and further back, among the preceding Signs of Stars; at the rate of about 50 Seconds each Year: which retrograde Motion is call'd the *Precession, Recession, or Retrocession of the Equinoxes*.

Hence, as the fixed Stars remain immovable, and the Equinoxes go backward; the Stars will seem to move more and more Eastward with respect thereto; whence the Longitudes of the Stars, which are reckon'd from the first Point of *Aries*, or the Vernal Equinox, are continually increasing. See *LONGITUDE* and *STAR*.

Hence it is that the Constellations have all chang'd the Places assign'd them by the antient Astronomers: In the Time of *Hipparchus* and the oldest Astronomers, the Equinoctial Points were fix'd to the first Stars of *Aries* and *Libra*; but the Signs are now no longer in the same Points; and the Stars which were then in Conjunction with the Sun when he was in the Equinox, are now a whole Sign, or 30 Degrees, to the East thereof: Thus the first Star of *Aries*, is now in the Portion of the Ecliptic call'd *Taurus*; and the first Star of *Taurus* now resides in *Gemini*; and *Gemini* is advanced into *Cancer*, &c. See *SIGN* and *CONSTELLATION*.

The Equinoxes will have made their Revolution Westward, and will be return'd to *Aries* again; or the Constellations will have made theirs Eastward, and will again fall into their former places, with regard to the Equinoxes, in 25816 Years, according to *Tycho*; in 25920, according to *Ricciolus*; and in 24800, according to *Cassini*.

The Antients, and even some among the Moderns, have taken the Equinoxes to be immoveable; and ascribed that Change of Distance of the Stars here-from, to a real Motion of the Orb of the fixed Stars; which they suppose to have a slow Revolution about the Poles of the Ecliptic: so as that all the Stars perform their Circuits in the Ecliptic, or its Parallels, in the space of 25920 Years; after which, they should all return again to their former places.

This Period the Antients call'd the *Platonic, or great Year*; and imagin'd that at its Completion, every thing would begin again as at first: and all things come round in the same Order they have already done. See *PLATONIC YEAR*.

The Physical Cause of the *Precession* of the Equinoxes, Sir *Isaac Newton* demonstrates, does arise from the broad spheroidal Figure of the Earth; which again arises from the Earth's Rotation a-round its Axis. See *EARTH*.

**PRECIOUS**, or **PREVIOUS** *Storze*, call'd also *Gemz*, and *Jewel*, is a Stone extraordinarily hard, durable, transparent, and of a beautiful Colour, or Water. See *STONE* and *GEM*.

Of these we may distinguish three Kinds: 1°. Such as are entirely transparent; which again may be divided into such as are either colour-less, as the *Diamond*; or colour'd, as the *Emerald*: Which Division of colour'd Gems may be subdivided into those of one Colour, as the *Ruby*; and those with several, as the *Amethyst*. 2°. Brilliant, or shining, as the *Bohemian Granate*. 3°. Semi-transparent, as *Opal*.

Bishop *Wilkins* divides *precious Stones* into *more* and *less transparent*. The *less transparent* he distinguishes by their Colours: into red, as the *Sardius* and *Cornelian*; pale, fleshy Colour, like that of a Man's Nail, as the *Onyx*; blueish, as the *Turquois*; pale purple, as the *Chalcedony*; and those of various Colours, as *Opal* and *Car's Eye*.

The *more transparent* he distinguishes into such as are colourless, as the *Diamond* and white *Saphir*; and colour'd, which are either red, as the *Ruby*, *Carbuncle*, and *Granate*; yellow, as the *Chrysolite*, and *Topaz*; green, as the *Emerald*, *Smaragd*, and *Beryl*; blueish, as the *Saphir*; and purple or violaceous, as the *Amethyst* and *Hyacinth*.

Dr. *Woodward* divides *precious Stones* somewhat more precisely, into *opaque*, *semi-opaque*, and *transparent*. Again, 1st, the *opaque* are either of one Colour, as the *Turquois*; or of various Colours, as *Lazuli* and *Jasper*. 2d, *Semi-opaque*, either have their Colours *permanent*, as the *Agat*, *Chalcedony*, *Onyx*, *Sardonix*, *Cornelian*, and *Beryl*; or their Colours *vary*, according to the Position of the Light, as the *Oculus Cati*, and *Opal*. 3d, *Transparent Stones* are either *with Colours*; as the *Topaz* and *Jacinth*, yellow, or partaking thereof; *Granate*, *Ruby* and *Amethyst*, red; *Saphire*, *Water Saphire*, and *Aquemarine*, blue; and *Emerald*, or *Chrysolite*, green, or partaking thereof: or *without Colours*, as the *Crystal*, *Pseudo-Diamond*, white *Saphire*, and *Diamond*.

The natural History, Characters, Properties, &c. of each Stone; see under its proper Article: *DIAMOND*, *CORNELIAN*, *RUBY*, *TURQUOIS*, *ONYX*, *EMERALD*, *CHRYSO-LITE*, &c.

The Medicinal Virtues of *precious Stones*, or *Gems*, in the general; see under *GUM*.

The Origin and Formation of *precious Stones*, see under *STONE*.

For the Art of engraving on precious Stones, see *ENGRAVING*.

The Art of cutting them, see under *LAPIDARY*.

**PRECIPE**, or **PRÆCIPE** *quod reddat*, a Writ of great Diversity, both as to Form and Use. See *ENTRY* and *INGRESSUS*.

It extends as well to a Writ of Right, as to other Writs of Entry and Possession; and is sometimes call'd a *Writ of Right, close*, as when it issues out of the Court of Chancery; close; sometimes a *Writ of Right, patent*, as when it issues out of Chancery, patent or open, to any Lord's Court, for any of his Tenants deforced, against his Deforcer. See *RIGHT*.

**PRECIPITANT**, in Chymistry, a Term apply'd to any Liquor which, being pour'd on a Dissolution, separates what is there dissolved, and makes it *precipitate*, i. e. fall to the bottom of the Vessel. See *DISSOLUTION*.

Thus Oil of Tartar, and the Volatile Spirit of Sal Armoniac, are *Precipitants*, with regard to the Dissolution of Gold in *Aqua Regalis*; and common Water is a *Precipitant*, with regard to the Dissolution of Jalap in Spirit of Wine. See *PRECIPITATION*.

**PRECIPITANT**, is also used in Medicine, for a Remedy which separates and precipitates any heterogeneous Matter contain'd in the Mass of the Blood; and by this means abates any irregular Fermentations, Effervescences, or the like Disorders, which that Matter had excited.

Among the Number of *Precipitants*, are rank'd Harts-Horn, Crabs-Eyes, Ivory, Bezoard, Barks of Oak, and Guaiacum, Iron, Quinquina, Chalk, &c.

**PRECIPITATE**, in Chymistry, a Substance which having been dissolved in a proper Menstruum, is again separated from its Dissolvent, and thrown down to the bottom of the Vessel, by the pouring in of some other Liquor. See *PRECIPITANT*.

The Chymists make various *Precipitates* of Mercury, which are of various Colours, as the *Precipitants* vary; viz. *White, Red, Yellow, Green*, &c. See *MERCURY*.

The *white Precipitate*, is prepared of Mercury dissolved in Spirit of Nitre, and precipitated with Salt-Water, or Spirit of Salt, into a white Powder.

If in lieu of the former *Precipitants*, hot Urine be pour'd on the Dissolution, we have a *pale Rose-Colour*.

To make the *red Precipitate*, they take the Dissolution of Mercury made in Spirit of Nitre, evaporate all the Humidity over a gentle Fire, till nothing remains but a white Mass; which by increasing the Fire, they rubify or raise to a red Colour. — *Green Precipitate* is made with Mercury, Copper, and acid Spirits — *Yellow Precipitate* with Mercury, and Oil of Vitriol: But these three last are improperly call'd *Precipitates*; because not procured by Precipitation. See *PRECIPITATION*.

**PRECIPITATION**, an Operation in Chymistry, being a kind of Separation, whereby a Body dissolv'd in any Liquor, is detach'd there-from, and falls down to the bottom of the Vessel. See *OPERATION*.

*Precipitation* is either *Spontaneous* or *Artificial*.

*Spontaneous Precipitation*, is when the Particles of the dissolved Body, separate of themselves from their Dissolvent.

*Artificial Precipitation*, is when some other Body, call'd a *Precipitant*, is added to procure this Separation. See *PRECIPITANT*.

There is also a *total Precipitation*, wherein the dissolved Parts are all separated, and sunk to the bottom; and a *partial Precipitation*, wherein the Parts dissolv'd are still suspended in the Fluid; and don't fall down.

Theory of **PRECIPITATION**.

To account for the Operation of *Precipitation*: It may be observ'd, that a fluid Menstruum may be made to sustain a Body specifically heavier than itself, either by making the Resistance, arising from the Cohesion of the Parts of the Fluid, equal to the Excess of specific Gravity of those Bodies above that of the Menstruum. See *MENSTRUUM*.

Or, by the heavy Body's being join'd to some lighter one; so that the two together only make one whole, equal in weight to the Fluid.

In the first case, the Resistance, we know, is still proportional to the Surface of the Corpuscles; so that the Surface being diminish'd, the Resistance is weaken'd: the Proportion therefore of the Tenacity of the Menstruum, to the Gravity of the Corpuscles being thus destroy'd, a *Precipitation* must ensue.

*Precipitation*, then, may be effected two ways, on this Foundation; viz. either by the dropping in a Liquor specifically lighter, or specifically heavier; in the former Case, the Gravity of the Menstruum, which is always proportional to the compound Gravities of both, will by this Mixture come lighter: Thus, the Menstruum being diluted, the



of Cohesion is also weaken'd, so as to become unable any longer to sustain the Bodies; so Hydrometers, which are easily sustain'd in Water, upon pouring in a good deal of any burning Spirits sink to the bottom of the Glass.

And this agrees not only with the Laws of Mechanics, but with Experiments: Thus Spirit of Sal Armoniac does very plentifully precipitate the Filings of Metals, dissolved in acid Menstruums; tho' it be abundantly lighter than any of them.

The same thing is done quicker by Spirit of Wine, whose Gravity is known to be almost the least of any Liquor.

By this Spirit also, all Salts, which are suspended in Water, are precipitated, and so unite into Crystals. So if you drop in distilled Vinegar, the Dross of Antimony dissolved in Water, it falls to the bottom, and affords the Golden Sulphur.

After the same manner, Water, Vinegar, &c. make a Precipitation from Acids, tho' more sparingly: Nay, Acids themselves being pour'd upon others which are heavier, will precipitate whatever is swimming in them. Thus Spirit of Salt precipitates either Lead, Copper, or Tin, dissolved in Oil of Vitriol: so little need is there of Alkalies in this Business, tho' the Chymists have unanimously contended for them as absolutely necessary.

In the 2d Case, Precipitation will succeed by the Addition of a heavier Liquor to the Menstruum. For the Particles of this Liquor, what with their Weight, and what with the Impetus they acquire in their Descent, carry down and sink all the solid Corpuscles they meet with in their way; so that the Corpuscles being thus forced down, and kept there by this adventitious Liquor, cannot mount up into their former Situation.

To try the Truth of this Reasoning by Experiments; not only acid Spirits, but even mere Water, will be found to precipitate Tinctures of Vegetables extracted by Spirit of Wine: And the very same Tinctures, extracted with Water, or Wine, are precipitated very copiously by acid Spirits, which are heavier.

Metals, when dissolved in Spirit of Sal Armoniac, are precipitated with Oil of Vitriol, or Spirit of Nitre. When suspended in *Aqua Fortis*, they are precipitated with Oil of Vitriol, or Bezoartic Spirit of Nitre.

As to Bodies suspended by means of their Union with other lighter ones: This is properly the Case of dissolved Metals; and to this may the last Case of Precipitation be reduced. Here, the Particles of a Metal being separated by a Dissolvent, and rendred imperceptible by their extreme Littleness, only float, because united to very light Particles of the acid Spirit, which keeps them suspended: Tho' the great Surface they have, both on account of their Smallness, and of their Union with the Acids, frequently contribute to the Effect.

Now, as they are in a forced Equilibrium with the Fluid wherein they swim; and as the Causes that sustain them, are only accidental; they must of course be precipitated to the bottom, when the Acid or Menstruum abandons them; from whatever Cause it be: It is even sometimes sufficient, that the Quantity of the Fluid, wherein they are sustain'd, be diminish'd. For then, several of the Metallic Particles, tho' still join'd to their Acid, coming to meet, and unite, assume a smaller Surface, with regard to their Mass; thus, being no longer held up by the Largeness of their Surfaces, they subside to the bottom.

When the Menstruum abandons a dissolved Body; if that Body be lighter than the Menstruum, the contrary to a Precipitation will ensue, i.e. the Body will rise: Thus Camphor being mixed in Oil of Olives, and the whole dissolved, the Camphor rises first, &c.

If it happen that the Particles, when abandon'd by the Dissolvent, are equally heavy with the sustaining Fluid; they will neither rise nor fall; only several of them now re-uniting, form little Masses, sufficient to spoil the Limpidness and Transparency of the Fluid; as is the Case in Resins dissolved in Spirit of Wine, and Water pour'd over them: where the Water uniting closely with the Spirit of Wine, makes it let go the greatest part of the resinous Particles.

Thus is effected what we call an *Imperfect Precipitation*; which, in reality, is no more than a Disposition to precipitate.

If in this Case, the Aqueous Particles of the Fluid be hid, and as it were, absorb'd among the gross *Molecules* of the dissolved Matter; it forms what they call a *Coagulum*. See COAGULATION.

Sometimes, when the Liquors are pour'd on one another, the Salts with which they abound, being put into Motion, by their attractive Force, they run mutually to embrace one another; and because they don't recoil far back after the Congress, they are at length so united, as to become like a Solid, there being very little Phlegm remaining, as is very observable in *Tartarum Vitriolatum*.

In these Experiments there happens such a Conflict and Effervescence, as evaporates almost all the Moisture, with which the Salts are diluted. And upon this depends the Rationale of Chymical Coagulation, a thing of very great consequence in the Business of Precipitation. Nor can we account for Oil of Tartar's precipitating Bodies dissolv'd in Acids, any otherwise than from its making a kind of *Coagulum* with these Corpuscles, and thereby becoming too heavy for, and exceeding the Tenacity of, the Menstruum.

Such are the general Principles of Precipitation.

PRECEPTORY, PRÆCEPTORIA, or *Commandry*, a kind of Benefice held by the more Eminent among the antient Knights-Templars; who were created by the Grand-Master, with the Title of *Præceptores Templi*, i.e. *Masters of the Temple*. See TEMPLAR.

*Stephens de Jurisd. lib. 4.* says, the *Præceptories* were only a kind of Cells, all subordinate to their principal Mansion, the *Temple in London*. See TEMPLE.

Of these *Præceptories*, *Dugdale* says, he finds sixteen recorded, as antiently belonging to the Templars in *England*; viz. *Crossing Temple, Balsal, Shangey, Newland, Teveland, Witham, Temple-Bruere, Willington, Rotheley, Ovenington, Temple Comb, Trebigh, Ribstane, Mount St. John, Temple-Newsum, and Temple-Hurst*. But there were more. See COMMANDRY.

PRECIPUT, in Jurisprudence, an Advantage belonging to any one, in a thing to be divided; or a Portion taken off, and set by, in his favour, e'er the Division be made.

In noble Partition, the Eldest has always the principal Fief, or Mannor, for his *Preciput*.

The *Preciput* coincides with the Right of Primogeniture. See PRIMOGENITURE.

The Word is form'd from the *Latin Præcipuus*, Chief, Principal.

PRECISION, PRÆCISIO, in the Schools, the same with *Abstraction*. See ABSTRACTION.

PRECONISATION, a Proposition or Declaration, which the Cardinal Patron makes in the Consistory at *Rome*, of a Person nominated by some Prince to a Prelature; by virtue of Letters, whereof he is the Bearer: which the Pope complying with, gives his Collation.

The Date of the Bulls is dispatch'd on the same Day with the *Preconisation*.

PRECONTRACT, a Contract made before, or prior to another; chiefly used in relation to Marriages. See CONTRACT.

PRECURSOR, PRÆCURSOR, *Fore-runner*, in Theology, a Person who goes before any one to notify his coming.

The Term is peculiarly apply'd to *St. John Baptist*, who is stiled the *Precursor* of Jesus Christ, from what is said of him by *St. Luke*, *Thou, Child, shalt go before the face of the Lord, to prepare his way*.

PREDECESSOR, a Person who has preceded another in the same Office, or Employ.

PREDESTINARIAN, a Person who adheres to the Doctrine of absolute Predestination. See PREDESTINATION.

*St. Augustin* is look'd on as the Founder of the Sect of *Predestinarians*; he being the first of the Fathers that seems to have asserted the Doctrine in such express Terms; tho' the Jansenists and Jesuits are still greatly divided about the real Doctrine of *St. Augustin*, in this Article; each interpreting him consistently with their own Scheme. See JANSENIST, &c.

Father *Sirmond* contends for an antient Sect of *Predestinarians*, cotemporary with *St. Augustin* himself, and who had their Rise in *Africa*, in the Monastery of *Asdrumet*; from a Misunderstanding of *St. Augustine's* Doctrine. 'Tis added, that the Opinion spread thence throughout the *Gauls*; where one of them, a Priest named *Lucidus*, was condemn'd by *Jansius* Bishop of *Rhegio*; and his Sentence confirm'd by two Councils.

The Doctrine was again broach'd in the ninth Century by *Godeschalcus* a *Benedictine*; who, as *Hilmar* in a Letter to Pope *Nicholas*, says, maintain'd with the antient *Predestinarians* who had been already anathematized, that God predestinated some to eternal Life, and others to eternal Death; that God did not will all People to be saved; that Jesus Christ did not die for all, but only the Elect or those that are saved, &c. See GRACE, &c.

This Doctrine was again condemn'd in a Synod held at *Mentz*: But the *Jansenists*, particularly the Friends of *Mess. de Port-Royal*, and among the rest, the President *Manquyn*, have refused *F. Sirmond*; and shewn, that the Heresy of the *Predestinarians* is a mere Chimæra; adding, that *S. Fulgentius*, *S. Prosper*, and the other Disciples of *S. Augustin*, only look'd on it as an imaginary Heresy, invented by the Enemies of *S. Augustine's* Doctrine, to traduce it. In effect, the chief Evidence Father *Sirmond* produces to the contrary, is the Priests of *Marseilles*, who



are suspected of *Semi-Pelagianism*. See SEMI-PELAGIAN.

**PREDESTINATION**, in Theology, a Judgment, or Decree of God, whereby he has resolved, from all Eternity, to save a certain Number of Persons, hence named *Elect*. See ELECT.

Other Divines define *Predestination*, a Decree to give Faith in Jesus Christ, to a certain Number of Men; and to leave the rest to their own Malice, and Hardness of Heart. See DECREE.

The Remonstrants define it more laxly, and generally, the Decree of saving Believers, and damning Unbelievers. See REMONSTRANTS.

The Difficulties wherewith the modern Theology is clogg'd, turn on the Article of *Predestination*; both the *Romish* and Reformed Churches are divided about it: The *Lutherans* speak of it with Horrour; the *Calvinists* contend for it with the greatest Zeal; the *Molinists* and *Jesuits* preach it down as a most dangerous Doctrine; the *Jansenists* assert it as an Article of Faith: The *Arminians*, *Remonstrants*, and *Pelagians*, are all avowed Enemies of *Predestination*. See ARMINIAN, JANSENIST, MOLINIST, JESUIT, PELAGIAN, &c.

Those strenuous Patrons of *Jansenism*, the *Port-Royalists*, teach, that God predestinates those who he foresees will co-operate with his Grace to the End. *Du Pin* adds, that Men don't fall into Sin, because not predestinated; but they are not predestinated, because God foresaw their Sins. See ELECTION, REPROBATION, &c.

**PREDESTINATION**, is also used for a Concatenation of second Causes, appointed by Providence; in virtue whereof, things are brought to pass by a fatal Necessity; contrary to all appearances, and maugre all opposition. See FATE and DESTINY.

The *Turks* are great *Predestinarians*; they esteem the lightest Accident predetermin'd; and on this account, are much more daring in Battel, and run greater risques of their Lives, than they would otherwise do. See MAHOMETANS.

**PREDETERMINATION**, in Philosophy and Theology. The Schoolmen call that Concurrence of God, which makes Men act, and determines them in all their Actions, both Good and Evil, *Physical Predetermination*, or *Premotion*. See PREMOTION.

Divines hold, that God has no part in Sin; inasmuch as he only affords his Concurrence to the *physical* part of human Actions, not to the *moral* part. See LIBERTY and NECESSITY.

*Physical Determination*, or *Premotion*, if there be any such thing, is that Action of God, whereby he excites a second Cause to act; or by which, antecedently to all Operation of the Creature, or before it could operate in consequence either of the Order of Nature or Reason, he really and effectually moves, and occasions it to produce all its Actions: that is, whatever the Creature does, or acts, is really done, and acted, by the Agency of God on the Creature, who is all the time passive. So that without such *Predetermination* of God, all Creatures must remain in an eternal State of Inactivity; and with such *Predetermination*, it is impossible but they should do what they are thus put upon doing.

'Tis strongly controverted, whether or no such a *Physical Predetermination* be necessary to the Action of Natural Causes. The *Scotists* maintain the Negative; urging, that all Natural Causes are, of their own Nature, determin'd to a certain Action; whence it should seem needless to call in a new *Predetermination* of God, e. gr. to Fire, to make it warm the hand. For if an Object be, by the Course of Divine Providence, apply'd to Fire; what need a second Application of the Fire, to make it warm the Object apply'd thereto? since Beings are not to be multiply'd unnecessarily. See CAUSE.

And such *Predetermination* some Philosophers hold still less requisite to produce the Acts of the Will: At least, say they, the human Mind must be allow'd the common Power and Privilege of a second Cause; and therefore be entitled to produce its own Acts, as well as other strictly natural Agents.

The *Thomists*, on the other hand, stand up strenuously for the *Physical Predetermination*: One of their principal Arguments is drawn from the Subordination of second Causes to the first. Where there are several subordinate Agents, say they, the lower Agents do not act, unless first moved and determined thereto by the first; this being the very Essence of Subordination.

Again, the like they argue from the Dominion of God over all his Creatures: 'Tis of the Essence of Dominion, say they, to apply and direct Things subject thereto, to its own Operations; and this, if the Dominion be only moral, morally; but if it be also physical, physically. And that this is the Case in respect of God, and his Creatures, is confess'd. See GOD.

**PREDIAL Tithes**, are Tithes paid of Things, which grow from the Ground only; as *Corn, Hay, Fruit, &c.* See TITHES.

**PREDICABLE**, **PREDICABLE**, in Logic, a general Quality, or an Epithet which may be *predicated* of, or applied to several Subjects. Thus Animal is *predicable* both of Man and Beast: Man is *predicable* of Peter, and James: Triangle is *predicable* of an hundred different Kinds of Figures; as right Angles, Scalenes, Isosceles's, &c. See PREDICATE.

The Schoolmen reduce the *Predicables* to five Classes, viz. *Genus, Species, Proprium, Differentia*, and *Accidens*; under one or other of which, all that can be *predicated* of any Subject, is included. See GENUS, SPECIES, PROPRIUM, &c.

A *Predicable* is also call'd an *Universal Logicum*, as having respect to other particular, and interior, or subject Things: Thus Animal is an *Universal*, with regard to Man and Beast.

'Tis call'd a *Logical Universal*, to distinguish it from a *Metaphysical* one; which is a common Being, consider'd in itself, and therefore denominated universal in *Essentia*; whereas the Logical one is only universal as to our Conception and Application. See UNIVERSAL.

Among the Schoolmen, *Predicable* is usually defined *unum, aptum Predicari de multis, univoce, & divisim*; or, somewhat more clearly, a *Predicable* is a Nature which may be predicated univocally of all things to which it is common; and which, as it is dividually multiply'd in all its Subordinates, may be aptly predicated of them all.

Thus, when the Appellation of *Virtue* is attributed to Justice, Prudence, Temperance, Fortitude, Charity, &c. the same Reason may be given why each is distinguish'd by such Name; as being all founded in a Mediocrity, and being agreeable to right Reason, which is the Character of Virtue.

Hence, if there be several things call'd by some common Name; but the Reason of such Name is not the same in all, but different; these do not come under the Number of *Predicables*. As in the Instance, *Canis*, Dog, which is both apply'd to a Domestic Animal, distinguish'd by its barking; to a Constellation of the Heavens; and to a Sea-Fish.

The way by which the Mind comes to form such *Predicables*, or *Universals*, is thus: Among those things which fall under our Observation, we find some Characters and Properties common to several; and others peculiar to each: What we find common, we consider a-part; and thus form an Universal equally applicable to all. See GENERAL.

**PREDICABLY**, **PREDICABILITER**, is used in the Schools in opposition to *predicamentally*. Thus, Matter is said to be united to Form *predicably*, or *per accidens*; to exclude the Notion of a predicamental Accident.

**PREDICAMENT**, **PREDICAMENTUM**, in Logic, a Class, or Order of Beings, or Substances rang'd according to their Natures; call'd also *Category*, or rather *Categoria*. See CATEGORY.

The Word *Predicamentum* was first introduced by *Boethius*, in lieu of the Greek *Categoria*; and is used among the School-Writers with a good deal of Latitude and Variety: For it either signifies the Act of *predicating*; or, a common *Predicate* itself; or, the Genus or Basis of any *Category*; or, the Collection of several common Predicates disposed in a certain Order. Which last is its most usual Acceptation.

Hence some define it a Series of Predicates drawn from the Genus, or highest Term, thro' all the inferior Genera, and Species. Thus, a Series of *Substance* drawn from *Substance* thro' *Body, Living, Animal, Man*, to *Peter*, is call'd the *Predicament* of Substance.

But the usual Definition of *Predicament* among Logicians, is, That it is a natural Order, or Scheme, of some most general or universal Thing, and all that is contain'd under the same, that is, all the subordinate Genera, Species, and Individuals.

The Properties of a *Predicament*, *ex parte vocis*, i. e. of the Term, or Word whereby the *Predicament* or *predicamental* Series is denoted, the Logicians hold, are, that it be one, simple, precise, and concinnous.

*Vox una, & simplex, rebus concinna locandis.*

The Conditions requisite *ex parte rei*, or of the Thing to be ranged in a *Predicament*, are contain'd in the following Verse:

*Entia per se, Finita, Realia, tota.*

i. e. it must be a *positive Being*, in exclusion of Non-Entities, Negations, Privations, Impossibilities, &c. and a *Being per se*, to exclude accidental Things, fictitious Things, &c. And *finite*, that is, of a limited Nature and Extent, to exclude God and other Transcendentals: *Real*, since it



Intention is for the better and more commodious disposing of Things in their places to be the more distinctly known and conceiv'd; and *whole*, or compleat, as not being in the relation of a component Part, or as only accessory to some other.

**PREDICATE**, *PRÆDICATUM*, in Logic, that part of a Proposition which affirms or denies something of the Subject. See **PROPOSITION**.

Thus, in God made the World; *made the World*, is the Predicate; God, the Subject. See **SUBJECT**.

A Predicate, say the Schoolmen, is properly a Name predicated, or spoke, of another, as its Subject. As *Man*, in the Proposition *Peter is a Man*.

It is a celebrated Rule or Law of Predicates, That nothing is esteem'd to be absolutely spoke or affirm'd of another, unless it be affirm'd thereof in such manner, or by such an Affirmation, as wants nothing either in the Subject, Predicate, or Copula, to make it true.

This also is a noted Property of a Predicate, That it contains, in some measure, its own Subject. Thus Metal contains Gold, Copper, Iron, &c. of which it is predicated.

The Word *Predicate* is sometimes used indifferently with *Attribute*; but the more accurate Writers make a distinction. Every Predicate is indeed an Attribute, since whatever is predicated of a Thing, is attributed to it: So, if Animated be predicated of Man, it is also attributed to him. But every Attribute is not a Predicate: Thus Soul, Learning, &c. are attributed to Man, but not predicated of him. See **ATTRIBUTE**.

**PREDICATING**, in Logic, is properly the Act of affirming or denying somewhat of something: As, Man is not a Stone, Body is Substance. The Thing thus predicated, is call'd Predicate. See **PREDICATE**.

In the Doctrine of Universals, or Predicables, to predicate is to speak or declare a Thing truly, directly, and affirmatively. Thus Man is predicated of several, *i. e.* it is truly, and directly affirm'd that these several are Men; as when I say, *Socrates is Man, Plato is Man, Aristotle is Man, &c.* See **PREDICABLE**.

The Things predicated of others, are reducible to three Classes. *Genera*, as Animal, of Man, &c. *Forms*, as Whiteness, of a Swan, &c. and *Equals*, of Things of equal Extent, as Species, Difference, Proprium, &c.

The Schoolmen distinguish several ways of Predicating; as, 1<sup>o</sup>. *In quod tantum*, which is to predicate essentially, both as to the thing and the manner; as Justice is a Virtue. 2<sup>o</sup>. *In quale tantum*, which is to predicate accidentally, both as to the thing and the manner; as Peter is Learned. And, 3<sup>o</sup>. *In quale quid*, or *in quale post quid*, which is to predicate both essentially and accidentally; as Man is rational.

**PREDICTION**, *PRÆDICTIO*, Divination, Prophecy, or Foretelling of what is to come; either by divine Revelation, by Art and human Invention, or by Conjecture. See **DIVINATION**, **REVELATION**, &c.

Divines labour hard to make the Predictions in the Old Testament tally with the Events, in the New. See **PROPHECY**.

The Predictions of Oracles were all dark and ambiguous. See **ORACLE**.

**PREDOMINANT**, *Reigning*, that which prevails, appears most, or has some Superiority, or Ascendancy over another thing.

Thus we say, Bitterness is the predominant Quality among Tastes, or that which is most perceiv'd. 'Tis a Rule, that Sugar never predominate in Confections, nor Pepper in Ragousts.

**PRE-EXISTENCE**, the State of a thing actually in being before another. See **EXISTENCE**.

The ancient *Pythagoreans* and *Platonists* all asserted the Pre-existence of human Souls, *i. e.* that they were in being before their being join'd to our Bodies. See **METEMPSYCHOSIS** and **TRANSMIGRATION**.

*Origen* held the eternal Pre-existence of Souls. See **SOUL**.

We believe that God created the World out of nothing; and not of *pre-existent* Matter. See **CREATION**.

Some Persons have held Mankind *pre-existent* to Adam. See **PRE-ADAMITE**.

**PREFACE**, *PRÆFATIO*, a Note, or Advertisement in the beginning of a Book, to inform the Reader of the Order, Disposition, &c. observed therein; of what is necessary to receive its full effect; and facilitate the understanding thereof.

The Word is form'd from the *Latin*, *præ* and *fari*, *q. d.* to speak before.

There is no part of Writing that requires more Art, or that fewer Authors succeed in, than Prefaces. Prefacing is, in effect, a particular Species of Writing, and has its Character and Taste to distinguish it from all others. It

is neither Argumentation, Discourse, Narration, nor Apology.

The *Romanists* call that part of their Mass which precedes the Consecration, and which is to be rehearsed in a peculiar Tone, *Preface*. See **MASS**.

The Use of Prefaces in the Church, they contend, is very antient; and conjecture, from some passages of St. *Cyrian*, &c. that it was in use in the times of the Apostles.

The Preface to the Mass antiently had, and still has, very different Names in different Churches. In the *Gothic*, or *Gallican Rite*, it is call'd *Immolation*; in the *Mozarabic Rite*, *Illation*; antiently among the *French*, it was call'd *Consecration*; in the *Roman Church*, alone, it is call'd *Preface*.

**PREFECT**, *PRÆFECTUS*, in antient *Rome*, one of their chief Magistrates, who govern'd in the Absence of their Kings, Consuls, and Emperors.

His Power was somewhat different at different times; but was always greatest under the Emperors. His principal Care was the Government and Administration of the City of *Rome*.

He took cognizance of all Crimes committed in the City, or within an hundred Miles thereof. He judg'd capitally and finally, no Appeal lying from him; and even by the 62d Novel, he presid'd in the Senate; taking place before all the *Patricii* and *Consulares*, &c.

He had the Superintendence of the Provisions, Policy, Buildings, and Navigation. There is still a *Prefect* of *Rome*, who is a kind of Governour; differing little from the antient *Prefect*, except that his Authority only extends to 40 Miles without *Rome*.

**PREFECT of the Pretorium**, *PRÆFECTUS PRÆTORII*, was the Chief, or Leader of the *Pretorian Bands* or Cohorts, destined for the Emperor's Guard. See **PRETORIAN**.

The *Pretorian Legion*, according to *Dion*, consisted of ten thousand Men. *Suetonius* refers the Institution of *Præfectus Prætorii* to *Augustus*. 'Tis added, that he was usually taken from among the *Roman Knights*.

By the Favour of the Emperors, his Authority grew very considerably; insomuch that he became the Arbiter and supreme Judge of all Affairs.

To reduce this extravagant Authority, *Constantine* divided the Prefecture of the Pretorium into four Prefectures; and each of these he again subdivided into Civil and Military; tho' the Name was only reserved to him who was invested with the Civil Authority; and that of *Comes Belli* given him who had the Command of the Cohorts. See **COUNT**.

Thus the Office of *Prefect of the Pretorium*, which, in its Origin, and till the time of *Constantine*, was Military, and succeeded to that of *Magister Equitum*; now commenced a purely Civil Magistrature; and at length became the prime Dignity of the Empire.

The succeeding Emperors following *Constantine's* Division, divided the Empire into four Prefectures *Prætorii*, as into four Dioceses; *viz.* the *Gauls*, *Illyria*, *Italy*, and the *East*. See **DIOCESSE**.

The Provinces whereof these Dioceses consisted, had their particular Governours; at the Head of whom was the *Prefect*, who, tho' he had not the Command of Arms, yet had the Power of the Sword; decided ultimately of all Affairs, and had all the Marks and Honours of Sovereignty.

*Justinian* created a fifth *Prefect of the Pretorium* for the Government of *Egypt*, which had been torn off from the Diocese of the East, by the Invasion of the *Vandals*, during the Empire of that Prince.

Under *Augustus*, the Officer sent to govern *Egypt* with a proconsular Authority, was call'd *Præfectus Augustalis*.

**PRE-EMPTION**, a Privilege antiently allow'd the King's Purveyor, of having the Choice, and first buying of Corn, and other Provisions for the King's House; but taken away by the *Stat. 19 Car. 2.* See **POURVEYOR**.

**PREENING**, in Natural History, the Action of Birds cleaning, composing, and dressing their Feathers, to enable 'em to glide more easily thro' the Air. See **FEATHER**.

For their use herein, Nature has given 'em an admirable piece of Furniture; *viz.* two peculiar Glands which secrete an unctuous Matter into an Oil-bag, perforated; out of which the Bird, on occasion, draws it with its Bill. See **OIL-BAG**.

**PREGNANCY**, the State of a Woman when she has conceiv'd, or is with Child. See **CONCEPTION**.

The same State with a View to the bearing of the Child in the Womb, is call'd *Gestation*. See **GESTATION**.

Hence also the Act of *Impregnating*. See **GENERATION**, **FLOWER**, **SEED**, &c.

**PREJUDICE**, *PRÆJUDICIUM*, a false Notion, or Opinion of any thing, conceiv'd without a due previous Examination thereof. See **FALSHOOD**, **OPINION**, &c.

*Prejudice, q. d.* Pre-judgment, does not import a Judgment merely as prior to another in respect of Time, but as being



being prior thereto in respect of Knowledge, or of sufficient Attention to the thing; the Preposition *præ* expressing an Anticipation, not so much of Time, as of Knowledge, and due Attention. See ERROR.

Hence *Prejudice* is also call'd among the Schoolmen *Anticipatio & præventa Cognitio*, a pre-conceiv'd Opinion, &c. See JUDGMENT, TRUTH, FALLACY, SENSE, &c.

PRELATE, an Ecclesiastical Superior, constituted in some eminent and superior Dignity of the Church. See DIGNITARY.

Patriarchs, Primates, Archbishops, Bishops, Generals of Religious Orders, certain Crosier'd and Mitred Abbots, and even Deans and Archdeacons are ranked among the Number of *Prelates*.

The Word comes from the *Latin*, *Prelatus*, of *præ* and *fero*.

PRELATE of the Garter, is the first Officer of that Noble Order, and antient as the Institution itself. See GARTER.

*William de Edynton*, then Bishop of *Winchester*, was the first *Prelate* at the erection of the Order; and it has been continued in that See ever since.

'Tis an Office of great Honour, but has neither Salary nor Fees; only a convenient Lodging allow'd in *Windsor-Castle*, and as oft as the *Prelate* comes thither (by the Sovereign's Command) he is to have Court-Livery allow'd for himself and Servants.

PRELIMINARY, something to be examined, dispatch'd, or determined, e'er an Affair can be decided, or treated of thoroughly, and to purpose.

*Preliminaries* of Peace take up the greatest part of Treaties. They consist in examining of Powers, Qualities of Princes, Ranks of Ambassadors, &c.

The Word is form'd from the *Latin*, *præ*, and *limen*, Threshold.

PRELUDE, in Music, a *Flourish*, or an irregular Air which the Musician plays off-hand, to see if his Instrument be in Tune; and to lead him into the piece to be play'd.

PREMISES, PREMISSES, PRÆMISSÆ, in Logic, the two first Propositions of a Syllogism. See SYLLOGISM.

When a Syllogism is in form; the two *Premises* being granted, the Conclusion cannot be deny'd. See CONCLUSION.

The *Premises*, says *Chaurvin*, are properly the parts of the Antecedent of an Argument, when complex; and are call'd *Præmissæ*, because premised to the Conclusion. See ANTECEDENT, &c.

Thus in the Argument, Every Man is an Animal, *Peter* is a Man, therefore *Peter* is an Animal; the Propositions, Every Man, &c. and *Peter*, &c. are the *Premises*. See PROPOSITION.

*Premises* are the Principles of our Reasonings; as being clear, evident, and demonstrative Propositions, from the relations whereof to one another, we draw or infer new Truths, Propositions, &c. See REASONING, PRINCIPLE, MAXIM, &c.

The *Premises* are either *equal*, where neither suffices alone for the drawing a Conclusion, as in the Instance above; or *unequal*, the one *major*, greater, from which alone the Conclusion is drawn; the other *minor*, or less, which only serves in applying the Antecedent to the Consequent. See CONSEQUENT.

In the common Practice of the Schools, however, every Syllogism, or formal Argument, of what kind soever, is said to have a Major and a Minor; how equal soever the *Premises* may be. See MAJOR and MINOR.

PREMISES, in Law, the Lands, &c. before mentioned in a Lease, Conveyance, or the like.

PREMONSTRANTES, or PREMONSTRATENSES, a Religious Order of Regular Canons instituted in 1120. by *S. Norbert*; and thence also call'd *Norbertines*.

The first Monastery of this Order was built by *Norbert* in the Isle of *France*, three Leagues to the West of *Laon*; and by him call'd *Premonstre*, *Premonstratum*, whence the Order itself was denominated; tho' as to the occasion of that Name, the Writers of that Order are divided.

The Order was approved by *Honorius II.* in 1126. and again by several succeeding Popes. At first the Abstinence from Flesh was rigidly observed; in 1245, *Innocent IV.* complain'd of its being neglected, to a general Chapter; in 1288, their General, *William*, procured leave of Pope *Nicholas IV.* for those of the Order to eat Flesh on Journeys. In 1460, *Pius II.* granted 'em a general Permission to eat Meat, excepting from *Septuagesima* to Easter.

The Religious of this Order are clothed in white, with a Scapulary before the Calf. Out of Doors, they wear a white Cloak and white Hat; within, a little Camail, and at Church a Surplice, &c.

In the first Monasteries built by *Norbert*, there were one for Men, and another for Women, only separated by a Wall. In 1137, by a Decree of a General Chapter, this Practice was prohibited, and the Women removed out of those already built, to a greater distance from those of the Men.

PREMOTION, in the Schools, the Action of God co-operating with the Creature, and determining him to act. See PREDETERMINATION.

*Physical Premotion*, according to *Alvarez*, *Lemos*, &c. is a Complement of the active Power, whereby it passes from the first Act to the second; i. e. from a complet, and next Power, to the Action. 'Tis an Influence or participation of the Virtue of the first Cause which makes the second Cause actually active. See CAUSE.

PREMUNIENTES, in Law, Writs dispatch'd to each Bishop to call 'em to Parliament, and warning them to bring with them the Deans, and Archdeacons, one Proctor for each Chapter, and two for the Clergy of his Diocess. See CONVOCATION.

PREMUNIRE, *Præmunire*, a Term used both for an Offence; for a Writ granted thereupon; and for the Punishment thereof.

These will all be understood from one: Antiently, then, the Church of *Rome*, on pretence of her Supremacy and the Dignity of *St. Peter's* Chair, took upon her the disposal of most of the Bishopricks, Abbies, and other Ecclesiastical Benefices of Worth, by Mandates, or Bulls call'd *Expectative Graces*, and *Provisiones*, before they became void. See PROVISION and EXPECTATIVE.

*Edward III.* not brooking so intolerable an Incroachment, made several Statutes against those who drew the King's People out of the Realm, to answer to things properly belonging to the King's Court; and another to restrain the Privilege of the Pope.

The Pontiff, however, still persisted in his Preventions; and the flux of People from *England* to *Rome*, to sue for them, was as great as ever.

This occasion'd *Richard II.* to make several Statutes of the like Import with those of *Edward III.* particularly one, where he assign'd their Punishment to be this; *That they should be out of the King's Protection, attach'd by their Bodies, i. e. imprison'd during Life; and lose their Lands, Goods, and Chattels; which is hence call'd the Penalty of a Præmunire.*

*Henry IV.* made new Statutes against other Abuses of this kind, not fully obviated in those of his Predecessors; adding certain new Cases, and laying on 'em the same Penalty.

By later Statutes, the same Penalty is laid on some other Offenders; as, e. gr. by that 1 *Eliz.* on him who denies the King's Supremacy a second time. By 13 *Eliz.* on those who assert the Pope's Authority, or refuse the Oath of Supremacy; on seditious Talkers of the Inheritance of the Crown; and such as affirm the King or Queen to be a Heretic. And by Statute 13 *Car. 2.* on those who affirm that the Parliament begun *November 1640.* is not yet dissolved; or that there is any Obligation in an Oath or Covenant, &c. to endeavour a Change of Government either in Church or State; or that the Houses of Parliament have a legislative Authority without the King.

The Word *Præmunire* is now chiefly used for the Punishment appointed by the Statutes above-mentioned: Thus when 'tis said, a Man for an Offence, *shall incur a Præmunire*, 'tis meant he shall incur the Penalty appointed by the Statute 16 *Rich. 2.* commonly call'd the *Statute of Præmunire*.

The Word is a Corruption of the *Latin*, *Præmonere*, q. d. to forewarn, or bid the Offender take care; of which Reason may be drawn from the Words of the Statute *Edw. 3.* and the Form of the Writ, *Præmunire facias præfatum præpositum, & J. R. procuratorem, &c. quod tunc sint coram nobis.*

PRENDER, in Law, (from the *French*, *prendre*, to take) a Power or Right of taking a thing before it is sold. *It lies in Render, but not in Prender.* *Coke's Rep. 1 part.* Sir *John Peter's* Case.

PRENDER de Baron is an Exception to disable a Woman from pursuing an Appeal of Murder against the Killer of her former Husband; taken from her having married a second. See APPEAL.

PRENOTION, *Prænotio*, or *Præcognitio*, a Notice, or piece of Knowledge preceding some other, in respect of time. Such is the Knowledge of the Antecedent; which must precede that of the Conclusion. See NOTION, KNOWLEDGE, &c.

PREPARATION, *Præparatio*, or *Apparatus*, in Mathematics, one of the Parts or Branches of a Demonstration. See DEMONSTRATION.

If it be a Proposition in Geometry, the *Preparation* consists in some Lines to be drawn in the Figure; if a Proposition in Arithmetic, in some computation to be made to come the more easily at the Demonstration.

PREPARATION, in Chymistry and Pharmacy, is used for the several Manners of managing the *Materia Medica*, and of disposing it to serve the several purposes.



There are various *Preparations* of Mercury, Antimony, and other Drugs to purify 'em, sublime, calcine, edulcorate 'em, &c. See *MERCURY*, &c.

Crude Antimony is used in sudorific Decoctions; tho', when it has undergone a certain *Preparation*, it becomes a violent Vomitive. See *ANTIMONY*.

**PREPOSITION**, in Grammar, one of the parts of Speech, or Discourse. See *SPEECH*.

The *Preposition* is an indeclinable Particle, which yet serves to govern the Nouns that follow it. Such are *per*, *pro*, *propter*, *in*, *with*, *thro*, *from*, *by*, &c.

They are call'd *Prepositions*, because *præpositæ*, placed before the Nouns they govern.

*F. Buffer* does not allow the *Preposition* to be a Part of Speech; but merely a Modificative of a Part of Speech, viz. of the Noun, serving only to modify or circumstantiate it. See *MODIFICATIVE*.

**PREPENSED**, in Law, *Fore-thought*. In this sense we say *prepens'd Malice*.

It, when a Man is slain upon a sudden Quarrel, there were Malice *prepens'd* formerly between them, it makes it Murder; and, as it is call'd in some Statutes, *prepens'd Murder*. See *MURDER*.

**PREPUCE**, *Præputium*, in Anatomy, the Fore-Skin; see *PRÆPUTIUM*.

**PREROGATIVE**, a Privilege, or Pre-eminence, which a Person has over another.

The Word is borrowed from the Name of a Century in ancient *Rome*, which gave the first Vote, or Suffrage in the *Comitia*, or Assemblies, for the Election of Magistrates; *quasi Prærogati*; because first ask'd, or their Suffrage first required. See *SUFFRAGE* and *CENTURY*.

Their Vote was call'd *Omen Prærogativum*, because the rest usually gave their Votes the same way. See *OMEN*.

**PREROGATIVE of the King**, is that Power and Privilege which the King hath over, not only other Persons, but over the ordinary Course of the Common Law, in Right of his Crown.

Such are these, That the King may pardon a Person condemn'd to die: That the King's Person is subject to no Man's Suit: His Possessions cannot be taken from him by any Violence, or wrongful Disseisin: His Goods and Chattels are subject to no Tribute, Toll, or Custom, nor distrainable, &c. See *KING*.

**PREROGATIVE Court**, is a Court belonging to the Archbishop of *Canterbury*, wherein all Wills are proved, and all Administrations granted, that belong to the Archbishop by his *Prerogative*; that is, where the Party at his death had five Pounds or upwards in the Diocese, or ten Pounds out of the Diocese where he died. See *COURT*.

The Archbishop of *York* hath also the like Court call'd, his *Exchequer*.

All Citations and Decrees of this Court run in the Name of the Archbishop. See *ARCHBISHOP*.

This Court, for the Province of *Canterbury*, is kept in the common Hall in Doctor's Commons, in the Afternoon, next day after the Arches.

The Judge is attended by the Register, who sets down the Decrees and Acts of Court; and keeps, records, &c. all original Wills and Testaments of Parties dying, having *bona notabilia*.

The Place is usually call'd the *Prerogative Office*, now kept in *Dean's Court*; where, for a moderate Fee, one may have a Copy of any such Will. See *WILL*.

**PRESAGE**, *Præsagium*, an Augury, or Sign of something to come. See *AUGURY*.

The *Romans* judg'd of future Events by certain Signs, which their Superstition, or the Artifice of their Priests had invented. Their most celebrated *Presages* were founded on the Flight of Birds, or the Entrails of Victims: All Night-Birds pass'd for Birds of ill *Presage*. See *VICTIM*, &c.

'Tis a popular Error, that Comets *presage* Misfortunes. See *COMET*.

Close Weather, and a Southern Wind, *presage* Rain. See *WEATHER*, &c.

**PRESBYTER**, a *Priest*; or a Person in Priests Orders. See *PRIEST*.

He is thus call'd from the *Greek* πρεσβύτερος, *Elder*, of πρεσβύτης, *Old*; because, antiently, none were ordained but such as were advanced in Years.

The great Dispute between the Retainers to the *Geneva*, and the *Roman* Discipline, is about the Sameness or Difference of *Presbyters* and *Bishops*, in the Times of the Apostles. The *Presbyteral* Character is indelible.

**PRESBYTERIANS**, a Name assumed by the *Calvinists* of Great Britain. See *CALVINIST*.

The *Presbyterians*, as to Doctrine agree with the Church of *England*: Their chief Difference lies in the Point of Discipline; viz. who shall appoint the Governours of the Church, and what Subordination there shall or shall not be between them. See *DISCIPLINE*.

The *Presbyterians* allow of no Hierarchy; no Subordination in the Persons of their Ministers: Bishops and Priests, they maintain, in the Times of the Apostles were the same; and, therefore, tho' they allow Episcopacy as now settled in the Church of *England* to be very antient, yet they deny it to be *jure divino*. See *BISHOP* and *EPISCOPACY*.

In lieu of a Series of Ministers one over another, in Quality of *Priests*, *Bishops*, and *Archbishops*, their Polity consists in a Series of Assemblies, or Synods: Thus every Minister is to be obedient to the *Class* under which he lives; and that *Class* to a *Synod*, *Provincial*, *Classical*, or *Oecumenical*. See *CLASS*, *SYNOD*, &c.

The Power of Ordination, with them, resides in a *Class*; and none are admitted to administer the Sacrament, but those ordained by the Imposition of Hands of other Ministers.

They make use of Deacons to take Care of their Poor, and in the Government of the Church, call in Lay-Elders; whence their Name, from the *Greek* πρεσβύτερος, signifying Senior, *Elder*. See *ELDER*.

This is now the reigning Discipline in the Church of *Scotland*; as it was, during the Inter-regnum, in *England*.

**PRESBYTERY**, *Presbyterium*, an Assembly of the Order of Presbyters, or Priests, with Lay-Elders; for the Exercise of Church-Discipline.

The Kirk or Church of *Scotland* is divided into sixty-nine *Presbyteries*, each consisting of a number of Parishes, not exceeding twenty-four, nor less than twelve.

The Ministers of these Parishes, with one Ruling-Elder chosen half-yearly, constitute a *Presbytery*; who, meeting in their chief Town whence the *Presbytery* is denominated, chuse a Moderator, or rather Prolocutor, half-yearly.

They determine all Appeals from Kirk-Sessions, i. e. from the several Parochial-Assemblies; but can try nothing at the first Instance cognizable before a Kirk-Session. See *KIRK-Session*.

They compose all Differences between Ministers and People; for which end they hold *Presbyterial* Visitations in each Parish, where they examine the Registers of the Kirk-Sessions, &c.

They enquire into Repairs of Churches, see that the Glebe, &c. suffer no Dilapidations; appoint Schools in the Parishes, and see that the Funds ben't misapply'd.

'Tis they alone can exclude from the Communion, license Probationers, suspend, depose, and, in effect, determine all Ecclesiastical Matters within their District. From the *Presbytery* there lies an Appeal in all Cases to Provincial Synods. See *SYNOD*.

**PRESBYTERY**, *Presbyterium*, is sometimes also used for the Choir of a Church, because antiently appropriated to the Presbyters; in opposition to the Nave or Body of the Church, which was for the People. See *CHOIR* and *CHURCH*.

**PRESBYTÆ**, in Optics, a Term apply'd to Persons in whom the Configuration of the Crystalline of the Eye is too flat, so that they see distant things clearly, but those near at hand confusedly. See *VISION*.

The Reason is, that, in near Objects, the visual Rays passing the Retina before they unite, there can be no distinctness, since the distinct Base falls too far off beyond the Retina. See *CRYSTALLINE* and *RETINA*.

This defect is helped only with convex Glasses, or Spectacles; which will make the Rays converge sooner, and if they are well fitted, fall exactly on the Retina. See *CONVEX* and *SPECTACLE*.

The Word is form'd from the *Greek* πρεσβύτης, *Senex*; because old People are naturally subject to this defect; Time and the Friction of the Eye-Lids, &c. gradually wearing the Ball flat.

*Presbyta* are opposed to *Myopes*, in whom the Crystalline is too round. See *MYOPES*.

If the distance between the Retina and the Crystalline be too small, the Person will likewise be a *Presbyta*. See *CRYSTALLINE*, &c.

**PRESCIENCE**, in Theology, *Prevision*, *Fore-knowledge*; the Knowledge which God has of things to come.

The Doctrine of Predestination is founded on the *Prescience* of God, and on the supposition of all Futurity's being present to him. See *PREDESTINATION*.

Human Reason can scarce reconcile the *Prescience* of God with the Free-Agency of Man. See *LIBERTY* and *NECESSITY*.

How are we to admire the depth of the *Prescience* and Wisdom of God; who, in giving the first Motion to Matter, fore-saw all the possible Combinations this first Impression might undergo during infinite Ages? *Alacbr.*

**PRESCRIPTION**, in Law, a Title introduced for assuring the Property of Effects in favour of Persons who have possess'd them a certain time; and to keep off any who would disquiet them, or recover the thing possess'd, after the Term fixed by the Laws. See *POSSESSION*.



*Tourrcil* calls *Prescription* a Penalty imposed by the Laws upon Negligence ; and adds, that Possessors who have no other Title to plead but *Prescription*, are only honest Usurpers.

In effect, however, the Law of *Prescription* does not punish the Indolence of Proprietors ; but only interprets their Silence for their Consent ; presuming that a Man who neglects to assert his Right for a long Series of Years, gives it up.

There are some of the Lawyers who doubt whether Time and unjust *Prescription* be any legitimate Means of acquiring ; others, more favourable, call it the *Patron of Mankind* ; as being a general Presumption, under which the Law will have Men live in peace.

In the Common Law, *Prescription* is usually understood of a Possession for Time immemorial ; as when my Ancestors, or his, from whom I have an Estate, have enjoy'd and used it all the time whereof any Memory remains.

But in the Civil Law, and even in our Common Law, there are *Prescriptions* of a much shorter Date. *Prescription* of forty Years excludes all Actions whatever. *Reform. Leg. Eccles.*

The Custom of *Paris* allows of a *Prescription* of ten Years, if the Parties be present, and twenty if absent, in favour of peaceable Possessors of an Inheritance, if they have any Title, however controverted ; and of thirty Years in favour of those who possess without any Title at all.

In *Normandy*, a *Prescription* of forty Years peaceable Possession is equivalent to a Title, to Immovables ; and for Moveables and personal Actions, a *Prescription* of thirty Years suffices.

In *Romish* Countries, *Prescription* does not avail against the Church, if less than a hundred Years. In *France*, *Prescription* of twenty Years is admitted against all Crimes, except Duelling, which was excluded by a Declaration of the Year 1679. In Matters of Adultery, five Years suffice, *i. e.* provided there have been a discontinuance of Prosecution all that time.

By our Statutes, a Judge or Clerk convicted of false entering Pleas, &c. may be fined within two Years ; but those elapsed, he *prescribes* against the Punishment of the Statute.

The Crime of Maintenance or Embracery, whereby Perjury is committed by a Jury, must be prosecuted within six days ; otherwise the Parties *prescribe*. See *JURY*.

There is no *Prescribing* against a Man's Lord ; no *Prescription* avails to take off a Servitude or Tenure : A Title is always required there.

The Author of the History of the Inquisition observes, that no Time or *Prescription* avails in Matters of Heresy ; even Death itself does not secure the suspected from the Researches of the Inquisition. See *INQUISITION*.

*PRESCRIPTION*, in Medicine, the Act, or Art of assigning a proper and adequate Remedy to a Disease ; from an Examination of the Symptoms thereof, and an Acquaintance with the Virtues and Effects of the *Materia Medica*. See *REMEDY* and *DISEASE*.

The *Methodus prescribendi* is the last, finishing piece of Furniture of a Physician, and is the result of all the rest ; join'd with a ready, present Thought. See *MEDICINE* and *PHYSICIAN*.

To *Prescribe* with Judgment, Elegance, &c. a moderate Acquaintance with Pharmacy, *i. e.* with the Forms and Preparations of Medicines, is required. See *PHARMACY*.

The Merits of a Bill or *Prescription* consist in its being concise, pertinent, efficacious, and agreeable ; in the best and suitablest Materials being pitch'd on ; those assembled in the most judicious Proportions, made up in the best and most convenient Form, and apply'd in the justest Dose ; a due regard being still had to the Non-naturals, Regimen, Intervals of Application, &c. *Sydenham* excell'd in *Prescription*. See *DOSE*, *DIET*, &c.

*Prescription* is either *Officinal* or *Extemporaneous* ; the former consists in the ordering of the Medicines which the Apothecaries keep by 'em ready prepared according to their Dispensatory. See *OFFICINAL* and *DISPENSATORY*.

*Extemporaneous* is that which the Physician frames of himself, *pro re nata*, according to the Circumstances of the Patient, to be made up by the Apothecary according to the Physician's Bill. See *EXTEMPORANEOUS*.

*PRESENCE*, *Præsentia*, a Term of relation, used in opposition to *Absence* ; and signifying the Existence of a Person in a certain Place ; or the State of a Person consider'd as co-existing with another. See *CO-EXISTENCE*.

In this sense an Obligation is said to be pass'd in *Presence* of a Notary and Witnesses : At the breaking open of a Seal of a Minor or an absent Person, the *Presence* of a Substitute is necessary.

The Schoolmen hold, that *Presence*, in speaking of Bodies, denotes not only a Co-existence, but a sort of Contact. They make two kinds of *Presence* ; the one *virtual*, in which sense a Spirit, or Mind, is said to be *present* to a Body when it acts thereon ; the other *corporeal*, which consists in a physical Contact.

The Treasurers, &c. of *France* have what they call a *Right of Presence*, a certain Sum due on their actual Attendance in their Offices ; to oblige 'em to be the more assiduous in their Function. A Person absent in the Service of the King, or a Community, is reputed *present*.

The *Roman Catholics* believe the real *Presence* of *Jesus Christ* in the Eucharist, both in Body and Soul. See *TRANSUBSTANTIATION*.

*PRESENT*, in Grammar, the first Tense, or Inflection of Verbs ; expressing the Time *present*, or that which now is. See *TENSE*.

'Tis a peculiar piece of Address in Eloquence to make use of the *present*, for a *past* Tense, in order to express a past Action with the more force and warmth : Thus ; The Fleet is no sooner in full Sea, than the Heavens begin to lower, the Winds rise, the Waves dash against each other, Thunder rolls, and Lightning glares on all sides ; the Ships lose their Masts and Rudders, and are driven impetuously against the Rocks.

*PRESENTATION*, in the Canon Law, the Act of a Patron, nominating and offering his Clerk to the Bishop, or Collator, to be instituted in a Benefice of his Gift. See *PATRON*, *COLLATOR*, &c.

The *Presentation* must be tender'd to the Bishop within an hundred eighty-two days after the living is vacant, else it lapses to the Bishop ; and if the Bishop do not collate in half a Year more, it lapses to the Archbishop ; and from him in a like time to the King, who may stay as long as he pleases ; for *Nullum tempus occurrit Regi*.

By some Customs, a Lay-Patron has only four Months time to make his *Presentation* in ; and if he have presented a Person incapable, he may vary it, and make a new *Presentation* within the four Months. See *BENEFICE*.

The Word is form'd from the antient Phrase *Præsentare ad Ecclesiam*, which originally signify'd the Patron's sending, or placing a Person in a Church ; and which itself is form'd from *Representare*, which, *Selden* observes, is used in the Council of the *Lateran* and elsewhere, for *Præsentare*. See *PARSON*.

*PRESENTATION*, also, gives the Title to three Orders of Nuns. See *RELIGIOUS*.

The first, projected in 1618, by a Maid nam'd *Joan of Cambray*. The Habit of the Nuns, according to the Vision she pretended to have, was to be a grey Gown of natural Wool, &c. but this Project was never accomplished.

The second was established in *France* about the Year 1627, by *Nich. Sanguin*, Bishop of *Senlis*. It was approved by *Urban VIII*. This Order never made any great progress.

The third was established in 1664 ; when *Fred. Borromeo*, being Apostolical Visitor in the *Valtelline*, was intreated by some devout Maids at *Morbegno* to allow 'em to live in Community in a retir'd place ; which he granted, and erected 'em into a Congregation, under the Title of *Congregation of our Lady*. They live under the Rule of *St. Augustine*.

*PRESENTATION of the Virgin*, is a Feast of the *Romish* Church held on the 21st of *November*, in memory of the Virgin's being presented by her Parents in the Temple, to be there educated.

It is pretended, that there were young Women brought up in the Temple of *Jerusalem* ; which some endeavour to prove from the second Book of *Maccabees*, *Sed & Virgines quæ conclusæ erant, procurrebant ad Oniam* ; which is the Sentiment of *Eusebius* on this Passage. And *Lyraeus* adds, that other more antient Authors observe, that young Women were educated till Marriage, either in the Temple, or at least in Buildings contiguous thereto.

*Emanuel Comnenus*, who began to reign in 1143, makes mention of this Feast in his Constitution. Some even imagine it to have been established in the XIth Century among the *Greeks* ; and think they see evident Proofs of it in some Homilies of *George of Nicomedia*, who lived in the time of *Photius* ; so that it seems a Mistake in some modern Critics to refer its Institution to *Gregory XI*. in 1271.

Some take it to have been instituted in memory of the Ceremony practis'd among the *Jews* for their new-born Females ; corresponding to the Circumcision on the eighth day for Males. See *CIRCUMCISION*.

*PRESENTEE*, in the Canon Law, a Clerk presented by a Patron to a Collator. See *PRESENTATION*.

*PRESENTMENT*, in Law, a mere Denunciation of the Jurors themselves, or some other Officer, as a Justice, Constable, Searcher, Surveyor, &c. of an Offence, inquireable in the Court whereto it is presented.

*PRESENTS*, *Præsentia*, *Free-gifts*, or *Gratuities* ; especially those given by the Clergy, or the States of a Realm, to a King. See *BENEVOLENCE*.

They are so call'd because given into the Hands of a Person *present* ; by which they are distinguished from *Munera*, Gifts which are sent to the Party, or delivered by the intervention of a third Person.



Thus the XVIIIth Law, *de Verb. signif. Absentibus res donari dicantur, munera autem mitti, & præsentia offerri.*

There is no accounting the Eastern Princes without making them fine Presents. Kings usually make rich Presents to Embassadors sent to their Courts.

**PRESERVATIVE**, in Medicine, a Remedy taken by way of precaution; or to secure a Man from a Disease that threatens him. See **REMEDY**.

The principal *Preservatives*, according to *Boerhaave*, are Abstinence, Ease, drinking of warm Water, and after this, a gentle and continued Motion till the first appearance of Sweat; then a profuse sleeping, the Body well cover'd.

By such means, crass Humours are diluted, the Vessels are loosen'd, and noxious Matters excreted. He adds, that the best defence against the force of external Cold, is to lessen the Winter's Clothing late in the Spring, and to increase the Summer's Clothing soon in Autumn.

In time of Plague, *Preservatives* are very necessary against the Contagion of the Air, &c. See **PLAGUE** and **CONTAGION**.

Generous Wines, Cardiacs, and Sudorifics are *Preservatives*. Dr. *Alprunus* tells us, he made Incisions with a Lancet in *Inguine dextro* and *sinistro*, and put in Setons, to give passage to the Venom; which proved an excellent *Preservative* against the Plague that raged at Prague in 1680.

Dr. *Wenceslaus Dobr. Zensky de Nigro Ponte* gives us an universal *Preservative* against Infection in all Diseases. Whoever, says he, in conversing with Patients of any kind, would preserve himself from Infection, must, while he is within the Sphere of the Steams, never swallow his Spittle, but spit it out: For he conceives it to be the Spittle that first imbibes the Infection.

**PRESIDENT**, an Officer created, or elected, to *preside* over a Company, or Assembly; so call'd in Contradistinction to the other Members, who are term'd *Residents*.

*Lord PRESIDENT of the Council*, is the fourth great Officer of the Crown; as antient as the Time of K. *John*; when he was stiled *Conciliarius Capitalis*. See **COUNCIL**.

His Business is to attend on the King, to propose Business at the Council-Table, and to report to the King the several Transactions there.

**PRESIDIAL**, a Tribunal, or Bench of Judges, establish'd in the several considerable Cities of *France*, to judge, *en dernier ressort*, or ultimately, of the several Cases brought before them, by way of Appeal from the subaltern Judges.

The *Presidials* make one Company with the Officers of the Baillages and Seneschauſſees, where they are established.

The Edict of 1551, establishes *Presidials* under these two Conditions; first, that they may judge definitely, and without Appeal, to the Sum of 250 Livres, or 10 Livres *per Annum*. And, 2<sup>o</sup>. to the Sum of 1500 Livres by Provision.

When they judge in the former Case, they are obliged to pronounce it with these Words, *par Jugement dernier*; in the second, *par Jugement Presidial*.

When they judge finally of Appeals from inferior Judges, they may not pronounce the Sentence, or Appeal, *au neant*, void; that Form only belonging to the Sovereign Courts: But are to pronounce simply, that *it has been well or ill judged*. To judge *presidially* and finally, they must be at least seven in number.

**PRESS**, in the Mechanic Arts, a Machine made of Iron, or Wood; serving to squeeze, or compress any Body, very tightly. See **MACHINE** and **COMPRESSION**.

The *Ordinary Presses* consist of six Members, or Pieces; viz. two flat, smooth Planks, between which the Things to be press'd are laid; two Screws, or Worms, fasten'd to the lower Plank, and passing thro' two Holes in the upper; and two Nuts in form of an S, serving to drive the upper Plank, which is moveable, against the lower, which is stable, and without Motion.

*Presses used for expressing of Liquors*, are of various Kinds; some, in most respects the same with the common *Presses*; excepting that the under Plank is perforated with a great number of Holes, to let the Juice express'd, run thro' into a Tub, or Receiver, underneath.——Others have only one Screw, or Arbor, passing thro' the middle of the moveable Plank; which is made to descend into a kind of square Box, full of Holes on all sides, thro' which the Juices flow in proportion as the Arbor is turn'd, by means of a little Lever apply'd thereto.

The *Press used by Joiners*, to keep close the Pieces they have glued; especially Pannels, &c. of Wainscot, is very simple; consisting of four Members, viz. two Screws and two Pieces of Wood, four or five Inches square, and two or three Foot long, whereof the Holes at the two Ends serve for Nuts to the Screws.

The *Press used by Inlayers*, resembles the Joiner's *Press*, except that the Pieces of Wood are thicker, and that only one of them is moveable; the other, which is in form of a Tressel or Horse, being sustain'd by two Legs, or Pillars, jointed into it, at each end.

This *Press* serves them for the sawing and cleaving the Pieces of Wood required in Marquetry, or Inlaid Work: See **MARQUETRY**.

*Founders Press*, is a strong square Frame, consisting of four Pieces of Wood, firmly join'd together with Tenons, &c. This *Press* is of various Sizes, according to the Sizes of the Moulds; two of them are required to each Mould, at the two Extremes whereof they are placed: so as that by driving wooden Wedges between the Mould and the Sides of the *Presses*, the two parts of the Mould, wherein the Metal is to be run, may be press'd close together. See **FOUNDERY**.

*Printing Press*, is a very complex Machine, serving to press the Sheet of Paper upon the Forms, which the Workman has first smear'd or beat over with Ink; so, as that the Characters, or Types, whereof the Forms are composed, may leave their Marks or Impressions thereon.

The Parts of this *Press* are the two *Cheeks*, the four Planks, viz. the *Cap*, *Head*, *Shelves* and *Winter*, the *Back* of the *Press*, where the Ink is placed, the *Spindle* with its Nut, the *Hose* with its Hooks, the *Platten-Plate* and its Plug, the *Carriage*, the *Coffin*, *Gallows*, *Tympan* with its Joints, &c. Lastly, the *Handle*, to bring the Plank on which the *Coffin* is fix'd backwards and forwards; and the *Bar* to work the Spindle, and press the Platten on the Forms.

See the Form and Use of these several Parts described under the Article **PRINTING-Press**.

*Rolling-Press*, is a Machine used for the taking off Prints from Copper-Plates. It is much less complex than that of the Letter-Printers: See its Description and Use under the Article *Rolling-Press-PRINTING*.

**PRESS**, in Coining, is one of the Machines used in the striking of Money; differing from the Balancier, in that it has only one Iron Bar to give it Motion, and press the Moulds or Coins; is not charg'd with Lead at its Extreme; nor drawn by Cordage. See **COINING**.

*Binders-Press*, or *Cutting-Press*, is a Machine used equally by Book-binders, Stationers, and Pastboard-makers; consisting of two large Pieces of Wood, in form of Cheeks, join'd by two strong wooden Screws, which being turn'd by an Iron Bar, draw together, or set asunder the Cheeks, as much as is necessary for the putting in of the Books, or Papers, to be cut.

The Cheeks are placed flat on a wooden Stand, in form of a Chest, into which the Cuttings fall. A-side of the Cheeks are two pieces of Wood, of the same length with the Screws; serving to direct the Cheeks, and prevent their approaching or opening unequally upon turning the Screw.

Upon the Cheeks is the Shaft or Fust, to which the Cutting-Knife is fasten'd by a Screw, which has its Key to dismount it on occasion to be sharpen'd.

The Shaft consists of several Parts; among the rest, a wooden Screw or Worm, which catching within the Nuts of the two Feet that sustain it on the Cheeks, bring the Knife to the Book or Paper, which is fasten'd in the *Press* between two Boards. This Screw, which is pretty long, has two Directories or Pieces of Wood, which both as to their Form and Effect, resemble those of the Screws of the Cheeks. To make the Shaft slide square and even on the Cheeks, so that the Knife, push'd along by the Workman, may make an equal paring; that Foot of the Shaft where the Knife is not fix'd, has a kind of Groove, directed by a Thread fasten'd along one of the Cheeks. Lastly, the Knife is a piece of Steel, six or seven Inches long, flat, thin and sharp; terminating at one end in a point like that of a Sword; and at the other in a square form, which serves to fasten it to the Shaft. See **BOOK Binding**.

**PRESS**, in the Woollen Manufactory, is a large wooden Machine, serving to press Cloths, Serges, Ratines, &c. thereby to render them smooth and even, and to give them a Gloss. See **CLOTH**, &c.

This Machine consists of several Members; the principal whereof are the *Cheeks*, the *Nut*, and the *Worm* or *Screw*, accompany'd with its Bar, which serves to turn it round, and make it descend perpendicularly on the middle of a thick wooden Plank, under which the Stuffs to be press'd are placed. See **PRESSING**.

The Calender is also a kind of *Press*, serving to press or calender Linens, Silks, &c. See **CALENDER**.

**PRESSING**, in the Manufactures, the Action of violently squeezing a Cloth, Stuff, Linnen, &c. in a *Press*, to render it even, smooth, polish'd, and glossy. See **CLOTH**, &c.

This, in the Silken and Linnen Manufactures, they properly call *Calendring*. See **CALENDER**.

There are two manners of *Pressing*; the one *hot*, the other *cold*.

*Method*



*Method of PRESSING, Cold.*

After the Stuff has had all its Preparations, i. e. has been scour'd, full'd, and shorn (see SCOURING, FULLING, SHEERING:) it is folded square, in equal Plaits; and a Skin of Velom, or fine, smooth Past-board, put between each Plait. Over the whole is laid a square wooden Plank; and in this Condition it is put in the *Press*; which is driven tight down by means of the Screw turn'd full upon it, by the hands, assisted with Levers.

After it has lain a sufficient time under the *Press*, they take it out, remove the Past-boards or Veloms; and lay it up to keep. It may be observ'd, that some do not use a *Press* with a Screw in *pressing cold*; but content themselves with laying the Stuff on a firm Table, after plaiting and past-boarding it as before; covering the whole with a wooden Plank, and loading this with a Weight, greater or less, as is judg'd necessary.

*Method of PRESSING, Hot.*

The Stuff having receiv'd all its Preparations as before, it is sprinkled a little with Water, sometimes with Gum-Water, spurted over it with the Mouth; then plaited equally, and between each two Plaits are put Leaves of Past-board; and between every sixth and seventh Plait, as well as over the whole, an Iron or Brass Plate, well heated in a kind of Furnace for the purpose.

This done, it is laid under the *Press*; and a Screw brought forcibly down upon it, by means of a long Iron Bar.

Under this *Press* are laid five or six Pieces one over another, at the same time; all furnish'd with their Past-board, and Iron Plates. When the Plates are well cold, they take the Stuffs from under the *Press*, remove the Past-boards and Plates, and stitch it a little together, to keep in the Plait.

This manner of *Pressing* Woollen Stuffs, is very pernicious; and was only invented by the Manufacturers to cover the Defects of the Stuffs; and excuse their not giving them all the Snerings, Dyes, and Preparations, that are necessary to render them perfect: Accordingly it has been frequently prohibited.

*PRESSING to death*; see PAINE *Fort & Dure*.

*PRESSION*, or *PRESSURE*, in the *Cartesian* Philosophy, *Trusion*; an impulsive kind of Motion, or rather Endeavour to move, impress'd on a fluid Medium, and propagated thro' it. See MOTION, FLUID, and *CARTESIAN*.

In such a *Pression*, the *Cartesians* suppose the Action of Light to consist; see LIGHT: And in the various Modifications of this *Pression* by the Surfaces of Bodies, whereon that Medium is thus press'd, they suppose the various Colours to consist, &c. See COLOUR.

But Sir Isaac Newton has taught us better: For if Light, e. gr. consisted only in a *Pressure*, propagated without actual Motion, it could not agitate and warm such Bodies as reflect, and refract it; as we actually find it does; and if it consisted in an instantaneous Motion, or one propagated to all Distances in an instant, as such *Pression* supposes, there would be required an infinite Force to produce that Motion, every moment in every lucid Particle,

And if Light consisted either in *Pressure*, or in Motion propagated in a fluid Medium, whether instantaneously, or in time, it must follow that it would inflect itself *ad umbram*; for *Pressure* or Motion in a fluid Medium, cannot be propagated in right Lines beyond any Obstacle, which shall hinder any part of the Motion; but will inflect and diffuse itself every way into those parts of the quiescent Medium, which lie beyond the said Obstacle.

Thus the Force of Gravity tends downwards, but the *Pressure*, which arises from that Force of Gravity, tends every way with an equable Force; and with equal Ease and Force, is propagated in crooked Lines, as in straight. Waves on the Surface of Water, while they slide by the sides of any large Obstacle, do inflect, dilate and diffuse themselves by degrees into the quiescent Water, lying beyond the Obstacle. The Waves, Pulses or Vibrations of our Air, in which Sounds consist, do manifestly inflect themselves, tho' not so much as the Waves of Water; for the Sound of a Bell, or of a Cannon, can be heard over a Hill, which intercepts the sonorous Object from our sight; and Sounds will be propagated as easily thro' crooked Tubes, as thro' straight.

But Light is never observed to go in Curve Lines, nor to inflect itself *ad umbram*. For the fixed Stars do immediately disappear on the Interposition of any of the Planets, as well as some parts of the Sun's Body, by the Interposition of the Moon, Venus, or Mercury.

*PRESSURE of the Air*. See AIR.

Most of the Effects antiently ascribed to the *Fuga Vacui*, are now accounted for from the Weight and *Pressure* of the Air. See VACUUM.

The *Pressure of the Air* on the Surface of our Earth, is balanced by a Column of Water of the same Bulk, is about thirty-five Feet high; or one of Mercury of about twenty-nine Inches: See TORRICELLIAN Experiment and BAROMETER.

The *Pressure of the Air* on every square Inch on the Surface of the Earth, is computed to be about fifteen Pounds Avoirdupois. See BATHING.

*PREST*, a Duty in Money, to be paid by the Sheriff, upon his account, in the Exchequer; or for Money left or remaining in his hands.

*PREST Money*, from the French Word *Prest*, ready, is a Sum of Money which binds those who receive it, to be ready at command, at all times appointed; chiefly understood in the listing of Soldiers.

*PREST-Sail*, in the Sea-Language, is when a Ship carries all the Sail she can possibly croud; which is sometimes done in giving Chase, &c. But 'tis a dangerous Experiment, lest the Ship over-set, or bring her Masts by the Board; in which latter Case she becomes an easy Prey.

*PRESTATION-Money*, a Sum of Money paid yearly by Archdeacons, and other Dignitaries, to their Bishop, *Pro exteriori Jurisdictione*.

*Prestation* was also antiently used for other Payments: *& quieti sint de Prestatione Muragii*, Chart. Hen. 7. and sometimes for *Purveyance*.

*PRESTER*, a Meteor, consisting of an Exhalation thrown from the Clouds downwards with such Violence, as that by the Collision it is set on fire. See METEOR.

The *Prester* differs from the Thunder-bolt in the manner of its Inflammation; and in its burning and breaking every thing it touches with greater Vehemence. See THUNDER-BOLT.

The Word is Greek, *πρεσβε*; so called from the resemblance this Meteor has with a kind of Serpent call'd *πρεβη*, and sometimes *διδας*.

*PRESTER JOHN*, or *Jean*, a Term given the Emperor of the *Abyssinians*; because antiently the Princes of this Country were really *Priests*, and the Word *Jean* in their Language signifies *King*.

'Twas the French who first made him known in Europe under this Title. His Empire was antiently of vast Extent; at present it is confined to six Kingdoms, each about the bigness of Portugal.

The Name *Prester John* is altogether unknown in *Ethiopia*; and took its rise hence, That the People of a Province where this Prince usually resides, when they request any thing, say *Jean-Coi*, i. e. *my King*. His proper Title is, *The Grand Negus*.

There is also a *Prester John of Asia*, mention'd by M. Paolo the Venetian. His State is in the Country of *Cangingu*, between *China*, and *Sifan*, and *Thiber*; a Kingdom mightily valued by the *Chinese* for its Policy, and the Number of its fortify'd Cities; tho' they have usually the utmost Contempt for foreign Countries.

Some say he is so call'd from a *Nestorian Priest*, mention'd by *Albericus*, towards the Year 1145, to have mounted the Throne. Others, that he takes his Name from a Cross which he bears in his hand, as a Symbol of his Religion.

*PRESTIMONY*, *PRÆSTIMONIA*, in the Canon Law, a Term about which Authors are much divided; it is derived à *Præstatione quotidiana*, and is defined a kind of Benefice serv'd by a single Priest; in which sense, *Prestimony* is the same with a presbyterial Chappel. See BENEFICE.

Others will have *Prestimony* to be the Incumbency of a Chappel, without any Title or Collation; such as are most of those in Castles, where Prayers, or Mass are said; and which are mere Oratories un-endow'd: Whence also the Term is given in the *Romish Church* to certain perpetual Offices bestow'd on Canons, Religious, or others, for the saying of Masses, by way of Augmentation of their Livings.

Others, again, will have *Prestimony* to be a Lease, or Concession of any Ecclesiastical Fund, or Revenue belonging to a Monastery; to be enjoy'd during Life.

*Du Moulin* makes *Prestimony* a prophane Benefice, which, however, has a perpetual Title, and an Ecclesiastical Office with certain Revenues attach'd to it; which the Incumbent is allow'd to sell; and which may be possess'd without Tonsure: Such as the Lay-Church-Wardens of *Notre-Dame*. He adds, that in Propriety, the Canons of Chappels are Benefices of this nature.

Upon the whole, the surest Opinion seems to be this, that *Prestimony* is a Fund or Revenue affected by the Founder for the Subsistence of a Priest, without being erected into any Title of Benefice, Chappel, Prebend, or Priory; and which is not subject either to the Pope or to the Ordinary; but whereof the Patron, and those who have a Right from him, are the Collators; and nominate and confer, *pleno jure*.

*PRESUMPTION*, in Law, a Suspicion, or Conjecture founded on a Verisimilitude.



*Presumption* is of three sorts, 1<sup>o</sup>. *Violent*, which many times is allow'd a full Proof; as if one be kill'd in an House, and a Man is seen to come out of the House with a bloody Sword, and no other Person was at that time in the House; this, tho' but a *Presumption*, is a Proof.

2<sup>o</sup>. *Probable*, which hath but a small effect.

3<sup>o</sup>. *Levis*, or *Temeraria*, which is of no prevalency at all.

In Cases of a Charter or Feoffment, if all the Witnesses to the Deed be dead; the violent *Presumption*, that stands for a Proof, gives continual and quiet possession: *Stabit presumptio donec probetur in contrarium*. Coke on Lit.

*PRESUMPTION* was also antiently used for *Intrusion*. See *INTRUSION*.

*PRESUMPTIVE Heir*, the next Relation, or Heir at Law to a Person; who is to inherit from him *ab intestato*, and who 'tis *presumed* will be Heir; nothing but a contrary disposition of the Testator being able to prevent him.

See *HEIR*.  
*PRETENCE*, in Heraldry, see *ESCUTCHEON of Pretence*.

*PRETENS'D*, or *PRETENDED Right*, in Law, is where one is in possession of Lands and Tenements, which another who is out, claims and sues for. Here, the *pretens'd Right* is in him who so claims or sues.

*PRETER Naturam*, in Medicine, &c. see *NATURE*.

*PRETER*, or *PRETERIT*, *PRÆTERITUS*, *Past*, in Grammar, an Inflection of Verbs, expressing the Tense, or Time pass'd. See *VERB*.

*Preter*, or *Preterit*, is a general Name that comprehends the Inflections corresponding to the several Tenses, or several Circumstances and Relations of the Time past; all which the *Latins*, &c. distinguish'd by particular Inflections, or Terminations of the Verb; which make the proper Notion of Tenses. See *TENSE*.

The modern Languages, particularly the *English*, in lieu of different Terminations of the Verbs themselves, have frequently recourse to those of their Auxiliaries and Participles. See *PARTICIPLE*.

The *Preter*, or past Time, is subdivided by Grammarians into the *Preter-imperfect*, as, e. g. *I had, I thought*, in the *Latin*, *habebam, cogitabam*, in the *French*, *J'avois, je pensois*: The *Preter-perfect*; *I have had, I have thought*, *habui, cogitavi, j'ai eu, j'ai pensé*: And *Plusquam Preter perfect*, *I had thought, I had had, habueram, cogitaveram, j'eus eu, j'eus pensé*.

The *English* have properly but two Cases or Kinds of the *preter* Tense; viz. the *preter* Time of the imperfect Action; as, *I was at Supper then*, but had not yet done it. And the *preter* Time of the perfect Action; as, *I had then supp'd*, and it was then done.

The *preter* Tense is ofteneft form'd of the present Tense by adding *ed*; as *I burned*.

The *French* have a particular Case of the *preterit-perfect*, which F. Buffier calls the *Preterit Simple*, in opposition to the former, call'd the *Preterit Composite*; others call it the *Preterit Indefinite*, because expressing a thing done indeterminately, as *j'écrivis hier*. This answers to the *Aoristus* of the *Greeks*; and in the distinction of this from the compound *Preterit* does one of the greatest Niceties in the Practice of the *French* Language consist. See *AORISTUS*.

In the passive Voice, the *Latins*, *French*, &c. have recourse to Participles, and Auxiliaries, like the *English*, to form their *preter* Tenses, *I was loved, amatus eram, j'étois aimé*, &c.

*PRETERIT*, *PRÆTERITUS*, in the *Roman* Jurisprudence. A *preterit Child*, *Infans præteritus*, is that of whom the Father has forgot to make mention in his Testament; which renders it entirely null. See *TESTAMENT*.

A Father may make Institution, or Exheredation of his Son, but never *Preterition*.

*PRETER-Imperfect*,  
*PRETER-Perfect*,  
*PRETER-Pluperfect*, } in Grammar, see *PRETER*.

*PRETERITION*, or *PRETERMISSION*, in Rhetoric, a Figure, whereby, in pretending to pass over a thing untouched, we make a summary mention thereof.

*I will not say he is valiant, he is learned, he is just*, &c.

The most artful Praises are those given by way of *Preterition*.

*PRETEXT*, *Pretence*, a Colour, Motive, or Cause, either real, or apparent. See *COLOUR*.

*PRETEXTA*, or *PRÆTEXTA*, among the *Romans*, was a long white Gown, or Toga, having a Band, or Border of Purple at bottom. See *TOGA*.

It was wore by Children of Quality till the Age of Puberty, i. e. by Boys till seventeen, at which time they laid it aside, and assumed the Virile Gown. Girls wore it till Marriage. See *VIRILE*.

It took its Name *Pretexta*, according to Goodwin, *quod ei purpura Prætexta erat*, because guarded about with purple Silk.

The *Pretext* at first was a Robe of State, or Ceremony, wore only by the Chief Magistrates, and the Priests; nor was it lawful for such who wore this Gown to be arraigned, or Sentenc'd to pass against 'em, till it was pull'd off.

In continuance of time, it was permitted to Noblemen's Children; and, at length, even to all *Roman* Children in general.

*PRETIUM Sepulchri*, in old Law-Books, &c. those Goods accruing to the Church, wherein a Corps is buried.

In the *11th* Canons, lib. 19. it is ordered, that along with every Body that is buried, there go his Cow, Horse, Apparel, and the Furniture of his Bed; none of which may be disposed of otherwise than for the payment of Debts, &c. as being Familiars and Domesticks of the Deceased. See *HERIOT*, *MORTUARY*, &c.

*PRETOR*, *Prætor*, an eminent Magistrate in antient Rome.

In the first Ages of the Commonwealth, all the Magistrates were stiled *Pretors*; afterwards, the Title was bestow'd on all the principal Officers of the Army: At last, *Pretor* became restrained to a particular Magistrate.

About the Year of Rome 388, the People soliciting to have one of the Consuls always chosen from among the People; the Senators granted it, on condition that a new Magistracy should be erected, to be fill'd wholly from among the Patricians: Such was the Origin of the *Præture*, *Prætura*; which, *Livy* observes, was first discharged by *Spurius Furius*; and whose Office was to look to the administration of Justice and Equity between Man and Man; much in quality of a Lord Chief Justice, or Lord Chancellor, or rather both in one.

But Business increasing in proportion as the Empire was enlarged, a second *Pretor* was created, to take cognizance of the Affairs of Foreigners residing at Rome: upon which the former was distinguished by the Title of *Prætor Urbanus*, or *major*; and the latter by that of *Prætor Peregrinus*, or *minor*.

The Number, in after-times, was much increased; under the Reign of *Augustus* there were twelve, and afterwards eighteen; two whereof were call'd *Prætores Cereales*, as being charged with the providing of Corn and Grain; and two others *Prætores Fidei Commissarii*. In the Code, L. 1. T. 39. we find a Law of the Emperors *Valentinian* and *Marcian*, which reduces the *Pretors* to three.

The Office of the *Pretor*, or *Prætor Urbanus*, was to render Justice in the City; he had a Power to interpret the Laws, to supply, and reform 'em; and even to make new ones, when the public Good required it.

In the Institutes, the Edicts of the *Pretors* are call'd *Jus honorarium*; whence it should seem, they had only the force of Laws out of respect to that eminent Magistrature; the Business of the *Pretor* being rather to look to the Observation of the old Laws, than to make new ones. See *CIVIL LAW*.

Some are of Opinion he had not the Right of the Sword; the cognizance of Crimes being the special Province of the *Præfect* of Rome. See *PRÆFECT*.

But others are of another Sentiment. In the general, 'tis very difficult to fix precisely how far his Power extended. When he walk'd, he was preceded by six Lictors; and was clothed with the Robe call'd *Trabea*. See *LICTOR* and *TRABEA*.

His Authority, like that of the other Magistrates, was very much weaken'd and reduced under the Emperors. In the Digest and Code, is a Title *de Officio Prætoris*.

*PRETOR* was also a Title among the *Romans* for the Governour of a Province, who had pass'd the Office of *Pretor*.

Whence Provinces govern'd by *Pretors*, or restrained to those who had discharged that Office, were call'd *Pretorian Provinces*. See *PROVINCE*.

*PRETORIAN Guards*, or *Cohorts*, were the Soldiers of the Emperor's Guard; so call'd, as some imagine, from their Place or Station in the Palace or Court call'd *Prætorium*. See *PRÆTORIUM*.

Their Institution is owing to *Scipio Africanus*, who first established a Company of the bravest Men in his Army, pick'd out for the purpose, to be his Guard; and who never stir'd from his side in Battle. See *GUARD*.

Their Number was at length increased, as *Dion* tells us, to ten thousand. They were commanded by an Officer created by *Augustus*, call'd *Præfectus Prætorii*. See *PRÆFECT*.

*PRETORIUM*, among the *Romans*, the Place, Hall, or Court wherein the *Pretor* liv'd, and wherein that Magistrate sat, to administer Justice to the People. See *PRÆTOR*.

There were of these *Prætoriums* in all the Cities of the *Roman* Empire. See *CURIA*, *COURT*, &c.

The Scripture mentions that of *Jerusalem*; and there are still some remains of one at *Nismes* in *Languedoc*.



**PRETORIUM** was also the Tent, or Pavillion of the General of the Roman Army; wherein Councils of War, &c. were held.

From the time of *Augustus*, the Emperor's Tent in the Camp was distinguish'd by the Titles of *Pretorium Augustale*.

**PRETORIUM** was also a Place in *Rome* where the *Pretorian* Guards were lodged. See **PRETORIAN**.

Some will have the *Pretorium* to be properly the Tribunal of the *Praefectus Pretorii*; or an Auditory destined for the rendring of Justice in the Emperor's Palace. See **PRAEFECT**.

This they argue from *St. Paul's* Epistle to the *Philippians*; and from this place call'd *Pretorium*, they will have the Guards denominated *Pretoriani*, because assembled here for the Emperor's Guard.

Others will not allow the *Pretorium* to be any Tribunal, or Seat of Justice, but merely the Imperial Guard-house.

*Perizonius* has an express Dissertation to prove that the *Pretorium* was no Court of Justice in *St. Paul's* time; but the Camp or Place where the *Pretorian* Guards were assembled. He adds, that the Name *Pretorium* was not given to Places where Justice was administred, till long time after; when the Office of the *Praefectus Pretorii* was converted into a Civil Function.

**PREVARICATION**, *Prævaricatio*, in the Civil Law, is where the Informer colludes with the Defendant, and so makes only a feign'd Prosecution.

*Sylvius*, in his Comments on *Cicero, pro Cluentio*, gives us the difference between the three Terms, *Calumniari*, *Prævaricari*, and *Tergiversari*. He who in his Accusation forges faults never committed, is said *Calumniari*. He who undertakes one's Suit, and either will not urge Reasons in behalf of his Client, or not answer the Objections of his Adversary, when he is able, is said *Prævaricari*. And he who desists in his Accusation, and lets the Suit drop, *Tergiversari*.

**PREVARICATION**, in our Law, is when a Man falsely and deceitfully seems to undertake a thing, *ea intentione*, that he might destroy it; *e.gr.* where a Lawyer pleads booty, or acts by collusion, &c.

**PREVARICATION** is also used for a secret Abuse committed in the Exercise of a public Office, or of a Commission given by a private Person.

**PREVARICATOR**, in the University of *Cambridge*, is a Master of Arts, chosen at a Commencement, to make an ingenious, satirical Speech, reflecting on the Misdemeanours of the principal Members. See **TERRÆ Filius**.

**PREVENTION**, in the Canon, &c. Law, the Right a superior Person, or Officer has to lay hold of, claim, or transact an Affair before an inferior to whom it more immediately belongs.

The Word is chiefly used for the Pope's *Prevention* of ordinary Collators; and the Royal Judges of subaltern ones.

The *Romish* Canonists maintain, that the Pope, who is the Source of all Jurisdiction, has not transmitted it privately to the ordinary Collators; but that he may still not only collate concurrently with them, but also *prevent* them by using his original Power as Head of the Church. See **COLLATOR**.

These *Preventions* are grown odious in several Countries, where they don't now obtain without a world of Modifications and Restrictions; and the Civil Power in *France*, always judges in favour of the ordinary Collators.

The Pope has no *Prevention* to the prejudice of Lay-Patrons; but by the *Concordat* he has reserved to himself the Right of conferring elective Benefices by *Prevention*, and even Cathedral and Collegiate Dignities. See **CONCORDAT**.

If the Provisions of the Pope, and Collations of the Ordinary bear Date of the same Day; the *Ultramontane* Canonists give the preference to the Pope; the *French* to the Ordinary.

The Cardinals have a particular Indulgence not to be *prevented* by the Pope within six Months.

**PRIAPELA**, in Poetry, a Name given to certain obscene Epigrams, and other Pieces, composed on the God *Priapus*; whereof we have many Instances in the *Greek Catalecta*. See **PRIAPUS**.

**PRIAPISMUS**, **PRIAPISM**, in Medicine, a continual and painful Erection or Tension of the Yard. See **ERECTION**.

The immediate Cause of a *Priapism*, is the Heat, Pungency, or Acrimony of the Semen; accompanied with a Convulsion of the Muscles of that part, which compressing the Veins and cavernous Bodies, prevent the return of the Blood.

The more remote Causes are too hot, sharp, stimulating Foods; Cantharides are also found to perform the same effect, but with much more violence. There are Instances of People, especially old Men, who, making use of Cantharides to enable 'em to satisfy their Passions the better,

have been seiz'd with a *Priapism*, which has been follow'd with universal Convulsions, and even Death. See **CANTHARIDES**.

The Term is derived from *Priapus*, a Heathen God, whom the Poets and Painters represent with a Yard always stiff and erect.

As Satyrs are usually painted after the same manner, the Disease is also call'd *Satyriasis*.

Some, however, distinguish between the *Satyriasis* and *Priapismus*; in that the latter is without any effusion or desire; but the former attended with both. See **SATYRIASIS**.

**PRIAPUS**, a Term sometimes apply'd to the genital Parts of Men, *viz.* the Penis and Testes. See **GENITAL**.

The Name took its rise from *Priapus*, a fabulous Deity, particularly adored at *Lampsachus*, the Place of his Birth; who, for the extraordinary Size of his Parts was exceedingly revered by the Women; insomuch that the Scripture tells us, King *Asa* dethroned his Mother *Maachab*, because she had consecrated a Grove to *Priapus*, and presided at his Sacrifices.

**PRICE**, *Pretium*, the Value of a thing. See **VALUE**.

**PRICE-CURRENT**, in Commerce, a weekly Account of the current Value of most Commodities. See **CURRENT**.

**PRICK-POST**, in Building, see **POST**.

**PRICKING**, in the Sea-Language. To *prick the* Plat, or Chart, is to make a Point therein, near about where the Ship is to be at any time; in order to find the Course they are to steer. See **COURSE**, **CHART**, &c.

**PRIEST**, *Sacerdos*, a Person set a-part for the performance of Sacrifice, and other Offices, and Ceremonies of Religion. See **SACRIFICE**, **RELIGION**, &c.

Thus the false Gods and Goddesses of the Heathens had their *Priests*; *Priests* of *Mars*, of *Bacchus*, of *Hercules*, of *Isis*; and some of 'em their Priestesses. See **PONTIFF**, &c.

The *Jews* too had an Order of *Priests* and *Levites*, who serv'd in the Temple. See **LEVITE**, &c.

The *Mahometans* have their *Priests* call'd *Scheik* and *Muphi*; and the *Indians* and *Chinese* their *Bramans* and *Bonzes*. See **SCHAIK**, **MUPHTI**, **BONZES**, and **BRAMAN**.

**PRIEST**, *Presbyter*, in the Christian Church, is a Person invested with holy Orders; in virtue whereof, he has a Power to preach, pray, administer the Sacraments, &c. and, in the *Romish* Church, also, to bless, absolve, &c. See **ORDERS**.

By the Canons, a Man must be twenty-four Years of Age 'er he be admitted to the *Priesthood*; antiently thirty Years were required. See **ORDINATION**.

The Holy Scripture usually confounds the Title of *Priest*, *Presbyter*, with that of *Bishop*, *Episcopos*; and does not seem to give any Superiority to the one, over the other: and, yet, the absolute Equality among all the *Priests* in the Government of the Church has few Instances, but what are contested. See **PRESBYTER**.

*Blondel* and *Salmasius* maintain with a world of Reason, that in the primitive Church, the *Priests* govern'd with perfect Equality, and without any other pre-eminence beside that of Age; and yet to consult the Fathers, and Tradition, the *Presbyterian* Form of Government would scarce seem to have been known among the Antients. See **PRESBYTERIAN**.

In effect, the primitive Writers speak of nothing but Episcopacy; and of that too, frequently in such Terms, as if they esteem'd it of Apostolical Institution. See **EPISCOPACY** and **BISHOP**.

As, in the antient Church, the Deacons had the Management and Administration of the Revenues of the Church, their Authority grew apace, and in a little time they were got above the *Priests*; *St. Jerom* used his utmost Endeavours to prove that Deacons were originally inferior to *Priests*; and the Council of *Nice* decided the Question in favour of the latter. See **DEACON**.

Indeed, an Order of Deacons having been instituted without any other Function than to assist the *Priest* at the Altar; these have made no difficulty of owning the Superiority of the *Priests*. Add to this, that the Order of a Deacon being now become necessary to arrive at that of a *Priest*, there is no room to dispute the precedence: But the Deacons who had retain'd their Function, had the disposal of the Revenues, and paid the *Priests* their Penions; still maintain'd the Superiority. Upon which, the sixth Council in *Trullo* pronounced once more on the Dispute, and gave the Pre-eminence to the *Priests*.

*Cardinal Priest*, see **CARDINAL**.

*High Priest*, see **PONTIFEX**.

*Priest's Cap*, in Fortification, see **BONNET à Perc.**

**PRIMA NATURALIA**, in Physics, *Atoms*, or the first Particles, whereof natural Bodies are primarily composed; call'd also *MINIMA NATURALIA*, which see: See also **PARTICLE**, **ATOM**, &c.

**PRIMÆ Viæ**, in Medicine, the first Passages of the Chyle;



Chyle; as the Stomach, Intestines, and their Appendices. See CHYLE, &c.

PRIMAGE, a Duty appointed by a Statute of Henry VIII. to be paid to the Mariners, and Sailors, for the loading of any Ship, at its setting forth from a Haven.

This is different, in different places; in some, a Penny per Pound; in others, Six-pence *per Bale* or Pack. See DUTY and CUSTOM.

PRIMARY Planet, a Planet which revolves round the Sun as a Centre. See PLANET.

Such are Saturn, Jupiter, Mars, the Earth, Venus and Mercury; thus call'd in opposition to secondary Planets, or Satellites. See SATURN, VENUS, &c.

Some Authors restrain the *primary Planets* to the superior ones, viz. Saturn, Jupiter and Mars; but very imperitantly.

PRIMATE, an Archbishop, invested with a Jurisdiction over several Archbishops, or Bishops. See ARCHBISHOP.

Father *Sirmond* derives the Origin of *Primates* hence; That the large Provinces having been divided and subdivided by the Emperors; the first Divisions were call'd *First*, others *Seconds*, others *Thirds*, &c. and the Title *Primate* given to the Metropolitans, i. e. to the Bishop of the City which was the Capital of the Province, e'er the Division was made. See METROPOLIS and METROPOLITAN.

This Metropolitan *Primate* had some Jurisdiction over the Bishops of the inferior Provinces; and was also call'd *Patriarch*. See PATRIARCH.

The Term *Primate* is *Latin*, and signifies the *First* or *President* of a Society: The *Greek* Word corresponding to it, is *Exarcha*. See EXARCHA.

Those who hold for a strict Ecclesiastical Hierarchy, maintain a *Primate* to be he who has several Metropolitans under him; as a Patriarch has several *Primates*: yet 'tis pretty evident from History, that *Primates* were at first confounded with Patriarchs: Thus *Socrates* enumerating ten Patriarchs, does not make any distinction thereof from *Primates*.

In *Africa*, after the Distinction was made, the *Primates* were not at all subject to the Patriarch: Thus the Bishop of *Carthage*, who was *Primate*, paid no Obedience to the Bishop of *Alexandria*, who was Patriarch.

Nor, to be a *Primate*, was it necessary to have Metropolitans for Suffragans: Each Province of *Africa*, except those which compos'd the Diocese of *Alexandria*, had its *Primate*; this Quality being given to Age.

In *France*, the Subdivision of Provinces gave occasion to the Erection of *Primates*: Thus *Aquitain*, e. gr. being divided into two Provinces, the Archbishop of *Bourges* became *Primate* of the *Aquitains*, because *Bourges* was the Capital of the first.

Thus also the Division of *England* into two Provinces, *Canterbury* and *York*, in 1152, gave occasion to the Introduction of *Primacies* among us; *Canterbury*, which was the Metropolis before, thence giving the Title of *Primate* of all *England*, to its Prelate; tho' the Archbishop of *York* still claims that of *Primate* of *England*. And accordingly, the first has some Jurisdiction over all *England*, relating to Administrations, &c. which the latter has only within his own Province. See PROVINCE.

PRIME, PRIMUS, the first in Order, Degree, or Dignity, among several Things of the same, or like kind.

Thus we say, *Prime Minister*, *Prime Mover*, *Prime Cost*, &c. See MINISTER, MOBILE, &c.

PRIME, or PRIME Minute, in Geometry, the sixtieth part of a Degree. See DEGREE.

*Prime* is sometimes also used for the tenth part of an Unit. See DECIMAL.

In Weights it is used for the twenty-fourth part of a Grain. See GRAIN.

PRIME Number, in Arithmetic, a Number which can only be measur'd by Unity; or whereof 1 is the only aliquot part. See NUMBER.

Such are 5, 7, 11, 13, &c.

*Prime Numbers*, *inter se*, among themselves, are those which have no common Measure besides Unity; thus 12 and 19 are *Prime Numbers inter se*.

PRIME Figure, in Geometry, is that which cannot be divided into any other Figures more simple than itself. See FIGURE.

Such is a Triangle among Planes; and the Pyramid in Solids: for all Planes are made of the first, and all Bodies or Solids compounded of the second.

PRIME Vertical, is the Vertical Circle which passes thro' the Poles of the Meridian. See VERTICAL.

PRIME Verticals, in Dialling, or PRIME Vertical Dials, are those projected on the Plane of the Prime Vertical Circle, or on Planes parallel thereto. See DIAL Plane.

These are what we likewise call Direct, Erect, North or South Dials. But since every Plane hath that Pole raised

or depressed thereon, which lies open to it; therefore this Plane, (if a direct South) hath the South Pole elevated, and consequently the Style (whose Height must be the Complement of the Latitude of the Place) will point downwards. Wherefore to find the Hour's Distance from the Meridian upon this Plane, the Proportion is, As the Radius is to the Sine of the Style's Height, or Co-Latitude; so is the Tangent of the Hour, or Angle at the Pole: To the Tangent of the several Hours Distance from the Meridian. By this Canon, the Hours requisite for the Plane, as also the Half-Hours, Quarters, &c. being calculated and set in a Table; the Dial is described after the same manner, as the Horizontal Dial. North Direct Erect Dials, are but the backside of the South, because lying in the same Azimuth with it; therefore it is no more but turning the South Dial upside-down, and leaving out the superfluous Hours between 5 and 7, and 4 and 8, and the North Dial is made. Only note, that the Style must point upwards to the North Pole. See DIALLING.

PRIME of the Moon, is the new Moon at her first Appearance, for about three Days after her Change. See NEW MOON.

PRIME is also used in the *Romish* Church, for the first of the Canonical Hours, succeeding to *Lauds*. See LAUD.

PRIME, in Fencing, is the first, and chief of the Guards, which is that the Body is in, immediately after drawing the Sword; being fittest to menace and terrify the Enemy, by reason the Point of the Sword is held higher up to the Eye, than in any of the other Guards. See GUARD.

PRIME, or PRIMING of a Gun, is the Gun-Powder put in the Pan, or Touch-hole of a Piece, to give it fire by.

The *Priming* is the last thing done in Charging. See CHARGE.

For Pieces of Ordnance, they have a pointed Iron Rod, to pierce the Cartridge thro' the Touch-hole; call'd *Primer*, or *Priming Iron*.

PRIMING, among Painters, signifies the laying on of the first Colour. See COLOUR and PAINTING.

PRIMICERIUS, in Antiquity, the first, or chief Person in any Office, or Dignity.

In this sense the Word occurs frequently in the Code, and even in our old *English* Laws; tho' it is there also occasionally used for the Nobility, as *Primicerius totius Angliæ: Mon. Ang.*

The *Romans* had great Variety of *Primicerii*, both in Church, and the Emperor's Court; a *Primicerius* of the *Empress*, a *Primicerius Augustus*, a *Primicerius* of the *Bardariotæ*, of the *Legions*, of the *Court*, of the *Chamber*, of the *Palace*, &c.

The *Ecclesiastical Primicerius*, *Du Cange* observes, was the same with the *Chanter* among us. See CHANTER.

In the Church of *Metz*, the *Primicerius* is the first Dignitary of the Diocese, and presides at Assemblies of the Clergy, in prejudice of the Bishop.

At *Venice*, the Dean of the Church of *St. Mark* is call'd *Primicerio*, or *Primicerius*: He is independent of the Patriarch of *Venice*, and enjoys Episcopal Privileges.

PRIMIER Seisin, in Law, *q. d.* the first Seisin; a Branch of the King's Prerogative, whereby he had the first possession of all Lands, and Tenements held of him in chief, whereof his Tenant died seized in Fee; and consequently the Rents and Profits thereof, till the Heir, if he were of Age, did homage; and if under Age, till he became of Age.

But all Charges arising by *Primier Seisin*, are annulled by a Stat. 12 Car. 2. See SEISIN.

PRIMIPILARI, or PRIMOPULARII, in Antiquity, the Soldiers of the first Company, or Cohort of a Legion. See LEGION and COHORT.

The *Primipilarii* had considerable Advantages; one of the chief was, that most of the Soldiers who died in the Campaign, left them their Heirs.

PRIMIPILUS, or PRIMOPILUS, in Antiquity, the first Centurion, or Captain of a Cohort, who had charge of the *Roman* Banner. See CENTURION and COHORT.

PRIMITIÆ, the First Fruits gather'd of the Earth; whereof the Antients made Presents to the Gods. See FRUITS.

In *Leviticus*, the *Primitiæ* of all Fruits are enjoind to be offer'd to God. See TITHES.

In our Law, the *Primitiæ* are one Year's Profits, after Avoidance, of every Spiritual Living, as rated in the King's Books. See FIRST-FRUITS.

PRIMITIVE, in Grammar, a Root; or a Word in a Language, which is neither derived from any other Language, nor compounded from any other Words of the same. See ROOT.

Thus, *God* is a *Primitive*; *Godly*, a *Derivative*; *God like*, a *Compound*. See DERIVATIVE.

PRIMITIVE, in Arithmetic. See PRIME Number.

PRIMO Beneficio Ecclesiastico habendo, in Law, a Writ directed from the King to the Lord Chancellor, appointing him to bestow the Benefice that shall first fall in the King's Gift,



Gift, above or under such a Value, upon this or that Clerk. See **BENEFICE**.

**PRIMOGENITURE**, *Birthright*; the Right of the First-born, or eldest Child. See **BIRTHRIGHT**.

The *Right of Primogeniture* seems to be an unjust Privilege, and contrary to natural Right: For since 'tis Birth alone gives Children a Title to the paternal Succession, the Chance of *Primogeniture* should not throw an Inequality among them.

Accordingly, the Right of *Primogeniture*, which calls the Elder-born to the Crown, preferably to the other, was not introduced into *France* till very late: 'Twas unknown to the first Race of Kings; and even to the second.

The four Sons of *Clovis* shared the Kingdom equally among themselves; and *Louis le Debonnaire* did the same: 'Twas not till the Race of *Hugh Capet*, that the Privilege of Succession to the Crown was affected to the First-born.

By the antient Custom of *Gavelkind*, still preserv'd in some parts of our Island, *Primogeniture* is of no account; the paternal Estate being equally shared by all the Sons. See **GAVELKIND**.

**PRIMUM Mobile**, in the *Ptolemaic* Astronomy, the ninth or highest Sphere of the Heavens, whose Centre is that of the World, and in comparison of which, the Earth is but a Point. This they will have to contain all the other Spheres within it, and to give motion to them, turning it self, and all them, quite round in twenty-four hours. See **MOBILE**.

**PRINCE**, **PRINCEPS**, in Politicks, a Person invested with the supreme Command of a State or Country; independent of any Superior. See **MONARCH**. See also **KING**.

**PRINCE** is also used for a Person who is Sovereign in his own Territory; yet holds of some other, as his Superior, or Lord, and pays Homage or Tribute to him.

Thus all the *Princes of Germany* are Feudataries of the Emperor; they are all as absolute in their respective Principalities, as the Emperor himself; yet are all bound in certain Services to him. See **EMPEROR**. See also **ELECTOR**, and **COLLEGE**.

In many antient Titles, the Word *Prince* signifies no more than *Lord*; *Du Cange* gives a great many Instances of it. See **LORD**.

In effect, the Word *Princeps* in *Latin*, whence *Prince* in *English*, originally signifies the *Chief*, or *First*; it is compounded of the *Latin* *primus*, and *Caput*; and is properly a Word of Dignity and Office, not of Property and Sovereignty.

Thus, in the Charter of King *Offa*, after the Bishops had subscribed their Names, we read, *Bordanus Patritius, Binnanus Princeps*; and afterwards the Dukes subscribed their Names.

And in a Charter of King *Edgar*, in *Mon. Angl. tom. 3. p. 301. Ego Edgarus Rex rogatus ab Episcopo meo Deorwolfe, & Principe meo Aldredo, &c.* And in *Mat. Paris, p. 155. Ego Halden Princeps Regis pro viribus assensum præbeo, & ego Turketillus Dux concedo.*

Among the antient *Romans*, it was the Custom for the Emperor in his Life-time to nominate him whom he would have succeed in the Empire, under the Title of *Princeps Juventutis, & Cæsar*. See **CÆSAR**.

In the *Ludus Trojanus*, the Youth who was chose Captain, was also call'd *Princeps Juventutis*. See **TROJANUS**.

**PRINCE** is also a Title given to the Issue of *Princes*, or those of the Royal Family; in which sense, they are called, particularly in *France*, *Princes of the Blood*; as partaking of the Blood to which the Sovereignty is affected: and not by any Hereditary Right, but as a Patrimony substituted to all the Royal Race. See **BLOOD**.

In *England*, the King's Children are call'd *Sons and Daughters of England*: The Eldest is created *Prince of Wales*. See **PRINCE of Wales**.

The Cadets, or Younger, are created Dukes, or Earls, with what Title the King pleases. See **CADET**.

They have no Appannages, as in *France*; but only what the good pleasure of the King bestows on them.

The Sons are all by Birth Counsellors of State: The Daughters are stiled *Princesses*; to violate the Eldest of which, unmarried, is at this day High Treason.

To all the King's Children belongs the Title of *Royal Highness*: All Subjects are to kneel, when admitted to kiss their Hand; and at Table, out of the King's presence, they are serv'd on the Knee.

The first *Prince of the Blood in France*, is call'd absolutely, *Monsieur le Prince*. The Quality of *Prince of the Blood*, gives a Rank and Precedency, but does not include any Jurisdiction; they are *Princes* by Order, not by Office.

*Wicquefort* observes, that 'tis not fifty Years since the *Princes of the Blood of France* gave place to all Emba-

sadors, even those of Republicks; and it was at the King's request, that they were since allow'd the Precedency.

The moment the Pope is elected, all his Relations become *Princes*.

**PRINCE of Wales**, the eldest Son of *England*. He is born Duke of *Cornwall*; and immediately entitled to all the Rights, Revenues, &c. belonging thereto; as being deemed, in Law, at full Age on his Birth-day.

He is afterwards created *Prince of Wales*; the Investiture whereof is perform'd by Imposition of a Cap of State, and a Coronet, a Verge of Gold, and a Ring. He holds the Principality by Patent, granted him and his Heirs, Kings of *England*.

The Title and Principality were first given by King *Edward* the first to his eldest Son: Till that time, the eldest Son of *England* was call'd *Lord Prince*. While *Normandy* remained to the King of *England*, the eldest Son was always stiled *Duke of Normandy*: Since the Union, his Title is *Magna Britannia Princeps*.

He is reputed, in Law, the same Person with the King: To imagine his Death, or to violate his Wife, is High Treason. His Revenues, as Duke of *Cornwall*, are computed at 14000 *l. per Annum*. The Revenues of the Principality were estimated 300 Years ago at 4680 *l. per Ann.*

**PRINCIPAL**, the chief, most considerable, or necessary part of a thing.

Thus we say, the Mayor is the *principal* Magistrate of a City or Town: A Council of War consists of the *principal* Officers. In a Peroration, the *principal* Points insisted on, are to be briefly summ'd up. The *Principal* of a College, or Hall, is the Master thereof. See **COLLEGE**, and **HALL**.

**PRINCIPAL**, in Commerce, is the Capital of a Sum due or lent; in which sense the Word is used in opposition to *Interest*. See **INTEREST**.

**PRINCIPAL** is also used for the first Fund or Sum put by Partners into common Stock; by which it is distinguish'd from the Calls or Accessions sometimes required, when the former proves insufficient.

**PRINCIPAL Point**, in Perspective, is a Point in the perspective Plane; upon which a Line drawn from the Eye, perpendicular to the Plane, falls. See **POINT**.

This Point is in the Intersection of the horizontal and vertical Plane, and is also call'd the *Point of Sight*, and *Point of the Eye*. See **SIGHT**, &c.

**PRINCIPAL Ray**, in Perspective, is that which passes perpendicularly from the Spectator's Eye to the perspective Plane. See **RAY**.

Whence, the Point, where the Ray falls on the Plane, is called the *principal Point*, which some Writers call the *Centre of the Picture*, and the *Point of Concurrence*.

**PRINCIPAL**, *Principalium*, in old Law-Writers, is sometimes used for a *Heir lome*; which see: and sometimes for a *Mortuary*, or *Corse present*.—*Item lego equum meum vocatum le Bay Gelding, ut offeratur ante Corpus meum in die sepulture mee, nomine Principalii Test. Joh. de Macclesfield, 9 Hen. 5.* In *Urchensfield Com. Hertford*, certain *Principals*, as the best Beatt, best Bed, best Table, &c. pass to the eldest Child, and are not subject to Partition.

**PRINCIPLE**, **PRINCIPIUM**, a Term frequently used for the Cause, Source, or Origin of any thing; in which sense we say, the *Principle of Thinking*, of *Willing*, &c.

In Physics, we must ever have recourse to a first *Principle*; which is God. See **CAUSE**.

The *Manichees* admit of two *Principles*, the one of Good, the other of Evil; which they establish in quality of two contrary Deities, constantly opposing each other. See **MANICHEE**. See also **GOOD** and **EVIL**.

According to the Doctrine of *Pelagius*, our Wills are the *Principles* of our good Actions, and we ourselves the *Principles* of our good Wills. See **PELAGIANS**.

**PRINCIPLE** is defined, among the School Philosophers, to be that from which any thing is, is done, or known: *Unde aliquid est, fit, aut cognoscitur*; which is a very extensive Signification, and agrees to all kinds of *Principles*.

Thus, the Premises are *Principles*, in respect of the Conclusion; and thus Fire, and every other Agent, are the *Principles* of Things which they produce.

The *Thomists* define *Principle* to the like effect; *id est quo aliquid procedit aliquo modo.*

The Philosophers usually distinguish *Principles*, *Principia*, into those of *Being*, *Essendi*; and those of *Knowing*, *Cognoscendi*: Or *Principia Rei* and *Cognitionis*.

Of the first they make two Kinds; *viz.* of *Origination*, which are those from which something proceeds really the same with the *Principle*; as in the Procession of the Son and Spirit from the Father in the Trinity: And of *Dependency*; in which sense, any Cause is a *Principle*, in respect of the Thing caused; or a Subject, in respect of the Accidents inherent in it.



The *second* is that from which we borrow, or derive our Knowledge of some other Thing; or, it is that which makes the Thing be known. Such are *Axioms*, *Definitions*, *Hypotheses*; such also are *Examples*, *Explanations*, &c. See KNOWLEDGE.

PRINCIPLE, in Physics, or PRINCIPLES of a natural Body, is something that contributes to the Essence of a Body; or, whereof a natural Body is primarily constituted. See BODY.

Aristotle defines *Principles* to be those things which are not made or constituted of themselves, nor of other things, but all things of them: *Quæ non sunt ex se invicem, nec ex aliis, sed ex iis omnia*.

To give an Idea of natural *Principles*, consider a Body in several States; a Coal, e.g. that was just now a piece of Wood: 'tis evident there is something in the Coal, which before existed in the Wood; this, whatever it is, is a *Principle*; and is what we call *Matter*. See MATTER.

Again, there must be something join'd with this Matter, to make it Wood rather than Fire; or Fire, rather than Wood: This is another *Principle*; and is what we denominate *Form*. See FORM.

Matter, and Form, then, are universal *Principles* of natural Bodies.

The *Peripatericks* add a third *Principle*, viz. *Privation*; for tho', say they, a thing is not made from nothing; yet it must be made from its not being that thing before: This Aristotle calls *Privation*, and admits it as a third *Principle*.

But the Moderns reject it; for if Privation be a *Principle*, 'tis at least so, in a very different sense from Matter and Form. See PRIVATION.

Some late Philosophers admit no *Principles* but *Acid* and *Alkali*. See ACID and ALKALI.

Aristotle makes two sorts of natural *Principles*, as they concur in the Generation, or the Composition of Bodies.

The *Principles* of Generation, or of a Body *in fieri*, are those without which a natural Generation can neither be, nor be conceiv'd. Such are the three *Principles* above mention'd; *Matter*, *Form*, and *Privation*.

The *Principles* of Composition, or of a Body *in facto esse*, already made, are those whereof natural Bodies really consist. Such, according to him, are *Matter* and *Form*; to which some add a third, viz. *Union*, to connect the two others together. But this is only necessary upon supposition of substantial Forms. See SUBSTANTIAL FORM.

*Principles* are usually confounded with *Elements*; yet is there a real difference: *Elements* are properly the first and simplest Beings, arising from the first Determination or Assemblage of *Principles*. They are the simplest things in which Matter and Form are combined. *Elements* and *Principles*, therefore, differ in this, that a *Principle*, as Matter, is only a begun, not a compleat Nature; but an *Element* is perfect and compleat. See ELEMENT.

To this Head may likewise be referred what we call *Mechanical Principles of Bodies*, which explain the Mechanism or artificial Structure of Things, and all the Varieties and Differences of Bodies from Motion, Figure, and other common Affections. See MECHANICAL.

These *Principles* are differently maintain'd by three or four different Sects of Philosophers; viz. the ancient *Epicureans*, or *Corpuscularians*; to which may be added the modern *Gassendists*; the *Cartesians*; and the *Newtonians*. See EPICUREAN, CORPUSCULARIAN, CARTESIAN, and NEWTONIAN.

PRINCIPLES, in Chymistry, are the first and simplest parts whereof natural Bodies are compounded; and into which they are again resolvable by Fire. These are more properly, as well as more commonly, call'd *Elements*. See ELEMENT.

The Chymists make five *Principles*; three whereof are call'd *active Principles*, viz. *Salt*; *Sulphur*, or *Oil*; and *Mercury*, or *Spirit*. The *Salt* they suppose the Foundation of all Savours; see SALT. The *Sulphur* of Odours; see SULPHUR: and the *Spirit*, or *Mercury*, of Colours; see SPIRIT.

The two *passive Principles*, are *Phlegm*, and *Caput Mortuum*; which they also call *elementary Principles*. See PHEGM, &c.

PRINCIPLES, in the *Hermetic Philosophy*. According to these Gentlemen, the two *Universal Principles* of sensible Nature, are *subtile* and *solid*, which being join'd in a greater or less degree, generate all that beautiful Variety of Beings in the Universe.

The three *Natural Principles* are *Salt*, *Sulphur*, and *Mercury*. These *Principles* generate the four *Elements*; and are, as it were, secondary *Elements*, inasmuch as they are contain'd in all mix'd Bodies. *Sulphur* is the first, and stands in the place of Male; *Mercury* the second, standing in the place of Female; and *Salt* the third, which copulates the others together. *Diâ. Hermet.*

PRINCIPLE is also apply'd to the Foundations of Arts and Sciences. See ART and SCIENCE.

In this sense we say, *Principles* are not to be proved; they must be common Notions. See NOTION and AXIOM.

There is no disputing against a Man that denies *Principles*. The worst Reasoning is that which includes a *Petitio Principii*, i. e. which supposes a *Principle* that ought to be proved.

The Word *Principle* is also used by extension for the first Rules, or Maxims of an Art. In this sense we say, a Man is ignorant of the *Principles* of Geometry; meaning, he has not learnt *Euclid's Elements*.

The *Principles* of all Arts and Sciences are found in this Dictionary, under their respective Heads.

PRINTER, a Person who composes, and takes Impressions from, moveable Characters, ranged in Order; or from Plates engraven: by means of Ink, a Press, &c. See PRINTING.

*Fust*, *Guttembourg*, *Schoeffer*, *Mantel*, and *Koster* were the first *Printers*. The first that practis'd it in England, was *Fred. Corseles*, brought over from *Haerlem*, under King Henry VI. In France, *Gering*; at Rome, *Conrad Sweynheim*, and *Arnold Pannarts*, both Germans; at Naples, *Sixtus Rufinger*.

The great *Printers* were *Aldus*, and *Paul Manutius*; the two *Badii*; *William* and *Frederick Morel*; *Oporin*; *Froben*; *Rob. Hen.* and *Char. Stephens*; *Gysbaeus*; *Turnebius*, *Torres*, *Commelin*, *Plantin*, *Rapheling*, *Vascosan*, *Bleau*, *Crispin*, and the two *Elzevirs*.

The learned *Printers* were the *Manutii*, the *Stephens's*, the *Badii*, *Turnebius*, *Wechel*, *Morel*, &c.

*Plantin* had the Title of *Arch Printer* given him by the King of Spain, in consideration of his printing the *Polyglot* of *Antwerp*.

The Names, Characters, and Eloges of all the famous *Printers* are found in the 11d Book of the *Censura Authorum*.

The *Printers*, since the establishment of that Art, are esteemed a part of the Company of Stationers and Booksellers: Before that establishment, the Company consisted only of Booksellers, Binders, Illuminers, and Parchment-makers.

The *Parchment-Makers* prepared the Skins, and made the *Parchment* or *Velom*; which were then almost the only Matters Books were wrote on. The *Writers*, or *Stationarii*, wrote and transcribed Books after Copies given 'em by the Booksellers. The *Binders* were charged with the binding of those days, which was very coarse; only consisting of two slight Boards cover'd with some paltry Leather. The *Illuminers* painted in Miniature, and gilt initial Letters, Head-pieces, Tail-pieces, and other Compartments. Lastly, the *Booksellers* set the Stationers to work, and sold their Copies in Shops, and other Places, on the days allow'd 'em by the Statutes to expose the same.

PRINTING-HOUSE, a Place destined for *Printing*, and fitted up for that purpose with Presses and other Furniture.

The most considerable *Printing-Houses* in the World are those of the *Louvre* and *Vatican*.

The first began under *Francois I.* carried to its utmost Perfection under *Lewis XIII.* by the Care of the Cardinal *Richelieu*; and removed into the Galleries of the *Louvre* by *Louis XIV.* See LOUVRE.

The *Vatican Printing-House*, call'd also the *Apostolical Printing-House*, because the Pope's Bulls, Decrees, &c. are printed therein, was begun by *Pius IV.* and built with great Magnificence by *Sixtus V.* See VATICAN.

Out of both these *Printing-Houses* have come forth very beautiful and splendid Editions of the ancient Authors: The *Vatican* was the first that printed in *Arabic*.

The *Clarendon Printing-House* at *Oxford*, so call'd because open'd with an Edition of the History of the Lord of that Name, promises well: It has already furnished us with a fine *English Bible*.

PRINTING, the Art of taking Impressions with Ink, from Characters and Figures moveable, or immoveable, upon Paper, Velom, or the like Matter. See CHARACTER, INK, PAPER, &c.

There are two kinds of *Printing*; the one for Books; the other from Copper-Plates, for Pictures: The first call'd *Common-Press Printing*; the second *Rolling-Press Printing*.

The prime difference between the two consists in this, that the Characters of the former are call'd in *Relievo*; and those of the latter engraven in *Creux*. See RELIEVO, ENGRAVING, &c.

The Art of *Printing* is a modern Invention: 'Tis, indeed, of a very ancient standing among the *Chinese*; but then their *Printing* is very different from ours. It must be own'd the *European Printing*, in its Original, was much the same with the *Chinese*; yet, as there was at that time no Commerce or correspondence between *Europe* and *China*, the passage into the East by the *Cape of good Hope* being as



yet undiscover'd by the *Portuguese*; there is no room to charge the *Europeans* with borrowing their Art from the *Chinese*: But each must be own'd to have fall'n on the same thing, tho' at very different times.

Father *Couplet* assures us, that *Printing* has been in use in *China* from the Year 930. Father *le Compte* speaks more largely; saying, that it has been there from, almost, all Ages: He adds, that there is this difference between theirs and ours, that, whereas we have but a very small Number of Letters in our Alphabets, and by the various Arrangement of these, are able to form infinite Volumes; we have the Advantage, by making our Characters moveable, to print the largest Works with an inconsiderable Quantity of Letter; those that served for the first Sheets, serving over again for the succeeding ones: The *Chinese*, on the contrary, by reason of the prodigious Number of their Letters, are precluded this resource; and find it more easy and less expensive to cut all their Letters on wooden Blocks; and thus to make as many Blocks as there are Pages in a Book, and these of no further use but for that single Work.

Their Method of Printing see hereafter.

#### Origin and Invention of the European PRINTING.

Who the first Inventors of the *European Printing* were; in what City, and what Year 'twas first set on foot, is a famous Problem long disputed among the Learned: In effect, as the *Grecian* Cities contended for the Birth of *Homer*; so do the *German* Cities for that of *Printing*.

*Mentz*, *Haerlem*, and *Strasbourg*, are the warmest on this Point of Honour: *Italy* also would have enter'd the Lists; but the Suffrages being at first divided between the first three Pretenders, they are left in possession of the Question, which, in reality is not yet justly decided; tho' it must be own'd, *Mentz* has always had the Majority of Voices.

We shall not enter into a nice Disquisition of the Merits of the Cause, but only propose the Pretensions of each.

*John Mantel* of *Strasbourg*, *John Guttembourg* and *John Fust* of *Mentz*, and *L. John Koster* of *Haerlem*, are the Persons to whom this Honour is severally ascribed, by their respective Countrymen; and have all their Advocates among the Learned.

*Mantel*, a Physician of *Paris*, enters the Lists in behalf of his Name-sake of *Strasbourg*; and contends that 'twas he first invented *Printing* in the Year 1442, and that in consideration hereof, the Emperor *Frederic III.* gave him a Coat of Arms corresponding thereto: He adds, that *Guttembourg*, whom he had taken in as a Partner or Associate, carry'd it to *Mentz*, where he took in *Fust* a Partner.

The *Haerlemers*, with *Boxhornius*, *Schrevelius*, &c. refer the first Invention to *Lawrenzs Janzs Koster* of *Haerlem*, in the Year 1430. Adding, that his Associate, *Guttembourg*, stole away his Tools while he was at Church; and carried 'em to *Mentz*, where he set up for the first Inventor; tho' others attribute this Theft, &c. to his Partner *Fust*.

*Munster*, *Polydore Virgil*, *Pasquier*, &c. will have *Guttembourg*, or *Guttemburgh*, to have really been the Inventor of *Printing*; and add, that he took in *Fust* and *Schoeffer* for Associates.

*Naude*, in his *Mascurat*, espouses the Cause of *Fust*, or *Faust*, or *Faustus*; and will have him to be the first Printer in *Europe*, and that he took in *Guttembourg* for a Partner. His reason for putting *Fust* in possession of this Privilege, is, that the first Books that were printed, appear to have been all of his Impression. 'Tis more than probable, had *Guttembourg* or *Koster* had a greater or an equal Share in the Invention, they would not have allow'd him to attribute the whole to himself and his Son-in-law *Schoeffer*, as he has done, without ever offering to do the like, or in the least contradicting him, and asserting their own Right.

These Editions are, 1°. The *Catholicon Januensis*, dated in 1460, and now in the King's Library. *Fust's* Name, indeed, is not to this; but 'tis perfectly like the following ones, where it is. 2°. The *Latin Bible* of 1462, now in the French King's Library. 3°. *Tully's Offices*, in 470; (the rest being all *Folio's*) in the Year 1465 and 1466; for there are Copies in the *Bodleian*, and the Library of *C.C. College*, *Oxon*, of both those Dates. 4°. Other Bibles of 1471. 5°. *St. Augustine de Civitate Dei*, 1473. 6°. *Mercurius Trismegistus de Potestate & Sapientia Dei*, in 1503. 7°. *Titus Livius*, in 1518.

Add to this, that at the beginning of *Livy*, is a Privilege granted by the Emperor *Maximilian*, to *Schoeffer* for the sole Power of printing that Author for ten Years; and for six Years to all the other Books he should print thereafter, in consideration of his Father-in-law, *Fust's* having invented the Art of *Printing*. This Privilege is dated 1518, and signed *Jac. Spiegel*.

*Erasmus*, however, in the Epistle after that Privilege, does not positively aver the Fact; he only observes, that the first, or the chief Inventor of that Art is held to be *J. Fust*. In the Advertisement to the said Book, *Nich. Car-*

*bachius* speaks to the same effect as the Privilege, and *Erasmus*.

As to *Guttembourg*, *Mantel*, and *Koster*, *Naude* observes, the Person is not yet born that can lay he has ever seen Books printed by any of 'em; before, or as early as those of *Fust*. All that is urged on their behalf, is only founded on Reports, Conjectures, Probabilities, forged Authorities, and the Jealousies of Cities against one another.

Yet *Salmuth*, in his Additions to *Pancirollus*, cites a public Act, whereby it appears that *Fust*, after having invented *Printing*, and sustain'd it a long time on his own footing; at length took in *Guttembourg* as a Partner, to contribute to the Expence; which was very great, by reason the first Books were most of 'em printed on Vellum, or at least Parchment, and after the *Chinese* way.

But the Cause is not thus decided: The Advocates for *Koster* urge divers things, to put him in the place here assigned to *Fust*. Mr. *Ellis*, in the *Philos. Transact.* fathers Books on him prior to any of those above refer'd to *Fust*; and even some as early as 1430, and 1432. 'Tis certain, the *Haerlemers*, shew printed Books of that Date, which agreeing so well with the account given by *Theod. Schrevelius*, and others, leaves little room to doubt, whether the Honour of the Invention be his or the others due. All that belongs to *Fust*, according to this Writer, is the honour of establishing the Art in greater Lustre and Perfection at another place many Years after.

But the difficulty lies, either in shewing why the Practice should be at a stand from 1432, to the reviving of it at *Mentz* by *Fust* and *Schoeffer*, in 1465; or else in giving some account of the Condition and Progress of this Invention during that Interval.

Now, *Boxhornius*, *Schrevelius*, and other Authors, expressly affirm, that so large a Work as the *De Speigel, Speculum Salutis*, of *Koster*, shewn at *Haerlem* for the first printed Book, could never be his first Essay: He must have had the Art in its rougher Rudiments before, and have made many Trials on lesser Works: No doubt his first Attempts were on loose Sheets, which we may suppose were easily lost. In effect, it must be allow'd no inconsiderable Argument in *Koster's* behalf, that the rudest and most artless Performances seem to be his: Mr. *Ellis* mentions some things of this kind without Date, which he had seen in the King's Library at *St. James's*, in that of *Bernet* College and the *Bodleian* at *Oxford*, with all the Marks of the utmost Simplicity, and which might fairly bid for first Essays: There is something so awkward and coarse in 'em, that any body almost might have done 'em; mere Nature being sufficient, without any Art or Experience at all. The Ink was only common writing Ink, unartfully spread upon wooden Blocks, very clumsily cut, &c.

By this time we have traced up the Art to such a State, that it may, perhaps, scarce seem worth the contesting who it was invented it; and no doubt, *Printing* as it now stands, owes more to the Genius and Address of some of the later Improvers, than it did to its Author.

The same Consideration may make us more easy under our present Ignorance of the Inventors of most other Arts; many of which had such simple unmeaning Originals, that you or I should, perhaps, think it no mighty Credit to be esteem'd the Authors of Inventions nothing less Artful and Ingenious.

#### Progress of PRINTING.

The first Printers, then, whoever they were, whether *Koster*, *Fust*, *Schoeffer*, or *Guttembourg*, made their first Essays on wooden Blocks, or Forms, after the *Chinese* manner.

'Tis not improbable, says Mr. *Bagford*, they might take the Hint from ancient Medals and Seals; but others rather imagine it to have come from the Method of making playing Cards, which, 'tis certain, bears a near resemblance to the primitive Process of *Printing*; as appears from the first Specimens of that Art above-mentioned. See CARD.

The Book at *Haerlem*, the Vocabulary call'd *Catholicon*, and the Pieces in the *Bodleian* and *Bernet's* College, are all perform'd in this way; and the Impression appears to have been only given on one side the Leaves; after which the two blank sides were pasted together.

But they soon found the Inconveniencies of this Method; and therefore bethought themselves of an Improvement; which was by making single moveable Letters, distinct from one another.

These being first done in Wood, gave room for a second Improvement; which was the making of 'em, at length, of Metal; and, in order to that, forging Moulds, Matrices, &c. for casting 'em.

From this ingenious Contrivance, we ought to date the Origin of the present Art of *Printing*, as practised in *Europe*; contra-distinguish'd from the Methods of the *Chinese* abroad, and the Card-Makers at home, which were the same Art, only practised in a different place, or with a different view.



And of this, *Schoeffer*, or *Scheffer*, first, Servant, and afterwards Partner, and Son-in-Law, of *Fust*, at *Mentz*, above-mentioned; is pretty generally allow'd the Inventor. So that he was properly the first *Printer*; and, in strictness, the Bible, which was printed with moveable Letters in 1450, was the first printed Book; the next was *Augustin de Civitate Dei*, then *Tully's Offices*, &c. about the Year 1461.

But the Art being yet in its Infancy, there were some Imperfections in the Books they printed; among the rest was the want of Capital Letters: hence they left the places of the initial Letters blank, and gave 'em to the Illuminers to paint in Gold, or Azure: Tho', others say, this was done designedly, to enable 'em to pass off their Books for Manuscripts.

Some Authors tell us, that *Fust* carrying a parcel of his Bibles to *Paris*, and offering 'em to sale as MSS. the *French*, upon considering the number of Books, and their exact Conformity with one another, even to a Point; and that the best Book-Writers could not be near so exact; concluded there was Witchcraft in the case; and, by either actually indicting him as a Conjuror, or threatening to do so, extorted the Secrer. And hence the Origin of the popular Story of *Dr. Faustus*.

From *Mentz*, the Art of *Printing* soon spread itself throughout a good part of *Europe*; *Haerlem* and *Strasbourg* had it very early; which, as the current of Authors represent it, occasion'd their pretending to the honour of the Invention.

From *Haerlem* it pass'd to *Rome* in 1467; and into *England* in 1468, by means of *Tho. Bouchier*, Archbishop of *Canterbury*, who sent *W. Turner*, Master of the Robes, and *W. Caxton*, Merchant; to *Haerlem*, to learn the Art: These privately prevailing with *Corseles*, an Under-workman, to come over, a Press was set up at *Oxford*; and an Edition of *Ruffinus* on the Creed printed the same Year in a broad Octavo on Paper.

From *Oxford*, *Caxton* brought it to *London* about the Year 1470. In the same Year it was carried to *Venice*, and to *Paris*, where *Gering*, *Grantz*, and *Friburger*, all Germans, invited thither by two Doctors of the *Sorbonne*; set up a Press in that learned House.

Hitherto there had been nothing printed but in *Latin*, and the vulgar Tongues; first in *Roman* Characters, then in *Gothic*, and at last in *Italic*. But in 1480, and, as some say, in 1476, the *Italians* cast a Set of *Greek* Types; and it

was at *Venice*, or, as some say, at *Milan* or *Florence*, that the first Editions in that Language appeared.

The *Italians*, too, have the honour of the first *Hebrew* Editions, which were printed about the same time with the *Greek*, at *Soucino*, a little City in the Dutchy of *Milan*; under the direction of two *Jewish* Rabbins, *Joshua* and *Moses*, whose Works are dated in the Year of the World 5240, answering to the Year 1480 of the Christian *Æra*.

Towards the end of the 16th Century, there appeared various Editions of Books in *Syriac*, *Arabic*, *Persian*, *Armenian*, *Coptic*, or *Egyptian* Characters; some out of the Curiosity of the Learned, and others for the Liturgic Uses of the Christians of the *Levant*, printed chiefly at *Paris*; whither Puncheons and Matrices were sent from *Constantinople* by *M. Savary*, then Ambassador at the Port.

Out of *Europe*, the Art of *Printing* has been carried into the three other Quarters of the World: For *Asia*, we see Impressions of Books at *Goa*, and in the *Philippines*; at *Lima*, *Boston*, *Mexico*, &c. for *America*; and at *Morocco* for *Africa*.

The *Turks*, indeed, rigorously prohibit *Printing* throughout their Empire, as imagining that the too free Communication with Books, might occasion some change in Religion or Government; yet the *Jews* have several Editions of their Books printed at *Constantinople*, *Theffalonica*, &c.

#### Method of PRINTING.

The *Printing* Letters, Characters, or Types as they are sometimes call'd, we have already spoke of, under the Articles *LETTER* and *CHARACTER*.

Of the Method of forming or casting them, under the Article *Letter-FOUNDRY*.

And of the Art of Engraving the Puncheons, Matrices, &c. in order thereto, under the Articles *ENGRAVING*, *PUNCHEON*, *MATRICE*, &c.

There are Letters of several Sizes, or *Bodies*; each of which, again, are sometimes cast with the *Roman*, sometimes an *Italick*, and sometimes an *English Face*. There are also Bodies with *Greek*, *Hebrew*, and the *Musick Face*.

The most usual Sizes, or Bodies, with their Proportions, are shewn and exemplify'd in the following Table; where, it is to be observed, that the Verse answering to each is compos'd in the respective Letter

Which when he knew, and felt our feeble Hearts,

Emboist with Bale, and bitter biting Grief.

Which Love had launced with his deadly Darts;

With wounding Words, and Terms of foul Reprief,

He pluck'd from us all hope of due relief,

That erst us held in love of lingering Life.

The Hopeless, heartless 'gan the cunning Thief

Persuade to die to stint all further strife:

To me he lent this Rope, to him a rusty Knife:

With which sad Instrument of hasty Death,

That woful Lover lothing--

A Set or *Point* of any of these Sizes, includes current Letters, Capitals, numeral Figures, Points, Spaces, &c. See *FOUNT*.

The Workmen employ'd in *Printing* are of two kinds; *Compositors*, who range and dispose the Letters into Words, Lines, Pages, &c. according to the Copy deliver'd them by the Author: And *Press-men*, who apply Ink upon the same, and take off the Impression. See *COMPOSITION*, &c.

#### Office of the Compositor.

The Types being cast, &c. are distributed, each kind by itself, among the Divisions of two long wooden Frames, an upper, and under one, call'd *Cases*; each of which is divided into little Cells, or *Boxes*, of different Sizes.

The Boxes of the upper Case are in Number 98; and in these are disposed the Capitals, small Capitals, accented Letters, &c.

In the Cells of the lower Case, which are fifty four, are disposed the common running Letters, with the Points, Comma's, Spaces, Quadrates, &c.

Each Case is placed a little slope, like a reading Desk, that the Operator may reach the upper Boxes the better; and be in less danger of mixing the Letters by stretching his Arm over them. See *CASE*.

The Compositor's Post is against the middle of the Case, and he works standing: holding an Instrument, call'd the *Composing-Strick*, in one Hand, with the other he takes out the Letters, Points, Comma's, &c. as he needs them, out of the Boxes; ranges them on his *Composing-Strick*; and, putting



ting a Space between each two Words, forms one Line after another; till the Stick being full, he empties it out upon another Instrument, call'd the *Galley*; several of which ranged in a Frame, call'd a *Chase*, are ready for the Press.

This short View of Composing, we shall further illustrate and enlarge upon.

The *Composing-Stick*, then, (represented Tab. MISCELLANY, Fig. 7.) consists of a Plate, or Slip of Brass, Iron, or Wood, more or less broad, and contrived so as to be made more or less long according to the width of the Page, and the Number of Lines to be composed in it.

From the right Side of this Plate arises a Ledge *a a*, about half an Inch high, running the whole length of the Plate, and serving to sustain the Letters, the sides of which are to rest against it; from the same Plate likewise arise two other lesser pieces, *b* and *c*, one of which, *b*, is contrived to slide along it, that so the two pieces may be either approached or withdrawn at pleasure, to adjust the length of the Line to the Measure intended. See COMPOSING-STICK.

Add, that where Marginal Notes, References, &c. are required in a Work; a second sliding Piece is added in the Composing-Stick, at the proper distance from the former: as at *e*.

E'er the Workman proceeds to compose, a *Rule*, or Slip of Brass-Plate, cut to the length of the Line, and of the same height as the Letter, is placed in the Composing-Stick against the Ledge thereof; for the Letter to bear immediately against.

Things thus prepared, and having the Copy lying before him, and the Stick in his left Hand; with the right he picks up the Letters, Spaces, &c. and places 'em against the Rule; while with the Thumb of the left he presses them close to the upper Screw, or *Check*; and thus keeps them tight and steady: while the other Hand is constantly employ'd in setting in more Letters: The whole performed with a degree of Expedition and Address, not easy to be imagined.

A Line being thus composed, if it end with a Word or Syllable, and fill the Measure; there needs no further Care; otherwise more *Spaces* are to be put between the several Words to *justify* the Lines, *i. e.* to make the Measure pretty stiff; and thus he proceeds to another Line.

The *Spaces* here used are a sort of blank Characters, of the like Dimensions as the Letters, but less high; and whose Faces, therefore, when set, do not appear, nor give any Impression. They are of several kinds according to the Dimensions of the Blanks, or Intervals to be made by them, *viz.* *Quadrats*, to fill up a Break at the end of a Paragraph, or the like; *M quadrats*, which are square, and of the thickness of an *m*, serving to make the distance after a Period, or between Sentence and Sentence; *N quadrats*, of the thickness of an *n*, to be placed after Colons, Semi-colons, and Comma's; and *thick* or *thin Spaces*, to be used between the Words in justifying, as above.

For Marginal Notes, in the Spaces reserved for them, between the two sliding pieces of the Composing-Stick, are put little quadrated pieces of Metal, call'd *Quotations*; which are justified by other smaller pieces: a Slip of Scale-board being placed from the top of the Page to the bottom, to keep the Note and Text at a due distance.

The first Line thus completely justify'd, the Compositor advances to a fresh one; in order to which, he moves the brass Rule from behind the former, and places it before it, and thus composes another Line against it, after the same manner as the former: and thus he goes on till his Stick be full, which he empties into the Galley, after the manner following.

Taking the Rule from behind the last Line, he places it before it; and with his two middle Fingers squeezes the Lines in the Stick close; his two Fore-fingers at the same time being apply'd on the outside of the Rule: thus he lifts them out of the Stick, and clapping his two Thumbs behind the first Line, lifts them into the Galley; taking care to disengage his two Thumbs without breaking the Lines.

The Compositor having thus set the proper Number of Lines in his Stick, *viz.* four, six, or eight, and emptied them out into the Galley; he again fills, and empties as before, till a complete Page be form'd: Remembering at the bottom of every Page to set a Line of Quadrats, and at the end thereof the first Word of the Page ensuing, for a *Catch-Word*; and, if it be the first Page of the Sheet, one of the Letters of the Alphabet for a *Signature*.

The *Galley* is a flat wooden Instrument, in form of a long Square; of a length and breadth proportionable to that of the Page: It consists of two Parts, the Upper, call'd the *Slide*, whereby the Pages of large Volumes, when composed, are slidden upon the Stone; the other, which is the Body of the Galley, is ledged on three sides, to contain the Slide; the inner Ledge not to exceed half an Inch in height, that the composed Page rising above it by one half

the height of the Letter, may be *tyed up*, or bound down, and removed without danger.

This Galley is placed at the Top of the Case, and detained by two wooden Pins from sliding down the Boxes. See GALLEY.

The Page, then, composed and ranged in the Galley, he ties it up therein with a *Cord* or Pack-thread; and sets it by; and proceeds to the next, till the Number of Pages of the Sheet be completed: which done, he carries them to the *Imposing* or *Correcting-Stone*, there to range them in Order, in a *Chase*; which they call *Imposing*.

The *Chase* is a Rectangular Iron Frame of different Dimensions, according to the Size of the Paper to be printed on; having two cross pieces of the same Metal, call'd a *long* and *short Cross*, mortised, at each end, into the Frame, so as to be taken out occasionally.

By the different Situations of these Crosses, the Chase is fitted for different Volumes; for Quarto's and Octavo's, one traverses the middle lengthwise, the other breadthwise, so as to intersect in the Centre; which is the most customary Situation: For Twelves and Twenty-fours, the short Cross is shifted nearer to one end of the Chase: For Folio's, the long Cross is left entirely out, and the short one placed in the Middle; and for Broad-sides, or Sheets printed on one side only, both Crosses are set aside.

To *dress the Chase*, or range and fix the Pages therein, they make use of a Set of *Furniture*, consisting of *Riglets*, or slips of Wood of different Dimensions, and about half an Inch high, that they may be lower than the Letters: Some of these are placed at the Top of the Pages, call'd *Head-sticks*; others between them to form the inner Margin, call'd the *Gutter sticks*; others at the Sides, call'd *Side-sticks*; and others at the Bottom, call'd *Foot-sticks*.

The Pages, then, placed in order on the Stone, the Chase is put over 'em, and the Riglets apply'd between the Letter and the Chase, in the Position above-mentioned; the whole is lock'd up by means of other lesser pieces, cut in the Wedge-form, call'd *Quoins*, which are driven with a *Mallet* and *Shooting stick*, to a sufficient Tightness.

Before the Form be quite lock'd up, they *dress down* the same, by passing a smooth piece of Wood, call'd the *Flamer*, over the Letters, to make their Surfaces stand flat and even; and when lock'd up, they shake it, to see that nothing stir.

In this condition the Work is call'd a *Form*, containing more or fewer Pages, according to the Volume. See FORM.

As there are two Forms required for every Sheet, when both sides are to be printed, 'tis necessary they be exactly of the same length and breadth, *i. e.* the corresponding Riglets, Head-sticks, &c. are to be equal in both Forms.

Here, then, properly ends the Compositor's Office; the Form, thus finish'd, being to be committed to the Press-Man.

Indeed, as it is impossible but there must be Mistakes in the Work, either thro' the Oversight of the Compositor, or by the transposition of the Letters in the Cases; after drawing off a Proof, it is deliver'd to the Corrector, who reading it over, and rectifying it by the Copy; it is remanded to the former Operator, to be *corrected* accordingly.

For the Characters used in correcting a Sheet for the Compositor, see CORRECTION.

The Compositor, then, unlocking the Form upon the correcting Stone, by knocking out or loosening the Quoins; and spreading his corrected Proof so, as that the Lines hereof range with the respective ones of the Metal; by running his Eye along both, he easily spies where Corrections are to be made: according to which, he proceeds to pick out the faulty Letters, Points, &c. with a sharp-pointed Steel-Bodkin, and puts others in their places.

Where the Alterations are considerable, and particularly where Insertions or Omissions are to be made, there usually arises a necessity of *over-running*; in order to which, they must de-compose, or return the Lines back from the Chase into the Galley, and from the Galley again into the Composing-Stick, to be new modell'd and rectify'd accordingly.

If, *e. gr.* one or more Words to be inserted in a Line, cannot be *got in* by changing the Spaces of the Line for lesser ones; part of the Line must be put back into the close of the preceding one, or forward into the beginning of the subsequent one, or both; till room is got. If the Insertion be large, several Lines will need to be over-run, either backward or forward, till a Break is arrived at; when, if it be not *got in*, a Line is to be *driven out*; and to get in that Line, the next Pages, either backward or forward, must sometimes be over-run e'er it can come in.

Where an Omission is to be made, the contrary course must be taken. If it be but little, the Compositor takes it out, and *drives out* the Matter; by either enlarging his Spaces, or by slowing the beginning of the following, or the close of the preceding Line, therein. If it be considerable, he may be obliged to over-run several Pages e'er it can be driven out.



Office of the Pressman, or PRINTING, properly so call'd.

To work off the Form thus prepared and corrected by the Compositor, there are three things required, *Paper*, *Ink*, and a *Press*.

To fit the Paper for use, it is to be first wet or moisten'd, by dipping several Sheets together in Water; these are afterwards laid in a heap over one another; and to make 'em take the Water equally, are all press'd close down with a Weight a-top. As to the degree of wetting, it must be according to the Quality of the Paper, and the Size of the Letter; small Letters, and stiff Paper, requiring most wetting.

The *Printer's Ink* is of two kinds, black and red. The last occasionally used in Title-Pages, Calendars, &c. the first for the Body of Books. The Composition of each, tho' now reckon'd no part of the Printer's Business, but usually furnish'd 'em by other hands, is as follows.

#### Method of making the PRINTING-Inks.

*For black Ink*: An hundred Pounds of Nut, or Linseed-Oil being reduced, by boiling, to the Consistence of a Syrup, is cleans'd and purify'd by throwing into it two Pounds of coarse Bread, and about a dozen Onions. They then boil thirty or thirty-five Pounds of Turpentine, a-part, till such time as they find, upon its cooling on Paper, that it breaks clean, like Glass, without pulverizing; for if it pulverize easily, 'tis a sign it is burnt. The Oil and Turpentine thus prepared, the first is gently pour'd, half cold, into the latter; and the two stirr'd together with a Stick till they be well mixed; after which, the Composition, which is call'd the Varnish, is set by, to be used occasionally.

Now, to proceed to make Ink, they take a quantity of this Mixture, and add to it a certain quantity of Lamp-black; working it up with a kind of wooden Mullet, or *Brayer*, till the whole be incorporated and reduced into a kind of Pulp; which is the Ink for use.

Where, Note, that its Thickness or Strength are always to be proportion'd to that of the Paper and the Warmth of the Weather; strong Paper and hot Weather requiring strong Ink: and that the Strength or Weakness of the Ink depends on the greater or less degree of Cotion of the Varnish.

*For red Ink*: They use the same Materials as for black, excepting that instead of Lamp-black they add a proper Quantity of Vermillion. Some hold, that by mixing and incorporating the bigness of a Nut of Fish-glue, or Brandy, or the White of an Egg with the Ink; the Vermillion acquires a greater Lustre.

The Ink is applied upon the Forms by *Balls*, which are a kind of wooden Funnels, the Cavities whereof are furnish'd with Wool, cover'd with Leather nailed to the Wood. One of these the Press-man takes in each Hand, and applying them on the *Ink-block*, to charge 'em with Ink, he rubs one against t'other to distribute the Ink equally; and, at last, smears over the Form by *beating* or dabbing 'em several times over the whole Face thereof: This leaves the Form in a condition to be pass'd under the Press, with the moisten'd Paper laid thereon.

#### The PRINTING-Press.

The *Printing-Press* (represented Tab. MISCELLANY, fig. 8.) is a very complex Machine; its two principal Parts, each whereof consists of several others, are the *Body* of the Press, which serves to give the Pinch or Stroke for the Impression; and the *Carriage*, on which the Form is laid to undergo the same.

The *Body* consists of two strong *Cheeks* *b b*, placed perpendicularly, and join'd together by four cross Pieces or *Planks*.

The first Plank *c c*, call'd the *Cap* of the Press, is fixed, and serves to keep the two Cheeks together at the due distance, at top: The second *d d*, call'd the *Head*, is moveable; being sustain'd by two Iron-Pins or *long Bolts*, that pass the Cap: In this Plank is fix'd a Female-Screw or *Worm*, with a *brass Nut*, sustain'd by two *short Bolts* which keep it up: The third Plank *e e*, call'd the *Shelves*, serves to keep steady a Part call'd the *Hose*, in which the *Spindle* (to be spoke of hereafter) is enclosed: The fourth Plank *f f*, call'd the *Winter*, is moveable; it bears the *Carriage*, and sustains the Effort of the Press beneath, as the Head does above; each giving way a little, the one upwards, the other downwards, to make the Pull the easier.

The *Spindle* *g g*, is an upright piece of Iron pointed with Steel, of different Dimensions; having a Male-Screw which goes into the Female of the *Head* about four Inches. Thro' the *Eye* *h*, of this Spindle, is rivetted the *Bar*, by which the Press-man works the Press.

The lower part of the *Spindle* passes thro' the *Shelves*, being inclosed in a square wooden Frame *i*, call'd the *Hose*; and its Point works into the *Plug*, fix'd in a *brass Pan* supply'd with Oil: which *Pan* is fix'd to an Iron Plate let into the top of the *Platten*. The Press-man, then, by *pulling* or turning the *Bar* fix'd in the *Eye* by an Iron Key, presses upon a square smooth Piece of Wood call'd the *Platten*, and enables it to compress the Form cover'd with the Paper, Tympan, and its Blankets, which, in order hereto, are brought under the *Platten*.

At each Corner of the *Hose*, is an Iron-Hook fasten'd to those at each Corner of the *Platten*, with Cords or Pack-thread very exactly.

The *Carriage* *l l l l*, which makes the second principal Member of the Press, is placed a foot below the *Platten*, having its fore-part supported by a wooden Prop *m*, call'd the *Fore-stay*, while the other rests on the *Winter*. On this Carriage, which sustains the *Plank*, are nail'd two long Iron-Bars or *Ribs* *o o*, and on the *Plank* are nail'd short pieces of Iron or Steel *p p*, call'd *Cramp-Irons*, equally tempered with the *Ribs*, and which slide upon 'em when the Press is turn'd in, or out.

Under the Carriage is fix'd a small piece of Iron call'd the *Spit*, with a double Wheel in the middle, round which *Leather Girts* are fasten'd, nail'd to each end of the *Plank*. To the outside of the *Spit* is fix'd a Handle, or *Rounce*, by which the Press-man turns the *Plank* in or out at pleasure.

Upon the *Plank* is a square wooden Frame, or *Coffin* *q q*, wherein is inclosed a Marble, or polish'd *Stone*, for the Form to be laid on: To this Coffin are fasten'd *Leather Stay Girts*, one on each side; which being again fasten'd to the Cheeks of the Press, prevent the *Plank* from running too far out, when drawn from under the *Platten*. On the fore-part of the *Plank* is a *Gallows* *r r*, which serves to sustain the Tympan, when taken from off the Form.

On the Front of the Coffin are three Frames much alike, tho' serving for different purposes, *viz.* the two Tympan and Frisket: The *Tympan* *s s*, are square, made of three Slips of very thin Wood, and a-top of a slip of Iron, still thinner, call'd a *Head-Band*: That call'd the *outward Tympan* is fasten'd with *Iron Joints* to the Coffin. They are both cover'd with Parchment; and between the two are placed Blankets, which serve to make the Impression of the *Platten* upon the Surface of the Letters more equable; as also to prevent the Letters from being broke by the Force of the Press. The *Frisket* *t t*, is all of Iron, very thin; fasten'd a-top to the great or *outward Tympan*; and sustain'd by a slip of Wood hanging from the Ceiling, when open'd, to take out the printed Sheets, and put in others. It is also cover'd with Parchment, or Paper, cut in the necessary places, that the Sheet, which is between the great Tympan and Frisket, may receive the Ink, and that nothing may hurt the Margins. On the Parchment of the great or *outward Tympan* it is, that the blank Sheet is laid to be printed.

To regulate the Margins, and make the Lines and Pages answer each other when printed on the other side; in the middle of the Wood in the sides of this Tympan are two Iron Points which make two Holes in the Sheet, to be placed on the same Pins when the Sheet is return'd for an Impression on the other side, call'd the *Reiteration*.

Every thing now about the Tympan being prepared for printing, and the Press-man having ink'd, or *beat* his Form now placed on the Stone; he brings the Tympan and Frisket down from the Gallows upon the Form; and advancing the *Plank* under the *Platten* by means of the *Spit-Handle*, or *Rounce*, gives two Strokes or *Pulls* with the *Bar*; and with the same Handle turn'd the contrary way, brings back the *Plank*, to take out the printed Sheet, and put in a fresh one; and this he repeats till he have taken off the full Number of Sheets the Edition is to consist of.

One side of the Sheet thus printed, 'tis remanded to the Press for the other; and so disposed as that the Iron Points pass thro' the Holes already made in the Sheet.

Sometimes 'tis required to cut the Frisket a-fresh, where the second side is to be more or less full of *Printing* than the first; as is frequently the case at the beginning and ending of Books, &c.

The Number of Sheets of the Edition being compleat, and the Form to be separated, to restore the Letters into the Cases; they first wash it in a boiling Lye to take out the Remains of the Ink, scouring it with a Brush, and then with fair Water. This done, it is carry'd to a wooden Frame to be unlock'd, and the Furniture, *i. e.* the Sticks, &c. taken off to disengage it from the Chase. Then the Compositor taking out several Lines at once upon a little wooden Ruler, he replaces each Letter in its proper Box, to be again used in the remainder of the Impression; which last Operation they call *Distribution*.



Beside the several kinds of Letters and Characters above-mentioned, used in *Printing*; they have likewise Rules for blank Lines, Borders, and Head and Tail-Pieces, accommodated to the several kinds of Letters.

The *Rules* for blank Lines are of Brass, and made exactly the height of the Letter; otherwise they will either hinder the neighbouring Letters from *printing*, or will themselves be hindered by 'em. These the Compositor occasionally cuts into proper Lengths, as his Work requires.

The *Borders* are a kind of Ornaments in form of long Bars, serving for the Divisions of Books, Chapters, &c. Their Depth is proportion'd to the Letter, and their Length adjusted to the Page; for being composed of several moveable Pieces, 'tis easy lengthening or shortening 'em.

The *Head and Tail Pieces*, cut either in Wood or Pewter, are Compartments used at the beginnings and endings of Books.

The initial Letters are sometimes cut in Wood, and figured; sometimes cast like the other Characters.

For the Convenience of the Binding, the *Printers* had early recourse to *Signatures*, i. e. Letters of the Alphabet placed at the bottom of the Sheet, which shew the Order they are to be bound in; as well as whether the Quires be compleat.

The *Catch-Words* serve nearly the same purpose; these are the first Words of each Page, which are repeated at the bottom of the preceding Pages. The Numbers of the Pages are equally serviceable to the Reader and the Binder, to guide to References, and to warrant the Book duly bound and collated: Some *Printers* formerly put 'em at the bottoms of the Pages; but Custom has carried it for the Tops.

In the Infancy of *Printing*, they had likewise a *Registrum Chartarum*, for the Convenience of the Binders: To draw this, at the end of each Volume, they collected the Signatures, and the first Words of the four first Sheets of each Alphabet. To abridge it, they afterwards contented themselves to express the Signatures, and how oft each Letter was repeated. But the *Registrum* has been long disused.

As to the Faults which escape the Corrector, and Compositor; they are usually noted in what they call *Errata*. The antient Editions had no *Errata*; but in lieu thereof they corrected the Faults in each printed Copy with a Pen; which was easy enough in those days, tho' impracticable now. In effect, we have antiently had *Printers* who did not need an *Errata* of above five Articles in a Volume of five hundred Sheets: How different from some of the present Set, who might make an *Errata* of five hundred Articles in a Book of five Sheets?

#### The CHINESE-PRINTING.

There are three Opinions as to the Antiquity of the *Chinese-Printing*; one fixing it 300 Years before Christ; another 900 Years after him; and a third carrying it still farther back, and making it co-eval with that mighty Empire: tho' it must be allow'd the last is much the least probable of the three.

Their Manner of *Printing*, we have already hinted to be very different from that which now obtains among the *Europeans*: 'Tis true, it has some Advantages over ours in Correctness, and the Beauty of the Character; but in other Respects it comes far short: The single Advantage of moveable Characters making more than amends for all that is urged against us by some zealous Advocates for this *Oriental Printing*.

Books are printed in *China* from wooden Planks, or Blocks, cut like those used in printing of Callico, Paper, Cards, &c. among us. See CARD, &c.

These Blocks are of a smooth, firm, close Wood, and the Size of the Leaf required. On the Face-side they glue a Paper, upon which some able *Chinese* Writer draws out the several Letters and Characters, with a *Chinese* Pen, which is a kind of Pencil. This is the principal part of the Work, and that whereon the Success of the rest depends.

When finish'd, the Block is put into the Hands of a Sculptor, or Cutter in Wood; who, following the several Strokes of the Writer with his Gravers, and other sharp little Instruments, makes 'em all appear in Relievo on the Wood. See CURRING in Wood.

When the Engraving is finish'd, they moisten what remains of the Paper, and rub it gently off.

The Ink they use in *printing* is the same with the common *Chinese* Ink; wherewith they also write; and is made of Lamp-black, mixed up with Oil.

Their Press resembles our Rolling-Press, much more than the Letter-Press. See ROLLING-Press.

As to their Paper, it is inferior to ours: It is made of the inner Bark or Rind of a kind of Rushes, beat up with Water into a Pulp or Paste, and form'd in Moulds, much like ours. See PAPER.

The Advantages of the *Chinese-Printing* consist in this, that they are not obliged to take off the whole Edition at once; but print their Books as they need 'em: That the Blocks are easily retouch'd, and made to serve a-fresh; and that there needs no Corrector of the Press.

Its Disadvantages are, that a large Room will scarce hold all the Blocks of a moderate Volume; that the Colour of the Ink easily fades; and that the Paper is apt to tear, and is subject to Worms: whence it is that we see so few antient Books in *China*.

#### Rolling-PRESS-PRINTING.

*Rolling-Press-Printing*, is employ'd in taking off Prints, or Impressions from Copper-Plates engraven, or etch'd. See ENGRAVING and ETCHING.

It differs, as we have before observ'd, from Letter-printing; in that the Marks and Characters, whose Impressions are to be taken, in the former Case, are indented, or cut inwards; and in the latter, are in *Relievo*, or stand out.

#### Origin and Progress of Rolling-Press-PRINTING.

This Art is said to be as antient as the Year 1460; and to owe its Origin to *Finiguerra*, a *Florentine* Goldsmith, who casting a piece of engraven Plate in melted Brimstone, found the exact Print of the Engraving left in the cold Brimstone, mark'd with Black licked out of the Strokes by the liquid Sulphur.

Upon this he attempted to do the same on silver Plates with wet Paper, by rolling it smoothly with a Roller; and this succeeded.

This Novelty tempted *Baccio Baldini*, a Goldsmith of the same City, to attempt the same; which he did with Success; engraving several Plates of *Sandro Boticello's* Design, and *printing* them off this new way: in which he was follow'd by *Andrew Mantegna*, then at Rome.

This knowledge getting into *Flanders*, *Martin of Antwerp*, a famous Painter, graved abundance of Plates of his own Invention, and sent several Prints into *Italy*, marked thus, M.C.

After him *Albert Durer* appear'd, and gave the World a vast number of Prints, both in Wood and Copper.

About this time one *Hugo de Carpi*, an *Italian* Painter, found out a way, by means of several Plates of Wood, to make Prints resemble Designs of *Claro Obscuro*; and some Years after, the Invention of *Etching* was discover'd, which was soon made use of by *Parmeggiano*.

The Art was not used in *England* till the Time of King *James I.* when it was brought from *Antwerp* by *Speed*.

The Structure of the *Rolling-Press*, and the Composition of the Ink used therein; with the Manner of applying both in taking off Prints, are as follow.

#### Structure of the Rolling-Press.

This Machine, like the common Press, may be divided into two parts; the *Body* and *Carriage*, analogous to those in the other.

The Body consists of two *Cheeks* of different Dimensions; ordinarily about 4  $\frac{1}{2}$  foot high, a foot thick, and 2  $\frac{1}{2}$  apart; join'd a top and bottom by Cross-pieces. The Cheeks are placed perpendicularly on a wooden Stand, or Foot, horizontally placed, and sustaining the whole Press.

From the Foot likewise rise four other perpendicular pieces, join'd by other cross or horizontal ones; which may be consider'd as the *Carriage* of the Press, as serving to sustain a smooth, even *Plank*; which is about 4  $\frac{1}{2}$  foot long, 2  $\frac{1}{2}$  foot broad, and an inch  $\frac{3}{4}$  thick: upon which the engraven Plate is to be placed.

Into the Cheeks go two wooden Cylinders, or *Rollers*, about six Inches in diameter, bore up at each end by the Cheeks; those Ends, which are lessen'd to about 2 Inches diameter, and call'd *Trunnions*, turn in the Cheeks between two pieces of Wood, in form of *Half Moons*, and lined with polished Iron, to facilitate the Motion.

The Space in the half Moons, left vacant by the Trunnion, is fill'd with Paper, Pastboard, &c. that they may be rais'd and lower'd at discretion; so as only to leave the space between them, necessary for the passage of the Plank, charg'd with the Plate, Paper, and Blankets.

Lastly, to one of the Trunnions of the upper Roller, is fasten'd a *Cross*, consisting of two Levers, or Pieces of Wood, traversing each other. The Arms of this Cross serve, in lieu of the Handle of the common Press; giving a Motion to the upper Roller, and that to the under; by which means the Plank is protruded, or pass'd between them.

#### Preparation of the Ink.

The Ink used in *Rolling-Press-Printing*, is a Composition of Black, and Oil mix'd and boil'd together in a due Proportion.



The Black is a factitious Matter, made of the Stones of Peaches and Apricots, Bones of Sheeps-feet, and Ivory; all well burnt; beaten, sifted, and mix'd together with Spirit of Wine, and sometimes only with Water.

This Black is usually brought hither ready prepared from *Francfort on the Main*; whence our Printers call it *Francfort-Black*. See BLACK.

The Oil wherewith they dilute this Black, is Nut-Oil; which is boil'd up differently, according to the different Works it is to be used in.

They usually make three Kinds, *thin, thick, and strong*; only differing in the degree of Coction: The Strong is that used in the finest Works, &c.

To make the Ink, they pulverize the black Stone very carefully, and pass it thro' a fine Sieve; then mix it up on a Marble with the proper Oil, by means of a Mallet; after the same manner as the Painters do their Colours.

#### Method of PRINTING from Copper-Plates.

The Ink being prepared, they take a little Quantity of it on a *Rubber*, made of Linnen Rags, strongly bound about one another; and therewith smear the whole Face of the Plate, as it lies on a *Grate*, over a Charcoal-fire.

The Plate sufficiently inked, they first wipe it coarsely over with a foul Rag, then with the Palm of the left Hand, then of the right; and, to dry the Hand, and forward the wiping, rub it from time to time on Whiting.

In wiping the Plate perfectly clean, yet without taking the Ink out of the Engraving, consists a good part of the Address of the Workman. The *French* Printers use no Whiting, as being detrimental to the Colour of the Ink; nor do they lay the Plate on the *Grate* to warm, till after inking and wiping it.

The Plate thus prepared, is laid on a thick Paper, fitted upon the Plank of the Press: Over the Plate is laid the Paper, first moisten'd, to receive the Impression; and over the Paper, two or three Folds of Blanketing, or other Stuff.

Thus disposed, the Arms of the Cross are pull'd; and by that means, the Plate with its Furniture pass'd thro' between the Rollers; which pinching very strongly, yet equally, presses the moisten'd Paper into the Strokes of the Engraving, whence it licks out the Ink.

Some Works require being pass'd twice thro' the Press, others only once, according as the Graving is more or less deep, or the greater or less degree of Blackness the Print is desired to have.

It must be observ'd, that the stronger, and thicker the Ink is, the stronger must the Rollers pinch the Plate: This tempts many of the Workmen to use a thinner Oil, in order to save Labour; which proves prejudicial to the Impression.

The wetting of the Paper ought to be done two or three days before printing it, to render it the more supple and mellow: As the Prints are drawn off, they are hung up to dry on Lines, &c.

Lastly, after the Number of Prints desired, have been wrought off from the Plate; they rub it over with Oil of Olives, to prevent its rusting, and set it by against a new Impression. If the Strokes of the Graving be perceived full of Ink harden'd therein, in the Course of the Printing; they boil it well in a Lye, e'er the Oil be apply'd.

PRIOR, *before*, something that is nearer the beginning, than another to which it is referred. See PRIORITY.

PRIOR, is particularly used for a Superior of a Convent of Monks; or the second Person, after the Abbot. See SUPERIOR and CONVENT.

Priors are either *Claustal*, or *Conventual*.

Conventual PRIORS are the same as Abbots; all the difference between them being in Name; both having the same Rights; and both, alike, Governours of Monasteries. See ANNOT.

A *Claustal* PRIOR, is he who governs the Religious of an Abbey, or *Priory, in Commendam*; so called, because he has Superiority in the Cloister, or Monastery. See COMMENDAM.

His Jurisdiction is wholly from the Abbot; and ends with the Abbot's Death, unless he has been elected by the whole Convent. See CLAUSTAL.

Conventual Priors, are of two kinds, *viz. Regular Conventual Priors*, who govern Religious living in Community; and *Secular-commendatary-conventual Priors*.

Conventual Priors, are obliged to take up the Priesthood within a Year, or at most two, from the Dates of their Provision; in default whereof, their Benefices are declared vacant.

Priors must be twenty-five Years old, e'er they can govern the Convent; and twenty, if the Convent be govern'd by another.

Grand PRIOR, is the Superior of a large Abbey, where

several Superiors are required; as in the Abbeyes of *Cluny* and *Fecamp*.

In the Monastery of *St. Dennis*, there were antiently five Priors; the first whereof was call'd the *Grand Prior*. In most Monasteries, there is a *Sub-Prior*.

There are also *Grand Priors* in the Military Orders; as *Priors of Malta*, or of *St. John of Jerusalem*, &c.

PRIORITY, the Relation of something, consider'd as it is *before*, or *prior*-to, another; *i. e.* nearer to the beginning, or the first. See POSTERIORITY.

The principal Modes of *Priority* are five, *viz.* in respect of *Time*; as when we say, that the *Grecian* Empire was *prior* to the *Roman*; *Nature*, as when we say one is *prior* to two; *Order*, *Dignity*, and *Causality*. Which are summed up in the Technical Distich:

*Tempore, Natura, prius Ordine, dic & Honore;  
Effecto Causam dicimus esse prius.*

PRIORITY, in Law, is an Antiquity of Tenure, in comparison of another less antient. See TENURE.

To hold by *Priority*, is to hold of one Lord more antiently, than of another; in respect whereof, the Tenant is said to hold in *Posteriority*. See POSTERIORITY.

The Lord of the *Priority* shall have the Custody of the Body. *Crompt. Jurisd.*

PRIORS *Aliens*, certain Religious, born in *France*, and *Normandy*; Superiours of Religious Houses, erected for their Country-Folks here in *England*.

These, *Henry V.* deeming no good Members for this Land, suppress'd; and their Livings were afterwards given by *Henry VI.* to other Monasteries, and Houses of Learning; but chiefly, as *Stow* observes, to the erecting of those two famous Colleges, call'd the *King's Colleges* of *Cambridge*, and *Eaton*.

PRISAGE, that Share which belongs to the King or Admiral, out of such Merchandizes as are taken at Sea, as lawful Prize; which is usually a tenth part. See PRIZE.

*Prisagium est jus Prisas capiendi; vel ipse actus.*

PRISAGE of *Wines, Butlerage*; a Custom whereby the King challenges out of every Vessel laden with Wine containing twenty Tuns, or upwards; two Tun of Wine, the one before, the other behind the Mast, at his own price; which is twenty Shillings *per Tun*. See DUTY.

This Custom varies a little, in various places: At *Boston*, *e. gr.* every Bark laden with ten Tuns of Wine, pays *Prisage*.

The Term is now, almost grown into disuse; and in lieu of *Prisage*, the Custom is popularly call'd *Butlerage*; because 'tis the King's chief Butler that receives it. See BUTLERAGE.

PRISCILLIANISTS, antient Hereticks, who arose in *Spain* towards the end of the fourth Century.

The *Priscillianists* were a Branch of the *Manichees* and *Gnosticks*. See Gnosticks, &c.

We are at a loss for their particular Tenets. *St. Leo* says, they attributed to Jesus Christ only a fictitious or imaginary Body.

*Priscillian*, their Leader, was a Lay-man: He was condemn'd with some Bishops his Adherents, in a Council at *Saragossa*, and in another at *Bordeaux*; but he appeal'd to the Emperor *Maximus*, and had a hearing at *Treves*, where being convicted of broaching Novelties, he was condemn'd to death, with several of his Followers.

PRISE, or PRIZE, in Navigation, a Vessel taken at Sea from the Enemies of the State, or from Pirates; by a Man of War, or a Merchant-man, having Commission from the Admiral.

Vessels are look'd on as lawful *Prise*, if they fight under any other Standard, than that of the State from whom they have their Commission; if they have no Charter-Party, Invoice, or Bill of Lading a-board them; if they be laden with Effects belonging to the King's Enemies, or with Contraband Goods.

Those of the King's Subjects recover'd from the Enemy, after having remain'd twenty-four Hours in their hands, are deem'd *Prise*.

Vessels that refuse to strike their Sails, after having been summon'd thereto by the King's Ships; may be constrain'd to do it; and if they make resistance, and fight, are lawful *Prise*.

PRIZE, in our Statutes, is used for Things taken of the Subjects by the King's Pourveyors. See POURVEYOR.

*Spelman* describes *Prises* to be Corn and other Provisions taken from the Country People, at lower Rates than ordinary; for the Maintenance of the King's Household, Garrisons, &c.

*Roger de Montalto*, who married the Sister of *Hugo de Abeney*, claim'd the following Privileges; *viz.* his Cattle of *Risinge cum Prisis 40 Dierum*, with *Prises* of 40 Days: Which Phrase the same Author understands of the Liberty of



of taking Provisions for the Support of the Garrison of his Castle, upon paying for them within 40 Days. See Stat. 12 Car. 2. cap. 34.

**PRISM**, in Geometry, an oblong Solid or Body, whose Planes are all rectilinear and regular, and the opposite ones equal. See SOLID, &c.

It is thus call'd from the Greek *πρισμα*, something *sawn*, or *cut off*.

The *Prism* is generated by the Motion of a rectilinear Figure, as A C B (Tab. GEOMETRY, fig. 16.) descending always parallel to itself, along the right Line A E.

If the Describent be a Triangle, the Body is said to be a *triangular Prism*; if square, a *quadrangular* one, &c.

From the Genesis of the *Prism*, 'tis evident it has two equal and opposite Bases; that it is terminated by as many Parallelograms as the Base consists of Sides; and that all the Sections of a *Prism* parallel to its Base, are equal.

Every triangular *Prism* may be divided into three equal Pyramids. See PYRAMID.

#### *To measure the Surface and Solidity of a PRISM.*

Find the Area of the Base, e. gr. A B C (see TRIANGLE) and multiply it by E; find the Areas of the Planes or Parallelograms, that include or circumscribe it, and add their Sum to the former Product. The Sum is the whole Surface of the *Prism*.

Multiply then, the Base B A C, by the Altitude C D; the Product is the Solidity of the Cube A B C D E F. See CENTRO-BARIC.

All *Prisms* are in a Ratio compounded of their Bases and Altitudes: If then their Bases be equal, they are to each other as their Heights; and *vice versa*. Similar *Prisms*, &c. are in a triplicate Ratio of their homologous Sides, as also of their Altitudes.

**PRISM**, in Dioptricks, is a Glass in form of a triangular *Prism*, much used in Experiments about the Nature of Light and Colours. See LIGHT, &c.

The Phenomena and Use of the *Prism*, arise from its separating the Rays of Light in their Passage thro' it. See RAY.

The more general of these Phenomena are as follow: For, to enumerate all, would be endless; and even these are sufficient to demonstrate, that Colours don't either consist in the Contortion of the Globules of Light, as *Des Cartes* imagined; nor in the Obliquity of the Pulses of the *Aetherial* Matter, as *Hook* fancied; nor in the Contipation of Light, and its greater or less Concitation, as *Dr. Barrow* conjectured: but that they are original and unchangeable Properties of Light itself.

#### *Phenomena of the PRISM.*

1°. The Sun's Rays transmitted thro' a *Prism* to an opposite wall, project an Image like the Rainbow, of various vivid Colours; the chief whereof are red, yellow, green, blue, and violet. See RAINBOW.

The reason is, that the various colour'd Rays, which were before mixed and blended together, are now, in virtue of their different Refrangibilities, separated by Refraction, in passing thro' the *Prism*, and thrown, each Colour, by itself. See REFRACTION.

For the blue Rays, e. gr. represented by the dotted Lines, (Tab. OPTICKS, fig. 50.) beginning to be separated from the rest in the Side *ca*, of the *Prism abc*, by the first Refraction in *dd*; are again separated further in the other face of the *Prism bc*, by a second Refraction, the same way, in *ee*. Whereas in a plain Glass, or even in a *Prism*, in a different Position; the blue Rays separated by the first Refraction in the first Surface, are again mixed by the second Refraction at the other Surface, which is made a contrary way. See REFRACTION.

2°. The Image thus projected, is not round; but when the Angle of the *Prism* is 60 or 65 Deg. about five times as long as broad.

Because some of the Rays are refracted more than others, and therefore exhibit several Images of the Sun, stretch'd out in length, as if it were but one.

3°. Those Rays which exhibit the yellow Colour, swerve more from the rectilinear Course, than those which exhibit the Red; and the Green more than the Yellow; and the Violet most of all.

4°. If the *Prism* thro' which the Rays are transmitted, be turn'd about its Axis; so as the red, yellow, green, &c. Rays be receiv'd in order, on another *Prism*, about twelve Foot distant from the former, thro' a little hole, and thence projected further; the yellow, red, &c. Rays, tho' they fall in the same manner on the second *Prism*, yet will not be projected on the same place as the red, but will be deflected further, that way towards which the Refraction is.

And if in lieu of the second *Prism*, they be receiv'd on a Lens a little gibbous; the yellow, green, &c. Rays,

will be collected, each in its order, into a nearer Focus than the red ones: The reason of which two last Phenomena is, that the yellow Rays are refracted more than the red ones, the green ones more than the yellow ones, and the violet ones most of all.

5°. The Colours of colour'd Rays well separated, can neither be destroy'd, nor in any manner alter'd by repeated Refractions thro' a number of *Prisms*; nor by passing thro' an illumined Space, nor by their mutual Decussations, nor by the Neighbourhood of the Shade, nor by being reflected from any natural Bodies.

Because their Colours are not Modifications arising from Refraction, but original and immutable Properties thereof. See COLOUR.

6°. All colour'd Rays collected together in any manner, either by several *Prisms*, or a convex Lens, or concave Speculum, form Whiteness; but being again separated after Decussation, each exhibits its proper Colour. See WHITENESS.

Because, as the Ray was white e'er its parts were separated by Refraction; so those parts being re-mix'd, it recovers its Whiteness; and the colour'd Rays when they meet, don't destroy one another, but only intermix.

Hence Dusts, or Pouders, red, yellow, green, blue, violet, &c. mix'd in a certain proportion, become grey; or of the Colour arising from a Mixture of black and white; and would be perfectly white, but that some of the Rays are absorb'd.

Thus if a Circle of Paper be smear'd with all these Colours a-part, in a certain proportion, and turn'd swiftly about its Centre, so that the Species of the several Colours may be confounded in the Eye by the Velocity of the Motion; the several Colours will disappear, and the whole be seen of one uniform Colour, between black and white.

7°. If the Sun's Rays strike very obliquely on the inner Superficies of a *Prism*; the Rays reflected will be violet; those transmitted, red.

8°. If there be two *Prisms*, the one full of a red Liquor, the other of a blue one; the two join'd together will be opaque: tho' if both be fill'd either with a blue or a red Liquor, they will, together, be transparent. For the one transmitting none but blue, the other none but red Rays; the two together will transmit none at all. See BLUE.

9°. All natural Bodies, especially white ones, view'd thro' a *Prism* held to the Eye; seem fringed or hemmed, on one side with red and yellow, on the other with blue and violet.

10°. If two *Prisms* be so placed, that the red of the one, and the purple of the other, meet in a proper Paper encompass'd with Darkness; the Image will be pale: but view'd thro' a third *Prism* held to the Eye at a due distance, will appear double, red and purple.

And if two kinds of Dusts, the one perfectly red, the other blue, be mixed; a little Body being cover'd thick with the Mixture, will exhibit a double Image, the one red, the other blue, thro' a *Prism* apply'd to the Eye.

11°. If the Rays transmitted thro' a convex Lens, be receiv'd on a Paper before they meet in the Focus, the Confine of Light and Shadow will seem tinged with a red Colour; if beyond the Focus, with a blue.

12°. If the Rays about to be transmitted thro' one part of the Pupil, be intercepted by the Interposition of some opaque Body near the Eye; the Extremes of Bodies lying beyond it, will seem ting'd with Colours, as if seen thro' a *Prism*; tho' less vivid.

Because the Rays transmitted thro' the rest of the Pupil, are separated by Refraction into Colours; and the intercepted Rays, which would be refracted a contrary way, are prevented from mixing and diluting them: Whence also it is, that a Body viewed with both Eyes thro' two little Holes made in a Paper, does not only appear double, but tinged with Colours too.

**PRISMOID**, **PRISMOIDES**, in Geometry, a solid Figure, bounded by several Planes, whose Bases are right-angled Parallelograms, parallel and alike situated. See PRISM.

**PRISON**. See GOAL.

**PRISONER**, in Law, one that is restrain'd of his Liberty upon any Action, Civil or Criminal; or upon Commandment.

A Man, again, may be *Prisoner* either upon Matter of Fact, or of Record.

*Prisoner upon Matter of Record*, is he who being present in Court, is by the Court committed to Prison, only upon an Arrest, be it by the Sheriff, Constable, or other.

**PRIVATION**, the Absence, Want, or Defect, of something needed.

In the Canon Law, Privation is used for an Interdiction, or Suspension. See DEPRIVATION.

The Mytic Divines call *Privation of God*, the Dryness of a Soul experiences, to whom God does not make himself felt.

The Church of Rome teaches, that Children dying without Baptism, go into a *Limbus*, where they undergo a Privation of the Sight of God.



**PRIVATION**, in Physics, is a Negative Principle, which, with Matter and Form, the *Peripaticks* suppose, conspires to constitute natural Bodies. See **MATTER** and **FORM**.

*Privation* signifies no more than the absence of the future Form: Thus every thing, according to *Aristotle*, is form'd of this, that it was not that thing before, e. gr. a Chick arises hence, that it was not a Chick before it was generated; which is what that Philosopher calls *Privation*. See **PRINCIPLE**.

*Aristotle* is very angry with the Antients, for not admitting *Privation* as a Principle; and imputes it to their Ignorance thereof. But it is an Injustice to reproach them with Ignorance, of what it is impossible to be ignorant of; and 'tis an Illusion to produce this poor Principle of *Privation* as such a mighty Mystery; there being no body but supposes it a thing known, that a thing is *not* before it is made. See **PERIPATETIC**, &c.

**PRIVATIVE**, in Grammar, a Particle, which prefix'd to a Word, changes it into a contrary Sense. See **PARTICLE**.

Thus, among the *Greeks*, the  $\alpha$  is used as a *Privative*; as in *αθεος*, *Atheist*, *Αεφθαλμος*, &c.

The *Latins* have their *Privative* in; as, *incorrigibilis*, *indeclinabilis*, &c.

The *English*, *French*, &c. on occasion, borrow both the *Latin* and *Greek Privatives*.

**PRIVATIVE Quantity**, in Algebra, is a Quantity less than nothing; call'd also a *Negative Quantity*: in opposition to Affirmative or Positive Quantities. See **QUANTITY**, **NEGATIVE**, &c.

*Privative Quantities*, are denoted by the Character of Subtraction, —, prefix'd to them. See **CHARACTER**.

**PRIVILEGE**, in the general, any kind of Right, Pre-rogative, or Advantage, attach'd to a certain Person, Condition, or Employment; exclusive of others.

The Word is form'd from the *Latin* *privata lex*.

**PRIVILEGE**, in Law, is a particular Right granted to a single Person, Place, Community, or the like; whereby they are exempted from the Rigour of the common Laws.

*Privilege* is either *Personal* or *Real*: A *Personal Privilege* is that which is granted to any Person, either against or beyond the Course of the Common Law; such, e. gr. is that of a Member of Parliament, who may not be arrested, nor any of his Servants, during the sitting of Parliament, nor for a certain time before and after. See **PARLIAMENT**.

*Privilege Real*, is a Franchise granted to a Place. See **FRANCHISE**.

Such is that granted to our Universities; by which none, tho' Members thereof, may be call'd to *Westminster-Hall*, upon any Contract made within their own Precincts.

So also, a Person belonging to the Court of Chancery, cannot be sued in any other Court; certain Cases excepted; and if he be, he may remove it by *Writ of Privilege*.

'Tis an ancient *Privilege*, for Men to be exempted from Arrests within the Verge of the Court; i. e. in or near the Palace, where the King is resident: Because, in such Cases, Quarrels frequently happen; and the Peace ought to be strictly kept there. See **VERGE**.

In the Laws of *Hen. I.* 'tis express'd, that Peace ought to be maintain'd religiously and reverently within four Miles of the King's Doors towards the four Quarters; and forty nine Acres, nine Foot, nine Palms, and nine Barley-Corns around. See **PEACE**.

**PRIVILEGE**, in Commerce, is a Permission from a Prince, or Magistrate, to make and sell a certain Merchandize; or to engage in a certain Commerce; either exclusively of others, or concurrently with them.

The first is call'd an *exclusive Privilege*; the latter, simply, *Privilege*.

*Exclusive Privileges* are to be granted rarely; by reason of the hindrance they are of to Trade: yet they are sometimes very just and reasonable, by way of Reward for the Invention of useful Machines, Manufactures, &c.

*Exclusive Privileges for foreign Commerce*, are usually granted on the following Conditions: That the Commodities be brought from remote parts, where there is no going without running great risques: That the *Privilege* be only for a limited Time: That the *Privileges* be not allowed to monopolize, i. e. to raise and lower their Commodities at pleasure; but that the Sale and Price be always proportionable to the Expence, Interests, &c. And, That the *Privileges* assist the State, on occasion, with part of their Gains.

**PRIVILEGE for the Impression of Books**. This *Privilege* is properly exclusive; being a Permission which an Author or Book seller obtains under the Great Seal, to have alone the Impression of a Book; with a Prohibition of all others to print, sell, or distribute the same, within a certain Term of Years, usually 14; under the Clauses and Penalties express'd therein.

These *Privileges* were unknown till the Beginning of the

16th Century; when they were introduc'd in *France*: The oldest is said to bear Date in the Year 1507. and to have been occasion'd by some Printers counterfeiting the Works of others, as soon as they appear'd.

But People were yet at liberty to take or let them alone at pleasure; till the Interests of Religion, and the State, occasion'd the restraining of this Liberty.

In 1563, *Charles IX.* publish'd a celebrated Ordonnance, forbidding any Person, on pain of Confiscation of Body and Goods, to print any Letter, Speech, &c. without permission.

The like has been since done in *England*: tho' at present, *Privileges* are not only, not requir'd; but by the late Act for securing the Properties of Books, seem needless.

**PRIVITIES**, the natural Parts, of either Sex; or those immediately ministering to the Business of Generation. See **GENERATION**, **PUDENDUM**, &c.

**PRIVITY**, an intimate Freedom, or private Familiarity, between two Persons. See **PRIVY**.

The Lawyers say, if there be Lord and Tenant, and the Tenant hold of the Lord by certain Services; there is a *Privy* between them in respect of the Tenure.

**PRIVY**, in Law, a Person who is Partaker, or has an Interest, in an Action or Thing.

In this sense they say, *Privies in Blood*: Every Heir in Tail, is *privy* to recover the Land intail'd.

In old Law-Books, *Merchants Privy* are oppos'd to Merchants Strangers.

*Coke* mentions four kinds of *Privies*: *Privies in Blood*, as the Heir to his Father: *Privies in Representation*, as Executors and Administrators to the Deceased: *Privies in Estate*, as he in Reversion, and he in Remainder, when Land is given to one for Life, and to another in Fee; the reason is, that their Estates are both created at the same time. The fourth is, *Privy in Tenure*, as the Lord by Escheat, i. e. when Land escheats to the Lord for want of Heirs.

**PRIVY Council**, a Council of State, held by the King, to concert Matters for the public Service, the Honour and Safety of the Realm, &c. See **COUNCIL**.

The *Privy Council* is the *Primum Mobile* of the State, and that which gives the Motion and Direction to all the inferior Parts. It is likewise a Court of Justice of great Antiquity; the primitive and ordinary way of Government in *England* being by the King and *Privy Council*.

It has been frequently used by all our Kings, for determining Controversies of great Importance: The ordinary Judges have sometimes declined giving Judgment, till they had consulted the King and *Privy Council*; and the Parliament have frequently referr'd Matters of high moment to the same; as being by long Experience better able to judge of, and by their Secrecy and Expedition, to transact some State-Affairs, than the Lords and Commons.

At present, the *Privy Council* takes Cognizance of few or no Matters, except such as may not be well determin'd by the known Laws and ordinary Courts; such as Matters of Complaint, and sudden Emergencies.

The Oath of a *Privy Counsellor* is to the utmost of his power and discretion, truly and justly to counsel the King, and to keep secret the King's Counsels.

Antiently, to strike in the House of a *Privy Counsellor*, or elsewhere in his presence, was grievously punish'd: To conspire his Death, is Felony; and to effect it, High-Treason.

With the Advice of this Council, the King issues Proclamations that bind the Subject, provided they be not contrary to Law. See **PROCLAMATION**.

In Debates, the lowest delivers his Opinion first, the King last; and thereby determines the Matter.

A Council is never held without the presence of a Secretary of State. See **SECRETARY**.

The Members of the *Privy Council* in the Year 1710, were in Number 57. Their Officers; four Clerks of the Council, three Clerks extraordinary, three Clerks in the Council-Office, a Keeper of the Records, and two Keepers of the Council-Chamber.

*Lord President of the Privy Council*. See **PRESIDENT**.

**PRIVY Seal**, a Seal which the King uses, previously, to such Grants, &c. as are afterwards to pass the Great Seal.

Yet the *Privy Seal* is sometimes used in Matters of less consequence, which don't require the Great Seal. See **SEAL**.

*Lord Privy Seal*, is the fifth great Officer of the Crown; thro' whose hands pass Charters and Grants of the King, and all Pardons sign'd by him, before they come to the Great Seal: also Matters of less moment, which don't pass the Great Seal, e. gr. for Payments of Money, &c.

He is a Lord by Office, and a Member of the *Privy Council*; he was antiently chief Judge of the Court of Requests. See **PRIVY SEAL**.

*Privy Chamber*. See **CHAMBER**.



**PRO Confesso**, in Law: when, upon a Bill exhibited in Chancery, the Defendant appears, and is in Contempt for not answering, and in Custody; upon a *Habeas Corpus*, (which is granted by Order) to bring him to the Bar, the Court assigns him a Day to answer; which being expir'd, and no Answer put in, a second *Habeas Corpus* is granted, and a farther Day assign'd: by which Day, if he answer not, the Bill, upon the Plaintiff's Motion, shall be taken *pro confesso*, unless Cause be shew'd by a Day, which the Court usually gives; and for want of such Cause shew'd, upon Motion, the Substance of the Plaintiff's Bill shall be decreed, as if it had been confess'd by the Defendant's Answer: or, after a fourth insufficient Answer made to the Bill, the Matter of Fact not sufficiently answer'd unto, shall be taken *pro confesso*.

**PRO Indiviso**, in Law, a Possession, or Occupation of Lands, or Tenements, belonging to two or more Persons; whereof none can say which is his several Portion; each having the whole, &c. as Co-parceners before Partition. See *POUR-PARTY* and *PARTITION*.

**PROBABILISTS**, a Sect, or Division, among the *Romanists*, who adhere to the Doctrine of *probable Opinions*; holding, that a Man is not always obliged to take the more probable side, but may take the less probable, if it be but barely probable. See *PROBABLE*.

The *Jesuits* and *Molinists* are strenuous *Probabilists*. See *JESUIT*, &c.

Those who oppose this Doctrine, and assert, That we are obliged, on pain of Sinning, always to take the more probable side, are call'd *Probabiliorists*.

The *Jansenists*, and particularly the *Port-Royalists*, are *Probabiliorists*. See *JANSENIST*, &c.

**PROBABILITY**, in Reasoning, a *Verisimilitude*; or an Appearance of Truth. See *TRUTH*.

To define it Philosophically, *Probability* is the appearance of the Agreement or Disagreement of two things by the Intervention of Proofs, whose connection is not fixed or immutable, or is not perceived to be so; but is, or appears, for the most part, to be so; so as to suffice to induce the Mind to judge the Proposition to be true or false, rather than the contrary. See *EVIDENCE*.

That Proposition, then, is *probable*, for which there are Arguments and Proofs to make it pass, or be received for true. See *PROBABLE*.

The entertainment the Mind gives to this sort of Propositions, is call'd *Belief*, *Assent*, or *Opinion*. See *FAITH*.

*Probability*, then, being to supply the defect of our Knowledge, is always conversant about Propositions, whereof we have no certainty, but only some Inducements to receive them for true. See *OPINION*.

According to *Aristotle*, a Proposition is *probable*, if it seems true to all, or most People, and those the wiser, and more reputable Sort. But by *seems*, he means, what, after a close Inquiry, shall seem to be true.

Of *Probability* there are various Degrees, from the Confines of Certainty and Demonstration, down thro' Improbability and Unlikelihood, to the Confines of Impossibility; and also Degrees of Assent from certain Knowledge, and, what is next to it, full Assurance and Confidence, quite down to Conjecture, Doubt, Distrust, and Disbelief.

The grounds of *Probability*, are, in short, these two following, *viz.* the Conformity of any thing with our own Knowledge, Experience, or Observation, call'd *internal Probability*; and the Testimony of others, vouching their Observation or Experience, call'd *external Probability*. See *CREDIBILITY*.

**PROBABILITY**, in Poetry, the appearance of Truth in the Fable, or Action, of a Poem. See *ACTION* and *FABLE*.

There are four Kinds of Actions: For a thing may be either only true, or only probable; or true and probable at the same time; or neither the one nor the other. See *ACTION*.

These four Kinds of Actions are shared between four Arts: History takes the first, still keeping to Truth, without regard to *Probability*. See *HISTORY*.

Epic and Dramatic Poetry have the second; and still prefer *Probability*, tho' false, to an *Improbability*, tho' true: Thus the death of *Dido*, who kills herself on her being deserted by *Aeneas*, tho' false in itself, is a fitter Subject for a Poem, than the Action of *Samson*, or the Maid of Orleans.

Moral Philosophy takes the third; and the Fabulists, as *Aesop*, &c. the fourth. See *FABLE*.

*Bosju* adds, that the *Epopoea* in its Nature and Essence, uses Truth and *Probability* like Morality; yet in its Circumstances and Expressions takes a liberty like that of *Aesop*: Instances of each we have in the *Aeneid*.

*Poetical Probability* may be so either in respect of the Rules of Theology, of Morality, Nature, Reason, Experience, or Opinion.

As to the Theology, there is scarce any thing but is probable, in respect hereof; because nothing is im-

possible to God. This is an Expedient they have frequent recourse to, in order to bring things feign'd contrary to the Order of Nature, within the bounds of *Probability*. See this consider'd under the Article *MA-CHINE*.

As to *Morality*, we have observed, it requires both Truth and Verisimilitude: An antient Poet was condemn'd on the Theatre for a slip herein; *viz.* for making a Person, whom he represented as an honest Man, say, that *his Tongue swore, his Mind did not*.

*Seneca* accuses *Virgil* of an Offence against *Natural Probability*, in saying, that the Winds were pent up in Caves; for, says that Philosopher, Wind being only Air in Motion, to suppose it at Rest, is to destroy its Nature. To which *Vossius* answers, that the Poet only speaks of the natural Origin of Winds; which are produced in Mountains by Vapours, &c. pent there: Just as we should say, the Winds are enclosed in an *Aeolipile*.

*Virgil*, likewise, committed an Offence against *Natural Probability*, by making *Aeneas* find Deer in *Africa*; because that Country produces none.

Indeed these Faults are excusable, because, as *Aristotle* finely observes, they are not Faults in the Poet's Art, but arise from his Ignorance of something taught in the other Arts.

However, care must be taken they ben't too gross; there being some *Probabilities* of this kind, which *Aesop* himself could not dispense withal: He would never be forgiven, were he to represent a Lion fearful, a Hare daring, a Fox stupid, &c.

*Probability*, in respect of *Reason*, is frequently broke in upon by those who affect nothing but the *Merveilleux*: Here *Statius* is a notorious Criminal: *Tideus* being surpriz'd in an Ambuscade by fifty Bravoes, who had vow'd his death; kills forty-nine of 'em, and pardons the last.

Again, two young Kings, whereof this same *Tideus* was one, the other *Polynices*, upon a Quarrel, go together by the ears; and box it out; their Swords all the while by their sides. *Scrutatur & intima Vultus, unca manus, penitusq; oculis cedentibus instat*.

*Scaliger* accuses *Homer* of an Offence against *Experience*; in saying, that *Jupiter* thunder'd and snow'd at the same time. This, says the Critic, was never known; and yet have there been Instances hereof even in our time.

But the principal and most important Kind of *Probability*, is that in respect of *common Opinion*. A thing is probable when it looks like Truth: But, sometimes, it shall appear true to the People, and false to the Learned; and *vice versa*. When, then, the Learned and the People are divided, to which side must the Poet adhere? Suppose, for instance, the Adventure of *Penelope*, the History of *Medea*, *Helena*, or the like: What *Virgil* and *Homer* have wrote of 'em shall appear probable to the Populace; yet the Learned read the contrary in History; some Authors having wrote that *Dido* was chaste, and *Medea* innocent; that *Penelope* was divorced and banished by *Ulysses* for abusing his Absence; and that *Helena* never saw *Troy*.

This Point is soon decided: *Homer* and *Virgil* make no scruple of leaving History, to improve their Fables: *Horace* does not send the Poets to the Truths of History; but either to Fables already invented, or to common Fame.

All which is confirmed by *Aristotle*; where he says, that a Poet does not tell, like an Historian, what kind of Person *Alcibiades* was, nor what he really did or said on this or that Occasion; but what he probably might have done or said. Add to this, that *Aristotle* approves of the Fable of *Oedipus*, and *Iphigenia*; tho' it can never be imagined the truth of those Stories was believed by the Learned in those days.

In effect, every one finds his Account in this Conduct: The People think they see Truth; and the Learned do really see Truths, and more solid ones too, than those the People look for; and more sure than those of the History which the Poet neglects. The more understanding they are, the less will they desire these historical Truths in a Poem, which is intended for other and deeper Ends. The Truths they require, are Moral and Allegorical Truths. The *Aeneid* was not wrote to teach us the History of *Dido*, but to shew, under that Name, the Genius and Conduct of the Republic founded by her, and the Source and Series of its differences with *Rome*. This we see with pleasure; and these Truths are more agreeable, more constant and notorious than any the Poet could take from a History, so little known in his time.

To these kinds of *Probability*, may be added another; which we call an *Accidental Probability*: It consists, not in the using of several Incidents, each probable a-part; but in disposing 'em so as to hang probably together.

A Man, *e. gr.* may probably die of an Apoplexy; but that this should happen just in the nick, when the Poet wanted it for an unravelling, is highly *improbable*.



'Tis an Offence against this kind of *Probability* to produce an Incident all at once, and without any preparation, which yet needed one. *Virgil* is wonderfully exact in this Point: *Juno* prepares the Tempest rais'd in the first Book; *Venus* in the same Book prepares the Amours of the fourth. The Death of *Dido* in the end of the fourth is prepared on the first day of Marriage; *Helenus* in the third disposes the whole Matter of the sixth; and in the sixth, the *Sybil* predicts all the Wars that follow.

**PROBABLE Opinion**, a Term long time controverted among the *Romish* Casuists.

It is usually defined an Opinion founded on a grave Motive, or an apparently good Foundation; and which has Authority enough on its side to persuade a wise, disinterested Person. See **PROBABILITY**.

Others define a *probable Opinion* to be that, which, being compared to the contrary Opinion, becomes Problematic, by a perfect Equality of the Reasons on each side; so that there is nothing in Reason or Nature to determine a Man to this rather than that.

But the Jesuits go still farther, and maintain, that to render an *Opinion probable*, it suffices that it be either built on a Reason of some Consequence, or on the Authority of some one grave Doctor. With these Qualifications it is allowable to follow it, even tho' it be less *probable* and less sure than the contrary Opinion. Here it is the Venom of *Probability* lies.

The Doctrine of *probable Opinions* is attack'd with infinite Address by M. *Paschal* in the *Provincial Letters*.

One of the twenty-four Patriarchs of the Jesuits, *Castro Palao*, asserts, that a Judge, in a Question of Right, may give Sentence according to a *probable Opinion*, against a more *probable* one; and this, contrary to the Judgment and Persuasion of his own Mind; *imo contra propriam Opinionem*. Escobar, Tr. 6. ex. 6. n. 45.

So *Vasquez* maintains, that it is lawful to follow the less *probable* and less secure *Opinion*, discarding the more *probable* and more secure one.

*Lessius* and *Escobar* treating of the Question, Whether a Man may kill another for giving him a Box on the Ear; decide it to be a *probable Opinion*, and speculatively true; tho' there may be some inconveniencies in the practice, for which it would be as well to let it alone. *In praxi tutam & probabilem, judicarunt—sed non facile admittendam*. Let. Provinciales, p. 307, 308.

**PROBATE**, of a *Will* or *Testament*, in Law, is the exhibiting and proving a Will and Testament, before the Ecclesiastical Judges delegated by the Bishop who is Ordinary of the Place where the Party dies. See **WILL** and **TESTAMENT**.

The Ordinary is known by the Quantity of Goods the Deceased hath out of the Diocese wherein he departed; for if all his Goods be in the same Diocese, then the Bishop of the Diocese, or the Archdeacon, according as their Composition leads, has the *Probate* of the Testament. If the Goods be dispersed in several Dioceses, so that there be any Sum of Note, as five Pounds, out of the Diocese where the Party liv'd; then is the Archbishop of *Canterbury* the Ordinary by *Prerogative*. See **PREROGATIVE**.

This *Probate* may be made two ways; either in common Form, or *per Testes*.

The Proof in common Form is only by the Oath of the Executor, or Party exhibiting the Will, who swears upon his Belief, that the Will exhibited by him, is the last Will and Testament of the Deceased. See **EXECUTOR**.

The Proof *per Testes*, by *Witnesses*, is, when over and besides his own Oath, he also produceth Witnesses, or makes other Proof to confirm the same; and that in the Presence of such as may pretend some Interest in the Goods of the Deceased; or at least in their Absence, after they have been lawfully summoned to see such a Will proved, if they think fit.

The latter Course is commonly taken when there is fear of Strife or Dispute about the Deceased's Goods: For some hold, that a Will proved in common Form only, may be call'd in question any time within thirty Years after.

Where a Will disposeth of Lands, and Tenements of Freehold, it is now frequently proved by Witnesses in Chancery.

**PROBATION**, in a Monastic Sense, a Time of Trial; or the Year of Noviciate, which a Religious must pass in a Convent to prove his Virtue, and Vocation, and whether he can bear the Severities of the Rule. See **NOVICIATE**.

The Year of *Probation* commences from the Day of Novices taking the Habit.

**PROBATION**, in the Universities, is the Examination and Trial of a Student who is about to take his Degrees. See **DEGREE**.

**PROBATIONER**, in the Presbyterian Discipline, a Person licensed by a Presbytery to preach; which is usually done a Year before he be ordain'd. See **PRESBYTERY**.

A Student in Divinity is not admitted *Probationer* till after several Trials: The first, private, before a Presbytery; the second public, before a Congregation; the Presbytery being present.

The private Trials are a Homily and Exegesis; *i. e.* a Theological Subject is given into the Presbytery in Theses, and the Candidate answers any Objections started against it.

The public Trials are a popular Sermon, and an Exercise and Addition; *i. e.* a Text is handled, half an Hour; Logically and Critically; and half an Hour more, Practically.

If he acquit himself to the Satisfaction of the Presbytery, he signs the Confession of Faith, owns the Presbyterian Government, &c. Upon which he receives a Licence to preach.

**PROBATOR**, in Law, an Accuser, or one who undertakes to prove a Crime charged upon another; properly an Accomplice in the Crime.

**PROBATUM EST**, *q. d.* it is approved; a Term frequently subjoin'd to a Receipt, for the Cure of some Disease. See **RECIPE**.

**PROBE**, a Surgeon's Instrument, to sound and examine the Circumstances of Wounds, Ulcers, and other Cavities. See **SPECULUM**.

**PROBLEM**, **PROBLEMA**, in Logic, a doubtful Question; or a Proposition that neither appears absolutely true, nor false, but which is probable on both sides, and may be asserted either in the Negative or Affirmative, with equal Evidence.

Thus, that the Moon and the Planets are inhabited by Animals in some respect like us, is a *Problem*: That the fixed Stars are all Suns, and each the Centre of a several System of Planets and Comets, is a *Problem*. See **PLANET**, **STAR**, &c.

The Word is originally *Greek*, *πρόβλημα*, signifying the same thing.

**PROBLEM** is also a Proposition expressing some natural Effect, proposed in order to a discovery of its apparent Cause. Such are the *Problems* of *Aristotle*.

A Logical or Dialectical *Problem*, say the Schoolmen, consists of two Parts; a Subject, or Subject Matter about which the Doubt is rais'd; and a Predicate or Attribute, which is the thing doubted whether it be true of the Subject or not. See **SUBJECT** and **PREDICATE**.

There are four Topical Predicates, *viz.* *Genus*, *Definitio*, *Proprium*, and *Accidens*; whence arise four different kinds of dialectical *Problems*.

The first, when the thing attributed to the Subject is in the relation of a Genus: As, whether Fire be an Element or not. See **GENUS**.

The second, when the thing attributed has the Effect of a Definition: As, when it is ask'd, Whether or no Rhetoric be the Art of Speaking? See **DEFINITION**.

The third, when the Attribute imports a Propriety: As, Whether it belong to Justice to give every one their Due? See **PROPER**.

The last is when the thing attributed is adventitious: As, Whether Justice is to be desired? See **ACCIDENT**.

*Problems*, again, may be divided into those relating to things to be done, or avoided, call'd *Ethical*; those relating to the Knowledge of Nature, call'd *Physical*; those relating to Spirits, call'd *Metaphysical Problems*, &c.

**PROBLEM**, in Geometry, a Proposition wherein some Operation, or Construction is required; as, to divide a Line, to construct an Angle, to draw a Circle thro' three Points not in a right Line, &c. See **PROPOSITION**.

Messieurs of the *Port-Royal* define a *Geometrical Problem*, a Proposition given to be demonstrated, wherein something is required to be done; and what is done, to be proved to be the thing required.

A *Problem*, according to *Wolffius*, consists of three Parts. The Proposition, which expresses what is to be done. See **PROPOSITION**.

The Resolution, or Solution, wherein the several Steps whereby the thing required is to be effected, are orderly rehearsed. See **RESOLUTION**.

The Demonstration, wherein is shewn that by doing the several things prescribed in the Resolution, the thing required is obtain'd.

Accordingly, the general Tenor of all *Problems* is this: The things prescribed in the Resolution being done; the thing required, is done. See **DEMONSTRATION**.

**PROBLEM**, in Algebra, is a Question, or Proposition which requires some unknown Truth to be investigated, or discovered; and the Truth of the Discovery demonstrated.

In this sense 'tis a *Problem* to find a Theorem. See **THEOREM**. See also **INVESTIGATION**.

Algebra is defined to be the Art of Resolving all *Problems* that are resolvable. See **ALGEBRA**.



**Kepler's PROBLEM**, in Astronomy, is the determining of a Planet's Place from the Time. See **PLANET**.

It took its Name from *Kepler*, who first propos'd it.

The **Problem**, stated in form, stands thus: To find the Position of a right Line, which passing thro one of the Foci of an Ellipsis, shall cut off an Area describ'd by its Motion which shall be in any given Proportion to the whole Area of the Ellipsis.

The Proposer knew no way of solving the **Problem** directly, and geometrically; and therefore had recourse to an indirect Method; for which he was tax'd with an *anæmæntia*, or want of Geometry; and his Astronomy charged with not being Geometrical. But the **Problem** has since been solved directly and geometrically several ways, by several Authors; particularly Sir *Is. Newton*, Dr. *Keill*, &c. See **PLANET**, **PLACE**, &c.

**Deliac PROBLEM**, in Geometry, is the doubling of a Cube. See **CUBE**, &c.

This **Problem** was so call'd from the People of *Delos*, who, upon consulting the Oracle for a Remedy against a Plague they were then infested with, were answer'd, that the Plague should cease, when *Apollo's* Altar, which was in form of a Cube, should be doubled. See **DUPLICATION**.

This **Problem** coincides with that for finding two mean Proportionals between two given Lines; whence that, also, is call'd the **Deliac Problem**. See **PROPORTIONAL**.

**PROBLEMATICAL Resolution**, in Algebra, a Method of solving difficult Questions by certain Rules, call'd **Canons**. See **SOLUTION** and **CANON**.

**PROBOSCIS**, in Natural History, the *Trunk*, or Snout of an Elephant; and some other Animals. See **TRUNK**.

The **Proboscis** is a Member issuing out of the middle of the Forehead, serving instead of a Hand; and having a little Appendix fasten'd to the end thereof, in form of a Finger.

By the **Proboscis**, the She-Elephant sucks herself; and by the same, conveys the Milk to her Young.

The **Proboscis**, Mr. *Derham* observes, is a Member so admirably contrived, so curiously wrought, and with so great agility apply'd by that unwieldy Animal; that it may pass as an Instance of the Creator's Skill, &c.

All Quadrupeds have the length of their Neck equal to that of their Feet; the Elephant alone excepted; in whom the Shortness of the Neck is compensated by the Length of the **Proboscis**.

The Cameleon has also a kind of Trunk or **Proboscis**, which is its Tongue; and which it darts nimbly out of its Throat, as if it spat it; and draws it in again instantaneously. It serves like the Elephant's Trunk, to lay hold on, and take in its Food. See **CAMELEON**.

The Microscope shews us a little Trunk in Flies, and Gnats; by means whereof, they suck the Blood of Animals, or Liquors, for their Food.

The Word is *Greek*, *πρὸςβόσκις*, where it has the same Signification.

**PROCATARCTIC Cause**, the original or pre-existent Cause of an Effect. See **CAUSE**.

Such, e. gr. is a Disease which co-operates with some other Disease, subsequent thereto.

Thus, Anger, or Heat of Climate, bring on such a Disposition of the Juices, as occasions a Fever; where the ill Disposition is the immediate Cause, and the Heat or Anger, the **Procatarctic Cause**.

The Word is form'd from the *Greek* *προεγρέπω*, *antigredior*, I go before.

**PROCEDENDO**, in Law, a Writ whereby a Plea or Cause, formerly call'd from a base Court to the Chancery, King's Bench, or Common Pleas, by Writ of Privilege or *Certiorari*, is releas'd, and return'd to the other Court to be proceeded in; upon its appearing that the Defendant has no Cause of Privilege, or that the Matter comprized in the Party's Allegation is not well proved.

**PROCEDURE**, in Law, the Course of the several Acts, Expeditions, and Instructions of a Process, or Law-Suit. See **PROCESS**.

A **Procedure** is either Civil or Criminal: *Civil Procedure*, is that where the Estate alone is concern'd: *Criminal or extraordinary Procedure*, is that where the Person is prosecuted.

**PROCEED**, among Merchants, that which arises from a Thing. In this sense they say, the *neat Proceed*.

**PROCELEUSMATICUS**, in the ancient Poetry, a Foot consisting of four Syllables; as *Honorius*. See **FOOT**.

**PROCESS**, in Law, in its general Sense, is used for all the Proceedings in any Cause, or Action real or personal, civil or criminal, from the original Writ, to the end. See **ACTION**.

In *France*, they carry on a formal **Process** against the Memory of People kill'd in Duels; or that have murder'd themselves.

Pyrates, when taken in the Fact, are hang'd without any **Process**; as are sometimes also Robbers.

**PROCESS**, is also used in a more restrain'd sense, for that by which a Man is first call'd into Court; this being the beginning or principal part, and that by which the rest of the Business is directed.

The Difference between this **Process**, and a **Precept** or **Warrant** of the Justices, is this; the **Precept** or **Warrant** is only to attach or convene the Party, before any Indictment or Conviction, and may be made either in the Name of the King, or the Justice: But the **Process** is always in the King's Name, and usually after an Indictment. See **PRECEPT**.

**PROCESS**, in Chymistry, the whole Course of an Operation or Experiment. See **OPERATION** and **EXPERIMENT**.

**PROCESS**, **PROCESSUS**, in Anatomy, is a Term of equal Import with *Apophysis*, *Prominence*, *Protuberance*, and *Production*; which see.

**Process** is particularly apply'd to certain Eminences of the Bones, and other Parts; distinguish'd by peculiar Names, expressing their Place, Form, or the like: as, *Processus Peritonæi*, *Processus Vermiformes*, *Processus Papillares*, *Ciliares*, &c. See **BONE**, **VERMIFORMES**, **PAPILLARES**, **CILIARES**, **PERITONÆUM**, &c.

**PROCESSION**, in Theology, a Term used for the manner wherein the Holy Spirit is conceiv'd to issue from the Father and the Son, in the Mystery of the Trinity. See **SPIRIT**, **TRINITY**, **PERSON**, &c.

The *Greeks* and *Latins* are not agreed about the **Procession** of the Holy Spirit. See **GREEK**.

**PROCESSION**, is also a Ceremony in the Romish Church, consisting in a formal March of the Clergy in their Robes, and the People after them, putting up Prayers, singing Hymns, &c. and in this manner, making a Visit to some Church, or other holy Place.

There are general **Processions** of all the People in Jubilees, and in publick Necessities. See **JUBILEE**.

The **Processions** of the Holy Sacrament are very solemn.

They have also **Processions**, frequently, a-round the Church, at the Salutations, &c. in the Mass.

Antiently, among us, there were, in each Parish, customary **Processions** of the Parish-Priest, and the Patron of the Church, with the chief Flag, or holy Banner, attended by the other Parishioners, each Ascension-Week; to take a Circuit round the Limits of the Parish, and pray for a Blessing on the Fruits of the Earth. Of which Custom there still remains a Shadow in that annual Perambulation, still call'd **Processioning**; tho' the Order, and Devotion of the antient **Processions**, be almost lost.

**PROCESSUM Continuando**, a Writ for the Continuance of a **Process**, after the Death of the Chief Justice, or other Justices in the Writ or Commission of Oyer and Terminer. Register of Writs.

**PROCHEIN Amy**, in Law, the Person next a-kin to a Child in Nonage; and who, in that respect, is allow'd in Law to deal and negotiate for him, to manage his Affairs, to see him redress'd of any Wrong, and to be his Guardian, if he hold in Socage.

By Statute of *Westminster*, the prosecution of any Action at Law, is by the Guardian, if the Plaintiff be an Infant; and by the *Prochein Amy*, *Proximum Amicum*, if the Infant be Defendant. See **GUARDIAN**.

**PROCIDENTIA**, or **PROLAPSUS Ani**, in Medicine, is when upon a Discharge by Stool, the *Intestinum Rectum* is protruded so far, as that it cannot be drawn back again into the Body; or when drawn back, falls again. See **RECTUM**.

This is sometimes a Chronic Disease, especially when it arises from a Palsy: Its Causes are a Relaxation of the Fibres of the Rectum, either from the Admixture of the Alvus, a Diarrhæa, Dysentery, or Tenesmus.

'Tis very difficultly cured, when attended with Hemorrhoids: The principal Cure is by Astringents.

External Assistance is requir'd to reduce the fallen Gut; which, if it be not soon had, is apt to tumefy and mortify by the Contact of the Air.

'Tis subject to relapse after Reduction in Children, especially, upon violent Crying; and is difficult to keep up in case of a Diarrhæa.

**PROCIDENTIA Uteri**, the Descent, or falling down of the Womb; from a Relaxation of the Ligaments, which hold it in its place. See **UTERUS**.

If the Uterus fall into the Vagina, so that its Os may be either perceiv'd with the Finger within, or by the Eye just without, the *Labia Vulvæ*; it is call'd a *Labia* down of the Womb.—If it fall quite down, so as to hang pendulous without the *Labia*, but so as that no more of the Inside than the Orifice is seen, it is call'd a *Prolapsus* or *Procidentia*.—If, falling thus low, it be turn'd inside out, and hang like a fleshy Bag, with a rugged unequal Surface, it is call'd a *Perverso Uteri*.

These Disorders may proceed from violent Motions, vehement Coughing, Sneezing, *Stuor Albus*. They appear most frequent in Women with Child, from the Weakness



pressing and bearing hard upon the Uterus; but especially if the Fœtus be dead, lie in a wrong posture, or be violently extracted.

After replacing the part, Restringtons both inwardly, and by Injection, are here used; such as obtain in Diarrhæas, Hemorrhoids, the Gonorrhœa Simplex, &c.

PROCIDENTIA, or PROLAPSUS, *Uvula*; the Descent or Relaxation of the Uvula, or Almonds of the Ears. See *Uvula*.

PROCLAMATION, an Instrument dispatch'd by the King, with the Advice of his Privy Council; whereby the People are advertis'd of something, which his Majesty thinks fit for them to know; and whereby they are sometimes requir'd to do, or not to do certain Things. See KING and PRIVY COUNCIL.

*Proclamations* have the Force of Laws; but then they are suppos'd to be consistent with the Laws already in being; otherwise they are superseded: *Proclamare est palam & valde clamare*.

PROCLAMATION is also used for a solemn Denunciation, or Declaration of War or Peace. See WAR, &c.

PROCLAMATION is also the Act of notifying to the People the Accession of a Prince to the Crown. See ACCESSION.

The *Proclamation* does not invest the Prince with the Regal Authority; it supposes him already invested therewith; and only gives notice thereof to the People.

PROCLAMATION of a *Fine*, is a Notice openly and solemnly given thereof at all the Assizes held in the County within one Year after the Ingrossing it. See FINE.

These *Proclamations* are made on Transcripts of the Fine, sent by Justices of the Common Pleas, to the Justices of Assize, and of the Peace.

PROCLAMATION, in the Monastic Sense, is the Accusation of a Friar or Brother, by another Brother, in open Chapter, and in presence of the Superior and Community, for some external Crime he has seen him commit.

PROCONDYLI, among Anatomists, the Bones of the Fingers next the Back of the Hand. See FINGER.

PROCONSUL, a *Roman* Magistrate; sent to govern a Province with a Consular Authority. See CONSUL and PROVINCE.

The *Proconsuls* were appointed out of the Body of the Senate; and ordinarily, as the Year of any one's Consulate expir'd, he was sent *Proconsul* into some Province.

The *Proconsuls* had the same Honours, &c. with the Consuls themselves; except that they had only six Lictors, and Fasces before them.

The *Proconsuls* did not ordinarily hear and determine Processes in person, but had that Office perform'd by their Assessors, or other Judges, constituted or delegated by them.

As the *Proconsuls* had the Direction both of Justice, of War, and of the Revenues; they had their several Lieutenants in each Capacity: These were call'd *Legati*, and were ordinarily nominated by the Senate.

The *Proconsular* Function only held a Year: The Charges of their Journey backwards and forwards, was bore by the Publick; and was call'd *Viaticum*. See VIATICUM.

After the Partition of the Provinces between *Augustus* and the People; those who presided over the Provinces of the People, were call'd specially *Proconsuls*.

In our ancient Law-Books, *Proconsul* is used for a Justice in Eyre, or Justice Errant. See JUSTICE.

PROCREATION, the Action of begetting, and bringing forth Children. See GENERATION.

PROCTOR, PROCURATOR, a Person commission'd to act as Proxy, or Delegate, in behalf of another. See PROCURATOR.

PROCTOR, *Procurator*, in the Civil Law, is an Officer appointed to appear in Court, and manage the Causes of Parties, who will make use of his Procuration. See CIVIL LAW.

Antiently, every body was oblig'd to appear in person; and when the Affair happen'd to be drawn out to a great length, was allow'd to create a *Proctor*, or Proxy, in his Cause.

But this was a Favour only granted for a certain Time; till towards the middle of the 16th Century, when it was decreed, that all Procuration should hold till revoked.

PROCTORS of the Commons, are Persons skill'd in the Civil Law, and the Practice of Doctors Commons; who exhibit their Proxies, and make themselves Parties for their Clients, to draw up Acts and Pleadings, produce Witnesses, prepare Causes for Sentences, and attend the Advocates with the Proceedings.

They are 34 in Number; are admitted by the Archbishop's Fiat; and wear black Robes, and Hoods lined with white Furs. See DOCTORS COMMONS.

Proctors of the Clergy, are Deputies, or Representatives, chose by the Clergy of each Diocese, two for each; and by the Cathedral and Collegiate Churches, one for each, to sit in the Lower House of Convocation. See CONVOCATION.

PROCTORS in the University, are two Officers, chose from among the Students, to see good Orders, and Exercises daily perform'd there. See UNIVERSITY.

PROCUMBENT Leaves, in Botany, such Leaves of Plants as lie flat, or trailing on the Ground. See LEAVES.

PROCURACY. See PROCURATOR.

PROCURATION, an Act whereby a Person is empowered to act, treat, receive, &c. in a Person's Name, as if he himself were actually present. See PROCURATOR.

When a Man treats in behalf of another, the first thing is to examine his *Procuration*.

The Word is now little used in this sense, except in the Case of a Person who collects the Fruits of a Benefice for another.

PROCURATION, or *Proxy*, in the Canon Law, is used for the Repast or Entertainment antiently given to Church-Officers or Ordinaries, who came to visit in Churches or Monasteries; whether they were Bishops, Arch-deacons, or Visitors.

*Procuration* was due to the Pope's Legates, and even to Popes themselves, when they came into France; and the Charge was comprized in the Bulls then granted.

Complaints were frequently made to the Pope, of the excessive Charges of the *Procurations* of Bishops and Arch-deacons; upon which they were prohibited by several Councils and Bulls.

That of *Clement IV.* mention'd in the *Monasticon*, is very express; wherein that Pope tells us, Complaint had been made, that the Arch-deacon of *Richmond*, visiting the Diocese, travel'd with one hundred and three Horses, twenty one Dogs, and three Hawks; and did so grievously oppress a Religious House with that vast Equipage, that he caus'd the Monks to spend in an hour, as much as would have maintain'd them a long time. See INDEMNITIES.

PROCURATION, or *PRAXYS*, is now used for a Sum of Money, paid yearly by Parish-Priests to the Bishop or Arch-deacon, in lieu of this Entertainment.

PROCURATOR, PROCTOR, PROXY, a Person who has a Charge or Office committed to him by another. See PROCURATION.

Thus the *Proxies* of the Lords in Parliament, in our Law-Books, are call'd *Procurators*. See PROXY.

The Word is also used for a Vicar or Lieutenant; thus, in *Petrus Blesensis*, we read of a *Procurator Regni*.

Those who manage Causes in Doctors Commons, are also call'd *Procurators*, or *Proctors*. See PROCTOR.

The Bishops are sometimes call'd *Procuratores Ecclesiarum*; and the Representatives sent by the Clergy to Convocation, *Procuratores Cleri*. See CONVOCATION.

In our Statutes, a Person who gathers the Fruits of a Benefice for another, is particularly call'd *Procurator*; and the Instrument empowering him to receive the same, *Procuracy*.

PROCURATOR, is also a kind of Magistrate in several Cities of Italy, who takes care of the publick Interests.

There are *Procurators* of St. Mark, *Procurators* at Venice, at Genoa, &c.

Originally there was but one *Procurator* of St. Mark at Venice: In 1442, the Number was augmented to Nine; when, the Senate made a Decree, appointing, that for the future, none should be admitted to the Dignity, but after the Death of some of the Nine. But in the Occasions of the Republick, the Number was afterwards enlarged to Forty; tho' of these, there are only Nine that bear the Title of *Procurators*, and whose place is regularly fill'd. They are Administrators of the Church of St. Mark, and of the Revenues attach'd thereto; the Patrons of Orphans, and Executors of Testaments.

This Office receives more Lustre from the Merit of those who discharge it, than from its Authority. They are clothed in Black or Violet, with Ducal Sleeves.

PROCURATOR *Monasterii*, antiently, was the Advocate of a Religious House, who was to solicit the Interest, and plead the Causes of the Society. See ADVOCATE.

PROCURATORES *Ecclesie Parochialis*, are the Church-Wardens, whose Office is to act as Proxies and Representatives of the Church. See CHURCH-WARDEN.

PROCURORS. See MALVEIS *Procurors*.

PROCYON, in Astronomy, a fixed Star of the second Magnitude, in *Canis Minor*. See CANIS.

PRODES *Homes*, q. d. Wise Men, in our antient Customs, a Title given to the Barons, and other military Tenants, who were call'd to the King's Council, and were to give advice according to the best of their prudence and knowledge. See THANE, BARON, &c.

PRO-DICTATOR, among the Romans, a Magistrate who had the Power, and did the Office, of a Dictator. See DICTATOR.

The Romans sometimes created a *Prodictator*, in Cases where they could not have a Dictator. *Fabius Maximus* was *Prodictator*.

PRODROMUS, *προδρομος*, literally denotes a Forerunner, a Harbinger: Hence, *Prodromus Morbus*, among Phy-



Physicians, is used for a Disease which foreruns a greater. Thus a Straitness of the Breast is a *Prodromus* of a Consumption, &c. See *PHTHISIS*.

**PRODUCING**, in Geometry, denotes the continuing a right Line; or drawing it out farther, till it have any assign'd Length. See *LINE*.

**PRODUCT**, in Arithmetick and Geometry, the Factum of two Numbers; or the Quantity arising from, or produced by, the Multiplication of two or more Numbers, Lines, &c. into one another. See *FACTUM*.

Thus, if 6 be multiply'd by 8, the *Product* is 48. See *MULTIPLICATION*.

In Lines it is always (and sometimes in Numbers) call'd the *Rectangle* between the two Lines, multiply'd by one another. See *RECTANGLE*.

**PRODUCTION**, in Anatomy, a Continuation, or Processus. See *PROCESS*.

**PROEDRUS**, in Antiquity. See *EPISTATES*.

**PROEM**, **PROÆMIUM**, a Term antiently used for *Preface*. See *PREFACE*.

**PROEMPTOSIS**, in Astronomy, that which makes the New Moons appear a Day later, by means of the Lunar Equation, than they would do without that Equation. See *MOON* and *EQUATION*.

**PROFANATION**, in Religion, the doing of something disrespectful to Holy, or Sacred Things. See *PROFANE*.

**PROFANE**, a Term used in opposition to *Holy*, *Sacred*. See *SACRED*, &c.

Except Churches, and Church-yards, all places are esteem'd *Profane*.

By the Canon Law, a Sacred Chalice or Cup becomes *Profane*, by giving it a Blow with an Hammer.

**PROFANE** is also apply'd in the general to all Persons who have not the Sacred Character, and all Things that don't belong to the Service of Religion. In this sense we say, *Zenophon*, *Seneca*, &c. are *Profane* Authors. All the Heathen Priests, Pontiffs, &c. pass with us for *Profane*.

**PROFER**, in Law, the Time appointed for the Accounts of Sheriffs, and other Officers, to be given into the Exchequer; which by Stat. 51 Hen. 3. is to be twice in the Year. See *SHERIFF* and *EXCHEQUER*.

The Word is form'd of the French *proferer*, to produce.

We also read of *Profers*, Anno 32 Hen. 8. in another Acceptation: *Trinity-Term shall begin the Monday next after Trinity-Sunday, whenever it shall happen to fall, for the keeping of the Effoins, Profers, Returns, and other Ceremonies heretofore in use.* In which place, *Profer* signifies the Offer and Endeavour to proceed in an Action, by any Man concern'd so to do.

**PROFER** the *Half Mark*. See *HALF MARK*.

**PROFESSED Monk**, or *Nun*, one who having made the Vow, is admitted of a Religious Order. See *VOW*, *MONK*, and *RELIGIOUS*.

In this sense the Word is used in opposition to *Novice*. See *NOVICE* and *PROBATION*.

**PROFESSION**, in the Monastic Sense, the entering into a religious Order; or an Action whereby a Person offers himself to God, by a Vow of observing three things, viz. *Obedience*, *Chastity*, and *Poverty*, which he promises inviolably to maintain. See *VOW*, *ORDER*, &c.

This is call'd *Sanctæ Religionis professio*, and the Person a *Religious professed*.

Persons are not admitted to make *Profession* till after a Year of *Probation*. See *PROBATION*.

**PROFESSOR**, in the Universities, a Doctor, or Regent, who teaches, or lectures publicly, some Art, or Science, in a Chair establish'd for that purpose. See *CHAIR*.

The *Professors* in Foreign Universities, teach the Arts, and have their Classes of Pupils; those in our Universities only read publick Lectures in Term-Time. See *TERM*.

Of *Professors*, we have a great Number; some denominated from the Arts they profess; as *Cassistical Professor*, *Hebrew Professor*, *Physick Professor*, *Divinity Professor*, &c.

Others from those who founded the *Professorship*, or assign'd a Revenue for the Support of the *Professor*; as the *Savilian Professors* of Astronomy and Geometry, the *Lucasian Professor* of Mathematicks, *Margaret Professor* of Divinity, &c.

**PROFILE**, in Architecture, the Figure, or Draught of a Building, Fortification, or the like; wherein are express'd the several Heights, Widths, and Thicknesses, such as they would appear were the Building cut down, perpendicularly from the Roof to the Foundation; whence the *Profile* is also call'd the *Section*, and by *Vitruvius*, *Scia-graphy*. See *SECTION*, &c.

**PROFILE**, is sometimes also used for a Design, or Description; in opposition to a Plan, or *Ichmography*.

In which Sense, *Profiles* coincide with what we popularly call *Prospects*.

**PROFILE** is also used for the Contour, or Out-Line of a

Building, or a Member of Architecture; as a Base, a Corniche, &c.

Hence *Profiling* is sometimes used for Designing, or describing the Member with Rule, Compass, &c.

**PROFILE**, in Sculpture, and Painting. A Head, a Portrait, &c. are said to be in *Profile* when they are represented side-ways, or in a side-view. As, when in a Portrait, there is but one side of the Face, one Eye, one Cheek, &c. shewn, and nothing of the other.

In almost all Medals the Faces are in *Profile*. See *ME-DAL*.

**PROFLUVIUM**, in Medicine, any kind of Flux, or liquid Evacuation; whence *Profluvium Ventris*, a Flux of the Belly, is a *Diarrhea*, or *Dysentery*. See *FLUX*.

**PROFUNDITY**, see *DEPTH*.

**PROFUNDUS**, in Anatomy, a Muscle, call'd also *Perforans*. See *PERFORANS*.

**PROGNOSTIC**, **PROGNOSIS**, in Medicine, a conjectural Judgment of the Event of a Disease; as, e. gr. whether it shall end in Life or Death, be long or short, mild or malignant, &c. taken from certain Symptoms thereof. See *SIGN* and *SYMPTOM*.

In all continued Fevers, *Morton* tells us, a strong equable Pulse is a good *Prognostic*, and always presages well, whatever other threatening Symptoms attend it; on the contrary, a quick, feeble, intermitting Pulse is a *Prognostic* of Death, how much sooner the other Symptoms may flatter. See *PULSE*.

*Hippocrates* observes, that all Predictions and *Prognostics* of acute Diseases are very fallacious; *Diemerbroeck*, however adds, that in the Plague of *Nimwegen*, sixth day Crises were constantly found fatal *Prognostics*; also to be infected about the new, or full Moon; Faintings in the beginning of the Disease, and Palpitations of the Heart, were found deadly *Prognostics*; on the contrary, a Pleurisy, and Suppression of Stool, were good *Prognostics*.

The Word comes from the Greek *προγνωστικον*.

**PROGNOSTIC** of the Weather, see *WEATHER*.

**PROGRAMMA**, a Letter sealed with the King's Seal. See *SEAL*.

**PROGRAMMA** is also a College Term, signifying a Bill, or Advertisement posted up, or given into the Hand, by way of Invitation to an Oration, or other College Ceremony; containing the Argument, or so much as is necessary for the understanding thereof.

*Programma's* are sent to invite People to assist at Declarations, Dramatic Performances, &c.

**PROGRESSION**, an orderly advancing, or going forward, in the same Manner, Course, Tenor, &c.

**PROGRESSION**, in Mathematics, is either *Arithmetical*, or *Geometrical*.

**Arithmetical PROGRESSION**, call'd also *Arithmetical Proportion*, is a Series of Quantities equidistant from each other; i. e. either increasing, or decreasing by one common Interval or Difference. See *SERIES*.

Thus 3, 6, 9, 12, 15, 18, &c. make an *Arithmetical Progression*; because increasing, or differing equally, by 3: Thus also 25, 20, 15, 10, and 5, are in *Arithmetical Progression*, decreasing by a common difference, 5.

In every *Arithmetical Progression*, whether increasing, or decreasing, the Sum of the first and last Term, is equal to the Sum of any two intermediate Terms equidistant from the Extremes; as, also, if the Number of Terms be uneven to the double of the middle Term.

For Instance;

$$\begin{array}{r} 3, 6, 9, 12, 15, 18, 21 \\ \quad \quad \quad 12, 9, 6, 3 \\ \hline 24, 24, 24, 24 \end{array}$$

Hence, 1<sup>o</sup>. we find the Sum of any *Arithmetical Progression* by Multiplying the Sum of the first and last Term by half the Number of Terms.

2<sup>o</sup>. Having, therefore, the first Term, the Difference, and the Number of Terms given; the Sum of the *Progression* is had by Multiplying the first Term by the Number of Terms, and to the Product adding the Product arising from the difference multiply'd into the Semi-difference of the Number of Terms from the Square of that same Number.

Thus, suppose the first Term 3, the Number of Terms 7, and the difference 3; the Product of 3 and 7 = 21 being added to the Product 63, of the difference 3 multiply'd into the Semi-difference of the Number of Terms 7, from the Square thereof 49, = 21; gives 84, the Sum of the *Progression*.

3<sup>o</sup>. The Number of Terms lessen'd by one, being multiply'd by the common Difference, and the first Term added to the Product; the Sum is the last Term. Thus in a *Progression*



*Progression* of 52 Places, where the difference is 3; and the first Term 5; 51 being multiply'd by 3, produces 153, to which adding 5, the Sum 158 is the last Term required.

4<sup>o</sup>. If the *Progression* begin with 0, the Sum of all the Terms is equal to half the Product of the last Term multiply'd by the Number of Terms.

Whence it follows, that the Sum of a *Progression* beginning from 0, is subduple the Sum of so many Terms, all equal to the greatest.

5<sup>o</sup>. In an *Arithmetical Progression*, as the difference of the Sum of the first and last Term from double the Sum of the *Progression*, is to the difference of the first Term from the last; so is the Sum of the first and last Terms to the *Progressional* difference.

*Geometrical PROGRESSION*, is a Series of Quantities increasing or decreasing in the same Ratio, or Proportion; or a Series of Quantities continually proportional. See PROPORTION.

Thus 1, 2, 4, 8, 16, 32, 64, &c. make a *Geometrical Progression*; or 729, 243, 81, 27, 9, 3, 1.

1<sup>o</sup>. In every *Geometrical Progression*, the Product of the extreme Terms is equal to the Product of two intermediate Terms equidistant from the Extremes; as also, if the Number of Terms be uneven, to the Square of the middle Term.

For Example;

|       |    |     |      |      |     |
|-------|----|-----|------|------|-----|
| 3,    | 6, | 12, | 24,  | 48,  | 96  |
|       |    | 12, | 6,   | 3    |     |
| <hr/> |    |     |      |      |     |
|       |    |     | 288, | 288, | 288 |

2<sup>o</sup>. If the difference of the first and last Term of a *Geometrical Progression* be divided by a Number less than the Denominator of the Ratio, *i. e.* than the Quotient of a greater Term divided by a less; the Quotient will be the Sum of all the Terms except the greatest: Hence, by adding the greatest Term, we have the Sum of the whole *Progression*.

Thus, in a *Progression* of 5 Terms, beginning with 3; and the Denominator being likewise 3, the greatest Term will be 243. If then the difference of the first and last Term 240, be divided by 2, a number less by 1 than the Denominator; the Quotient 120 added to 243, gives 363, the Sum of the *Progression*.

Hence, 3<sup>o</sup>, the first, or least term of a *Progression*, is to the Sum of the *Progression*, as the Denominator less'n'd by 1, to its Power likewise less'n'd by 1; the Exponent of which Power is equal to the number of Terms.

Thus, supposing the first Term 1, the Denominator 2, and the Number of Terms 8; the Sum will be 255.

4<sup>o</sup>. Hence, also, the difference between the last Term and the Sum is to the difference between the first Term and the Sum, as Unity to the Denominator: Wherefore, if the difference between the first Term and the Sum, be divided by the difference between the Sum and the last Term, the Quotient is the Denominator.

**PROHIBITED Goods**, in Commerce, such Commodities as are not allow'd to be either imported or exported. See CONTRABAND.

**PROHIBITIO de vasso directa Parti**, is a Writ judicial, directed to the Tenant, prohibiting him from making Waste upon the Land in controversy, during the Suit. It is sometimes directed to the Sheriff.

**PROHIBITION**, the Act of forbidding, or inhibiting any thing. 'Tis the *Prohibition* of the Law that makes the Sin. A Testator frequently bequeaths things with a *Prohibition* to alienate.

**PROHIBITION**, in Law, is a Writ issued to forbid any Court, either Spiritual or Secular, to proceed in a Cause there depending; upon suggestion, that the Cognizance thereof belongeth not to that Court.

It is now usually taken for that Writ which lieth for one, who is impleaded in the Court Christian for a Cause belonging to the Temporal Jurisdiction, or the Cognizance of the King's Court; whereby, as well the Party and his Council, as the Judge himself, and the Register, are forbid to proceed any farther in that Cause.

**PROJECTILE**, or **PROJECT**, in Mechanics, a heavy Body put in Motion by an external Force impress'd thereon; or, more fully, a *Projectile* is a heavy Body, which being put into a violent Motion, is dismiss'd from the Agent, and left to pursue its Course. See MOTION.

Such, *e. gr.* is a Stone thrown out of the Hand or a Sling, an Arrow from a Bow, a Bullet from a Gun, &c. See PROJECTION.

The Cause of the Continuation of the Motion of *Projectiles*, or what it is determines 'em to persist in Motion after the first Cause ceases to act, has puzzled the Philosophers. See MOTION.

The *Peripatetics* account for it from the Air, which being violently agitated by the Motion of the *projecting* Cause,

*e. gr.* the Hand and Sling, and forced to follow the *Projectile* while accelerated therein, does, upon the dismissal of the *Projectile*, press after it, and protrude it forward; to prevent a Vacuum. See VACUUM.

The Moderns account for the Motion of *Projectiles* on a much more rational and easy Principle; it being, in effect, a natural Consequence from one of the great Laws of Nature, *viz.* That all Bodies being indifferent as to Motion or Rest, will necessarily continue the State they are put into, except so far as they are hindred, and forced to change it by some new Cause. See NATURE.

Thus a *Project* put in Motion, must continue to move eternally on in the same right Line, and with the same Velocity; were it to meet with no Resistance from the Medium, nor had any force of Gravity to encounter.

The Doctrine of the Motion of *Projectiles* is the Foundation of all Gunnery. See GUNNERY.

The Laws thereof are as follow.

#### Laws of the Motion of PROJECTILES.

1<sup>o</sup>. If a heavy Body be *projected* perpendicularly, it will continue to ascend or descend perpendicularly: Because, both the *Projecting*, and the Gravitating Force are found in the same Line of Direction.

2<sup>o</sup>. If a heavy Body be *projected* horizontally, it will, in its Motion, describe a Parabola; the Medium being supposed void of Resistance.

For, the Body is equally impell'd by the impressed Force, according to the right Line A R, (Tab. MECHANICS, Fig. 45.) and by the Force of Gravity according to the right Line A C, perpendicular thereto. While, then, the Body by the Action of the impressed Force is arrived in Q; by the Force of Gravity it will be arrived in Q M; and, therefore will be found in M. But the Motion in the direction A R will still be uniform; (see MOTION) and, therefore, the Spaces Q A and q A are as the Times; and the Spaces Q M and q m, are likewise as the Squares of the Times. Therefore, A Q<sup>2</sup> : A q<sup>2</sup> :: Q M : q m. That is, P M : p m :: A P : a p.

The Course, or Path, therefore, of a heavy Body *projected* horizontally A M m, is a Parabola. See PARABOLA.

Two hundred Years ago, the Philosophers took the Line described by a Body *projected* horizontally, *e. gr.* a Bullet out of a Cannon, while the force of the Powder exceeded the Weight of the Bullet considerably, to be a right Line; after which it became a Curve.

N. Tartaglia was the first who perceiv'd the Mistake, and maintain'd the Path of the Bullet to be a crooked Line, throughout its whole Extent; but it was Galileo who first determined the precise Curve the Bullet described; and shew'd the Path of the Bullet, *projected* horizontally from an Eminence, to be a Parabola; the Vertex whereof is the Point where the Bullet quits the Cannon.

3<sup>o</sup>. If a heavy Body be *projected* obliquely, either upwards, or downwards, in a Medium void of Resistance; it will likewise describe a Parabola, in a Medium uniformly resisting.

Cor. Hence, 1. the Parameter of the Diameter of the Parabola A S (Fig. 47.) is a third Proportional to the Space thro' which the body descends in any given Time, and the Celerity, which is defined by the Space pass'd over in the same time; *i. e.* to A P and A Q. 2. Since the Space described by a Body falling perpendicularly in one Minute, is 15  $\frac{1}{2}$  Paris feet in a Second; the Parameter of the Diameter of the Parabola to be described is found, if the Square of the Space pass'd over by the *Projectile* with the impress'd Force in a Second, be divided by 15  $\frac{1}{2}$ . 3. If, then, the Velocity of the *Projectiles* be the same, the Spaces described in the same time by the Force impress'd, are equal; consequently the Parameter of the Parabola's pass'd over by the compound Motion, is the same. 4. If from the Parameter of the Diameter be subtracted quadruple the Altitude of A P, the Remainder is the Parameter of the Axis; the fourth part whereof is the distance of the Vertex of the Axis from the Focus of the Parabola. Hence the Celerity of the *Projectile* being given, the Parabola described by the *Projectile* may be laid down on Paper. 5. The Line of Direction of the *Projectile* A R is a Tangent to the Parabola in A.

Sir Is. Newton shows, in his *Principia*, that the Line a *Projectile* describes, approaches nearer to an Hyperbola than a Parabola.

4<sup>o</sup>. A *Projectile* in equal times describes Portions of its parabolic Path, as A M, A m, which are subtended by equal Spaces of the Horizon A T, T t. *i. e.* in equal times it passes over equal horizontal Spaces.

5<sup>o</sup>. The Quantity, or Amplitude of the Path A B, *i. e.* the Range of the *Projectile* is to the Parameter of the Diameter A S, as the Sine of the Angle of Elevation R A B to its Secant.

Hence, 1. the Semiparameter is to the Amplitude of the Path A B, as the whole Sine to the Sine of double the Angl



**Angle of Elevation.** 2. If then the Celerity of two *Projectiles* be the same, the Parameter is the same. Wherefore, since the Semiparameter of the Path, in the one Case, is to the Amplitude, as the whole Sine, to the Sine of double the Angle of Elevation; and the Semiparameter of the Path in the other Case is to the Amplitude as the whole Sine to the Sine of double the Angle of Elevation: We may say farther, as the Amplitude is to the Sine of the Angle of double the Elevation in the one Case, so is the Amplitude to the Sine of the Angle of double the Elevation in the other Case. The Amplitudes, therefore, or Magnitudes of the Paths, are as the Sines of double the Angles of Elevation; the Velocity of the *Projectile* remaining the same.

6°. The Celerity of the *Projectile* being the same, the Amplitude  $AB$  is greatest, *i. e.* the Range of the *Projectile* is greatest, at an Angle of Elevation of  $45^\circ$ ; and the Amplitudes or Ranges, at Angles of Elevation equally distant from  $45^\circ$ , are equal.

This is found by Experiment; and is likewise demonstrable thus: Since the Ratio of the Sine of double the Angle of Elevation to the Amplitude is always the same, while the Celerity of the *Projectile* remains the same; as the Sine of double the Angle of Elevation increases, the Amplitude will increase. Wherefore, since the Sine of double the Angle of Elevation of  $45^\circ$  is Radius, or the largest Sine; the Amplitude, or Range in that Elevation must be the greatest. Again, since the Sines of Angles equidistant from right Angles; *e. gr.*  $80^\circ$  and  $100^\circ$  are the same; and the double Angles must be equidistant from a right Angle, if the simple ones be so: The Amplitudes or Ranges at Elevations equidistant from  $45^\circ$ , must be equal.

Hence, since as the whole Sine is to the Sine of double the Angle of Elevation; so is the Semi-parameter to the Amplitude; and the whole Sine is equal to double the Sine of the Angle of Elevation, if that be  $45^\circ$ : Under the Angle of Elevation  $45^\circ$ , the Amplitude is equal to the Semi-parameter.

7°. The greatest Range or Amplitude being given; to determine the Amplitude or Range under any other given Angle of Elevation; the Celerity remaining the same. Say thus; As the whole Sine is to the Sine of double the Angle of any other Elevation; so is the greatest Amplitude or Range, to the Amplitude required.

Thus, suppose the greatest Range of a Mortar at  $45^\circ$ , to be 6000 Paces, and the length of the Range at  $30^\circ$ , required; it will be found 5196 Paces.

8°. The Velocity of a *Projectile* being given, to find its greatest Range or Amplitude. Since the Celerity of the *Projectile* is given in the Space it will pass over by the impressed Force; *e. gr.* in one Second; there is nothing required but to find the Parameter of the Path, (by *Corol.* 2. of the 3d Law.) for half of this is the Amplitude or Range required.

Suppose, *e. gr.* the Celerity of the *Projectile* such as that in one Second it will run over 1000 Feet, or 12000 Inches: If then 144000000 be divided by 181, the Quotient will give the Parameter of the Path 795580 Inches, or 66298 Feet. The Range or Amplitude required, therefore, is 33149. Any Object, therefore, found within this Extent may be struck by the *Projectile*.

9°. The greatest Range or Amplitude being given; to find the Velocity of the *Projectile*, or the Horizontal Space it will pass over in a Second. Since double the greatest Amplitude is the Parameter of the Path; between double the greatest Amplitude and the Space pass'd over in a Second by a Body falling perpendicularly, *viz.* 181 Paris Inches, find a mean Proportional; for this will be the Space described by the *Projectile* in the given Second.

Thus, if the greatest Amplitude be 1000 Feet, or 12000 Inches, the Space required will be  $=\sqrt{(12000.181)} = 120$  Feet and 4 Inches.

10. To determine the greatest Altitude to which a Body obliquely projected will rise. The Rule is; Bisect the Amplitude  $AB$  in  $t$ , and from the Point  $t$  erect a perpendicular  $tm$ ; this  $tm$  will be the greatest Altitude to which the Body projected, according to the Direction  $AR$ , will arise.

11. The Range or Amplitude  $AB$ , and the Angle of Elevation  $BAR$ , being given; to determine the greatest Altitude of the *Projectile*. If  $AR$  be taken for the whole Sine,  $BR$  will be the Sine, and  $AB$  the Co-sine of the Angle of Elevation  $BAR$ : Wherefore, say, as the Co-sine of the Angle of Elevation is to the Sine of the same; so is the Amplitude  $AB$  to a fourth Number; which will be  $BR$ ; the fourth part whereof is the greatest Altitude required.

Hence, since from the given Velocity of a *Projectile*, its greatest Range or Amplitude, and thence its Range under any other Angle, is found; the Velocity being given, the greatest Altitude of the *Projectile* is likewise found.

12. The Altitude of the Range  $tm$  is to the eighth part of the Parameter, as the versed Sine of double the Angle of Elevation to the whole Sine.

Hence, 1. since, as the whole Sine is to the versed Sine of double the Angle of Elevation in one Case; so is the eighth part of the Parameter to the Altitude of the Range: And as the whole Sine is to the versed Sine of double the Angle of Elevation in any other Case; so is the eighth part of the Parameter to the Altitude: but the Velocity remaining the same, the Parameter, in different Angles of Elevation, will likewise be the same: The Altitudes of the Ranges under different Angles of Elevations are as the versed Sines of double their Angles. 2. Hence, also, the Velocities remaining the same, the Altitudes of the Ranges are in a duplicate Ratio of the Sines of double the Angles of Elevation.

13. The Horizontal Distance of any Mark or Object, together with its Height above, or Depth beneath the Horizon, being given; to find the Angle of Elevation required to hit the said Object.

Wolffius gives us the following Theorem, the Result of a regular Investigation: Suppose the Parameter  $= a$ ;  $In = b$ ,  $AI = c$ , the whole Sine  $= r$ . Then, as  $c$  is to  $\frac{1}{2}a + \sqrt{(\frac{1}{4}a^2 - ab - c^2)}$ : So is the whole Sine  $r$ ; to the Angle of Elevation required  $RAB$ .

Dr. Halley gives the following easy, and compendious Geometrical Construction of the Problem; which he likewise deduces from an analytical Investigation.

Having the right Angle  $LDA$  (fig. 48.) make  $DA$ ,  $DF$ , the greatest Range,  $DG$  the horizontal Distance, and  $DB$ ,  $DC$ , the perpendicular Height of the Object; and draw  $GB$ , and make  $DE$  equal thereto. Then with the Radius  $AC$ , and Centre  $E$ , sweep an Arch, which, if the thing be possible, will intersect the Line  $AD$  in  $H$ ; and the Line  $DH$  being laid both ways from  $F$ , will give the Points  $K$  and  $L$ ; to which draw the Lines  $GL$ ,  $GK$ .

Here, the Angles  $LGD$ ,  $KGD$ , are the Elevations required for hitting the Object  $B$ .

But note, that if  $B$  be below the Horizon, its Descent  $DC = DB$ , must be laid upon  $A$ , so as to have  $AC = AD + DC$ . Note, likewise, that if in Descents,  $DH$  be greater than  $FD$ , and so  $K$  fall below  $D$ ; the Angle  $KGD$ , shall be the Depression below the Horizon.

It may be here observed, that the Elevation sought constantly bisects the Angle between the Perpendicular and the Object. This, the Author was not aware of, when he gave the first Solution of the Problem; but upon discovering it, observes, that nothing can be more compendious, or bid fairer for the perfection of the Art of Gunnery; since 'tis here, as easy to shoot with a Mortar at any Object in any situation, as if it were on the Level; nothing more being required but to lay the Piece, so as to pass in the middle Line between the Zenith and the Object, and giving it the due Charge. See MORTAR.

14. The Times of the Projections, or Casts under different Angles of Elevation, the Velocity remaining the same, are as the Sines of the Angles of Elevation.

15. The Velocity of a *Projectile*, together with the Angle of Elevation  $RAB$  being given (fig. 47.); to find the Range, or Amplitude  $AB$ , and the Altitude of the Range  $tm$ , and describe the Path  $AmB$ . To the horizontal Line  $AB$  erect a Perpendicular  $AD$ , which is to be the Altitude whence the *Projectile* falling, might acquire the given Velocity: On  $AD$  describe a Semi-circle  $AQD$ , cutting the Line of Direction  $AR$  in  $Q$ : Thro'  $Q$  draw  $Cm$  parallel to  $AB$ , and make  $CQ = Qm$ . From the Point  $m$  let fall a Perpendicular  $mt$  to  $AB$ : Lastly, thro' the Vertex  $M$  describe the Parabola  $AmB$ .

Here,  $AmB$  is the Path sought,  $CQ$  its Amplitude or Range,  $tm$  the Altitude of the Range, and  $CD$  the Parameter.

Hence, 1. The Velocity of a *Projectile* being given, the Amplitudes and Altitudes of all the possible Ranges are given at the same time. For, drawing  $EA$ , we have under the Angle of Elevation  $EAB$ , the Altitude  $AI$ , and the Amplitude  $4IE$ : Under the Angle of Elevation  $FAB$ , the Altitude  $AH$ , the Amplitude  $4HF$ . 2. Since  $AB$  is perpendicular to  $AD$ , it is a Tangent to the Circle in  $A$ : Hence the Angle  $ADQ$  is equal to the Angle of Elevation  $RAB$ ; consequently  $AIM$  is double the Angle of Elevation, and therefore  $CQ$ , the fourth part of the Amplitude, is the right Sine;  $AC$  the Altitude of the Range, the versed Sine of double the Angle of Elevation.

16. The Altitude  $tm$  of a Cast  $tm$ , or its Amplitude  $AB$ , together with the Angle of Elevation  $RAB$ , being given; to find the Velocity wherewith the *Projectile* first moved, that is, the Altitude  $AD$ , in falling from whence it would acquire the like Velocity: Since  $AC = tm$  is the versed Sine,  $CQ = \frac{1}{4}AB$ , the right Sine of double the Angle of Elevation  $AIQ$ : To the versed Sine of double the Angle of Elevation, find the whole Sine, and the height of the Cast



Or to the right Sine of double the Angle of Elevation, the whole Sine and the fourth part of the Amplitude, find a fourth Proportional. This will be the Radius IQ or AD, the double whereof AD is the Altitude required.

**PROJECTION**, in Mechanics, the Action of giving a Projectile its Motion. See PROJECTILE.

If the Direction of the Force whereby the Projectile is put in motion, be perpendicular to the Horizon; the Projection is said to be *Perpendicular*: If parallel to the apparent Horizon, it is said to be a *horizontal Projection*: If it make an oblique Angle with the Horizon, the Projection is oblique. See OBLIQUE.

The Angle ARB, (Tab. MECHANICS, fig. 47.) which the Line of Direction AR makes with the horizontal Line AB, is call'd the *Angle of Elevation of the Projectile*.

**PROJECTION**, in Perspective, the Appearance or Representation of an Object on the perspective Plane. See PLANE.

The Projection, e. gr. of a Point, as A, (Tab. PERSPECTIVE, fig. 1.) is a Point *a* thro which the Optic Ray OA passes from the objective Point, thro' the Plane, to the Eye; or the Point *a* wherein the Plane cuts the optic Ray.

And hence is easily conceiv'd what is meant by the Projection of a Line, a Plane, or a Solid. See PERSPECTIVE.

**PROJECTION of the Sphere in Plano**, is a Representation of the several Points or Places of the Surface of the Sphere, and of the Circles described thereon, or of any assign'd parts thereof, such as they appear to the Eye situate at a given distance, upon a transparent Plane placed between the Eye and the Sphere. See SPHERE.

For the Laws of this Projection, see PERSPECTIVE; the Projection of the Sphere being only a particular Case of Perspective.

The principal Use of the Projection of the Sphere is in the Construction of Planispheres, and particularly Maps and Charts; which are said to be of this or that Projection, according to the several Situations of the Eye, and the perspective Plane with regard to the Meridians, Parallels, and other Points and Places to be represented. See PLANISPHERE, &c.

The most usual Projection of Maps of the World is that on the Plane of the Meridian, which exhibits a right Sphere; the first Meridian being the Horizon. The next is that on the Plane of the Equator, wherein the Pole is in the Centre, and the Meridians the Radii of a Circle, &c. This represents a parallel Sphere.

See the Application of the Doctrine of the Projection of the Sphere, in the Construction of the various kinds of Maps, under the Article MAP.

The Projection of the Sphere is usually divided into Orthographic and Stereographic; to which may be added Gnomonic.

**Orthographic PROJECTION**, is that wherein the Superficies of the Sphere is drawn on a Plane, cutting it in the Middle; the Eye being placed at an infinite distance vertically to one of the Hemispheres. See ORTHOGRAPHIC.

*Laws and Properties of the Orthographic PROJECTION.*

1. The Rays by which the Eye at an infinite distance perceives any Object, are parallel.

2. A right Line perpendicular to the Plane of the Projection is projected into a Point, where that right Line cuts the Plane of the Projection.

3. A right Line, as AB, or CD, (fig. 17.) not perpendicular, but either parallel or oblique to the Plane of the Projection, is projected into a right Line, as EF, or GH, and is always comprehended between the extreme Perpendiculars AF, and BE.

4. The Projection of the right Line AB, is the greatest when AB is parallel to the Plane of the Projection.

5. Hence it is evident, that a Line parallel to the Plane of the Projection, is projected into a right Line equal to itself; but if it be oblique to the Plane of the Projection, 'tis projected into one which is less.

6. A plane Surface as ABCD, (fig. 18.) at right Angles to the Plane of the Projection, is projected into that right Line; e. gr. AB, in which it cuts the Plane of the Projection.

Hence it is evident, that the Circle BCAD, standing at right Angles to the Plane of the Projection, which passes thro' its Centre, is projected into that Diameter AB, in which it cuts the Plane of the Projection.

It is likewise evident, that any Arch, as *cc*, is projected into *oo* equal to *Ca*, *Cb*, which is the right Sine of that Arch; and the complimentary Arch *cA* is projected into *oA*, the versed Sine of the same Arch CC.

7. A Circle parallel to the Plane of the Projection, is projected into a Circle equal to itself; and a Circle oblique to the Plane of the Projection, is projected into an Ellipsis.

**Stereographic PROJECTION**, is that wherein the Surface and Circles of the Sphere are drawn upon the Plane of a

great Circle, the Eye being in the Pole of that Circle. See STEREOGRAPHIC.

*Properties of the Stereographic PROJECTION.*

1. In this Projection, a right Circle is projected into a Line of half Tangents.

2. The Representation of a right Circle, perpendicularly opposed to the Eye, will be a Circle in the Plane of the Projection.

3. The Representation of a Circle placed oblique to the Eye, will be a Circle in the Plane of the Projection.

4. If a great Circle be to be projected upon the Plane of another great Circle, its Centre will lie in the Line of Measures, distant from the Centre of the primitive by the Tangent of its Elevation above the Plane of the primitive.

5. If a lesser Circle, whose Poles lie in the Plane of the Projection, were to be projected; the Centre of its Representation would be in the Line of Measures, distant from the Centre of the primitive, by the Secant of the lesser Circles distance from its Pole, and its Semi-diameter or Radius, be equal to the Tangent of that distance.

6. If a lesser Circle were to be projected, whose Poles lie not in the Plane of the Projection, its Diameter in the Projection, if it falls on each side of the Pole of the Primitive, will be equal to the Sum of the half Tangents of its greatest and nearest Distance from the Pole of the Primitive, set each way from the Centre of the Primitive in the Line of Measures.

7. If a lesser Circle to be projected, fall entirely on one side of the Pole of the Projection, and do not encompass it; then will its Diameter be equal to the difference of the half Tangents of its greatest and nearest distance from the Pole of the Primitive, set off from the Centre of the Primitive one and the same way in the Line of Measures.

8. In the Stereographic Projection, the Angles made by the Circles of the Surface of the Sphere, are equal to the Angles made by their Representatives in the Plane of their Projection.

**Gnomonic PROJECTION of the Sphere**, see GNOMONIC PROJECTION.

**PROJECTION of Globes**, &c. see GLOBE, &c.

**PROJECTION**, in Alchemy, the casting of a certain, imaginary Powder, call'd *Powder of Projection*, into a Crucible, or other Vessel full of prepared Metal, or other Matter, which is to be hereby transmuted into Gold. See Powder of PROJECTION.

**Powder of PROJECTION**, or of the Philosopher's Stone, is a Powder supposed to have the Virtue of changing any quantity of an imperfect Metal, as Copper, or Lead, into a more perfect one, as Silver or Gold; by the admixture of a little quantity thereof. See TRANSMUTATION.

The Mark to which the Alchymists direct all their Endeavours, is to find the *Powder of Projection*; which every one of 'em has been within an Ace of, an hundred times. See ALCHEMY.

For the Characters, Properties, Virtues, &c. of this Powder, see PHILOSOPHER'S Stone.

**PROJECTION in Building**, see PROJECTURE.

**PROJECTIVE Dialling**, a Method of Drawing, by a Method of Projection, the true Hour-Lines, Furniture of Dials, &c. on any kind of Surface whatsoever, without any regard had to the Situation of those Surfaces, either as to Declination, Reclination, or Inclination. See DIALLING.

**PROJECTURE**, in Architecture, the Out-jetting, or Prominency, which the Mouldings and Members have, beyond the Naked of the Wall, Column, &c. See NAKED, COLUMN, &c.

These the Greeks call *Ecphoræ*, the Italians *Sporti*, the French *Saillies*, our Workmen frequently *Sailings over*, and the Latins *Projecta*, from *projicio*, I cast forward; whence the English, *Projecture*.

*Vitruvius* gives it as a general Rule, that all the projecting Members in Buildings have their *Projectures* equal to their Heights: But this is not to be understood of the particular Members, or Mouldings, as Dentils, Corona's, the Fasciæ of Architraves, the Abacus of the Tuscan and Doric Capital, &c. but only of the *Projectures* of entire Cornices, &c. See CORNICE, &c.

The great Point of Building, according to some modern Architects, consists in knowing how to vary the Proportions of *Projectures*, &c. agreeably to the Circumstances of the Building: Thus, say they, the nearness and remoteness making a difference in the View, requires different *Projectures*; but 'tis evident the Antients had no such Intention. See PROPORTION.

The *Projecture* of the Base and Cornice of Pedestals, M. Perrault observes, is greater in the antique than the modern Buildings by one third; which seems to follow, in good measure, from the Antients proportioning this *Projecture* to the height of the Pedestals; whereas the Moderns make the *Projecture* the same in all the Orders, tho' the height of the Pedestal be very different.



The reason of this Change which the Moderns have made of the antique, the same Author refers to a View to the Appearance of Solidity. See PEDESTAL.

**PROLABIA**, *Fore-Lips*; a Term in Anatomy for that part of the Labia which jets out. See LABIA.

**PROLATE**, in Geometry, an Epithet apply'd to a Spheroid produced by the Revolution of a Semi-Ellipsis about its longer Diameter. See SPHEROID.

If the Solid be formed by the Revolution of a Semi-Ellipsis about its shorter Diameter, it is call'd an *Oblate Spheroid*, of which Figure is the Earth we inhabit, and, perhaps, all the Planets too; having their Equatorial Diameter longer than their Polar. See OBLATE.

**PROLATION**, in Music, the Act of Shaking, or making several Inflections of the Voice, on the same Syllable.

**PROLEPSIS**, a Figure in Rhetoric, by which we anticipate, or prevent what might be objected by the Adversary. See FIGURE.

Thus; *It may perhaps be objected, &c.*

The Word in the original Greek, προληψις, signifies Pre-occupation.

**PROLEPTIC Disease**, a Distemper which still anticipates, or whose Paroxysm returns sooner, and sooner, every day; as is frequently the Case in Agues, &c.

**PROLIFIC**, in Medicine, something that has the Qualities necessary for generating. See FECUNDITY.

Some Physicians pretend to distinguish whether or no the Seed be *Prolific*. See SEED.

**PROLIXITY**, in Discourse, the Fault of entering into too minute a Detail; of being too long, precise, and circumstantial to a degree of Tediousness. See STYLE.

*Prolixity* is the Vice opposite to Conciseness and Laconism. See LACONICAL.

*Prolixity* is a Fault commonly charged on *Guiccardin*, *Gassendus*, &c. F. *Rapin* observes, that formal Harangues, at the Head of an Army, and Deliberations, of nauseous *Prolixity*, formerly so frequent, are now disused in all the better Histories.

**PROLEGOMENA**, in Philology, preparatory Observations, or Discourses prefixed to a Book, &c. containing something necessary for the Reader to be apprized of, to enable him the better to understand the Book, to enter deeper into a Science, &c.

The generality of Arts and Sciences require some previous Instructions, some *Prolegomena*.

The Word is Greek προλεγομενον, form'd of προλεγειναι, to Preface. See PREFACE.

**PROLOCUTOR**, of the Convocation, the Speaker, or Chairman of that Assembly. See CONVOCATION.

The Archbishop of *Canterbury* is, by his Office, President, or Chairman of the Upper House of Convocation.

The *Prolocutor* of the Lower House is an Officer chosen by the Members the first day of their meeting; and to be approved of by the Higher.

'Tis by the *Prolocutor* their Affairs, Debates, &c. are to be directed; and their Resolutions, Messages, &c. deliver'd to the higher House: By him all things propounded to the House are read, Suffrages collected, &c.

**PROLOGUE**, PROLOGUS, in Dramatic Poetry, a Discourse address'd to the Audience before the Drama or Play begin. See DRAMA.

The original Intention of the *Prologue* was to advertise the Audience of the Subject of the Piece, and to prepare them to enter more easily into the Action; and sometimes to make an Apology for the Poet.

This last Article seems to have almost excluded the two former, in the *English* Drama; and to be in sole possession of the *Prologue*.

The *Prologue* is of a much more ancient Standing than the Epilogue. See EPILOGUE.

The *French* have left off the Use of *Prologues*; those few they now and then make, have nothing in them of the genuine *Prologue*; as bearing no relation to the Subject, but being mere Flourishes or Harangues in praise of the King, &c.

In the ancient Theatre, the *Prologus* was properly the Actor, who rehears'd the *Prologue*: The *Prologus* was esteem'd one of the *Dramatis Personae*, and never appear'd in the Piece in any other Character; so that the Learned are surprized to find *Mercury* in *Plautus's Amphitryo*, speaking the *Prologue*, and yet acting a considerable part in the Play afterwards.

The *Prologue*, therefore, among them was a part of the Piece; indeed, not an essential, but an accessory part.

With us the *Prologue* is no part at all; but something entirely distinct and a-part: With them the Drama was open'd with the appearance of the *Prologue*; with us 'tis not open'd till after the *Prologus* is retir'd: with us therefore the Curtain is kept close till after the *Prologue*, with them it must have been withdrawn before.

Hence proceeds a still more considerable Difference, in

the practice of the *Prologue*: For with us the *Prologus* speaks in his real or personal Character; 'tis Mr. *Bout* or Mrs. *Oldfield* speaks, not *Cato* or *Andromache*: With them the *Prologue* spoke in his Dramatic Character, not as *Turpius* or *Attilius*, but as *Prologus*.

With us, he directs his Speech to the Audience, consider'd as in a Play-house; to Pit, Box, and Gallery: With them, he ought, in propriety, to have spoke as to a Chorus of By-standers, or Persons to be present at the real Action: But this being in good measure inconsistent with the Design of the *Prologue*; their Persons spoke in their Dramatic Capacity to the Audience in its personal Capacity; which was an Irregularity that either the good Fortune or the good Sense of the Moderns, have freed them from.

They had three Kinds of *Prologues*; the first *προσωνια*, wherein the Poet deliver'd the Argument of the Piece; the second *προσωνια*, wherein the Poet recommended himself or his Piece to the People; the third *αναφορικος*, wherein Objections were obviated, &c.

The Word *Prologue* is form'd from the Greek προλογος, *Proloquium*, *Fore-Speech*.

**PROLUSION**, PROLUSIO, in Literature, a Term apply'd to certain Pieces or Compositions, made previously to others; by way of Prelude, or Exercise.

*Diomedes* calls the *Culex* of *Virgil*, and his other *Opuscula*, *Prolusions*; because wrote before the great ones.

The *Prolusions* of *Strada* are very ingenious pieces: The famous M. *Huet*, Bishop of *Auranches*, has all *Strada's Prolusions* by heart.

**PROMETHEUS**, in the ancient Astronomy, was the Name of a Constellation of the Northern Hemisphere; now call'd *Hercules*, or *Engonasis*. See HERCULES.

**PROMISE**, in Law, is when a Man binds himself by his Word to perform such an Act as is agreed on and concluded with another, upon a valuable Consideration. See CONTRACT, PACT, COVENANT, &c.

**PROMONTORY**, in Geography, a Point of Land, or a Rock, projecting out into the Sea; the Extremity of which to the Sea-ward, is usually call'd a *Cape*, or an *Headland*. See CAPE.

**PROMOTERS**, in Law, those Persons, who in popular and penal Actions, do prosecute Offenders in their Name, and the King's; and are entitled to part of the Fines and Penalties for their pains.

These, among the *Romans*, were call'd *Quadruplicatores*, or *Delatores*.

Sir *Tho. Smith* observes, that *Promoters* belong chiefly to the Exchequer and King's-Bench. My Lord *Coke* calls them, *turbidum Hominum Genus*, 3 Inst.

**PROMPT Payment**, ready Money, see PAYMENT.

In many Cases there is a Discount for *Prompt Payment*. See DISCOUNT, REBATE, &c.

**PROMPTER**, in the Drama, an Officer posted behind the Scenes, whose Business is to watch attentively the Actors speaking on the Stage, in order to suggest and put them forward, when at a stand; to correct them when amiss, &c. in their parts.

**PROMULGATED**, PROMULGED, *Promulgatus*, something publish'd or proclaim'd.

In this sense we say, the *Jewish* Law was *promulgated* by *Moses*: The *Promulgation* of the New Law was chiefly effected by the Apostles and Disciples.

**PRONOS**, in the ancient Architecture, a Porch to a Church, Palace, or other spacious Building. See PORCH.

**PRONATION**, among Anatomists. The Radius of the Arm has two kinds of Motions; the one call'd *Pronation*, the other *Supination*. See RADIUS.

*Pronation*, is when the Palm of the Hand is turn'd downwards; *Supination*, when the back of the Hand is downwards.

There are two Muscles, whereby the *Pronation* is effected, call'd

**PRONATORS**, PRONATORES, in Anatomy, two Muscles of the Radius, which serve to turn the Palm of the Hand downwards. See PRONATION.

They are distinguish'd by the Names of *Rotundus* and *Quadratus*.

The Word is form'd from the Latin *Pronus*, that which lies on the Fore-side.

The Radius has two other Muscles, call'd *Supinators*, which have an opposite Effect. See SUPINATORS.

**PRONATOR Radii Quadratus**, or *Brevis*, rises broad and fleshy, from the lower and inner part of the Ulna; and passing transversely over the Ligament that joins the Radius to the Ulna, is inserted into the superior and external part of the Radius: which it helps to pull inwardly; together with the

**PRONATOR Radii Rotundus**, or *Terres*, a Muscle which rises fleshy, from the internal Extuberance of the *Oss. Humeri*, where those bending the *Carpus* and Fingers do rise; and firmly adhering to the *Flexor Carpi Radialis*, &c.



descends obliquely downwards to its fleshy Insertion a little above the Radius, in the middle externally : Its Use is to move the Radius and Palm inwards.

**PRONOUN, PRONOMEN**, in Grammar, a part of Speech used in lieu of a Noun, or Name; whence the Denomination; from *pro* and *nomen*, q. d. *For-Noun*, or *Name*. See **NOUN**.

As it would have been disagreeable to have been always repeating the same Name; there are Words invented in all Languages, to save the Necessity thereof, and to per-sonate Names: as, *I, thou, he, &c.*

As Nouns are the Marks, or Signs, of Things; *Pronouns* are of Nouns.

Father *Buffier* shews, that *Pronouns* are real Nouns or Names; and that all the difference between what the Grammarians call Nouns, and *Pronouns*, is, that the former are more particular, and the latter more general.

They are call'd *Pronouns*, because used in the place of particular Nouns: Indeed, sometimes they don't fill the place of Nouns entirely, but need other Words to assist them, to express the Object spoke of: Such, e. gr. are *who, whoever, &c.* which don't express any determinate Object whereof a Thing may be affirm'd, unless accom-pany'd with another Word, especially a Verb: As, *Whoever labours, deserves a Reward.*

These, Father *Buffier* calls *Incomplete Pronouns*, to dis-tinguish them from those which express an Object com-pletely; as, *I, thou, he, &c.*

The Grammarians ordinarily distinguish *Pronouns* into four Classes, with regard to their different Signification, Formation, &c. viz. *Pronouns Personal, Relative, Pos-sessive, and Demonstrative*; to which may be added, *Inde-terminate Pronouns*.

*Personal Pronouns*, are those used in lieu of Names of particular Persons: Such are, *I, thou, he, we, ye, they.* See **PERSON** and **PERSONAL**.

*Pronouns Relative*, which *Buffier* calls *Modificative*, or *Determinative*, are those placed after Nouns, with which they have such Affinity, that without them they signify no-thing: Such are, *qui, who, that, &c.* See **RELATIVE**.

*Pronouns Possessive*, are those which express what each possesses, or what belongs to him; as, *mine, thine, his, &c.* See **RELATIVE**.

These are pure Adjectives; and only differ from the rest, by the relation they bear to *Pronouns* whence they are deriv'd, and by some particular Inflections which they have in some Languages. See **ADJECTIVE**.

*Pronouns Demonstrative*, those which serve to indicate, or point out the Subject spoke of; as, *this, those, &c.* See **DEMONSTRATIVE**.

Lastly, *Pronouns Indefinite*, are those which express their Object indeterminately; as *whoever, any, &c.* These co-incide with what F. *Buffier* calls *Incomplete Pronouns*.

**PRONOUNS** are likewise divided into *Substantive* and *Ad-jective*.

To the first belong, *I, thou, ye*: To the second, *he, she, they, it, my, mine, who, what, &c.*

*Pronouns* may be consider'd in two States; the first, or foregoing State; as *I, we*: The second, or following one; as *me, us*.

**PRONOUNCING, PRONUNCIATION**, in Painting, the marking, and expressing the parts of all kinds of Bodies with that degree of Force, necessary to make them more, or less distinct, and conspicuous.

Thus the Painters, in speaking of a Piece, say, these or these parts are well *pronounc'd*; which is a metaphorical way of speaking; as when we say, that a Man who talks well, has a fine *Pronunciation*. See **EXPRESSION**.

**PRONUNCIATION**, in Grammar, the Manner of ar-ticulating or sounding the Words of a Language represented to the Eye by Writing and Orthography. See **WORD, LAN-guage, SOUND, &c.**

From the Definition it would seem, that the *Pronuncia-tion* were only the Image of the Orthography. But as we pronounce before we write, and only write to express what we pronounce; 'tis more just to lay down the *Pronuncia-tion* as the Rule, and Model of Orthography. See **ORTHO-graphy**.

*Pronunciation* makes much the most difficult Article of a written Grammar: In effect, a Book only expressing it self to the Eyes, in a Matter that concerns the Ears; the Case seems next a-kin to that of teaching the Blind to dis-tinguish Colours. See **GRAMMAR**.

Hence it is, that there is no part so defective in the Gram-mars, as the *Pronunciation*; for the Writer has frequently no Term, whereby to give the Reader an Idea of the Sound he would express; for want of a proper Term, therefore, he frequently substitutes a vitious or precarious one.

Thus the *French* Grammarians ordinarily tell us, that the Vowels *a, e, i, &c.* are pronounced in *French* the same as in *Latin*; never considering, that there is not any known and determinate *Pronunciation* of the *Latin*; but each

Nation, now, Pronounces the *Roman Characters* in the *Latin*, the same as it pronounces those same Characters in its own Language. Thus the *Latin cæcus*, is pronounc'd by the *English, sekus*; and by the *Italians, tchekous, &c.*

Hence it appears, that the Relation between Sounds and Characters, as well as between Things and Words, is pure-ly arbitrary and national.

Indeed, *Plato* seems of a contrary Sentiment, and will have a natural Relation between Words and the Things they express; as there is a natural Relation between the Signs made by Mutes, and the things they would intimate. So that according to *Plato*, to every several Word there must be a several Motion of the Mouth relative to the Action ex-press'd by the Word.

Whether or no there might be such a thing in the primi-tive Language, we dare not undertake; but 'tis certain such a relation would require a Facility of Contorsions in the Mouth, to which we are Strangers.

To give a just and precise Idea of the *Pronunciation* of a Language, it seems necessary to fix, as nearly as possible, all the several Sounds employ'd in the *Pronunciation* of that Language: This Mr. *Lodwick* has done in his At-tempt towards an universal Alphabet; where he enume-rates forty-three several simple Sounds; (some of 'em, indeed, strangers to the *English* Language) and F. *Buffier*, who gives thirty-three several Sounds in the *French* Tongue, twenty-nine in the *Italian*, thirty in the *German*, twenty-two in the *Spanish*, and twenty-four in the *English*. See **ALPHABET**.

The *French* Language is clogg'd with a difficulty in *Pro-nunciation*, from which most others are free; and it con-sists in this, that most of their Words have two different *Pronunciations*; the one in common Prose, the other in Verse.

In Prose, e. gr. they omit the *Pronunciation* of the final *s* in the Plural of Nouns, and of the *t* in the third Person of the Plural of Verbs, and of several other final Conso-nants; but in Verse they pronounce all.

Thus, in *a quoi bon reveiller mes Muses endormies?* the final *s* of *Muses* is pronounced; and in *Mille & mille douceurs y semblent attachées*; the *t* of *semblent* is to be pronounced.

Add to this, that in Prose, they soften the Sound of a great many Words, *pronouncing, craire* for *croire*; but in Poetry the genuine *Pronunciation* is retain'd. See **ENG-LISH, FRENCH, &c.**

**PRONUNCIATION** is also used for the fifth and last part of Rhetoric, which consists in regulating and varying the Voice and Gesture agreeably to the Matter and Words; so, as more effectually to persuade, and touch the Hearers. See **RHETORIC**.

The *Pronunciation* is of such Importance, that *Demo-sthenes* call'd it the first, the second, and the third Part of Eloquence.

*Quintilian* defines the *Pronunciation, Vocis & Vultus & Corporis moderatio cum venustate*; a decent, agreeable manner of managing the Voice, Gesture, and Action of the whole Body.

*Cicero*, somewhere, calls it *quædam Corporis Eloquentia*, a certain Eloquence of the Body; and in another Place, *Sermo Corporis*, the Language, or Speech of the Body.

*Pronunciation* is the same with what we otherwise call *Action*. See **ACTION**.

Some Writers, particularly Mr. *Henley*, confound it with *Elocution*, which is a very different thing. That Author, when he styles himself *Restorer of the antient Elocution*, means of the antient *Pronunciation*. See **ELOCUTION**.

There are three Things which come under the *Pronun-ciation*; the Memory, Voice, and Gesture. See each under its proper Article.

*Augustus*, to avoid being balk'd by his Memory, and at the same time save the trouble of getting off by Heart, used to harangue from a Writing; as we are told by *Dio* and *Suetonius*.

**PRONUNCIATION**, in Painting; see **PRONOUNCING**.

**PROOF**, in Arithmetic, an Operation whereby the Truth and Justness of a Calculation is examin'd and ascertain'd. See **CALCULATION**.

The proper *Proof* is always by the contrary Rule: Thus Subtraction is the *Proof* of Addition, and Multiplication of Division; and *vice versa*. See **ADDITION, SUBTRAC-TION, &c.**

The *Proof* of Multiplication by 9 or by 7, are precarious. See **MULTIPLICATION**.

There would need no *Proofs* in Arithmetic, were it not that a Man is liable to make Mistakes; for all the Rules and Operations being built on Demonstration, 'tis thence we are assured of their Truth and Certitude. See **DE-MONSTRATION**.

The *Proof*, then, does not confirm the Rule, but only shews us whether or no we have apply'd it right. See **RULE**.

**PROOF**, in Law, Logic, &c. the Mediums, or Arguments used to evince the Truth of any thing. See **TRUTH**.



In Law, a *literal Proof*, or *Proof in writing*, is preferable to a *Testimonial*. The *Ordonnance de Moulins* excludes all *Proof* by Witnesses for Loans of above 1000 Livres. See EVIDENCE, WITNESS, TESTIMONY, &c.

The *Proof* of Crimes was antiently effected among our Ancestors, divers ways; viz. by Duel or Combat, Fire, Water, &c. See PURGATION, DUEL, FIRE, WATER, &c.

The *Proof* by red-hot Iron was very frequent: The Accused, to purge himself, was here obliged to make an Oath as he touch'd the Iron. The Formula, Ceremonies, Prayers, &c. made on this Occasion, are still extant in the Notes at the end of the *Capitularies of Charlemain*. See ORDEAL.

This Custom was abrogated by the Emperor *Frederic*; but still obtains in *Mingrelia*; as we are told by *Lamberti*, in his Relation inserted in *Thevenot's Voyages*.

If they cannot have *Proof* of a Crime, a Cross is laid at the bottom of a Caldron full of boiling Water; out of which the Accused is obliged to fetch it with his naked Hand and Arm: This done, the Arm is put up in a Bag, tied, and seal'd; and three days after open'd; when, if there be no Marks of the Burn or Scald, the Accused is declared Innocent.

In the Kingdom of *Siam*, to have *Proof* of a Crime, the Party is obliged to wash his Hands in boiling Oil, or to walk on burning Coals; from either of which he must come out untouch'd to be reputed Innocent.

Sometimes they oblige the two contending Parties to plunge under Water; and he who stays there longest, gains the Cause: And sometimes to swallow a Grain of Rice, prepar'd and charm'd by their Doctors; he who is able to swallow it, is declared Innocent, and carried home in Triumph; and the Accuser punish'd.

This looks like an Imitation of what was done among the *Jews*; to have *Proof* of Adultery.

The *Proof* by Combat is likewise said to subsist among the *Mingrelians*. See COMBAT.

PROPAGATION, the Act of Multiplying the Kind; or of producing the like in the way of natural Generation. See GENERATION.

Some Plants are only propagated by *Sowing*; as Wheat, Poppies, &c. The Reason is, that the Stem in these Plants withers and dies away, and consequently is incapable of being planted: And as to the Root, the whole Force and Effect thereof passes into the Ear, or Spica, which being the useful part of the Plant, exhausts the whole. See SEED and SOWING.

Sometimes Plants are *propagated* by the Roots, as the Anemones, &c. In which Case, there is a considerable Stock of Seminal or Spermatick Virtue still reserv'd in the Root, so as to be in a condition for shooting new Fibres upon any favourable occasion. See ROOT.

Sometimes, a Branch lopp'd off, and set in the Ground, shall shoot into a new Plant; as we see in the Willow, Vine, Poplar, &c. And sometimes a Truncheon shall do the same. In this Case, the Plants being of a very porous Texture, readily imbibe Nourishment, and take Root. This Method of *Propagation* is particularly remarkable in the Vine, any part of which put any how in the Ground, will become a Plant. The little Chips of Elm are said to do the same. See BRANCH and PLANTING.

When a Branch or Arm of a Vine shoots too great a length, or withers towards the Extreme, or grows too small to feed its Grapes, 'tis usual to cut pieces of it off, and put 'em in the Ground; which readily grow into thriving Plants.

Nay, sometimes, to bring up young Plants, and make 'em grow and advance the faster, especially Lemon, Orange, and Citron Trees; they pass a Branch or Shoot of an old Tree, without cutting it off, thro' an Aperture of a Vessel fill'd with good Earth; upon which, the Pores opening by the Moisture and Warmth, Roots presently burst forth, which being furnish'd with Food both from the Earth and the parent Plant, grow at a great rate, and are soon in a Condition to be separated from the Parent, and shift for themselves. See STOCK, DWARF, &c.

Lastly, Plants are sometimes, also, *propagated* by Bulbs. See BULB.

PROPER, something naturally, and essentially belonging to any Being.

The School-Philosophers, after *Porphyry*, distinguish four kinds of *Probers*, or Modes of *Propriety*; which are express'd in the following Verse:

*Est Medicus, Bipes, Canescens, Risibilisque.*

The first, call'd *PROPRIUM primo modo*, is what agrees to a single Species, but not to all the Individuals: This they call *soli sed non omni*. As, to be a Geometrician, a Physician, a Divine, &c. which are things *proper* to Man; but not to all Men.

The second, *PROPRIUM secundo modo*, is what agrees to the whole Species, but agrees likewise to another: which they call *omni sed non soli*.

Thus to have two Feet is *proper* to a Man, but is likewise *proper* to a Bird.

The third *PROPRIUM tertio modo*, is that which agrees to a single Species, but not at all times; *omni sed non semper*: As, to grow grey, according to *Porphyry*, is *proper* to a Man, but 'tis to an old Man.

The last, and highest, *PROPRIUM quarto modo*, is that which alone agrees to one Kind, to all the Individuals thereof, and at all times; *omni, soli, & semper*. Thus, the Faculty of Laughing is *proper* to Man; of Neighing to Horses, &c. And 'tis this that *Porphyry* calls the *true Proper*. See ESSENCE, &c.

The first three Species are only Accidents of the fifth vulgar Predicable, to which they directly belong. See PREDICABLE.

The fourth is an Universal agreeing to every Individual, or Subject of Predication of any Species, in such Manner, as to be always found absolutely in the Species alone, but not at every determinate time: Thus Man alone is naturally risible; not that he is always Laughing, but has the Faculty of Laughing at all times. See DEFINITION.

PROPER, in respect of Words, is understood of their immediate and particular Signification; or that directly and peculiarly attach'd to 'em.

In this Sense the Word stands oppos'd to Figurative and Metaphorical. See FIGURATIVE, &c.

PROPER is also laxly used in a Moral Sense, to denote something that is usually found in Things; as their particular or specific Virtues, &c.

In this sense we say, Magnanimity is the *proper* Virtue of Heroes. See HERO.

The Word is also used for the natural Qualities necessary to succeed in a thing. In this sense we say, People of a hot, vigorous Temperament are *proper* for the Army; the cold and phlegmatic are *proper* for Study. The Romans became less *proper* for War, in proportion as they grew more learned and polite.

PROPER, in Grammar, is a Term apply'd to Nouns, or Names, which are distinguish'd into *Proper*, and Appellative. See NOUN.

Man is the Appellative, *Peter* the *proper* Name. See APPELLATIVE.

The *proper* Name among Christians is that impos'd at Baptism. See NAME.

PROPER Fraction, is such a one as hath its Numerator less than the Denominator.

Such is  $\frac{3}{4}$ , or  $\frac{2}{3}$ , which is really less than Unity; and, therefore, *properly* speaking, a Fraction. See FRACTION.

PROPER, in the Civil Jurisprudence, is apply'd in opposition to acquired; for an Inheritance derived by direct or collateral Succession. See GOODS.

By the *French* Laws, a Testator can only dispose of one fifth of his *proper* Effects; the paternal Relations inherit the paternal *Propria*, and the Maternal the Maternal ones: So that *Propria* always return to the Line whence they proceed.

The Origin of the Law which fixes this difference between *Probers*, and Acquests, is not known; neither the *Greeks* nor *Romans* having ever made any such distinction.

Indeed, it seems founded on this Principle of natural Equity, that Men are usually desirous to preserve and attach to their Family, the Goods they have received from their Fore-fathers; and to transmit them to those descending from the same Stock.

PROPER sometimes, also, stands as a Reduplicative, serving to mark or design a thing more expressly, and formally.

In this sense we say, Jesus Christ came to redeem the World in his *proper* Person. The King did such and such a thing of his own *proper* Motion.

PROPERTY, or PROPRIETY, that which constitutes or denominates a thing *proper*; or, it is a particular Virtue, or Quality which Nature has bestow'd on something. See PROPER.

Thus, Colour is a *Property* of Light; Extension, Figure, Divisibility, and Impenetrability, are *Properties* of Body. See COLOUR, BODY, &c.

Every Day discovers new *Properties* in the Load-stone. See MAGNET.

PROPERTY, or PROPRIETY, in Law, strictly speaking, is the highest Right a Man can have to a thing; and such as no ways depends on any other Man's Courtesy. See RIGHT.

In this Sense, none in our Kingdom have the *Property* of any Lands or Tenements, except the King, in Right of his Crown; all other Lands being of the nature of Fee, and held of the King either mediately or immediately. See FEE, KING, &c.



*Propriety*, however, is used for that Right in Lands and Tenements which common Persons have; importing as much as *Utile Dominium*, tho' not *Directum*.

There are three Manners of Right or *Property*; viz. *Property* absolute, *Property* qualified, and *Property* possessory. See PROPRIETOR and FEE.

Incumbents have not the *Propriety* of Benefices, they have only the Enjoyment thereof. See BENEFICE.

The Monks have a long time disputed whether they had the *Propriety* of the Bread they eat, or only the Use.

One may give the *Propriety* of an Estate, yet reserve the Usufruct; by the Death of the Usufructuary the Usufruct is consolidated to the *Propriety*. See CONSOLIDATION.

PROPHECY, a Prediction, made by Divine Inspiration. See PROPHET and INSPIRATION.

A late Author observes, that the Christians have this in common with the Pagans, that they equally build their Religions on *Prophecy* and *Divination*. See DIVINATION and AUGURY.

He adds, That *Divination* was an Art learnt by the Romans in Schools, or under Discipline; as the Jews did *Prophecy* in the Schools and Colleges of the Prophets.

In these Schools, as the learned *Dodwell* observes, the Candidates for *Prophecy* were taught the Rules of *Divination*, practised by the Heathens; who were in possession of the Art long before 'em. 'Tis added, that the Gift of *Prophecy* was not an occasional thing, but a constant and standing Matter of Fact; and some think they have discover'd an Establishment of an Order of Prophets in the Old Testament, in analogy to the Heathen Diviners.

This is certain, from many Passages of Scripture, that there were great Numbers of Prophets among 'em, who not only exercised their Talent in Matters of Government and Religion, but even in the discovery of lost Goods, and in telling of Fortunes. See AUGURY, ORACLE, &c.

One of the greatest Difficulties in Christianity, turns upon the Completion of the Scripture *Prophecies*: In the Prophets of the Old Testament are frequent Predictions of the Messiah; which, the Writers of the New, frequently urge to the Jews and Heathens as fulfill'd in *Jesus Christ*; and on this Principle evince the Truth of his Mission: But these Truths thus urged from the Old, in the New Testament; are sometimes not to be now found in the Old; and at other times, not urged in the New in the literal and obvious Sense which they seem to bear in the Old; whence most of the Christian Commentators, Divines, and Critics, Antient and Modern, judge 'em to be apply'd in a secondary, typical, allegorical, or mystical Sense.

Thus, e. gr. St. *Matthew*, after an Account of the Conception of the Virgin, and the Birth of *Jesus*, says, "All this was done, that it might be fulfilled which was spoken by the Prophet, saying, Behold a Virgin shall be with Child, and shall bring forth a Son, and they shall call his Name *Emanuel*." But the Words, as they stand in *Isaiah*, whence they are supposed to be taken, do, in their obvious and literal Sense, relate to a young Woman who was to bring forth a Child in the Days of *Ahaz*; as appears from the Context, and as is own'd by *Grotius*, *Huetius*, *Castalio*, *Curcellæus*, *Episcopius*, *Hammond*, *Simon*, *le Clerc*, *Lamy*, &c.

This *Prophecy*, then, not being fulfill'd in *Jesus*, in the primary, literal, or obvious Sense of the Words, is supposed, like the other *Prophecies* cited by the Apostles, to be fulfill'd in a secondary, typical, or allegorical Sense; i. e. this *Prophecy*, which was first literally fulfill'd by the Birth of the Prophet's Son in the Time of *Ahaz*, was again fulfill'd by the Birth of *Jesus*; as being an Event of the same kind, and intended to be signified either by the Prophet, or by God who directed the Prophet's Speech.

*Grotius* observes this to be the Case in most, if not all the *Prophecies* and Citations quoted from the Old in the New Testament; and *Dodwell*, with Sir *John Marsham*, refer even the famous *Prophecy* in *Daniel* about the Seventy Weeks to the Times of *Antiochus Epiphanes*; shewing, that the Expressions taken thence by Christ, and urged by him as predicting the Destruction of *Jerusalem* by the Romans, have only in a secondary Sense, a respect to that Destruction.

And even that famous *Prophecy* in the *Pentateuch*, "A Prophet will the Lord God raise up unto thee like unto me, to him shall ye hearken"; which St. *Luke* refers to as spoken of *Jesus Christ*, is, by *Simon*, *Grotius*, *Stillingsfleet*, &c. understood to signify, in its immediate Sense, a Promise of a Succession of Prophets.

'Tis allow'd then, the Apostles apply'd the *Prophecies* they quote from the Old Testament, in a typical Sense; but, unhappily, the Rules whereby they quoted, are lost. Dr. *Stanhope* laments the loss of the Jewish Traditions or Rules for interpreting Scripture receiv'd among the Rabbins, and follow'd by the Apostles. But this Loss, *Surenhusius*, Hebrew Professor at *Amsterdam*, thinks he has retrieved from the Jewish *Talmud*, and the antient Jewish

Commentaries; and has accordingly published to the World, the Rules whereby the Apostles quoted the Old Testament.

But the truth is, these Rules are too precarious, strain'd, and un-natural, to gain much Credit. See QUOTATION.

Mr. *Whiston* condemns all allegorical Explanation of the *Prophecies* of the Old Testament cited in the New, as weak, enthusiastic, &c. And adds, that if a double Sense of the *Prophecies* be allow'd, and there be no other Method of shewing their Completion, than by applying them secondarily and typically to our Lord, after having been in their first and primary Intention long ago fulfill'd in the Times of the Old Testament; we lose all the real Advantages of the antient *Prophecies*, as to the Proofs of Christianity.

He therefore sets up a new Scheme in opposition thereto: He owns, that taking the present Text of the Old Testament for Genuine, it is impossible to expound the Apostles Citations of the *Prophecies* of the Old Testament, on any other than the allegorical Foundation; and, therefore, to solve the Difficulty, is forced to have recourse to a Supposition contrary to the Sense of all Christian Writers before him; viz. that the Text of the Old Testament has been greatly corrupted since the Apostolical Age by the Jews, See BIBLE.

His Hypothesis is, that the Apostles made their Quotations out of the Old Testament rightly and truly from the Septuagint Version, which in their Time was in vulgar Use, and exactly agreed with the Hebrew Original; and that as they made exact Quotations, so they argued justly and logically from the obvious and literal Sense of the said Quotations, as they then stood in the Old Testament: But, that since their Times, both the Hebrew and Septuagint Copies of the Old Testament have been so greatly corrupted, and so many apparent Disorders and Dislocations introduced therein, as to occasion many remarkable Differences and Inconsistencies between the Old and New Testament in respect to the Words and Sense of those Quotations. See SEPTUAGINT, &c.

As to the Manner wherein these Corruptions were introduced, he says, the Jews in the second Century greatly corrupted and alter'd both the Hebrew and Septuagint, especially in the *Prophecies* cited by the Apostles, to make their Reasoning appear inconclusive; that in the third Century, they put into *Origen's* hand one of these corrupted Copies of the Septuagint, which *Origen* mistaking for genuine, inserted in his *Hexapla*; and thus brought into the Church a corrupted Copy of the Septuagint: And that in the end of the fourth Century, the Jews put into the hands of the Christians, who, till then, had been almost universally ignorant of the Hebrew, a corrupted Copy of the Hebrew Old-Testament.

The Disagreement, then, between the Old and New Testament in respect to the said Quotations, he contends, has no place between the genuine Text of the Old Testament (now no where existing) but only between the present corrupted Text of the Old and New Testament: And, therefore, to justify the Reasonings of the Apostles, he proposes to restore the Text of the Old Testament, as it stood before the Days of *Origen*, and as it stood in the Days of the Apostles. From which Text thus restored, he doubts not, it will appear, that the Apostles cited exactly, and argued justly and logically from the Old Testament.

But this Scheme of accomplishing *Prophecies*, labours under Difficulties at least as great as the Allegorical Scheme. Its Foundation is incredible, and its Superstructure, from first to last, precarious: In effect, 'tis inconceivable the Old Testament should be so corrupted; and it is even made appear, that the Hebrew and Septuagint disagreed in the Times of the Apostles: Add to this, that the Means whereby he proposes to restore the true Text, will never answer that end; nor has he, himself, from all the Means he is yet possess'd of, been able to restore one prophetic Citation, so as to make that seem literally, which before only seem'd allegorically, apply'd. See PENTATEUCH, &c.

PROPHET, a Person inspired by God with the Knowledge of future Events; and commission'd to declare his Laws, his Will, &c. to the World. See PROPHECY and DIVINATION.

Among the Canonical Books are those of sixteen *Prophets*; four of which are denominated the greater *Prophets*, viz. *Isaiah*, *Jeremiah*, *Ezekiel*, and *Daniel*; so call'd from the length or extent of their Writings, which exceed those of the others, viz. *Hosea*, *Joel*, *Amos*, *Obadiah*, *Jonas*, *Micha*, *Nahum*, *Habbakuc*, *Haggai*, *Zachariah*, and *Malachi*; who are call'd the lesser *Prophets*, from the shortness of their Writings.

The Jews only reckon three greater *Prophets*; *Daniel* they exclude, as no more to be rank'd among the *Prophets* than *David*: Not but that both the one and the other foretold many important things; but because their manner of Life differ'd from that of the other *Prophets*, *David* being a King, and *Daniel* a Peer.



In the *Greek Church*, the lesser *Prophets* are placed in order before the great ones; apparently because many of the lesser *Prophets* are more antient than the greater.

Among the *Greeks* too, *Daniel* is rank'd among the lesser *Prophets*.

In the 48th Chapter of *Ecclesiasticus*, *Isaiah* is particularly call'd the great *Prophet*; both on account of the great things he foretold, and the magnificent Manner wherein he did it.

*Spinoza* says, the several *Prophets* prophesied according to their respective Humours; *Jeremiah*, e. gr. melancholy, and dejected with the Miseries of Life, prophesied nothing but Misfortunes.

*Dacier* observes, that among the Antients the Name *Poet* is sometimes given to *Prophets*; as that of *Prophet* is at other times given to *Poets*. See *POET*.

The Word is derived from the *Greek* *φαῖτος*, said; whence the *Latins* derive their *fatus*, spoken. See *VATES*.

**PROPHYLACTICE**, *προφυλακτική*, that part of the Art of Medicine which directs the preventing or preserving from Diseases. See *MEDICINE*, *PRESERVATIVE*, &c.

**PROPITIATION**, in Religion, a Sacrifice offer'd to God to assuage his Wrath, and render him propitious. See *SACRIFICE*.

Among the *Jews* there were both ordinary and public Sacrifices, as *Holocausts*, &c. offer'd by way of Thanksgiving; and extraordinary ones offer'd by particular Persons guilty of any Crime, by way of *Propitiation*.

If it were a Crime of Ignorance, they offer'd a Lamb or a Kid; if done wittingly, they offer'd a Sheep: For the Poor, a pair of Turtles was enjoin'd as a *Propitiation*.

The *Romish Church* believe the Mass to be a Sacrifice of *Propitiation* for the Living and the Dead. The Reform'd Churches allow of no *Propitiation* but that one offer'd by Jesus Christ on the Cross.

**PROPITIATION** is also a solemn Feast among the *Jews*, celebrated on the tenth of the Month *Tisri*, which is their seventh Month, and answers to our *September*.

It was instituted to preserve the Memory of the Pardon proclaim'd to their Fore-fathers by *Moses* on the part of God; who thereby remitted the Punishment due for their Worship of the golden Calf.

**PROPITIATORY**, among the *Jews*, was the Cover or Lid of the Ark; which was lined both within and without, with Plates of Gold; insomuch that there was no Wood to be seen. See *ARK*.

Some even take it to have been one piece of massive Gold. The Cherubim spread their Wings over the *Propitiatory*.

This *Propitiatory* was the Type or Figure of Christ, whom *St. Paul* calls the *Propitiatory* ordain'd from all Ages.

**PROPLASM**, *Proplasma*, *προπλασμα*, is used for a Mould, wherein any Metal or soft Matter, which will afterwards grow hard, is cast. See *MOULD*.

**PROPLASTICE**, *προπλαστική*, the Art of making Moulds, for casting things in. See *MOULD*, *FOUNDERY*, &c.

**PROPOLIS**, a Virgin-Wax, of a reddish or yellowish Colour, wherewith the Bees stop up the Holes and Crannies of their Hives, to keep out the cold Air, &c. See *WAX*.

The *Propolis* is a friable Matter, esteem'd sovereign in Diseases of the Nerves. It is also used to make Holes in Abscesses; and being heated on the Fire, its Vapour is received for inveterate Coughs.

**PROPORTION**, in Arithmetic, the Identity or Similitude of two Ratios. See *RATIO*.

Hence, Quantities that have the same Ratio between 'em, are said to be *Proportional*: e. gr. If A, be to B; as C, to D: or 8, be to 4; as 30, to 15; A, B, C, D, and 8, 4, 30, and 15, are said to be in *Proportion*, or are simply call'd *Proportionals*. See *PROPORTIONAL*.

*Proportion* is frequently confounded with *Ratio*; yet have the two, in reality, very different Ideas; which ought by all means to be distinguish'd.

*Ratio* is, properly, that Relation or Habitude of two things which determines the Quantity of one from the Quantity of another without the Intervention of any third: Thus we say, the Ratio of 5 and 10 is 5; the Ratio of 12 and 24 is 12.

*Proportion* is the Sameness or Likeness of two such Relations: Thus, the Relations between 5 and 10, and 12 and 24 being the same, or equal; the four Terms are said to be in *Proportion*. Hence, Ratio exists between two Numbers; but *Proportion* requires at least three.

*Proportion*, in fine, is the Habitude or Relation of two Ratios, when compared together; as Ratio is of two Quantities. See *QUANTITY*.

*Proportion*, again, is frequently confounded with *Progression*. In effect, the two often coincide; the difference between 'em only consisting in this, that *Progression* is a particular Species of *Proportion*, wherein the second of

three Terms is a mean *Proportional* between the other two, or has the same Ratio to the third which the first has to the second.

Add to this, that *Proportion* is confin'd to three Terms; but *Progression* goes on to infinity; (so that *Progression* is a Series or Continuation of *Proportions*;) And that in four Terms 3, 6, 12, 24, *Proportion* is only between the two Couples 3 and 6, and 12 and 24; but *Progression* is between all the four Terms. See *PROGRESSION*.

*Proportion* is said to be *continual*, when the Consequent of the first Ratio is the same with the Antecedent of the second; as, if 3 be to 6, as 6 to 12. See *CONTINUAL*.

The *Proportion* is said to be *Discrete*, or Interrupted; when the Consequent of the first Ratio differs from the Antecedent of the second; as, if 3 be to 6, as 4 to 8.

*Proportion*, again, is either said to be *Arithmetical*, or *Geometrical*; as the Ratios are.

**Arithmetical PROPORTION**, is the Equality of two or more Arithmetical Ratios; or the Equality of difference between three several Quantities.

Thus, 1, 2, 3; and 2, 5, 8, are in *Arithmetical Proportion*; because there is the same difference betwixt the Numbers compared, which are 1 to 2, and 2 to 3; or 2 to 5, and 5 to 8.

If every Term have the same Ratio to the next as the first has to the second; the Terms are said to be in *continual Arithmetical Proportion*; as 5, 7, 9, 12, 15.

If the Ratio between any two Terms differ from that of any others; the Terms are said to be in *Arithmetical Proportion discrete*, or *interrupted*; as where 2:5:6:9, the Ratios of 5 and 6 being different from that of 2 and 5.

A Series of more than four Terms in *Arithmetical Proportion*, form an *Arithmetical Progression*. See *PROGRESSION*.

#### Properties of Arithmetical PROPORTION.

1°. If three Numbers be in *Arithmetical Proportion*, the Sum of the Extremes is equal to double the middle Term. Thus, in 3, 7, 11; the Sum of 3 and 11 is equal to twice 7; viz. 14.

Hence we have a Rule for finding a mean Proportional Arithmetical between two given Numbers; half the Sum of the two being the Mean required: Thus half the Sum of 11 and 3, viz. 14, is 7.

2°. If four Numbers be in *Arithmetical Proportion*, the Sum of the Extremes is equal to the Sum of the middle Terms. Thus, in 2:3:4:5; the Sum of 5 and 2 is equal to the Sum of 3 and 4, viz. 7.

Hence, four Terms in *Arithmetical Proportion*, are still proportional if taken inversely 5:4:3:2; or alternately, thus, 2:4:3:5; or, inversely, and alternately; thus, 5:3:4:2.

3°. If two Numbers in *Arithmetical Proportion* be added to other two; the less to the less, &c. their difference is in a duplicate Ratio, i. e. double that of the respective parts added: Thus, if to 3:5 be added 7:9, the Sums are 10:14; whose difference 4 is double the difference of 3:5, or 7:9. And if to this Sum you add other two, the difference of the last Sum will be triple the difference of the first two, and so on.

If two *Arithmetical Proportionals* be subtracted from two others in the same Ratio, the less from the less, &c. the Arithmetical Ratio of the Remainder is 0. Thus from 9:7 taking 3:5, the Remainders are 4, 4.

Hence, if *Arithmetical Proportionals* be multiply'd by the same Number, the difference of their Products will contain the first difference as oft as the Multiplier contains Unity. Thus 3:5 multiply'd by 4, produce 12:20, whose difference 8 is equal to 4 times 2, the difference of 3 and 5.

4°. If two Numbers in *Arithmetical Proportion* be added to, or multiply'd by, other two, in another Ratio of the same kind, less by less, &c. the Sums are in a Ratio which is the Sum of the Ratios added or multiply'd. Thus, 2:4 and 3:9 being added; the Sums are 5:13, whose difference is 8, the Sum of 2 and 6, the differences of the Numbers given.

**Geometrical PROPORTION**, is the Equality of two Geometrical Ratios, or Comparisons of two Couples of Quantities. See *GEOMETRICAL PROPORTION*.

Thus 4:8::12:24, are in *Geometrical Proportion*; the Ratio of 4 and 8 being equal to that of 12 and 24; 4 being contain'd as often in 8, as 12 is in 24. Again, 3, 1 are in *Geometrical Proportion*, 9 being triple of 3 as 3 is of 1.

If in a Series of Terms, there be the same Ratio between every two Terms that there is between the first and second; they are said to be *Continual Geometrical Proportionals*: As 1:2:4:8.

If any two Terms have a different Ratio from that of the first and second, they are said to be in *Disjunct*, or *Interrupted* *Geometrical Proportion*.



*rupted Geometrical Proportion*; as are 2 : 4 : 3 : 6 ; where 2 is to 4 as 3 to 6 ; but not so as 4 to 3.  
A Series or Progression of more than four *Geometrical Proportionals*, is call'd a *Geometrical Progression*. See PROGRESSION.

*Properties of Geometrical PROPORTION.*

1<sup>o</sup>. If three Quantities be in continual *Geometrical Proportion*, the Product of the two Extremes is equal to the Square of the middle Term. Thus, in 6 : 12 :: 12 : 24, the Product of 6 and 24 is equal to the Square of 12, viz. 144. Hence we have a Rule,

2<sup>o</sup>. To find a mean *Geometrical Proportional* between two Numbers, e. gr. 8 and 12.

Multiply one of the Numbers by the other, and from the Product 576, extract the Square Root 24. This will be the Mean required.

3<sup>o</sup>. To find a fourth *Proportional* to three given Numbers, e. gr. 3, 12, 5 ; or a third *Proportional* to two given Numbers.

Multiply the second 12 into the third 5, in the first Case ; and in the latter, multiply the second into itself. Divide the Product by the first 3, the Quotient 20 is the fourth *Proportional* sought in the one, or the third in the other.

The Solution of this Problem is what we popularly call the *Rule of Proportion*, or the *Golden Rule*, or *Rule of Three*. See RULE.

4<sup>o</sup>. If four Numbers be in *Geometrical Proportion*, the Product of the Extremes is equal to the Product of the two middle Terms. Thus in 2 : 5 :: 4 : 10, the Product of 10 and 12 is equal to that of 5 and 4, viz. 20. Hence,

5<sup>o</sup>. If four Numbers represented  $a : b :: c : d$  be either in *Arithmetical*, or *Geometrical Proportion* ; they will also be in the same, if taken inversely, viz.  $d : c :: b : a$  ; or alternately, as  $a : c :: b : d$  ; or alternately and inversely, as  $d : c :: b : a$ .

6<sup>o</sup>. If the two Terms of a *Geometrical Ratio* be added to, or subtracted from, other two in the same Ratio, the less to or from the less, &c. the Sums, or Differences, are in the same Ratio. Thus, in 6 : 3 : 10 : 5, where the common Ratio is 2 ; 6 added to 10, makes 16, as 3 to 5 makes 8 ; and 16 : 8 are in the same Ratio as 6 : 3, or 10 : 5. Again, 16 being to 8 as 6 to 3, their Differences 10 and 5 are in the same Ratio.

The Reverse of which Proposition is likewise true ; viz. if to or from any two Numbers be added or subtracted other two, if their Sums, or the Differences, be in the same *Geometrical Ratio* as the first two, the Numbers added or subtracted are in the same Ratio. Hence,

7<sup>o</sup>. If the Antecedents, or the Consequents of two equal *Geometrical Ratios* 3 : 6 and 12 : 24 be divided by the same 3 ; in the former Case, the Quotients 1 and 4 will have the same Ratios to the Consequents ; viz. 1 : 6 :: 4 : 24 ; and in the latter, the Antecedents the same Ratio to the Quotients, viz. 3 : 1 :: 12 : 4.

8<sup>o</sup>. If the Antecedents, or Consequents of similar Ratios 2 : 6 and 3 : 9 be multiply'd by the same Quantity 6 ; in the former Case the Facta 12 and 18 have the same Ratio to the Consequents, viz. 12 : 6 :: 18 : 9 ; and in the latter, the Antecedents have the same Ratio to the Products, viz. 2 : 6 :: 3 : 9.

9<sup>o</sup>. If in a *Geometrical Proportion* 3 : 6 :: 12 : 24, the Antecedents be multiply'd or divided by the same Number 2 ; or divided by the same Number 3 ; in the former Case, the Facta 6 ; in the latter, the Quotients will be in the same *Proportion*, viz. 6 : 18 :: 24 : 72, and 1 : 3 :: 4 : 12.

10<sup>o</sup>. If, in a *Proportion* 4 : 2 :: 10 : 5, the Antecedent of the first Ratio be to its Consequent as the Antecedent of the second to its Consequent ; then, by *Composition*, as the Sum of the Antecedent and Consequent of the first Ratio, is to the Antecedent or Consequent of the first ; so is the Sum of the Antecedent and Consequent of the second, to the Antecedent or Consequent of the second ; viz. 6 : 2 :: 15 : 5, or 6 : 4 :: 15 : 10.

11<sup>o</sup>. If, in a *Proportion* 6 : 4 :: 15 : 10, as the Antecedent of the first Ratio is to its Consequent ; so is the Antecedent of the other to its Consequent ; then, by *Division*, as the difference of the Terms of the first Ratio is to its Antecedent, or Consequent, so is the difference of the Terms of the second Ratio to its Antecedent or Consequent ; viz. 2 : 4 :: 5 : 10 ; or, 2 : 6 :: 5 : 15.

12<sup>o</sup>. If, in a *Proportion* 4 : 2 :: 6 : 3, as the Antecedent of the first Ratio is to its Consequent, so is the Antecedent of the second to its Consequent : And as the Consequent of the first is to another Number 8, so is the Consequent of the second to another Number 12 ; viz. 2 : 8 :: 3 : 12 ; then will the Antecedent of the first be to 8, as the Antecedent of the second to 12 ; viz. 4 : 8 :: 6 : 12.

13<sup>o</sup>. If, in a *Proportion* 8 : 4 :: 12 : 6, as the Antecedent of the first Ratio is to its Consequent ; so is the Antecedent of the second to its Consequent ; and as the Consequent of

the first is to another Number 16 ; so is another Number 3, to the Antecedent of the second, viz. 4 : 16 :: 3 : 12. Then, will the Antecedent of the first be to 16, as 3 to the Consequent of the second, viz. 8 : 16 :: 3 : 6.

14<sup>o</sup>. Suppose any four proportional Quantities, viz. 3 : 6 :: 12 : 24, and any other four proportional Quantities 1 : 3 :: 9 : 27 ; if you multiply the several Terms of the latter into those of the former, the Products will likewise be *Proportional*, viz. 3 : 18 :: 108 : 648.

15<sup>o</sup>. If there be several Quantities continually *Proportional*, A, B, C, D, &c. the first, A, is to the third, C, in a duplicate Ratio ; to the fourth, D, in a triplicate Ratio, &c. of the first A to the second B.

16<sup>o</sup>. If there be three Numbers in continual *Proportion*, the difference of the first and second will be a mean *Proportional* between the difference of the first and second Term, and the difference of the second and third, and the first Term.

*Harmonical*, or *Musical PROPORTION*, is a third kind of *Proportion*, form'd out of the other two ; thus : Of three Numbers, if the first be to the third, as the difference of the first and second to the difference of the second and third ; the three Numbers are in *Harmonical Proportion*.

Thus, 2 : 3 : 6 are *Harmonical*, because 2 : 6 :: 1 : 3. And four Numbers are *Harmonical*, when the first is to the fourth as the difference of the first and second to the difference of the third and fourth.

Thus 24 : 16 :: 12 : 9 are *Harmonical*, because 24 : 9 :: 8 : 3.

By continuing the *Proportional* Terms in the first Case, there arises an *Harmonical Progression*, or Series. See SERIES.

*Properties of Harmonical or Musical PROPORTION.*

1<sup>o</sup>. If three or four Numbers in *Harmonical Proportion* be multiply'd or divided by the same Number ; the Products, or Quotients, will also be in *Harmonical Proportion*. Thus, if 6, 8, 12, which are *Harmonical*, be divided by 2 ; the Quotients 3, 4, 6, are also *Harmonical* ; and reciprocally their Products by 2, viz. 6, 8, 12.

2<sup>o</sup>. To find an *harmonical Mean* between two Numbers given.

Divide double the Product of the two Numbers by their Sum, the Quotient is the Mean required. Thus, suppose 3 and 6 the Extremes ; the Product of these is 18, which doubled gives 36 ; this divided by 9 (the Sum of 3 and 6) gives the Quotient 4. Whence, 3 : 4 : 6 are *Harmonical*.

3<sup>o</sup>. To find a third *Harmonical Proportional* to two Numbers given.

Call one of them the first Term, and the other the second ; multiply 'em together, and divide the Product by the Number remaining after the second is subtracted, from double the first ; the Quotient is a third *Harmonical Proportional*. Thus suppose the given Terms 3 : 4, their Product 12 divided by 2 (the Remainder after 4 is taken from 6, the double of the first) the Quotient is 6 ; the *Harmonical* third sought.

4<sup>o</sup>. To find a fourth *Harmonical Proportional* to three Terms given.

Multiply the first into the third, and divide the Product by the Number remaining after the middle or second is subtracted from double the first ; the Quotient is a fourth Term in *Harmonical Proportion*. Thus, supposing the Numbers given 9 : 12 : 16 ; a fourth will be found by the Rule to be 24.

5<sup>o</sup>. If there be four Numbers disposed in Order ; whereof one Extreme and the two middle Terms are in *Arithmetical Proportion* ; and the same middle Terms with the other Extreme, are in *Harmonical Proportion* ; the four are in *Geometrical Proportion* : As here, 2 : 3 :: 4 : 6, which are *Geometrical* ; whereof 2 : 3 : 4 are *Arithmetical*, and 3 : 4 : 6.

6<sup>o</sup>. If betwixt any two Numbers you put an *Arithmetical Mean*, and also a *Harmonical* one ; the four will be in *Geometrical Proportion*. Thus, betwixt 2 and 6, an *Arithmetical Mean* is 4, and an *Harmonical* one 3 ; and the four 2 : 3 :: 4 : 6 are *Geometrical*.

We have this notable difference between the three kinds of *Proportion* ; That from any given Number we can raise a continued *Arithmetical Series* increasing *in infinitum*, but not decreasing ; the *Harmonical* is decreasable *in infinitum*, but not increasable ; the *Geometrical* is both.

*Contra-harmonical PROPORTION*, is that Relation of three Terms, wherein the Difference of the first and second, is to the Difference of the second and third, as the third to the first.

Thus, 3, 5, 6, are Numbers in *contra-harmonical Proportion*, because 2 : 1 :: 6 : 3.

To find a Mean in *Contra-harmonical Proportion* between two Numbers : Divide the Sum of two Squares by the Sum of the Roots, the Quotient is the Mean requir'd. Thus



the Sum of the Squares of 3 and 6, viz. 45, divided by 9, the Sum of the Roots, gives 5.

PROPORTION is also used for the Relation between unequal Things of the same kind, whereby their several Parts correspond to each other with an equal Augmentation, or Diminution.

Thus, in reducing a Figure into little, or in enlarging it, Care is taken to observe an equal Diminution, or Enlargement, thro' all its parts; so that if one Line, e. gr. be contracted by one third of its Length; all the rest shall be contracted in the same Proportion.

The making of Reductions of this kind, is the great use of the proportional Compasses. See COMPASSES. See also REDUCTION, and DRAUGHT.

PROPORTION, in Law. See DEONERANDO *pro rata portio*nis.

PROPORTION, in Architecture, the just Magnitude of the Members of each part of a Building, and the Relation of the several Parts to the Whole; e. gr. of the Dimensions of a Column, &c. with regard to the Ordonnance of the Building. See SYMMETRY. See also BUILDING.

One of the greatest Differences among Architects, M. Perrault observes, is in the Proportions of the Heights of Entablatures with respect to the Thickness of the Columns, to which they are always to be accommodated. See ENTABLATURE.

In effect, there is scarce any Work, either of the Antients or Moderns, wherein this Proportion is not different; some Entablatures are even near twice as high as others—Yet 'tis certain, this Proportion ought of all others to be most regulated; none being of greater Importance, as there is none wherein a Defect is sooner spied, nor any wherein it is more shocking. See COLUMN.

PROPORTION is likewise understood of the Magnitudes of the Members of Architecture, Statues, or the like, with regard to the Distance whence they are to be view'd.

The most celebrated Architects are much divided in their Opinions on this Subject: Some will have it, that the parts ought to be enlarg'd in proportion to their Elevation; and others, that they ought to remain in their natural Dimensions. See STATUE.

PROPORTION, in Painting, is the just Magnitude of the several Members of a Figure, a Group, &c. with regard to one another, to the Figure, the Group, and the whole Piece. See PAINTING.

Proportion makes one of the most important Articles in the Art of Painting, the principal Subject it is employ'd in, being the human Body; for which reason, the Curious in that Art will thank us for the following Scheme of the Rules and Laws thereof.

By the way, let it be observ'd, 1°. That to measure and set off Proportions, we either divide the Module into twelve Parts, and subdivide each of those into four; or divide the Face into three Lengths of the Nose; subdividing each Length into twelve: Or lastly, divide the whole Face into three, and subdivide each of those into four: which last Method is what we shall here follow.

2°. That the Multiplicity of little Measures are to be studiously avoided, because they confound; and because they require great Skill in Osteology, to hit justly.

3°. That in Measuring, there be a regard had to the Relievo, or Juttings out of Figures.

#### The Rules of Proportion in Painting.

In the Proportions of a human Figure, regard is had to the Age, Sex, and Quality.

As to Age; we consider three Stages thereof; Infancy, Youth and Manhood. For the first; at three Years of Age, we count five Lengths of the Face, from Top to Toe; viz. from the Tip of the Head to the Bottom of the Belly, three; thence to the Foot, two; Breadth about the Shoulders, one Face, one eighth: and in the place of the Hips, one Face.

At four Years, the Height is six Faces  $\frac{1}{2}$ . viz. from the Top of the Head to the Bottom of the Belly, three Faces  $\frac{1}{2}$ . thence to the Sole of the Foot, three Faces. The Breadth about the Shoulders one Face  $\frac{2}{3}$ . about the Haunches, one Face  $\frac{1}{2}$ .

At five Years, the Height is six Faces  $\frac{1}{2}$ .  $\frac{1}{2}$  abated, the lower being shorter.

In Youth at twelve Years, we have two Proportions; the one from Nature, which gives nine Faces for the Height; the Breadth about the Shoulders, two Faces; about the Haunches, 1 Face  $\frac{1}{2}$ . The other from the antique Statues, as that of *Laocoon*, &c. which give the Height, ten Faces  $\frac{1}{2}$ . the Breadth from one Shoulder to another, one Face  $\frac{1}{2}$ . at the Haunches, 1  $\frac{1}{2}$ . at the place of the Muscle, call'd *Vastus Externus*, 2. The Thigh 1, the Knee  $\frac{2}{3}$  and  $\frac{1}{2}$  a Subdivision, and at the Ankles  $\frac{1}{2}$ .

In the State of Manhood, when the Measures are arriv'd at perfection; we reckon the Height ten Faces: the 1st, from

the Top of the Head to the Nostril; the 2d, to the Hole in the Neck between the Clavicles; the 3d, to the Pit of the Stomach, call'd *Cartilago Ensigiformis*; the 4th, to the Navel; the 5th, to the pyramidal Muscles; thence to the Knee 2  $\frac{1}{2}$ , and as much to the Sole of the Foot.—The Extent of the Arms is the same with the Height; viz. from the Tip of the long Finger to the Joints of the Wrists, one Face; thence to the Elbow 1  $\frac{1}{2}$ ; thence to the Joints of the Shoulders, 1  $\frac{1}{2}$ ; thence to the Hole in the Neck, 1  $\frac{1}{2}$ ; in all five Heads, which with the five of the other Arm gives ten: The Thickness of the Arms to be adjusted by the Quality or Character.

As to the Breadth of the Figure seen Front-wise; the Width of the Shoulders a-cross the *Deltoides*, is 2 Faces  $\frac{1}{2}$ ; Breadth of the pectoral Muscle, to the Juncture of the Arm, 2. About the Haunches, where the *Obliqui externi* are, 1  $\frac{2}{3}$ , and three Subdivisions. The Thighs, at the biggest place, 1: The Knee  $\frac{1}{2}$ , three Subdivisions  $\frac{1}{2}$ . The Leg at the thickest, 2 and 1 Subdivision. The Extreme of the Ankle,  $\frac{1}{2}$ , 1 Subdivision  $\frac{1}{2}$ . The Feet,  $\frac{1}{2}$ , and  $\frac{1}{2}$  a Subdivision. Their Length, 1 Face  $\frac{1}{2}$ , 1 Subdivision.

Others, measuring by the Length of the whole Head, make only eight Heads, in Height and Breadth; thus: The Head, one; thence to the bottom of the Breasts, one; thence to the Navel, one; thence to the Yard, one; thence to the middle of the Thigh, one; thence to the lower parts of the Knee, one; thence to the small of the Leg, one; thence to the bottom of the Foot, one.

The Breadth, thus: From the End of the long Finger to the Wrist, one; thence to the Bend of the Arm, one; thence to the bottom of the Shoulder, one; thence over to the other Shoulder, two; thence to the End of the other long Finger, three.

To these general Proportions, may be added others, which usually obtain; as, that the Hand is the Length of the Face; the Thumb the Length of the Nose; and the great Toe the same: The two Nipples, and the Hole in the Neck, make a just equilateral Triangle: The Space between the Eyes, is the breadth of an Eye: The breadth of the Thigh, at the thickest, is double that of the thickest part of the Leg, and treble that of the smallest: From the top of the Head to the Nose, the same as from the top of the Nose to the Chin. The distance from the Chin to the Throat-pit, is the breadth of the Throat; the distance of the Centre of the Eye from the Eye-brow, the same as the Prominency of the Nostrils; and the Space between them and the upper Lip. The Length of the Fore-Finger, the same as the Space thence to the Wrist; the Space from the tip of the Fore-Finger to the Wrist, the Length of the Face.

For the Sex: The Proportions of Man and Woman differ in height; in that the Woman has a longer Neck; the parts at the Breasts, and the lower parts of the Belly, bigger by half a part; which makes the space from the Breast to the Navel, less by one part; and the Thigh shorter by a third part.

As to breadth, a Woman has her Breasts and Shoulders narrower, and Haunches larger; and Thighs, at the place of their Articulation, larger; Arms and Legs thicker, Feet straighter; and because Women are more fat and fleshy, their Muscles are less seen, and therefore the Contours more smooth and even.

Young Maids have little Heads, long Necks, low or down Shoulders, slender Bodies, Haunches big, Legs and Thighs long, Feet little.

Young Men have the Neck thicker than Women, the Shoulders and Breasts larger, the Belly and Haunches narrower, Legs and Thighs slenderer, and Feet larger.

As to the Quality of Subjects, we are either to follow simple Nature, or fine and agreeable Nature, or to chuse Nature, or exceed it. In following simple Nature, in common and Country Subjects, Men of dull Wit, and a moist Temperament to be of an heavier and rougher Proportion, the Muscles appearing but little distinguish'd; the Head big, Neck short, Shoulders high, Stomach little, Knees and Thighs thick, and Feet large.

In Nature, as fine and agreeable, for serious Histories, &c. the Figures of the Heroes to be well shaped, the Haunches high and upright, the Joints well knit, little and compact; free from Flesh and Fat.

Military Men, to have the Head little, Neck thick and nervous, Shoulders large and high, Body and Paps elevated, Haunches and Belly little, Thighs muscly, principal Muscles rais'd up and knit together at the Heads; the Legs smooth, Feet slender, Soles hollow.

Nature is sometimes to be selected, i. e. made up of parts from various good Originals, to form extraordinary and perfect Figures for great and heroic Subjects, as in Roman Histories; giving, thus, a Character of Force sufficient to execute Actions agreeable to the Descriptions the Poets, &c. make.

Lastly, sometimes Nature is to be exceeded, as in Representations of fabulous Deities, of Heroes and Giants: In



In these the great Pieces, which serve to form the Body, are to be set out in Measures agreeable to the Height; and by diversifying them by their Bigness.

In the Rule of Proportions, it is to be observ'd, that there is a difference in the Contours of some parts, when put in different Postures. Thus when the Arm is bent, 'tis larger than when straight; the same is true of the Foot and Knee, as is shewn by *Leonardo da Vinci*.

**Rule of PROPORTION**, in Arithmetic, a Rule whereby we find a fourth Proportional to three Numbers given.

This is popularly call'd, *The Golden Rule*, and sometimes, *The Rule of Three*. See **RULE**.

**Compass of PROPORTION**, a Name by which the French, and after them some English Authors, call the *Sector*.

See its Construction and Use, under the Article **SECTOR**.

**PROPORTIONAL**, a Quantity, either Linear or Numerical; which bears the same Ratio, or Relation to a third, that the first does to the second. See **PROPORTION**.

1. To find a fourth PROPORTIONAL to three given Lines, AB, AC, and BD. (Tab. GEOMETRY, fig. 62.)

Draw an Angle FAG at pleasure; from A set off the first of the Lines to B; from A, the second to C; and from B, to D, the third: draw BC; and in D make an Angle, equal to ABC: then is CE the fourth Proportional sought; and  $AB:AC::BD:CE$ .

2. If a third Proportional be requir'd to two given Lines, AB, and AC; make BD equal to AC, i. e. let AC be repeated twice: then  $AB:AC::AC:CE$ .

3. To find a mean Proportional between two given Lines, AB and BE (fig. 63.) join the two given Lines, into one continu'd right Line, and bisect it in C. From C, with the Interval of AC, describe a Semi-circle ADE; and from B erect a Perpendicular BD; this is the mean Proportional sought; and  $AB:BD::BD:BE$ .

The Geometricians have been these two thousand Years in search of a Method, for finding two mean Proportionals. See **MEAN**.

The Antients perform'd it mechanically, by the Mesolabe, describ'd by *Eutocius*; and many of them attempted to give the Demonstration; some by the solid Loci, as *Menechmus*; others by the plain Loci, as *Nicomedes*, *Diocles*, and in our Times, *Vieta*; and others by implicit Motions, as *Plato*, *Architas*, *Pappus*, and *Sporus*; others tentatively, by the Description of Circles, as *Hero* and *Apollo-nius*, &c. But all in vain. See **PROBLEM** and **QUADRATURE**.

4. To find a mean Proportional between two Numbers: Half the Sum of the two given Numbers is an arithmetical mean Proportional; and the square Root of their Product, a Geometrical mean Proportional. See **PROPORTION** *Arithmetical* and *Geometrical*.

To find a mean harmonical Proportional. See **PROPORTION** *Harmonical*.

**PROPORTIONAL Compasses**, an Instrument for the ready drawing of Lines, and Figures, in any given Ratio to other Lines, or Figures.

See their Construction and Use, under the Article **COMPASSES**.

**PROPORTIONAL Scales**, call'd also *Logarithmical Scales*, are the Artificial Numbers or Logarithms, placed on Lines, for the Ease and Advantage of Multiplying, Dividing, &c. by means of Compasses, or of Sliding-Rules. See **LOGARITHM** and **SCALE**.

They are, in effect, only so many Lines of Numbers, as they are call'd by *Gunter*; but made single, double, triple, or quadruple; beyond which they seldom go. See **NUMBERS**, *GUNTER'S Scale*, &c.

**PROPORTIONALITY**, a Term used by *Gregory à St. Vincent* for the Proportion that is between the Exponents of four Ratios. See **EXPONENT** and **RATIO**.

**PROPORTUM**, **PROPORT**, or **PURPORT**, in our Law-Books, the Intention or Meaning of any thing. *Secundum Proportum disli Chirographi inter eos confecti*.

**PROPOSITION**, **PROPOSITIO**, call'd also **ENUNCIATION**, in Logic, part of an Argument, wherein some Quality, either Negative or Positive, is attributed to a Subject. See **ENUNCIATION**, **ATTRIBUTE**, &c.

*Chauvin* defines a Proposition, a compleat, consistent Sentence, indicating or expressing something either true or false, without ambiguity:—As, *Xantippe is a bad Wife*;—*If an Ass fly, he has Wings*.

Others, more Philosophically, define it a Speech utter'd, or produced to signify some Judgment of the Mind. See **JUDGMENT**.

A Proposition consists of two Terms; the one, that, whereof we affirm or deny; call'd the *Subject*: The other the thing affirmed or denied, call'd the *Attribute* or *Predicate*. See **SUBJECT** and **PREDICATE**.

These two are either join'd, or separated, by the Intervention of some Copula or Disjunctive. See **COPULA**.

Thus in the Proposition, *God is just*; the Subject, *God*,

is joined with the Attribute *just*, by the Verb substantive *is*.

The Schoolmen call the two Terms the *Matter*, and the Copula the *Form* of the Proposition. See **FORM**, &c.

Now, as Terms may be either singular; or common, and universal; if the Subject of a Proposition be a common Term, taken in all its extent; the Proposition is call'd *Universal*: As, *Every Atheist is blind*. See **UNIVERSAL**.

If the common Term be only taken in an indeterminate part of its Extent, the Proposition is call'd *particular*: As, *Some Atheists are wicked*. See **PARTICULAR**.

If the Subject of the Proposition be singular, the Proposition is call'd *singular*: As, *George is King of England*. See **SINGULAR**.

Those Propositions which have only one Subject, and one Attribute, are call'd *simple*; those that have several Subjects, or Attributes, are call'd *compound*. See **COMPOUND**.

A Syllogism consists of three Propositions, Major, Minor, and Conclusion. See **SYLLOGISM**.

An Enthymeme, of two. See **ENTHYME**.

The Schoolmen make several other Species and Divisions of Propositions; as,

A Proposition *de primo adjacente*, where the Subject and Predicate are both included under the Verb; such are; *Veni, Vidi, Vici*.

A Proposition *de secundo adjacente*, is, where either the Subject or Predicate is included in the Verb; as, *I love—I write*.

A Proposition *de tertio adjacente*, is, where both the Subject and Predicate are express, and stand distinct from the Verb; as, *The King is just*.

This Proposition is the Rule or Standard of all the other; so that whatever Proposition can be reduced thereto, is legitimate; and what cannot, is not.

Propositions, again, are divided into three Classes: The first, regarding the *Matter*; the second, the *Form*; the third, the *Thought*.

Those of the first Class are subdivided into, finite and infinite; direct and indirect; single and manifold.

A finite or definite PROPOSITION, is that which declares something determinate on a Subject; as, *Man is a Biped*.—*The Wind is not visible*.

An infinite or indefinite PROPOSITION, is that where either one or both of the Terms are infinite, or have a Negative prefixed to 'em; as, *Non homo est albus—Homo est non albus*.

A direct PROPOSITION, is that wherein a higher or more general is predicated of a lower and more particular; as, *Man is an Animal*. Others will have it, that wherein the Subject stands as a Matter, receiving, and the Predicate, as a Form, received; as, *Peter is learned*.

An indirect PROPOSITION, according to some, is that wherein an inferior is predicated of a higher; as, *An Animal is Man*. According to others, it is that wherein the Subject stands as the Form, and the Predicate as the Matter; as, *Every Rational is Man*.

A single PROPOSITION is such, either Simply, or by Conjunction: Simply, when it affirms or denies one thing of one other thing; as, *The Sun shines*: By Conjunction, when several Propositions are join'd and coupled together; thus, *The Sun shines, and it is Day*; are two Propositions, which conjoin'd make this one, *If the Sun shines, it is Day*.

Of such conjunct Propositions there are divers kinds, viz. Hypothetical, Disjunctive, Copulative, &c.

Hypothetical Proposition, is that consisting of several simple ones, affected with some conditional one; as, *If the Sun be set, it is Night*.

Disjunctive Proposition, is that consisting of several, affected with a disjunctive Conjunction; as, *It is either Day or Night*.

A copulative Proposition, is that consisting of several affected with a Conjunction Copulative; as, *Peter does not stand, and sit*.

Some add, *Discrete* or *Adversative Propositions*; as, *He is rich, but covetous*.

A compound PROPOSITION, is that where one or both the Terms excite several Ideas in the Mind; as, *A Man is Body and Soul, and both together*: Or, *a Foundation, Walls, and Roof, are a House*.

A manifold PROPOSITION, is that consisting of several Subjects; as, *Peter and Paul preach'd*: Or, several Predicates; as, *Simon reads and walks*: Or both; as, *Peter and Paul preach and pray*.

In respect of Form, Propositions are divided into Affirmative, and Negative; True, and False; Pure, and Modal.

An Affirmative PROPOSITION, is that whose Attribute is join'd to the Subject; as, *God is a Spirit*.

A Negative PROPOSITION, is that whose Attribute is separated from the Subject; as, *Man is not a Stone*.



A **True Proposition**, is that which declares a thing to be what it really is; or not to be what it is not. See **TRUTH**.

A **False Proposition**, is that which signifies a thing to be what it is not; or not to be what it is. See **FALSHOOD**.

The **Truth of a Proposition**, therefore, depends on the connecting of the Subject with the Attribute, which is done by the Act of the Mind, call'd Judgment. See **JUDGMENT, ERROR, &c.**

A **PROPOSITION** is said to be *pure*, when it implies or involves nothing besides its Matter and Form; as, *Man is rational*.

A **Modal Proposition**, is that which beside the pure Matter and Form, involves some Mode or Manner of Disposition; as, *It is necessary Man be rational*.

Hence, such **Proposition** is said to consist of a Mode and a Diction; the Mode denotes some Circumstance which disposes the **Proposition**; as, *It is necessary*: The Diction is the rest of the **Proposition**; *that Man be rational*.

There are four of these Modes very famous, *viz.* **Necessary, Possible, Impossible, and Contingent**: See **NECESSARY, POSSIBLE, &c.**

Others produce other Modes, as *true, false, certain, uncertain, probable, &c.*

To modal **Propositions**, the Philosophers refer *exclusive, exceptive, and restrictive Propositions*; all which are denoted by a common Name, *Exponible Propositions*, because requiring some Explanation to make 'em clearly understood.

An **Exclusive Proposition**, is that denoted by a Sign, or Character of Exclusion; as, *only, solely, alone*: as, *God alone is eternal*; which is expounded thus, *God is eternal, and no other Being beside him is so*: Peter *only plays*; which we expound, *Peter plays, and does nothing else*.

Every **Exclusive Proposition** is expounded by two **Propositions**, one of which is affirmed, and the other denied.

**Exceptive Proposition**, is that denoted by an exceptive Sign; as, *beside, unless, &c.* Thus, *Every Animal, beside Man, is irrational*.

Every **Exceptive Proposition** is to be resolved, or expounded by three **Propositions**; as that, *e. gr.* abovementioned, by these: *Every Animal that is not Man is irrational: Every Man is an Animal: No Man is irrational*.

**Restrictive, or Limitative Proposition**, is that affected with a restrictive Sign; as, *according to, so far as, consider'd as, quatenus, &c.* Thus, *Man quatenus an Animal, perceives*.

**PROPOSITION**, in Mathematics, is some Truth advanced, and shewn to be such by Demonstration: or some Operation proposed, and its Solution shewn.

If the **Propositions** be deduced from several theoretical Definitions compared together; as this, A Parallelogram is double of a Triangle, standing on the same Base and of the same Altitude; it is call'd a **Theorem**. See **THEOREM**.

If from a Praxis or Series of Operations, a **Problem**; as, To find a third Proportional to two given Quantities. See **PROBLEM**.

Indeed, in strictness, the **Proposition** is only part of a Theorem, *viz.* that which shews what agrees to such a thing under such Conditions, and what not: In which sense it is distinguish'd from the **Demonstration**, which shews the reasons why the Understanding conceives that to agree to it. See **DEMONSTRATION**.

Again, strictly speaking, the **Proposition** is only a Member of a Problem, *viz.* that which shews what is required to be done: In which sense, it is distinguish'd from the **Solution**, which rehearses the several things to be done in order to effect what is required; and from the **Demonstration**, which proves, that by doing the things enjoin'd in the Solution, the thing requir'd in the **Proposition** is truly done. See **RESOLUTION**.

**PROPOSITION**, in Poetry, the first part of an Epic Poem, wherein the Author proposes, or lays down, briefly and in general, what he has to say in the Course of his Work. See **POEM, EPIC, &c.**

The **Proposition**, Pere Bossu observes, is to contain the bare Matter of the Poem, *i. e.* the Action, and the Persons that are to execute it, both human and divine.

This is what we have both in the *Iliad*, the *Odyssey*, and the *Æneid*. The Action proposed in the *Iliad*, is the Wrath of Achilles; that of the *Odyssey*, the Return of Ulysses; and that of the *Æneid*, the Translation of the Trojan Empire into Italy.

The same Author observes, that the divine Persons are nam'd in all the three **Propositions**. Homer, *e. gr.* declares, that what happens in the *Iliad*, is by the Will of Jupiter; and that Apollo was the Cause of the Quarrel between Agamemnon and Achilles: The same Poet says, 'twas Apollo prevented the Return of Ulysses's Companions; and Virgil mentions the Destinies, the Will of the Gods, and the Anger

of Juno.—But they all three dwell, chiefly, on the Person of the Hero, as if he were the Matter of the Poem. See **HERO**.

Yet there is some difference, in this respect, in the three Poems; in that Achilles is named in the *Iliad*; but Ulysses, and Æneas are not: They are only pointed at, and that in such general Terms, as if it were supposed they were known before.

This practice seems to fall in with the first Intention of the Poet; who is to feign an Action without Names, and who, as Aristotle says, does not relate the Action of Achilles, nor Ulysses, nor Æneas, nor any particular Person, but of an universal, general, and allegorical Person. See **TABLE** and **ACTION**.

Add to this, that the Character which the Poet is to give his Hero, and his whole Work, is express'd in the **Proposition**; both by Homer and Virgil. See **CHARACTER**.

The whole *Iliad* is Anger and Violence; 'tis Achilles's Character, and 'tis what the Poem commences with: Μῆνιν ἄειδε. The *Odyssey* presents us in the first Verse with the Prudence, Dissimulation, and Address which makes the Character of Ulysses, and the Business of the Poem: Ἀνδρᾶ Πολύτροπον. And we see the Piety and Mildness of Æneas in the beginning of the *Latin Poem*: *Insignem Pietate Virum*.

As to the manner of the **Proposition**; Horace contents himself to prescribe Modesty and Simplicity; not to promise much, nor raise great Expectations in the Reader. *Don't begin*, says he, *like that wretched Poet who set out with*, Fortunam Priami cantabo & nobile Bellum. *How much better is that of Homer*, Dic mihi, Musa, Virum, &c. *He does not spend all his Fire at once, and leave nothing but Smoke: From this feeble beginning, you shall soon see him rise to the Wonders of Antiphates, Scylla, Charybdis, and Polypheme*.

The same Modesty we find in the **Proposition** of the *Æneid*: If that of the *Iliad* be a little more furious, 'tis, perhaps, in conformity to the Character of the Poem, which is a Series of Violences and Extravagancies.

Add, that if the Poet be to speak with Modesty of his Hero; much more is he to do so of himself: Thus Virgil only says, *I sing the Action of Æneas*. Homer begs his Muse to say or sing. How far does Claudian swerve from these Examples?

— Audaci premere Cantu,  
Mens congesta jubet, gressus remove profani:  
Jam furor humanos nostro de pectore sensus  
Expulit, & torum spirant præcordia Phœbum.

A short Poem, *e. gr.* an Ode, &c. wherein the violent Strain might be pursued to the end; might admit of such a pompous beginning: Thus we find Horace begin an Ode much after the Manner of Claudian:

Odi profanum vulgus, & arceo——  
Carmina non prius audita Musarum  
Sacerdos, Virginibus puerisque canto.

But the length of an Epic Poem quite excludes all pompous **Propositions**.

There is scarce any Fault we have yet observ'd a **Proposition** liable to, but there is an Instance of in the **Proposition** of Statius's *Achilleid*: He bids his Muse rehearse the Deeds of the Magnanimous Son of Æacus, who was formidable even to the Thunderer. He adds, *That he has worthily discharged a former Undertaking, and that Thebes esteems him a second Amphion*.

Magnanimum Æacidem formidatamque Tonanti  
Progeniem, & patrio vetitam succedere Cælo  
Diva refer.——  
In modo, si veteres digno deplevinus haustu,  
Da fontes mihi, Phœbe, novos, &c.

**PRO-PRETOR**, or **PRO-PÆTOR**, a Roman Magistrate, who having discharged the Office of Pretor at home, was sent into a Province to command there with his former pretorial Authority. See **PRETOR**.

The Name **Pro-pretor** was also given to those, who, without having been Pretors at Rome, were sent extraordinarily into the Provinces, to administer Justice with the Authority of Pretors.

Some also give the Name **Pro-prætors** to those sent by the Emperors into the Provinces, which, upon partition in Augustus's time, fell to their Lot; as the Name **Proconsul** was given to those sent into the Provinces that fell to the People's share. See **PROCONSUL**.

**PRO-PREFECT**, **PRO-PRÆFECTUS**, among the Romans, the Prefect's Lieutenant; or an Officer whom the Pretor of the **Prætorium** commission'd to do any part of his Office in his place. See **PREFECT**.

In *Gruter*, p. CCCLXX, the third Inscription mentions



*Pro prefects of the Prætorium under Gratian, in the City of Rome and the neighbouring parts. See PRÆTORIUM.*

**PROPRIETOR**, or **PROPRIETARY**, he who has the Property or Propriety of any thing. See **PROPERTY**.

**PROPRIETOR**, in Law, is strictly, such a one as has, or possesses any thing in the utmost degree : *Que nullius in alterius est obnoxia.*

The Term was formerly apply'd in a particular manner to him who had the Fruits of a Benefice to himself, and his Heirs and Successors ; as in antient time Abbots and Priors had.

**PROPRIETARY-Monks**, were such as had reserved Goods and Effects to themselves, notwithstanding their formal Renunciation of all at the Time of their Profession.

They are frequently mentioned in the *Monast. Anglic. &c.* and were to be very severely dealt withal ; to be Excommunicated, deprived of Burial, &c. — *Monachi Proprietarii excommunicentur ab Abbatibus, & si in morte Proprietarius inventus fuerit, Ecclesiastica careat Sepultura, &c.* Addit. ad Matt. Par.

**PROPRIETATE Probanda**, is a Writ that lies for him that would prove a Propriety before the Sheriff.

For where a Property is alledged, a Replegiare properly lies not. See **REPLEGIARE**.

**PROPRIETY**, in Grammar, is, where the direct and immediate Signification of a Word agrees to the thing it is apply'd to.

In which sense *Propriety* is used in opposition to a figurative, or remote Signification.

**PROPYLÆUM**, the Porch of a Temple, or Great Hall. See **PORCH**.

Hence the Word is used figuratively in Matters of Learning for an Introduction, Apparatus, or Prodromus to some greater Work.—In this sense we say, the *Propylæum* of the Jesuits at *Antwerp*, &c.

The Word is Greek *προπυλαίον*, signifying the same thing.

**PRO-QUESTOR**, **PRO-QUÆSTOR**, the Questor's Lieutenant, or a Person who discharged the Office of Questor in his stead. See **QUESTOR**.

The Word is chiefly apply'd to an Officer appointed by the Governour of a Province to discharge the Questure after the decease of the Questor, till the Senate and People should send a new one.

**PRO-RATA**, in Commerce, a Term sometimes used among Merchants, for *Proportion*. See **PROPORTION**.

Thus, when in speaking of any Undertaking they say, Each Person must reap the Profit or sustain the Loss in *Pro-rata* to his Interest ; 'tis meant, each shall gain or lose in proportion to the Sum he put in Stock.

**PRO-RATA Portionis**, in Law, see **ONERANDO pro rata portionis**.

**PRORÆ OS**, in Anatomy, a Bone of the Cranium, call'd also *Os Occipitis*. See **OS OCCIPITIS**.

**PROROGATION**, the Act of prolonging, adjourning, or putting off to another Time.

The difference between a *Prorogation* and an Adjournment of Parliament, is, that by the *Prorogation* in open Court the Session is ended ; and such Bills as passed in either House, or both Houses, and had not the Royal Assent, must at the next Assembly begin again : For every Session of Parliament, is in Law a several Parliament. See **SESSION**.

If it be only adjourn'd, then there is no Session ; and, consequently, all things continue in the same State they were in before the Adjournment. See **ADJOURNMENT**.

This difference between *Prorogation* and Adjournment is of no long standing ; antiently they were used as Synonymous.—*Prorogetur Curia de Hora in Horam, quousque placitum terminetur, MS de L L.*

To *Prorogue* the Parliament the King goes in Person, with his Crown on his Head ; and sends the *Black Rod* for the House of Commons to attend him at the Bar of the House of Lords ; where, after giving an Answer to each Bill signified to him, he makes a Speech ; and the Lord Chancellor, by command, signifies the Parliament to be *Prorogued*. See **PARLIAMENT**.

**PROSCENIUM**, in the antient Theatre, the *Pulpitum*, or Eminence whereon the *Roman* Actors exhibited. See **THEATRE**.

The *Proscenium* answer'd to our *Stage*.

It consisted of two Parts among the *Greeks* ; one particularly so call'd, where the Actors perform'd. The other was the *Logeion*, where the Singers and the Mimicks acted their Parts.

Among the *Romans*, the *Proscenium* and *Pulpitum* were the same thing. See **PULPITUM**.

**PROSCRIPTION**, a Publication made in the Name of the Chief or Leader of a Party, whereby he promises a Reward to any who shall bring him the Head of one of his Enemies.

*Scylla* and *Marius* by turns proscribed each other's Adherents.—Under the Triumvirate a great part of the best and bravest of the *Romans* fell by *Proscription*.

The Term took its Rise from the Practice of writing down a List of the Persons Names, and posting it in publick ; from *pro*, and *scribo*, I write.

**PROSE**, the natural Language of Mankind, loose, and unconfin'd by poetical Measures, Rhimes, &c.

The Word is used in opposition to *Verse*. See **VERSE**.

Tho' *Prose* have its Connections, which sustain it ; and a Structure, which renders it numerous ; it ought still to appear free : its Character consists in running easy, and unrestrain'd. See **STYLE**.

Poets very rarely have the Talent of *Prose* : The Habit of wearing Chains fits fast upon 'em, even when the Chains are off.

*S. Evremond* compares *Prose*-Writers to Foot-Travellers, who walk with less Noise, but more Security than the Cavaliers.

The Word comes from the *Latin Prosa*, which some will have derived from the *Hebrew Poras*, *expendit*.

**PROSECUTOR**, in Law, is he that pursues a Cause in another's Name. See **PROMOTER**.

**PROSELYTE**, a new Convert to the Faith. See **CONVERT**.

The Term was much used in the Primitive Church—The *Jews*, too, had their *Proselytes* ; who from *Gentiles* embrac'd *Judaism*.

The Word is pure Greek *προσηλύτης* ; which in *Latin* signifies *Advena* ; in *English*, *Stranger*, or one arriv'd out of another Country.

**PROSODY**, **PROSODIA**, that part of Grammar which teaches and directs the Pronunciation, and manner of Rehearsal ; marks the Accents, and distinguishes the long and short Syllables. See **GRAMMAR**, **PRONUNCIATION**, &c.

The Word is form'd from the Greek *προσῳδία*, *accino* ; of *πρὸς* and *ωδὴν*, *Cantus*, Singing.

*Prosody* is properly that Branch of Grammar which relates to Syllables ; treating of their true Pronunciation in respect of Accent and Time. See **SYLLABLE** : See also **ACCENT**, &c.

The *English Prosody* turns chiefly on two Things ; *Numbers*, that is, a certain number of Feet or Syllables. See **NUMBERS**.

And, *Rhime*, or a Similitude of Sound between the last Syllables of Verbs. See **RHIME**.

The *Greek* and *Roman Prosodies* were unacquainted with Rhime ; but in lieu thereof, had something to make their Verse harmonious, without, *viz.* *Quantity*. See **QUANTITY**.

**PROSONOMASIA**, *προσωνομασία*, a Figure in Rhetoric, whereby allusion is made to the Likeness of a Sound in several Names, or Words. See **FIGURE**.

**PROSOPOPOEIA**, in Rhetoric, a Figure, whereby we make Persons that are absent, or dead, or even Things which are inanimate, as Cities, &c. to speak. See **FIGURE**.

The Poets, in their Fictions, make frequent use of the *Prosopopœia* ; as also do the Orators, in their painting of violent Passions, which seem to transport, and make them forget themselves.

There are two kinds of *Prosopopœia*'s, the one direct ; the other indirect.

For an instance of the latter : *Just Gods, Protectors of the Innocent, permit the Order of Nature to be interrupted for one moment, and let this Carcase resume the use of Speech, &c.*

Instances of the former are found every where, among the Orators and Poets ; that which follows, is a very beautiful one, found by way of Epitaph on a Tomb-stone : The dead Wife addresses her surviving Husband, thus :

*Immatura peri : sed tu felicior, annos  
Vive tuos, conjux optime, vive meos.*

The Word is form'd from the Greek *προσωπον*, *Person*, and *ποιέω*, *I make*, or *seign*.

**PROSPECT**. } See { **PERSPECTIVE**.

**PROSPECTIVE Glass**. } See { **PERSPECTIVE Glass**.

**PROSTAPHÆRESIS**, in Astronomy, the Difference between the true, and mean Motion, or true and mean Place, of a Planet ; call'd also *Equation of the Orbit*, or of the *Centre*, and simply the *Equation*. See **EQUATION**.

Or, which amounts to the same, *Prostaphæresis* is the difference between the mean, and equated Anomaly. See **ANOMALY**.

Thus, suppose the Circle **ALMPN** (Tab. **ASTRONOMY**, fig. 51.) the or Orbit of the Earth, surrounded by the *Ecliptic* **V**, **S**, **Ξ**, &c. and suppose **S**, the Sun ; and the Earth in **R** : the mean Anomaly will be the Arch **APR**, or, casting away the Semicircle, the Arch **PR**, or the Angle **PCR** ; and the true Anomaly, rejecting the Semicircle, will be **PSR**, which is equal to **PCR** and **CRS**. If then to the mean Anomaly, we add the Angle **CRS**, we shall have the true Anomaly **PSR**, and the Earth's Place, in the *Ecliptic*. See **PLACE**, &c.

And



And here, the Angle *CLS*, or *CRS*, is call'd the *Prosthaphæresis*; by reason it is sometimes to be added, and sometimes to be subtracted from the mean Motion, that we may have the true Motion or Place of the Earth. See *EARTH*.

The Word is form'd from the Greek *πρόσθε, ante superans*; and *ἀφαιρέσις, ademptio*.

**PROSTATES**, or **PROSTATA**, in Anatomy, a white, spongy, glandulous Body situate at the Root of the Penis; or just below the Neck of the Bladder; and about the Size of a Walnut. See *GLAND* and *PENIS*.

Authors ascribe two kinds of Substance to the *Prostata*, the one glandulous, the other spongy, or porous; which last seems nothing but a Congeries of minute Vessels and Cells; thro' the middle of which passes the *Vesicula Seminales*, without any Communication therewith.

It has excretory Ducts of its own, pretty numerous: *De Graaf* does not remember to have known them fewer than ten in the *Prostata* of a Man; in Dogs, they are sometimes an hundred; each of which discharges itself into the Urethra; some above, some below the *Caput Gallinaceum*: Each having its proper Caruncle. See *EXCRETORY*.

Out of these issues a whitish, slimy Humour, secreted in the glandular part of the *Prostata*, and convey'd into the Cavity of the Urethra.

The Use of this Humour is to line and lubricate the Capacity of the Urethra, and prevent it from being annoy'd with the Acrimony of the Urine in its Passage thro' it; and to serve as a Vehicle to the Seed, in the time of Ejaculation. See *URINE*, *URETHRA*, &c.

Some take it for a third kind of Seed; but without much reason. See *SEED*.

*Boerhaave* thinks it may serve to nourish the Animalcule during the first moments after Coition.—This Humour, he adds, remains after Castration; but is not prolific.

The same Author, from the Memoirs of the *French Academy*, makes the *Prostata* to consist of an Aggregate of twelve Glands, each of which terminates by its excretory Duct in a little Bag, into which it discharges its Humour. These twelve Bags open by as many excretory Ducts into the Cavity of the Urethra; so as to encompass the Exit of the *Vesicula*; whence the Seed and the Humour of the *Prostata* are the more accurately mix'd.

**PROSTYLE**, in the antient Greek Architecture, a Range of Columns in the Front of a Temple. See *TEMPLE*.

The Word is form'd from the Greek *πρὸς, before*, and *στυλῶν, Columns*.

**PROSYLLOGISM**, **PROSYLLOGISMUS**, is used by some School-Writers, for a Reason or Argument produc'd to strengthen, or confirm one of the Premises of a Syllogism. See *PREMISE*.

Others define the *Prosylogism*, an Argument compos'd of two Syllogisms so dispos'd, as that the Conclusion of the former is the *major*, or *minor* of the latter.

As here, *e.gr.* every Rational is risible: but every Man is rational, therefore every Man is risible; but no Ass is risible, therefore no Ass is a Man.

The *Major* of the second Syllogism may be omitted or understood; and some even contend that it ought to be so: so that on their Principle, a *Prosylogism*, or redundant Syllogism, is when two Syllogisms are so contain'd in five Propositions, as that the Conclusion of the former, is the *Major* or *Minor* of the latter. See *SYLLOGISM*.

**PROTASIS**, in the antient Drama, the first part of a Comic, or Tragic Piece; wherein the several Persons of the Play are shewn, their Characters and Manners intimated, and the Action, which is to make the Subject of the Piece, propos'd, and enter'd upon. See *DRAMA*, *TRAGEDY*, &c.

The antient *Protasis* might go about as far as our two first Acts. See *ACT*.

Where the *Protasis* ended, the *Epitasis* commenc'd. See *EPITASIS*.

The Word is form'd from the Greek *πρότασις, Protenfio*.

**PROTATICUS**, in the antient Drama, was a Person who never appear'd but in the *Protasis*, or first part of the Play; as *Socia* in *Terence's Andria*, &c.

**PROTECTION**, the Shelter, Defence, Authority, and Aid, employ'd by any one in behalf of the helpless, or unhappy. See *PROTECTOR*.

*Active Protection* supposes Power, Interest, Favour, &c. in the Person that protects: *Passive Protection*, on the contrary, implies Necessity, Weakness, and Dependence in the Person protected. See *SAFEGUARD*.

**PROTECTION** is also used for a Privilege belonging to Embassadors, Members of Parliament, &c. whereby they and their Domesticks are secur'd from Arrests, &c. See *PRIVILEGE*, &c.

**PROTECTION** is sometimes also understood of the Person of the Protector. Such a Cardinal has the *Protection* of France.—The *Protection* of Spain is become vacant by the Death of such a Cardinal. See *PROTECTOR*.

**PROTECTION**, in Law, has both a general, and a special Signification.

In the general, it is used for that Benefit, and Safety, which every Subject, Denizen or Alien, specially secur'd, hath by the Laws. See *LAW*.

In the special Signification, it is used for an Exemption, or Immunity, given by the King to a Person, to secure him against Suits in Law, or other Vexations, upon reasonable Causes moving him thereunto.

Of this, *Fitzherbert* makes two kinds; the first he calls a *Protection, cum clausula volumus*; whereof he mentions four Particulars.

1°. A *Protection, quia profecturus*, for him that is to pass over Sea in the King's Service.

2°. A *Protection, quia moraturus*, for him who is abroad in the King's Service.

3°. A *Protection* for the King's Debtor, that he be not sued or attach'd, till the King be paid his Debt.

4°. A *Protection* for a Person in the King's Service beyond Sea, or in the Marches of Scotland.

The second Form of *Protection*, is *cum clausula volumus*, which is most commonly granted to a spiritual Company, for their Immunity, from taking their Cattle by the King's Ministers; but it may be also granted to a single Person, either spiritual or temporal.

*Protection* extends not to Pleas of Dower, *Quare impedit*, Affize of novel Disseisin, Darrein Presentment, Attaints, nor Pleas before Justices in Eyre.

**PROTECTOR**, a Person who undertakes to shelter and defend the weak, helpless, or distress'd. See *PROTECTOR* and *PATRON*.

God, and the Magistrate, are the *Protectors* of the Widow and Orphan.—Among the Heathens, *Minerva* was esteem'd the *Protectress* of Arts.

Every Catholic Nation, and every Religious Order, has a *Protector* residing at the Court of Rome, who is a Cardinal, and call'd the *Cardinal Protector*. See *CARDINAL*.

The Name is sometimes also used for a Regent of a Kingdom, made choice of to govern it during the Minority of a Prince.

*Cromwell* assum'd the Title and Quality of *Lord Protector of the Commonwealth* of England.

**PROTEST**, in Law, is used for a Caution, or Call of Witness, or an open Affirmation that a Person does either not at all, or but conditionally, yield his Consent to any Act; or to the Proceeding of any Judge in a Court, wherein his Jurisdiction is doubtful; or to answer upon his Oath farther than by Law he is bound.

Any of the Lords in Parliament have a Right to *protest* their Dissent to any Bill pass'd by a Majority; which *Protest* is enter'd in form. See *PARLIAMENT*.

This Privilege is said not to be very antient: The Commons have no Right to *protest*.

**PROTEST**, in Commerce, is a Summons made by a Notary Publick to a Merchant, Banker, or the like, to discharge a Bill of Exchange, drawn on him; after his having refus'd either to accept or pay the same. See *BILL of Exchange*.

It is call'd *Protest*, because containing a Protestation, that the Party will return the Bill, and even take up Money at Interest; and charge all Costs, Damages, Carriage and Recarriage, on the Refuser.

There are two kinds of *Protests*; the one for want of Acceptance; the other for want of Payment. See *ACCEPTANCE*, &c.

The first to be made by the Bearer of the Bill at the time of presenting it, in case the Person, on whom it is drawn, refuse to accept it for the time, or the Sum there express'd.—The latter is made as the Bill falls due, whether it have been accepted or not. See *ACCEPTANCE*.

The Bearers of Bills of Exchange, that have been accepted, or which become payable at a certain Day, are oblig'd to have them either paid or *protested* within three Days after Due, on the Penalty of answering for the Omission; and it must be observ'd, that if the third Day happen to be a Holy-Day, the *Protest* is to be made on the Eve thereof.

At *Paris* and *Hambourg*, the *Protest* is to be made within ten Days: At *Venice*, where all Bills are paid in *Dance*, the *Protest* for want of Payment is to be made within six days; but then the Bank is suppos'd open, otherwise no *Protest* to be made: At *Rome*, *Protests* for want of Payment are to be made within fifteen Days: At *Leghorn*, *Milan*, and *Boulogne*, there is no time fix'd: At *Amsterdam*, they are to be made within five Days: At *Venice*, the third Day.

The Negotiants of some Places, as those of *Rome*, Mr. *Savary* observes, don't look on themselves as oblig'd to *protest* in default of Payment; but this Opinion is contrary to universal Custom and natural Reason: since, till after *Protestation*, they have no Remedy or Resource against the Drawer, or Endorser; nor any Title to be reimburs'd. M.



*M. Ricard* adds, that Bills of Exchange drawn from *Amsterdam*, or *Antwerp*, or *Spain*, are to be *protested*, in default of Payment, within fourteen Days after they fall due; after which time, the Bearer stands the risque and chance of the *non-protested* Bill, not the Drawer, or Endorser; in case the Party happens to fail after the said fourteenth Day.

**PROTESTANT**, a Name first given in *Germany* to those who adher'd to the Doctrine of *Luther*; because, in 1529, they *protested* against a Decree of the Emperor *Charles V.* and the Diet of *Spire*; and declar'd, that they appeal'd to a General Council.

The Name has been since also given to those who adhere to the Sentiments of *Calvin*; and is now become a common Name for all those of the Reform'd Churches. See **LUTHERAN**, **CALVINIST**, &c.

Great Endeavours have been made to unite the *Lutheran* Protestants with the *Calvinists*, but in vain.

**PROTESTATION**, a solemn Declaration made by some Judiciary Act or Proceeding against an Oppression, Violence, or Injustice; or against the Legality of a Sentence, Judgment, Decree, or other Procedure; importing that the Party is determin'd to oppose it at the proper time, &c. See **PROTEST**.

*Protestation*, in Law, is defin'd by Justice *Walsh*, a Defence or Safeguard to the Party that makes it, from being concluded by the Act he is about to do; so that Issue cannot be join'd upon it.

*Protestation* is a Form of pleading, when one does not directly either affirm or deny any thing alledg'd by another, or which he himself alledges. *Plowd.* fol. 276.

**PROTHESIS**, or **PROSTHESIS**, in Grammar, in the general is used for a Metaplasm. See **METAPLASM**.

But it also more particularly denotes a prefixing of something at the beginning of a Word; as in *gnavus, pronavus*.

This is also call'd *Apposition*. See **APPOSITION**.

**PROTHESIS**, or **PROSTHESIS**, among Surgeons, is the filling up of what was before wanting: Such, *e. gr.* is the filling up of fistulous Ulcers with new Flesh. See **FISTULOUS**, &c.

**PROTHESIS** is also a little Altar in the *Greek* Churches, whereon a Ceremony is perform'd, call'd by the same Name, *προthesis*.

On this Altar the Priest, with the other Ministers, prepares every thing necessary to the Celebration of Mass; *viz.* the Bread, Wine, &c. After which, they go in procession from this to the great Altar, to begin Mass; carrying with them the Species thus prepar'd. See **ALTAR**.

**PROTHONOTARY**, **PROTONOTARY**, or **PRONOTARY**, a Term properly signifying *first Notary*; and which was antiently the Title of the principal Notaries of the Emperor of *Constantinople*. See **NOTARY**.

With us, *Prothonotary* is now used for Officers in the Courts of King's Bench, and Common Pleas; the latter whereof has three; the former, one. See **COURT**, &c.

**PROTHONOTARY** of the King's Bench, records all Actions Civil, sued in that Court; as the Clerk of the Crown-Office doth all Criminal Causes. See **KING'S Bench**, **RECORD**, &c.

**PROTHONOTARIES** of the Common Pleas, enter and enroll all Declarations, Pleadings, Affidaves, Judgments, and Actions: they also make out all Judicial Writs; as the *Venire facias*, after Issue join'd; *Habeas Corpus*, for bringing in of the Jury; *Distringas Jurator*. Writs of Execution, and Seisin, of *Superfideas*, of Privilege, &c. They enroll all Recognizances acknowledg'd in that Court, all common Recoveries; make Exemplifications of Records, &c.

**PROTHONOTARY**, or **PROTONOTARY**, is also an Officer in the Court of *Rome*, who has a degree of Pre-eminence over the other Notaries.

There is a College of twelve *Prothonotaries*, call'd *Participantes*, because partaking in the Fees of the Expeditions in Chancery.

They are rank'd among the Number of Prelates, wear the Violet Rochet, the Hat, &c. They assist at all grand Ceremonies, and have a place in the Pope's Chappel.

Their Office is to dispatch the Acts in grand Causes, which the simple Apostolical Notaries dispatch in lesser Causes: they may create Apostolical Notaries, and Doctors, to officiate out of the City.

Those out of the College have none of the Privileges of the others, except the Habit.

The *Prothonotaries* were first establish'd at *Rome* by Pope *Clement I.* with design to write the Lives of the Martyrs. See **NOTARY**.

**PROTHYRUM**, *πρόθυρον*, a Porch at the outward Door of a House, or Portal. See **PORCH**.

**PROTHYRIS**, **PROTHYRIDE**, is also used by *Vignola* for a particular sort of a Key of an Arch, an Instance of which we have in his *Ionic* Order; consisting of a Roll of Water-Leaves, between two Reglers and two Fillets,

crown'd with a *Doric Cymatium*; its Figure being much like that of a Modillion.

**PROTHYRIS**, in the antient Architecture, is sometimes also used for a Quoin, or Corner of a Wall; and sometimes for a cross Beam; or over-thwart Rafter.

**PROTO**, a Word used in Composition with divers Terms in our Language; affecting them with a relation of Priority: as in *Proto-Martyr*, *Proto-Type*, &c.

It is form'd of the *Greek* *πρῶτος*, *primus*, first.

**PROTOCOLLUM**, **PROTOCOL**, a Term used in the antient Jurisprudence, for the first Leaf of a Book; wherein was the Mark of the Paper and Parchment.

It was even sometimes used for the Mark itself; which was usually in the Margin, but sometimes at the top of the Page.

The XLIVth Novel of *Justinian*, forbids the cutting of the *Protocolum* of Charters which shew'd the Year; wherein the Paper or Parchment were made, and the Officer commission'd for the Delivery of them; by means whereof, Frauds were frequently detected.

Others will have *Protocolum* to have been the first Minute, or Draught, or Summary, of an Act to be pass'd: which the Notary drew first up, in short, in little Table-Books, to be afterwards enlarg'd at leisure. See **NOTARY**.

**PROTO-FORESTARIUS**, was he whom our antient Kings made Chief of *Windsor-Forest*, to take Cognizance of all Causes of Death, or Mayhem there. See **FOREST** and **FORESTER**.

**PROTO-MARTYR**, the first Martyr, or Witness, who suffer'd Death in Testimony of the Truth; as *Abel* in the Old Testament; and *St. Stephen* in the New. See **MARTYR**.

The Word is compounded of *πρῶτος*, first, and *μαρτυρ*, Witness.

**PROTONOTARY**. See **PROTHONOTARY**.

**PROTOPLAST**, **PROTOPLASTUS**, a Title sometimes given to our First-father, *Adam*; from the *Greek* *πρωτοπλαστος*, *q. d.* first form'd. See **PLASTIC**.

**PROTOTYPE**, the Original, or Model whereon a thing is to be form'd. See **TYPE**.

It is chiefly used for the Patterns of things to be Engraven, Moulded, or Cast. See **MODEL**, **MOULD**, &c.

**PROTOTYPON**, in Grammar, is sometimes used for a primitive or original Word. See **PRIMITIVE**.

**PROTRACTING**, or **PROTRACTION**, in Surveying, the plotting, or laying down of the Dimensions taken in the Field; by means of a *Protractor*, &c. See **PROTRACTOR** and **PLOTTING**.

*Protracting* makes one half of Surveying. See **SURVEYING**.

**PROTRACTING-PIN**, a Mathematical Instrument; or rather, an Appendage of an Instrument call'd a *Protractor*.

The *Protracting-Pin* is a fine Needle, fitted into a Handle; used to prick off Degrees and Minutes from the Limb of the *Protractor*. See **PROTRACTOR**.

**PROTRACTOR**, an Instrument used in Surgery, to draw out any foreign or disagreeable Bodies from a Wound, or Ulcer, in like manner as the Forceps. See **FORCEPS**.

**PROTRACTOR**, is also an Instrument used in Surveying; whereby, the Angles taken in the Field with a *Theodolite*, *Circumferentor*, or the like, are plotted or laid down on Paper. See **PLOTTING**.

The *Protractor* consists of a Semi-circular Limb B A C (Tab. **SURVEYING**, Fig. 29.) of Brass, Silver, Horn, or the like, divided into 180°, and subtended by a Diameter B A; in the middle whereof is a little Notch or Lip, *o*, call'd the Centre of the *Protractor*.

On the Limb of the *Protractor* are, sometimes, also placed Numbers, denoting the Angles at the Centers of regular Polygons: Thus, against the Number 5, denoting the Sides of a Pentagon is found 72, the Angle at the Centre of a Pentagon. See **POLYGON**.

#### Use of the PROTRACTOR.

1. To lay down an Angle of any given Quantity, or Number of Degrees. Suppose, *e. gr.* an Angle of 50° with the Line A o B, required on the Point *o*. Lay the Centre of the *Protractor* on the given Point, and the Diameter of the *Protractor* on the given Line. Make a Mark against the given Degree 50, on the Limb of the *Protractor*; thro' which, from the given Point draw a Line *o p*: This gives the Angle required.

2. To find the Quantity of a given Angle: *E. gr.* the Angle *p o A*; lay the Centre of the *Protractor* on the Point of the Angle, *o*, and the Diameter on the Line. The Degree of the Limb cut by the other Line *o p*, *viz.* 50, is the Number of Degrees of the Angle requir'd.

3. To inscribe any given regular Polygon, *e. gr.* a Pentagon in a Circle. Lay the Centre and Diameter of the *Protractor* on the Centre and Diameter of the Circle; and  
10 U make



make a Dot against the Number of Degrees of the Angle at the Centre, viz. 72. Thro' this Dot, and the Centre of the Circle, draw a Line cutting the Circumference of the Circle. To the Point of Intersection, from the Point where the Diameter cuts the Circumference, draw a right Line: This Line will be a Side of the Pentagon, which being taken in the Compasses, and set off as often as it will go, in the Circumference, will give Points, which being connected by Lines, will form the Pentagon requir'd. See POLYGON.

4. To describe any regular Polygon, e. gr. an Octagon on a given Line. Subtract the Angle at the Centre, which the Protractor gives,  $45^\circ$  from  $180^\circ$ , the Remainder  $135^\circ$  Degrees, is the Angle included between two Sides of the Octagon; one half whereof is  $67\frac{1}{2}$ . Applying then the Diameter of the Protractor over the given Line, with the Centre over one Extreme; make a Dot against  $67\frac{1}{2}$ , to which from the Centre draw a Line. Apply the Protractor to the other end of the Line, so as the Centre be over the Extreme, and there set off another Angle of  $67^\circ\frac{1}{2}$ . From the Point where the two Lines thus drawn intersect, as a Centre, describe a Circle, with the interval of the given Line. The given Line will be one Side of the Octagon, which being set off as often as it will go in the Circumference thus drawn, will give Points, which being connected, will form the Octagon required.

PROTRACTOR Improved, is a Machine like the former, only furnish'd with a little more Apparatus, whereby we are enabled to set off an Angle to a Minute; which is impracticable in the other.

The chief Addition is an Index fitted on the Centre, and movable thereon; so as to play freely and steadily over the Limb. Beyond the Limb the Index is divided, on both Edges, into 60 equal parts of the Portions of Circles, intercepted by two other right Lines drawn from the Centre, so as each makes an Angle of one Degree with Lines drawn to the assumed Points from the Centre.—Now to set off an Angle of any Number of Degrees and Minutes with this Protractor; move the Index so, that one of the Lines drawn on the Limb, from one of the forementioned Points, may be upon the Number of Degrees given: And prick off as many of the equal parts on the proper Edge of the Index, as there are Minutes given: thus, drawing a Line from the Centre to that Point so prick'd off, you have an Angle with the Diameter of the Protractor, of the proposed Number of Degrees and Minutes.

Indeed, it may be of good Use to lay down an Angle to a Minute, when we are able to take it to a Minute: But till we have other-guise Needles, and juster Theodolites, than are yet made, the old Protractor may serve very well. See THEODOLITE.

PROTUBERANCE, in Anatomy, an Eminence, or Tumour that projects, or advances out beyond the rest.

The Orbicular Protuberances of the third Ventricle of the Brain are call'd Nates; and the Apophyses of the Orbicular Protuberances, Testes. See NATES and TESTES.

The Annular Protuberance is a process of the Medulla Oblongata, in form of a Ring; whence its Name, first given it by Willis. See MEDULLA Oblongata.

PROVEDITOR, PROVEDITOUR, or PROVEDITORE, an Officer in several parts of Italy, particularly at Venice.

There are various kinds of Proveditors in Venice: as Proveditor of the Commons; who is nearly the same with the Aediles among the Romans; the Consuls in Languedoc; and the Sheriffs in other Cities. Of these Proveditors there are three.

Proveditor General of the Sea, is an Officer whose Authority extends over the whole Fleet, when the Captain-General is absent. He has, particularly, the Disposal of the Cash, and pays the Seamen and Soldiers. The Captain-General, and Proveditor, are mutually Spies over one another. Tho' the Proveditor be inferior to the General; yet is the Power so divided, that one has Authority without Strength, the other Strength without Authority.

The Proveditore alle Ragione vecchie, alla Biave, alla Giustizia, have the Direction of Matters relating to Policy throughout the Signory.

PROVEND, or PROVENDER, is properly a sort of Bushel, or Vessel containing the Measure of Grains daily given to a Horse or other Beast of Labour, for his ordinary Subsistence.

Hence Provender is become a general Name for all Food of Cattel.

In Monasteries, when the Religious go to Meals; they are said to go to Provend.

Some derive the Word from the Latin *Præbendo*, Prebend. See PREBEND.

PROVER, in Law, Probator, an Approver; or a Person who, confessing Felony, appeals, or accuses another of the same.

He is thus call'd, because he must prove what he alledges in his Appeal; which Proof is either by Battel, or by the Country, at his election who is appealed. See TRIAL, COMBAT, &c.

39 Edw. 3. coram Rege, Rot. 97. Suff. A Man became an Approver, and appealed five, who all join'd Battel with him, and he overcame 'em all; four of 'em were accordingly hang'd, and the fifth pleaded he was a Clerk. The Prover was pardon'd.

PROVERB, is defined by Camden a concise, witty, and wise Speech; grounded upon long Experience, and containing, for the most part, some good Caveat.

We are furnish'd with Instances out of his own Collection: Such are, *A close Mouth catches no flies.*—*A high Building, a low Foundation.*—*A carrion Kite will never be a good Hawk.*—*A short Horse is soon curried.*—*A Man may lose his House well, tho' he ride not on the Ridge.*—*A false Knave needs no Broker.*—*Better to spare at Brim than at Bottom, &c.*

PROVIDENCE, PROVIDENTIA, the Conduct and Direction of the several Parts of the Universe, by a superior, intelligent Being. See UNIVERSE.

The Notion of a Providence is very antient, even in the Heathen Theology; we find Thales mentions it.

It is founded on this Supposition, That the Creator has not so fixed, and ascertained the Laws of Nature, nor so connected the Chain of second Causes, as to leave the World to itself; but that he still preserves the Reins in his own hands, and occasionally intervenes, alters, restrains, enforces, suspends, &c. those Laws by a particular Providence. See MIRACLE.

Indeed, some use the Word Providence in a more general Sense; signifying by it, that Power, or Action whereby the several parts of the Creation are ordinarily directed.

Thus Damascenus defines Providence to be the Divine Will, whereby all things are order'd, and directed to the proper End: Which Notion of Providence, supposes no Laws at all fixed by the Author of Nature at the Creation; but that he reserved it at large to be govern'd by himself occasionally. See NATURE.

The Antients call'd Providence by the Names of Fate, Fortune, Nature, Destiny, Necessity, &c. See FATE, FORTUNE, &c.

The antient Egyptians seem to have been the first who had the Notion of a Divine Providence: Arnobius observes they reason'd thus,—“ Providence is so essential to a Prince, that without it he cannot be, nor even be call'd, a Prince; and the more August a Prince is, the more perfect ought his Providence to be. Since, then, God is the Greatest and most august of all Princes, to him must belong the most perfect Providence.”

The Epicureans deny any Divine Providence; as thinking it inconsistent with the Ease and Repose of the Divine Nature to meddle with human Affairs. See EPICUREAN.

Others deny the Existence of a Providence, from the seemingly unjust Distribution of Good and Evil, which seem to fall indiscriminately on the Just and Unjust.

Simplicius argues thus for a Providence: If God don't look to the Affairs of the World, 'tis either because he cannot, or will not: But the first is absurd; since to govern can't be difficult, where to create was easy: The latter is both absurd and blasphemous. See GOD.

PROVIDENTIAE, in old Law-Books, were Provisions of Eating and Drinking. See POURVEYANCE.

*Providentia Vini ante adventum suum in Cellaria erat Centum Dolorum.* Knighton, Anno 1354.

PROVINCE, PROVINCIA, among the Romans, was a Country conquer'd by them, without the Bounds of Italy; govern'd by a Deputy, or Lieutenant; and having peculiar Laws and Privileges.

Of these Countries, that part of France next the Alps was one, and still retains the Name Provence.

Nicod derives the Word, à *procul vivendo*, living a-far off.

Among us, PROVINCE is used for the Extent of an Archbishop's Jurisdiction; in which sense, England is divided into two Provinces, those of Canterbury and York.

PROVINCE is now chiefly used for a Canton or Division of a Kingdom, or Common-wealth comprehending several Cities, Towns, &c. all under the same Government, and usually distinguish'd by the Extent of a Civil or Ecclesiastical Jurisdiction.

The Provinces were antiently Dutchies, Counties, &c. which have been since all reunited under the same Chief. See DUKE, COUNT, &c.

The Church distinguishes its Provinces by Archbishopricks; each containing a certain Number of Bishopricks. See ARCHBISHOP.

The Monks make particular Divisions of their Provinces, according to the Antiquity and Number of Convents in each. See PROVINCIAL, ORDER, &c.

The United Provinces are the seven Northern Provinces of the Low-Countries, who, revolting from the Spanish Dominion, made a firm and perpetual Alliance, Offensive and Defensive, at Utrecht in the Year 1579. See STATES General.



PROVINCIAL, PROVINCIALIS, something relating to Province. See PROVINCE.

Thus we say, a *Provincial Council*, or *Synod*, &c. See SYNOD and COUNCIL.

PROVINCIAL, in the Monastic sense, is a Person who has the Direction and Superintendancy of the several Convents of a Province; according to the Division established in that Order. See ORDER, CONVENT, &c.

The General of the Order has several Provinces under him; the *Provincial* several Priors, Abbots, &c. See GENERAL, ABBOT, &c.

PROVINE, of the *French Provigner*, signifies to lay a Vine-Stock, or Branch, in the Ground, to take Root. See VINE, PROPAGATION, &c.

PROVISION, any thing got, or procured as necessary for the Subsistence of Life.

PROVISION, in Traffick, is used for the Wages due to a Factor. See FACTORAGE.

PROVISION, in the Canon-Law, the Title, or Instrument, by virtue whereof an Incumbent holds, or is provided of a Benefice, Bishoprick, or the like. See TITLE, BENEFICE, &c.

Ordinary Collators give *Provisions* in Case of Vacancy by Death, pure and simple Demission and Permutation. See COLLATOR.

The Court of Rome grants *Provisions* by Resignation, Devolution, Prevention.

*Provisions by Prevention*, are call'd *Gratie Expectativa*, or *Mandata de Providendo*; of the great Abuse whereof throughout England, frequent Complaint was made in our ancient Statutes, and a Remedy provided for the same by the Statute of *Premunire*. See PREVENTION, PRÆMUNIRE, &c.

*Provisions* of small Benefices, in the Court of Rome, are only simple Signatures, which are, as it were, Minutes of the Bull; because the Bulls themselves dispatch'd on Parchment would be too expensive. The Signature is no more than the Request of the Impetrant answer'd by the Pope in these Words; *Concessum uti petitur in presentia D. N. Papæ*, wrote in the Hand of the Prelate who presides over the Signature. See BULL.

Extraordinary *Provisions* are sign'd by the Pope himself, in these Words, *Fiat ut petitur*, with the first Letter of his Name. See SIGNATURE.

PROVISO, in Law, a Condition inserted in a Deed, upon the Observance whereof the Validity of the Deed depends. See CONDITION, &c.

Sometimes the Word imports a Covenant. See COVENANT.

PROVISO hath also another signification, in Judicial Matters; as, if the Plaintiff desist from prosecuting an Action, by bringing it to a Trial; the Defendant or Tenant may take out a *Venire facias* to the Sheriff, having in it these Words, *Proviso quod*, &c. to the end, that if the Plaintiff take out any Writ to that purpose, the Sheriff shall summon but one Jury upon them both: In which Case it is call'd, going to Trial by *Proviso*.

PROVISO is also a Sea-Term. A Ship is said to moor a *Proviso*, when she has an Anchor out, and also a Hawser ashore; and so is moor'd with her Head to the Shore with two Cables. See MOORING.

PROVISOR, is generally taken for him that hath the Care of providing things necessary; in which sense it coincides with *Purveyor*. See PURVEYOR.

PROVISOR *Monasterii*, is used for the Steward, or Treasurer of a Religious House.

PROVISOR, in our Statutes, is a Person who sued to the Court of Rome for a *Provision*. See PROVISION.

These were prohibited by Proclamation 42 Hen. 3. Ann. 1258. *Provisores dicuntur qui vel Episcopatum, vel Ecclesiasticam aliam dignitatem in Romana Curia sibi ambiebant de futuro, quod ex Gratia expectativa nuncuparunt, quia usque dum vacaret expectandum esset.* Spelm.

PROVOCATIVE, in Physic, a Medicine which strengthens Nature, and stimulates or incites to Venery.

Such are Cantharides, &c. See CANTHARIDES.

PROVOST, *Prepositus*, an Officer, whereof there are divers Kinds; Civil, Military, &c.

Provost of the City, or of the Merchants, is the Chief Municipal Magistrate in several considerable trading Cities, particularly *Edinburgh*, *Paris*, and *Lyons*; much the same with the Mayors in other Places. See MAYOR.

The Provost presides at the City-Courts, and, together with the Sheriffs, decides all Differences relating to Trade and Merchandize; takes cognizance of the Affairs of Officers of Policy of the City with regard to their Functions; of the Delinquencies of Merchants, Commissioners, and Factors; inspects the Ports, Rivers, the Duties, Imposts, &c.

Authors attribute the Institution of Provost of the Merchants of Paris to Philip Auguste. Du Haillan refers its Epoch to the Year 1190.

The Lord Provost of *Edinburgh* is principal Sheriff; the Bailiffs are his Deputies; he calls Conventions of the Boroughs by his own Missives.

PROVOST, or PREVOT Royal, is a sort of inferior Judge established throughout France; for the taking cognizance of all Civil, Personal, Real, and Mixed Causes, among the People; but without any Jurisdiction in the Causes of Nobles.

These in the *Bourbonnois*, *Auvergne*, &c. are call'd *Chatelains*; in *Normandy*, *Vicomtes*; in *Languedoc* and *Provence*, *Viguiers*.

Grand Provost of France, or of the Household, is a Judge of the Sword; who has Jurisdiction in the King's House, and over the Officers therein; looks to the Policy and Regulation thereof; the Rates of Provisions following the Court, &c. He was antiently call'd *Roi des Ribauds*.

Grand Provost of the Constable, a Judge of the Sword, who manages the Processes against the Soldiers in the Army who have committed any Crime. He has four Lieutenants distributed throughout the Armies, call'd *Provosts of the Army*; and particular *Provosts* in the several Regiments.

Provost General of the Marine, an Officer who manages the Processes against the Marines when guilty of any Crime; and makes report thereof to the Council of War. There is also a Marine Provost in every Vessel, who is a kind of Goaler, and takes the Prisoners into his Care; and keeps the Vessel clean.

Provosts of the Marshals, are a kind of Lieutenants of the Marshals of France, established for the Security of the Country against Rogues, Vagabonds, and Deserters. They take cognizance of Royal Cases; which, for this Reason are call'd *prevotal Cases*; such are all Crimes committed by Strollers, or People without any fixed Abode; Robberies on the High-way, Infraction of Safe-guard, Burnings, &c. They pronounce *en dernier ressort*.

There are 180 Seats of these Provosts in France. Their chief Jurisdiction regards High-way-men, Foot-pads, House-breakers, &c. and correspond to the Officers establish'd by Augustus and Tiberius, call'd, as Cujas tells us, *Latrunculatores*; to shew, that their Office was to pursue Thieves.

Provost of the Mint, is a particular Judge instituted for the apprehending and prosecuting of false Coiners. See MINT.

Provost Marshal of an Army, is one appointed to secure Deserters, and all other Criminals. See MARSHAL.

He is to go often abroad round the Army to hinder the Soldiers from pillaging: It is his Office to indict Offenders, and to execute the Sentence pass'd upon them. He likewise regulates the Weights and Measures, and the Price of all Provisions, &c. in the Army.

There is also a Provost Marshal in the Navy, who hath Charge of the Prisoners taken at Sea.

Provost of an University; see UNIVERSITY.

PROW, in Navigation, the Head, or Fore-part of a Ship. See SHIP.

In the Front hereof is the Beak, that cuts the Water to make way for the Vessel.

The Prow is lower than the Poop, and contains fewer Stories or Decks. On the Beak is usually some Hieroglyphic, which often gives Name to the Vessel.

In strictness, however, the Prow is said to be only that part of the Fore-Castle which is aloof, and not in the Hold; particularly that between the Chase and the Loof.

The Antients represented Beaks of Birds in the Prows of their Ships, whence they were call'd *Rostra*.

The Word Prow is form'd from the Latin *Prora*, which signifies the same thing.

PROXIMITY, of the Latin *Proximitas*, denotes the Relation of Nearness, either in respect of Place, or Blood, or Alliance. See VICINAGE, CONSANGUINITY, &c.

PROXINETA, or PROXINETES, a Broker, or Manager between two Persons. See BROKER.

The Word is chiefly used for those who negotiate Offices, Marriages, &c.

The Roman Law grants the *Proxinetes* an Action for recovery of their Salaries. The Word is Greek *προξενος*, Broker.

The Latins give 'em a more honourable Appellation, calling 'em *Interpreters*. See INTERPRETER.

These made a kind of Office, or College in Rome: To them the Fathers address'd themselves, to sound and examine the Inclinations of the young Men they intended for their Daughters.

A Commentator on the Digest, accounts it a great Defect in the modern Policy, that there are not now any of these *Proxinetes* or Match-Makers established by public Authority.

PROXY, Procurator: a Deputy, or Person who officiates in the room of another. See PROCURATOR.

Princes are usually married by Proxies.

Proxy, Procuracy, among Civilians, is also a Commission given



given to a Proctor by a Client to manage a Cause in his behalf. See PROCTOR.

PRUINA, in Physiology, *Hoar-Frost*; a Concretion of the Dew, made by the violence of the external Cold. See DEW and FREEZING.

PRUNELLA, in Medicine, a dryness of the Tongue, and Throat, happening in continued Fevers, especially acute ones; accompanied with a heat and redness of the Throat, and a Scurf covering the Tongue; sometimes whitish, and sometimes blackish. See FEVER.

Some give the Name *Prunella* to the Quinzy. See SQUINANCY.

PRUNELLÆ Sal, in Pharmacy, is a Preparation of purify'd Salt-Petre; call'd also *Lapis Prunellæ*, and *Crystal Mineral*. See SALT Petre, CRYSTAL, &c.

It is prepared, by separating and absorbing some of the more volatile parts of the Salt-Petre; which is done by burning upon it, when melted in a Crucible over the Fire, about a thirtieth part of its Weight of Flower of Brimstone.

'Tis given to cool, and provoke Urine in Fevers, and Quinzies; tho some think that Salt-Petre, purify'd three or four times, would be a better Medicine.

The *Sal Prunellæ* is frequently adulterated with Alum; the Deceit is known by its Whiteness and Glittering.

PRUNES, are Plumbs dried, and baked in an Oven, or in the Sun.

The *Prunes* chiefly used among us, are black, and large; brought from *Bourdeaux*: Great Quantities are used by the *English* and *Dutch*.

The Word comes from the *Latin Pruna*, Plumb. The Juice of *Prunes* is esteem'd laxative.

PRUNIFEROUS Trees, or *Shrubs*, the *Plumb-bearing kind*; are those whose Fruit is pretty large, and soft, with a Stone in the middle. See TREE and FRUIT.

In this kind, the Flower adheres to the bottom of the Base of the Fruit.

PRUNING, in Gardening, and Agriculture, the Operation of lopping, or cutting off the superfluous Branches of Trees; either to dispose them to bear better, to grow higher, or appear more regular. See TREE, &c.

*Pruning* is one of the most important Branches of the Gardeners Province; and that whereon the Weal, or Woe of his Fruit-Trees, as well as the Air and Regularity of his Garden, in great measure depends. See GARDEN.

'Tis sometimes practis'd, purely, for the trimming or adjusting of Trees to the Eye, by taking away irregular Branches; as in Box, Holly, Yew, &c.

Sometimes to make the Stem grow fairer, and rise higher; by taking off all the large Branches arising out of it; and thus sending the Sap, which would otherwise be expended by them, to the Top of the Tree, to nourish, and prolong the same.

But its more ordinary use is to render the Tree more fertile, and to mend its Fruit; by retrenching such useless Branches as might impoverish the Trunk, and consume the Juice necessary to nourish the Branches that bear. See VEGETATION.

*Pruning* is an annual Operation; the Amputation is sloping; sometimes stump-wise. Its best Season is about the end of *February*; tho' it may be begun as soon as the Leaves are off, viz. in *November*; and continu'd to the time fresh Leaves come on, viz. in *April*.

As the Gardener has usually three kinds of Trees to manage, viz. some too weak, others too strong, and others in a just plight; he will find *Pruning Work* thro' all that space; it being proper to *prune* some sooner, and some later. The weaker and more languishing a Tree is, the sooner it ought to be *pruned*, to ease it of its offensive Branches; and the more vigorous the Tree is, the longer may the *Pruning* be defer'd. See PINCHING and BRANCH.

#### Practice of PRUNING Fruit-Trees.

For *Pruning a Tree of the first Year*; i.e. a Tree planted the Year before: If it have only shot one fine Branch from the middle of the Stem, it must be cut to that Branch; and the Branch shorten'd to four or five Eyes, or Buds: the effect of which is, that the next year, there will be at least two fine Branches opposite to each other.

If the Tree produce two fine Branches, well plac'd with weak ones among them; all requir'd is to shorten them equally, to the Compass of five or six Inches in length; Care, however, being taken, that the two last Eyes, or Buds, of the Extremes of the Branches thus shorten'd, look on the right, and left, on the two bare sides; that each may bring forth at least two new ones, and the four be so well plac'd, that they may be all preserv'd. If one of the two Branches be much lower than the other; or both on one side, or the like; only one is to be preserv'd, and that the fittest to begin a fine Figure: The other to be cut off so close, as that it may never be able to produce thick ones

in the same place.——If a Tree have put forth three or four Branches, all in the Extremity, or a little beneath; they must be all *pruned* by the same Laws as the two above-mention'd: If they be equally thick, they are to be used alike; if some of them be smaller than the rest, they must only be *pruned* with a prospect of getting a single Branch each; taking care to have it on that side which shall be found empty: in order to which, they should be shorten'd to an Eye, or Bud, that looks on that side; and the same care to be taken in the larger, in order to begin to fill up the better. If these fine Branches shoot a little below the Extremity, 'tis but shortening the Stem to 'em: On the contrary, if the Branches be most of them ill ones; two, at least, if possible, are to be preserv'd, and *pruned* in the same manner as the two fine ones, above. Good, weak Branches, are to be carefully preserv'd for Fruit; only cutting them a little at the Extremity, when they appear too weak for their length: Not failing to take away all the sapless Branches.——If the Tree has produc'd five, six, or seven Branches; 'tis sufficient to preserve three or four of the best: the rest to be cut quite off, at least if they be thick; for if they be weak, i.e. fit for Fruit-Branches, they should be kept till they have perform'd what they are capable of doing. And if among the great ones, there happen to be many small ones; two or three of the best, only, to be preserv'd; pinching off the Ends of the longest.

*Pruning of a Tree of the second Year*: If, having put out two fine Wood-Branches, and one or two small ones for Fruit, the first Year; the Sap have alter'd its Course in the second Year, from the thick Branches to the small ones; so that the small become Wood; and the large, Fruit-Branches: The Productions of the former must be quite cut off into the Mother-Branch, and those of the latter used as Fruit-Branches.——If a Tree, from the first Year's *Pruning*, have produc'd four or five Branches, or more; it must needs be very vigorous: for which reason it may be sometimes adviseable to preserve those Branches, even tho' they be not necessary to the Figure of the Tree; but only to consume part of the Sap, which might otherwise be prejudicial to the Fruit-Branches: These superfluous Branches may be left long, without much ill consequence; but those essential to the Beauty of the Tree, must be all *pruned* a little longer than those of the preceding Year; i.e. about two, or at most three Eyes, or a good Foot. This is making an advantage of the Vigour of the Tree; which, without this, would not yield Fruit in a long time: the redundant Sap converting all the Eyes into Wood-Branches; which, with a more spare Diet, would have been Fruit-Branches. In these vigorous Trees, some Branches cut stump-wise, are to be left on, and even some thick ones, tho' of false Wood, especially where there are any necessary to the Form of the Tree; to employ the Excess of Sap, and prevent its doing mischief. Still more to assuage its Violence, it may be necessary to preserve many long, good, weak Branches, when plac'd so as to occasion no Confusion; and even on the thick Branches, a good number of Outlets for the Sap to range in.——Be it a general Rule, rather to spare the lower Branches, and cut off the higher, than the contrary: By this means, the Tree spreads more easily to the bottom of the Wall.

*Pruning of a Tree the third Year*: In a Tree that has been planted four Years, and *pruned* twice; if it be vigorous, as many old Branches as possible are to be preserv'd, especially for Fruit: If it be weak, it must be eased of the Burden of old Branches, as well those for Fruit, as Wood. It must likewise be cut short, to enable it to shoot out new ones; which, if it cannot do with Vigour, let it be pull'd up; and a new one, with fresh Earth, planted in its place.

In all *Pruning*, Provision to be made for Branches to proceed from those now under the *Pruning-Knife*; to prepare such as may be proper for the Form: with this assurance, that when the high Branch is taken down from over the lower; this latter being reforc'd with the Sap that would have gone to the former, will certainly produce more Branches, than it would have done without such Reinforcement.

#### General Laws, or Rules, of PRUNING Fruit-Trees.

1. The more the Branches shoot horizontally, the after and better dispos'd the Tree is to bear Fruit; consequently, the more upright the Branches, the more inclin'd is the Tree to increase in Wood; and the less in Fruit.

Hence, ever take care to keep the middle of a Tree from great Wood, or thick Branches; and as those increase, and grow upon you, cut them out entirely; for there is no danger but the place will be soon fill'd with better and more fruitful Wood.

In Dwarfs, you are to prune all open, and clear of Wood, leaving none but horizontal Branches; and in Wall-Trees, if you do but furnish your Walls with horizontal Branches, Nature



Nature will provide for the middle. Chuse therefore such Shoots as are not over-vigorous, to furnish bearing Branches.

2. Take care the Tree be not left over full of Wood; nor even of bearing Branches: as is frequently seen in the Management of Peaches, Nectarines, and Cherries.

Nature cannot supply them all with Juice enough; whence, none will be supply'd well: the consequence of which is, that either the Blossoms will fall off, or the Fruit will dwindle. 'Tis certain, a multitude of Branches crowding on one another, produces neither so good, nor so much fruit, as where there is a convenient Space; beside the disagreeable Effect of crossing one another.

3. All strong and vigorous Branches are to be left longer on the same Tree, than weak and feeble ones: consequently, the Branches of a sickly Tree must be *pruned* shorter, and fewer in number, than those of a strong healthful Tree.

4. All Branches shooting directly forward from Trees that grow against a Wall, are to be *pruned* close to the Branch whence they spring, &c.

5. When a Branch well plac'd, either against a Wall, or in a Dwarf, has shot some false Wood, neither fit for the Figure, nor the Fruit; *prune* it off within the Thickness of a Crown piece, or slopingly; tho' this is best *pinched* off in the beginning of Summer.

6. Cut off all Branches arising from hard Knobs, whereon Pear-stalks grew; or from short strait Branches, like Spurs.

7. If a Tree, in its Years, have produc'd Branches of moderate Vigour, and afterwards puts forth strong ones, well plac'd, tho' of false Wood; the latter may be used as the Foundation of the Figure, and the other kept a time for bearing Fruit.

8. When an old Tree shoots stronger Branches towards the bottom than the top, and the top is in ill Case, cut it off, and form a new Figure from the lower ones. If the top be vigorous, cut off the lower ones, unless well plac'd.

9. The Order of Nature in the Production of Roots and Branches, is, that a Branch is always less than that out of which it shoots: If this Order be inverted, use them as false Wood.

10. Regard to be always had to the Effects of former *Pruning*; in order to correct its Defects, or continue its Beauties.

11. In vigorous Trees, the weaker Branches are the Fruit-bearers. In weak Trees, the stronger, chiefly; therefore in the latter, *prune* off the feeble and small.

12. In vigorous Trees, three good Branches may put forth at one Eye, or Bud: In which case, the two Side-Branches are generally to be preserv'd, and the middle-most cut off in *May* or *June*.

13. It is difficult to strengthen a weak Branch, without cutting off others above it: Sometimes it can scarce be done, without cutting off the End of the Branch it shoots out of.

14. The *Pruning* of vigorous Peach-Trees to be defer'd till they are ready to blossom, the better to know which are likely to bear Fruit.

15. Fruit-buds next the Ends of Branches, are commonly thicker, and better fed, than others. In weak Trees, therefore, it may be best to *prune* them early, that the Sap may not waste itself in such parts as are to be retrench'd.

16. The farther a weak Branch is from the Trunk, the less Nourishment it receives; and therefore the more it is to be shorten'd: but thick Branches, the more distant they are from the Heart, the more they receive; and are therefore to be remov'd, that the Vigour may extend itself to the middle, or lower part.

17. A Branch for Wood must never be *pruned* without special occasion; as where they annoy others.

18. If an old well-liking Tree be disorder'd with false Wood, thro' ill *Pruning*, or want of *Pruning*; take it lower, by cutting off a Branch or two, yearly; till it is sufficiently reduc'd. Some Trees put forth so vigorously, that they cannot be reduc'd to compass in one year, but must be allow'd to extend themselves, otherwise they will produce false Wood.

19. All Trees have a predominant Branch or two, if not more; yet the more equably the Vigour is divided, the better: Where it runs much on one side, it is faulty.

20. The Buds of all Stone-Fruit frequently form themselves the same year in which the Branch they grow on, is form'd: the same holds of Pears and Apples; tho' 'tis generally, at least, two or three Years, e'er the latter come to perfection.

21. All Shoots put forth in Autumn, are to be *pruned* off, as naught: The same may be said of all sapless Branches.

22. When a Tree puts forth much stronger Shoots on one side, than the other; a great part of the strong ones must

be cut off close to the Body, or some of them stump-wise.

23. In all Trees, less Length to be allow'd the weak, than strong Branches.

24. Upper Branches to be cut off, close to others, that they may heal over: Lower Branches to be cut sloping, or at a little distance, that new ones may grow out of them.

25. If a young crooked Tree produce a fine Branch beneath the Crook; cut the Head off close to the Branch.

26. Tho' five, six, or seven Inches, be the ordinary Lengths Wood-branches are left at; yet must this be vary'd, on occasion of the Vigour or Weakness of the Tree, Thickness or Smallness of the Branch, the Fullness or Vacuity of the Place, &c.

27. Be careful not to *prune* many thick Branches; standing over weak ones; lest the Sap, which fed the larger, flow so plentifully into the less, as to occasion them to put forth much ill Wood and Suckers.

28. Branches shot from the Ends of others, are usually good Wood; sometimes it happens otherwise, and then they must be *pruned*.

As to the grand yearly *Prunings*—Fruit-Branches being of short continuance, and perishing the first year wherein they produce Fruit, are to be cut off, unless they put forth Shoots for Blossoms the succeeding Year. In the second *Pruning*, about the middle of *May*, where the Fruit so is close, as to be like to obstruct each other, some of them and their Branches to be taken off; as must also the multitude of young Shoots that cause Confusion. Branches more luxurious than others, to be cut clear off. To preserve old Trees, they must be disburden'd, by leaving few Branches for Wood on them; and those to be shorten'd to five or six Inches; and very few weak ones, and none dry, and nigh walled.

#### PRUNING of Forest or Timber Trees.

For large Trees, 'tis best not to *prune* them at all; yet if there be an absolute Necessity for it, avoid taking off large Boughs as much as possible; and observe the following Rules.

1. If the Bough be small, cut it smooth and close, that the Bark may soon cover it; and sloping, that the Water may run off.

2. If the Branch be large, and the Tree old, cut it off at three or four Foot from the Stem, or where any young Shoots are found issuing out of it.

3. Boughs growing upright, not to be cut cross over, but sloping upwards. In Boughs leaning from the Head, the Slope to be on the lower side.

4. If the Tree grow crooked, cut it off at the Crook, sloping upwards; and nurse up one of the most promising Shoots for a new Stem. Indeed, in Trees that have great Piths, as the Ash, Walnut, &c. we must be cautious of cutting off the Heads.

5. If the Tree grow top heavy, its Head must be lighten'd; and that rather by thinning the Boughs that grow out of the main Branches, than by cutting off the main Branches themselves. But if you would have them spring, 'tis best done by rubbing off the Buds, as they put out in the Spring, and shredding up the Side-Shoots.

6. If the Side-boughs still break out, and the Top be able to sustain itself, give the Boughs that put forth in Spring, a *Pruning* after *Midsummer*; cutting them very close. This will cause the Bark to cover and kill them, so as never to shoot out again; and is the only Method to make a Tree grow with a fine, strait, handsome Body.

PRUNING of Vines. See VINE.

PRURITUS, a Sensation of the Skin, popularly call'd *Itching*; which is supposed to arise hence, that the Extremities of the Capillary-Veins being obstructed, cannot take up the redundant Blood of the Members, to carry it back again to the Heart; whence, as there is a fresh Stock of Blood continually sent into the part by the incessant Pulsation of the Heart, the Fibres become preternaturally stretch'd or distended: And hence the uneasy, titillating Sense of *Itching*.

PRYTANEUM, in Antiquity, a considerable Building in *Athens*, where the Council of *Prytaneis* assembled, and where those who had render'd any signal Services to the Commonwealth, were maintain'd at the publick Expence. See PRYTANEUS.

PRYTANEUS, in Antiquity, the first Magistrate in most of the Cities of *Greece*.

At *Athens*, there were fifty *Prytaneis*: at *Corinth*, there was but one; who was, there, the same what the *Archon* was at *Athens*. See ARCHON.

The *Prytaneis* of *Athens* were the Senators who compos'd the grand Council that governed the State; and corresponded to what we now call, *The States General of the United Provinces*.



Fifty of these were chose each Year out of each Tribe; and to these were nominated fifty more, to supply the places of the former, in case of Death or Male-administration.

The Tribes took the Government by turns; each after other, for the space of thirty-five Days.

All the fifty *Prytanei* of the Tribe did not govern together during those five Weeks; but in Companies, ten at a time, chosen by Lot; seven Days each Company: After which, another Tribe came into play; and had its five Weeks after the same manner.

This was an Establishment of *Solon*. *Scaliger* is mistaken, when he says the Tribes took their Turns every day. See **TRIBE**.

**PSALM**, a Divine Song, or Hymn. See **SONG**, and **HYMN**.

The Word is now appropriated to the *CL Psalms* of *David*; and the Name *Canticle*, or *Song*, given to other pieces of the same kind, composed by other Prophets and Patriarchs.

The Antients, as is observ'd by *St. Augustin*, made this difference between a *Canticle* or *Song*, and a *Psalm*; that the former was sung solitarily, or by the Voice alone; but the latter accompany'd with a Musical Instrument.

The *Psalms*, in the antient Editions, are divided into five Books; nor is *David's* Name found at the Head of more than seventy-three of them; tho' some, and among the rest, *St. Augustin*, and *St. Chrysostom*, attribute all the hundred and fifty to him without exception.

The *Jews*, however, were always of another Sentiment; and 'tis certain there are some few, at least, that are not his——*St. Jerom* observes, among the Number, several that were composed long time after *David*. *Du Pin* adds, that 'tis difficult to ascertain the Authors; all we know of the Book, is, that 'tis a Collection of Songs, made by *Esdras*.

The *Gradual Psalms*, were those antiently sung on the Steps of the Temple. See **GRADUAL**.

The *Penitentiary Psalms*, were not formerly the same with those now call'd by that Name. See **PENITENTIARY**.

The Word is form'd of the *Latin Psalmus*; and that from the *Greek ψάλλω*, *I sing*.

**PSALMODY**, the Art of singing Psalms. See **PSALM** and **SINGING**.

**PSALTER**, the Book, or Collection of Psalms, ascrib'd to *David*. See **PSALM**.

There are an Infinity of Editions of the *Psalter*——*Augustin Justinian*, a Dominican, and Bishop of *Nebo*, publish'd a *Polyglot Psalter* at *Genoa*, in 1516; *Comarinus* publish'd the *Psalter* in *Hebrew*, *Greek*, *Chaldee*, and *Arabic*, with *Latin* Notes and Glosses. See **POLYGLOT**.

**PSALTER** is also used among Religious for a large Chaplet, or Rosary; consisting of 150 Beads; the Number of Psalms in the *Psalter*——*St. Dominic* is said to have been the Inventor. See **ROSARY**.

**PSALTERY**, **PSALTERION**, a Musical Instrument, much in use among the antient *Hebrews*; who call'd it *Nebel*.

We know but little of the precise Form of the antient *Psaltery*: That now in use, is a flat Instrument, in form of a *Trapezium*; or a Triangle truncated a-top.

It is strung with thirteen Wire Chords, set to Unison or Octave; and mounted on two Bridges on the two sides——It is struck with a *Plectrum*, or little Iron Rod; or sometimes a crooked Stick; whence it is usually ranked among the Instruments of Percussion.

Its Chest, or Body, is like that of a Spinnet. It has its Name à *Psallendo*; some also call it *Nablum*, or *Nablium*.

*Papias* gives the Name *Psaltery* to a kind of Flute used in Churches, to accompany the Singing; in *Latin*, *Sambucum*.

**PSAMISMUS**, in Medicine, a Term sometimes used for a Bath of dry and warm Sand, to dry the Feet of dropical Persons upon. See **BATH**, &c.

The Word is form'd from the *Greek ψάμμος*, *Sand*, or *Gravel*.

**PSATYRIANS**, **PSATYRIANI**, a Sect of *Arians*, who in the Council of *Antioch*, held in the Year 360, maintain'd that the Son was not like the Father, as to Will; that he was taken from nothing, or made of nothing; and that in God, Generation was not to be distinguish'd from Creation. See **ARIAN**.

**PSEUDO**, a Term, or Particle, used in the Composition of divers *Latin* and *English* Words; in the Sense of *false*, or *lying*.

Thus we say a *Pseudo-Martyr*, *q. d.* a false Witness; *Pseudo-Prophet*, *Pseudo-Apostle*, *Pseudo-Christ*, &c.

The Word is form'd from the *Greek ψεύδω*, *decepio*, *falso*, *I deceive*.

**PSEUDONYMUS**, **PSEUDONYMOUS**, a Name given by

the Criticks, to those Authors who publish Books under false, or feigned Names.

Much as the Name *Cryptonymus* is given to those who publish under secret and disguised Names; and *Anonymus*, to those who publish without any Names at all. See **ANONYMOUS**.

The Apostolical Constitutions, the greater Epistles of *St. Ignatius*, &c. are usually supposed to be *Pseudonymous*. See **CONSTITUTIONS**.

The Word is form'd from the *Greek ψεύδω*, *Lye*; and *ὄνομα*, *Name*.

**PSEUDO-DIPTERE**, in the antient Architecture, a Temple with eight Columns in Front; and a single Row of Columns all around. See **TEMPLE**.

The Word signifies *false* or *imperfect Diptere*; and is used to distinguish this, from the *Diptere*; which had two Rows of Columns all around. See **DIPTERE**.

**PSEUDO-STELLA**, in Astronomy, any kind of Meteor or Phenomenon, newly appearing in the Heavens, and resembling a Star. See **METEOR**, &c.

**PSILOTHRIX**, in Medicine, *Depilatory*; or something proper to make the Hair fall. See **DEPILATORY**.

Such are strong Lixiviums, Quick-Lime, Ants Eggs, Sandarac, Orpiment, and Arsenic.

The Word is form'd from the *Greek ψιλάω*, *deglabro*, *I flea*, or take off the Bark; and *τρίχης*, *Hair*.

**PSOAS Magnus**, or *Lumbaris*, in Anatomy, a round, hard, fleshy Muscle, which arises from the internal Side of the transverse Processes of the Vertebrae of the Loins, within the Abdomen; and descending upon part of the internal Side of the Ilium, is inserted into the lower part of the little Trochanter——It is the first of the Flexors of the Thigh. See **FLEXOR** and **THIGH**.

**PSOAS Parvus**, arises fleshy from the Inside of the upper Vertebrae of the Loins, and hath a thin, and broad Tendon, which embraces the *Psoas Magnus*; and which is inserted into the *Os Innominationum*, where the *Os Pubis* and *Ilium* join together.

This, tho' ordinarily reckon'd among the Muscles of the Thigh, properly belongs to the lower Venter.

**PSORA**, in Medicine, a cutaneous Disease, called by the *Latins*, *Scabies*; by the *English*, *Itch*. See **ITCH**.

The *Psora* is described by *Celsus*, as a reddish Hardness and Roughness of the Skin, from an Eruption of Pusles thereon; some dryer, others moister; and oozing out a sanious Matter, that occasions a continual *Pruritus*.

These Eruptions are most frequent about the Jundures of the Limbs, and between the Fingers; in some they spread over the whole Body; in others they soon cease; and in some return at certain Seasons of the Year.

In Youth, this Disease frequently prevents others, or cures them——It sometimes degenerates into a Leprosy.

The dry is much more difficultly cured than the moist, which arises from a Disorder in the Humours, or Viscera. *Willis* derives the Disease from a sharp, saline Humour, occasioning an Itching.

Some of the later Physicians will have it to consist in a number of little Animals preying on the Skin: And hence it is, that it becomes so very contagious.

*Willis* observes, that in this respect it is second to no other Disease, but the Plague; which many conjecture to arise in like manner, from Animalcules.

For the Cure, *Borelli* recommends a Lotion of black Soap, for poor People, &c. But the Soap to be soon wash'd off, lest it excoriate the Skin. Where the Disease is inveterate, recourse is had to Salivation. See **SALIVATION**.

The Word is *Greek*, *Ψωρα*, *Itch*.

Hence, **PSORICA** are Medicines good against Scabs, and other cutaneous Eruptions.

**PSOROPHTHALMIA**, is a kind of *Ophthalmia*, accompany'd with a *Pruritus*, or Itching. See **OPHTHALMIA**.

The Word is form'd from *ψώρα*, *Itch*; and *οφθαλμία*, *Eye*.

**PSYCHOLOGY**, a Discourse concerning the Soul. See **SOUL**.

*Anthropology*, or the Science which considers Man, consists of two parts: The first treating of the Body, and the parts belonging thereto; call'd *Anatomy*: And the second of the Soul, call'd *Psychology*.

The Word is form'd from the *Greek ψυχή*, *Soul*; and *λογία*, *Discourse*.

**PSYCHOMANCY**, a kind of Magick, or Divination, perform'd by raising the Souls of Persons deceas'd. See **DIVINATION**.

The Word comes from *ψυχή*, and *μαντία*, *Divination*.

**PSYCHROMETER**, an Instrument for measuring the Degree of Moisture or Humidity of the Air; more usually call'd *Hygrometer*. See **HYGROMETER**.

The Word is form'd from the *Greek ψυχρός*, *humid*, and *μέτρον*, *Measure*.



**PTARMICA**, Medicines proper to promote Sneezing ; more usually call'd *Sternutatories*. See **STERNUTATORY**.

The Word is form'd of the Greek *σπέρμα*, *Sternutamentum*, Sneezing.

**PTERIGIUM**, or **PTERYGIUM**, in Medicine, a Disease of the Eye, by the *Latins* call'd *Unguis*, Nail ; and sometimes *Pannus*, Web. See **UNGUIS** and **PANNUS**.

The Cure is much the same as of the *Ophthalmia*. See **OPHTHALMIA**.

The Word is form'd from the Greek *πτερον*, *Ala*, Wing. **PTERIGOIDES**, or **PTERYGOIDES**, in Anatomy, two Apophyses of the *Os Sphenoides* ; so call'd from their resembling the Wings of a Bat. See **SPHENOIDES**.

From the Greek *πτερυγος*, *Wing*, and *ειδος*, *Form*. **PTERIGOIDEUS**, or **PTERYGOIDEUS Internus**, is a Muscle of the Jaw, which arises from the internal part of the *Pterygoides* Process, and descends to be inserted into the inferior part of the internal side of the lower Jaw, near its Angle.

When it acteth, it draws the Jaw to one side.

**PTERIGOIDEUS Externus**, is a Muscle which arises from the external part of the same Process, and goes backward to be inserted between the *Condiloid* Process, and the *Corone*, on the inside of the lower Jaw.

This pulls the lower Jaw forwards, and makes it shoot beyond the upper.

**PTERIGOSTAPHILINUS**, or **PTERYGOSTAPHILINUS**, in Anatomy, the internal Muscle of the *Uvula* ; call'd by *Valsalva*, *Novus Tubæ Musculus* ; as being unknown to the ancient Anatomists.

It arises fleshy, near the *Sphenostaphilinus*, from the *Os Petrosum*, where the Tube from the Palate enters that, near an acute Process of the *Sphenoides* ; and ascending to the *Processus Pterygoides*, becomes a broad, flat Tendon, which expands itself on the fore-part of the *Uvula*.

Some of the tendinous Fibres ascend to the lower Edge of the *Os Palati*, others descend down the sides of the *Fauces* ; the middle Series either unites with those of the other side, or is lost in two fleshy Bodies that compose the *Uvula*.

This Muscle, with its partner, draw the *Uvula* upwards, and forwards ; and also raise the *Amygdalæ*.

The Word is form'd from the Greek *πτερον*, *Wing*, and *σταβηλον*, *Uvula*.

**PTERIGOPHARYNGÆUS**, or **PTERYGOPHARYNGÆUS**, a pair of Muscles arising from the *Processus Pterygoides*, where the Tendon of the *Pterygostaphilinus* is reflected.—Some fleshy Fibres of it do likewise arise from the upper Jaw-Bone, behind the farthest Grinder, and some from the sides of the *Tongue*, and *Os Hyoides*.

From all these places its fleshy Fibres pass semi-circularly ; and meet with those of the opposite side in a middle Line on the back side of the *Pharynx* externally.

In the inner Surface of the *Fauces* is another Order of fleshy Fibres, decussating each other at acute Angles.—They arise both from the sides of the *Uvula*, and from the Root of the Cartilage ; and descend obliquely to their Insertions in the glandulous Membrane of the *Pharynx*.

This Muscle serves both to constrict the *Pharynx*, and to compress the *Tonsils*, and force out the *Mucus* ; whence its Use in Hawking.

The various Originations of the several parts of this Muscle has caused its being generally divided into several Muscles.—Thus *Valsalva* calls that part springing from the *Tongue*, the *Glossopharyngæus* ; that immediately below it, the *Hyopharyngæus*.

Hence, in like manner, come the *Cephalopharyngæus*, *Sphenopharyngæus*, &c.

**PTEROPHORI**, in Antiquity, a Name given to such of the *Roman* Couriers as brought Tidings of any Declaration of War, a Battel lost, or any Mishap befallen the *Roman* Armies.

They were so call'd because they bore Wings on the Points of their Pikes ; from the Greek *πτερον*, *Wing*, and *φορος*, I bear.

**PTISAN**, **PTISANA**, in Medicine, a cooling Potion, made of Barley boil'd in Water, and usually sweeten'd with Liquorice, &c.

To these are sometimes added the Herb Dog's-grass, and Senna to render it laxative.—Most of the Decoctions of Physicians are in *Prisans*. See **DECOCTION**.

Feverish Patients are prohibited Wine, &c. and reduced to *Prisans*.

The Word is form'd from the Greek *πτισαν*, which signifies the same thing.

**PTOLEMAITES**, a Branch of the ancient *Gnostics* ; so call'd from their Leader *Ptolemy*.

This Heresiarch is represented as a Man of considerable Learning, who improved considerably on the System of the *Gnostics*, his Predecessors, and enlarged it with a number of Notions and Visions of his own. See **GNOSTICS**.

S. *Epiphanius* is very ample on the Subject of the *Ptole-*

*maites* ; and produces a Letter of *Ptolemy* to *Flora*, wherein that Heretic lays down his Doctrine.—He maintain'd, that in the Law of *Moses* there were three things to be consider'd, inasmuch as it did not all come from the same hand ; but part of it, said he, from God, part of it from *Moses*, and part of it which came from neither of 'em, but consisted altogether in the pure Traditions of the ancient Doctors ; on which part it was that he founded his Dreams.

**PTOLEMAIC System**, or *Hypothesis*, the Order, or Disposition of the Heavens and Heavenly Bodies, wherein the Earth is supposed to be at rest, in the Centre ; and the Heavens to revolve round it, from East to West ; carrying with 'em the Sun, Planets, and fixed Stars, each in their respective Spheres. See **SUN**, **EARTH**, **PLANET**, &c.

This Hypothesis took its Name from *Ptolemy*, the great *Alexandrian* Astronomer ; because maintain'd and illustrated by him : Not that it was his Invention ; for it was much older, as having been held by *Aristotle*, *Hipparchus*, &c. See it further illustrated under the Article **SYSTEM**.

**PTYALISM**, **PTYALISMUS**, in Medicine, a *Spitting* ; or a discharge of Saliva by the Glands of the Mouth ; whether it amount to an absolute Salivation, or not. See **SALIVATION**.

The Word is form'd from the Greek *πτύω*, *spuo*, to ooze out.

**PUBERTY**, **PUBERTAS**, in the Civil Law, a natural Majority ; or the Age wherein a Person is allow'd to contract Marriage. See **MAJORITY**, &c.

Boys arrive at *Puberty* at fourteen Years of Age ; Maids at twelve. *Full Puberty* is accounted at eighteen. See **AGE**.

**PUBES**, a Term used for the external parts of the *Pudenda*, or parts of Generation in both Sexes. See **PUDENDUM**, &c.

This, from the Age of *Puberty*, is supposed to be cover'd, more or less, with Hair ; whence the Name. See **HAIR**.

**PUBIS Os**, or *Os Pectinis*, in Anatomy, a Bone of the Hip, situate in the fore and middle part of the Trunk ; and making the lower and inner part of the *Os Innominatum*. See **INNOMINATUM Os**.

It is join'd to the other part by a Cartilage, thicker, but looser in Women than Men ; in the former whereof, the *Os Pubis* recedes, or gives a little in time of Travel, to give way for the *Fœtus*. See **DELIVERY**.

It has a large *Foramen*, which makes room for the Passage of two Muscles of the Thigh ; besides a Sinus, whereby the Crural Veins and Arteries pass to the Thighs. See **PECTINIS Os**.

**PUBLIC Notary**, see **NOTARY Public**.

**PUBLICAN**, **PUBLICANUS**, among the *Romans*, a Person who farmed the Impôts, Taxes, and public Revenues.

The Name appears to have been odious to the *Jews*, &c. apparently because of the Exactions of this sort of People.

**PUBLICATION**, the Act of *Promulgating*, or making a thing known to the World. See **PROMULGATION**.

By the Canons, *Publication* is to be made of the Bans of Marriage three times, e'er the Ceremony can be solemnized ; without especial Licence to the contrary. See **MARRIAGE**.

**PUCELLAGE**, see **VIRGINITY**.

**PUDICA Planta**, see **SENSITIVE Plant**.

**PUERILITY**, in Discourse. *Longinus* defines it to be a Thought, which, by being too far fetch'd, becomes flat and insipid.—*Puerility*, he adds, is the common Fault of those who affect to say nothing but what is Brilliant and Extraordinary. See **SUBLIME**.

**PUGIL**, among Physicians, &c. a Measure of Flowers, Seeds, or the like Matters, containing so much as may be taken up between the Thumb and two Fore-Fingers. See **MEASURE**.

The *Pugil* is esteem'd the eighth part of the Handful. See **MANIPULUS**.

The Word comes from the *Latin*, *Pugillus*, little Hand. The *French* frequently call it *Pincee*, Pinch.—Some confound *Pugil* with *Manipulus* ; and use it for a Handful.

**PUISNE**, **PUNY**, in Law, a Younger-born ; or a Child born after another. See **MULIER**.

The Word is not only apply'd to the second, third, fourth, &c. with regard to the first ; but to the third with regard to the second, &c.

The last of all is call'd absolutely *Cadet*. See **CADET**.

The Word is pure *French* ; in which Language it bears the same Signification.

In the like sense we say a *Puisne Judge*, a *Puisne Counsellor*. See **JUDIC** and **JUSTICE**.

**PUKING**, a cant Word for a Nausea, or Disposition to Vomit. See **NAUSEA** and **VOMITING**.

**PUL**, in Commerce, a general Name which the *Persians* give to all the Copper-Moneys current in the Empire ; particularly the *Kabesqui* and *Demi-kabesqui*. See **MONEY** and **COIN**.



*Olearius*, who was at *Ispahan* in 1637, in the Retinue of the Ambassador of *Holstein*, assures us, That each City in *Persia* has its several Copper-Money, mark'd with its particular Badge, which is only current in that District, and changed every Year.—At the beginning of each Year, which is at the Vernal Equinox, all the old Money is cried down, and the new appears in its place.

Both the Emperor and the State find their Interest in this frequent change: The first, in that he only gives at the Rate of 17 *d.* Sterling per Pound for Copper; yet delivers it out coin'd in *Kabesqui* and *Demi-kabesqui* at above 2 *s.* per Pound: The second, in that the Copper-Money is by this Means less abundant, being reduced each Year to nearly the same Quantity.

The same Author adds, that at the Time when he was in *Persia*, the *Kabesqui* at *Ispahan* were struck with the Image of a Lion, at *Scamachia* with a Devil, at *Kaschan* with a Cock, and at *Kilan* with a Fish.

**PULLEY**, *Trochlea*, in Mechanics, one of the five Mechanical Powers; consisting of a little Wheel, or Rundle, having a Channel around it, and turning on an Axis; serving, by means of a Rope which slides in its Channel, for the raising of Weights. See **MECHANICAL POWER**.

The *Latins* call it *Trochlea*; and the Seamen, when fitted with a Rope, a *Tackle*.—An Assemblage of several Pulleys is call'd a *Polyspaston*.

#### Doctrine of the PULLEY.

1°. If a Power *P*, (Tab. **MECHANICS**, fig. 49.) sustain a Weight *Q*, by means of a single Pulley *AB*; in such manner as that the Line of Direction of each is a Tangent to the Periphery of the Rundle; the Weight and the Power are equal.

Hence, a single Pulley, if the Lines of Direction of the Power and the Weight be Tangents to the Periphery, neither assists nor impedes the Power; but only changes its Direction.

The Use of the Pulley, therefore, is when the vertical Direction of a Power is to be changed into an horizontal one; or an ascending Direction into a descending one; and on the contrary.

This is found a good Provision for the safety of the Workmen employ'd in drawing with the Pulley.—For suppose a large Weight *EFG* requir'd to be raised to a great Height by Workmen pulling a Rope *AB*: If now the Rope should chance to break, the Workmen's Heads underneath would be in immediate Danger; but if by means of the Pulley *B*, the vertical Direction *AB* be changed into a horizontal one *BC*, there is no danger from a breaking of the Rope.

This Change of Direction by means of a Pulley has this further Advantage; that if any Power can exert more Force in one Direction than another; we are here able to employ it in its greatest force.

Thus, *e. gr.* a Horse cannot draw in a vertical Direction; but draws with all its Advantage in a horizontal one. By changing the Vertical Draught, therefore, into a horizontal one, a Horse becomes qualify'd to raise a Weight.

2°. If a Power apply'd in *E*, (Fig. 50.) according to the Line of Direction *BE*, which is a Tangent to the Pulley in *E* and parallel to the Rope *AD*, sustain the Weight *F* suspended from the Centre of the Pulley *C*; the Power is subduple of the Weight.

But the grand Use of the Pulley, is where several of 'em are combined; thus forming what *Vitruvius*, and others after him, call *Polyspasta*; the Advantages whereof are, that the Machine takes up but little room, is easily removed, and raises a very great Weight with a very moderate Force.

The effect of *Polyspasta* is founded on the following Theorem.

3°. If a Power apply'd in *B*, (Fig. 51.) sustain (by means of a *Polyspaston*) a Weight *F*, so as all the Ropes *AB*, *HI*, *GF*, *EL*, *CD*, are parallel to each other: The Power will be to the Weight as Unity to the Number of Ropes, *HI*, *GF*, *EL*, *CD*, drawn by the Weight *F*; and therefore as Unity to the Number of Pulleys, higher and lower, taken together.

Hence, the Number of Pulleys and the Power being given, 'tis easy to find the Weight that will be sustain'd thereby: Or, the Number of Pulleys and Weight to be sustain'd, being given, the Power is found: Or, the Weight and Power being given, the Number of Pulleys the *Polyspaston* is to consist of, is found. See **POLYSPASTON**.

4°. If a Power move a Weight by means of several Pulleys; the Space pass'd over by the Power will be to the Space pass'd over by the Weight, as the Weight to the Power.

Hence, the smaller the Force that sustains a Weight by means of Pulleys, is; the slower is the Weight raised: So that what is saved in Force, is spent in Time.

**PULMO**, in Anatomy, see **LUNGS**.

**PULMO Marinus**, *Sea-Lungs*, among Naturalists, a light spongy Body, of a shining Colour, like Crystal, intermixed with blue, and usually of a Figure resembling the human Lungs; whence its Name.

It swims a-top of the Water; and is popularly supposed to presage a Storm.—It is in effect no more than a viscous Excrement of the Sea, hardened by the Sun.

It shines in the Night-time, and communicates its luminous Property to a Stick rubb'd therewith. Being apply'd to the Skin, it raises an Itching; and takes off the Hair.

**PULMONARY Vessels**, in Anatomy, are those which carry the Blood from the Heart to the Lungs, and back again from the Lungs to the Heart.

These are two in Number; *viz.* the *Pulmonary Artery* and *Vein*.

The *Pulmonary Artery*, which the Antients call'd *Vena Arteriosa*, the *Arterial Vein*, is, in reality, an Artery, and composed, like the rest, of several Tunics.—It arises from the right Ventricle of the Heart, and divides into two large Branches, which sub-dividing into several smaller, diffuses itself throughout the whole Substance of the Lungs. See **LUNGS**.

The *Pulmonary Vein*, which the Antients call'd *Arteria Venosa*, the *Venous Artery*, consists of four Membranes like the other Veins. It arises in the Lungs from an infinity of little Branches, which uniting in one Trunk, opens into the left Ventricle of the Heart. See **HEART**.

For the Office of these Vessels, see **CIRCULATION**. See also **RESPIRATION**, &c.

Mr. *Cowper* gives us an Instance of a *Polypus* in the *Pulmonary Vein*. See **POLYPUS**.

**PULMONARY Consumption**, or Consumption of the Lungs, is what we properly call a *Phthisis*. See **PHTHISIS**.

**PULP**, in Fruits, the *Flesh*; or that part between the Skin, and the Core, or Seed. See **FRUIT**.

The *Pulp* of a Tree, or Plant, is the *Parenchyma*, which grows and swells by means of a Juice, at first very coarse and disagreeable; at length sweeter and more delicate. See **PARENCHYMA**; see also **VEGETABLE**, **PLANT**, &c.

**PULP**, in Medicine, the farthest, fullest, and most solid part of the *Flesh*. See **FLESH**.

Physicians apply the Word particularly to the upper part of the *Belly*; because fleshy, and because 'tis here that they feel Animals, to examine whether they be fat.

This part the *Latins* call *Pulpa*, from *palpare*, to feel, handle.

**PULP**, in Pharmacy, is the soft part of Fruits, Roots, or other Bodies, extracted by infusion, or boiling, and pass'd thro' a Sieve.

**PULPIT**, **PULPITUM**, a Term now restrain'd to an Elevation, or Apartment in a Church, whence Sermons are deliver'd.

Among the *Romans*, the *Pulpit* was a part of the Theatre, call'd also *Proscenium*; or what we now call the *Stage*, whereon the Actors trod; tho' some say it was properly an Eminence thereon for the Music, or a *Suggestum* whence Declamations, &c. were spoke.

The *French* use the Word *Pulpit*, *Pupitre*, for a Reading-Desk in a Church, Library, or the like: Those large ones in Churches, they properly call *Lutrans*.

Some Authors derive the Word from *Publicum*, because People are there exposed to open view.

**PULSATION**, in Medicine, the Motion of the Pulse; or the Beating of the Artery. See **PULSE**.

**PULSE**, in the Animal Oeconomy, the beating, or throbbing of the Arteries. See **ARTERY**.

The *Pulse* is that reciprocal Motion of the Heart and Arteries, whereby the warm Blood thrown out of the left Ventricle of the Heart, is so impell'd into the Arteries to be by them distributed throughout the Body, as to be perceivable by the Finger. See **BLOOD**.

The Pulsation of the Arteries arises from that of the Heart; and has, like it, a Systole and Diastole; the Systole of the one corresponding to the Diastole of the other. See **HEART**, **SYSTOLE**, &c.

*Galen* tells us, that *Hippocrates* was the first who observed the Motion of the *Pulse*. *M. Homberg* mentions the Case of a Woman in *Paris* who had a *Pulse* in the Veins, perfectly like that we commonly observe in the Arteries. He adds, that he is the first Author that ever mention'd such a thing. See **VEIN**.

The *Pulse* is thus accounted for.—When the left Ventricle of the Heart contracts, and throws its Blood into the great Artery; the Blood in that Artery, is not only thrust forward towards the Extremities, but the Channel of the Artery is likewise dilated; because Fluids, when they are press'd, press again towards all sides, and their pressure is always perpendicular to the sides of the containing Vessels: but the Coats of the Artery by any small Impetus may be distended; therefore, upon the Contraction of the Heart, the Blood from the left Ventricle will not only press the Blood in the Artery forwards, but both together will distend



end the sides of the Artery ; and thus is a Motion of Distention effected.

And when the Imperus of the Blood against the sides of the Artery ceases, that is, when the left Ventricle ceases to contract, then the spiral Fibres of the Artery, by their natural Elasticity, return again to their former State, and contract the Channel of the Artery, till it is again dilated by the Systole of the Heart ; so that here is a Motion of Restitution effected.

This Diastole of the Artery is call'd its *Pulse*, and the time of the spiral Fibres returning to their natural state, is the distance between two *Pulses*.

This *Pulse* is in all the Arteries of the Body at the same time : for while the Blood is thrust out of the Heart into the Artery ; the Artery being full, the Blood must be propelled in all the Arteries at the same time ; and because the Arteries are conical, and the Blood moves from the Basis of the Cone to the Apex, therefore the Blood is continually pressing against the Sides of the Vessels, and consequently every Point of the Artery must be dilated at the same time that the Blood is thrown out of the left Ventricle of the Heart ; and as soon as the Elasticity of the spiral Fibres can overcome the Imperus of the Blood, the Arteries are again contracted.

Thus, two Causes operating alternately ; the Heart, and Fibres of the Arteries, keep the Blood in a continual Motion. See CIRCULATION.

The Observation of the *Pulse* is of the last Importance to a Physician ; both as it discovers the State of the Heart, the first Mover in the Animal Frame ; and as it shews the Nature, Quantity, and Motion of the Blood, that universal Humour whereon all the rest depend ; and as it indicates the condition of the Artery, the primary Vessel of the whole Body.

A *strong Pulse*, then, denotes, 1. A great Muscular Force of the contracting Heart ; and, consequently, the strength of the contracting Cause ; i. e. 2. A brisk and copious Influx of the nervous Juice into the Villi of the Heart. 3. Plenty of Blood. 4. A laudable Secretion and Circulation of Humours.

A *strong Pulse*, therefore, is a good Prefage, if it be alike throughout the whole Body. Indeed it is frequently fallacious in Apoplectic, and some other Diseases ; where the Passage between the Heart and the Brain is free ; and in other parts, especially the Viscera, obstructed.

A *weak Pulse* denotes the contrary of the former ; tho' this some m. s. deceives, particularly in fat People.

A *hard Pulse* signifies, 1. That the Membrane of the Artery is stiffer than ordinary : And, therefore, 2. Obstructions in the minute Vesicles whereof the Membranes of the Artery are wove. 3. That the Arteries are full ; but, 4. That their Capillary Extremities are obstructed with an inflammatory Viscidity. 5. That the Blood is very dense and compact : Hence, 6. That the Circulations, Secretions, and Excretions are depraved.

A *soft Pulse* denotes the contrary to all these ; yet is very fallacious in an acute *Peripneumonia*.

A *slow Pulse* denotes, 1. That the Contractions of the Heart are slow ; and, therefore, 2. A Slowness of the Influxes of the nervous Juice from the Brain into the Villi of the Heart. 3. That the Blood has circulated a great number of Times. 4. That all the Humours circulate easily thro' their Vessels. Indeed if the *Pulse* be thus from Weakness, 'tis an ill sign.

A *quick Pulse* denotes the contrary to all these ; as Acrimones, Spirits agitated, Fevers, Phrenzy.

An *equable Pulse* denotes a constant Tenor of the vital Functions ; an uneven one the contrary.

An *intermitting Pulse* shews Life in a slippery Situation.

An *intermitting Pulse* is either owing to a fault in the nervous Juice, which flows unequally into the Heart ; or in the Vessel which transmits the Blood and Humours ; or to the Humours themselves.

The Cause of this Disorder is various, as Convulsions, Polypus's, Cacochymias, Inflammations, want of Blood, bony or cartilaginous Arteries, &c.

A strong, equable, and, at the same time, slow *Pulse*, is of all others the best. A strong and great ; or strong and slow *Pulse*, together, are good. A weak, small, hard, unequal, intermitting, quick *Pulse*, is of all others the worst.

Yet in all these things, regard must be had to the nature of the particular Artery, the Age, Sex, Temperament, Affections of the Mind, the six Non-naturals, Habit of Body, Season, Country, &c. All which have an influence on the *Pulse*.

A Diminution or total Suspension of the *Pulse*, is reducible, either to a *Leipothymia*, where it fails to such degree, as that there is scarce strength left to sustain the Body. See LEIPOTHYMIA.

Or to a *Leipopsychia*, when it arises to a sensible Diminution of the natural Heat.

Or to a *Syncopa*, when the Heart fails, so as the Heat, Motion, Senses and all are almost destroy'd.

Or, lastly, to an *Asphyxia*, where those are all absolutely destroy'd as to Sense, and Death itself seems in possession. See SYNCOPA, &c.

*PULSE* is also used for the Stroke, with which any Medium is affected by the Motion of Light, Sound, &c. through it. See LIGHT and SOUND.

Sir Isaac Newton demonstrates, lib. 2. Prop. 48. Princip. That the Velocities of the *Pulses* in an Elastic Fluid Medium, (whose Elasticity is proportionable to its Density) are in a Ratio compounded of half the Ratio of the Elastic Force directly, and half the Ratio of the Density inversely : So that in a Medium whose Elasticity is equal to its Density, all *Pulses* will be equally swift. See MEDIUM, FLUID, &c.

*PULSE*, *Legumen*, in Botany, a Term used for those Grains or Seeds which are gather'd with the Hand ; in contradistinction to Corns, &c. which are reap'd, or mow'd.

*Pulse* is the Seed of the leguminous Species of Plants. See LEGUMINOUS.

The Word is primarily understood of Grains that grow in Pods ; as Beans, Peas, Vetches, &c. but is also used, by Extension, for Artichocks, Asparagus, and other Kitchen-Roots and Herbs.

*PULSION*, or *Trusion*, the Act of driving, or impelling a thing forwards. See TRUSION.

The Word comes from *pello*, I drive. See ATTRACTION and ELECTRICITY.

*PULTURA*, in our old Law-Books, denotes a previous Examination ; from *pulsare*, to ask, or demand, thus call'd on account of the Monks, who, e'er they were admitted into the Monasteries *pulsabant ad fores*, for several days.—*Et volo ut sint quieti de omnibus Causis & Querelis, & placitis Ballivorum & Prepositorum Hundredi & a Pultura Seranorum*, i. e. from the Examination or Sergeants ; & *de rewardo Forestarum*, i. e. the Visitation of the Forest.

*PULVERIZATION*, the Act of *Pulverizing*, or reducing a Body into a fine Powder. See POWDER.

This is performed, in friable Bodies, by pounding or beating in a Mortar ; but to *pulverize* malleable ones, other Methods must be taken. See FRIABLE and MALLEABLE.

To *pulverize* Lead, or Tin, the Method is thus : Rub a round wooden Box, all over the inside, with Chalk ; pour a little of the melted Metal nimbly into the Box, when, shutting the Lid, and shaking the Box briskly, the Metal will be reduced into Powder. See TRITURATION.

*PULVINATA*, *PULVINATED*, in the ancient Architecture, a Term apply'd to a Freeze which swells, or bulges out, in manner of a Pillow ; whence the Name. See FREEZE.

*PULVIS Fulminans*, or the thundering Powder ; see FULMINANS *Pulvis*.

*PULVIS Patrum*, the Jesuits Powder ; see CORTEX and QUINAQUINA.

*PUMICE Stone*, *PUMEX*, a kind of spongy Stone, very porous and friable. See STONE.

Naturalists are not agreed about the Nature and Origin of *Pumice*—Some look on it as pieces of Rock half-burnt and calcined, cast up in Eruptions of Volcano's, particularly *Ætna* and *Vesuvius*, into the Sea ; and which, by being there wash'd in the Salt-water, lays aside the black Colour that the Impression of the subterranean Fires had given it, and becomes whitish, or sometimes only greyish, according as it has floated more or less in the Sea.

Other Authors will have the *Pumice* to rise from the bottom of the Sea ; whence they suppose it detach'd by subterranean Fires, and hence account both for its lightness and porosity, and its saline Taste. Alledging, in confirmation hereof, that *Pumice* is frequently found in parts of the Sea far remote from all Volcano's ; and adding, that several parts of the *Archipelago* are frequently found cover'd with it, all at once, after a few inward shakes and heavings of the bottom of the Sea.

*Pumice* makes a very considerable Article in Commerce, and is much used in the Arts and Manufactures to polish and smooth several Works. See POLISHING, &c.

Its pieces are of several Sizes : The Parchment-Makers and Marblers use the largest and lightest.—The Carriers the heaviest and flattest.—Pewterers the smallest.

Pliny observes, that the Antients made considerable use of *Pumice* in Medicine ; but it is out of the present Practice.

*PUMP*, *Antlia*, in Hydraulics, a Machine form'd on the Model of the Syringe, for the raising of Water. See SYRINGE.

*Vitruvius* ascribes the first Invention of *Pumps* to *Ctesibes the Athenian*, whence the *Latins* call it *Machina Ctesibiana*, or *Organum Ctesibicum*.

*Pumps* are distinguish'd into several Kinds, with regard to the several Manners of their acting—As the *Common*, sometimes call'd the *Sucking-Pump*, which acts by the pressure of the Air, and whereby Water is raised out of a lower into a higher Place not exceeding thirty-two Feet :



The *Forcing-Pump*, which acts by mere impulse or protrusion, and raises Water to any Height at pleasure.—And *Crescebes's Pump*, the first and finest of 'em' all, which acts both by Suction and Expulsion.—The Structure of each is as follows.

*Structure and Action of the Common or Sucking Pump.*

1. A hollow Cylinder or Barrel ABCD, (Tab. HYDROSTATICS, fig. 27.) is provided, of any solid Matter, usually Wood; and erected perpendicularly in a Spring, or other Source of Water: The lower Base of the Cylinder being first fitted with a Valve I, which opens upwards.

2. A Piston or Embolus, call'd the Sucker, EK, furnish'd with a Valve L, which likewise opens upwards, is let down the Cylinder; and for the more easy working upwards and downwards, furnish'd with a Lever, as G H. See EMBOLUS and VALVE.

Now, the Embolus E L, being drawn up from I to L, will leave the Space L I void of Air, at least in a great measure so: The pressure, therefore, of the Air on the Surface of the stagnant Water prevailing, will, by the Laws of Hydrostatics, lift up the Valve I, and raise it to fill the Cavity L I. See AIR and SIPHON.

If, then, the Embolus be again let down; the lower Valve being now fast closed with the Weight of the incumbent Water, upon pressing the Piston, the Water must open the upper Valve, and get into the Embolus, by which it is raised up and discharged out at the Spout H.

Thus is the Embolus alternately raised and depressed, &c. See the *Theory of the Pump* more accurately laid down under the Article SYRINGE.

*Structure and Action of a Forcing Pump.*

1. In a Cylinder A B, (Fig. 28.) is divided by a Diaphragm, or transverse piece, C D, fitted with a Valve E, opening upwards; and thus immersed in Water.

2. An Embolus F, furnish'd with a Valve G, is so fitted to an Iron Rod I H, moveable on a Hinge at H, as that it may be conveniently raised and depressed by the Hand apply'd in K.

Now, upon depressing the Embolus F, the Water will open the Valve G, and thus ascend into the Cavity of the Cylinder B C: But upon raising it again, the Valve G is shut; so that there is no Passage for it that way: The Valve E, therefore, becomes open'd, and the Water mounts thro' it; and by repeating the Agitation of the Embolus, 's at length driven out through the Spout M.

The great difficulty of rectifying this *Pump* when it happens to be out of Order, on account of the chief Seat of Action's being under Water, makes People decline the Use of it, when they can do well without it; notwithstanding its Advantage of raising the Water to any given Height.

*Structure and Action of Crescebes Pump.*

1. A brass Cylinder A B C D, (Fig. 29.) furnish'd with a Valve in L, is placed in the Water. 2. In this is fitted the Embolus M K, made of green Wood which will not swell in the Water, and adjusted to the Aperture of the Cylinder with a covering of Leather; but without any Valve. In H is fitted on another Tube N H, with a Valve that opens upwards in I.

Now, the Embolus E K being raised, the Water opens the Valve in L, and rises into the Cavity of the Cylinder.—And when the same Embolus is again depress'd, the Valve I is open'd, and the Water driven up thro the Tube H N.

This is the Pump used among the Antients; and that from which both the others are deduced.—Sir S. Morland has endeavour'd to increase its Force, by lessening the Friction; which he has done to good effect: Inasmuch as to make it work without, almost, any Friction at all.

PUMPS, used in Ships, are of several Kinds: As, the *Chain-Pump*, used in large Vessels. This yielding a great Quantity of Water, works easily, and is easily mended.

*Bare-Pumps* are small ones made of Cane, or a piece of Wood bored thro', used in lieu of Cocks, &c. to pump Beer or Water out of the Casks.

*Bur-Pumps*, call'd also *Bidge-Pumps*, are chiefly used by the Dutch, who have 'em by their Ships-sides. In these is a long Staff with a Bur at the End like a Gunner's Sponge, to pump up the Bidge-Water. See BUR-PUMP.

*Air-Pump*, in Pneumatics, is a Machine by means whereof the Air is emptied out of Vessels, and a sort of Vacuum produced therein. See AIR and VACUUM.

For the Invention, Structure, and Use of this Pump; see AIR-PUMP.

PUN, or PUNN, a *Lusus Verborum*, or Point, the Wit whereof depends on a resemblance between the Sounds or Syllables of two Words, which have different, and, perhaps, contrary Significations. See POINT and WIT.

Such are—*Cane Decane Cane*—*Far Mole, Mole, Mole*.—*Lex Dei, Lux Diei*.—All-houses are Ale-houses.—The holy State of Matrimony, is become Matter of Money.—Some Men's Paradise is a pair of Dice.—Was it so in the time of Noah? Ah no.—*L'Ordre tire du D'sordre, ou D'sordre Ordonne*, is the Title of a French Book.

Puns, when they come easily, and are very ingenious, poignant, and apposite, are allow'd of in Conversation, Letters, Epigrams, Madrigals, and the like Compositions; but are absolutely banish'd out of the grave, serious, and sublime, by reason they weaken its Force and diminish its Beauty which consists in something great and elevated. The *Greeks* and *Romans*, 'tis true, sometimes indulg'd themselves the Practice, and used them as Ornaments in the most serious Discourses. But the more severe and philosophical Genius of our Age, is by no means satisfy'd with such an outside of Wit.—Devises, Symbols, Rebus's, Motto's, &c. are their proper Sphere, where they shine to most advantage. See DEVISE, REBUS, &c.

PUNCH, an Instrument of Iron or Steel, used in several Arts, for the piercing or stamping Holes in Plates of Metals, &c. being so contrived, as not only to perforate, but to cut out and take away the Piece; whence the French call it *Emporte-piece*, q. d. take-off-piece.

The *Punch* is a principal Instrument of the Metal-Button-Makers, Wafer-Makers, Patch-Makers, Shoe-Makers, &c.

The *Punch* of the Makers of Plate-Buttons serves to cut and parcel out the Plates of Gold and Silver wherewith they cover their Moulds.—'Tis large, round, four, or five Inches high, the bottom hollow for about half an Inch, well steel'd, and the Edge very sharp.

To use it, they extend the Plate of Metal on a leaden Table or Block, and with a pretty heavy Hammer, strike the Head of the *Punch*, &c. See BUTTON-MAKING.

In the Manage, a *Punch Horse*, is a well-set, well-knit Horse; short-back'd, and thick-shoulder'd, with a broad Neck, and well lined with Flesh.

PUNCH, is also a sort of compound Drink, frequent in England, and particularly about the Maritime Parts thereof; tho' little known elsewhere. See DRINK.

Its Basis is Spring-Water, which being render'd cooler, brisker, and more acid with Lemon-Juice, and sweeten'd again to the Palate with fine Sugar, makes what they call *Sherbet*; to which a proper Quantity of a spirituous Liquor, as Brandy, Rum, or Arrac being super-added; the Liquor commences *Punch*.

Several Authors condemn the Use of *Punch* as prejudicial to the Brain, and nervous System.—Dr. Cheyne insists that there is but one wholesome Ingredient in it, which some now begin to leave out, viz. the mere Element. See WATER, BRANDY, RUM, ARRAC, SUGAR, &c.

The proportions of the Ingredients are various; usually the Brandy and Water are in equal Quantities.

Some, instead of Lemon-Juice, use Lime-Juice, which makes what they call *Punch Royal*; found less liable to affect the Head, as well as more grateful to the Stomach.

Some also make *Milk-Punch*, by adding near as much Milk to the Sherbet as there is Water; which tempers the Acrimony of the Lemon.—Others prefer *Tea-Punch*, made of green Tea instead of Water, and drank hot.

Lastly, What they call *Punch for Chamber-Maids* is made without any Water; of Lime-Juice, sharpen'd with a little Orange and Lemon-Juice; twice as much white Wine as Lime-Juice, and four times as much Brandy, with Sugar.

PUNCHIN, or PUNCHION, in Building. See PUNCHION.

PUNCHION, a little Block, or Piece of Steel, on one End whereof is some Figure, Letter, or Mark engraven either in *Creux*, or in *Relievo*; Impressions whereof are taken on Metal, or some other Matter, by striking it with a Hammer, on the End not engraved. See ENGRAVING, &c.

There are various Kinds of these *Punchions* used in the Mechanical Arts.—Such, for instance, are those of the Goldsmiths, Cutlers, Pewterers, &c. See MARK.

PUNCHION, in Coining, is a piece of Iron steel'd, whereon the Engraver has cut, in *Relievo*, the several Figures, Arms, Effigy, Inscription, &c. that are to be in the Matrices, wherewith the Species are to be mark'd. See MATRIX, &c.

Coiners distinguish three Kinds of *Punchions*, according to the three Kinds of Matrices to be made: that of the Effigy, that of the Cross or Arms, and that of the Legend or Inscription.

The first includes the whole Portrait, in *Relievo*.—The second are small, each only containing a piece of the Cross or Arms, v. gr. a Flower-de-Lys, a Harp, a Coronet, &c. by the Assemblage of all which, the entire Matrix is form'd.—The *Punchions* of the Legend only contain each a Letter, and serve equally for the Legend on the Effigy-side, and the Cross-side. See COINING.



For the Manner of Engraving, Tempering, and Stamping these Punchions, to form the Matrices; see ENGRAVING on Steel, MATRIX, &c.

PUNCHIONS, in Printing, are those used in stamping the Matrices, wherein the Types, or Printing-Characters, are cast. See LETTER-FOUNDRY.

PUNCHION is also used for several Iron Tools of various Sizes, and Figures used by the Engravers in Creux, on Metals—Seal-Gravers, particularly, use a great number; for the several pieces of Arms, &c. to be engraven—And many stamp the whole Seal from a single Punchion. See ENGRAVING.

PUNCHION is also a common Name for all the Iron Instruments used by Stone-Cutters, Sculptors, Lock-Smiths, &c. for the cutting, incising, or piercing their several Matrices.

Those of Sculptors and Statuaries, serve for the repairing Statues, when taken out of the Moulds. See STATUE, FOUNDRY, &c.

The Lock-Smiths use the greatest Variety of Punchions; some for piercing hot, others for piercing cold; some flat, some square, some round, others oval; each to pierce Holes of its respective Figure, in the several parts of Locks.

PUNCHION, or PUNCHIN, or NEEDLE, in Carpentry, is a piece of Timber placed upright between two Posts whose bearing is too great; serving, together with them, to sustain some large Weight. See BEARING, &c.

The Punchion is usually lower and slighter than the Posts, and is join'd by a Brace, or the like, of Iron. See POST.

Punchion is also a piece of Timber raised upright under the Ridge of a Building, wherein the little Forces, &c. are jointed—*Vitruvius* calls the Punchion, *Columen*.

Punchion is also used for the Arbour, or principal Part, of a Machine, whereon it turns vertically; as that of a Crane, &c. See CRANE.

PUNCHION, is also a Measure for Liquids, containing  $1\frac{1}{2}$  of a Hoghead; or 48 Gallons, or  $\frac{3}{4}$  of a Tun. See MEASURE.

The Paris Punchion is the same with their Demi-queue: At Rouen, it is three Bushels, &c.

PUNCTATED Hyperbola, in the higher Geometry, an Hyperbola, whose oval Conjugate is infinitely small, i. e. a Point. See CURVE and HYPERBOLA.

PUNCTION, or PUNCTURE, in Chirurgery, an Aperture made in the lower Belly, in Dropsical Persons; to discharge the Water: call'd also PARACENTESIS; which see. See also TAPPING, and DROPSY.

PUNCTUATION, in Grammar, the Art of Pointing; or of dividing a Discourse into Periods, and Members of Periods; by Points, expressing the Pauses to be made in the reading thereof. See SENTENCE, PERIOD, &c.

The Points used herein are four; viz. the Period, Colon, Semi-colon, and Comma: See the particular Use of each under its proper Article; COMMA, COLON, PERIOD, and SEMI-COLON.

Punctuation is a modern Art—the Antients were entirely unacquainted with the Use of our Commas, Colons, &c. and wrote not only without any Distinction of Members, and Periods, but also without Distinction of Words: which Custom, *Lipsius* observes, continued till the hundred and fourth Olympiad; during which time, the Sense alone divided the Discourse. See POINT.

There is much more difficulty in Pointing, than People are generally aware of——In effect, there is scarce any thing in the Province of the Grammarians so little fix'd and ascertain'd as this. The Rules usually laid down, are impertinent, dark, and deficient; and the Practice, at present, perfectly capricious; Authors varying not only from one another, but from themselves too.

Indeed, F. *Buffier*, and since him, Mr. *Ward*, have done something towards a fix'd and precise System of Pointing, from the Reason and Analogy of Things: Their Doctrine the Reader will find under the Articles, Comma, Colon, &c.

In the general, we shall only here observe, that the Comma is to distinguish Nouns from Nouns, Verbs from Verbs, and such other parts of a Period as are not necessarily join'd together——The Semi-colon serves to suspend and sustain the Period, when too long——The Colon, to add some new, supernumerary Reason, or Consequence, to what is already said——And the Period, to close the Sense, and Construction; and release the Voice.

PUNCTUM, in Geometry, &c. See POINT.

In the Schools, they have their *Punctum Terminans*, which is the indivisible Extreme of a Line, beyond which no part of the Line extends. See LINE.

*Punctum continuans*, which is an indivisible Magnitude between contiguous Points of a Line, whereby they are connected, and from whence arises a Continuity. See CONTINUITY.

And *Punctum Initians*, which is an Indivisible, from which the Line begins.

PUNCTUM *Formatum*, or *Generatum*, in Conics, is a Point determin'd by the Intersection of a Right Line drawn thro' the Vertex of a Cone to a Point in the Plane of the Base that constitutes the Conic Section. See CONE and CONIC.

PUNCTUM *ex Comparatione*, is either Focus of an Ellipsis and Hyperbola; thus call'd by *Apollonius*, because the Rectangles under the Segment of the transverse Diameter in the Ellipsis; and under that and the Distance between the Vertex and the Focus, in the Hyperbola; are equal to one fourth part of what he calls the Figure thereof. See ELLIPSIS and HYPERBOLA.

PUNCTUM *Lineans*, in Geometry, is a Term used by some Authors for that Point of the generating Circle of a Cycloid, or Epicycloid, which, in the Genesis produces any part of the Cycloidal Line. See CYCLOID, &c.

PUNCTUM *Saliens*, in Anatomy, the first Mark of Conception of an Embryo, which is in the place where the Heart is form'd. See CONCEPTION, HEART, and EMBRYO.

This is easily observ'd with a Microscope, in a Brood-Egg, wherein, after Conception, we see a little Speck or Cloud; in the middle whereof is a Spot that appears to beat, or leap a considerable time, e'er the *Fœtus* be form'd ready for hatching. See EGG: See also GENERATION, and EMBRYO.

PUNCTUM *Lachrymale*, in Anatomy, a little Hole in the Edge of each Eye-lid; opening into a Bag, call'd the *Glandula Lachrymalis*. See LACHRYMAL.

PUNCTURE, in Chirurgery, &c. any Wound made by a pointed Instrument. See WOUND.

In Phlebotomy, People are sometimes brought in danger of the Loss of a Limb, and even of Life, by the Puncture of a Tendon——The Patient, here, does not immediately feel any pain; but twelve Hours after the Operation, complains thereof; not in the Puncture itself, but in the parts tending towards the Armpits——The wounded part swells to the size of a Filberd, and distils an aqueous Humour, or Ichor, which is the chief Diagnostic of the *Punctura Tendinis*. See TENDON.

PUND-BRECH, from the Saxon *Pund*, *Parcus*, Pound; and *Brech*, *Fractura*, Breaking, denotes the illegal taking of Cattel out of the Pound; either by breaking the Pound, picking the Lock, or otherwise. See POUND.

—*Si Pund-brech fiat in curia Regis plena Wyta sit: alibi quinque Mance.* Leg. Hen. 1.

PUNISHMENT, a Penalty impos'd upon the Commission of some Crime. See CRIME.

'Tis essential to the Nature of a Law, that it import or decree a Punishment to the Transgressors thereof. See LAW.

The Forms and Manners of Punishment are various in various Countries, and Ages, and for various Crimes; as Treason, Felony, Adultery, Parricide, &c. See ADULTERY, &c.

Among the Romans, the Pecuniary Punishments were the *Multa* and *Confiscatio*——The Corporal Punishments were *Capitis Diminutio*, *Aqua & Igni Interdictio*, *Proscriptio*, *Deportatio*, *Relegatio*, *Furca*, *Crux*, *Carcer*, *Cubus*, *Equuleus*, *Scala Gemoniae*, *Damnatio ad Gladium*, *ad Metallum*, *Flagellatio*, *Talio*, &c. most of which see describ'd under their respective Articles.

Among us, the principal Civil Punishments, are Fines, Imprisonments, the Stocks, Pillory, Burning in the Hand, Whipping, Cucking-stool, Hanging, Beheading, Quartering, Burning, Transportation, &c. See FINE, PILLORY, CUCKING-STOOL, GALLOWES, GIBBET, &c.

The Ecclesiastical Punishments, are Censures, Suspensions, Deprivations, Degradations, Excommunications, Anathemas, Penances, &c. See CENSURE, SUSPENSION, DEPRIVATION, DEGRADATION, EXCOMMUNICATION, ANATHEMA, PENANCE, &c.

The Military Punishments, are, being Shot, Running the Gamelope, Riding the wooden Horse, Bilboes, &c.

Among the Turks, &c. Impaling, Bastinado's on the Soles of the Feet, &c. obtain. See IMPALING.

PUNITORY Interest, in the Civil Law, such Interest of Money as is due for Delay of Payment, Breach of Promise, &c.

PUPIL, in the Civil Law, a Boy or Girl, not yet arriv'd at the State of Puberty; i. e. under fourteen Years of Age the Boy; and twelve the Girl. See PUBERTY.

While a Minor remain'd under the Direction of a Tutor, he was call'd *Pupil*; after Puberty, a Curator being assign'd him, he ceased to be call'd a *Pupil*. See TUTOR and CURATOR.

A Tutor is obliged to pay Interest for what Monies of his *Pupil* lie idle and unemploy'd——A Tutor is allow'd to do any thing for his *Pupil*, but nothing against him.



**PUPILLA, PUPIL**, in Anatomy, a little Aperture, in the middle of the Uvea, and Iris of the Eye; thro' which the Rays of Light pass to the Crystalline, in order to be painted on the Retina, and cause Vision. See EYE and VISION.

'Tis observed, that as we are forced to use various Apertures to our Optic Glasses; so Nature has made a like Provision in the Eyes of Animals, whereby to shut out too much, and admit sufficient Light; by the Changes in the Aperture of the *Pupil*. See TELESCOPE.

The Structure of the Uvea and Iris is such, as that by their Aperture, the *Pupil*, is contractable and dilatable at pleasure; so as to accommodate itself to Objects, and to admit more or fewer Rays, as the Object being more vivid and near, or more obscure and remote, requires more or less Light.—It being a constant Law, that the more luminous the Object, the smaller the *Pupil*; and again, the nearer the Object, the smaller the *Pupil*; and *vice versa*. See UVEA and RAY.

This Alteration of the *Pupil* is effected by certain Muscular Fibres on the Outside of the Uvea; which are form'd of Nerves detach'd hither from the Sclerotica.—These Fibres proceeding, straight, from their Origin towards the Centre, terminate in the Orbicular Limb or Verge of the *Pupil*, which consists of Orbicular Muscles; whereby the Figure and Space of the *Pupil* are defined.—The first, or longitudinal Fibres, dilate the Aperture of the *Pupilla*; the latter, or orbicular ones, contringe it.

Some Authors, however, attribute the Motions of the *Pupilla* to the *Ligamentum Ciliare*; and others think, that both this, and the Fibres of the Uvea, concur herein.—Mr. *Derham* adds, that while the *Pupil* opens, and shuts; the *Ligamentum Ciliare* dilates, or compresses the Crystalline, and brings it nigher to, or further from the Retina, as the Object is more or less remote. See CILIARE, &c.

The Figure of the *Pupil* in various Animals, is wonderfully adapted to their various Circumstances and Occasions. In some, *e. gr.* in Man, 'tis round; that Form being fittest, for the position of our Eyes, and the various use we make of them in all Directions.

In others, 'tis elliptic or oblong; in some of which, *e. gr.* the Horse, Sheep, Ox, &c. the Ellipsis is transverse, and the Fissure large, to enable them to see laterally and even with a little Light; and thereby both to gather their Food the better in the Night, and to avoid Dangers on either side.—In others, *e. gr.* the Cat, the Ellipsis is erect; and also capable of opening very wide and shutting very close; by means of the latter of which, that Animal can exclude all, but, as it were, a single Ray of Light, and so avoid all the Inconveniencies of the bright Sun; and by the former can take in all the faintest Rays, and thus avoid the Inconveniencies of the Night. An incomparable Provision for these Animals, which are to watch and way-lay their Prey both by Day and Night; to see upwards and downwards; to climb, &c. See EYE.

**PUPILLARITY**, the State of a Pupil; in opposition to *Puberty*. See PUBERTY.

Hence, also, Pupil comes to be used, by way of Extension, in Universities, &c. in the sense of *Alumnus*, for a Youth under the Education, or Discipline of any one.

**PURBECK Stone**, see STONE.

**PURCH. SE**, in Law, the Acquisition of Goods, *viz.* Lands, Tenements, &c. by means of Money; in contradistinction to those descending from Ancestors. See GOODS.

**PURCHASE**, in the Sea Language, has the same Signification with *draw*, at Land.—Thus, they say the *Capstan purchases a-pace*, *i. e.* draws in the Cable a-pace: And when they cannot draw or hale any thing in with the Tackle, they say, *the Tackle will not purchase*.

**PURE**, something free of any admixture of foreign or heterogeneous Matters. See PURIFICATION.

Hence *Pura Eleemosyna*, *Pure Alms*, a Tenure whereby the Churchmen hold Lands in Scotland, somewhat on the footing of the primitive Clergy. See TITHES.

**PURE Hyperbola**, in Geometry, is an Hyperbola without any Oval, Node, Spike, or Conjugate Point. See CURVE.

**PURE Mathematics**, see MATHEMATICS.

**PURFLEW**, a Term in Heraldry, expressing Ermines, Peans, or any of the Furs, when they compose a Bordure round a Coat of Arms. See PEAN, BORDURE, &c.

Thus they say, He beareth Gules, a Bordure *Purflew*, Verry: meaning, that the Bordure is Verry.

**PURGATION**, the Act of *purging*, scowering, or purifying a thing, by separating and carrying off any Impurities found therein. See PURIFICATION.

**PURGATION**, in Pharmacy, is a cleansing of a Medicine, by retrenching its Superfluities; as the Wood and Seeds out of Cassia, Stones out of Dates Tamarinds and other Fruits.

**PURGATION** is also used in Chymistry for several Preparations of Metals, and Minerals; to clear 'em of their Impurities: more usually call'd *Purification*. See PURIFICATION.

The *Purgation* of Mercury is performed by passing it thro' a Chamois Skin. See MERCURY.

Gold is *purged* by the Coppel, Cementation, &c. See GOLD, COPPEL, &c.

The *Purgations* of other Metals are perform'd by repeated Fusions, &c. See METAL, &c.

**PURGATION, Catharsis**, in Medicine, is an excretory Motion, arising from a quick and orderly Contraction of the fleshy Fibres of the Stomach, and Intestines; whereby the Chyle, corrupted Humours, and Excrements lodg'd therein, are protruded further and further; and at length quite excluded the Body. See EXCRETION, STOMACH, INTESTINES, &c.

*Purgation* is one of the principal Species of *Evacuation*. See EVACUATION.

For the Means and Manner wherein it is effected, see PURGATIVE.

**PURGATION**, in Law, is the clearing one's self of a Crime, whereof he is accused before a Judge. See TRIAL.

Of these *Purgations* there was antiently much use in England; especially touching Matters of Felony charged on Clerks; and they are still retained in the Ecclesiastical Court, in suspicion of Incontinency, &c.

*Purgation* is either Canonical, or Vulgar.

*Canonical* is that prescribed in the Canon-Law; the Form whereof, now obtaining, is, that the Party shall take his Oath he is clear of the Fact objected; and bring so many of his honest Neighbours, not above twelve, as the Court shall assign him, to swear, on their Consciences, they believe he swears truly.

The *Vulgar*, and most antient Manner, was by Fire, or Water, or Combat; used by Infidels, and by Christians too, till abolished by the Canon Law. See ORDEAL, WATER, COMBAT, &c.

*Combat*, tho' now disused, may yet be still practised by the Laws of the Realm, in Cases where Evidence is wanting, and the Defendant rather chuses Combat than any other Trial. See SUTHDURE, DUEL, CHAMPION, &c.

**PURGATION**, in Tragedy, a Term which *Aristotle* uses for the Effect of Tragedy on the Mind.

That Philosopher observes, that Tragedy, by means of the Terror and Compassion which it excites, *purges* those Passions out of the Soul.

Indeed, *Corneille* adds, that Tragedy frequently makes those Passions, instead of *purging* 'em; so that he takes *Aristotle's Purgation* to be no more than a Chimæra. See TRAGEDY.

**Menstrual PURGATIONS**, the *Catamenia* or *Menses* of Women. See MENSES.

**PURGATIVE**, or *PURGING Medicine*, a Medicament which evacuates the Impurities of the Body by Stool; call'd also a *Cathartic*. See STOOL, PURGATION, and CATHARTIC.

*Purgatives* are divided, with regard to their Effect, into Gentle, Moderate, and Violent.

*Gentle Purgatives* are such as operate very mildly; as *Tamarinds*, *Cassia*, *Manna*, *Rhubarb*, *Senna*, and most of the Mineral Waters. See CASSIA, MANNA, RHUBARB, &c.

The *Moderate* purge somewhat more briskly, as *Jalap*, *Scammony*, &c. See JALAP and SCAMMONY.

The *Violent* operate excessively; as *Coloquintida*, *Hellebore*, *Laurcola*, &c. See COLOQUINTIDA, HELLEBORE, &c.

*Purgatives* are, again, divided with regard to the Humour they evacuate, into *Phlegmagogues*, *Cholagogues*, *Melanagogues*, and *Hydrogogues*; each whereof see under its proper Article PHLEGMAGOGUE, CHOLAGOGUE, &c.

The modern Physicians reject this Division; and shew the Operations of all *Purgatives* to be alike.

#### Theory of the Operation of PURGATIVES.

*Purgatives* make one of the most important Articles in Medicine.—Their Effect is produced by vellicating and irritating the nervous Fibres of the Stomach and Intestines; and thereby urging 'em to an Expulsion. See STOMACH and INTESTINE.

An Idea of the Manner of their Operation is thus given us by Dr *Cheyne*.

A *Purgative Medicine* being received into the Stomach, by the Mouth, its Particles do there vellicate or stimulate the Fibres of the Stomach, and thereby increase the digestive Faculty, *i. e.* bring the muscular Fibres of the Stomach and the Muscles of the Abdomen and Diaphragma into more frequent Contractions than ordinary; till the Medicine is admitted into the Intestines, the Fibres and Glands whereof being more sensible than those of the Stomach, (whose Parts by the frequent, rough Contacts of one against another, and of the gross Bodies often thrown into it, are, as it were, deadned) it easily moves and brings 'em into frequent, forcible Contractions, whereby these Glands are squeezed.



queer'd, and so emit a fluid Matter, which lubricates the Passages; and which mixing with the feculent Matter of the Intestines, (which is render'd fluid by the same active and stimulating Quality of the *Purgative Medicine*) renders it more fluid; by which, and by the uncommon Contractions of the Intestines, it passes more easily and plentifully into the *Intestinum rectum*, and is thence ejected by Stool.

Thus do gentle *Purges* act; and only cleanse the Intestines; few of their Particles entering in by the Lacteal Veins so as to affect the Blood.—But in violent *Purgatives*, the stimulating Particles are mixed with the Blood, and produce there, many times, very great Effects, by occasioning unnatural Fermentations, by separating the natural Cohesions of the Fluids of the Body; and do also, by velleating the spiral Fibres of the Veins and Arteries, bring those into more forcible Contractions, and thereby accelerate the Motion of the Blood—All which may have sometimes a good, sometimes a bad Effect.

As to the Effects of *Purgatives*, on animal Bodies, Dr. *Quincy* adds, that every Irritation of the Intestines, either quickens the peristaltic Motion in its natural Direction, or occasions some little Inversions of it—Now, in both Cases, any Matters that but slightly adhere to the Coats, or inner Membranes, will be loosen'd, and shook off, and carried forward with the other Contents; and they will also be more agitated, and thus render'd more fluid.

Hence is manifest, how a *purging Medicine* hastens and increases the Discharges by Stool; but the same manner of Operation also carries its Effects much farther, in proportion to the Force of the Stimulus: For where it is great, all the Appendices of the Bowels, and even all the Viscera in the Abdomen, will, by a consent of parts, be pull'd or twitch'd, so as to affect their respective Juices in the same manner, as the Intestines themselves do their Contents.—The Consequence of which must be, that a great deal will be drained back into the Intestines, and made a part of what they discharge. And when we consider the vast Number of Glands in the Intestines, with the Outlets of those Viscera opening thereunto, and particularly of the Liver and Pancreas; it will be no wonder that vast Quantities, especially in full Constitutions, may be carried off by one *Purge*.

As to those *Purgatives* distinguish'd by the Names of *Chologogues*, *Hydragogues*, *Phlegmagogues*, on a Supposition of an elective Quality therein; they may be accounted for upon more intelligible Principles.—For when the Discharges by Stool discover an Over-proportion of any particular Humours, it is to be supposed there was a Redundance of such an Humour, whose discharge any Irritation would occasion. Thus in proportion to the Proximity of some Humours in the Intestinal Tube, and the Disposition of the Passages to convey them that way, do they require greater or lesser Vibrations, or Shakes of the Fibres to fetch them out.

For this Reason, the brisker Cathartics, which vellicate the Membranes most of all, pump out, as it were, from all the Mesenteric Glands, and neighbouring Parts, their Contents, which because they abound so much with Lymphatics, and viscid watry Humours, make the Discharges thin and watry.

Those which act in somewhat a lower degree, yet irritate enough to deterge and draw out a great deal of mucous and viscid Matter, which sometimes by lodgment and want of due Motion, changing into various Colours, occasions the different Names of *Phlegm* or *Choler*. As the former therefore pass for Hydragogues, so do the latter for Purgers of Phlegm and Choler. See *PHLEGM*, *CHOLER*, &c.

But there is another Principle besides that of a Stimulus, whereby a purging Medicine is enabled to answer its Intention; viz. by fusing the Humours, and rendering them more fluid than before, whereby they are better fitted to pass off by their proper Emunctories.—Those which consist of very subtle and active Parts, are not so sensible in the larger Passages, because of the great Quantities of Matter which lays too great a Load upon them, and makes them unheeded; but when they are got into the Blood in any considerable number, they divide and fuse those Cohesions, which obstruct, or move heavily along the Capillaries, and scour the Glands, insomuch that every Pulsation throws something through the intestinal Glands, which goes away by Stool, that the reflux Blood had wash'd away and brought back from all parts of the Body.

Of this kind are all those Cathartics, which are said to *purge* the Joints, and are prescribed in Rheumatisms, and Arthritic Pains, as the *Radix Turpethi*, and all the Aloetics.—And this is the Reason, why purging Medicines of this sort, are so easily changed into the most efficacious Alteratives; for an Alterative is a Cathartic in a lower degree, or of a more remiss Operation. Whatsoever brings such Particles to a Secretory Orifice, which are fitted for its Passage,

oftener, either by accelerating the Blood's Motion, or breaking it into more Particles of that particular Size and Inclination, will increase the Secretion. According, therefore, to the difference of the Parts, where such Secretions are enlarged, as the Glands of the Intestines, Kidneys, or Skin; are the Medicines, which are the Instruments therein, call'd either *Cathartics*, *Diuretics*, or *Diaphoretics*. See *ALTERATIVE*, *SECRETION*, &c.

Dr. *Quincy* has made some Improvements in the Doctrine of purging Medicines, their Nature, Manner of Action, Effects, and Analogy with other Medicines; with the Circumstances of their Preparation, Management, &c. in a Discourse inserted in the *Philosoph. Transact.* The Substance of which we cannot do better than here subjoin.

In order hereto, it is to be premised, 1°. That all those parts of an animal Body which are vascular, or thro' which any Fluid passeth, from the Intestines to the minutest Fibre, are the Seat of the Operation of Medicines. See *MEDICINES*.

2°. That this whole Course of Circulation, or animal Motion, is naturally distinguish'd into three different Stages, by the different Capacities of the Vessels, and Motions of their Contents, each having its proper Out-let; and that these are the Seat of the three Concoctions, so often mention'd by physical Writers: the first being the Stomach and Bowels, and having the Anus for its Emunctory; the second all that Space within the Blood's Motion, so far as it retains its red Colour, having the Kidneys; and the third, all beyond that Circuit, having the Skin for an excretory Organ. See *CONCOCTION*, *EMUNCTORY*, &c.

3°. That every Medicine which causeth Evacuation is, in some sense, a *Purge*. See *EVACUATION*.

4°. That every *Purge* operates as a Dissolvent, by fusing the Juices, and increasing the Quantity fit for Expulsion; or as a *Stimulus*, by accelerating their Motions, so as to bring the Matter fit for Expulsion, oftener to the secretory Out-let; or both.

These *Postulata* are only premised in order to prove this grand Proposition, That a Change in the Bulks, Figures, and Motions of the component Particles of a purging Medicine, will change the Seat of its Operation, and fit it for exertion in the larger or smaller Vessels, as those mechanical Affections are intended, or remitted.

For Illustration hereof, it may be convenient to attend to the common way of making a *Purge* operate, more or less, than it otherwise would do.

Substances, then, which are gross and heavy, as those consisting chiefly of saline and earthy Particles; such as Tartar, Manna, and the like, when reduced smaller by Triture, or repeated Solutions, operate more gently; but when acuated by Acids, or any way made to expose their Angles more plentifully to the Membranes, they become rougher, and sooner take effect.

Resinous Medicines, as Scammony, Gamboge, Jalap, and most of vegetable Production, are more violent, and operate sooner, when they are more renacious, and adhesive, as in their Extracts; but gentler, when divided by hard, brittle Substances, such as Salt of Tartar, Sugar, &c.

Medicines which have in their Composition, Sulphur and Salt, are more or less rough, and speedy in their Operation, in proportion to their greater or lesser participation of the saline Ingredient, and the asperity of its Angles.—Of this kind are most Minerals, and their Preparations: It may be sufficient to instance in the management of Antimony, and Mercury; the first of these is by chymical Analysis known to be a Composition of a subtle Sulphur and Salt; and the more the saline Part is set loose by Preparation, and opening the Sulphur, as it is commonly term'd, the speedier, and with the greater vehemence will it operate; whereas in its more imperfect Preparations, when the Salts are closely wrap'd up in their native Sulphur, it will hardly work at all till it reaches the farthest stages of Circulation. See *ANTIMONY*.

Mercury *per se* is little known as a Medicine, and its first Preparation which makes it into Sublimate, so loads it with saline *Spicule*, that it amounts even to a Poison; but the more those *Spicule* are broken by Triture, Sublimation, &c. the milder doth it operate; and if to the comminution of its Points be added a Sulphur subtle enough to join it, it may be reduced to so mild a Medicine, as not to be felt, but in the last Stage of Operation. See *MERCURY*, *SALIVATION*, &c.

This short View may be sufficient to shew, 1°. That it is the too great Asperity, and Motion in a Medicine, that will not suffer it to pass the Stomach, without irritating it into such Convulsions, as will throw it up again by *Vomit*. See *EMETIC* and *VOMITINO*.

2°. That a farther Comminution, and smoothing its Figure, will gain it admittance into the Bowels, and cause it to operate, as a proper *Purgative*, by Stool.



3°. That a yet farther Remission of these Properties will convey it into the Blood, and allow it there to promote Evacuation by Urine. See URINE and DIURETIC.

And, lastly, that a still farther Comminution will pass it into the minutest Canals, where by the same Properties, only in a lower degree, it will cause Sweat, or increase Perspiration. See PERSPIRATION, SWEAT, DIAPHORETIC, &c.

Hence it appears, that the more subtile Medicines operate in the Capillaries, and smallest Fibres by the same Mechanism, that the more gross ones do in the common Stream of the Blood, when they go off by Urine; or as the grossest of all do in the greater Passages, when they promote Evacuation by Stool.

Hence it is evident, that the Skill of preparing and administering of Medicines consists in proportioning their manifest, and known Properties to the Capacity, and Circumstances of the Part they are to operate in; and to intend, or remit their mechanical Affections, as they are sooner or later to take place in the greater or smaller Vessels.

Of the first Class there are few to be reduced small enough to go beyond the larger Passages, and none of them are worth the pains they require, to fit them farther than for Diuretics: Besides, their natural Disposition to attract, and join with the serous Part of the Blood, whenever they get into that stage of Motion, runs them off by the Kidneys, before they can undergo Comminution enough to get farther; but if by frequent Repetitions of such Medicines, and an uncommon Laxity of the Passages, any thing is passed into the Habit, their Grossness fouls the delicate Strainers, which are destin'd for their Expulsion; and they lodge upon the Glands and Capillaries in such manner, as to induce Intermittents, which is observable in many Persons, after a long use of Cream of Tartar, the common cathartic Salts, and the purging Waters, especially at the latter end of the Summer, when the heat of the preceding Season has debilitated the Solids, and left 'em under too great a Relaxation.

Among the resinous Purges, there are many very powerful ones, but where their Operation is desir'd in the Viscera, Blood, and remoter parts, they must be extremely divided; and this we find spirituous Menstruums will do, by taking up the most subtile parts only, and carrying them into the very small Passages, where they operate chiefly by fusion; because the softness of such Substances cannot enable them, hardly in any degree, to act as *Stimuli*, farther, at least, than as ordinary Detergents. And thus we find that Aloes, the chief of this Tribe, goes farthest into the Habit, and continues longest 'er it operates, when managed with a spirituous Menstruum, as in the *Tinctura Sacra*. The *Rad. Turpetibi*, and *Colocynth* likewise, with all of the vegetable Kind, that will yield to a spirituous Liquor, are, by that means, to be carry'd into the farthest Scenes of animal Action; where they will prove efficacious Medicines in Cases, which, with other management, they would never be able to reach: And on this account it must undoubtedly have been, that we frequently meet, in practical Writers, with many Materials of this sort mention'd as Alterants; the *Colocynth* particularly by *Helmont*: for all Medicines which operated in the farthest Passages, they commonly include under that general Appellation.

But the most efficacious Purges, and those which require the most Skill, are procured from the Mineral Kingdom; these abound in Solidity beyond any other Materials, and therefore wherever they are brought into Action, necessarily excel in quantity of Impulse: Many of these therefore want not only the utmost Comminution to carry them into the farther Scenes of Operation, but also some restraint of their Asperities, and Motions, to fit them for many Intentions.—Thus Sublimar is not only to be much sweeten'd, that is, smooth'd in its Points, to make it a safe Purge in the larger Vessels; but if it be intended to go farther than the Blood, and those Glands, which, in that Circuit it is most apt to be lodged upon when it salivates, it must not only be render'd very fine, but also be cover'd with such Substances as weaken its Points, and make it strain into the last Subdivisions of the Constitution. To this purpose, the common Practice wisely contrives in Distempers, which, according to the Course of Circulation, lie most remote, to wrap up the Basis of this Medicine, in Sulphurs, and such like Substances, as follow it into its last Division, without giving it any Asperities to make it act as a *Stimulus*. Thus, for all cutaneous Foulnesses, and habitual Taints, the Cinnabar, the *Æthiops*, and all of that Sortment, are in readiness; and that ordinary Sulphurs will cover and deaden the efficacies of Mercurial Preparations, so that they shall not operate, but in such Parts only and in certain Circumstances, is demonstrable in ordinary Salivations, which are to be lower'd by Sulphureous Medicines.

Medicines from such Minerals, where a Salt and Sulphur are united by Nature, as they are in some Mercurials by Art, as in Antimony, the native Cinnabar, Steel, &c. are ma-

nageable only upon the same Principles; and the more they are design'd to be carried into the Habit, the more are they to be restrained by their natural, or adventitious Sulphurs: Steel, when opened by, and joined with, the Points of acid Liquors, operates the sooner, and will sometimes prove even Emetic; but when it is cover'd with an additional Sulphur, it will go farther, and answer Intentions much more remote; as is manifest in the common Preparations of Steel, with Tartar, or Vinegar, and with Sulphur.

This way of reasoning on these Occasions, seems the more just, from considering the Texture of those Substances which by a natural Preparation are fitted for Operation in the minutest part of an animal Body; such as those of the aromatic Kind, all which, more or less, according to their greater or lesser Degree of Subtility and Smoothness, promote a Diaphoresis: For these consist of exquisitely fine Salts, cover'd with a most subtile Sulphur, as is demonstrable by Chymical Analysis; and the common *Sal Volatile Oleosum* is an admirable Contrivance upon the same Foundation, where a very volatile animal Salt is cover'd with a most exalted vegetable Oil, whereby it is fitted to pass into the minutest Fibres, and make, as it were, a part of the animal Spirits themselves.

And here it may not be amiss to observe, that all animal Salts are very Volatile, or easily render'd so; but when bare and naked, just as the Fire draws them out, with a Mixture also of its own Particles in their Composition, they are too pungent to be felt without painful Sensations; and when soften'd with a fine Portion of somewhat of an opposite Texture, which is smooth and yielding, they become most efficacious, and safe Sudorifics.

On these Considerations it likewise ceases to be a wonder why the subtile Salts of Cantharides are more sensibly injurious to the Bladder, than any other Parts, and why Camphire prevents those Injuries; for the exquisite Smallness of those *Spiculæ* makes them imperceptible, but in the most minute Canals, into which the Fibres composing the Membranes of the Bladder are known to be divided; and Camphire blunts their Irritations, because its exquisite Subtility enables it to follow them into those Meanders, and sheath their Asperities.

To this purpose is very remarkable, what many now commonly practise in guarding even Mercurials against their stimulating Properties, and sending them into the finest Passages to operate by Fusion, and the bare force of Impulse: For not only *Calomel* and the *Mercurius Dulcis* may be restrained from manifest Operation in the wider Passages, and the Glands about the Mouth; but even the mineral Turbith, which of itself, in a small Dose, will operate powerfully by Vomit and Stool, will not, when mixed with Camphire, be so much felt in those respects, but go into the farthest Circuit of Motion, and promote the cutaneous Discharge in a more efficacious manner, than any Medicine of less specific Gravity.—In this Management the Camphire is to be mixed but a very little while before taking, otherwise it hath not the effect; which appears to proceed from its great Volatility, which makes it in a great measure exhale while it stands mixed in a Medicine.

As to the Doses of *Purgatives*, Dr. Cockburn attempts to determine 'em on the following Suppositions—1°. That no part of 'em operate but in the Blood. 2°. That they operate there, by changing the Blood and other circulating Fluids derived from it.

From which *Postulata* he concludes, that in the same Constitution of Blood, the Dose requir'd to produce the like Effects, must be proportionable to the Blood's Quantity; so that where a certain Dose is requir'd to alter one Pound of Blood, for instance, to a certain degree, there will be requir'd a double Dose to alter two Pounds to the same degree, and a triple Dose to three Pounds, &c. And universally if the Quantity of Blood *b*, require the Dose *d*, the Quantity *m b* requires the Dose *m d*. For as *b : d :: m b : m d*. See DOSE.

PURGATORY, in the *Romish* Church, a Place where the Just are supposed to suffer the Pains due to their Sins for which they have not satisfy'd in this World. See MERITS, ABSOLUTION, &c.

'Tis by the Mercy of God, the Indulgences of the Church, and the Prayers of the Faithful, that People are supposed to be deliver'd out of *Purgatory*. See INDULGENCE, &c.

In *Ireland* is a Place call'd *St. Patrick's Purgatory*; where, as the Legend has it, at the Prayers of *St. Patrick* Bishop of the Place, there was made a visible Representation of the Pains which the Wicked undergo after Death, in order to deter Sinners, &c.

PURGE, in Medicine, a Term frequently used for a purgative Medicine; as Cassia, Senna, Rhubarb, &c. See PURGATION and PURGATIVE.

PURIFICATION, in Chymistry, &c. the Act of *Purifying*, or Refining Natural Bodies; or of separating the *Fæces*



Faces and Impurities therefrom. See PURGATION, REFINING, &c.

For the Methods of Purifying Metals, Gold, Silver, Iron, Copper, Tin, &c. See METAL, GOLD, SILVER, &c.

For the Purification of Semi-metals, Minerals, and other Matters, as Antimony, Sulphur, Camphor, Saltpetre, &c. See ANTIMONY, SULPHUR, CAMPHOR, &c.

PURIFICATION, in Matters of Religion, is an Offering made the Priest by Women rising out of Childbed, e'er they be re-admitted into the Church.

By the Law of Moses, a Woman after bringing forth a Male-Child, was unclean forty Days; after a Female, eighty Days. During which time, she was not to touch any thing Holy, nor to go near the Temple; but to continue within Doors, separate from all Company and Commerce of others.

This Term expir'd, she was to present herself at the Temple, and at the Door of the Tabernacle to offer a Lamb, as a Holocaust, and a Pidgeon or Turtle, which the Priest taking, offer'd to God, and pray'd for her that she might be purify'd.

This Ceremony, which consisted of two things, a Holocaust, and a Sacrifice of Expiation, was call'd *Purification*, טוהר טהרה, *Purificatio*, *Purgatio*.

The holy Virgin, tho', according to the Fathers, exempt from the Terms of the Law, yet comply'd therewith; and at the Time prescribed went to the Temple and accomplish'd the Law: In Commemoration whereof the Church yearly solemnizes the *Feast of the Purification of the Virgin*, on the second of February; call'd also the *Feast of Candlemas*. See CANDLEMAS.

The *Feast of the Purification* seems to be very antient. 'Tis ordinarily said to have been instituted in the Time of Justinian, in the Year 542; and this, on occasion of a Mortality which that Year dispeopled almost the whole City of Constantinople. Yet are there some who imagine it to have been held before, tho' in another manner and on a different Day from that fix'd by Justinian, viz. between the Circumcision and Epiphany.

The same Day is the *Presentation of our Saviour* in the Temple. See PRESENTATION.

PURIM, a solemn Feast held among the Jews on the 14th of March, in Memory of their Deliverance from the Conspiracy of Haman by Esther. See ESTHER.

The Word is Hebrew, פורים, q. d. Lots.

PURITAN, a Term antiently used for the Calvinists of Great Britain, from their Profession to follow the Pure Word of God; in opposition to all Traditions, Human Constitutions, and other Authorities. See CALVINIST, PRESBYTERIAN, NON-CONFORMIST, TORY, WHIG, &c.

PURLINS, in Building, those Pieces of Timber that lie across the Rafters, on the inside; to keep them from sinking in the Middle of their Length. See RAFTER.

By the Act of Parliament for Rebuilding London, it is provided, That all Purlins from fifteen Foot six Inches to eighteen Foot six Inches long, be, in their Square nine Inches and eight Inches—And all in length from eighteen Foot six Inches to twenty-one Foot six Inches, be in their Square twelve Inches and nine Inches.

PURLUE, or PURLIU, or POURALLEE, is all that Ground near any Forest, which being made Forest by our antient Kings; was, by Perambulation granted by some of their Successors, sever'd again from the same, and made *Purlieu*, i. e. pure and free from the Laws and Obedience of the Forest. See FOREST.

The Word is form'd from the French *pur*, pure; and *lieu*, place.

A *Purlieu*, or *Pourallee*, is defined a Circuit of Ground, adjoining to the Forest, and circumscribed with immovable Boundaries, known only by Matter of Record; which Compass of Ground was once Forest, and afterwards disafforested by the Perambulations made for the severing the new Forest from the old.

*Purlieus* or *Pourallees* commenc'd after the manner following—King Henry II. at his Accession to the Crown in 1154, took so much delight in the Forests of this Kingdom, that, not being contented with those he found here, tho' many and large, he began to enlarge divers of them; and to afforest the Lands of his Subjects near adjoining to the same. See AFFORESTING.

His Successors, Richard I. and Henry II. far from retrenching or restoring any thing; made still further Incroachments; and thus did the Lands continue till the 17th Year of King John; at which time, the Grievance being grown notorious, and generally felt by all degrees of People; divers Noblemen and Gentlemen besought the King to grant, that they might have all those new Afforestations, made by his Predecessors aforesaid, and himself, disafforested again; and the King, after much Solicitation, was at length prevail'd on to subscribe, and seal such Articles concerning the Liberties of the Forest, as they then de-

manded, being for the most part such as are now contain'd in the Charter of the Forest. See CHARTA de Foresta.

Hereupon choice was made of divers Noblemen, &c. to the Number of twenty-five, who were sworn, with others their Assistants, to see the said Liberties, so granted and confirm'd by the King, to be in every point observ'd.

But e'er any thing was done to the purpose, King John died, and King Henry III. succeeding, fresh Solicitations were made to him; who, for the better accomplishing of the said Disafforestation, order'd Inquisitions to be taken by substantial Juries for severing all the new Forests from the old: upon which, two Commissioners were sent to take those Inquisitions; in virtue whereof, many great Woods and Lands were not only disafforested, but improved to arable Land by the Owners thereof. See DISAFFORESTING.

After this Charter was made and confirm'd, some of these new Afforestations were perambulated, and proper Inquisitions taken, and the Certainty determin'd by Matter of Record, which were the old, and which the new: Tho' it appears that the greatest part of the new Afforestations were still remaining during the Life of King Henry III.

Under Edward I. fresh Petitions and Solicitations being set on foot; three Bishops, three Earls, and three Barons, were at length appointed to see those Perambulations perform'd and continu'd; who caused them to be made accordingly, and Inquisitions to be taken thereupon, and return'd into the Court of Chancery; and all those, that were antient Forest, to be meered, and bounded with irremovable Boundaries, to be known by Matter of Record for ever.

Those Woods and Lands, that had been newly afforested, the King likewise caused to be separated from the old, and to be return'd into the Chancery by Marks, Meres, and Bounds to be known, in like manner, by Matter of Record for ever.

Thus it appears, how the *Purlieus*, or *Pourallees*, had their first beginning; for all such Woods and Lands as were afforested by Henry II. Richard I. or King John, and by Perambulations sever'd from the antient Forests, were, and yet are call'd *Pourallees*, q. d. Woods and Lands sever'd from the old Forests, and disafforested by Perambulation; *Pourallee* being the same as *Perambulatio* in Latin. See PERAMBULATION.

But notwithstanding such new Afforestations were disafforested by Perambulation, whereby the same became *Pourallee*, or *Purlieu*; yet they were not thereby so disafforested as to every Man, but that they do in some sense continue Forest still, as to others—For by the Words of *Charta de Foresta*, if the King has afforested any Woods or Lands of his Subjects, to the damage of the Proprietors, they should forthwith be disafforested again; that is, only as to those Persons whose Woods and Lands they were; who, as the proper Owners thereof, might fell and cut down their Woods at their own pleasure, without any Licence from the King; as also convert their Meadows and Pastures into Tillage, or otherwise improve their Ground to the best advantage. So also they might hunt and chase the wild Beasts of the Forest towards the same, &c. But no other Person might claim such Benefit of hunting in the *Pourallee*, beside the proper Owner of the Soil thereof; who is left at liberty to suffer the *Pourallee* to remain Forest still; as some, in effect, have thought most expedient, because hereby entitled to the Benefit of the Common within the Forest, which otherwise they were excluded from. Hence, if the Beasts chance to wander out of the Forest into the *Pourallee*, the King hath a Property in them still, against every Man, but the Owner of the Ground wherein they are, who hath a special Property in them, *ratione soli*; yet so as he may only take them by hunting, or chasing with his Grey-hounds, or Dogs, without any Forestalling or Forestetting them in their Course again towards the Forest. See HUNTING, FORESTALLING, &c.

Beside what has been hitherto said of the Difference between Forest and *Purlieu*, or *Pourallee*, there is this farther Diversity, that all the Woods and Lands within the Regard of the Forest, are absolutely within the Bondage and Charge of the Forest, as well in respect of the Owners thereof, as of any other Person; for no one may cut down his own Woods, or improve his own Lands, within the Regard of the Forest, without Licence from the King, or his Chief Justice in Eyre of the Forest.—Neither shall any Person hunt, chase, or molest the wild Beasts of the Forest in his own Ground, within the Regard of the Forest, without Licence, or Warrant from the King, or his Chief Justice of the Forest, so to do. See REGARD.

But those, whose Grounds are within the *Pourallees*, are not subject to these Restrictions.

Yet are not the Woods and Lands in the *Pourallees*, absolutely freed from the Bondage of the Forest in respect of the wild Beasts having their Haunts therein, when they happen to stray out of the Forest; but as they were once absolutely Forest, so they are still conditionally so.



**PURLUE - Man**, or **PURLIEU - Man**, or **POURALLEE - Man**, is one who has Land within the *Purlue*; and is allow'd or qualify'd to hunt or course within the same, tho' under certain Restrictions.

By Stat. 13 Rich. 2. he who may lawfully hunt in any *Pourallee*, ought to have Woods or Lands of Freehold within the *Pourallee*, to the yearly Value of 40 s.—By Stat. Jac. 1. he ought to have Lands of Inheritance of the yearly Value of 10 l. or Lands of Freehold of the yearly Value of 30 l. or have Goods worth 200 l. or be the Son of a Knight, or Baron, or Person of a higher Degree, or Son and Heir apparent of an Esquire—But by a later Act, Car. 2. no Man may keep Grey-hounds within the *Pourallee*, or elsewhere within *England* or *Wales*, unless he have a free Warrant, or be Lord of a Mannor, or such a Freeholder, as is seized in his own Right, or in Right of his Wife, of Lands, Tenements, or Hereditaments, of the clear yearly Value of 40 l. over and above all Charges, and Reprises, of such Estate of Inheritance; or of Lands, Tenements, or Hereditaments, in his own Right, or in Right of his Wife, for Term of Life or Lives, of the yearly Value of 80 l. over and above all Charges, and Reprises, or that is worth in Goods, or Chattels, 400 l. See **GAME**.

The *Pourallee*, or *Purlieu*, then, is said to be for him that is so qualify'd: Others, not qualify'd, and therefore not *Purlieu-Men*, yet having Land in the *Pourallee*, may, if they find any wild Beasts of the Forest in their own Grounds within the *Pourallee*, chase them thereout with little Dogs, but not with Grey-hounds, or other Dogs.

Nor is the *Purlieu-Man* left at large to hunt at his own Discretion; but tied down to several Rules: As,

1. That he always begin his Chase in his own Ground; and that tho' he find such wild Beasts in his own *Pourallee*, and in respect thereof, hath a Property in them, *ratione soli*, against all Persons but the King; yet such his Property is only on this Condition, that he can slay them with his Dogs in Chase, without *Forestalling*, before they can recover the Forest—Tho' they be but within the Lift of the Forest, before the Dogs fasten on them; they are the King's, or other Owner of the Forest.

But if the *Pourallee-Man* first make his Chase in his own Freehold, he may pursue the same thro' every Man's Ground within the *Pourallee*, provided he enter not into the Forest.

2. If a *Purlieu Man* begin his Course in another Man's Ground, within the *Pourallee*; and his Dogs fasten on a wild Beast, before it can get within the Bounds of the Forest, and the Beast draws the Dogs into the Forest, and is there slain by them; here the *Pourallee-Man* shall not enter into the Forest, nor take the Beast so kill'd, because his Course was irregular from the beginning, as he could claim no Property in the Beast, *ratione soli*.

3. A *Pourallee-Man* may hunt in his own *Pourallee*, with no more Company than his own Servants; neither may he appoint, license, or warrant any other Person, except his Servants, to hunt by his Commandment in his *Pourallee*.

4. Every *Pourallee-Man* is forbidden by the Laws of the Forest, to hunt in his own Grounds within the *Pourallee*, every day, or oftner than three days in any one Week, Sunday excepted.

5. Nor is any Man to disturb, or make a Course after any Deer found in his *Pourallee*, within forty days after the King hath made a general Hunting in the Forest adjoining thereunto; because then the wild Beasts of the Forest come not into the *Pourallees* of their own accord; but as they are forced into the same by the Hunters, with Clamours and Blowing of Horns; so that they fly thither for Refuge.

6. No Man shall hunt within seven Miles of the Borders of the Forest, or in his own *Pourallee*, within forty days next before the King hath issued out his Proclamation, declaring his Royal Will and Pleasure to make a general Hunting in that Forest.

Inasmuch as the *Pourallees* were once, and in some sense still are, Forest, it was necessary to have Officers to attend, and take on them the Charge of the Preservation of the Game that may happen to wander out of the Forest, into the *Pourallees*; since otherwise the Laws of the *Pourallees* could not be executed, but the Forest would soon be destroyed by the *Pourallee-Men*.

For this reason, *Rangers* were first appointed; who, tho' not Officers in the Forest, yet appertain thereto; for all Officers in the Forest have Charge of the Vert, and Venison of the Forest; but a Ranger hath no Charge of Vert, but only of Venison coming out of the Forest into the *Pourallees*, his place of Charge; from whence his Office is to conduct the same back again into the Forest. See **RANGER**.

This Officer is appointed by the King, or his Chief Justice in Eyre, and made by Patent, with a Fee commonly

of 20, 30, or 40 l. or more, by the Year, payable out of the Exchequer, as also certain Fee-Deer, both Red and Fallow, to be taken annually at proper Seasons, out of the Forest.

The Substance of his Oath is, to chase, and with his Hounds drive back, the wild Beasts of the Forest, as often as they range out of the same into his *Pourallee*; to prevent all unlawful Hunting and Hunters, of wild Beasts of the Forest; and to prevent those, and other Offences, at the next Court of Attachments, or Swainmore, which shall first happen.

Rangers, it is to be observ'd, belong only to such *Pourallees*, as were once the Woods and Lands of the Subject, and were afterwards disafforested again, and so became *Pourallees*: Hence, as there are some Forests in *England*, which never had any Enlargement by new Afforestations, and therefore have no *Pourallees* at this day; there can be no Rangers belonging to them.

**PURPLE**, **PURPURA**, a red Colour, bordering on Violet; made chiefly with Cochineal, or Scarlet in Grain. See **COLOUR**; see also **RED**, **SCARLET**, **COCHINEAL**, &c.

*Purple* was much esteem'd among the Antients; especially the *Tyrian Purple*, which underwent more Dyes than the rest, and which was almost peculiar to Emperors and Kings. Yet this *Purple* did not exceed that now in use; the chief Reasons why the former has been disused, are, that the latter is both cheaper and finer.

The ancient *Purple* was tinged or given with the Blood of a testaceous Sea-fish, call'd by the Greeks *porpura*, and by the Latins *Purpura*; whereof we have Descriptions in several Authors, and Shells in most of the Cabinets of the Curious.

In the Seas of the *Spanish West-Indies* about *Nicoya*, is found a Shell-fish which perfectly resembles the ancient *Purpura*, and in all probability is the very same: This Fish, Gage tells us, usually lives seven Years; it hides itself a little before the Dog-days, and continues to disappear for 300 Days running.

They are gather'd plentifully in the Spring, and by rubbing one against another, yield a kind of Saliva, or thick Glair, resembling soft Wax: But the *Purple Dye* is in the Throat of the Fish; and the finest part in a little white Vein—The rest of the Body is of no use.—He adds, that the chief Riches of *Nicoya* consist in this Fish. Cloth of *Segovia* dyed with it is sold for twenty Crowns the Ell; and none but the greatest *Spanish* Lords use it.

Besides the *Indian Purple Fishes*, we have others much nearer home: In the *Philosoph. Transact.* we have an Account of a *Purple-Fish* discover'd in 1686. by Mr. W. Cole, on the Coasts of *Somersetshire*, *South-Wales*, &c. where it is found in great abundance.

The Fish, M. *Reaumur* observes, is a kind of *Buccinum*; a Name given by the Antients to all Fishes whose Shell bears any resemblance to a Hunting-Horn; and it appears from *Pliny*, that part of the ancient *Purple* was taken from this kind of Shell-Fish.—So that this may be esteem'd a recovery of what had been supposed entirely lost.

The Method of obtaining the Colour, the Author describes thus—The Shell, which is very hard, being broke, (with the Mouth of the Fish downwards, so as not to crush the Body) and the broken pieces being pick'd off, there appears a white Vein lying transversely in a little Furrow or Cleft next the Head of the Fish.

In this Vein is the *Purple Matter* lodged; some of which being laid on Linnen, appears at first of a light green Colour, and if exposed to the Sun, soon changes into a deep green, and in a few Minutes into a Sea-green, and in a few more into a blue; thence it soon becomes of a purplish red, and in an Hour more of a deep *Purple* red.

And here the Sun's Action expires; but by washing in scalding Water and Soap, and drying it, it becomes of a most bright, beautiful Crimson; which will bear washing admirably without any Styptic. See **CRIMSON**.

The Fish, he observes, is good Food; and adds, that there are several Kinds, differing in Size, and Shell, and also in the Colour of the tinging Liquor—There are some found on the Coasts of *Poitou*.

M. *Reaumur* has discover'd another very different Kind of *Purple*—It is produced in oval Grains, about a quarter of an Inch long, and about one thick, full of a white Liquor bordering on yellow, which cover certain Stones or Sands, about which the *Buccina* of *Poitou* usually assemble.

By the Experiments M. *Reaumur* has made, it appears that these Grains are neither the Eggs of the *Buccinum*, nor the Seeds of any Sea-Plants, nor any rising Plants, but the Eggs of some unknown Fish.

These Grains being bruised on a white Linnen, at first only tinge it yellow, and that insensibly; but in three or four Minutes give it a very beautiful *purplered*, provided the Linnen be exposed to the open Air; for the Air of a Room, even



even if the Windows be open, will not do.—This Colour fades a little by repeated Washings.

M. *Reaumur* concludes, from some Experiments he made, that the Effect of the Air on the Liquor, does not consist in its taking away any Particles thereof, nor in giving it any new ones; but only in its agitating it, and changing the Arrangement of the Parts that compose it.—He adds, that the Liquor of the *Buccinum*, and that of the Grains, seem to be nearly of the same nature; except that the latter is more watry, and only saline; whereas the other is hot, and pungent.

The *Caribbee* Islands have likewise their *Purple-Fish*—It is call'd *Burgan*; being of the Size of the End of the Finger, and resembling our Perriwinkles: Its Shell is of a brownish azure, its Flesh white, its Intestines of a very bright red, the Colour whereof appears thro' the Body: and 'tis this dyes the Froth, which it casts when tad-ken, and which is at first of a violet hue, bordering on blue.

To oblige them to yield the greater Quantity of Froth, they lay them on a Plate, shake and beat them against one another; upon which the Plate is immediately cover'd with the Froth, which is receiv'd on a Linnen Cloth, and becomes *Purple* in proportion as it dries.

P. *Labat* observes, that if this be the real *Tyrian Purple*, the Secret of preparing and fixing it is lost; this Colour being found to dwindle and dissipate, in proportion as the Linnen dy'd with it is wash'd.

The same Author gives us the Description of another *Purple Dye* produced by a Plant growing in the *Anzilles*—The Juice of this Tree, when cut standing, is of a blood-red, and communicates the same Colour to Cloths; tho', like the former, it loses much in washing.

**PURPLE**, in Medicine.—The *Purple Fever* is a kind of Plague, or a Malignant-Fever, discovering itself in Eruptions on the Skin like the Bites of Bugs, or Fleas, or like Grains of Millet or the Small-Pox; whence it is sometimes also call'd the *Spotted Fever*. See **FEVER**.

The Eruptions are red, orange, violet, azure, livid, or black; and when they rise in great quantity, 'tis esteem'd a good Sign.

Sometimes they spread to a great extent, like *Erysipela's*, according to the Quality of the Poison. See **PLAGUE**.

**PURPURE**, or **POURPLE**, or **PURPLE**, in Heraldry, according to some, is one of the five Colours of Armories, mix'd or compounded of Gules and Azure bordering on Violet; according to others, of a little black and much red or mallow Colour. See **COLOUR**.

It is supposed a Symbol of *Temperance, Liberality, Dignity, Authority, Faith, and Piety*.

Most of the Authors in Heraldry, as *Favin, Gelior, Monnet, and Menestrier*, don't allow *Purple* for a Colour; in regard it is not simple, but composed of an equal Mixture of four other Colours.—They rather esteem it a kind of mean Metal; sometimes Metal, and sometimes Colour. Hence the *Spaniards* call it *una mistion*; so that one cannot lay it on Metal and Colour without falsifying the Arms.

Add, that many take the *Purple*, as it is accounted, on many antient Bearings, by which some of the Moderns would evince the regularity and legitimacy of this Colour in Armory to be no other than Silver tarnish'd.

*Spelman*, however, in his *Aspilogia*, allows *Purple* the preference before all other Colours, as having been an Ensign of Royalty for many Ages; yet he allows it to have been excluded by the antient Heralds, as only an imperfect Colour.

It is represented in Engraving by transverse Strokes drawn from the dexter Point of the Chief.

In the Coats of Noblemen it is call'd *Ametbyst*, and in those of Princes *Mercury*.

**PURPRESTURE**, in our antient Law-Books, from the French *Pourprist*, and *Pourprest*, q. d. *Integre arreptum, est pro-*

*prie terre alienæ clandestina subtrahio, ejusdemque vicinæ ascriptio*. See **POURPRESTURE**.

**PURPRISUM**, of the French *Pourpris*, a Close, or Enclosure—Also the whole Compass or Extent of a Manor or Place.

—*Donavi eis meum Purprisum de Kirkeham & Domos meas & Molendinum & Prata, &c.* Charta Walteri Espec. Priorat. de Kirkeham.

**PURPURATI**, i. e. the Sons of Emperors and Kings. *Neubrigenfis*, lib. 3. cap. 4. *Malmsbury*, lib. 3.

**PURREL**, Anno 35 *Eliz.* cap. 10. A List ordained to be made at the end of Kerseys, to prevent deceit in diminishing their length.

**PURSE**, a manner of Accounting; or, as some call it, a Species of Money of Account, much used in the *Levant*; particularly at *Constantinople*. See **MONEY of Account**.

The *Purse* consists of about 112 Pounds *Sterling*—'Tis

so call'd, because all the Grand Signor's Treasure in the *Seraglio* is kept in Leather Bags of this Value.

This Method of Accounting, the *Turks* derive from the *Greeks*, and they from the *Romans*; the Emperors whereof brought it to *Constantinople*, as appears from a Letter of *Constantine* to *Cecilian Bishop of Carthage*, quoted by *Eusebius* and *Nicephorus*, wherein is this Passage—"Being resolved to give something for the support of the Ministers of the Catholic Religion throughout the Provinces of *Africa, Numidia, and Mauritania*; I have wrote to *Vesius*, Treasurer-General of *Africa*, and given him orders to pay you three thousand *Folles*," i. e. *Purses*: For, as M. *Fleury* observes, we may call that *Purse* which the *Latins* call'd *Follis*, which was a Sum of two hundred and fifty silver *Denarii*, amounting to about seven Pounds sixteen Shillings, our Money.

**PURSER**, an Officer aboard a King's Ship, who receives her Victuals from the Victualler, and is to take care that it be in good Condition, and well laid up, and stow'd.

His Office is also to keep a List of the Men and Boys belonging to the Ship; and to set down exactly the Day of each Man's admittance into pay, that so the Pay-Master or Treasurer of the Navy may issue out his Disbursements, and pay off the Men according to the *Purser's Books*.

**PURSIVENESS**, among Farriers, *Broken Wind*; a Name common to all those Diseases in Horses, whose principal Seat is in the Lungs; proceeding from an Ulcer, or some inward wasting thereof, wherein the small Vessels are worn or abraded by the Sharpness or Acrimony of the common Discharges. See **PHTHISIS**.

The like Disorder may also arise from a Stagnation, hindering the Air from penetrating so as to lift up the Lungs in the Act of Respiration; or from tough and mucilaginous Matter separated in the Branches of the Wind-Pipe.

The usual Occasions are Cold, Surfeits, and other Diseases not thoroughly carried off—*Purfive* Disorders may also arise from unwholesome Food, bad Air, hard Riding when a Horse is full.

The Signs are commonly a heaving and beating of the Flanks; a wheezing and rattling. Sometimes the Kernels about the Throat will swell, and there will be a glandulous Running at the Nose, which is the utmost Stage of the Disease, and usually reputed desperate. See **GRANDERS**.

**PURSUIVANT**, see **POURSUIVANT**.

**PURVEYANCE**, see **POURVEYANCE**.

**PURVIEW**, a Term frequently used by Sir *Edw. Coke* for the Body of an Act of Parliament; or that part which begins with *Be it Enacted, &c.* contradistinguish'd from the Preamble. See **STATUTE**.

The Statute of 3 *Hen. 7.* stands upon a *Preamble* and a *Purview*. 12 Rep.

The Word comes from the French *Pourveu*, a Gift, Grant, Provision, &c.

**PURULENT**, in Medicine, something mix'd with, or partaking of *Pus*. See **PUS**.

Phthical People frequently spit a *purulent Matter*. See **PHTHISIS**.

In a *Dysentery*, the Stools are *Purulent*; when there is an Ulcer in the Reins or Bladder, the Urine is *Purulent*.

**PUS**, in Medicine, a putrid Matter, white and thick, form'd of corrupted Blood, and issuing out of the Lips of a Wound when open'd, or an Imposthume when burst. See **WOUND** and **ULCER**.

Wounds are always to be kept open while they suppurate, i. e. while they generate *Pus*; for fear of shutting up the Wolf in the Sheep-fold. See **SUPPURATION**.

The Word is *Latin*, *Pus*, literally denoting Snout, &c. form'd of the *Greek*  $\pi\upsilon\sigma$ , which signifies the same thing.

**PUSTULE**, a little Pimple, or Eruption, on the Skin, full of *Pus*; especially arising in the small and great Pox. See **POX**.

**PUTAGE**, **PUTAGIUM**, in our old Law-Books, **PUTANISM**; or *Fornicatio ex parte femine: quasi putam agere; à Gall. Putte, i. e. Meretrix*. See **PUTANISM**.

*Quod autem generaliter solet dici Putagium, hereditatem non adimit; illud intelligendum est de putagio Matris; quia filius heres legitimus est, quem Nuptiæ demonstrant.* Glanv. lib. 7. cap. 12.

**PUTANISM**, **PUTANISMO**, an *Italian* Term, naturaliz'd by some *English* Writers, signifying *Whoredom*, or the Life or Condition of a Courtesan.

The Word we borrow immediately from the French, *Putanisme*, and they from the *Italians*, *Puttana*, Whore; of *Putta*, Girl.

**PUTATIVE**, *Suppositivus*; or something reputed to be what it really is not.

The Word is seldom used but in the Phrase *Putative-Father*.—Thus we say *Joseph* was the *Putative-Father* of *Jesus Christ*.

**PUTLOGS**, in Building, short pieces of Timber, about seven Foot long, used in building Scaffolds—They lie at right Angles to the Wall with one of their ends resting upon the



the Ledgers or Poles, which lie parallel to the side of the Wall of the Building.

**PUTREFACTION**, or **PUTRIFICATION**, in Physics, a slow sort of Corruption produced in natural Bodies, generally by the Moisture of the Air, or some other ambient Fluid, which penetrating the Pores, and being agitated therein, dissolves and sets at liberty some of the more subtile Parts, particularly the Salts and Oils; and thus loosen and dislocate the Compages, quite change the Texture, and sometimes the Figure of the Mixt. See **CORRUPTION**.

How much the Air contributes to *Putrefaction*, is evident hence, that Bodies buried deep under Earth or in Water out of any reach of Air, shall remain for Ages entire; which yet being exposed to the open Air, shall soon rot and moulder away. See **SUBTERRANEANOUS**.

The like appears from succulent Fruits and other vegetable Matters, which, for all their aptness to *putresc*, will remain a long time unchang'd *in vacuo*. See **VACUUM**.

The perpetual Oscillations of so elastic a Fluid contain'd or shut up in the Pores of a Body, may be conceived sufficient to induce this Alteration in their Form and Texture; yet should it rather seem that the Water or vapoury Matter wherewith the proper Air is impregnated, is the more immediate Agent. Hence *Acoffa* observes, that in *Peru*, and others have observ'd the same in *Egypt*, where it very rarely rains, every thing will continue a long time uncorrupted: unless we will rather ascribe the Effect to the abundance of nitrous Salt in the Air of those Places, which is known to resist *Putrefaction*. See **AIR, WATER, SALT, &c.**

In effect, all *Putrefactions*, both of Animal and Vegetable Bodies, are affirmed by the learned *Boerhaave* to be perform'd by means of Water alone: Take (says he) a Pound of fresh Flesh, and keep it in a heat like that of our Body, and in few days the *Putrefaction* will be compleated; but if you first drain out or exhale all the watry Part from the same in some chymical Vessel; tho' the Salt and Oil remain, the Flesh will harden like a Stone, and may be kept for Ages without *Putrefaction*—Tho' when thus harden'd, Water pour'd on it, or even the common Dew, will soon set it a *putresc*ing.

By such means, Bread, Flesh, or the like Foods, may be preserv'd for Ages; provided regard be had to the Place: Hence it is, that in dry Countries, as *Egypt*, dead Carcasses never *putresc*, but dry and harden uncorrupted; as we see in the Mummies found buried under the Sand. See **MUMMY**.

Even human Blood, which naturally is so prone to *Putrefaction*, if you deprive it of its watry Part, may be kept for fifty Years. Goat's Blood we actually find kept so long in the Shops, without corrupting; tho', if you dissolve it in Water, and expose it to a gentle Warmth, it *putresc*es immediately.

**PUTREFACTION**, in Chymistry, is a spontaneous Operation whereby vegetable Substances, in virtue of their own Heat and Moisture, are dissolved, and turn'd into an animal Nature. See **ANIMAL and VEGETABLE**.

*The Process of PUTREFACTION is as follows:*

Throw together any of the tender, green, and succulent Parts of recent Vegetables, whether Acid or Alkaline, in a large Heap, in the warm open Air, and press them down with an additional Weight, if their own be inconsiderable, and the middle part of the Heap will in a little time, spontaneously conceive a small degree of Heat, and pass successively through the other degrees, till it arrive at a state of Ebullition, and be perfectly *putresc*'d.

In the space of three days, from the first putting them together, they will yield a Heat, perceivable by the Hand, equal to that of a human Body in a healthy State; by the fifth it will be too great for the Hand to bear without pain; and, lastly, by the sixth, seventh, or eighth day, the Juices will generally appear ready to boil, and sometimes the Matter will even flame and burn away.

By this spontaneous Operation, the Vegetable acquires an abominably *putrid*, stercoraceous, or cadaverous Taste, and Odour; and turns intirely into one soft, simular, pappy Mass, or Crassamentum, greatly resembling fetid human Excrement in the Scent, and *putresc*'d Flesh in the Taste. See **EXCREMENT**.

If now this fetid Matter thus obtain'd, be directly, whilst it remains in its fetid state, committed to a Glass-Retort, and distill'd with proper degrees of Fire, there will come over, 1. A Water impregnated with an urinous Spirit, perfectly like that obtainable from animal Subjects, and separable by a fresh Distillation slowly made in a tall Glass, into Elementary Water; and a large quantity of pure, white, volatile, dry, alkaline Salt, not to be distinguish'd from animal Salts. 2. A volatile, alkaline, oily Salt, that shoots in the Globes. 3. An exceedingly volatile and a thick fetid Oil, both which are so entirely like those of Animals. And, lastly, the remainder being calcin'd in an open Fire, affords not the least Particle of fixed Salt, just as if the Sub-

ject had really been of the Animal, and not of the Vegetable Kingdom.

This Process is truly universal, and holds equally in all kinds of Vegetables, tho' ever so different in their Nature and Virtue. Experiments have been made in the coldest and most succulent or watry Plants, such as Purslain, Sorrel, &c. as well as with the hottest or most acrimonious, such as the Spurges, &c. and it was always found to succeed; but the sooner, as the Vegetable employ'd contain'd the greater quantity of Oil; tho' with the same Phenomena.

It will likewise succeed with dry Vegetables; provided they be moisten'd with Water before they are thrown into heaps: And thus we sometimes see that Stacks of Hay will spontaneously take fire and blaze away; especially if it was not well dried in the making.

It is surprizing to consider, that by this means the difference betwixt Vegetables may be entirely taken away, and the whole Kingdom thereof reduced to the same common Nature; so that Wormwood and Tansey, for instance, or Sorrel and Scurvygrass, shall appear as one and the same thing; and this thing appear no otherwise than *putresc*'d Flesh.

Tho' Sorrel be famed for its power of preserving the animal Fluids uncorrupted whilst they are circulating in the Body, and Scordium for its embalming Virtue, as continuing it in a state of Incorruption after Death; yet even these Plants are themselves thus easily corrupted and changed into such a kind of *putresc*'d Flesh as it is their Virtue to prevent.

This, *Boerhaave* considers as a general Law of Nature, wisely established to produce wonderful Changes in the World, and prevent the Inaction and Decrease of Matter on our Globe; this active Principle or Medium giving an easy and reciprocal Transition of Vegetable into Animal Substances, and Animal into Vegetable.

Hence we are given to understand the Nature and Uses of *Putrefaction*, with its difference from Fermentation, both in regard of the Subject, Cause, and Effect—Vegetables alone are the Subject of Fermentation; but both Vegetables and Animals of *Putrefaction*. Fermentation also requires that its Subject be first reduced to the form of a Liquid, or at least made capable of floating in one, before it can obtain; whereas *Putrefaction* only succeeds when its Subject is half dry, or just barely moist: which is the reason why Must put up in a wooden Vessel does not *putresc*; whilst the Grapes from which it was expressed, being thrown in heaps, would presently conceive heat, and run into a state of *Putrefaction*.

We see also that Vegetable *Putrefaction* is begun and promoted with Heat, and finish'd with Coction, which requires a degree of Heat much greater than that excited by Fermentation, as being capable of causing an Ebullition in the Plant, and even of turning it into a Flame: As, indeed, the immediate Cause of Fermentation is the Motion of the Air intercepted between the Fluid and viscous Parts of the fermenting Liquor; but the Cause of *Putrefaction* is Fire itself, collected or included within the *putresc*ing Subject.

Again, the Effects of Fermentation are the Production of Flowers or Yeast, the conversion of the saline part of the fermenting Body into Tarrar, or an acrimonious Acid and fixed kind of Salt, and of Oils into inflammable Spirit, retaining something of the nature of the Vegetable; but *Putrefaction* makes all the acid Salts volatile and alkaline, renders the Oils not spirituous, but abominably fetid, utterly destroys what sets the specific difference between one Subject and another, and converts them wholly into a soft pulpy Mass, of an animal Nature, without the least Signs of any fixed Salt, tho' the recent Vegetable would, by Calcination, at the first have afforded a large Proportion: Or, in short, making nearly the same kind of Alteration in the whole Subject, as it would undergo by passing through a sound animal Body, suffering all the Actions thereof, and being at length turned into the form of Excrement. See **FERMENTATION**.

This Operation may let us a little into the nature of animal Digestion, or the Change which the Aliment suffers in the human Body—For the Change our vegetable Foods undergo in the Body, being such as brings 'em to be of the same Nature, and afford the same Principles with the Change induced by *Putrefaction*, is a presumption that Digestion is nothing else; at least it apparently comes nearer thereto than to Fermentation. See **DIGESTION**.

**PUTRID**, **PUTRIDUS**, something rotten, or putrify'd. See **PUTREFACTION**.

Thus we say *putrid* Flesh—A *putrid* Humour—*Putrid* Limbs, i. e. mortify'd ones, are to be cut off. See **MORTIFICATION**.

**PUTRID Fever**, is that kind of Fever, where the Humours, or part of 'em, have so little circulatory Motion, that they fall into an intestine one, and putrify. See **FEVER**.

This is commonly the case after great Evacuation, or excessive Heat; where there is such a Scarcity of Spirits, that



that the Solids do not vibrate sufficiently to keep the Fluids in their due Velocity.

In these Cases the Pulse is low, and the Flesh cooler than natural at first.

**PUTTY**, a Term used for Powder of calcined Tin. See **TIN**.

**PUTURA**, a Custom claim'd by the Keepers of Forests, and sometimes Bailiffs of Hundreds, to take Man's Meat, Horse's Meat, and Dog's Meat, of the Tenants and Inhabitants *gratis*, within the Perambulation of the Forest, Hundred, &c. See **PURLIEU**, **PERAMBULATION**, &c.

This Custom within the Liberty of *Knarensburg* was long since turned into the Payment of four Pence *pro Putura*.

The Land subject to this Service, is call'd *Terra Puturata*. The learned *Sommer* erred in his Exposition of this Word—*Johannes clamat unam Puturam in prioratu de Penevostham, qui est quedam Cella Abbatie de Evesham pro se & Ministris, Equis & Garcionibus suis per unum diem & duas noctes de tribus Septimanis in tres Septimanas, viz. de victualibus, ut in esculentis & poculentis, ad Costas prioratus predicti indebite*—Placit. apud Preston. 17 Edv. 3.

**PYANEPSIA**, in Antiquity, a Feast celebrated by the Athenians in the Month *Pyaneption*; which, according to the generality of the Critics, was their fourth Month, and corresponded to our *September*. See **FEAST**.

*Plutarch* refers the Institution of this Feast to *Theseus*; who, at his Arrival from *Crete*, made a kind of Sacrifice to *Apollo* of all the Provisions remaining in his Vessel; putting 'em all into a Kettle, boiling 'em together, and eating 'em with his six Companions; which Custom was afterwards continued.

The Scholiast of *Aristophanes* says, it was to acquit himself of a Vow he made to *Apollo* in a Tempest.

*M. Baudelot* writes *Puanepsia*; and takes it to be a Feast instituted in memory of *Theseus's* Return after killing the *Minotaur*. See **MINOTAUR**.

The Greeks vary as to the Origin and Signification of the word *Pyaneption*, whence the Feast is denominated.—*Harpocration* calls it *Peanopsia*; he adds, that others call it *Panopsia*, because then the Fruits all appear to the Eye. *Hesychius* writes *Pyanepsia*; and derives it from *πυαμ*, Bean, and *εσθω*; I gather: because in this Feast the Athenians gather'd their Beans; and made a kind of Broth of 'em.

**PYCNOSTYLE**, or **PYCHNOSTYLE**, in the ancient Architecture, a Building where the Columns stand very close to one another; one Diameter and a half of the Column being only allow'd for the Intercolumination. See **INTERCOLUMINATION**.

The *Pycnostyle* is the smallest of all the Intercoluminations mention'd by *Vitruvius*.

The Word is form'd from the Greek *πυκν*, close, and *στυλ*, Column.

Some make the *Pycnostyle* the same with the *Systyle*; others distinguish the latter, by its allowing half a Module more in the *Corinthian* Intercolumination. See **SYSTYLE**.

The *Pycnostyle*, Mr. *Evelyn* observes, chiefly belong'd to the Composite Order; and was used before the most magnificent Buildings, as at present in the *Peristyle* of *St. Peter's* at *Rome*, consisting of near 300 Columns; and such as yet remain of the Antients among the late discover'd Ruins of *Palmyra*.

**PYCNOTICS**, Medicines of an aqueous Nature, and which have the Faculty of cooling and condensing, or thickening the Humours.

Such are Purslain, the Nenuphar, or Water-Lilly, Solanum, &c.

The Word in its original Greek, *πυκνωτικόν*, signifies something that has the power of thickening.

**PYGMY**, or **PIGMY**, or **PIGMÆUS**, a Dwarf, or Person of exceedingly small Stature, not exceeding a Cubit in height. See **DWARF** and **GIANT**.

The Appellation is given among the Antients to a fabulous Nation, said to have inhabited *Thrace*, who generated and brought forth Young at five Years of Age, and were Old at eight; famous for the bloody War they waged with the *Cranes*.

The Word is form'd of the Greek *πυγμα*, Cubit. See **CUBIT**.

**PYLING** the Ground, for Foundations. See **FOUNDATION**.

**PYLORUS**, in Anatomy, the lower Orifice of the Stomach, whereby it discharges itself into the Intestines. See **STOMACH** and **INTESTINES**.

The *Pylorus* is situate on the right side of the Stomach, and passes by an oblique Ascent to the *Duodenum*; to prevent the too precipitate Passage of the Aliment out of the Stomach. See **DUODENUM**.

For this end, it is likewise furnish'd with an extraordinary Series of Fibres, to constrict it more than any other part: These running round it, serve as a kind of Sphincter, which is open'd by the Contraction of the Stomach,

and the Appulse of the Chyle. See **DIGESTION**, **CHYLIFICATION**, &c.

At the bottom of the *Pylorus*, is a large Cavity, which *Willis* calls the *Antrum Pylori*, and conceives its Use to be, to keep the Food first digested, till the latter taken into the Stomach be digested; tho', if what *Wharton* observes be true, viz. that there are Lacteals in the bottom of the Stomach, such a Provision should seem unnecessary. See **LACTEAL**.

The Word is derived from the Greek *πυλας*, Janitor, Door-keeper.

**PYRAMID**, in Geometry, a Solid standing on a square Basis, and terminating, a-top, in a Point: Or a Body whose Base is a Polygon, and whose Sides are plain Triangles; their several Tops meeting together in one Point. See **SOLID**.

*Euclid* defines it a solid Figure, consisting of several Triangles, whose Bases are all in the same Plane, and have one common Vertex. See **TRIANGLE** and **VERTEX**.

*Wolfius* defines it a Solid, bounded by as many Triangles, A D C, D C B, and A D B, terminating in one Point, D; as the Base A B C, has Sides. (Tab. **GEOMETRY**, fig. 78.)

The *Pyramid* is said to be *Triangular*, *Quadrangular*, *Quinquangular*, &c. as the Base is triangular, quadrangular, &c.—The *Pyramid* may be call'd a square, triangular, &c. Cone; or the Cone, a round *Pyramid*. See **CONE**.

#### Properties of the PYRAMID.

1. All *Pyramids* and *Cones* standing on the same Base, and having the same Altitude, are demonstrated to be equal.

2. A triangular *Pyramid* is the third part of a Prism, standing on the same Base, and of the same Altitude. See **PRISM**.

3. Hence, since every Multangular may be divided into Triangulars; every *Pyramid* is the third part of a Prism, standing on the same Basis, and of the same Altitude.

4. If a *Pyramid* be cut by a Plane *abc*, parallel to its Base A B C; the former Plane, or Base, will be similar to the latter.

5. All *Pyramids*, Prisms, Cylinders, &c. are in a Ratio compounded of their Bases and Altitudes: The Bases, therefore, being equal, they are in proportion to their Altitudes; and the Altitudes being equal, in proportion to their Bases.

6. *Pyramids*, Prisms, Cylinders, Cones, and other similar Bodies, are in a triplicate Ratio of their homologous Sides.

7. Equal *Pyramids*, &c. reciprocate their Bases and Altitudes; i. e. the Altitude of the one is to that of the other, as the Base of the one to that of the other, &c.

A Sphere is equal to a *Pyramid*, whose Base is equal to the Surface, and its Height to the Radius of the Sphere.

8. A *Pyramid* is one third of the perpendicular Altitude, multiply'd by the Base.

To measure the Surface and Solidity of a *Pyramid*—Find the Solidity of a Prism that has the same Base with the given *Pyramid*: See **PRISM**.—And divide this by three; the Quotient will be the Solidity of the *Pyramid*.

Suppose, v. gr. the Solidity of the Prism be found 67010328; the Solidity of the *Pyramid* will be thus found 22336770.

The Surface of a *Pyramid* is had, by finding the Areas both of the Base A B C, and of the lateral Triangles A C D, C B D, B D A. See **TRIANGLE**. The Sum of these is the Area of the *Pyramid*.

The external Surface of a right *Pyramid*, standing on a regular Polygon Base, is equal to the Altitude of one of the Triangles which compose it, multiply'd by the whole Circumference of the Base of the *Pyramid*.

To describe a *Pyramid* on a Plane.—1. Draw the Base, v. gr. the Triangle A B C; (if the *Pyramid* requir'd be triangular) so as that the Side A B, supposed to be turned behind, be not express'd. 2. On A C and C B, construct the Triangles A D C, and C D B, meeting in any assumed or determined Point, v. gr. D; and draw A D, C D, B D: Then will A D B C, be a triangular *Pyramid*.

To construct a *Pyramid* of Past board, &c.—Suppose, v. gr. a triangular *Pyramid* required. 1. With the Radius A B, describe an Arch B E; (fig. 79.) and thereto apply three equal Chords, B C, C D, and D E. 2. On D C construct an equilateral Triangle D F C; and draw the right Lines A D and A C. This Past-board, &c. being cut off by the Contour of the Figure, what remains within, will turn up into a *Pyramid*.

**PYRAMID**, in Architecture, is a solid massive Edifice; which from a square, triangular, or other Base, rises diminishing, to a Point, or Vertex.

*Pyramids* are sometimes used to preserve the Memory of singular Events; and sometimes to transmit to Posterity the



the Glory and Magnificence of Princes: but as they are the Symbol of Immortality, they are more commonly used as funeral Monuments. See MONUMENT.

Such is that of *Cestius* at Rome; and those other celebrated ones of *Egypt*, as famous for the Hugeness of their Size, as their Antiquity.

These last are all square in their Bases; and 'tis a thing has been frequently proposed, to establish a fixed Measure from them; to be thereby transmitted to Posterity.—— See their Descriptions, Measures, &c. in *Thevenot*, *Pietro della Valle*, &c.

Among the *Egyptians*, the *Pyramid* is said to have been a Symbol of human Life; the Beginning whereof is represented by the Base, and the End by the Apex: On which account it was, they used to erect them on Sepulchres. HERODOTUS.

Some derive the Word from *πῦρ*, *Wheat*, and *ἀνδρα*, *colligo*; pretending that the first *Pyramids* were built by the Patriarch *Joseph* for Granaries.——But *Villalpandus*, with much better reason, derives the Word from *πῦρ*, *Fire*; because ending in a Point like Flame.

When they are very narrow at bottom, i. e. their Base very small; they are call'd *Obelisks* and *Needles*. See OBELISK.

*Scenography* of a PYRAMID. See SCENOGRAPHY.

*Optic* PYRAMID. See OPTIC Pyramid.

PYRAMIDAL Mirrors. See MIRROR.

PYRAMIDAL Numbers, are the Sums of Polygonal Numbers, collected after the same manner as the Polygon Numbers themselves are extracted from Arithmetical Progressions. See POLYGONAL Number, &c.

These are particularly call'd *prime Pyramids*——The Sums of first *Pyramids* are call'd *second Pyramids*——The Sums of those *third Pyramids*, &c. ad infinitum.

Particularly those arising from triangular Numbers are call'd *prime triangular Pyramids*; those arising from Pentagonal Numbers are call'd *prime pentagonal Pyramids*, &c.

From the manner of summing up polygonal Numbers it appears evidently how the *prime Pyramidal* Numbers are found; viz.  $(a-2)n^2 + 3n - (a-5)n$ , expresses all the

6

*prime Pyramids*.

PYRAMIDALE Corpus, in Anatomy, a Plexus of Blood-Vessels on the back of the Testicles; thus call'd from its Form: and from its Structure also call'd *Corpus Varicosum*, and *Pampini-forme*. See CORPUS and VARICOSUM.

It consists of innumerable little Veins, communicating with each other; and forming a kind of Net-Work; which, at length, uniting, terminate in one Vein; by which the Blood is convey'd into them all.

The Origin of this Plexus is from the spermatic Veins, which, a little above the Testicles, split into several Branches; which again uniting, several times, form the *Corpus Pyramidale*. See TESTICLE and SPERMATIC Veins.

PYRAMIDALES Papillæ, see PAPILLÆ Pyramidales.

PYRAMIDALIS, in Anatomy, a small Muscle of the Abdomen, lying on the lower part of the *Rectus*——It has its Name from its Figure; and its Origin from the Margin of the *Os Pubis*, with a pretty broad fleshy Head, whence it grows gradually narrower till it end in a small round Tendon in the *Linea alba*; sometimes almost at the Navel.

This Muscle is sometimes single, sometimes it has its fellow; and sometimes they are both wanting.

PYRAMIDOID, call'd also *Parabolic Spindle*, a solid Figure form'd by the Revolution of a Parabola round its Base, or greatest Ordinate.

Thus, if you consider it according to the Method of Indivisibles, you may conceive its Solidity to consist of an infinite Series of Circles, whose Diameters are all parallel to the Axis of the revolving Parabola. See PARABOLIC Spindle.

PYRATE, see PIRATE.

PYRENOIDES Processus, in Anatomy, a Process of the second Vertebra; thus call'd from its pear-like shape; as also for the like reason, *Dentiformis*, or Tooth-like Process. See PROCESS and VERTEBRA.

The Word is compounded of *Pyrum*, Pear, and *ειδος*, Figure.

PYRETICS, Medicines good against Fevers. See FEVER.

The Word is form'd from the Greek *πυρ*, Fire, of *πύρετος*, Fire.

PYRIFORMIS, in Anatomy, a Muscle of the Thigh, receiving its Name from its Figure, which resembles that of a Pear.——It is also call'd *Iliacus externus*, from its Situation. See ILIACUS.

Its beginning is round and fleshy, from the inferior and internal part of the *Os Sacrum*, where it respects the Pelvis of the Abdomen; and descending obliquely in the great

Sinus of the *Os Ilium*, above the acute Process of the *Ispidium*, and joining with the *Gluteus medius*, it is inserted by a round Tendon into the superior part of the Root of the great Trochanter.

This moves the *Os Femoris* somewhat upwards, and turns it outwards.

PYRITES, in Natural History, a Semi-metal, supposed to be the Marcasite of Copper; or the Matrix or Ore where in that Metal is formed. See MARCASITE, ORE, COPPER, &c.

From this Marcasite it is that the *Roman Vitriol* is procured. See VITRIOL.

The Word is form'd from the Greek *πῦρ*, in regard it takes fire more readily than any other Stone——It is also call'd *Quis*.

Antiently it was used in lieu of the Flints in Fire-Locks.

——Dr. *Starc* tells us of a Heap of *Pyrites* consisting of two or three hundred Tons; which being cover'd up from the Air five or six Months, took fire, and burnt for a Week. Some of it look'd like melted Metal, others like red-hot Stones. He adds, it emitted a most noisome Smoke.

Dr. *Lister* attributes Thunder, Earthquakes, &c. to the sulphureous and inflammable Breath of the *Pyrites*. See THUNDER, EARTHQUAKE, EXHALATION, &c.

PYRITES, in a more general sense, is used for the Marcasites of all Metals; the Names whereof are varied according to the Metals they partake of. See MARCASITE.

Thus *Chrysites* is that of Gold; *Argyrites* that of Silver; *Siderites* that of Iron; *Chalcites* that of Copper; *Molybdites* that of Lead, &c. See ARGYRITES, CHRYSITES, SIDERITES, &c.

PYROBOLOGY, see PYROTECHNIA.

PYROENUS, from *πῦρ*, Ignis, Fire, and *ενος*, Vinum, Wine; is a Term sometimes used for rectify'd Spirit of Wine; thus call'd because made by Fire, or rather because render'd of a fiery nature. See SPIRIT and RECTIFICATION.

PYROET, or PIROUET, or PYROUET, in the Manage. See PIROUET.

PYROMANCY, a kind of Divination, perform'd by means of Fire. See DIVINATION.

The Antients imagined they could foretel Futurity by inspecting Fire and Flame: To this end, they consider'd its Direction, or which way it turn'd.——Sometimes they added other Matters to the Fire; e. gr. a Vessel full of Urine, with its Neck bound about with Wool; watching narrowly on which side it burst, and thence taking their Augury.

Sometimes they threw Pitch on it; and if it took fire immediately, esteem'd it a good Augury.

PYROTECHNY, PYROTECHNIA, the Art of Fire; or a Science which teaches the Management and Application of Fire in several Operations. See FIRE.

The Word is form'd from the Greek *πῦρ*, Fire, and *τεχνη*, Art.

*Pyrotechny* is of two kinds, *Military*, and *Chymical*.

*Military* PYROTECHNY is the Doctrine of Artificial Fire-Works and Fire-Arms; teaching the Structure and Use both of those used in War for the Attacking of Fortifications, &c. as Gun Powder, Cannons, Bombs, Granadoes, Carcasses, Mines, Fusees, &c. and those made for Amusement-like, as Rockers, Stars, Serpents, &c. See FIRE-ARM, ORDNANCE, &c.

Some call *Pyrotechny* by the name *Artillery*; tho' that Word seems confined to the Instruments used in War. See ARTILLERY.

Others chuse to call it *Pyrobology*, q. d. the Art of Missile Fires; from the Greek *πῦρ*, Fire, and *βαλλειν*, to cast, throw. See GUNNERY, PROJECTILE, &c.

*Wolffius* has reduced *Pyrotechnia* into a kind of mixt Mathematical Art: Indeed, it won't allow of Geometrical Demonstrations; but he brings it to tolerable Rules and Reasons; whereas, before, it had used to be treated by Authors at Random and without any Reason at all. See MATHEMATICS.

See the Elements of *Military Pyrotechny* under the several Instruments and Operations; CANNON, BOMB, ROCKET, GUN-POWDER, &c.

*Chymical* PYROTECHNIA, is the Art of managing and applying Fire, in Distillations, Calcinations, and other Operations of Chymistry. See CHYMISTRY and OPERATION.

Some reckon a third kind of *Pyrotechnia*, viz. the Art of fusing, refining, and preparing Metals. See METAL, FUSION, REFINING, &c.

PYROTICS, in Medicine, Remedies either actually, or potentially hot; and which, accordingly, will burn the Flesh, and raise an Eschar. See CAUSTIC and ESCHAROTIC.

The Word is form'd from the Greek *πῦρ*, Fire. PYRRHIC, PYRRHICA, in Antiquity, a kind of Exercise on Horse-back; or a feign'd Combat, for the Exercise of the Cavalry. See EXERCISE.



It was thus call'd from its Inventor *Pyrrhicus*, or *Pyrrhus* of *Cydonia*, who first taught the *Cretans* to march in Measure and Cadence to Battel; and to observe the pace of the *Pyrrhic* Foot.

Others derive the Name from *Pyrrhus* Son of *Achilles*, who instituted this Exercise at the Obsequies of his Father. *Aristotle* says, 'twas *Achilles* himself that invented it.

The *Romans*, also, call'd it *Ludus Trojanus*, the *Trojan* Game; and *Aulus Gellius*, *Decursus*.

'Tis doubtless this Exercise that we see represented on Medals by two Cavaliers in Front running with Launces, and the Word *Decursio* in the Exergue.

**PYRRHIC**, in the *Greek* and *Latin* Poetry, a Foot consisting of two Syllables both short. See FOOT.

**PYRRHONIANS**, a Sect of ancient Philosophers, so call'd from their Founder *Pyrrho*. See PHILOSOPHER.

The distinguishing Character of this Philosopher was, that he profess'd to doubt of every thing; maintaining, that Men only judge of Truth and Falshood from Appearances. See DOUBTING.

On this Principle he kept himself in continual suspension of Mind, never determining on any thing; to avoid the Inconveniencies of Error and false Judgments. See ERROR, FALSHOOD, &c.

Those now distinguish'd by the Name of *Pyrrhonians*, or Sceptics, are Persons who, from the great Number of things that are dark and obscure, and from the Aversion they bear to popular Credulity, maintain that there is nothing certain in the World. See SCEPTICS.

The truth is, *Pyrrhonism* has some foundation in Nature: We don't judge of things from their real Essences, but from their Relations to ourselves. Most of our Ideas we receive by means of our Senses; but our Senses are not given us to judge of the Essences, but the Relations of things to ourselves, i.e. how they may affect us, so as to do us good or harm. See SENSATION, RELATION, SENSE, &c.

Thus, e.g. our Eyes don't give us the real Magnitudes of Objects, but their relative ones only. See VISION. See also BODY and MATTER.

The Academicks differ'd from the *Pyrrhonians*, in that they own'd there were some things more like, or a-kin to Truth than others; which the *Pyrrhonians* peremptorily denied. See ACADEMICS.

*Le Clerc* observes, that the *Pyrrhonians*, in affirming that there is nothing certain, were the most assuming and decisive of all Philosophers; since they must have first examin'd all things, to be able to determine precisely that all things are uncertain.

It may be added, that the very Principle of the *Pyrrhonians* destroys itself: For if there be nothing certain, then must that Dogma itself be precarious; and if no one thing be more probable or liker to Truth than another, why shall the Principle of the *Pyrrhonians* be believed preferably to the opposite one; since itself is come at in the same way as our other Knowledge.

**PYTHAGOREANS**, a Sect of ancient Philosophers, who retain'd to the Doctrines of *Pythagoras*. See PHILOSOPHER.

The Founder of this Sect was of *Samos*, the Son of a Lapidary, and Pupil of *Pherycides*; who flourish'd about the seventh Olympiad, i.e. about 500 Years before Christ.

This Sect was also call'd the *Italic Sect*, or *Italic School*, because *Pythagoras*, after travelling into *Egypt*, *Chaldea*, and even into the *Indies*, to inform his Understanding; returning home to his own Country, and there unable to bear the Tyranny of *Polycrates*, or *Solison*, retir'd into the Eastern Part of *Italy*, then call'd the *Greater Greece*, and there taught and form'd his Sect. See IONIC.

He is held to have excell'd in every part of Science: *Laertius* says, among the *Chaldees* and *Hebrews* he learnt Divination, and the Interpreting of Dreams; in *Egypt* he learnt all the Mysteries of the Priests, and the whole System of Symbolical Knowledge, with all their Theology—*Porphyry* adds, that he learnt the Mathematical Sciences in his Travels; Geometry from the *Egyptians*, the Doctrine of Numbers and Proportions from the *Phœnicians*, and Astronomy from the *Chaldeans*; Morality, and Theology he learnt chiefly from the *Magi*.

He was the first who assum'd the Title *Philosopher*; the Sages till his time having bore the arrogant Title σοφοί. See PHILOSOPHER.

*Jamblicus* observes, that in *Phœnicia* he conversed with the Prophets and Philosophers, the Successors of *Mochus* the Physiologist; which *Mochus*, *Selden* and some others will have to be *Moses*.

His School in *Italy* was at *Crotona*; where he is said to have been attended by no less than 600 Scholars—His House was call'd the Temple of *Ceres*, and the Street where it stood the *Museum*. See MUSEUM.

Out of his School proceeded the greatest Philosophers and Legislators, *Zaleucus*, *Charonidas*, *Archytas*—*Porphyry* says, as soon as he arriv'd in *Italy* he had an Auditory

of two thousand People; to whom he explain'd the Laws of Nature, Reason, and Justice.

He endeavour'd to assuage the Passions of the Mind with Verses, and Numbers; and made a Practice of composing his Mind every Morning by his Harp; frequently singing the *Pœans* of *Thales*. See MUSIC.

Exercises of the Body made a considerable part of his Discipline. See GYMNASIUM Exercise.

His School became so popular, that Cities and People committed their Republics to the Government of his Scholars—At length, *Porphyry* adds, Envy stirring up Sedition against 'em, they were oppress'd; and in time, their Learning, which they ever kept secret, was lost; except some difficult things learnt by Rote by the Crowd of Hearers. For *Pythagoras* never committed any thing to Writing.

Beside his public School, *Pythagoras* had a College in his own House, which he call'd κοινόν, *Cœnobium*: In this were two Orders or Classes of Scholars, ἐξωτερικοί, *Exoterici*, call'd also *Auscultantes*; and ἐσωτερικοί, *Intrinsēci*.—The former were Novices and Probationers, who were kept under a long Examen, and even imposed a Quinquennial Silence, to teach them Modesty and Attention, according to *Apuleius*; or, according to *Clemens Alexandrinus*, to teach them to abstract their Minds from sensible Objects, and enure them to the pure Contemplation of the Deity.

The latter were call'd *Genuini*, *Perfēti*, *Mathematici*, and *Pythagoreans*, by way of Eminence—These alone were let into the *Arcana* and Depths of the real *Pythagoric* Discipline.

*Clemens* observes, that these Orders corresponded very exactly to those among the *Hebrews*: For in the Schools of the Prophets were two Orders, viz. the Sons of the Prophets, who were the Scholars; and the Doctors or Masters, who were also call'd *Perfēti*. And among the Levites, the Novices or Tyro's, who had their Quinquennial Exercises, by way of Preparation. Lastly, even among the *Profelytes* there were two Orders; *Exoterici*, or *Profelytes* of the Gate; and *Intrinsēci* or *Perfēti*, or *Profelytes* of the Covenant. He adds, 'tis highly probable that *Pythagoras* himself had been a *Profelyte* of the Gate, if not of the Covenant. See PROPHECY.

*Gale* endeavours to prove, that *Pythagoras* borrow'd his Philosophy from that of the *Jews*; to this end producing the Authorities of many of the Fathers, and ancient Authors; and even pointing out the Tracks and Footsteps of *Moses* in several parts of *Pythagoras*'s Doctrine.

*Pythagoras* taught, 1. That God is one; that he is a most simple, incorruptible, and invisible Being; and therefore only to be worshipped with a pure Mind, with the simplest Rites, and those prescribed by himself.

*Laertius* observes, that he made Unity the Principle of all things; hence arose Duality, &c. See UNITY, &c.

In his Conversation with the *Egyptians*, he learnt abundance of Secrets about Numbers; to which he attributed so much, that he even attempted to explain all things in Nature by Numbers—In effect, it was a common Opinion of the ancient Philosophers, that the Species of Things have to each other the Nature and Relation of Numbers; and that the Universe, and all Things therein, were produced according to certain Numbers, inherent in the Creator's Mind. See CREATOR.

Hence *Porphyry* observes, the *Pythagoreans* studied the Doctrine of Numbers with great Attention: Since the incorporeal Forms, and first Principles of Things, i.e. the Divine Ideas, could not be deliver'd in Words, they had recourse to Demonstration by Numbers; and thus call'd the common Reason and Cause of Unity, Identity, and Equality, by the Name *One*.

2. *Pythagoras* further taught, that there is a Relation or Kinship between the Gods and Man; and therefore the Gods take care of Man—Which, *Clemens Alexandrinus* says, is apparently borrow'd from the Christian Doctrine of Providence. See PROVIDENCE.

*Pythagoras* also asserted a *Metempsychosis*, or Transmigration of Souls; and therefore the Immortality of the Soul. See METEMPSYCHOSIS.

3. He taught, that Virtue is Harmony, Health, and every good thing; and that God, and therefore every thing, consists of Harmony. See HARMONY.

**PYTHAGOREAN**, or **PYTHAGORIC** System, among the Antients, was the same with the *Copernican* System among the Moderns. See SYSTEM.

It was thus call'd, as having been maintained and cultivated by *Pythagoras*, and his Followers; not that it was invented by him, for it was much older. See COPERNICAN System.

**PYTHAGORIC Theorem**, or **Proposition**, is the 47th of the first Book of *Euclid*. See TRIANGLE and HYPOTHE-NUSE.

**PYTHAGORIC Tetraclys**. See TETRACTYS.



**PYTHIA**, or **PYTHIAN**, in Antiquity, the Priestess of *Apollo*; by whom he deliver'd Oracles. See **ORACLE**.

She was thus call'd from the God himself, who was entitled *Apollo Pythius*, from his slaying the Serpent *Python*; or, as others will have it, ἀπὸ τοῦ πυθόδατος, because *Apollo*, the Sun, is the cause of Rottenness; or, according to others, from πυθόμενος, *I hear*, because People went to hear and consult his Oracles.

The Priestess was to be a pure Virgin—She sat on the Covercle, or Lid, of a brazen Vessel, mounted on a Tripod; and thence, after a violent Enthusiasm, deliver'd her Oracles, or rather explain'd those of the God; i. e. rehearsed a few ambiguous and obscure Verses, which were taken for Oracles.

All the *Pythiæ* did not seem to have had the same Talent at Poetry, or Memory enough to retain their Lesson—*Plutarch* and *Strabo* make mention of Poets, who were kept in pay, as Interpreters of *Jupiter*, &c.

**PYTHIAN Games**, **PYTHICI Ludi**, were solemn Games instituted in honour of *Apollo*, and in memory of his killing the Serpent *Python* with his Arrows. See **GAMES**.

The *Pythici* were celebrated in *Macedonia*, in a place call'd *Pythium*—They were the next in Fame after the *Olympic Games*; but were more antient than they: for 'tis pretended they were instituted immediately after the Defeat of the Serpent.

They were held every two Years, towards the Month *Elaphebolion*, which answer'd to our *February*.

The *Pythia* were also celebrated at *Delphos*; and 'twas these were the most renown'd—A part of *Pindar's* Poems are compos'd in praise of the Victors in the *Pythian Games*. See **PINDARIC**.

The Critics are divided on the Subject of the Serpent *Python*—The Poets say, that *Juno* made use of it to persecute *Latona*, and prevent her bringing into the World *Apollo* and *Diana*, whom she had conceiv'd of *Jupiter*; and that 'twas for this reason *Apollo* kill'd it.

*Strabo* says, 'twas no other than a famous Villain, one *Draco*, that *Apollo* ridded the World of.

*Dickinson*, in his *Delphi Phenicizantes*, maintains the *Python* of the *Greeks* to be the *Typhon* of the *Phenicians*; and the *Typhon* of the *Phenicians* to be the *Og* of Scripture; and *Apollo* who slew it, he will have to be *Jehovah*.

**PYXIS Nautica**, in Navigation, the *Seaman's Compass*. See **COMPASS**.

The Word *Pyxis* is *Latin*, and literally signifies a little Box.

Among Anatomists, *Pyxis* is also used for the Cavity of the Hip-bone. See **ACETABULUM**.





## Q.

**Q**, A Consonant, and the sixteenth Letter of the Alphabet. See LETTER and ALPHABET. The *Q* has this peculiar to it, that 'tis always follow'd by an *U*. See *U*.

The *Q* is form'd from the Hebrew *ק*, *Koph*; which most other Languages have borrow'd; tho' some of them have rejected it again, particularly the *Greeks*, who now only retain it as a Numeral Character.

In effect, there is that resemblance between the *Q* and *C*, in some Languages, and *K* in others; that many Grammarians, in imitation of the *Greeks*, banish the *Q* as a superfluous Letter.

*Papias* even affirms, that all the *Latin* Words now wrote with a *Q* were wrote among the antient *Romans* with a *C*: But we want better Authorities. For tho' that may hold in many cases, insomuch that we still write indifferently *quor* or *cui*, *cum* or *quum*, *quotidie* or *cotidie*, &c. Yet does it not thence follow, that they wrote *cis*, *ce*, *cid*; for *quis*, *que*, *quid*—What Inscriptions authorize such a reading?

Far from this the Antients sometimes substituted *Q* for *C*; and wrote *quojus*, *quos*, for *cujus*, *cus*, &c.

*Varro*, however, and some other Grammarians, as we are told by *Censorinus*, &c. would never use the *Q*. The truth is, its Use or Disuse seems to have been so little settled and agreed on, that the Poets used the *Q* or *C* indifferently, as best suited their Measures; it being a Rule, that the *Q* joined the two following Vowels into one Syllable; and that the *C* imported them to be divided.

Hence it is, that *Lucretius* uses *cuiet* for three Syllables, in lieu of *quiet*; *acua* for *aqua*; and that *Plautus* uses *relicuum* for *reliquum*; as in *quod dedi datum non vellem relicuum non*; where the *cum* must be two Syllables, otherwise the *Trochaic* Verse will be lame of a Foot.

In the *French*, the Sound of the *Q* and *K* are so near akin, that some of their nicest Authors think the former might be spared—*Ramus* adds, that till the Establishment of Royal Professors in the University of *Paris* under *Francis I.* they always used *Q* in the *Latin* the same as in the *French*; pronouncing *kis*, *kalis*, *kantus*, &c. for *quis*, *qualis*, *quantus*, &c.

Some very learned Men make *Q* a double Letter, as well as *K* and *X*—According to them, *Q* is evidently a *C* and *U* joined together—'Tis not enough that the Sound is the same; but they see the Traces of the *CU* in the Figure of the *Q*; the *V* being only laid obliquely  $\angle$ , so as to come within the Cavity of the *C*.

To confirm this, they say the Antients wrote *qi*, *qæ*, *qid*. Tho' *Jos. Scaliger*, *Littleton*, &c. think this no Proof of the Point; for in *Gruter's* Inscriptions, we find not only the *Q*, but also the *C*, put for *QU*; as *Cintus*, *Quintus*, *sicis* for *siquis*, &c. Yet no body ever imagin'd the *C* a double Letter.

*Q* among the Antients, was a Numeral Letter, signifying 500; as in the Verse,

*Q* velut *A* cum *D* quingentos vult numerare.

A Dash over it, as  $\tilde{Q}$ , denoted it to signify five hundred thousand. See *A*.

*Q* is also used as an Abbreviature in several Arts—In Physician's Bills, *Q. Pl.* stands for *quantum placet*, or *quantum vis*, as much as you please of a thing; *q. s.* for *quantum sufficit*, or as much as is necessary.

Among Mathematicians, *Q. E. D.* signifies *quod erat demonstrandum*, which was to be demonstrated—*Q. E. F.* *quod erat faciendum*, which was to be done.

*Q. D.* is also frequently used among Grammarians, &c. for *quasi dictum*, as if it were said, &c.

**QUACK**, in Medicine. See *EMPIRIC*.

**QUADRA**, in Building, any square Border, or Frame, encompassing a Basso-Relievo, Pannel, Painter's or other Work.

The Word is also used abusively for a Frame or Border of another Form; as Round, Oval, or the like.

**QUADRAGESIMA**, a Term sometimes used for the Time of Lent; because consisting of forty Days. See *LENT*.

Hence, some Monks are said to lead a *Quadragesimal* Life; or to live on *Quadragesimal* Food all the Year.

**QUADRAGESIMA Sunday**, is the first Sunday in *Lent*; so call'd, because it is about the fortieth Day before *Easter*. See *EASTER*.

On the same account, the three preceding Sundays, are call'd *Quinquagesima*, *Sexagesima*, and *Septuagesima*. See *QUINQUAGESIMA*, &c.

**QUADRAGESIMALS**, denote *Mid-Lent* Contributions, or Offerings. See *OFFERING*, *OBLATION*, &c.

It was an antient Custom for People to visit their Mother-Church on *Mid-Lent* Sunday, and to make their Offerings at the High Altar: and the like was also done in *Whitsun-Week*—But as these latter Oblations, &c. were sometimes commuted for by a Payment of *Pentecostals*, or *Whitsun-Farthings*: See *PENTECOSTALS*—So were the former also changed into a customary Payment, called *Quadragesimals*; *Denarii Quadragesimales*; and sometimes *Letare Jerusalem*, from a Hymn so call'd, sung on that day; beginning, *Jerusalem Mater omnium*, &c.

**QUADRANGLE**, in Geometry, a Quadrangular, or Quadrilateral Figure; or a Figure which has four Sides, or four Angles. See *FIGURE* and *QUADRILATERAL*.

To the Class of *Quadrangles*, or *Quadrangular Figures*, belong the *Square*, *Parallelogram*, *Trapezium*, *Rhombus*, and *Rhomboides*. See *SQUARE*, *PARALLELOGRAM*, *RHOMBUS*, &c.

A Square, &c. is a regular *Quadrangle*—a Trapezium an irregular one.

Quadrangular Figures are not proper for Fortification; the Flanks and flank'd Angles being too small. See *BASTION*.

**QUADRANS**, in Antiquity. See *As*.

**QUADRANS**, in our Customs, is the fourth part of a Penny; or a *Farthing*. See *PENNY* and *FARTHING*.

**QUADRANT**, **QUADRANS**, in Geometry, an Arch of a Circle, containing 90 Degrees, or one fourth of the entire Periphery. See *ARCH* and *CIRCLE*: See also *DEGREE*.

Sometimes, also, the Space or Area included between this Arch and two Radii, drawn from the Center to each Extremity thereof, is call'd a *Quadrant*, or more properly *Quadrantal Space*; as being a quarter of the entire Circle. See *SECTOR*.

**QUADRANT**, is also a Mathematical Instrument, of great use in Navigation and Astronomy; for the taking of Altitudes, &c. See *ALTITUDE*.

The *Quadrant* is variously contrived, and furnished with various Apparatus, according to the various Uses it is intended for; but they all have this in common, that they consist of a *Quadrant*, or quarter of a Circle, whose Limb is divided into 90 Degrees; that they have a Plummets suspended from the Centre, and are furnish'd with *Pinnule*, or Sights.

The principal, most usual, and most useful *Quadrants*, are, the *Common* or *Surveying Quadrant*, the *Astronomical Quadrant*, the *Horodistical Quadrant*, *Gunter's Quadrant*, *Sutton's* or *Collins's Quadrant*, and the *Sinecal Quadrant*.

The *Common* or *Surveying Quadrant* (represented Tab. SURVEYING, fig. 30.) is made of Brass, Wood, or other Matter; usually 12 or 15 Inches Radius—Its Circular Limb is divided into 90°, and each of those subdivided into as many equal Parts as the Space will allow; either diagonally, or otherwise—On one Edge, or Semidiameter, are fixed two immoveable Sights; and in the Angle, or Centre, is hung a Thread with a Plummets.

To the Centre is likewise, sometimes, fixed a Label or moveable Index, bearing two other Sights like the Index of a Telescope—And in lieu of the immoveable Sights, is sometimes fitted a Telescope; tho' this more properly belongs to the *Astronomical Quadrant*.

On the under side, or face of the Instrument, is fitted a Ball, and Socket; by means whereof, it may be put in any position for use.

Besides the Essentials of the *Quadrant*, there is frequently added on the face near the Centre, a kind of Compartment, call'd the *Quadrat*, or *Geometrical Square*; as in the Figure—This, in some measure, making a distinct Instrument of itself; see its Description and Use under the Article *QUADRAT*.

The *Quadrant* is to be used in different Situations, according to the Dimensions to be taken—To observe Heights and Depths, its Plane is disposed at right Angles to the Horizon: To take horizontal Distances, the Plane is disposed parallel thereto.

Heights and Distances, again, may be taken two ways; viz. by means of the fixed Sights and Plummets, and by the Label.



*Use of the Common, or Surveying QUADRANT.*

1. *To take the Height, or Depth of an Object, with the fixed Sights and Plummets*—Place the *Quadrant* vertically, and the Eye under the Sight next the Arch of the *Quadrant*: Thus direct the Instrument to the Object, *v. gr.* the Top of a Tower, till the visual Rays thereof strike thro' the Sights upon the Eye.

This done, the Portion of the Arch intercepted between the Thread and the Semidiameter, whereon the Sights are fasten'd, shew the Complement of the Object's Height above the Horizon, or its Distance from the Zenith; and the other Portion of the Arch intercepted between the Thread and the other Semidiameter, shews the Height itself of the Object above the Horizon.

The same Arch likewise gives the Quantity of the Angle made by the visual Ray, and a horizontal Line parallel to the Base of the Tower.

Note, to observe Depths, the Eye must be placed over that Sight next the Centre of the *Quadrant*.

From the Height, or Depth of the Object, in Degrees thus found, which suppose  $35^{\circ}$ ,  $35'$ , and the Distance of the foot of the Object from the place of Observation carefully measur'd, which suppose 47 Foot; its Height or Depth in Feet, Yards, &c. is easily determin'd by the most common Case in Trigonometry. See TRIANGLE.

For we have here, in a Triangle, one Side given, *viz.* the Line measured; and we have all the Angles: for that of the Tower is always supposed a right Angle, the other two therefore are equal to another right Angle; but the Angle observed is  $35^{\circ}$ ,  $35'$ ; therefore the other is  $54^{\circ}$ ,  $25'$ . See ANGLE.

The Case then will be reduced to this; as the Sine of  $54^{\circ}$ ,  $25'$ , is to 47 Feet; so is the Sine of  $35^{\circ}$ ,  $35'$ , to a 4th Term, *viz.*  $33\frac{1}{2}$  Feet: to which add the Height of the Observer's Eye, supposed 5 Foot, the Sum  $38\frac{1}{2}$  Feet, is the Height of the Tower required.

2. *The further Use of the Quadrant in taking of Altitudes of Objects, both accessible and inaccessible*; see under the Article ALTITUDE.

3. *Use of the Quadrant in taking Heights and Distances by the Index and Sights*.—To take, *e. gr.* a Height, as that of a Tower, whose Base is accessible—Place the Plane of the Instrument at right Angles to the Plane of the Horizon, and one of its Edges parallel thereto, by means of the Plummets, which in that case will hang down along the other—In this Situation turn the Index, till thro' the Sight you see the top of the Tower; and the Arch of the Limb of the *Quadrant* between that side thereof parallel to the Horizon, and the Index, will be the Height of the Tower in degrees: whence, and from the Distance measured as before, its Height in Feet, &c. may be found by Calculation, as in the former Case; or without Calculation, by drawing, from the Data, on Paper, a Triangle similar to the great one, whose Base is the Distance, and its Perpendicular measured on the Scale, the Height of the Tower. See SCALE.

4. *Use of the Quadrant in measuring horizontal Distances*—Tho the *Quadrant* be a less proper Instrument for this purpose than a Theodolite, Semicircle, or the like, by reason Angles greater than *Quadrants* cannot be taken hereby; yet Necessity sometimes obliges Persons to have recourse to it.

The Manner of its Application herein is the same with that of the Semicircle; all the difference between the two Instruments consisting in this, that the one is an Arch of  $180^{\circ}$ , and can therefore take an Angle of any Quantity; and the other only an Arch of  $90^{\circ}$ , and therefore confined to Angles of that Quantity. See, therefore, SEMI-CIRCLE.

*Astronomical QUADRANT*, is a large *Quadrant*, usually made of Brass, sometimes of wooden Bars, only faced with Plates of Iron, or the like; having its Limb curiously divided, diagonally or otherwise, into Degrees and Minutes, and even Seconds, if possible; with plain Sights fixed to one side of it, or instead thereof, a Telescope; and an Index moving about the Centre, carrying either plain Sights, or a Telescope.

These *Quadrants* are of principal use in taking Observations of the Sun, Planets, or fixed Stars. See OBSERVATION.

The Antients used only plain Sights, but the Moderns have found it of great benefit to use Telescopes instead of them. See SIGHT and TELESCOPE.

Add, that the Contrivance of moving the Index, by the help of a Screw on the Edge of the Limb, and of readily and easily directing it, and the *Quadrant* upon its Pedestal, to any desired Phenomenon, by means of the Screws and dented Wheels, is a still greater Improvement of the Instrument.

The Particulars of the Mechanism whereby this is effec-

ted, would afford a very dry and intricate, as well as useless Detail; which we shall omit, as being sufficiently known among the Instrument-Makers: And in lieu thereof, content ourselves with giving a Figure or Representation, (Tab. ASTRONOMY, fig. 53.)

The Use of this Instrument is obvious—Being adjusted as above, and turned horizontally round on its Axis, till thro' the moveable Telescope the Object be seen to fall in with the Point of Intersection of the cross Bars, the Degrees cut by the Index give the Altitude requir'd. See TELESCOPE.

The *Horodical QUADRANT*, is a pretty, commodious Instrument, thus call'd from its Use in telling the Hour of the Day; which is its only Use.

Its Construction is so simple and easy, and its Application so ready, that we shall describe both, for the Use of some who may want other Conveniences.

*Construction and Use of the Horodical QUADRANT.*

From the Centre of the *Quadrant* C, (Tab. ASTRONOMY, Fig. 54.) whose Limb AB is divided into  $90^{\circ}$ ; describe seven concentric Circles at Intervals at pleasure; and to these add the Signs of the Zodiac in the Order they are represented in the Scheme. 2. Applying a Ruler to the Centre C, and the Limb AB, mark upon the several Parallels the Degrees corresponding to the Altitude of the Sun when therein, for the given Hours; connect the Points belonging to the same Hour with a curve Line, to which add the Number of the Hour—To the Radius CA, fit a couple of Sights, and to the Centre of the *Quadrant* C, tie a Thread with a Plummets, and upon the Thread a Bead to slide.

If now the Bead be brought to the Parallel wherein the Sun is, and the *Quadrant* directed to the Sun till a visual Ray pass thro' the Sights, the Bead will shew the Hour.

For the Plummets in this situation cuts all the Parallels in the Degrees corresponding to the Sun's Altitude: Since, then, the Bead is in the Parallel which the Sun then describes, and thro' the Degrees of Altitude to which the Sun is elevated every Hour, there pass Hour-Lines; the Bead must shew the present Hour—Some Persons who are not mighty nice, represent the Hour-Lines by Arches of Circles, or even by straight Lines; and that without any sensible Error.

*Gunter's QUADRANT*, is a kind of *Quadrant* (represented Tab. ASTRONOMY, Fig. 55.) invented by our Countryman Edm. Gunter.

This, beside the graduated Limb, fixed Sights, and a Plummets, as the other *Quadrants*; has, likewise, a Stereographical Projection of the Sphere on the Plane of the Meridian, with the Eye placed in one of the Poles; by which, besides the common Uses of other *Quadrants*, several useful Questions in Astronomy, &c. are easily solved.

*Use of Gunter's QUADRANT.*

1. *To find the Sun's Meridian Altitude for any given Day; or the Day of the Month for any given Meridian Altitude*—Lay the Thread to the Day of the Month in the Scale next the Limb; the Degree it cuts in the Limb is the Sun's Meridian Altitude.

Thus, the Thread being laid on the 15th of May, cuts  $59^{\circ}$   $30'$ , the Altitude sought—And contrarily, the Thread being set to the Meridian Altitude, will shew the Day of the Month.

2. *To find the Hour of the Day*—Having put the Bead (which slides on the Thread) to the Sun's Place in the Ecliptic, observe the Sun's Altitude by the *Quadrant*; then, if the Thread be laid over the same in the Limb, the Bead will fall upon the Hour requir'd.

Thus, suppose on the 10th of April, the Sun being then in the beginning of Taurus, I observe the Sun's Altitude, by the *Quadrant*, to be  $36^{\circ}$ . I place the Bead to the beginning of Taurus in the Ecliptic, and lay the Thread over  $36^{\circ}$  of the Limb; and find the Bead to fall upon the Hour-Line mark'd 3 and 9; accordingly the Hour is either 9 in the Morning, or 3 in the Afternoon—Again, laying the Bead on the Hour given, (having first rectify'd or put it to the Sun's Place) the Degree cut by the Thread or the Limb, gives the Altitude.

Note, the Bead may be rectify'd otherwise, *viz.* by bringing the Thread to the Day of the Month, and the Bead to the Hour-Line of 12.

3. *To find the Sun's Declination from his Place given; and contrariwise*—Set the Bead to the Sun's Place in the Ecliptic; move the Thread to the Line of Declination E.T. and the Bead will cut the Degree of Declination requir'd—Contrarily, the Bead being adjusted to a given Declination, and the Thread moved to the Ecliptic, the Bead will cut the Sun's Place.



4. *The Sun's Place being given, to find his right Ascension; or contrariwise*—Lay the Thread on the Sun's Place in the Ecliptic, and the Degree it cuts on the Limb is the right Ascension sought—Contrariwise, laying the Thread on the right Ascension, it cuts the Sun's Place in the Ecliptic.

5. *The Sun's Altitude being given, to find his Azimuth; and contrariwise*—Rectify the Bead for the Time (asin the second Article) and observe the Sun's Altitude: bring the Thread to the Complement of that Altitude; thus the Bead will give the Azimuth sought, among the Azimuth Lines.

6. *To find the Hour of the Night from some of the five Stars laid down on the Quadrant*—1. Put the Bead to the Star you intend to observe, and find how many Hours the Star is off the Meridian, (by Article 2.) then from the right Ascension of the Star, subtract the Sun's right Ascension converted into Hours; and mark the difference: Which difference added to the observ'd Hour of the Star from the Meridian, shews how many Hours the Sun is gone from the Meridian, which is the Hour of the Night.

Suppose, *e. gr.* on the 15th of May, the Sun being in the fourth Degree of Gemini, I set the Bead to *Arcturus*; and observing his Altitude, find him to be in the West about  $52^{\circ}$  high, and the Bead to fall on the Hour-Line of two after Noon: then will the Hour be 11 Hours 50 Minutes past Noon, or 10 Minutes short of Midnight.

For,  $62^{\circ}$ , the Sun's right Ascension converted into Time, makes 4 Hours 8 Minutes, which subtracted from 13 Hours 58 Minutes, the right Ascension of *Arcturus*, the Remainder will be 9 Hours 50 Minutes; which added to 2 Hours, the observ'd distance of *Arcturus* from the Meridian, shews the Hour of the Night to be 11 Hours 50 Minutes.

Sutton's QUADRANT, sometimes, also, call'd Collins's Pocket QUADRANT—One of the best of Mr. Sutton's Quadrants, (represented Tab. ASTRONOMY, Fig. 56.) is a Stereographic Projection of that Quarter of the Sphere between the Tropics, upon the Plane of the Equinoctial, the Eye being in the North Pole.

'Tis fitted to the Latitude of London—The Lines running from the right Hand to the left are Parallels of Altitude, and those crossing them are Azimuths: The less of the two Circles bounding the Projection is  $\frac{1}{4}$  of the Tropic of Capricorn, the greater  $\frac{3}{4}$  of that of Cancer—The two Ecliptics are drawn from a Point on the left Edge of the Quadrant, with the Characters of the Signs upon 'em; and the two Horizons are drawn from the same Point—The Limb is divided both into Degrees, and Time; and by having the Sun's Altitude, the Hour of the Day may be here found to a Minute.

The quadrantal Arches next the Centre contain the Calendar of Months; and under them, in another Arch, is the Sun's Declination.

On the Projection are placed several of the most noted fixed Stars between the Tropics, and next below the Projection is the Quadrant, and Line of Shadows. See QUADRANT.

#### Use of Sutton's or Collins's QUADRANT.

*To find the Time of Sun-rising or setting, his Amplitude, Azimuth, Hour of the Day, &c.*—Lay the Thread over the Day and the Month, and bring the Bead to the proper Ecliptic, either that of Summer or Winter, according to the Season; (which is call'd rectifying) then, moving the Thread, bring the Bead to the Horizon; in which Case the Thread will cut the Limb in the time of the Sun's rising or setting, before, or after six; and at the same time the Bead will cut the Horizon in the Degrees of the Sun's Amplitude.

Again, observing the Sun's Altitude with the Quadrant, and supposing it found  $45^{\circ}$  on the 24th of April; lay the Thread over the 24th of April; bring the Bead to the Summer Ecliptic, and carry it to the Parallel of Altitude  $45^{\circ}$ . In which Case the Thread will cut the Limb at  $55^{\circ} 15'$ , and the Hour will be seen among the Hour-lines to be either 41' past nine in the Morning, or 19' past two in the Afternoon.

Lastly, the Bead among the Azimuths shews the Sun's distance from the South, *viz.*  $50^{\circ} 41'$ .

But note, that if the Sun's Altitude be less than what it is at six a-clock, the Operation must be perform'd among those Parallels above the Winter Horizon; the Bead being rectify'd to the Winter Ecliptic.

Sinecal QUADRANT, is an Instrument of Use in Navigation—(It is represented Tab. NAVIGATION, Fig. 1.) and consists of several concentric quadrantal Arches; divided into eight equal parts by Radii with parallel right Lines crossing each other at right Angles.

Now, any of the Arches, *e. gr.* B C may be accounted a Quadrant of any of the great Circles of the Sphere, chiefly of the Horizon, and Meridian: If, then, B C be taken for a Quadrant, *e. gr.* of the Horizon; either of the Sides,

*e. gr.* A B, may represent the Meridian; and the other, A C will represent a Parallel, or Line of East and West; and all the other Lines parallel to A B will also be Meridians; and all those parallel to A C, East and West Parallels, or East and West Lines.

Again, the eight Spaces into which the Arches are divided by the Radii, represent the eight Points of the Compass in a quarter of the Horizon; each containing  $11^{\circ} 15'$ .

The Arch B C is likewise divided into  $90^{\circ}$ , and each Degree subdivided into 12' Diagonal-wise.

To the Center is fixed a Thread, as A L; which being laid over any Degree of the Quadrant, serves to divide the Horizon.

If the Sinecal Quadrant be taken for a fourth part of the Meridian; one side thereof, A B, may be taken for the common Radius of the Meridian and the Equator; and then the other side A C, will be half the Axis of the World—The Degrees of the Circumference B C will represent Degrees of Latitude, and the Parallels to the side A B, assumed from every Point of Latitude to the Axis A C, will be Radii of the Parallels of Latitude, as likewise the Sine-Complements of those Latitudes.

Suppose, then, it be requir'd to find the Degrees of Longitude contain'd in 83 of the lesser Leagues, in the Parallel of  $48^{\circ}$ —Lay the Thread over  $48^{\circ}$  of Latitude on the Circumference, and count thence the 83 Leagues, or A B, beginning at A: This will terminate in H, allowing every small Interval, four Leagues. Then tracing out the Parallel H G, from the Point H to the Thread; the part A G of the Thread shews that 125 greater, or Equinoctial Leagues, make  $6^{\circ} 15'$ ; and therefore that the 83 lesser Leagues A H which make the difference of Longitude of the Course, and are equal to the Radius of the Parallel G I, make  $6^{\circ} 15'$  of the said Parallel.

If the Ship sail an oblique Course, such Course, besides the North and South greater Leagues, gives lesser Leagues Easterly and Westerly; to be reduced to Degrees of Longitude of the Equator—But these Leagues being made neither on the Parallel of Departure, nor on that of Arrival, but in all the intermediate ones; we must find a mean proportional Parallel between 'em.

To find this, we have on the Instrument a Scale of cross Latitudes. Suppose, then, it were requir'd to find a mean Parallel between the Parallels of  $40^{\circ}$  and  $60^{\circ}$ . With your Compasses take the middle between the 40th and 60th Degree on the Scale: This middle Point will terminate against the 51st Degree, which is the mean Parallel requir'd.

#### Use of the Sinecal QUADRANT.

The Use of this Instrument is to form Triangles upon, similar to those made by a Ship's way, with the Meridians and Parallels; the sides of which Triangles are measur'd by the equal Intervals between the concentric Quadrants, and the Lines N. and S. E. and W.

The Lines and Arches are distinguish'd, every fifth, by a broader Line; so that if each Interval be taken for one League, there will be five between one broad Line and another.

Now, suppose, a Ship to have sail'd 150 Leagues North-East, one fourth North; which is the third Point, and makes an Angle of  $35^{\circ} 45'$ , with the North part of the Meridian—Here are given two things; *viz.* the Course and Distance sail'd, by which a Triangle may be form'd on the Instrument, similar to that made by the Ship's Course, and her Longitude and Latitude; and hence may the unknown parts of the Triangle be found. See TRIANGLE.

Thus, supposing the Centre A to represent the place of Departure; count, by means of the concentric Arches, along the Point the Ship sail'd in, as A D, 150 Leagues from A to D: Then is the Point D the place the Ship is arriv'd at; which note.—This done, let D E be parallel to the side; and then there will be form'd a right-angled Triangle A E D, similar to that of the Ship's Course, difference of Longitude and Latitude: The side A E gives 125 Leagues for the difference of Latitude Northwards, which makes  $6^{\circ} 15'$ , and the side D E gives 83 lesser Leagues answering to the Parallels, which being reduced, as shewn above, gives the difference of Longitude—And thus is the whole Triangle found.

QUADRANT, in Gunnery, call'd also the Gunner's Square, is an Instrument serving to elevate or lower Cannons, Mortars, &c. according to the Places they are to be levell'd or directed to. See MORTAR, LEVEL, &c.

It consists of two Branches, made of Brass; one about a Foot long, 8 Lines broad, and one Line in thickness; the other four Inches long, and the same length and breadth as the former—Between these Branches is a Quadrant divided into 90 Degrees, beginning from the shortest Branch, furnish'd with Thread and Plummer. See its Figure represented Tab. FORTIFICATION, Fig. 11.

The Use of this Instrument is easy; nothing more being requir'd



requir'd but to place the longest Branch in the Mouth of the Cannon or Mortar, and elevate or lower it, till the Thread cuts the Degree necessary to hit a proposed Object.

Sometimes, also, on one of the Surfaces of the long Branch is noted the division of Diameters, and weights of Iron Bullets; as also the Bores of Pieces. See **ORDNANCE**, **CALLIPER**, &c.

**QUADRANT of Altitude**, is an Appendage of the Artificial Globe; consisting of a Lamina, or Slip of Brass, the length of a *Quadrant* of one of the great Circles of the Globe; and divided into 90 Degrees.

At the end where the Divisions terminate, is a Nut rivetted on and furnish'd with a Screw, by means whereof the Instrument is fitted on to the Meridian; and moveable round upon the Rivet, to all Points of the Horizon.

Its Use is to serve as a Scale in measuring of Altitudes, Amplitudes, Azimuths, &c. See the manner of its Application under the Use of the **GLOBE**.

**QUADRANTAL Space**, in Geometry, see **QUADRANT**.

**QUADRANTAL Triangle**, is a spherical Triangle, one of whose Sides is a Quadrant of a Circle; and one of its Angles, a right Angle. See **SPHERICAL Triangle**.

**QUADRANTAL**, in Antiquity, a Vessel in use among the Romans for the measuring of Liquids. See **MEASURE**.

It was, at first, call'd *Amphora*; afterwards *Quadrantal*, from its Form, which was Square every way, like a Die. See **AMPHORA**.

Its Capacity was 80 *Librae*, or Pounds of Water, which made 48 *Sextaries*, or 6 *Congii*. See **CONGIUS**.

**QUADRANTATA Terra**, in our antient Law-Books, is used for a quarter of an Acre; now call'd a Rood. See **ACRE** and **ROOD**. See also **FARTHINGDEAL**.

**QUADRAT**, call'd also *Geometrical Square* and *Line of Shadows*, is an additional Member on the Face of the common *Gunter's* and *Sutton's* Quadrants; of some use in taking Altitudes, &c. See **QUADRANT**.

The *Quadrat*, K L H, (Tab. **ASTRONOMY**, Fig. 55.) has each of its sides divided into 100 equal Parts commencing from the Extremes, so as the Number 100 falls on the Angles; and representing Tangents to the Arch of the Limb.

The Divisions are distinguish'd by little Lines from 5 to 5, and by Numbers from 10 to 10; and the Divisions being occasionally produced a-crofs, form a kind of Lattice, consisting of 10000 little Squares.

The Proportion here, is, as Radius is to the Tangent of the Altitude at the place of Observation (*i. e.* to the parts of the *Quadrat* cut by the Thread) so is the distance between the Station and foot of the Object, to its height above the Eye. See **ALTITUDE**.

*Use of the QUADRAT, Geometrical Square, or Line of Shadows.*

1. The *Quadrat* being vertically placed, and the Sights directed to the Top of a Tower, or other Object, whose Height is required; if the Thread cut the side of the *Quadrat* mark'd *right Shadows*, the distance from the Base of the Tower to the Point of Station is less than the Tower's Height—If the Thread fall on the Diagonal of the Square, the Distance is just equal to the Height—If it fall on that side mark'd *versed Shadows*, the Distance exceeds the Height.

Hence, measuring the Distance, the Height is found by the *Rule of Three*; inasmuch as there are three Terms given—Indeed, their disposition is not always the same; for when the Thread cuts the side of *versed Shadows*, the first Term in the *Rule of Three* ought to be that part of the side cut by the Thread, the second the side of the Square, and the third the Distance measur'd—If the Thread cut the other side, the first Term is the whole side of the Square, the second the parts of the side cut by the Thread, and the third the Distance.

For an Instance of each—Suppose, *e. gr.* in looking at the Top of a Steeple the Thread cut the side of *right Shadows* in the Point 40, and that the Distance measures 20 Poles; the Case then will stand thus: As 40 is to 100, so is 20 to a fourth Term, which I find to be 50; the Height of the Steeple in Poles.

Again, supposing the Thread to fall on the other side, in the Point 50, and the Distance to measure 35 Poles; the Terms are to be disposed thus: As 100 is to 60; so is 35 to a fourth Term, *viz.* 21, the Height required.

*Use of the QUADRAT without Calculation.*

The preceding Cases may be perform'd without Calculation where the Divisions of the Square are produced both ways, so as to form the Area into little Squares.

Thus, suppose, 1. The Thread to fall on 40 in the side of *right Shadows*, and the Distance be measur'd 20 Poles;

seek among the little Squares for that Perpendicular to the side which is 20 parts from the Thread; this Perpendicular will cut the side of the Square next the Centre, in the Point 50, which is the Height requir'd in Poles.

2. If the Thread cut the side of *versed Lines* in the Point 60, and the Distance be 35 Poles; count 35 parts on the side of the *Quadrat* from the Centre; count also the Divisions of the Perpendicular from the Point 35 to the Thread, which will be 21, the Height of the Tower in Poles.

Note, In all Cases, the Height of the Centre of the Instrument is to be added. See farther under **SHADOW**.

**QUADRAT**, in Astrology, call'd also **QUARTILE**, an Aspect of the heavenly Bodies, wherein they are distant from each other, a Quadrant, or ninety Degrees. See **ASPECT**.

This is held a malignant Aspect. See **QUARTILE**.

**QUADRAT**, in Printing, is a sort of *Space*; that is, a piece of Metal, cast like the Letters, to be used occasionally in Composing, to make the Intervals between Words, at the ends of Lines, &c. See **PRINTING**.

There are *Quadrats* of divers Sizes, as *m Quadrats*, *n Quadrats*, &c. which are respectively of the Dimensions of such Letters.

**QUADRATA Legio**, among the Romans, was a Legion consisting of 4000 Men. See **LEGION**.

**QUADRATIC Equation**, is an Equation wherein the unknown Quantity is of two Dimensions, *i. e.* is the Square of the Root or Number sought—As in  $x^2 = a + b^2$ . See **EQUATION**.

*Quadratic Equations* are of two Kinds; *simple*, or *pure*; and *adfectet*.

*Simple*, or *Pure QUADRATICS*, are those where the Square of the unknown Root is equal to the absolute Number given: As in  $aa = 36$ ;  $ee = 146$ ;  $yy = 133225$ .

The Resolution of these is easy; it being apparent that nothing more is requir'd than to extract the Square-Root out of the Number or known Quantity. See **EXTRACTION**.

Thus the Value of  $x$  in the first Equation is equal to 6; in the second  $e = 12$ , and a little more, as being a surd Root; and in the third Example  $y = 365$ . See **ROOT**.

*Adfectet QUADRATICS*, are those which between the highest Power of the unknown Number, and the absolute Number given, have some intermediate Power of the unknown Number: As  $aa + 2ba = 100$ . See **ADFFECTED**.

All Equations of this Rank are in one or other of the following Forms; *viz.*  $aa + ad = R$ .  $aa - ad = R$ .  $ad - aa = R$ .

There are several Methods of solving *adfectet Equations*, or of extracting their Roots; the most convenient is that of *Harriot*—Here,  $x$  being assumed as a part of the Root;  $a$ , the known Quantity of the second Term, will be double the other part; and therefore half of  $a$  is the other part—The Square, thereof, will be compleated by adding one fourth of  $aa$ ; which done, the Root of the Square may be extracted thus:

$$\begin{array}{r} x^2 + ax = b \\ \frac{1}{4}aa \quad \frac{1}{4}aa \quad add. \\ \hline x^2 \quad ax \quad \frac{1}{4}a^2 = \frac{1}{4}a^2 \quad b^2 \\ \hline x^2 \quad \frac{1}{2}a = \sqrt{\left(\frac{1}{4}a^2 \quad b^2\right)} \\ \hline x = \frac{1}{2}a \sqrt{\left(\frac{1}{4}a^2 \quad b^2\right)} \end{array}$$

In lieu of the Characters  $+$  and  $-$ , we here use two Points; to avoid the necessity of distinguishing several Cases. See **RESOLUTION**.

*Construction of QUADRATIC Equations*; see **CONSTRUCTION**.

**QUADRATING of a Piece**, among Gunners, is the seeing that a Piece of Ordnance be duly placed, and poiz'd in its Carriages; that its Wheels be of an equal Height, &c. See **CARRIAGE**, **ORDNANCE**, **CANNON**, &c.

**QUADRATO-quadratum**, or *Biquadratum*, the fourth Power of Numbers; or the Product of the Cube multiply'd by the Root. See **POWER**.

**QUADRATO-Cubus**, **QUADRATO-QUADRATO-Cubus**, and **QUADRATO-Cubo-Cubus**, are Names used by *Diophantus*, *Vieta*, *Oughtred*, and others, for the 5th, 7th, and 8th Powers of Numbers. See **POWERS**.

**QUADRATRIX**, in Geometry, a mechanical Line, by means whereof we can find right Lines equal to the Circumference of a Circle, or other Curve, and the several Parts thereof. See **CIRCLE**, &c.

Or, more accurately, the *Quadratrix of a Curve*, is a transcendental Curve, described on the same Axis, the Semiordinates whereof being given, the Quadrature of the correspondent Parts in the other Curve, are likewise given. See **CURVE**.

Thus, *e. gr.* the Curve **A N D** (Tab. **ANALYSIS**, Fig. 21.) may be call'd the *Quadratrix* of the *Parabola A M C*, since 'tis demonstrated that  $APM \Delta = PN^2$ , or  $APM \Delta = AP \cdot PN$ , or  $APM \Delta = PN a$ , &c.



The most eminent of these *Quadratrices* are that of *Dinoftrates*, and that of Mr. *Tschirnhausen* for the Circle, and that of Mr. *Perks* for the Hyperbola.

**QUADRATRIX of Dinoftrates**, is a Curve, *A M m m*, (Tab. ANALYSIS, Fig. 22.) whereby the Quadrature of the Circle is effected, tho' not Geometrically, but Mechanically; thus call'd from its Inventor *Dinoftrates*.

Its Genesis is thus, — Divide the *Quadrantal Arch A N B* into any Number of equal Parts; in *N n*, &c. by a continual Bisection — divide the Radius *A C* into the same Number of Parts in the Points *P p*, &c. Draw Radii *C N*, *C n*, &c. — Lastly, on the Points *P p*, &c. erect Perpendiculars *P M*, *p m*, &c. the Curve form'd by connecting these Lines is the *Quadratrix of Dinoftrates*.

Here, from the Construction,  $AB : AN :: AC : AP$ ; and therefore, if  $AB = a$ ,  $AC = b$ ,  $AN = x$ ,  $AP = y$ ;  $ax = by$ . See **QUADRATURE**.

**QUADRATRIX Tschirnhauseniana**, is a transcendental Curve *A M m B*, (Fig. 23.) whereby the Quadrature of the Circle is likewise effected; invented by M. *Tschirnhausen*, in imitation of that of *Dinoftrates*.

Its Genesis is thus conceived — Divide the Quadrant *A N B*, and its Radius *A C* into equal Parts, as in the former; and from the Points *P p*, &c. draw the right Lines *P M*, *p m*, &c. parallel to *C B*; and from the Points *N n*, &c. the right Lines *N M*, *n m*, &c. parallel to *AC* — The Points *A M m*, &c. being connected, the *Quadratrix* is form'd; wherein  $AB : AN :: AC : AP$ .

Here again, since  $AB : AN :: AC : AP$ ; if  $AB = a$ , and  $AC = b$ ,  $AN = x$ , and  $AP = y$ ;  $ax = by$ . See **QUADRATURE**.

**QUADRATUM Cubi**, **QUADRATO-QUADRATO-QUADRATUM**, and **QUADRATUM Surdesolidi**, &c. are Names used by the *Arabs* for the 6th, 8th, and 9th Powers of Numbers. See **POWERS**.

**QUADRATURE**, **QUADRATURA**, in Geometry, the squaring, or reduction of a Figure to a Square; or the finding a Square equal to a Figure proposed. See **FIGURE** and **SQUARE**.

Thus, the finding of a Square containing just as much Surface, or Area as a Circle, an Ellipsis, a Triangle, or other Figure, is call'd the *Quadrature of a Circle*, an Ellipsis, a Triangle, or the like. See **CIRCLE**, &c.

The *Quadrature of Rectilinear Figures* comes under the common Geometry; as amounting to no more than the finding their Areas, or Superficies; which are in effect their Squares. See **AREA**.

Squares of equal Areas are here easily had, by only extracting the Roots of the Areas thus found; and on such Root as a side constructing a Square. See **SQUARE**. See also the particular Methods of finding the Areas or Squares, under each particular Figure, as **TRIANGLE**, **PARALLELOGRAM**, **TRAPEZIUM**, &c.

The *Quadrature of Curves*, that is, the measuring of their Area, or the finding of a rectilinear Space equal to a curvilinear Space, is a Matter of much deeper Speculation; and makes a part of the higher Geometry. See **GEOMETRY**.

Tho' the *Quadrature*, especially of the Circle, bee a thing many of the first-rate Mathematicians among the Antients were very solicitous about, (see **QUADRATURE of the Circle**) yet nothing in this kind has been done so considerable, as in and since the middle of the last Century; when, viz. in the Year 1557, Mr. *Neil* and my Lord *Brounker*, and afterwards, in the same Year, Sir *Christopher Wren*, Geometrically demonstrated the Equality of some Curves to a straight Line.

Soon after this, others at home and abroad, did the like in other Curves; and not long afterwards the thing was brought under an analytical Calculus, the first Specimen whereof ever published was given by *Mercator* in 1688. in a Demonstration of my Lord *Brounker's Quadrature of the Hyperbola* by Dr. *Wallis's* reduction of a Fraction into an infinite Series by Division. See **QUADRATURE of the Parabola**.

Tho' it appears by the way that Sir *Isaac Newton* had before discover'd a Method of attaining the Quantity of all quadrable Curves analytically by his Method of Fluxions, before the Year 1668. See **FLUXIONS**.

'Tis contested between Sir *Christopher Wren* and Mr. *Huygens* which of the two first found the *Quadrature of any determinate Cycloidal Space* — Mr. *Leibnitz* afterwards found that of another Space; and M. *Bernoulli* in 1699, discover'd the *Quadrature of an infinity of Cycloidal Spaces*, not only Segments, but also Sectors, &c. See **QUADRATURE of the Cycloid**, **QUADRATURE of the Lane**, &c.

**QUADRATURE of the Circle**, is a Problem that has employed the Mathematicians of all Ages; but still in vain. See **CIRCLE**.

It depends on the Ratio of the Diameter to the Periphery, which was never yet determined in precise Numbers. See **DIAMETER**, &c.

Were this Ratio known, (which would imply the Circumference's being express'd by some Affection of the Diameter; and, of consequence, that it were equal to a right Line) the *Quadrature of the Circle* were effected: it being demonstrated, that the Area of a Circle is equal to a rectangular Triangle, whose two Sides comprehending the right Angle, are the Radius, and a right Line equal to the Circumference — So that to square the Circle, all that is required is to rectify it. See **CIRCUMFERENCE** and **RECTIFICATION**.

Many have approach'd very near this Ratio — *Archimedes* seems to have been one of the first who attempted it; which he did by means of regular Polygons inscribed and circumscribed; and by using Polygons of 96 sides, fixed the Ratio as 7 to 22. See **POLYGON**.

Some of the Moderns have come nearer, particularly *Lud. a Ceulen*, who with infinite Industry found, at length, that supposing the Diameter 1, the Circumference is less than 3.14159265358979323846264338387950; but yet greater than the same Number, if the last Cypher be turn'd into an Unit.

Strict Geometry here failing, Authors have had recourse to other Means; and particularly, to a sort of Curves, call'd *Quadratrices*: But these being Mechanical Curves, instead of Geometrical ones, or rather Transcendental instead of Algebraical ones, the Problem is not fairly solved thereby. See **TRANSCENDENTAL**, **MECHANICAL**, &c. **QUADRATRIX**.

Hence, recourse has been had, by others, to Analytics — and the Problem attempted by three sorts of Algebraic Calculations — The 1st gives a kind of transcendental *Quadratures*, by Equations of indefinite Degrees: as if  $x^x + x$  be equal to 30, and  $x$  be sought, it will be found to be 3; because  $3^3 + 3$ , is  $27 + 3$ , or 30. — The 2d by vulgar Numbers, tho' irrationally such; or by the Roots of common Equations, which for the general *Quadrature*, or its Sectors, is impossible — The 3d by means of certain Series, exhibiting the Quantity of a Circle by a Progression of Terms.

Arithmetic, in effect, affords us very accurate and intelligible Expressions for all rational Numbers; but it is defective as to Irrationals, which are infinitely more numerous than the former: there being, e. gr. an Infinity of 'em between 1 and 2. The Root of 2, which is a mean Proportional between 1 and 2, is a very obscure Idea; and its Magnitude is such, as that if you would express it in rational Numbers, which alone are clearly intelligible, you may still approach nearer and nearer its exact Value, but never arrive precisely at it.

Thus, if for the Value of the Root of 2, you first put 1, 'tis visibly too little; if, then, you add  $\frac{1}{2}$ , 'tis too much; for the Square of  $1 + \frac{1}{2}$ , or of  $\frac{3}{2}$ , exceeds 2. If, again, you take away  $\frac{1}{4}$ , you'll find you have taken too much; and if you'll return  $\frac{1}{8}$ , the Sum will be too great — Thus, may you proceed to Infinity, without ever finding a Number to stop at.

Now these Numbers, thus found, being disposed in their proper Order, make what we call an *Infinite Series*. See **SERIES**.

Further, of infinite Series's, there are some which only yield a finite Sum, as  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ , &c. and in general all such as decrease in Geometrical Progression — And there are others, on the contrary, which make an infinite Sum; as the Harmonical Progression,  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ , &c. See **PROGRESSION**.

But, here, we have only to do with the former, as expressing a finite Magnitude; yet cannot even the Sum of these be always found — Thus, we are certain, that 'tis impossible to find the Sum of the Series expressing the Root of 2.

Geometry, however, is free from the Impossibility Arithmetic labours under, of expressing irrational Numbers. — Thus, the Diagonal of a Square, whose Side is 1, expresses the Root of 2. See **DIAGONAL**.

Yet in other Magnitudes, Geometry, itself, may fall under the same Difficulty with Arithmetic — For it is possible, there may be right Lines which cannot be express'd but by an infinite Series of similar Lines, whose Sum it may be impossible to find.

In effect, the right Lines, which should be equal to Curves, are frequently of this kind — In searching, e. gr. for a right Line equal to the Circumference of a Circle, we find that the Diameter being put 1, the Circumference will be  $\frac{1}{2}$  less,  $\frac{1}{4}$  more,  $\frac{1}{8}$  less,  $\frac{1}{16}$  more, &c. making an infinite Series of Fractions, whose Numerator is always 4, and the Denominators in the natural Series of the uneven Numbers; and all these Terms, alternately, too great and too little.

Could the Sum of this Series be found, it would give the *Quadrature of the Circle*; but this is not yet done; nor is it at all probable it ever will be done — That, however, is not yet demonstrated; nor, of consequence, is the *Quadrature of the Circle* yet demonstrated impossible.

To this it may be added, that as the same Magnitude may be express'd by several different Series, 'tis possible the Circumference of the Circle may be express'd in some other Series, whose



whose Sum may be found—We have two infinite Series, expressing the Ratio of the Circumference to the Diameter, tho' indefinitely, as above—The first discover'd by Sir Isaac Newton; where the Diameter being put 1, the Circumference is  $4 - \frac{1}{2} - \frac{1}{8} - \frac{1}{16} - \frac{1}{32} - \frac{1}{64} - \frac{1}{128} - \frac{1}{256} - \frac{1}{512} - \frac{1}{1024} - \frac{1}{2048} - \frac{1}{4096} - \frac{1}{8192} - \frac{1}{16384} - \frac{1}{32768} - \frac{1}{65536} - \frac{1}{131072} - \frac{1}{262144} - \frac{1}{524288} - \frac{1}{1048576} - \frac{1}{2097152} - \frac{1}{4194304} - \frac{1}{8388608} - \frac{1}{16777216} - \frac{1}{33554432} - \frac{1}{67108864} - \frac{1}{134217728} - \frac{1}{268435456} - \frac{1}{536870912} - \frac{1}{1073741824} - \frac{1}{2147483648} - \frac{1}{4294967296} - \frac{1}{8589934592} - \frac{1}{17179869184} - \frac{1}{34359738368} - \frac{1}{68719476736} - \frac{1}{137438953472} - \frac{1}{274877906944} - \frac{1}{549755813888} - \frac{1}{1099511627776} - \frac{1}{2199023255552} - \frac{1}{4398046511104} - \frac{1}{8796093022208} - \frac{1}{17592186044416} - \frac{1}{35184372088832} - \frac{1}{70368744177664} - \frac{1}{140737488355328} - \frac{1}{281474976710656} - \frac{1}{562949953421312} - \frac{1}{1125899906842624} - \frac{1}{2251799813685248} - \frac{1}{4503599627370496} - \frac{1}{9007199254740992} - \frac{1}{18014398509481984} - \frac{1}{36028797018963968} - \frac{1}{72057594037927936} - \frac{1}{144115188075855872} - \frac{1}{288230376151711744} - \frac{1}{576460752303423488} - \frac{1}{1152921504606846976} - \frac{1}{2305843009213693952} - \frac{1}{4611686018427387904} - \frac{1}{9223372036854775808} - \frac{1}{18446744073709551616} - \frac{1}{36893488147419103232} - \frac{1}{73786976294838206464} - \frac{1}{147573952589676412928} - \frac{1}{295147905179352825856} - \frac{1}{590295810358705651712} - \frac{1}{1180591620717411303424} - \frac{1}{2361183241434822606848} - \frac{1}{4722366482869645213696} - \frac{1}{9444732965739290427392} - \frac{1}{18889465931478580854784} - \frac{1}{37778931862957161709568} - \frac{1}{75557863725914323419136} - \frac{1}{151115727451828646838272} - \frac{1}{302231454903657293676544} - \frac{1}{604462909807314587353088} - \frac{1}{1208925819614629174706176} - \frac{1}{2417851639229258349412352} - \frac{1}{4835703278458516698824704} - \frac{1}{9671406556917033397649408} - \frac{1}{19342813113834066795298816} - \frac{1}{38685626227668133590597632} - \frac{1}{77371252455336267181195264} - \frac{1}{154742504910672534362390528} - \frac{1}{309485009821345068724781056} - \frac{1}{618970019642690137449562112} - \frac{1}{1237940039285380274899124224} - \frac{1}{2475880078570760549798248448} - \frac{1}{4951760157141521099596496896} - \frac{1}{9903520314283042199192993792} - \frac{1}{19807040628566084398385987584} - \frac{1}{39614081257132168796771975168} - \frac{1}{79228162514264337593543950336} - \frac{1}{158456325028528675187087900672} - \frac{1}{316912650057057350374175801344} - \frac{1}{633825300114114700748351602688} - \frac{1}{1267650600228229401496703205376} - \frac{1}{2535301200456458802993406410752} - \frac{1}{5070602400912917605986812821504} - \frac{1}{10141204801825835211973625643008} - \frac{1}{20282409603651670423947251286016} - \frac{1}{40564819207303340847894502572032} - \frac{1}{81129638414606681695789005144064} - \frac{1}{162259276829213363391578010288128} - \frac{1}{324518553658426726783156020576256} - \frac{1}{649037107316853453566312041152512} - \frac{1}{1298074214633706907132624082305024} - \frac{1}{2596148429267413814265248164610048} - \frac{1}{5192296858534827628530496329220096} - \frac{1}{10384593717069655257060992658440192} - \frac{1}{20769187434139310514121985316880384} - \frac{1}{41538374868278621028243970633760768} - \frac{1}{83076749736557242056487941267521536} - \frac{1}{166153499473114484112975882535043072} - \frac{1}{332306998946228968225951765070086144} - \frac{1}{664613997892457936451903530140172288} - \frac{1}{1329227995784915872903807060280344576} - \frac{1}{2658455991569831745807614120560689152} - \frac{1}{5316911983139663491615228241121378304} - \frac{1}{10633823966279326983230456482242756608} - \frac{1}{21267647932558653966460912964485513216} - \frac{1}{42535295865117307932921825928971026432} - \frac{1}{85070591730234615865843651857942052864} - \frac{1}{170141183460469231731687303715884105728} - \frac{1}{340282366920938463463374607431768211456} - \frac{1}{680564733841876926926749214863536422912} - \frac{1}{1361129467683753853853498429727072845824} - \frac{1}{2722258935367507707706996859454145691648} - \frac{1}{5444517870735015415413993718908291383296} - \frac{1}{10889035741470030830827987437816582766592} - \frac{1}{21778071482940061661655974875633165533184} - \frac{1}{43556142965880123323311949751266331066368} - \frac{1}{87112285931760246646623899502532662132736} - \frac{1}{174224571863520493293247799005065324265472} - \frac{1}{348449143727040986586495598010130648530944} - \frac{1}{696898287454081973172991196020261297061888} - \frac{1}{1393796574908163946345982392040522594123776} - \frac{1}{2787593149816327892691964784081045188247552} - \frac{1}{5575186299632655785383929568162090376495104} - \frac{1}{11150372599265311570767859136324180752990208} - \frac{1}{22300745198530623141535718272648361505980416} - \frac{1}{44601490397061246283071436545296723011960832} - \frac{1}{89202980794122492566142873090593446023921664} - \frac{1}{178405961588244985132285746181186892047843328} - \frac{1}{356811923176489970264571492362373784095686656} - \frac{1}{713623846352979940529142984724747568191373312} - \frac{1}{1427247692705959881058285969449495136382746624} - \frac{1}{2854495385411919762116571938898990272765493248} - \frac{1}{5708990770823839524233143877797980545530986496} - \frac{1}{11417981541647679048466287755595961091061972992} - \frac{1}{22835963083295358096932575511191922182123945984} - \frac{1}{45671926166590716193865151022383844364247891968} - \frac{1}{91343852333181432387730302044767688728495783936} - \frac{1}{182687704666362864775460604089535377456991567872} - \frac{1}{365375409332725729550921208179070754913983135744} - \frac{1}{730750818665451459101842416358141509827966271488} - \frac{1}{1461501637330902918203684832716283019655932542976} - \frac{1}{2923003274661805836407369665432566039311865085952} - \frac{1}{5846006549323611672814739330865132078623730171904} - \frac{1}{11692013098647223345629478661730264157247460343808} - \frac{1}{23384026197294446691258957323460528314494920687616} - \frac{1}{46768052394588893382517914646921056628989841375232} - \frac{1}{93536104789177786765035829293842113257979682750464} - \frac{1}{187072209578355573530071658587684226515959365500928} - \frac{1}{374144419156711147060143317175368453031918731001856} - \frac{1}{748288838313422294120286634350736906063837462003712} - \frac{1}{1496577676626844588240573268701473812127674924007424} - \frac{1}{2993155353253689176481146537402947624255349848014848} - \frac{1}{5986310706507378352962293074805895248510699696029696} - \frac{1}{11972621413014756705924586149611790497021399392059392} - \frac{1}{23945242826029513411849172299223580994042798784118784} - \frac{1}{47890485652059026823698344598447161988085597568237568} - \frac{1}{95780971304118053647396689196894323976171195136475136} - \frac{1}{191561942608236107294793378393788647952342390272950272} - \frac{1}{383123885216472214589586756787577295904684780545900544} - \frac{1}{766247770432944429179173513575154591809369561091801088} - \frac{1}{1532495540865888858358347027150309183618739122183602176} - \frac{1}{3064991081731777716716694054300618367237478244367204352} - \frac{1}{6129982163463555433433388108601236734474956488734408704} - \frac{1}{12259964326927110866866776217202473468949912977468817408} - \frac{1}{24519928653854221733733552434404946937899825954937634816} - \frac{1}{49039857307708443467467104868809893875799651909875269632} - \frac{1}{98079714615416886934934209737619787751599303819750539264} - \frac{1}{196159429230833773869868419475239575503198607639501078528} - \frac{1}{392318858461667547739736838950479151006397215279002157056} - \frac{1}{784637716923335095479473677900958302012794430558004314112} - \frac{1}{1569275433846670190958947355801916604025588861116008628224} - \frac{1}{3138550867693340381917894711603833208051177722232017256448} - \frac{1}{6277101735386680763835789423207666416102355444464034512896} - \frac{1}{12554203470773361527671578846415332832204710888928069025792} - \frac{1}{25108406941546723055343157692830665664409421777856138051584} - \frac{1}{50216813883093446110686315385661331328818843555712276103168} - \frac{1}{100433627766186892221372630771322662657637687111424552206336} - \frac{1}{200867255532373784442745261542645325315275374222849104412672} - \frac{1}{401734511064747568885490523085290650630550748445698208825344} - \frac{1}{803469022129495137770981046170581301261101496891396417650688} - \frac{1}{1606938044258990275541962092341162602522202993782792835301376} - \frac{1}{3213876088517980551083924184682325205044405987565585670602752} - \frac{1}{6427752177035961102167848369364650410088811975131171341205504} - \frac{1}{12855504354071922204335696738729300820177623950262342682411008} - \frac{1}{25711008708143844408671393477458601640355247900524685364822016} - \frac{1}{51422017416287688817342786954917203280710495801049370729644032} - \frac{1}{102844034832575377634685573909834406561420991602098741459288064} - \frac{1}{205688069665150755269371147819668813122841983204197482918576128} - \frac{1}{411376139330301510538742295639337626245683966408394965837152256} - \frac{1}{822752278660603021077484591278675252491367932816789931674304512} - \frac{1}{1645504557321206042154969182557350504982735865633579863348609024} - \frac{1}{3291009114642412084309938365114701009965471731267159726697218048} - \frac{1}{6582018229284824168619876730229402019930943462534319453394436096} - \frac{1}{13164036458569648337239753460458804039861886925068638906788872192} - \frac{1}{26328072917139296674479506920917608079723773850137277813577744384} - \frac{1}{52656145834278593348959013841835216159447547700274555627155488768} - \frac{1}{105312291668557186697918027683670432318895095400549111254310977536} - \frac{1}{210624583337114373395836055367340864637790190801098222508621955072} - \frac{1}{421249166674228746791672110734681729275580381602196445017243910144} - \frac{1}{842498333348457493583344221469363458551160763204392890034487820288} - \frac{1}{1684996666696914987166688442938726917102321526408785780068975640576} - \frac{1}{3369993333393829974333376885877453834204643052817571560137951281152} - \frac{1}{6739986666787659948666753771754907668409286105635143120275902562304} - \frac{1}{13479973333575319897333507543509815336818572211270286240551805124608} - \frac{1}{26959946667150639794667015087019630673637144422540572481103610249216} - \frac{1}{53919893334301279589334030174039261347274288845081144962207220498432} - \frac{1}{107839786668602559178668060348078522694548577690162289924414440996864} - \frac{1}{215679573337205118357336120696157045389097155380324579848828881993728} - \frac{1}{431359146674410236714672241392314090778194310760649159697657763987456} - \frac{1}{862718293348820473429344482784628181556388621521298319395315527974912} - \frac{1}{1725436586697640946858688965569256363112777243042596638790631055949824} - \frac{1}{3450873173395281893717377931138512726225554486085193277581262111899648} - \frac{1}{6901746346790563787434755862277025452451108972170386555162524223799296} - \frac{1}{13803492693581127574869511724554050904902217944340773110325048447598592} - \frac{1}{27606985387162255149739023449108101809804435888681546220650096895197184} - \frac{1}{55213970774324510299478046898216203619608871777363092441300193790394368} - \frac{1}{110427941548649020598956093796432407239217743554726184882600387580788736} - \frac{1}{220855883097298041197912187592864814478435487109452369765200775161577472} - \frac{1}{441711766194596082395824375185729628956870974218904739530401550323154944} - \frac{1}{883423532389192164791648750371459257913741948437809479060803100646309888} - \frac{1}{1766847064778384329583297500742918515827483896875618958121606201292619776} - \frac{1}{3533694129556768659166595001485837031654967793751237916243212402585239552} - \frac{1}{7067388259113537318333190002971674063309935587502475832486424805170479104} - \frac{1}{14134776518227074636666380005943348126619871175004951664972849610340958208} - \frac{1}{28269553036454149273332760011886696253239742350009903329945699220681916416} - \frac{1}{56539106072908298546665520023773392506479484700019806659891398441363832832} - \frac{1}{113078212145816597093331040047546785012958969400039613319782796882727665664} - \frac{1}{226156424291633194186662080095093570025917938800079226639565593765455331328} - \frac{1}{452312848583266388373324160190187140051835877600158453279131187530910662656} - \frac{1}{904625697166532776746648320380374280103671755200316906558262375061821325312} - \frac{1}{1809251394333065553493296640760748560207343510400633813116524750123642650624} - \frac{1}{3618502788666131106986593281521497120414687020801267626233049500247285301248} - \frac{1}{7237005577332262213973186563042994240829374041602535252466099000494570602496} - \frac{1}{14474011154664524427946373126085988481658748083205070504932198000989141204992} - \frac{1}{28948022309329048855892746252171976963317496166410141009864396001978282409984} - \frac{1}{57896044618658097711785492504343953926634992332820282019728792003956564819968} - \frac{1}{115792089237316195423570985008687907853269984665640564039457584007913129639936} - \frac{1}{231584178474632390847141970017375815706539969331281128078915168015826259279872} - \frac{1}{463168356949264781694283940034751631413079938662562256157830336031652518559744} - \frac{1}{926336713898529563388567880069503262826159877325124512315660672063305037119488} - \frac{1}{1852673427797059126777135760139006525652319754650249024631321344126610074238976} - \frac{1}{3705346855594118253554271520278013051$



the Subtangent into the difference of the Semiordinates. Therefore the Space BAPM, is to the Space PMSQ as the difference of the Semiordinates AB and PM to the difference of the Semiordinates PM and SQ.

Note, If a Curve be not supposed; describe but only an Equation to it given, so as it don't appear; e. gr. where the Origin of  $x$  is to be fixed, we are to put  $x=0$  in the Integral, and expunging what are multiply'd by  $x$ , add to it the Remainder, if there be any, under the contrary Sign; to have the Quadrature sought.

QUADRATURE of Des Cartes's Curve, which is defined by the Equation,  $b^2 x^2 = b - x : y$ .

Since,  $b y = b x^2 - x^2$

$$y = (b x^2 - x^2) : b^2$$

$$y dx = (b x^2 dx - x^2 dx) : b^2$$

$$\int y dx = x^3 : 3 b - x^3 : 4 b^2$$

QUADRATURE of all Curves comprehended under the general Equation  $y = x \sqrt{m(x+a)}$

Since  $v = x(x+a) : m$

$$y dx = dx(x+a) : m$$

To render the Element integrable; suppose,

$$(x+a)^2 : m = v$$

Then will  $x+a = \sqrt{v m}$

$$dx = mv^{-1/2} dv$$

$$y dx = m v m dv$$

$$\int y dx = \frac{m v m}{m+1} + I = \frac{m}{m+1} (x+a) \sqrt{m(x+a)}. \text{ Let } x=0: \text{ The}$$

Remainder  $\frac{m}{m+1} a \sqrt{m a}$ . Whence, the Area of the Curve is

$$\frac{m}{m+1} (x+a) \sqrt{m(x+a)} - m a \sqrt{m a}$$

QUADRATURE, in Astronomy, that Aspect, or Situation of the Moon, when she is  $90^\circ$  distant from the Sun. See MOON.

Or, the Quadrature is when she is in the middle Points of her Orbit, between the Points of Conjunction and Opposition, which happens twice in each Revolution, viz. in the first and third Quarter. See ORBIT, OPPOSITION and CONJUNCTION.

When the Moon is in her Quadrature, she exhibits that Phasis which we call the Half Moon, i. e. she shines with just half her Face; and is said to be bisected, or Dichotomiz'd. See PHASIS and DICOTOMY.

In the Moon's Progress from the Syzygies to her Quadrature, her Gravity towards the Earth is continually increasing by the Action of the Sun; and her Motion retarded for the same Reason—Her Motion, then, in her Orbit is slowest as her Gravity to the Earth is greatest when in the Quadrature. See GRAVITY.

In her recess from the Quadratures to the Syzygies, the Gravity continually decreases, and the Velocity increases.

The Ratio is thus: As Radius is to the Sum, or Difference of one and a half the Co-sine of double the distance of the Moon from the Syzygy, and half the Radius; so is the addition of Gravity in the Quadratures to the Diminution or Increase thereof in any other Situation. See SYZYGY.

Hence the Moon's Orbit is more Convex in the Quadratures, than in the Syzygies; and hence the Circular Figure of the Moon's Orbit is changed into an Oval, whose greater Axis goes through the Quadratures; and hence, also, the Moon is less distant from the Earth at the Syzygies, and more at the Quadratures. See ORBIT.

'Tis no wonder, therefore, that the Moon approach nearer the Earth when her Gravity is diminished; that Access not being the immediate effect of this Diminution, but of the Inflection of the Orbit towards the Quadratures.

In the Quadratures, and within  $35^\circ$  Degrees thereof, the Apfides of the Moon go backwards, or move in antecedentia; but forwards in the Syzygies. See APSIDES.

The Moon's Orbit undergoes various Alterations in each Revolution—Its Excentricity is the greatest when the Line of the Apfides is in the Syzygies; least, when in the Quadratures. See EXCENTRICITY.

Considering one entire Revolution, the Nodes move slower and slower as the Moon approaches the Quadratures, and rest when she is therein: But considering several Revolutions, the Nodes go back fastest in the Quadratures. See NODE.

The Inclination of the Plane of the Moon's Orbit increases as the Nodes go from the Syzygies, and is greatest when the Nodes are in the Quadratures. See INCLINATION.

QUADRATURE-Lines, or Lines of QUADRATURE, are two Lines frequently placed on Gunter's Sector.

They are mark'd with the Letter Q, and the Figures 5, 6, 7, 8, 9, 10; of which Q signifies the side of a Square, and the other Figures the sides of Polygons of 5, 6, 7, &c.

ides—S there stands for the Semi-diameter of a Circle, and 90 for a Line equal to 90 Degrees in the Circumference. See SECTOR.

QUADRATUS, in Anatomy, a Name apply'd to several Muscles, in respect of their square Figure. See MUSCLE.

QUADRATUS Femoris, a Member of the Muscle Quadrigeminus, arising from the Apophysis of the Ischium, and maintaining an equal breadth and bulk to its insertion just below the great Trochanter.

This assists with the other Muscles of the Quadrigeminus, to turn the Thigh outwards. See QUADRIGEMINUS.

QUADRATUS Genæ, or Maxille inferioris, call'd also Montanus, is a broad square Muscle lying immediately under the Skin of the Neck—it arises thin and membranous from the upper part of the Spines of the Vertebrae of the Neck and the Skin of the superior parts of the Cucullaris and pectoral Muscle; whence, spreading over the Neck, it becomes fleshy, and is inserted partly into the Os Hyoides, and partly into the under Edge of the lower Jaw—it serves to pull the lower Jaw downward. See SUBCUTANEUS.

QUADRELS, in Building, a kind of Artificial Stones, perfectly square, whence their Name; made of a chalky, or whitish and pliable Earth, &c. dried in the Shade for two Years.

They were formerly in great request among the Italian Architects.

QUADRIGA, in Antiquity, a Car, or Chariot drawn by four Horses. See CAR and CHARIOT.

On the Reverse of Medals we frequently see Victory, or the Emperor, in a Quadriga, holding the Reins of the Horses; whence these Coins are call'd among the Curious, Quadrigates, or Victoriates. See MEDAL.

Various are the Accounts we have of the Author of the Quadriga—Cicero makes it the Invention of Minerva. Hyginus attributes it to Erichonius IV. King of the Athenians; which Sentiment Virgil follows in his Georgics, lib. iii. v. 113.—Eschylus gives Prometheus the Honour thereof—Tertullian, de Spectac. l. 9. says it was invented among the Argians, by Trochilus, in honour of Juno; and at Rome, by Romulus in honour of Mars, or Quirinus. Adon of Vienna, Chronic. Act 3. will have it to have been invented by one Procidus, about the time of the establishment of the Kingdom of Athens. Lazius, Hist. Univers. Epitom. l. 24. says the same of Triptolemus.—Lastly, if there be not Opinions enough already, Herodotus gives us another; and says the Greeks borrow'd it from the Lybians—Pliny tells us that his Seal was a Quadriga, lib. xvi. See SEAL.

The Word is form'd from the Latin, quatuor, four, and jugum, yolk. See BIGA.

QUADRIGEMINUS, in Anatomy, a Muscle, or rather an Assemblage of four Muscles; serving to turn the Thigh outward. See THIGH.

The first of the constituent Muscles of the Quadrigeminus, is the Pyriformis; the second and third the Gemini; and the fourth Quadratus Femoris. See each described under its proper Article, PYRIFORMIS, GEMINUS, &c.

QUADRILATERAL, in Geometry, a Figure whose Perimeter consists of four right Lines, making four Angles; whence it is also call'd a Quadrangular Figure. See QUADRANGULAR.

If the several Angles be right, the Figure is a rectangular Quadrilateral—If oblique, an oblique-angular Quadrilateral. See RECTANGULAR, &c.

If the Sides of a Quadrilateral be equal, and the Angles right, the Figure is a Square. See SQUARE.

If the Sides be equal, but the Angles unequal, the Figure is a Rhombus. See RHOMBUS.

If the Angles be equal, and the Sides unequal, the Figure is a Rectangle. See RECTANGLE.

If only the opposite Angles and Sides be equal, the Quadrilateral is a Rhomboides. See RHOMBOIDES.

If the opposite Angles and Sides be unequal, the Quadrilateral is a Trapezium. See TRAPEZIUM.

The two opposite Angles of any Quadrilateral Figure inscribed in a Circle, always make two right Angles. See INSCRIBED.

QUADRILL, QUADRILLA, a little Troop or Company of Cavaliers, pompously dress'd and mounted; for the performance of Carousels, Jousts, Tournaments, Runnings at the Ring, and other gallant Diversions. See JOUST, TOURNAMENT, &c.

A regular Carrousel is to have at least four, and at most twelve Quadrills. See CARROUSEL.

Of these Quadrills, each is to consist of at least three Cavaliers, and at most of twelve.

The Quadrills are distinguish'd by the Form of their Habits, or the Diversity of their Colours. See COLOUR, LIVERY, &c.



The Word is borrow'd from the *Italian*, being a Diminutive of *Squadra*, a Company of Soldiers rang'd in a Square: For *Squadrare* is, properly, to dispose any thing square; whence their *Quadrilla*, the *French Squadrille* and *Quadrilla*, and our *Quadrill*——'Tis not fifty Years since they wrote *Squadrilla*.

**QUADRIPARTITION**, the dividing by four; or a taking of the fourth part of any Number or Quantity. See **DIVISION**, **PARTITION**, &c.

Hence *Quadrupartite*, &c. something divided into four. See **INDENTURE**.

**QUADRIEME**, **QUADRIEMIS**, a Galley or Vessel with four Oars on a side. See **GALLEY**.

**QUADRUGATA Terra**, in old Law Records, is a *Team Land*; or so much as can be till'd by four Horses. See **CARUCATA**.

**QUADRUPED**, in Natural History, a four-footed Beast.

Mr. Ray defines *Quadruped*, a perfect, hairy, viviparous Animal, having but four Feet. See **ANIMAL**.

There is a great Analogy between the Structure of *Quadrupeds*, and that of Man——The principal differences result from their different Posture; and are seen in the *Legs*, *Heads*, *Necks*, *Stomachs*, *Hearts*, and the *Nerves*. See **LEG**, **HEAD**, **NECK**, **STOMACH**, &c.

Mr. Ray gives us the following Scheme or Division of *Quadrupeds*.

*Quadrupeds* are either hoof'd, (*ungulata*); or claw'd, or digitate, (*unguiculata*).

**Hoofed-QUADRUPEDS**, are either, 1. Whole-hoofed, *Solidipeda*, *Μεγένηα*, *Μόνυχα*, *Solidungula*: As the Horse, Ass, the Onager or wild Ass; the Mule, and the Zebra of *Africa*, or the fine striped *Indian*, or *African Ass*, almost like a Mule in Form and Stature. See **HOOF**.

Of this whole-hoofed Kind, *Aristotle* has observed, that no one hath two Horns——(he might have said any Horns) no one hath the *Talus*, or *Astragalus*, nor have the Males any appearance of Breasts. See **HORN**.

2. Cloven-Footed, and that either into two divisions only; as the *Δίχνηα*, or Bifurcate Kind, which are again subdivided into such as are, first,

*Ruminant*, *Μρυκάζοντα*, that is, such as chew the Cud; and these either have hollow and perpetual Horns, as the Bull, Sheep, and Goat-kind; or *Deciduous*, as the Hart and Deer kind, which usually shed their Horns annually. See **HEAD**.

Of the *Bull-kind* are reckon'd these; the common *Bos*, of which the Male is *Taurus*, the Female *Vacca*. (2.) The German *Urus*, *Urochs*, or *Aurochs*. (3.) The *Bison*. (4.) The *Bonastus*. (5.) The *Bubalus*, or *Busalo*. (6.) The *Bos Africanus* of *Bellonius*; *Obs.* l. 2. c. 50. which he takes to be the *Bubalus* of the *Antients*.

Of the *Sheep-kind*, besides the common sort, are reckon'd the *Arabian Ovis Laticauda*, whose Tail is sometimes of 30 l. weight; the *Ovis Strepsiceros Cretica Bellonii*; the *Ovis Africana*, with short Hairs instead of Wool; the *Ovis Guineensis*, or *Angolensis* of *Marcgrave*, (*Hist. Brasil.* l. 6. c. 10.)

Of the *Goat-kind*, are, besides the common *Capra Domestica*; the *Ibex*, or German *Steinbock*, found in the Tops of the *Alps*; the *Rupicapra*, French *Chamois*, German *Goms*; the *Gazella Africana*, or *Antelope*; the *Gazella Indica*; the *Capra Sylvestris Africana Grimmerii*; the *Capra Mambrina*, or *Syriaca* of *Gesner*; the *Buselaphus*, or *Moschellaphus Cati* in *Gesner*; the *Tragelaphus Cati* in *Gesner*.

Of the *Hart* or *Deer-kind*, are reckon'd, the *Cervus*, *Præcox*, the red Deer; the *Cervus Platyceros* or *Palmatus*, the fallow Deer; Alce or the Elk; *Rangifer*, the Rain-Deer; the *Axis Plinii*, according to *Bellonius*; the *Caprea Plinii*, the *Cugnacu-etc.* and *Cugnacu-sapara* of *Marcgrave*; the *Caprea Groenlandica*.

2. Of Cloven-Footed Animals into two parts only, and which do not chew the Cud, there is only the Hog and Swine-kind; and under this head, besides the common Swine, are reckon'd the wild Boar, or Swine; the *Porcus Guineensis Marcgravii*; the *Porcus Indicus* call'd *Babyloussa*; the *Tajaca* or *Apor Mexicanus Moschiferus* of *Dr. Tyson*, call'd by *Marcgrave*, *Tajaca Cumigoara*, by others *Quauhila Coymalt*, and *Quapizolt*, and by *Acosta* and some others *Zaino*.

3. There are some four-footed Animals, whose Hoof is cloven into four Divisions; and these seem to be not Ruminant: As the *Rhinoceros*, the *Hippopotamus*, the *Tapijere* of *Brasil*, the *Capy-Bara* of *Brasil*, the Animal *Moschiferum*.

**Clawed or Digitate QUADRUPEDS**: Of this Kind, there is, (1.) a sort whose Claws are not divided or separated, but adhering to one another, cover'd with one common Skin, but with obtuse Nails, sticking out round the Margin of the Foot; as the Elephant, which is Anomalous, and not clearly referable to this Kind or that of Cloven-footed *Quadrupeds*.

(2.) There is another Species of this Digitate-kind of

*Quadrupeds*, which hath only two Claws, as that of *Camels*; and tho' these have no Horns, they do both ruminant, and have also the four Stomachs of horned ruminant Animals: Of the Camel or Dromedary there are two sorts; one having but one Bunch on the Back, the other two. To this kind belongs the *Peruvian Glama*, which some have reckon'd among the Sheep-kind; as also the *Pacos*, the *Ovis Indica*, or *Peruviana Vulgo*, much less than the *Glama*.

3. A third Species of this *Unguiculate* kind, includes such Animals, as the *Greeks* call'd *Πλατυπόδα*, and *Ἀρσποπόδα*, which have the Foot divided into many Claws, with broad Nails on them; as the Ape and Monkey kind: Of these, some have no Tails, and are call'd *Simia*, or Apes. Others have Tails, and are call'd Monkeys, *Cercopithecus*; and such as have either long or short Tails, if they are of a larger Size, are call'd *Papiones*, or Baboons. There are great Numbers and Varieties of this Species of *Quadrupeds*; of which Naturalists have described these: viz. the *Ourang*, *Outang*, or *Homo Sylvestris* of *Dr. Tyson*, described by him in a particular Discourse. The *Guarita* of *Brasil*, *Marcgravii*; the *Cagui* of *Brasil*, greater and lesser; the *Cay* of the same Region, described by *Lerius*; the *Caitia* of the same Country; the *Cercopithecus Barbatu Guineensis*, two or three sorts of it; the *Cercopithecus Angolensis major*; the *Cercopithecus non barbatu Clusii*; the *Cercopithecus Clus.* call'd *Sagouin*; and if Apes and Monkeys have their Snouts very prominent like Dogs, they are call'd *Cynocephali*.

4. A fourth Species of this *Unguiculate* kind, is, when tho' the Claws are many, yet they are not cover'd at the end with broad flat Nails, like Monkeys or Apes; but are rather like the Talons of Hawks, &c. crooked, and sharp-pointed: And these, in respect of their Teeth, may be divided into such as have many *Dentes Primores*, or *Incisores*, (that is, cutting Teeth) in each Jaw, of which there are two sorts; a greater, which either have a short, round Head, as the Cat-kind; or a lesser sort, having a long slender Body, with very short Legs, as the Weasel or Vermin-kind. There are some of this Species of *Quadrupeds*, which have only two large remarkable Teeth in each Jaw; and these are of the Hare-kind, and live only upon Herbs, Grass, &c.

Of the *Cat-kind* of *Quadrupeds* are reckon'd to be the Lion, the Tyger, the *Pardalis*, whose Male is *Pardus*, and Female *Panthera*, the Leopard; the *Lupus Cervarius*, or Lynx; the *Catus Pardus*, or Cat-a-mountain, the common Cat, and the Bear.

Of the *Dog-kind* are reckon'd the Wolf, the *Lupus Aureus*, the Jackall; the common Dog, of which kind they enumerate, the Mastive; the *Canis Venaticus Graius*, or *Græcus*, or, according to some, *Scoticus*, the Greyhound; the *Græus Hibernicus*, or *Irish Greyhound*; the *Canis Venaticus Sagax*, *Indagator*, *Señator ferarum*, &c. the Hound; the *Canis Venaticus Hispanicus* or *Aviarius*, the Spaniel for Land or Water; the *Vertagus* or Tumbler; the *Canis Oïxus*, *Domesticus*, the House-dog; the *Canis Meliteus*, or the Lap-dog; the *Canis Getulus*, or *Islandicus*, the Shock; and of all these sorts there are many Varieties of Mongrels, and *Hebridous Breeds*.——Another sort of the Dog-kind is, the Fox; the Animal *Zibethicum*; the Civet-Cat, as it is corruptly call'd, but by its Teeth and Snout, is plainly of the Dog-tribe; the *American Coati*, or *Rackoon* or *Rattoon*; the *Tziquipate*; the *Carigweya*, *Mariucaca*, *Carigoy*, *Ropoza* or *Possim*; the *Taxus* or *Meles*; the Badger, Grey, or Pate; the *Lutra*, or Otter; the *Foca*, or Sea-Calf, or Seal; the *Equus Marinus*, or *Morse*, or Sea-Horse, mistaken by some for the *Hippopotamus*; the Dutch call him *Walras*, the *Danes* and *Islanders*, *Rosmarus*; the *Manari*, or *Vacca Marina*, the Sea-Cow.

Of the *Vermin*, or *Weasel-kind* of *Quadrupeds*, is, first, the *Mustela vulgaris*, the common Weasel, in *Yorkshire*, call'd *Foumart* or *Fitcher*, (*γαλιν*) the *Viverra Indica*, call'd *Quel* and *Quirpele*; and another sort call'd *Mungo*, and *Mungathia*, of a reddish grey. The *Mustela*, the *Ermine* or *Stoat*, if white, and the *Mustela Sylvestris*, the *Ferret*; the *Putorius*, the *Pole-Cat*; the *Martes*, *Foyna*; the *Marten* or *Martlet*; the *Mustela Zibellina* the *Sable*; the *Gonetta*, and the *Ichneumon Bellonii*.

Of the *Hare-kind* of *Quadrupeds*, are first, the *Lepus*, or common Hare; the *Cuniculus*, the Rabbit or Coney; the *Taperi*, or *Brasil-Coney*, and the *Aperca* of *Brasil*; the *Hystrix*, or Porcupine; and the *Hystrix Americanus*, or *Cuanda* of *Brasil*; the *Castor*, *Fiber*, or the Beaver; the *Sciurus vulg.* or Squirrel; the *Virginian*, *Zeylandic*, the *Barbary*, and the *American flying Squirrel*, &c. The *Mus Domesticus*, major and minor, the common Rat and Mouse; *Mus major Aquaticus*, the Water-Rat; the *Musk-Rat*; *Mus Avellanarum*, major and minor; the Dormouse or Sleeper, *Mus Noricus*, *Cricetus*, *Alpinus seu Marmotta*; the *Cavia Cobaya*, or *Cuniculus Americanus*; the *Guinea-Pig*; the *Agati*, and *Paca* of *Brasil*; the *Mus Norvegicus*, or *Leming*; the *Glis Gestori*, or the *Reil*; the *Mus Indicus*, &c.



**Animalous QUADRUPEDS.** To these several Kinds of *Quadrupeds*, the following Anomalous ones must also be added.

(1.) Such four-footed *Viviparous Animals*, as have a longish Snout, with their Feet divided into many Claws, and Toes, and having Teeth; as the *Echinus Terrestris*, or common Urchin, or Hedge-Hog; the *Erinaceus Indicus* albus; the *Tatu* or *Armadillo prima* of *Marcgrave*; the *Tatuete* of *Brasil*, or the second Species of the *Armadillo*, according to *Marcgrave*; the *Tatu Apara*, his third Species of the *Armadillo*; the *Tatu Mustelinus*, *Soc. Reg. Mus.* the Weasel-headed *Armadillo*; the *Talpa*, the Mole, Want, or Mold-warp; the *Mus Araneus*, Shrew, Hardy-Shrew, Shrew-Mouse.

(2.) *Quadrupedous and Viviparous Animals* with a longish Snout, having their Feet divided into many Claws or Toes, but without Teeth; as the *Tamandua-guacu* of *Brasil*, *Marcgrave*; the *Ursus Formicarius Cardani*; the great Ant-Bear; the *Tamanduais* of *Brasil*, or *Marcgrave's* lesser Ant-Bear.

(3.) *Anomalous flying Quadrupeds*, with a shorter Snout, and their Feet divided as above; being of the Bat-kind, or Flitter-Mice; of which there are several Sizes and different Forms.

(4.) There is one very anomalous Animal which has but three Claws on each Foot; and that is the *Afs*, or *Ignavus* of *Marcgrave*, the Sloth, or Sluggard.

(5.) *Viviparous and Sanguineous Quadrupeds*, breathing with Lungs, but having only one Ventricle in the Heart; as the *Rana aquatica*, the Frog or Froch; the *Rana arborea*, seu *Ranunculus Viridis*, the small Tree or green Frog; the *Bufo*, five *Rubeta*, the Toad; the *Testudo*, the Tortoise, *Greek* *xxviii*; of these there are Land and Water ones, and many different Species in foreign Parts.

(6.) *Oviparous Quadrupeds*, with a long Tail stretched out horizontally, of the Lizard-kind; as the *Lacertus omnium maximus*, the Crocodile; the *Cordylus*, five *Caudiverbera*, *Uromastix Grecis*, larger than the green Lizard; the *Lapayaxin Nove Hispanie*; the *Lacertus orbicularis* of *Hernandez*, the *Lacertus vulgaris*, the common Est, Swift, or Newt; the *Lacertus viridis*, the green Lizard; the *Lacertus Fucetanus Aldrovand.* at *Rome* and *Naples* call'd the Tarantula; the *Lacertus Indicus*, call'd *Senembi* and *Inguana*; the *Lacertus Brasiliensis*, call'd *Tejuguacu*, and *Temapara* by *Marcgrave*; the *Taraguira*, *Ameira*, *Taraguico Aycuraba*, *Americima*, *Curapopepa*, *Teiunham*, &c. of *Marcgrave*; the *Lacertus Indicus*; the *Scincus*, or *Crocodilus terrestris*; the *Seps*, or *Lacerta Chocidica*, a kind of footed Serpent; the *Stellio*, the Swift, or spotted Lizard; the *Salamandra terrestris*, *Salamandra aquatica*, the Water Est; the *Lacerta volans Indica*; and the *Chameleo*, the Chamelion.

**QUADRUPLE**, a Sum or Number multiply'd by four, or taken four times.

*Quadruple* is particularly used for Gold Coin worth four times as much as that whereof it is the *Quadruple*. The *Quadruple* of the *Spanish Pistole* is a Piece of four Pistoles, worth about three Pounds six Shillings *Sterling*. See **PISTOLE**.

The *Quadruple* of the *Louis d'Or* is only equal to two *Louis d'Ors* or *French Pistoles*, or one Pound thirteen Shillings *Sterling*.

**QUÆ PLURA**, a Writ that antiently lay where Inquisition had been made by an Escheator, of such Lands or Tenements as any Man died seized of, and all was supposed not to be found by the Office. See **ESCHEATOR**.

This Writ was to enquire what more Lands or Tenements the Party died seized of. But it is now made useless by taking away the Court of Wards and Offices.

**QUÆ SERVITIA**, a Writ. See *PEN quæ servitia*.

**QUÆSTA**, in our antient Writers, an Indulgence, or Remission of Penance; exposed to sale by the Popes. See **INDULGENCE**.

**QUÆSTUS**, or **QUESTUS**, in Law, is that Estate, or those Effects which a Man hath by Acquisition or Purchase; in contradistinction to *Hereditas*, which is what he hath by Descent. See **GOODS**, **ESTATE**, &c.

So in *Glanville*, lib. 7. *aut habet hereditatem tantum, vel quantum tantum, aut hereditatem & quantum*.

**QUESTIONARII**, in our antient Law-Books, were People who went about with Indulgences from Door to Door, desiring Charity either for themselves or others. See **INDULGENCE**.

*Matt. West* observes, 1240, that the King, *Terram suam per Papales Questionarios, depauperari, &c. permittit*.

**QUAKERS**, a Religious Sect, who made their Appearance in *England*, during the Time of the Inter-regnum. See **SECT**.

They took their Origin from *George Fox*, an illiterate Person, born at *Draiton* in *Leicestershire*; and by Profession a Shoe-maker.

The Accounts of those Times tell us, that as he wrought at his Trade, he used to meditate much on the Scriptures; which, with his solitary Course of Life, improving his natural Melancholy, he began at length to have Visions; and, in consequence thereof, set up for a Preacher.

The new Prophet proposed but few Articles of Faith; dwelt mostly on Morality; preach'd mutual Charity, the Love of God, and a deep Attention to the inner Motions and secret Workings of the Spirit—He would have a simple Worship, and Religion without any Ceremonies; making it a principal Point to wait in profound Silence, the Motion and Direction of the Holy Spirit.

The Genius of the Times, the Novelty of the Doctrine, and the great Appearance of Devotion in the Man, soon gain'd him Disciples; and some unusual Shakings and Convulsions which they were seiz'd withal at their first Meetings, procur'd 'em the Appellation *Quakers*.

They profess a great Austerity of Behaviour; a singular Probity and Uprightness in their Dealings; a Demureness, and Gravity of Countenance; a Coldness and Sparseness of Discourse, to have time to weigh what they say; a great deal of Frugality in their Tables, and of Plainness in their Dress.

They declaim much against the interested Views of the *English Ministers*; blame all War, and set aside all use of Oaths, as prohibited under the Gospel. See **AFFIRMATION**.

According to the Genius of rising Sects, an eager Zeal at first led 'em to some Extravagancies: They would run about the Streets naked; and were frequently in Prison for interrupting the Ministers in Service-time.

One of their Company, *Naylor*, is said to have had the Impiety to allow his Followers to call him Son of God, Son of Justice, and King of *Israel*; to strew Garments before him; and Hail him at his Entry into *Bristol*, with *Hosanna Son of David*. He had his Trial for the same, was whip'd for Blasphemy, and excommunicated by the rest.

Beside other Penalties inflicted on 'em, they were laugh'd at, and rally'd in Writing, and expos'd on the Theatre: But they despised alike both the Press and the Prison, and form'd their Sect, maugre all Opposition of both; and under the Direction of *Fox*, *Dewsbury*, and others, grew from a loose, undisciplin'd Multitude, into a regular Body, with stated Laws and Polity; which they retain with great Oeconomy to this day.

The modern *Quakers* retain nothing of the Extravagancies charged on their Leaders; having approved themselves a sober, quiet People, of exemplary Morals, and remarkably charitable and friendly to each other.

Their Doctrines are not easily collected; at least, not easily represented out of their own Terms, which appear somewhat ambiguous.

They hold Christ to be a Light which hath lighted every Man; and that whoever will soberly and seriously turn into himself with a sincere desire to know and practise his Duty, will not fail to find there a sufficient Director; a Ray from the Fountain of Light illuminating the Understanding, and assisting to distinguish Good from Evil.

They add, That such as follow the Directions and Convictions of this Light, shall be Holy and Acceptable to God; and that this was the End of Christ's coming into the World—That so far as they follow this Light, they shall be infallible; and that it is not Opinion, or Speculations, or Notions of what is true, or Subscription of Articles or Formula's of Faith, how soundly soever worded, that make a Man a true Believer or Christian; but a conformity of Mind and Practice to the Will of God, according to the Manifestation and Dictates of this divine Principle of Light within 'em.

Our Saviour's Injunction about Baptism they understand, in a figurative Sense, of a Conversion and Change of the Heart; and wholly neglect the outward Sign—Water-Baptism they hold was only *John's*; that it was no more than a Type or Figure, fitted for the Infant-state of the Gospel; and therefore now useless, in a Dispensation, which is spiritual and inward.

The same they hold of the Supper; alledging, That both allude to old *Jewish* Practices, and were used as Types or Significations of a near and accomplishing Work—They add, that the Communion of Saints consists only in a participation of the same divine Principle, shewing itself in an Unity of Spirit.

As to Ministry and Ordinances, they deny that any are to be used of Man's Wit, or Will, or carnal Invention, or Imitation; or other than what the inward Principle directs 'em to—Accordingly, they have no Persons set apart for the Ministry; but without distinction of Quality or Sex, every one who is of sober Life, and approved Conversation, and believes him or herself called or moved thereto, is permitted to speak and prophesy in their Assemblies.

They



They own the Scriptures to be given by divine Inspiration, and allow 'em the Appellation of the Form of sound Words; but refuse to call 'em the Word of God, as being a Denomination properly attributed to Christ alone—They add, that what makes 'em more scrupulous in this respect, is, that People are apt to be hereby led to think that if they have the Scriptures, they have all; and so look for no further Word or Light.

They acknowledge the Holy Three that bear Record in Heaven, Father, Word, and Spirit; but reject the School-Terms, Trinity, distinct, Persons, Hypostases, &c. as not Scriptural, and as apt to convey too gross Ideas.

They have been even charg'd with denying the Incarnation, our Saviour's Humanity, Divinity, plenary Satisfaction, and the Resurrection of the Dead: But this is injurious to 'em; and all that can be justly said, is, that they don't allow of 'em in the same Sense, or speak of 'em in the same Terms, as is commonly done among others.—They allow the Incarnation, and that the Godhead dwelt bodily in Jesus; and yet many of 'em say, there is no Christ but what is within 'em: Whence it should seem their Notion of the Incarnation only imply'd this, that the Light, which they call the Christ within, dwelt in the Man Jesus Christ fully.—Their Reasoning, here, is, that Christ, as God, not being divisible, the Measure or Manifestation of the Spirit of Christ in us, is a Manifestation of the same Christ which dwelt bodily and fully in the Man Jesus Christ.

They are silent as to the Hypostatical Union; and some of 'em are charged with allegorizing away the whole History of the Crucifixion, the Resurrection, and Ascension; tho' their best and most approved Writers have been very explicit in their Acknowledgment of the Reality of the History.

They decline the Use of Modes or Forms of Civility; expressing their Respect to their Superiors no other way but by obeying all just Laws under their Government.

The System of *Quakerism* is laid down in fifteen Theses, by Robert Barclay, in a well writ Apology address'd to King Charles II. Their History, writ in *Low Dutch* by William Sewel, and since translated into *English*, traces 'em from the beginning to the Year 1717.—A History of this People was also published An. 1695, by Gerard Croese; but the Author is by them accused as having misrepresented Facts, and in many respects done them injustice.

As to Discipline and Polity; the Affairs of the Community are all managed under a Democratical Government, by Rules established by common Consent; and this principally at their Meetings, whereof they have many kinds; viz. Monthly, Quarterly, Yearly, Second Day's Meetings, Meetings of Sufferings, &c.

Their *Monthly* and *Quarterly Meetings* are held in their respective Counties.—To these Deputies are sent from the several particular Meetings.—Here Enquiry is made into the State of each Meeting; who stand fast to the Rules and Orders, and who backslide; who pay Tythes, and Church Rates, and who suffer for non-payment of either; who are married by Priests, &c. and accordingly they proceed to Censure, or Encourage.—Here too they Excommunicate, and here receive again into Communion; of all which things exact Registers are kept.

From these Meetings Appeals lie to their *Yearly* ones, which are always held in *London*, and consist of three Orders or Classes; viz. Representatives sent from the Quarterly Meetings; Correspondents for the several Counties, and foreign Countries; and Ministers, or Preachers.—Higher are transmitted Accounts of what has been transacted in all the Monthly and Quarterly Meetings over the World.—Here are Measures concerted, and Directions given as to Behaviour about Tythes, and Rates, providing for the Poor, composing differences, &c.—Here public Accounts are audited, and proper Instructions given to the Deputies to be observed at their Return, and a yearly Epistle of Admonitions dispatch'd to be read in all the Monthly and Quarterly Meetings throughout the World.

The *Second Day's Meeting*, is a standing Committee consisting of the principal Preachers in and about the City, who meet every Monday, to concert particular Cases, and Exigencies relating to the Body happening between the yearly Meetings; particularly to examine, approve, license, &c. all Books printed in their behalf.

The *Meeting of Sufferings* is held every Week, and consists of the Correspondents for each County:—Its business is to receive Complaints from such as have suffer'd for non-payment of Tythes and Rates, and to procure 'em Relief, either by sending 'em Money, for which they have a settled Fund, or by soliciting their Causes above, or both.

**QUALI** *Writ*, was an ancient Writ Judicial, that lay where a religious Person had Judgment to recover Land; before Execution was made of the Judgment.

This Writ was issued forth to the Escheator between Judgment and Execution, to enquire whether the religious Person had Right to recover, or whether the Judgment were

obtained by collusion between the Demandant and Tenant to the intent that the true Lord were not defrauded.

**QUALIFICATOR**, in the Canon-Law, a Divine appointed to qualify, or declare the Quality of a Proposition brought before an Ecclesiastical Tribunal; chiefly before the Inquisition.

The *Qualificators* of the Office are not Judges; they only give their Sentiments on the Propositions presented to 'em.—'Tis the Inquisitors that judge. See INQUISITION.

**QUALITY**, *QUALITAS*, that Affection of a thing whence it is denominated *Such*; or that which occasions a thing to affect our Senses, in this or that manner, and gives it this or that Denomination.

Thus, that Virtue in Fire, whatever it be, whereby it excites in us the Sensation of Heat, since it is that whence the Fire is denominated hot, is the call'd *Quality* of Fire.

The word *Quality*, *Qualitas*, is said to have been first introduced into the *Latin* by *Cicero*. Till his time the *Romans* studiously avoided the using a Term which denoted an Abstraction; and in lieu thereof, only consider'd the Concrete, signify'd by *Quale*—The like is observed of the antient *Greeks*, who did not use *ποιότητα*, but *ποιόν*. See ABSTRACTION.

The Term *Quality*, it is to be observed, is very ambiguous; and has been apply'd to some things, which ought rather to have been look'd upon as *States* of Matter, or Complexions of several *Qualities*; as Life, Health, Beauty, &c.

There are, also, other Attributes, as Size, Shape, Motion, and the rest, usually reckon'd among *Qualities*, which might more conveniently be esteem'd the primary Modes of the Parts of Matter; since from these simple Attributes, all the *Qualities* are derived. See *MODE*.

The antient School Philosophers distinguish *Quality* in the general, which they call *Metaphysical* and *Predicamental Quality*; into *Essential*, and *Accidental*—The Moderns, more usually, into *Spiritual*, and *Corporeal*.

*Spiritual QUALITIES*, or *QUALITIES of the Soul*, are Affections of the Mind, consider'd as it is in this, or that Habitude or Disposition—Of these, they make two Kinds; the one belonging to the Understanding, the other to the Will: Of the former kind are Knowledge, Opinion, Certainty, Doubting, &c. Of the latter, are all the Moral Virtues and Vices. See UNDERSTANDING, WILL, KNOWLEDGE, IGNORANCE, OPINION, &c. See also VIRTUE, &c.

*Corporeal or Physical QUALITIES*, are what we chiefly consider under this Denomination, and to which the Definition above laid down is accommodated.

Philosophers are divided as to the Nature of these *Qualities*, or what they are in the Body—The general Language of the *Peripatetic* School, is, that they are things distinct from the Bodies themselves; are superadded to 'em, or flow from their substantial Forms: On which Principle, they hold *Qualities* to be real; and denominate 'em *Accidents*; supposing 'em to be inherent in Substances, tho' not in the relation of Parts, but to be sustain'd thereby as in a Subject, and incapable of subsisting without 'em—In effect, the *Thomists* define *Qualities* to be *Accidents* following or arising from the Form; in the same Manner as *Quantity* is an *Accident* following or arising from the Substance. See FORM, ACCIDENT, QUANTITY.

The Moderns absolutely explode the Notion of *Qualities* distinct from the Body; and insist, that the Powers whereby Bodies excite in us the Ideas of such *Qualities* are no other than the mechanical Affections of the Bodies themselves, viz. the Figure, Magnitude, Motion, &c. of the Parts whereof they consist. See MECHANICAL.

The principal Considerations insisted on by the Retainers to real *Qualities*, are, That these Powers may be actually separated from the Substances they inhere in; as we see in Light, Heat, &c. That from these very *Qualities* consider'd as so many Determinations, arises a very great diversity in Bodies: And that Bodies, according to the diversity of their *Qualities*, affect our Senses differently.

The Adherents to the Experimental way, on the contrary, account for all the *Qualities* of Bodies from mechanical Causes.

Thus all the Phenomena of a Clock, the Motion of its Wheels, its Hands, &c. whereby it strikes the Hour, points the Minute, Day, Moon's Age, &c. do all evidently arise from the single Spring; which we never imagine to have any particular Powers whereby it should be enabled to make such Discoveries; nor any other Principle but that one of Elasticity—Again, when the Smith who first invented Locks and Keys, had made his first Lock, it was only a piece of Iron, contrived into a particular Shape; and when, afterwards, he made a Key to it, that also, consider'd in itself, was nothing but a piece of Iron of a determinate Figure; but as these two pieces of Iron might now be apply'd to one another, after a certain manner, and, as there was a congruity betwixt the Wards of the Lock, and those



those of the Key, they now each obtain'd a new Capacity ; and it became a principal part of the Notion and Definition of a Lock, that it was capable of being made to open or shut, by that other piece of Iron call'd a Key ; and it was look'd on as a peculiar Faculty and Power in the Key to be fit to open and shut the Lock—And yet by these new Attributes there was not added any real or physical Entity, either to the Lock or the Key ; each of them remaining the same piece of Iron, just so shaped, as it was before. And, again, when the Smith made other Keys of different Sizes, or with differing Wards ; tho' the first Lock could not be open'd with any of those Keys, yet, that Indisposition was nothing new in the Lock, or distinct from the Figure it had before those Keys were made.

Why, then, may we not conceive, that sensible *Qualities*, tho', by virtue of a certain congruity or incongruity in point of Figure, Texture, or other mechanical Properties, the Portions of Matter they modify are enabled to produce various Effects, on account whereof the Bodies are said to be endowed with *Qualities* ; yet, that they are not in the Bodies endowed with them, any real or distinct Entities, or differing from the Matter itself, of such a determinate Bigness, Shape, or other mechanical Modifications ?

Thus, tho' the modern Goldsmiths and Refiners reckon it among the most distinguishing *Qualities* of Gold, that it is dissoluble in *Aqua Regia*, whilst *Aqua Fortis* will not work upon it ; yet these Attributes are not in the Gold any thing distinct from its peculiar Texture ; nor is the Gold we have now of any other nature than it was in *Pliny's* time, when *Aqua Fortis* and *Aqua Regia* were unknown.

If another *Menstruum*, of which Mr. Boyle suggests he was possess'd, should be invented to dissolve pure Gold in part, and change it into a different metalline Body, there would then arise another new Property, whereby to distinguish this from other Metals ; yet the nature of Gold is not at all different now from what it was before the discovery of this last *Menstruum*.

There are Bodies neither Cathartic nor Sudorific, with some of which Gold being joined, acquires a purgative Virtue, and with others a Power to procure Sweat.—Nature herself sometimes produces things, that have no relations to others : And Art, especially if assisted by Chymistry, may cause so many new Productions, that no Man can tell, but the most familiar Bodies may have multitudes of *Qualities* he dreams not of, which will hardly be imagined real physical Entities.

We all know that the Sun hath a Power to harden Clay, soften Wax, melt Butter, thaw Ice, turn Water into Vapour, make Air expand itself in Weather-Glasses, contribute to blanch Linnen, render the white Skin of the Face swarthy, and mowed Grass yellow, ripen Fruit, hatch the Eggs of Silk-Worms, Caterpillars, &c. and perform many other things, some of which seem contrary to others ; yet these are not distinct Powers or Faculties in the Sun, but only the Productions of its Heat, diversify'd by the different Textures of the Body it chances to work on, and the condition of the other Substances concern'd in the Operation—And, therefore, whether or no the Sun, in some Cases, has any influence at all distinct from its Light and Heat, we see that all the Phænomena mentioned, are producible by the Heat of common Fire, duly apply'd and regulated. *Boyle of Forms and Qualities.*

Some of the Antients, and particularly the *Peripatetics*, distinguish'd *Qualities* into *sensible* and *occult*.

*Sensible*, or *Manifest QUALITIES*, are those arising from certain Modifications of the Matter, and which become immediately Objects of our Senses.—Such are all those above mentioned.

Tho', in strictness, those only are said to be *sensible Qualities* which affect some one Sense alone ; as Colour does the Eye, Sound the Ear, &c.

These are sometimes, also, call'd *Tactile*, or *Tangible Qualities*, by reason they only produce their Effect, i. e. excite their Ideas in us when contiguous, or in contact with the Organ.

*Occult QUALITIES*, are certain latent Powers arising from the specific Forms of things, whereof no rational Solution can be given on any Principles of Physics. See OCCULT.

*Sensible Qualities* are usually divided into Primary and Secondary.

*Primary*, or *general QUALITIES* are such as are found in all Bodies ; or which agree to all Matter, consider'd as Matter, and therefore to the Elements themselves—Such are Extension, Figure, Motion, Rest, Solidity, Impenetrability, and Number. See BODY, FIGURE, SOLIDITY, &c.

*Secondary*, or *Particular QUALITIES* are such as result from a Composition or Mixture of Elements, and do not agree to Body as Body, but as a Mixt—Such are Light, Heat, Cold, Colour, Sound, Taste, Smell, Hardness, Softness, Fluidity, Firmness, Roughness, Smoothness, Opacity, Transparency, &c.

According to *Aristotle* and the *Peripatetics*, the Primary, or Elementary *Qualities* are those of the four Elements themselves ; viz. Heat, Cold, Moisture, and Dryness. See ELEMENT.

The Secondary *Qualities*, according to the same, are all the rest ; which are Combinations or Assemblages of the former Elementary ones ; as Colour, Odour, Taste, &c.

To give an Idea of *Aristotle's* Method of accounting for these secondary *Qualities* from his primary ones, we shall instance in his account of Colour—All Colours, then, says he, are generated of a Mixture of the four Elementary *Qualities* : White, e. gr. is produced when the Humidity surmounts the Heat, as in old Men, who grow grey : Black is produced when the Humidity dries off, as in Walls, Cisterns, &c. Red, &c.

Among the School-Philosophers we meet with other Divisions of *Qualities* ; as *Active*, and *Passive* ; *Real*, and *Intentional*.

*Active QUALITIES*, were such by Virtue whereof Effects and Operations were actually produced on other Bodies duly disposed with respect thereto—Such were the Heat of Fire, the Moisture of Water, &c.

*Passive QUALITIES* were those whereby Bodies were disposed to receive the Action of others—Such are Inflammability in Oil, &c.

*Real QUALITIES* are those which remain in the Subject ; and only act on things adjacent thereto—As Fire in a piece of Iron not ignited, &c.

*Intentional QUALITIES* are those which issue from the Subject, and operate at a distance—Such is the Light emitted from the Sun, &c.

But the Moderns are agreed that either all *Qualities* are real, or all alike intentional.—So that the distinction is impertinent.

However ignorant we may be of the Nature of *Qualities*, or the Manner of their Operation ; yet we know the Laws of their Intention and Remission—Dr. Keil demonstrates that every *Quality* which is propagated in *Orbem*, such as Light, Heat, Cold, Odour, &c. has its Efficacy increased or abated in a duplicate Ratio of the Distances from the Centre of Radiation, or Exertion of the *Quality*.

Thus, let A (Tab. GEOMETRY, Fig. 80.) be a Centre from whence any *Quality* exerts itself round about, according to the right Lines A e, A f, &c. The Efficacy of the *Quality*, be it Heat, Cold, Odour, &c. will be (at equal distances from A) as the Spissitude or Thickness of the Rays A b, A e, A f. But the Rays within the inner Circle, or rather spherical Superficies, b c d H, when they come to be extended to the other spherical Surface, e f g K, will be much less close than before, and that in the reciprocal Proportion of the Spaces they take up ; that is, if the outer Surface be double of the inner, the Rays there will be but half as thick : But since spherical Superficies are as the Squares of the Radii, therefore the Efficacy of the *Quality* in the inner Surface will be to that of the outer, as A e Square, to A b Square. Q. E. D.

Sir Isaac Newton lays it down as one of the Rules of Philosophizing, that those *Qualities* of Bodies which are incapable of being intended and remitted, and which are found to obtain in all Bodies wherein the Experiment could ever be tried, are to be esteem'd universal *Qualities* of all Bodies. See PHILOSOPHIZING.

*Chymical QUALITIES*—One may distinguish physical *Qualities*, with Mr. Boyle, into the first, second, and third ; to the two last of which may be refer'd several *Qualities* not treated of by the Writers of Physical Systems ; and these, for distinction sake, may, some of them, be styled the *Chymical Qualities of Things* ; because *Aristotle* and the Schoolmen, being unacquainted with them, they have been principally introduced by means of Chymical Operations and Experiments : As Fumigation, Amalgamation, Cupellation, Volatilization, Precipitation, &c.

By these Operations, among other Means, corporeal things come to appear volatile or fixed, soluble or insoluble in some Menstrua, amalgamable or unamalgamable, &c. which as well deserve the Name of *Quality*, as several other Attributes, to which it is allow'd.

To these chymical *Qualities* some others might be added, which, because of the Use that Physicians principally make of them, may be call'd *Medical Qualities*, whereby some Substances received into the human Body, are resolving, dissolving, suppurating, absterive, &c. For tho' some Faculties of Medicines, as those of heating, cooling, drying, attenuating, purging, &c. may be conveniently refer'd to the first, second, or third *Qualities*, mention'd by Naturalists, whilst others are reckon'd occult ; yet as several of them ought not to be refer'd to the *Qualities* whereof they are often ascribed ; so the handling of them may be look'd upon as a *Desideratum*, and deserves a distinct Place in Natural Philosophy. See MEDICINE ; see also PURGATIVE, &c.



*Cosmical QUALITIES*, see *COSMICAL Quality*.

**QUALITY** is also used for a kind of Title given to certain Persons in regard of their Territories, Signories, or other Pretensions. See **TITLE**.

Thus the King of *Great Britain* takes the *Quality* of King of *France*: The King of *Poland* that of King of *Sweden*: The King of *Sardinia* that of King of *Cyprus* and *Jerusalem*: The Czars of *Russia* and Kings of *Spain*, have whole Pages of *Qualities*—The Emperor of *China* assumes the *Quality* of Son of the Sun.

**QUAM diu se bene gesserit**, a Clause frequent in Letters Patents, or Grants of Offices, to secure them so long as the Person they are granted to, shall not be guilty of abusing the same.

Thus, *e. gr.* we find it in those given to the Barons of the Exchequer; where it intimates that they shall hold the same as long as they shall behave themselves well: which is to be restrain'd to the Matters of their Offices; and signifies no more than the Law would have imply'd, had the Office been granted expressly for Life.

A Grant, therefore, with this Clause, is equivalent to a Grant for Life. See **BARON**, **JUDGE**, **JUSTICE**, &c.

**QUANTITY**, **QUANTITAS**, any thing capable of Estimation, or Mensuration; or, which being compared with another thing of the same kind, may be said to be greater, or less, than; equal, or unequal to, it.

Mathematics is the Science or Doctrine of *Quantity*. See **MATHEMATICS**.

*Quantity* is a general Attribute, apply'd in a very different Manner to things of very different Nature; whence it is impossible to give any universal Definition thereof.

*Quantity* is apply'd both to Things, and to Modes; and this, either singularly, and to one; or plurally, and to several—In the first Case it is call'd *Magnitude*, in the latter *Multitude*. See **MAGNITUDE**, &c.

*Quantity* may be reduced to four Classes, *viz.*

*Physical*, or *Natural Quantity*, which is of two kinds; *viz.* 1. That which Nature furnishes us with, in Matter, and its Extensions. See **BODY** and **EXTENSION**.—And, 2. In the Powers, and Forces of Natural Bodies; as Gravity, Motion, Light, Heat, Cold, Rarity, Density, &c. See **FORCE**, **GRAVITY**, &c.

*Moral Quantity*, which depends on the Manners of Men, and the free Determination of their Wills—As the Prices and Values of Things; Degrees of Dignity and Power, Good and Evil, Merit and Demerit, Rewards and Punishments, &c.

*Notional Quantity*, arising from the Operation of the Understanding only—Such as the largeness or narrowness of the Capacity of the Mind, and its Conceptions—In Logic, Universals, Prædicaments, &c.—In Grammar, the *Quantity* and Measure of Syllables, Accents, Tones, &c.

*Transcendental Quantity*, as Duration, the Continuation of any Being, Existence, Time, &c. See **DURATION**, **TIME**, &c.

*Quantity* is also popularly distinguish'd into *Discrete* and *Continued*.

*Discrete QUANTITY*, is when the Parts whereof it consists, exist distinctly and unconnected together; which makes what we call *Number*. See **DISCRETE**.

The Antients distinguish'd this into two kinds, *viz.* *Permanent*, as *Numerus Numerans*; and *Successive*, as *Speech*.

*Continued QUANTITY*, is when the Parts are connected together—This, again, is of two kinds; either *successive* and *improper*, as *Time*. See **TIME**.

Or *permanent* and *proper*, as *Space*. See **SPACE**.

*Permanent Quantity* is further distinguishable into length, breadth, and depth. See **LINE**, **SURFACE**, and **SOLID**.

*Wolffius* gives us a more precise Notion of Mathematical *Quantity*, and its two Species of *Discrete* and *Continued*—Whatever is referr'd to Unity in the same manner as one right Line to another, is what we call *Quantity*, or *Number* in general. See **NUMBER**.

If, now, the thing be referr'd to a given Unit, as 3, it is call'd a *determinate Number*: if to Unity in the general, or at large, it is call'd a *Quantity*; which, on this Principle, is the same with *indeterminate Number*.

Thus, *e. gr.* the breadth of a River is accounted a *Quantity*: If, then, it be enquir'd how great it is? To conceive its *Quantity* we take some Unit at pleasure, and seek the Relation of the breadth hereto; and according to the different Unit assumed, express the breadth of the River in a different determinate Number.

The breadth of the River, therefore, is a *Quantity* consider'd as referr'd to a vague Unit, or to Unity at large; but the Unit being determined, the thing is understood by a determinate Number.

In this sense, Algebra is the Arithmetic of *Quantities*. See **ALGEBRA**.

*QUANTITY of Motion*, in Mechanics, is of two kinds, *viz.* of *momentary Motion*, and of *entire Motion*.

*Quantity of entire Motion*—The *Cartesians* define the entire Motion as the momentary one, by the Factum of the Mass, or *Quantity of Matter*, into the Velocity; but since Motion is a successive Being, and has no parts co-existing together, its *Quantity* ought to be estimated by the Aggregate of the several Parts existing successively; and is therefore equal to the Factum of the Momenta into the Time.

*QUANTITY of momentary Motion*, is the Factum of the Velocity into the Mass; or a Measure arising from the joint Consideration of the *Quantity of Matter*, and the Velocity of the Motion of the Body; the Motion of any Whole being the Sum or Aggregate of the Motion in all the several Parts. See **MOTION**.

Hence, in a Body twice as great as another, moved with an equal Velocity, the *Quantity of Motion* is double; if the Velocity be double also, the *Quantity of the Motion* will be quadruple. Hence the *Quantity of momentary Motion* coincides with what we call *Momentum*, or *Impetus* of a moving Body. See **MOMENTUM**.

In the Collision of Bodies, the *Quantity of momentary Motion*, which is found by taking the Sum of Motions tending the same way, or their difference if they tend towards contrary Parts; is not at all changed by any Actions of the Bodies on one another. See **PERCUSSION**.

*QUANTITY of Matter* in any Body, is the Product of the Density into the Bulk; or a *Quantity* arising from the joint Consideration of its Magnitude and Density. See **BULK**.

As, if a Body be twice as dense, and take up twice as much Space as another, it will be four times as great.

This *Quantity of Matter* is the best discoverable by the absolute weight of Bodies. See **MASS**, **WEIGHT**, &c.

*QUANTITY Infinite*—Tho' the Idea of Magnitude infinitely great, or such as exceeds any assignable *Quantity*, does include a negation of Limits; yet are not all such Magnitudes equal amongst themselves; but besides *infinite Length*, and *infinite Area*, there are no less than three several sorts of *infinite Solidity*; all of which are *Quantitates sui generis*; and those of each Species are in given Proportions.

*Infinite Length*, or a Line infinitely long, is to be consider'd, either as beginning at a Point, and so infinitely extended one way; or else both ways from the same Point: in which Case the one, which is a beginning Infinity, is one half of the Whole, which is the Sum of the beginning and ceasing Infinity, or Infinity *à parte ante*, and *à parte post*, which is analogous to Eternity in Time or Duration, in which there is always as much to follow as is past, any Point or Moment of Time. See **ETERNITY**.

Nor does the Addition or Subtraction of Time, Length or Space of Time, alter the Case, either as to Infinity or Eternity; since neither the one or the other can be any Part of the Whole.

As to infinite Surface or Area, any right Line infinitely extended both ways on an infinite Plane, divides that Plane into equal Parts, the one to the Right, and the other to the Left of the said Line; but if from any Point in such a Plane, two right Lines be infinitely extended, so as to make an Angle; the infinite Area, intercepted between these infinite right Lines, is to the whole infinite Plane, as the Arch of a Circle drawn on the Point of Concurrence of those Lines as a Centre, intercepted between the said Lines, is to the Circumference of the Circle; or as the Degrees of the Angle to the 360 Degrees of a Circle.

For an Example—Two infinite right Lines meeting at a right Angle on an infinite Plane, do include a quarter Part of the whole infinite Area of such a Plane: If two parallel infinite Lines be supposed drawn on such an infinite Plane, the Area intercepted between them will be likewise infinite; but at the same time will be infinitely less than the Space intercepted between two infinite Lines, that are inclined, tho' with never so small an Angle, for that in the one Case the given finite Distance of the parallel Lines diminishes the Infinity in one Degree of Dimension; whereas in a Sector, there is Infinity in both Dimensions; and consequently the *Quantities* are one infinitely greater than the other, and there is no Proportion between them.

From the same Consideration arise three several Species of infinite Space or Solidity; for a Parallelepiped, or a Cylinder infinitely long, is greater than any finite Magnitude, how great soever; and all such Solids supposed to be form'd on a given Basis, are in proportion to one another, as those Bases. But if two of those three Dimensions are wanting, as in the Space intercepted between two parallel Planes infinitely extended, and at a finite distance; or with infinite length and breadth, with a finite thickness; all such Solids shall be as the given finite Distances one to another.

But these *Quantities*, tho' infinitely greater than the other, are yet infinitely less than any of those wherein all the three Dimensions are infinite—Such are the Spaces intercepted between two inclined Planes infinitely extended; the Space intercepted by the Surface of a Cone, or the Sides of a Pyramid, likewise infinitely continued, &c. of all



all which, notwithstanding the Proportions one to another, and to the  $\pi$ , or vast Abyss of infinite Space (wherein is the Locus of all things: that are, or can be; or to the Solid of infinite Length, Breadth, and Thickness taken all manner of ways) are easily assignable. For the Space between two Planes is to the Whole, as the Angle of those Planes to the 360 Degrees of the Circle. As for Cones and Pyramids, they are as the Spherical Surface intercepted by them, is to the Surface of the Sphere; and therefore Cones are as the versed Sines of half their Angles, to the Diameter of the Circle: These three sorts of infinite Quantity are analogous to a Line, Surface, and Solid; and, like them, cannot be composed, or have any Proportion one to another.

QUANTITIES, in Algebra, are indeterminate Numbers, or things refer'd to Unity in the general.

Quantities are properly the Subject of Algebra; which is wholly conversant in the Computation of such Quantities. See ALGEBRA.

The given Quantities are used to be noted by the first Letters of the Alphabet *a, b, c, d, &c.* the Quantities sought by the last *x, y, z, &c.* See CHARACTERS.

Algebraical Quantities are of two kinds; *Positive*, and *Negative*.

*Positive*, or *Affirmative* QUANTITIES are those which are greater than nothing; and which are affected with the Sign  $+$  prefix'd; or supposed to be so. See POSITIVE.

*Negative*, or *Privative* QUANTITIES are those less than nothing; which are affected with the Sign  $-$  prefix'd. See NEGATIVE.

Hence, 1. Since  $+$  is the Sign of Addition, and  $-$  the Sign of Subtraction; a positive Quantity is produced by adding any real Quantity to nothing; *e. gr.*  $0 + 3 = 3$ ; and  $0 + a = +a$ . And a privative Quantity is produced by subtracting any real Quantity out of nothing; *e. gr.*  $0 - 3 = -3$ ; and  $0 - a = -a$ .

For an Illustration—Suppose when you are quite destitute of Money, somebody gives you an hundred Pieces; you have then an hundred Pieces more than nothing; which Pieces constitute a *positive Quantity*.

On the contrary, suppose you have no Money, yet owe an hundred Pieces; you have then an hundred Pieces less than nothing; for you must pay an hundred Pieces to have just nothing. This Debt is a *negative Quantity*.

Thus in local Motion, Progress may be call'd a *positive Quantity*, and Regress a *negative* one; because the first increases, and the second diminishes the Space pass'd over.

And in Geometry, if a Line drawn towards any Part be accounted an *affirmative Quantity*; another the contrary way will be a *negative* one.

1. *Privative Quantities*, therefore, are the Defects of the *positive Quantities* whereby they are understood; and, consequently are no real Quantities: For we measure the Defect by the Quantity defective; and thus it becomes intelligible.

Since one Defect may exceed another, (*e. gr.* if seven be wanting, the Defect is greater than if only three be wanting) and since *privative Quantities* are the Defect of *real Quantities*; one *privative Quantity* being taken a certain Number of times, may exceed another. Wherefore *privative Quantities* are homogeneous to one another.

4. But since the Defects of a *positive Quantity* taken any number of times can never exceed the *positive Quantity*, but grows still the more deficient; *privative Quantities* are heterogeneous to *positive* ones.

5. Since, then, *privative Quantities* are heterogeneous to *positive* ones, homogeneous to *privative* ones; there can be no Ratio between a *privative* and a *positive Quantity*, but there is a Ratio between *privative* ones. *E. gr.*  $-3 : -5 :: 3 : 5$ . The Ratio, here, is the same as if the Quantities were positive. But it may be noted, that between  $1$  and  $-1$ , and between  $-1$  and  $1$ , the Ratio is very different.

Addition of QUANTITIES. 1. If the Quantities denoted by the same Letter be affected with the same Sign, the Numbers prefix'd to 'em are added as in common Arithmetic. 2. If they be affected with different Signs, the Addition is changed into Subtraction; and to the Remainder is prefix'd the Sign of the greater. 3. Quantities denoted by different Letters, are added by means of the Sign  $+$ ; as in the following Example.

$$\begin{array}{r} 4a + 2b - 2c - 5d - g \\ 5a - 2b + bc + 2d - 3g \\ \hline 9a + 4c - 3d - 4g \end{array}$$

$$\begin{array}{r} a - b \\ c \\ \hline a - b + c \end{array}$$

Subtraction of QUANTITIES; see SUBTRACTION.  
Multiplication and Division of QUANTITIES; see MULTIPLICATION and DIVISION.

Combination of QUANTITIES; see COMBINATION.  
If a *positive Quantity* be multiply'd, or divided by another *positive Quantity*, the Result is a *positive Quantity*.

2. If a *negative Quantity* be multiply'd, or divided by a *positive*, the Result is a *negative*.

3. If a *negative Quantity* be multiply'd, or divided by another *negative*, the Result is a *positive*.

4. If a *positive Quantity* be multiply'd, or divided by a *negative*, the Result is a *negative Quantity*.

QUANTITY, in Grammar, is the Measure, or Magnitude of the Syllables; or that which determines them to be call'd long, or short. See GRAMMAR, PROSODY.

This Quantity is the Object of Prosody; and it is the regard to this that distinguishes Verse from Prose. See VERSE.

The Oeconomy and Arrangement of the Quantities, *i. e.* the distribution of long and short Syllables, make what we call the Numbers. See NUMBERS.

The Quantities are used to be distinguish'd among the Grammarians by the Characters  $\cup$  *short*, and  $-$  *long*. See CHARACTER.

The Proportion betwixt the long and short Syllables may be generally fix'd the same as between the Crochet and Quaver in Music; *viz.* as 2 to 1. See TIME.

In most Languages there are some Syllables whose Quantities vary, as the Measure requires; as in the *English Record* and *Récord*.

Some Authors confound the Quantities with the Accent: But the difference is glaring; the former being the length or shortness of a Syllable, the latter the raising or falling of the Voice. See ACCENT.

From two Quantities, *viz.* long and short Syllables, arise all the Varieties of Poetic Feet, which are very great. Horace alone uses no less than twenty-eight. Yet the Greeks went vastly beyond the Romans in this respect. In effect, as many ways as two Quantities may be varied by composition, and transposition from two to six Syllables, so many different Feet have the Greek Poets contrived, and that under distinct Names, to the Number of 124. Tho' it is the Opinion of some of the Learned, that Poetical Numbers may be sufficiently explain'd from the Feet of two or three Syllables, into which the rest are to be resolved.

The Feet form'd by the Antients of the long and short Syllables immediately; are the *Spondee*, consisting of two long Syllables; the *Pyrrhic*, of two short ones; the *Trochee*, of a long and short Syllable; and the *Iambic*, of a long and short Syllable. See SPONDEE, TROCHEE, IAMBIC, &c.

Those of three Syllables are the *Moloss*, consisting of three long Syllables; the *Tribrach* of three short ones; the *Dactyl* of one long and two short Syllables; and the *Anapest* of two short and one long Syllable. See DACTYL, ANAPEST, TRIBRACH, &c.

The *English* Tongue admits of no Feet above two Syllables, tho' both the *Latin* and *Greek* allow of six.

Our Heroic Verses consist of five long and five short Syllables intermix'd alternately; tho' not so strictly but that the Order may be dispensed withall. Dryden varies them with admirable Beauty; sometimes his Heroic Verse begins with a long Syllable follow'd by two short ones.

The truth is, the Quantity of the Syllables is but little fix'd in the modern Tongues; and there is still less regard had to it in the Composition of modern Verses. The want of Feet, or rather the shortness and uniformity of our Feet, makes a world of difference between the Numbers of the antient and modern Verse. Our Poets are fetter'd, and their Fetters are so short, but two poor Links, that it's no wonder they can make no extraordinary Motions.

The Antients subsisted by their Quantities alone; so well were they distinguish'd, and such a Variety and Harmony did they afford. Our Quantities make such poor Music, that we are forced to call in the Gothic Aids of Rhime to distinguish our Verse from Prose. See ONE.

Yet have Attempts been made to settle our Verse on the antient and natural footing of Quantities, in exclusion of Rhime, and with such success too, (witness the *Immortal Paradise Lost*) as seems to leave the practice of Rhiming inexcusable. The French have likewise attempted the same in their Tongue, particularly Jodelot, and after him Pasquier, Passerat, and Rapin; but they have all fail'd. See RHYME.

QUANTUM meruit, an Action upon the Case, grounded upon a Promise to pay a Man for doing so much as he should deserve or merit.

QUARANTAIN, in old Law-Books wrote QUAREN-TENE, or QUARANTENA, denotes the Space of forty Days.

The Term is borrow'd from the French; and is sometimes used for the time of Lent. See LENT.



*Quarantain of the King*, is a Truce of forty Days appointed by *S. Louis*; during which it was expressly forbid to take any Revenge of the Relation or Friends of People, who had fought, wounded, or affronted each other in words.

**QUARANTAIN** is particularly used for the Term of forty Days, which Vessels, coming from Places suspected of Contagion, are obliged to wait in certain Places appointed, to air themselves e'er they come into Port.

**QUARANTAIN, QUARANTENE, or QUARENTENA**, in Law, is a Benefit allow'd by the Laws of *England* to the Widow of a Man dying seized of Land; whereby she may challenge to continue in his Capital Messuage, or Chief Mansion-House (so it be not a Castle) for the space of forty Days after his decease.—If the Heir, or any other Person attempt to eject her, she may have the Writ *de Quarantina habenda*; which lies for a Widow to enjoy her *Quarantine*.

*Quarantene* is also used for a quantity of Ground containing forty Perches.—*Quatuor Carucas terre arabilis, continentes in Longitudine 8 Quarentenas, & 8 Quarentenas in Latitudine.* Chart. Withlasi Reg. Merc. apud Ingulf.

*Quarantena in London ponetur pro respectu habend. per 40 Dies post Summonitionem per breve Regis ut consultant, &c. si sibi viderint expedire.* MS. de temp. Ed. 3.

**QUARANTIA**, in the *Venetian* Polity, a Court of Judicature composed of forty Judges.

The *Venetians* have an old *Civil Quarantia*, new *Civil Quarantia*, and *Criminal Quarantia*.

The *Criminal Quarantia* takes Cognizance of all Crimes except those against the State; which belong to the Council of Ten.—The new *Civil Quarantia* judges of Appeals made from Sentences pass'd by Judges out of the City.—The old *Civil Quarantia* takes Cognizance of Appeals from Sentences of iudicatory Judges in the City.

**QUARE ejecit infra Terminum**, a Writ which lies for a Lessee in Case he be cast out of his Farm before his Term be expir'd; against the Lessor or Feoffee that ejects him. See **LEASE**.

It differs from the *Ejectione firme*, in that the former lies where the Lessor, after the Lease made, enfeoffs another who ejects the Lessee; whereas the *Ejectione firme* lies against any other Stranger that ejects him. See **EJECTION**.

The Effect is the same in both, viz. the Recovery of the Residue of the Term. See **EJECTIONE Firme**.

**QUARE Impedit**, a Writ which lies for him who has purchased an Advowson, against him that disturbs him in the Right thereof, by presenting a Clerk thereto, when the Church is void. See **ADVOWSON**.

It differs from the Writ *Assisa ultima presentationis*, which lies where a Man or his Ancestors formerly presented; this other lying for him who is the Purchaser himself.—Where a Man may have the *Assisa*, he may have this Writ; but not contrariwise. See **ASSISA**.

**QUARE Incumbavit**, a Writ which lies against the Bishop, who, within six Months after the Vacation of a Benefice, confers it on his Clerk, while two others are contending at Law for the Right of Presenting. See **PRESENTATION**, &c.

**QUARE non admittit**, a Writ which lies against the Bishop for refusing to admit his Clerk who has recover'd in a Plea of Advowson.

**QUARE non permittit**, is a Writ that lies for one who has a Right to present for a turn against the Proprietary.

**QUARE obstruxit**, a Writ that lies for him who having Right to pass thro' his Neighbour's Grounds, cannot enjoy the same by reason the Owner has fenced it up.

**QUAREL, QUERELA**, in Law, properly relates to personal Actions, or at most to mixed, wherein the Plaintiff is call'd *Querens*, and in all Declarations of Trespas it is said, *Queritur*. See **ACTION**, **PLAINTIFF**, &c.

Yet if a Man release all *Quarels*, or *Querels* (a Man's own Deed being taken most strongly against himself) *Quarel* includes all Actions; and accordingly all Actions, both Real and Personal, are hereby released. See **RELEASE**.

**QUARERA, or QUARATIA**; see **QUARRY**.

**QUARREL**, in Law, see **QUAREL**.

**QUARREL of Glass**; see **QUARRY**.

The Word is form'd by diminution from the *Latin quadratum*, or the *French quarre*, square; or, perhaps, immediately from the *Italian quadrello*, little square.

**QUARRY**, in our ancient Writers call'd **QUARERA, QUADRATA, QUARATIA**, a Place under Ground, out of which are dug Marble, Free-Stone, Slate, Lime-Stone, or other Matters proper for Building. See **STONE**.

See the several Kinds of *Quarries*, under the several Articles, **MARBLE**, **SLATE**, &c.

For *Quarries of Free Stone*, they first open a Hole in manner of a Well, twelve or fourteen Foot in Diameter; and the Rubbish drawn out with a Windlass in large Oiler Baskets, they heap up all around; placing their Wheel, which is to draw up the Stones, thereupon.

As the Hole advances, and their common Ladder becomes too short, they apply a particular Ladder for the purpose.—When they have got through the Earth, and are arrived at the first Bank, or Stratum; they begin to apply their Wheel and Baskets to discharge the Stones as fast as they dig through 'em. See **WHEEL**.

They usually find seven of these different Strata, or Beds of Stones, of different Heights, and serving for different Purposes; tho' the Number as well as Order wherein they follow is various. See **STRATA**.

As to the drawing of the Stone, i.e. the freeing it from the Bed; they find that common Stones, at least the softer kinds, as they lie, have two Grains; a cleaving Grain running parallel with the Horizon, and a breaking Grain perpendicular thereto.—After uncopying, then, i.e. clearing the Earth from off it, they observe by the Grain where the Stone will cleave, and there drive in a good Number of Wedges till they have thus cleft it from the rest of the Rock.

This done, they proceed to break it: In order to which, applying the Ruler to it at both ends, (ten, e.gr. or twelve Inches a-part, according to the Uses the Stone is intended for) they strike a Line, and by this cut a little Channel with their Stone-Ax; and in the Channel set five or six Wedges (supposing the Stone three or four Foot) driving 'em in very carefully, with gentle blows, and still keeping 'em equally forward.

Having thus broke 'em in length, (which they are able to do to half an Inch of any size) applying a Square to the straight Side, they strike a Line, and proceed as before to break it in breadth.

This Method of drawing is found vastly preferable to that where the Stones are broken at random.—One Load of the former is found to do the Business of a Load and a half of the latter.

But it may be observ'd, that this cleaving Grain being generally wanting in the harder Stones; to break up these in the *Quarries*, they have great heavy Stone-Axes where-with they work down a deep Channel into the Stone, and into this Channel, a-top, lay two Iron Bars, driving their Iron Wedges between these Bars.

Some, in drawing of Stone, especially the very hard kind, make use of Gun-Powder, and with very good effect.—In order to which, making a small Perforation pretty deep into the Body of the Rock, so as to have that thickness of Rock over it judg'd proper to be blown up at once; at the further end of the Perforation they dispose a convenient quantity of Gun-Powder, filling up all the rest with Stones and Rubbish strongly ramm'd in, except a little Space for the Train.—By this means is the Rock blown into several Pieces, most of 'em not too unwieldy for a Workman to manage. See **GUN-POWDER**.

**QUARRY, QUARREL**, in Glazery, a Pane, or Piece of Glass cut in a Diamond Form. See **GLASS**.

*Quarries, or Quarrels of Glass* are of two Kinds, viz. *Square*, and *Long*; each whereof is of different Sizes, express'd by the Number of 'em which makes a Foot of Glass, viz. 8ths, 10ths, 12ths, 15ths, 18ths, and 20ths; but all the Sizes are cut to the same Angles, the acute Angle being 77° 19' in the *Square Quarries*, and 67° 22' in the long ones. See **GLAZERY**.

The word *Quarry* seems form'd by Corruption from *Quarrel*, (which see;) unless we'll suppose it to come immediately from the *French quarre*, square.

**QUARRY**, in Falconry, is the Game or Fowl which the Hawk is in pursuit of, or has kill'd. See **HAWK** and **HAWKING**.

Among Hunters, the *Quarry* is sometimes used for part of the Viscera of the Beast taken; given by way of Reward to the Hounds. See **HUNTING**.

**QUART, q. d. Fourth**, in Music, Fencing, Gaming, &c. See **FOURTH**, **GUARD**, **PICQUET**, &c.

**QUART**, is particularly used for a diminutive Measure, containing one fourth or a quarter of some other Measure. See **MEASURE**.

Thus the *English Quart* is a fourth of a Gallon, or two Pints; the *Roman Quart*, or *Quartarius*, was the fourth part of a *Congius*. See **GALLON**, **PINT**, **CONGIUS**, &c.

The *French*, from whom we borrow the Word, besides their *Quart*, or *Pot* of two Pints, have various other *Quarts*, distinguish'd by the whole whereof they are quarters; as *Quart de Muid*, *Quart de Boisseau*. See **MUID** and **BUSHEL**.

They have also their *Quart* of a Yard, &c. See **QUARTER**.

**QUARTAN**, in Medicine, an intermitting Fever, or Ague, where the Fit returns every third day. See **FEVER**, &c.

It is call'd *Quartan, q. d. fourth*, by reason the two sick days are reckon'd, which, with the two intermitting ones, make four. See **TERTIAN**.

**QUARTATION**, among Refiners, a Method of purifying Gold, by melting three parts of Silver with one of Gold; and then casting the Mixture into *Aqua fortis*; which



which dissolving the Silver, leaves the Gold at bottom, in form of a black Powder. See **REFINING**.  
**Quarteration** is what we more usually call *Parting*, or the *Depart*. See **DEPART**; see also **GOLD**, &c.  
**QUARTELOIS**, **CARTELOIS**, or *Cotuca*, Surtouts, or upper Garments with Coats of Arms quarter'd on 'em, wore by the ancient Knights in their Military Expeditions. See **SURTOUT**, **COAT of Arms**, &c.

**QUARTER**, the fourth part of a Whole, or Integer divided into four equal Portions. See **FOURTH**.  
 In working of Fractions the *Quarter* is express'd by  $\frac{1}{4}$ , three *Quarters* by  $\frac{3}{4}$ . See **FRACTIONS**.

**QUARTER**, in Weights, is a fourth part of the Quintal, or Hundred Weight. See **QUINTAL**.  
 The *Quarter* is 28 Pounds *Avoirdupois*. See **HUNDRED WEIGHT**, **POUND**, **AVOIRDUPOIS**, &c.

**QUARTER** is also a dry Measure containing 8 Bushels striked; or the fourth part of a Chaldron. See **MEASURE**, &c.  
*Quarterium frumenti constat ex octo Buffellis*. Fleta. l. 2. See **BUSHEL**, **CHALDRON**, &c.

**QUARTER**, in Law, *Quarterium Anni*, is the fourth Part of a Year. See **YEAR**.  
 Hence the Days whereon those *Quarters* statedly commence, are call'd *Quarter-days*. See **DAY**.

*Quarter-days* are the 25th of March call'd *Lady-day*; the 24th of June, call'd *Midsummer-day*; the 29th of September, call'd *Michaelmas-day*; and the 25th of December, or *Christmas-day*.

**QUARTER Sessions**, a Court held Quarterly, by the Justices of Peace of each County, alternately, in the chief Towns thereof, appointed by the *Custos Rotulorum*. See **SESSIONS**, **JUSTICE**, &c.

Hither the Grand Inquest, or Jury of the County is summoned to appear, who upon Oath are to enquire of all Traytors, Heretics, Thieves, Murderers, Coiners, Rioters, &c. See **INQUEST**.

Those who appear to be guilty are by the said Justices committed to Prison, to be tried at the next Assizes, when the Judges go their Circuits. See **JUDGE**, **ASSIZE**, &c.

**QUARTER**, in Navigation—A *Quarter of a Point*, *Wind*, or *Rhumb*, is the fourth part of a Cardinal Point, *Wind*, or *Rhumb*; or of the distance between two Cardinal Points, *Winds*, &c. See **POINT**, **WIND**, and **RHUMB**.

The *Quarter* contains an Arch of  $11^{\circ} 15'$ .  
 The *Quarter* is what *Wolfius*, with regard to the other Divisions, calls a secondary Point of the second Order. See **CARDINAL Point**, &c.

**QUARTER Wind**, at Sea, is a lateral, or side Wind; or a Wind which does not blow in Stern, but a little a-side of it. See **WIND**.

Properly, the *Quarter Wind* is that which comes in abaft the Main-Mast Shrowds, even with the Quarter of the Ship.

The *Quarter Wind* is the best of all Winds, as bearing into all the Sails; whereas a Wind blowing full in Stern, is kept off by the Sails of the Mizzen. See **SAILING**.

**QUARTER of a Ship**, is that part of the Ship's Hull, which lieth from the Steerage-Room to the Transom. See **SHIP**.

**QUARTER Deck**, of a Ship, is that aloft the Steerage, reaching to the Round-house. See **DECK**.

**QUARTER**, in Astronomy—The Moon's Period, or Luration, is divided into four Stages, or *Quarters*; containing each from seven to eight Days. See **MOON** and **LUNATION**.

The first *Quarter* is from the new Moon to the Quadrature; the second thence to the full Moon, &c. See **QUADRATURE**, &c.

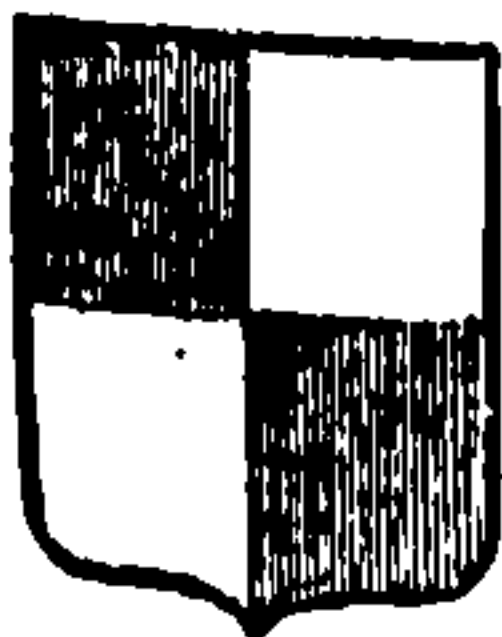
**QUARTER**, in Heraldry, is a Term used for a Scutcheon, or Coat of Arms. See **ESCUTCHEON**.

In this sense there are sixteen *Quarters* required to prove Nobility, in Companies or Orders where none but Nobles are admitted. See **NOBILITY**.

The Word *Quarters*, requir'd as a Proof of Nobility, is derived hence; that they used antiently to put the Coats of Arms of the Father, Mother, Grand-father, and Grand-mother on the four Corners of the Tomb of the Deceased—In *Flanders* and *Germany* we frequently see Tombs that have eight, sixteen, and even thirty-two *Quarters*. See **TOMB**.

**QUARTER** is also apply'd to the Parts, or Members of the first Division of a Coat that is *quartered*, or divided into four *Quarters*; as in the Figure adjoining. See **QUARTERING**.

The King of Great Britain in the first *Quarter* bears Gules three Lions passant Or, &c.—In the second *Quarter* he bears Azure three Flowers de Lys, &c.



**Franc QUARTER**, is a *Quarter* single, or alone; as that heretoadjoining.

This makes one of the honourable Parts of a Coat. See **ORDINARY**.

**QUARTER pierced**, in Heraldry, is used when there is a Hole or square Figure made in the middle of a Cross. See **PIERCED**.

**QUARTER Bullet**, a Bullet *quarter'd* into four or eight Parts. See **BULLET**, **SHOT**, &c.

**QUARTER** is also used for a Canton, or Division of a City; consisting of several Isles, &c. separated from some other *Quarter* by a River, a great Street, or other Boundary.

Such are the twenty *Quarters* of the City of Paris—Antient Rome was divided several times, under its several Augmentations, into *Quarters*, call'd *Regions*; as may be observ'd in the Topographies of *Aurelius Victor*, *Onuphrius Panvinus*, *Marillan*, *Pyrro Ligorio*, *Boissard*, and other Antiquaries. See **REGION**.

In many Cities there are *Commissaries of the Quarter* appointed to look to the Polity thereof—The Prior of the *Caporions* accounts himself the Chief, and Colonel of the fourteen *Regions*, or *Quarters of Rome*. Mascarat, p. 134.

**QUARTER**, in War, the Place allotted to certain Forces to live, lodge, and incamp upon, during a Siege or the like. See **INCAMPMENT**.

The *General's Quarter* is that where the General lodges and incamps in Person—They use to make Lines of Communication, to join the several *Quarters* together. See **LINE**.

The *Quarters* of a Siege are the principal Incampments, serving to stop the Avenues of a Place. See **SEIGE**.

**QUARTER Master**, an Officer in the Army, whereof there are several kinds; viz.—The

*Quarter-Master General*, whose Business is to provide good *Quarters* for the whole Army. See **QUARTERS**.

*Quarter-Master of a Regiment of Foot*, who is to provide *Quarters* for his Regiment. See **REGIMENT**.

*Quarter-Master of a Troop of Horse*, who is to provide *Quarters* for his respective Troop. See **TROOP**.

**QUARTER-Master** is also an Officer aboard a Ship, of which there are more or fewer according to her Burthen.—Their Business is to rummage in the Hold on all Occasions, to overlook the Steward in his delivery of Viſuals to the Cook, and in his pumping and drawing out the Beer; and in general, to take care there be no waste.

He is also to mind the Ship's Loading, which is the Business he is chiefly employ'd about. See **LOADING**, &c.

**QUARTER** is also used for any Lodgment made in the Field or Campaign out of a Siege—Thus, they say, the General has extended his *Quarters* a good way—The Enemy coming made him contract his *Quarters*.

**Winter QUARTERS**, is the Place allotted Troops to pass the Winter Season in.—Wherein these differ from Garrison, see **GARRISON**.

The Term is also used for the Time they continue in this Lodgment; and for the Advantages the Captains make thereof—Thus they say, such a Regiment was put to *Winter-Quarters* in such a Village—The *Winter-Quarters* only held three Months—Each Captain will make at least a thousand Crowns of his *Winter-Quarters*.

In Spain they have also *Summer-Quarters*.

**QUARTERS of Refreshment**, is some well-provided fertile Spot, to which Troops that have been much fatigu'd and harass'd, are sent to recover their Strength, or Health; even during the Season of the Campaign. See **REFRESHMENT**.

**QUARTER of Assembly**, is the Place of Rendezvous, where the Troops are to meet and draw up, for a March. See **PARADE**.

There are also *Quarters* assign'd for the Hucksters, and their Equipage.

**QUARTER** is also the Safety, and good Treatment promised to Persons, or Troops that surrender, and lay down their Arms—Thus they say the Enemy begg'd *Quarter*.

The Phrase took its rise from an Agreement antiently made between the *Dutch* and *Spaniards*, that the Ransom of an Officer, or Soldier, should be a *quarter* of his Pay—Hence, to beg *Quarter* was to offer a *quarter* of their Pay for their Safety; and to refuse *Quarter* was not to accept of that Composition for their Ransom. See **RANSOM**.

**QUARTER Round**, in Architecture, is a Term used by the Workmen for any Moulding, in general, whose Contour is either a perfect Quadrant, or *quarter* of a Circle, or approaches near that Figure. See **MOULDING**.

The Architects usually call it *Ovolo*; *Vitruvius* the *Echinus*. See **OVOLO** and **ECHINUS**.

**QUARTER Staff**, a long Staff or Pole, bore by Foresters, Park-keepers, &c. as a Badge of their Office; and occasionally used as a Weapon.



**QUARTER Wheeling**, or **QUARTER of Conversion**, in the Military Art, is a Motion whereby the Front of a Body of Men is turn'd round to where the Flank was; thus making a *quarter* of a Circle. See **CONVERSION**, **WHEELING**, &c.

If it be done to the Right, the Man in the right Angle keeps his Ground, and faces about, while the rest wheel; if to the Left, the left-hand Man keeps his Place, &c. See **EVOLUTION**.

**QUARTERS**, in a Clock, are little Bells which sound the *Quarters* of an Hour. See **CLOCK**, **HOOR**, &c.

**QUARTERS**, in Building, those slight upright Pieces of Timber, placed between the Punchions and Posts; used to lath upon.

They are of two kinds, *single* and *double*—The *single Quarters* are sawn to two Inches thick and four Inches broad; the *double* four Inches square.

**QUARTERIDGE**, Money paid quarterly, or by the Quarter.

**QUARTERING**, in the Sea-Language—When a Ship under sail goes at large, neither by a Wind nor before a Wind, but as it were betwixt both; she is said to go *Quartering*. See **SAILING**.

The Term is also used when a Ship sails with quarter Winds. See **QUARTER Wind**.

**QUARTERING**, in Gunnery, is when a Piece of Ordnance is so traversed, that it will shoot on the same Line, or on the same Point of the Compass as the Ship's Quarter bears.

**QUARTERING**, in Heraldry, the dividing a Coat into four or more Quarters, or *Quarterings*; by parting and coupling. See **QUARTER** and **QUARTERINGS**.

The King of *Great Britain* quarters with *Great Britain*, *France*, *Ireland*, *Brunswick*, &c. See **QUARTERLY**.

*Counter QUARTERING a Coat*, is when the Quarters are quarter'd over again, or subdivided each into four.

There are *Counter-quarter'd Coats* which have twenty or twenty-five Quarters.

**QUARTERINGS**, call'd also *Partitions* and *Compartiments* are the several Coats born on an Escutcheon; or the several Divisions made in it, when the Arms of several Families are to be placed on the same Shield, on account of Intermarriages, or the like. See **ESCUTCHEON**, **SHIELD**, &c.

*Colombiere* reckons twelve sorts of *Quarterings*; but other Authors give us more.—viz. Party per Pale, dividing the Escutcheon from top to bottom. See **PALE**.—Party per Cross, dividing it from side to side. See **CROSS**.

—Party of six Pieces, when the Escutcheon is divided into six Parts or Quarters.—Party of ten; of twelve; of sixteen; of twenty; and of thirty-two, when there are so many Partitions respectively.

Others give the Divisions in another manner: As—Party per Cross—per Pale—per Chief—per Pale Inclave—per Bend dexter—per Bend sinister—per Chevron—Barry Bendy of eight Pieces—Paleways of six Pieces—Barry of six Pieces—Barry of eight Pieces—Bendy of six—Checky—Fusilly, or Lozengy—Paly Bendy, or Bendy Lozengy—Barry Bendy Lozengy, or Bend Lozengy—Gyronny—Barry Lozengy counterchanged—Waved of six Pieces—Barry Nebule of six Pieces—Party per Saltier—Party per Pale in Point. See further under the respective Articles.

*Colombiere* observes, that thirty two is the greatest Number used in *France*, but that the *English* and *Germans* sometimes extend to forty; as a Testimony of the Truth whereof, he says, he saw the Escutcheon of the Earl of *Leicester*, Ambassador Extraordinary in *France* in the Year 1639, divided into the Number of forty; and some, he affirms, do go on to sixty-four several Coats.

But a Multitude of Quarters makes a Confusion; and accordingly all the Writers of Armoury cry out against it as an Abuse.—The first Instance of *Quartering* whereof we have any Account, is said to be in the Arms of *Renate* King of *Sicily*, &c. in the Year 1435, who quarter'd the Arms of *Sicily*, *Aragon*, *Jerusalem*, &c.

*William Wickley* observes, that such *Quarterings* are much properer for a Pedigree to be lock'd up in a Chest, and occasionally produced as an Evidence for the clearing or ascertaining of Alliances of Families, or Titles to Lands, &c. than to be borne as a Cognizance.

In Blazoning, when the *Quartering* is perform'd per Cross, the two Quarters a-top are number'd the first and second; and those at bottom the third and fourth; beginning to tell on the right side.—When the *Quartering* is by a Saltier, &c. the Chief and Point are the first and second Quarters, the right side the third, the left the fourth.

**QUARTERING** is sometimes also used for the distinguishing of younger Brothers from Elder. See **DIFFERENCE**.

**QUARTERIZATION**, **QUARTERING**, part of the Punishment of a Traytor, by dividing his Body into four

Parts. *Walsingham in Ric. 2. Audium & Confession turpissima scelera tractationi, Suspendio, Decollationi, Quarterationi & Quarterizationi adjudicavit.*

**QUARTERLY**, in Heraldry, a Person is said to bear *Quarterly*, when he bears Arms *quarter'd*. See **QUARTERING**.

The King of *Great Britain* bears *Quarterly* of four; in the first quarter, Gules, &c. *Great Britain*: In the second, Azure, &c. *Ireland*, &c.

**QUARTERN**, or **QUARTERON**, a Diminutive of *Quart*; signifying a quarter of a Pint; as a *Quart* does a quarter of a Gallon. See **QUART**.

**QUARTILE**, an Aspect of the Planets when they are three Signs, or 90 Degrees distant from each other. See **ASPECT**.

The *Quartile* Aspect is mark'd thus, □. See **CHARACTER**.

**QUARTO**, or 4<sup>to</sup>, a Book, whereof four Leaves, or eight Pages, make a Sheet. See **VOLUME**, **BOOK-BINDING**, &c.

**QUARTO Decimans**, **QUARTO Decimani**, an ancient Sect in the Church, who maintain'd that *Easter* was always to be celebrated conformably to the Custom of the *Jews*, on the 14th day of the Moon in the Month of *March*, whensoever that Day fell out. See **EASTER**.

And hence their Name *Quarto decimani*, q. d. Fourteenthers. See **PASSOVER**.

The *Asiatics* were mightily attach'd to this Opinion, pretending it was built on the Authority of *St. John*, who was their Apostle; and *Pope Victor* could never bring 'em to Obedience in this Point, tho' he was upon the point of Excommunicating them—Some are of opinion he actually did Excommunicate them, but it is more probable he contented himself with Menaces.

*Polycrates*, Bishop of *Ephesus*, wrote a long and warm Letter, in the Name of all the Bishops of *Asia*, to *Victor* and the Church of *Rome*, wherein he explain'd at large the Usage of those Churches with regard to the Celebration of *Easter*; and maintain'd, that herein they only follow'd a constant Tradition that had obtain'd immutably among 'em from the Time of the Apostle *St. John*, who died at *Ephesus*—But the *Pope* not satisfy'd with this Answer of *Polycrates*, had proceeded to Excommunication, but that some of the most eminent Bishops, among the rest *Irenaeus*, interposed, and dissuaded him from disturbing the Peace of the Church by excommunicating a People for adhering to what they accounted a Tradition.

**QUASHING**, in Law, the overthrowing and annulling a thing. See **ANNULLING**.—An Array return'd by one that has no Franchise, shall be *Quash'd*. *Coke on Litt.* fol. 156.

**QUASI Contract**, in the Civil-Law, an Act which has not the strict Form of a Contract, but yet has the force thereof. See **CONTRACT**.

In a Contract there must be the mutual Consent of both Parties; whereas in a *Quasi Contract*, one Party may be bound or obligated to the other without having given his Consent to the Act whereby he is obliged.

For an Example—I have done your Business, in your Absence, without your Procuration; and it has succeeded to your Advantage: I have then an Action against you for the recovery of what I have disbursed, and you an Action against me to make me give an account of my Administration: Which amounts to a *Quasi Contract*.

**QUASI Crime**, or **QUASI Delict**, in the Civil-Law, the Action of a Person who does Damage, or Evil involuntarily.

The Reparation of *Quasi Crimes*, consists in making good the Damages with Interest.

**QUASI-modo Sunday**, **Low Easter-Sunday**, or the next Sunday after *Easter*; thus call'd from the initial Words of the Introit of the Mass for the Day, *Quasi modo geniti Infantes*. See **SUNDAY**.

In ancient Deeds these Words were signified by q. m. s.

**QUATER-Cousins**, *quatre Cousins*; fourth Cousins, or the last Degree of Kindred. See **COUSIN**, **CONSANGUINITY**, &c.

Hence, when Persons are at variance, 'tis said they are not *quater*, or *cator Cousins*.

**QUATRE Nations**, q. d. *Four Nations*, a College founded in 1661, by Cardinal *Mazarin*; for the Education and Maintenance of sixty Children, Natives of the four Countries conquer'd by the King, viz. fifteen for *Pignora* and *Italy*, fifteen for *Alsacia*, twenty for *Flanders*, and ten for *Roussillon*. See **COLLEGE**.

**QUATUOR Vir**, in Antiquity, frequently wrote **III VIR**, a *Roman* Magistrate who had three Colleagues join'd with him in the same Administration.

To the *Quatuor-viri* was committed the Charge of Conducting and Settling the Colonies sent into the Provinces. See **COLONY**.



Upon unlucky Accidents, and other dangerous Affairs, it is usual to create *Quatuor-viri* with Commission to take Care *ne quid detrimenti Respublica caperet*, that the Republic were not prejudiced.

There were also *Quatuor-viri* appointed to inspect and take Care of Repairs, &c.

**QUAVER**, in Music, a Measure of Time, equal to one half of the Crochet, or one eighth of the Semibreve. See TIME.

The *Quaver* is mark'd by the Character *f*. See CHARACTER.

The *English Quaver* makes what the *French* call their *Crochue*, Crochet; because of the Hook at bottom. See CROCHET.

The *Quaver* is divided into two Semiquavers noted *f*, and four Demisemiquavers mark'd *f*.

**QUAVERING**, in Music, the Act of trilling, or shaking; or the running of a Division with the Voice. See DIVISION.

**QUAY**, *Kay*, a space of Ground paved on the Shore of a River, or Port; destined for the loading and unloading of Merchandize. See WHARF.

**QUEEN**, *Regina*, a Woman who holds the Crown of Realm, singly, and by Right of Blood. See CROWN.

The Name is also given by way of Courtesy to her that is married to the King; call'd, by way of distinction, *Queen Consort*.

The Widow of a King is call'd *Queen Dowager*. See DOWAGER.

The first is in all Construction the same with a King, and has the same Power and Prerogative in all respects that the King has. See KING.

The *Queen Consort* is inferior, and a Person distinct from the King—Tho' she be a *Feme covert*, yet may she sue, and be sued in her own Name, may make Leases, and Grants, &c. as a *Feme sole*. See WIFE and FEME.

She has several other Prerogatives—Tho' an Alien, she may purchase Lands in Fee-simple, without either Naturalization, or Denization; she may present to a Benefice; nor is Plenary a Bar against her more than against the King—She shall not be amerced if she be non-suited in any Action; may not be impleaded till first petitioned.

To conspire her Death, or violate her Chastity, is High-Treason. She had antiently a Revenue of *Queen-gold*; which see.

At present she hath a very large Dower, with a Royal Court and Officers apart.

The *Queen Dowager* has this particular, that she loses not her Dignity tho' she marries a private Gentleman—Thus, *Queen Katherine*, Widow of *Henry V.* being married to *Owen ap Theodore* Esq; maintained her Action as *Queen of England*—Much less does the *Queen* by Inheritance, follow her Husband's Condition, or is subject as other *Queens*, but is Sovereign to her own Husband, as *Queen Mary* was to King *Philip*; unless it be otherwise appointed by Parliament.

The Word *Queen* is deriv'd from the *Saxon* *Cwen*, *Cwen*, Uxor, the Wife of any one, but apply'd by way of Excellency to the Wife of the King only; whence she was antiently call'd the *King's Queen*; the *West-Saxons* having no other Name for a *Queen*, but the *King's Wife*. *Affer. de Ælfred. Rebus*, &c.

She was also call'd *Lady*, in *Saxon*, *Hlæfdia*; just as *Madame*, or *Mademoiselle*, are still used for the Wife, and Daughter of the Duke of *Orleans*—

**QUEEN Gold**, *Aurum Regine*; a Royal Revenue, belonging to the *Queen of England*, during her Marriage to the King, both by Law, Custom, and Prescription; and payable by divers Persons (upon several Grants of the King) by way of Oblation out of Fines; amounting to Ten Marks or upwards, viz. one full tenth part above the entire Fine; e.g. ten Pounds on every hundred Pounds Fine, &c. See FINE.

This becomes a real Debt to the *Queen*, by the Name of *Aurum Regine*, upon the Party's bare Agreement with the King for a Fine, and recording it; without any further Promise or Contract for this tenth part extraordinary.

**QUEEN's Bench**. See KING's Bench, &c.

**QUE ESTATE**, in Law, a Plea whereby a Man entitling another to Land, &c. saith, that the same Estate which himself had, he now has from him.

Thus, e.g. the Plaintiff alleges, that such four Persons were seiz'd of Lands, whereunto the Advowson in question belong'd in Fee; and who did present to it, and that afterwards the Church was vacant, *quo Estate*—i.e. which Estate he now has, and by virtue thereof presents, &c.

*Que est memo*, in Law, a Term used in Actions of Trespass, &c. for a direct Justification of the very Act complain'd of by the Plaintiff as a Wrong. See TRESPASS.

Thus in an Action upon the Case, the Plaintiff saying

the Lord threaten'd his Tenants at Will in such sort, as he forced them to give up their Lands; the Lord in his Defence pleads, that he said to them, if they would not depart, he would sue them at Law—*Que est memo*, i.e. this being the same Threatning that he used, the Defence is good.

**QUERELA**, *Quarel*, in Law—In an Action where the Plaintiff is *Querent*, i.e. Complainant, his Brief, Complaint, or Declaration, was call'd *Querela*. See QUARREL.

**QUERELA coram Rege & Concilio**, a Writ whereby one is call'd to justify a Complaint of a Trespass against the King himself; before the King and his Council.

**QUERPO**. See CUERPO.

**QUERRIES**, or *EQUERRIES*, the Grooms of the King's Stables. See EQUERRY.

*Gentleman of the Querry*, is an Officer appointed to hold the King's Stirrup when he mounts on horseback. See GENTLEMAN.

**QUEST**, or *INQUEST*, an *Inquisition*; or Inquiry made upon Oath of an Impannel'd Jury. See INQUEST.

**QUEST-Men**, Persons chose yearly in each Ward, to enquire into Abuses, and Misdemeanors, especially such as relate to Weights and Measures.

**QUEST**, in Hunting, the seeking out of Hounds; or the venting and winding of Spaniels. See SCENT, HOUND, HUNTING, &c.

The Word is form'd of the *French* *quête*, Search, of the *Latin* *questum*, a thing sought.

**QUESTION**, *QUESTIO*, in Logic, &c. a Proposition, whose Truth a Person being inquisitive about, proposes it, by way of Interrogation, to another. See INTERROGATION.

*Logical Questions* are variously distributed; the ordinary Division is into *first* or *primary Questions*; as, *Quid est*, What is such a Thing?—And *secondary*, which arise out of the former; as, *How is it?*

**QUESTION**, in Law—The *Question de Jure* must always be distinguish'd from the *Question de Facto*. See FACTO and JURE.

The first is decided by the Law, as explain'd and declared by the Judge; the second is decided by the Proof of a Truth in dispute. See TRIAL, JURY, &c.

**QUESTOR**, *QUESTOR*, an Officer in antient Rome, who had the Care of the publick Treasure. See TREASURE.

The *Questor-ship* is very antient, as having been establish'd under the Kings—In the Time of the Republick, the Senate appointed *Questors* in each Province, to assist the Proconsuls, as Lieutenants, or Treasurers, in the Administration of the Revenues: But under the Emperors, there was but one *Questor*, or Treasurer General of the Empire.

Those interior, or subordinate *Questors* were call'd Commissioners of the *Questor*, *Adjutores Questoris*.

The *Questor's* Office was originally confined to the Army.—They paid the Soldiery, took charge of Moneys coming by Spoil and Plunder, &c.

At length there were new ones erected to reside in the City, and to receive the public Money, Taxes, Tribute, &c.—Their Number was increased, as the Empire increased: *Sylla* augmented it to twenty.

There was also another kind of *Questors* whose Office was to enquire into, and take Cognizance of Capital Crimes.

The Word is form'd *à querendo*, seeking, searching.

**QUESTOR Sacri Palatii**, or of the *Sacred Palace*, was one of the first Dignities under the Emperors of *Constantinople*—'Twas the *Questor* that subscribed the Rescripts of the Emperor, and the Answers to the Requests and Supplications presented him—He drew up and sign'd the Laws and Constitutions which the Emperor thought fit to publish; and took care of the Administration of Justice.

Some compare his Function to that of our Lord High Chancellor—'Twas usually one of the *Juris Consulti* that was charged with this Office; it being required that he should know the Laws of the Empire, be able to dictate them, see them executed, and judge of Causes brought by way of Appeal before the Emperor.

*Constantino* was the first who erected *Questors* of the *Sacred Palace*. See PALACE.

**QUESTUS est nobis**, a Writ of Nuisance, which by Stat. 15 *Edw. 1.* lies against him to whom the House, or other thing that breeds the Nuisance is descended, or alienated; whereas before that Statute, the Action lay only against him who first levied, or caused the Nuisance to the Damage of his Neighbour. See NUISANCE.

**QUESTUS**, or *QUESTUS*; see QUMSTUS.

**QUEUE de Aronde**, q. d. *Swallow's Tail*, in Fortification, a Term apply'd to Horn-Works, when narrower at the Gorge than the Face; i.e. when the Sides open towards the Campaign, or contract towards the Gorge. See HORN-WORK.



The Name is occasion'd by their Resemblance in Figure to a Swallow's Tail, which the French call *queue d'aronde*.

Of this kind are single and double Tensilles; and some Horn-Works whose Sides are not parallel. See *TENAILLE*.

On the contrary, when the Sides are less than the Gorge, the Work is call'd *Contre queue d'aronde*.

*QUEUE d'aronde*, in Carpentry, a Method of Jointing. See *DOVE-TAIL*.

*QUEUE*, in Heraldry, the Tail of a Beast. See *TAIL*.  
If a Lion have a forked Tail, he is blazon'd by *double-queued*.

*QUIA*, in Logic; see *REASON*.

*QUIA Improvide*, a Superedeas granted in many Cases where a Writ is erroneously sued out, or mis-awarded. See *WRIT*.

Thus it is granted in behalf of a Clerk of the Chancery sued against the Privilege of the Court, in the Common-Pleas, and pursued to the Exigent.

*QUICK-Lime*; see *LIME*.

*QUICK-Silver*, a very ponderous fluid Mineral, properly call'd *Mercury*.

For the Method of gaining *Quicksilver*, of preparing it, &c. with its Properties, Uses, &c. see *MERCURY*.

*QUID*, *What*, in the Schools, is used for the Definition of a thing. See *DEFINITION*.

It is thus call'd by reason the Definition answers to the Question, *Quid est*, What is it? See *QUESTION*.

Hence we have two kinds of *Quids*; *Nominal*, *Quid nominis*; and *Real*, *Quid rei*.

*QUID pro quo*, in Law, a Latin Phrase, importing as much as the Greek *αλλεγμα*, among the Civilians; viz. a mutual Performance of both Parties to a Contract; or a giving of one thing for another—As ten Pounds for a Horse. *Kitchin*.

*QUID pro quo*, or *QUI pro quo*, is also used in Physic to express a Mistake of an Apothecary, in administering one Medicine for another; or in using an Ingredient in a Composition different from that prescribed. See *SUCCEDANEUM*.

In Propriety, the *Quid pro quo* is a Mistake in the Physician's Bill, where *quid* is wrote for *quo*, one thing for another; or of the Apothecary in reading *quid* for *quo*, and giving the Patient the wrong Medicine. See *PRESCRIPTION*.

Hence the Term is in the general extended to all Mistakes committed in Medicine, either in the Prescription, the Preparation, or Application of Remedies.

A Northern Physician in a printed Thesis on *quid pro quo*'s owns ingenuously, that they are very frequent—He distinguishes very accurately a great Variety of Kinds of *quid pro quo*'s; some with regard to the Operation, others with regard to the Subject, and others with regard to their Form, or their Effects.

The first comprehends the *quid pro quo*'s of the Physician, the second those of the Patient, the third those of the Apothecary.

He adds *quid pro quo*'s of the Chirurgion, and of the Cook; *quid pro quo*'s of the Nurse, &c. Nor does he omit that there are salutary *quid pro quo*'s, dangerous *quid pro quo*'s, indifferent, &c.—God preserve us from *quid pro quo*.

*QUIDDANY*, or *QUIDDENY*, of the Latin *Cydonium*, or *Cydoniatum*, a Conserve of Quinces. See *MARMELADE*.

*QUIDDITY*, *QUIDDITAS*, in the Schools, a Word of the same Signification with *Essence*. See *ESSENCE*.

The Name is derived hence, that it is by the Essence of a thing that it is *tale quid*, such a *quid*, or very thing; and not another—When upon seeing, or hearing the Name of a thing whose Nature, &c. we are unacquainted withal, we ask *Quid est*, What is it? we mean no more by the Interrogation, but that we desire to have its Nature and Essence explain'd by a Definition—Whence *Quiddity* is usually defined the Essence known or express'd in a Definition. See *DEFINITION*.

And hence what is essential to a thing is said to be *Quiddative*—As *Quiddative* Knowledge, &c.

*QUIESCENT*, something at Rest; see *REST*.

*QUIETISM*, the Sentiments of the *Quietists*, a Religious Sect which made a great noise towards the Close of the last Century.

*Molinos*, a Spanish Priest, who died at Rome in the Prison of the Inquisition, passes for the Author of *Quietism*; and yet the *Illuminati* in Spain had taught something like it before. See *ILLUMINED*.

The Name is taken from a sort of absolute Rest, and Inaction, which the Soul is suppos'd to be in, when arriv'd at the State of Perfection, which in their Language is call'd *the unitive Life*—To arrive at this, a Man is first to pass thro' the purgative way; that is, thro' a Course of Obedience, inspir'd by the Fear of Hell; Hence he is to proceed into the illuminative way, e'er he arrives at Perfection; to go thro' cruel Combats, and violent Pains; i. e.

not only the usual Drynesses of the Soul, and the common Privations of Grace, but infernal Pains: He believes himself damn'd; and the Persuasion that he is so, continues upon him very strongly several Years: St. Francis de Sales, say the *Quietists*, was so fully convinc'd thereof, that he would not allow any body to contradict him therein—But the Man is, at length, sufficiently paid for all this; by the Embraces of God, and his own Deification.

The Sentiments of the *Quietists*, with regard to God, are wonderfully pure, and disinterested—They love him for himself, on account of his own Perfections, independently of any Rewards or Punishments: The Soul acquiesces in the Will of God, even at the time when he precipitates it into Hell; insomuch that instead of stopping him on this occasion, B. Angele de Foligny cry'd out, *Haste, Lord, to cast me into Hell: Don't delay, if thou hast a care, don't me, but finish my Destruction, and plunge me into the Abyss*.

At length, the Soul, after long Travail, enters into Rest, into a perfect *Quiétude*—Here 'tis wholly employ'd in contemplating its God; it acts no more, thinks no more, desires no more; but lies perfectly open, and at large, to receive the Grace of God, who by means thereof drives it where it will, and as he will.

In this State, it no longer needs Prayers, or Hymns, or Vows; Prayers where the Spirit labours, and the Mouth opens, are the Lot of the Weak, and the Imperfect: The Soul of the Saint is, as it were, laid in the Bosom, and between the Arms of its God, where, without making any Motion, or exerting any Action, it waits, and receives the divine Graces—It, then, becomes happy: quitting the Existence it before had, it is now chang'd, it is transform'd, and, as it were, sunk and swallow'd up in the Divine Being, insomuch as not to know or perceive its being distinguish'd from God himself. *Penel. Max. des Saints*.

*QUIETISTS*, the Disciples of *Mic. de Molinos*; or the Adherents to the Opinions deliver'd in the Article *QUIETISM*.

*QUIETUS*, q. d. *freed*, or *acquitted*; a Term used by the Clerk of the Pipe, and the Auditors in the Exchequer, in their Acquittances or Discharges given to Accomptants; which usually conclude with the Words *Abinde receipt Quietus*; which is call'd a *Quietus est*.

A *Quietus est* granted to a Sheriff discharges him of all Accounts due to the King. See *SHERIFF*.

*QUINARIUS*, *QUINARY*, in Antiquity, a little Roman Coin, equal to half the *Denarius*. See *COIN*.

The *Quinarius* was properly the Roman Half-Penny. See *DENARIUS*.

The Medalists indeed use the Term *Quinarius* in the general for a Medal of any Matter, not exceeding the Size of our Six-Pence; but F. Chamillart, in an express Dissertation, shews this to be an Abuse—The Silver Coins, current under the Republic, he shews, were two: the one weighing a Drachm, and call'd *Denarius*, as containing ten As's; the other weighing half a Drachm, and call'd *Quinarius*, as containing five As's: which Coins continu'd on the same footing under the Emperors. See *AS*.

Hence the Origin of the Word *Quinarius*; and hence, in propriety, 'tis only the Silver Medal of the Weight of half a Drachm that the Name belongs to; the Romans having never given it to any other Species of the same Size therewith—'Tis only by way of Analogy, therefore, that the Moderns apply it to Medals of Gold, or Copper, of the same Size with the Silver *Quinarius*; those of Gold being fix'd at a Value much above, and those of Brass much below five As's.

The only Relation between these *Quinarii*, is, that the gold *Quinary* is the half of a gold Medal as to Weight and Value, and the brass *Quinary* half a brass Medal, as the silver *Quinary* is half a silver Medal.

Hence a Series of *Quinaries* should seem at least as necessary in the Cabinets of the Curious, as the Series of great Medals; they being all equally different Species of Money, which teach us how many kinds of Pieces there were of any Metal current in Commerce. See *SERIES*.

Add to this, says our Author, that the *Quinaries* were of a finer and more finish'd Coin than the other Medals, being wrought by the Hands of the Masters; which seems owing to the Nicety requir'd in Engraving whole Figures in so small Compass. He adds, that tho' *Quinaries* are very scarce, yet M. the Duke of Maine has almost a complete Set of 'em.

*QUINCUNX*, q. d. *quinque uncia*; a Chequer, or something that has five Inches, Ounces, or Parts.

The Term is chiefly used in Gardening for a Plantation of Trees, dispos'd originally in a Square, consisting of five Trees, one at each Corner, and a fifth in the Middle; which disposition repeated again and again, forms a regular Grove, Wood, or Wilderness, and when view'd by an Angle



Angle of the Square, or Parallelogram, presents equal and parallel Alleys. See **WIDENESS**.

Or the **Quincunx** is the Figure of a Plantation of Trees, disposed in several Rows, both length and breadthwise; in such manner as that the first Tree of the second Row commences in the Centre of the Square form'd by the two first Trees of the first Row, and the two first of the third; resembling the Figure of a five at Cards.—The finest manner of planting Trees to form a Grove, is in the **Quincunx**. See **GROVE**.

'Tis of this kind of **Quincunx** that *Cicero* speaks in his *Cato major*; and *Quintilian*, lib. 8. cap. 3.

The modern **Quincunxes**, *Daviler* observes, are made like those of the Antients, except for the fifth Tree, which is now generally disused; so that being, as it were, netted, and their Alleys view'd by the Side of the Rectangle, they form a perfect Chequer.

**QUINCUNX**, in Astronomy, &c. a Position, or Aspect of the Planets when distant from each other 150 Degrees, or five Signs. See **ASPECT**.

**QUINDECAGON**, in Geometry, a plain Figure which has fifteen Sides and fifteen Angles. See **FIGURE**.

If the Sides be all equal, 'tis a **Regular Quindecagon**. See **REGULAR**.

*Euclid* shews how to Inscribe it in a Circle, *Prop. 16. c. 4.* And the Side of a regular **Quindecagon** so described, is equal in Power to the half-difference between the Side of the Equilateral Triangle, and the Side of the Pentagon; and also to the difference of the Perpendiculars let fall on both Sides, taken together.

The Word is form'd somewhat irregularly from the Latin, *quinque*, five; and the Greek *γωνία*, Angle.

**Pentecagon** would be more regular.

**QUINDECIM VIR**, XV. Vir, a Roman Magistrate, who had fourteen Collegues join'd with him in the same Function.

Under *Turquin the Proud*, there were first two Magistrates erected to take care of the Sacrifices to be perform'd; these were call'd **Duumvirs**. See **DUUMVIR**.—Their Number, at length, grew to ten, and then they were call'd **Decemvirs**. See **DECEMVIR**.—In the time of *Cicero* it had reach'd fifteen, when they assum'd the Name of **Quindecimvirs**; and tho' their Number grew to sixty afterwards, yet *Servius* observes, on the Vlt. of the *Æneid*, that their Name never changed, but they still continued to be call'd **Quindecimviri**.

'Twas they examin'd the Sibyls Books, and were the Interpreters thereof; yet they never did this but by express Order of the Senate, declared by a **Senatus-Consultum**.—They also presided at the Sacrifices, and other extraordinary Ceremonies of Religion. See **SACRIFICE**.

On Medals, a Dolphin join'd with a Tripod marks the Priesthood of the **Quindecimviri**; who, to publish their solemn Sacrifices, used, the Eve thereof, to carry a Dolphin at the end of a Pole, throughout the City; this Fish being esteem'd sacred to *Apollo*, as the Crow was among Birds.

**QUINI-SEXTA**, in Ecclesiastical History, a Council held at *Constantinople* in the Year 692; call'd also the Council in *Trullo*, and by the *Greeks* *Penthestē*, q. d. fifth-sixth; as intimating that it was only a Supplement of the two preceding Councils. Tho' in Propriety, *Fleury* observes, it was a Council itself. See **COUNCIL**.

*Marshall* observes, that the fifth and sixth General Councils having made no Canons, the Orientals judg'd it necessary to supply that defect by this; so that the 102 Canons falsely attributed to those, were, in reality, made here. See **TRULLO**.

**QUINQUAGENARIUS**, among the Romans, was an Officer in the Army who had command of a Company of fifty Men.

**Quinquagenarius** was also an Officer of Policy, who had the Inspection of fifty Houses, or Families.

Lastly, in the ancient Monasteries, the **Quinquagenarius** was a Superior who had fifty Monks under his Guidance.

**QUINQUAGESIMA SUNDAY**, *Shrove Sunday*; thus call'd as being about the fiftieth Day before Easter. See **SHROVE-SUNDAY**.

Antiently, they used **Quinquagesima** for *Whit-Sunday*, and for the fifty Days between Easter and *Whit-Sunday*; but to distinguish this **Quinquagesima** from that before Easter, it was call'd the **Paschal Quinquagesima**.

**QUINQUANNION**, **QUINQUENNium**, in Antient Customs, a respite of five Years which insolvent Debtors formerly obtain'd by virtue of the King's Letters, to have time for the payment of their Debts. See **RESPIRE**.

When the thing intended was only to prevent the Sale of their Effects at an under Value; the Term of one Year was ordinarily granted, call'd the Benefit of *Annion*. See **ANNION**.

But when the Debtor would avoid the Surrendring of his Effects, upon proving that he was reduced by Poverty,

*Losses*, &c. to make use of this Expedient, the Term of five Years was granted, call'd the Benefit of *Quinquannion*.

**QUINQUATRIA**, in Antiquity, a Name given the Feasts of *Minerva*, otherwise call'd *Panathenæa*. See **PANATHENÆA**.

Some think they were term'd *Quinquatrid*, because they lasted five Days; but others with more reason, because they fell out five days after the Ides of the Month.

**QUINQUENNALIA**, in Antiquity, Games, or Feasts celebrated every fifth Year, in honour of the deified Emperors. See **GAME**, &c.

The **Quinquennalia** began to be express'd on Medals about the middle of the third Century.—*F. Pagi* produces a Medal wherein are engraven those of the Emperor *Posthumus*; which is not found in any Medals of his Predecessors.

**QUINQUENNALIS**, in Antiquity, a Magistrate in the Colonies, and municipal Cities of the Roman Commonwealth. See **COLONY**, &c.

The **Quinquennales** were much the same with the *Ediles* at Rome. See **EDILE**.

They were not thus call'd from their continuing in their Office five Years; but because they were elected every fifth Year, to preside at the Census, and to receive the Declaration each Citizen made of his Effects. See **CENSUS**.

**QUINQUE PORTUS**, the five Cinque Ports. See **CINQUE PORT**.

The five are *Hastings*, *Romney*, *Hythe*, *Dover*, and *Sandwich*.—To the first thereof belong *Winchelsea* and *Rye*, which are esteem'd Members of the Cinque Ports.

*Servitium quod Barones Quinque Portuum prescriptorum recognoscunt facere ad summonitionem Regis per annum, si contigerit per 15 dies ad custum eorum proprium, ita quod primus dies computatur a die quo vela navium erexerunt, usque partes ad quas tendere debent, vel ulterius quam diu Rex voluerat ad custum ejus.*

**QUINQUE-VIR**, frequently wrote V-Vir, a Roman Magistrate, who had four Collegues join'd with him in the same Function.

There were various kinds of Officers thus denominated—*Pomponius* the Lawyer mentions *Quinque-viri* on this, and on that side the *Tiber*, established for the Administration of Justice in the Night-time, in lieu of the ordinary Magistrates, who were not judg'd proper to run up and down the Streets in the dark.

*Rosinus* tells us, that it was sometimes the *Quinque-viri* who conducted the Colonies, and divided the Lands assign'd them, among the several Families. See **COLONY**.

Sometimes the *Epulones* were five in Number; in which case they were call'd *Quinque-viri*. See **EPULONES**.

The *Quinque-viri monetarii* were Officers first erected under the Consulate of *Valerius Poplicola*, to moderate the excessive Usury, or Interest, which Creditors or Bankers used to exact upon the People. See **USURY**.

**QUINQUINA**, **QUINAQUINA**, call'd also *China China*, and *Kin-Kina*, a Medicinal Bark brought from the *West-Indies*; call'd also, by way of Eminency, the *Bark*; and *Cortex Peruvianus*, the *Peruvian Bark*, from the Country whence it is brought; and popularly the *Jesuits Bark*, because at its first Introduction chiefly sold and administred by the *Jesuits*. See **CORTEX**.

The Tree which yields this Bark grows in a Province of *Peru* call'd *Quito*, on the Mountains near the City of *Loxa*.—The Natives call it *Ganaperide*, and the *Spaniards* *Palto de Calenturas*, i. e. Fever-Wood.

There are two kinds—the one wild, the other cultivated; whereof the latter is much the best.

The *Quinquina* was but little known in Europe till the Year 1640.—The *Jesuits* of Rome first brought it in vogue in Spain, and Italy in 1649; and in 1650, the Cardinal *de Lugo*, of that Order, brought it into France.

It was at first sold for its Weight in Gold: when reduced into Powder, it is by Foreigners call'd the *Cardinals Powder*; among us usually, the *Jesuits Powder*, *Pulvis Patrum*.

It met with a world of Opposition at first.—*Chiffet* and *Plompin* distinguish'd themselves against it. But is now almost universally allow'd one of the greatest and best Remedies within the whole Province of Medicine.

Some call the Gentian-Root the *European Quinquina*, because good against intermitting Fevers. See **GENTIAN**.

**QUINSEY**, or **QUINZY**, or **QUINCY**, in Medicine, the *Squinancy*, or *Angina*. See **ANGINA** and **SQUINANCY**.

**QUINSIEME**, or **QUINZIEME**, in our old Law-Books, a Tax antiently levied at the Rate of one Fifteenth Part of the Value of all moveable Goods. See **TAX** and **FIFTEENTH**.

It is a Mistake committed by several Authors to make this a Tax of the fifteenth Part of all Lands; it being of the Goods only.—It was first granted by Parliament, 18 Edw. 1. viz. *Computus quinte decime Regi, An. 18. per Archiepiscopos, Episcopos, Abbates, Priores, Comites, Barones*, &c.



*rones, & omnes alios de Regno, de omnibus bonis mobilibus concessa.*—The City of London paid this Year for the Fifteenth 2860*l.* 13*s.* 8*d.* and the Abbot of St. Edmund's 666*l.* 13*s.* 4*d.* which was by composition; and thereupon had all the temporal Goods of their District discharged of the Fifteenth.

The way of Collecting it was by two Assessors appointed in every County by the King, who appointed twelve more in every Hundred to make a true Valuation of every Man's personal Estate upon which the fifteenth Part was levied.

QUINT, a Sequence of five Cards of the same Colour. See SEQUENCE, PICQUET, &c.

QUINTA ESSENTIA; see QUINTESSENCE.

QUINTAIN, QUINTENA, in antient Custom, a Post driven into the Ground, with a Buckler fix'd to it, for the Performance of Military Exercises on Horseback, throwing of Darts, Breaking of Lances, &c.

*Borel, Matth. Paris, &c.* describe the Quintain as a kind of Mark, form'd like a Man from the Navel upwards, holding a Shield in his left Hand, and in his right a Sword or Stick; the whole so fitted as to turn round on its Foot, and so as that a Cavalier running a-tilt against it with a Lance, if he hit it in the Breast, it whisk'd round, and, unless he were very dextrous, struck him with the Sword held in the other Hand.

In other Places, a-top of a Post was erected a slender Beam fitted to turn round a Spindle; at one of whose Ends was a soap or flat Board, and at the other a Bag of Sand, or Dirt—The Sport was, with a long Staff, or wooden Lance, to ride a-tilt at the Board, and to be either so skilful or lucky to escape the Blow of the Sand-Bag.

This some take to be the same with the *Arietum Levatio*, frequently prohibited in our old Synods and Episcopal Constitutions.

The Custom is still retain'd in *Shropshire*, and some other Counties, among the Nuptial Solemnities—He that breaks the most Poles against the Quintain has the Prize, which was antiently a Peacock, now a Garland.

Some derive the Word from an antient Game call'd *Quintus*; others from a Man call'd *Quintus*.

The *Vallus* and *Passus* mention'd in *Cesar*, are taken, by *Vigenere*, for a kind of Quintain, or Wooden Man fix'd up as an Adversary, or Man of Straw, to prove one's Dexterity against.

Mention is made of this Exercise in the *Code de Aleatoribus*, and in the *Paratitles* of *Cujas* on the same—*Juvenal* mentions Women engaging therein;

*Aut quis non vidit vulnere Pali?*

QUINTAIN was also a Right which the Lord had to oblige all the Millers, Watermen, and other young People unmarried, to come before his Castle every three Years, and break several Lances, or Poles, against a Post, or wooden Man for his Diversion.

QUINTAL, in Commerce, the Weight of an hundred Pounds. See HUNDRED Weight.

The Quintal admits of some difference in different Places, according as the Pound consists of more or fewer Ounces, and as the Ounce is lighter or heavier. See POUND and OUNCE.

Thus, *e. gr.* the *Paris Quintal*, or Hundred, yields 123 Pounds at *Montpelier*; and the *Montpelier Hundred* only 81 Pounds at *Paris*.—The Quintal of *Constantinople* is esteem'd the heaviest of all those used in the *Levant*. It contains 45 Ocquas, the Ocquas weighing two *Dutch Pounds*  $\frac{7}{8}$ ; so that the Quintal is equal to 112 Pounds  $\frac{1}{4}$  of *Amsterdam*, 124 Pounds of *Venice*, and 160 of *Leghorn*.

The *English Quintal* usually consists of 112 Pounds *Avoirdupois*, and is divided into four Quarters. See QUARTER.

QUINTAL was also formerly used for a Weight of Lead, Iron, and other common Metals, usually equal to an hundred Pounds, at sixscore to the Hundred.

QUINTESSENCE, QUINTA-ESSENTIA, in Chymistry, a Preparation consisting of the Essential Oil of some Vegetable Substance, mix'd and incorporated with Spirit of Wine. See OIL, &c.

Thus, on a proper quantity, *e. gr.* of Essential Oil of Fennel, pouring twelve times the quantity of pure Alcohol prepared *per se*; they instantly unite into one similar Liquor, which is the Quintessence thereof.

The Antients were perfectly unacquainted with the Method of dissolving Oil in Spirit of Wine; and even some of the Moderns have question'd its Reality: But the Certainty of the thing is easily proved from the Instance above.

If such Quintessence be several times digested, cohobated, &c. the Oil will at length be broke so fine, as, like the Spirit itself, perfectly to mix with Water; which is one of the most extraordinary Effects in all Chymistry. See SPIRIT, SULPHUR, &c.

After the like manner is made a Quintessence of Camphor, by only reducing it into a Powder, and pouring on Spirit of Wine. See CAMPHOR.

Quintessences thus prepared are of great Medicinal Virtues as may appear from the pure and potent Ingredients used in the Composition, which retain, in a great degree, all the Virtues of the Plants they are procured from: And hence

*Boerhaave* thinks they might properly be call'd Vegetable Sulphurs made potable, and rais'd to their utmost degree of Power and Efficacy. See SULPHUR.

Dry Quintessences may be made from the Liquid ones, by adding to 'em some Essential Oil of the same Vegetable from whence the liquid Quintessence was procured, with a little Sugar; all mix'd together, and distill'd by a gentle Heat till all the Moisture is come over: The Matter remaining is a dry Quintessence.

This Form is principally useful to Travellers, Sailors, &c. inasmuch as it renders the Quintessence portable: so that the quantity, *e. gr.* of a Pin's Point, shall be an efficacious Medicine.

QUINTESSENCE, in Alchymy, is a mysterious Term signifying the fifth, or last and highest Essence, or Power of a natural Body.

This is supposed to be, as it were, the Soul drawn from the gross Body and its four Elements, by a most perfect Distillation; and by means hereof, the thing is said to be spiritualiz'd, *i. e.* render'd exceeding pure, spirituous, and, as it were, incorruptible. *Dict. Hermetique.*

The Antients, who allow'd of nothing real but what has a Body; would have the Soul of Man to be a fifth Element, a kind of Quintessence without a Name, unknown here below, indivisible, immovable, all celestial, and divine. *Fenelon.*

QUINTESSENCE of the Elements, is the *Hermetical Mercury*. See MERCURY.

QUINT-EXACT, in old Law-Books, the last Call of the Defendant sued to an Outlawry.

If he appears not to it, he is by the Judgment of the Coroners return'd Outlaw'd; if a Feme, waved. See EXIGENT, OUTLAWRY, WAIF, &c.

QUINTILE, QUINTILIS, in Astronomy, an Aspect of the Planets, when they are 72 Degrees distant from one another, or a fifth Part of the Zodiac. See ASPECT and CHARACTER.

QUINTILIANS, QUINTILIANI, a Sect of antient Heretics, the same with the *Pepuzians*; thus call'd from their Prophetess *Quintilia*. See PEPUZIAN.

In this Sect the Women were admitted to perform the Sacerdotal and Episcopal Functions; grounding their Practice on that Passage of St. Paul to the *Galatians*, where he says, *That in Christ there is no distinction of Males and Females.*

They attribute extraordinary Gifts to Eve, for having first eaten of the Tree of Knowledge; tell mighty things of Mary the Sister of Moses, as having been a Prophetess, &c. Philip, the Deacon, add they, had four Daughters, who were all Prophetesses.

In their Assemblies, it was usual to see the Virgins enter in white Robes personating Prophetesses—The *Quintilians* bore a good deal of resemblance to the modern Quakers. See QUAKER.

QUIRE of Paper, of the *French Caber*; the quantity of 24 or 25 Sheets. See PAPER.

QUIRISTER, or CHORISTER, *Chorista*, a Person appointed to sing in the Quire or Choir of a Cathedral. See CHORISTER.

QUIRINALIA, in Antiquity, Feasts celebrated among the Romans in honour of *Romulus*, who was call'd *Quirinus*. See QUIRITES.

The *Quirinalia* were held on the 13th of the Kalends of March, *i. e.* on our 17th of February.

QUIRITES, in Antiquity, an Appellation given to the People of Rome.

It took its Rise from the *Curetes*, the Inhabitants of the *Sabin Town Cures*; on this occasion—*Romulus*, and *Tatius* King of the *Sabins*, having united their two People, and their two States into one; upon *Romulus's* Death and Deification, the *Sabins*, out-doing the *Romans* in number, became Masters of the Councils; and accordingly appointed that *Romulus* should be denominated *Quirinus*, from *Cures* a City of the *Sabins*, or rather from *Quirinus*, the Name of a God worship'd in that City.

From the new *Quirinus*, all the People came afterwards to be call'd *Quirites*; unless we'll suppose that the same Authority which denominated *Romulus*, *Quirinus*, from *Cures*, did also denominate the People *Quirites*, immediately from the *Curetes*.

Some Authors derive the Word *Quirinus* from *Curis*, which in the *Sabin Tongue* signify'd a Pike or Halberd—*Struvius* adds, that *Romulus* was always painted with Pike in Hand.

QUIRK, in Building, a Piece of Ground taken out of any regular Ground-Plat, or Floor—Thus, if the Ground-Plat were Square, or Oblong; and a Piece be taken out



of a Corner, to make a Court, or Yard, &c. the Piece is call'd a *Quirk*.

**QUIS**, in Natural History, a kind of Marcasite of Copper, from which the *Roman Vitriol* is drawn. See **MARCASITE** and **VITRIOL**.

It is also call'd *Pyrites*. See **PYRITES**.

**QUIT-CLAIM**, *Quita clamantia*, a Release or Acquitting of a Man of any Action, that he hath or may have on some certain occasion; or a quitting one's Claim or Title. See **CLAIM**.

**QUIT-RENT**, q. d. *Quiet-Rent*, a certain small Rent, payable yearly, by the Tenants of most Manors in token of Subjection; upon the Payment whereof they are quit or free till it becomes due again. See **MANOR**, &c.

In some antient Records it is written *White-Rent*; because paid in Silver, to distinguish it from Rent-Corn, Rent-Pepper, &c. See **RENT**.

**QUITTER-BONE**, among Farriers, a hard, round Swelling, upon the Coronet of a Horse's Foot; or between the Heel and the Quarter. See **HOOF**.

Or it is an Imposthume breeding between the Hoof and Coffin-bone, on the upper Part; and shewing itself by a Swelling on the Coronet.

Sometimes it is occasion'd by a Gravel under the Shoe, or by a Bruise, Stab, Prick of a Nail; or from peccant Humours descending to that Place; or a Blow, Strain, or Over-reach, &c.

It occasions the Horse to halt much, and the Swelling grows visible, and comes to a head in four or five days, and breaks out with Matter at a little deep Hole, like a Fistula.

**QUOD Clerici non eligantur in Officio Baliivi**, &c. is a Writ that lies for a Clerk, who by reason of some Land he hath, is made, or like to be made, a Bailiff, Beadle, or Reeve, or such-like Officer. See **CLERICO infra sacros**, &c.

**QUOD non permittat**. See **CONSUETUDINIBUS & Servitiis**.

**QUOD persona nec prebendarii**, &c. a Writ that lies for Spiritual Persons, when distrained in their Spiritual Possessions, for the Payment of a Fifteenth, with the rest of the Parish. See **QUINZIEME**.

**QUODLIBETICAL Question**, or *Quaestio Quodlibetica*, a College Term for a Thesis, or Problem, antiently proposed to be debated in the Schools out of Curiosity and Entertainment, rather than for the settling of any useful Point.

The Term is form'd from the *Latin Quodlibet*, any thing, what you please; and so well satisfy'd were the Public with the Impertinences of these Questions, that the Term *Quodlibet* has been since retained to signify any little, ridiculous Quibble.

**QUO JURE**, a Writ that lies for him who has Land, wherein another challengeth Common of Pasture time out of mind.

The design hereof is to compel the Party to shew by what Right or Title he challengeth it.

**QUO MINUS**, a Writ that lies for him who has a Grant of House-bote in another Man's Wood, against the Grantor making such Waste, as that the Grantee cannot enjoy his Grant. See **HOUSE-bote**.

The Writ *Quo minus* also lies for the King's Farmer in the Exchequer, against him to whom he selleth any thing by way of Bargain, touching his Farm; or against whom he hath any Cause of personal Action.—For by the Vendee's detaining any Due from him, the Farmer is made less able to pay the King's Rent.

Under this Pretence, any one who pays the King a Fee-Farm Rent, may have this Writ against any other for Debt or Damage, and bring the Cause to trial in the Exchequer. See **EXCHEQUER**.

**QUO WARRANTO**, a Writ that lies against him who usurps any Franchise, or Liberty against the King; as to have Waife, Straw, Fair, Market, Court Baron, Leet, or such like, without good Title.

It also lies against him that intrudeth himself as Heir into Land. See **INTRUSION**.

**QUOIN**, or **COIN**, a-board a Ship, is a Wedge fasten'd on the Deck, close to the Breech of the Carriage of a Gun, to keep it firm up to the Ship's Side.

The Word is form'd from the *Latin Cuneus*, Wedge. See **WEDGE**.

**QUOINS**, in Architecture, the Corners of Walls. See **WALL**.

The Word is particularly used for the Stones in the Corners of Brick-Buildings.—When these stand out beyond the Brick-work (their Edges being chamfer'd off) they are call'd *Rustic Quoins*. See **RUSTIC Work**.

**Cantic Quoins** are short, three-legged *Quoins*, put between Casks to keep 'em steady.

**QUOITS**, a Kind of Exercise or Game, known among the Antients under the Name of *Liscus*. See **DISCUS**; see also **EXERCISE** and **GAME**.

**QUORUM**, a Term frequently mention'd in our Statutes, and often used in Commissions, both of Peace, and others. See **COMMISSION**, **PEACE**, &c.

It is thus call'd from the Words in the Commission, *Quorum A. B. unum esse volumus*.

For an Example.—Where a Commission is directed to seven Persons, or to any three of them, whereof A. B. and C. D. to be two; there A. B. and C. D. are said to be of the *Quorum*, because the rest cannot proceed without them.

So a Justice of the Peace and *Quorum*, is one, without whom the rest of the Justices in some Cases cannot proceed. See **JUSTICE**.

**QUOTATION**, in Literature, a *Citation*; or a Passage rehearsed expressly in one Author from another. See **CITATION**.

*Quotations* are used to be distinguish'd, by inverted Comma's, thus; "Half an Age ago *Quotations* were wonderfully common; and *Ovid* and *Catullus* came every day with the Pandects to the assistance of the Widow and the Orphan."—*La Bruyere*.

The *Quotations from the Old Testament*, found in the New, have occasion'd infinite Doubt, Dispute, and Criticism.—The Apostles are frequently referring to the Old Testament, and *quoting* Passages and Prophecies thence as fulfill'd in our Saviour; yet these Passages, thus *quoted*, are frequently either not found in the Old Testament, or are not urged in the New according to the literal and obvious Sense they seem to bear in the Old.

A late ingenious Author, in an Essay upon the Truth of the Christian Religion, frankly owns, that the Evangelists sometimes apply to the Messiah Passages of the Old Testament, which, as they lie in our present Copies, plainly relate to some other Person, or Thing.—This is evident, e. g. in the Passage, Matth. ii. 15. *Out of Egypt have I call'd my Son*; which are *quoted* from *Hosea* xi. where it is plainly understood of the coming of the *Israelites* out of *Egypt*. See **PROPHECY**.

This proves a heavy Obstacle in the way of Christianity, which the Divines, Commentators, Critics, &c. have long labour'd to remove, tho' by very different means.

Some have recourse to a double Completion; and imagine, that tho' the Prophecies were primarily accomplish'd in other Events, yet they might have a secondary one in the Messiah: But others set aside a double Completion, except where the Prophet himself declares as much, as making all Prophecy useless.

The generality chuse therefore to have recourse to an Allegorical, or Typical, or Spiritual Meaning in the Prophecies, &c. and suppose 'em to have been thus understood among the antient *Jews*, thus fulfill'd in our Saviour, and thus apply'd by the Apostles. See **TYPE**.

In effect, the *Jewish Rabbins*, 'tis allow'd, took a world of liberty in *quoting* and interpreting Scripture; and 'tis supposed the Apostles might follow those Rules in their *Quotations*. See **RABBIN**.

Accordingly M. *Surenhusius*, Hebrew Professor at *Amsterdam*, has endeavour'd to retrieve those Rules, long since lost, in an express Treatise on this Subject, published in 1713.

This Author observes a great deal of difference imply'd in the different Forms of *Quotings* used by the Sacred Writings: As, *It has been said*; *It is written*; *That it might be fulfill'd which was spoken by the Prophets*; *The Scripture says*; *See what is said*; *The Scripture foreseeing*; *Is it not written*, &c.—He adds, that the Books of the Old Testament having been disposed in a different Order at different Times, and having had different Names; 'tis thence that a Book or Writer is sometimes confounded with another.

For the Rules of *Quoting* and Interpreting practis'd among the Rabbins, he gives us ten; recover'd with much Study from the *Talmud* and the antient *Jewish Doctors*: Instances whereof he gives us in the Writings of the Apostles; and by those Rules he endeavours to explain and justify all the *Quotations* made from the Old Testament in the New.

The Rules are, 1. Reading the Words not according to the Points placed under them, but according to others substituted in their stead; as is done by St. *Peter*, *Acts* xxxiii. by *Stephen*, *Acts* vii. 43. and by *Paul*, 1 *Cor.* xv. 54. 2 *Cor.* viii. 15. &c.

The second is by changing the Letters; as is done by *Paul*, *Rom* ix. 33. 1 *Cor.* xi. 9. *Heb.* viii. 9. and x. 5. and by *Stephen*, *Acts* vii. 43.

The third is by changing both Letters and Points, as is done by *Paul*, *Acts* xiii. 41. and 2 *Cor.* viii. 15.—The fourth is adding some Letters, and taking away others.

The fifth, transposing Words and Letters.—The sixth is dividing one Word into two.—The seventh, adding other Words to make the Sense more clear.—The eighth, changing the Order of the Words.—The ninth, changing the



the Order of the Words, and adding other Words. Both of which are done by the Apostles.—Lastly, changing the Order of Words, adding Words and retrenching Words; which is a Method often used by St. Paul.

Other Authors, as Bishop Kidder, M. le Clerc, Mr. Sykes, &c. solve the difficulty another way.—That usual Form of Quotation among the Evangelists, "That it might be fulfilled which was spoken by the Prophets," according to these Authors, means no more than an Accommodation of the Prophets Words to the Case in hand.

The Word *πληρωθῆναι*, fulfilled, does not necessarily determine us to such a Sense, as if the Evangelists design'd to speak of a Prediction of future Events accomplished; but may barely express an Accommodation of borrow'd Words.—In effect, says Bishop Kidder, a Scripture may be said to be fulfilled two ways; Properly, as when that which was foretold comes to pass; and Improperly, by way of Accommodation, as when an Event happens to any Place or People like to what fell out some time before.—And thus it is that St. Matthew says, on occasion of the Murder of the Innocents, that "then was fulfill'd what was spoke by the Prophet Jeremy, In Rama was a Voice heard, &c."

This Interpretation is confirm'd by M. Le Clerc, who observes that the Jews, in their Language used to say, that a Passage of Scripture was fulfill'd as often as any thing happen'd which it might be apply'd to: So that the Evangelist Matthew, who was a Hebrew, and wrote, as 'tis commonly supposed, in that Language, intended no more in the Passage just cited, but that a thing happen'd to which one might

apply what Jeremy had formerly said on another Occasion.

Accordingly, says Mr. Sykes, the Evangelists in citing that Passage of Isaiah, Behold a Virgin shall be with Child, &c. only use it as words of that Prophet remarkably applicable to the miraculous Birth of Jesus, and not as a Prophecy of his Birth.

It may be added, that this way of speaking was not unknown among the Heathen Writers.—Thus in *Zelian*, Diogenes-Sinopensis used continually to say of himself, that he fulfill'd and underwent all the Curses of Tragedy.

QUOTIDIAN, in Medicine, an intermitting Fever, or Ague, the Access whereof returns every day. See FEVER and AGUE.

QUOTIENT, in Arithmetic, the Number resulting from the division of a greater Number by a smaller; and which shews how often the smaller is contain'd in the greater, or how oft the Divisor is contain'd in the Dividend. See DIVISION.

In Division, as the Divisor is to the Dividend; so is Unity to the Quotient.—Thus the Quotient of 12 divided by 3 is 4; which is thus disposed,  $3 \overline{) 12} (4$  Quotient.

The Word is form'd from the Latin, *quoties*, q. d. How often is such a Number contain'd in such another?

QUOYL, or QUOILE, or COYLE, in the Sea-Language, a Cable is said to be Quoyled, when it is laid round in a Ring on the Deck of a Ship. See CABLE.

In the middle of such Ring, or Quoyle, is a good Place to lay Shot in, more safe there than in Lockers along the side, where the Enemy's Shot may fall into it.



W



**R,**

*Hervieux* observes that 'tis usual to put the Female Canary-Bird to the Male Goldfinch, Linnet, or the like, to breed; but,



for his part, he should chuse to put the Male Canary-Bird to the Female Goldfinch, Linnet, &c. because the Male usually *Races* more than the Female, i. e. the young ones take more after the Male than after the Female.

**RACHITIS**, or **RHACHITIS**, in Medicine, a Disease affecting the Bones of Children, more usually called the *Rickets*. See **RICKETS**.

**RACK**, an Engine furnished with Cords, &c. for extorting Confession from Delinquents. See **TORTURE**.

The Duke of *Exeter*, Constable of the Tower under Henry VI. with the Duke of *Suffolk*, and others, having a design to introduce the Civil Law into *England*; for a Beginning, the *Rack*, or *Brake* allowed in many Cases by the Civil Law, was first brought to the Tower, where it is still preserv'd.

In those Days the *Rack* was call'd the Duke of *Exeter's Daughter*.

**RACK**, in the Manage, a Pace wherein a Horse neither Trots nor Ambles, but shuffles, as it were between both. See **PACE**.

The *Racking Pace* is much the same as the Amble; only that it is a swifter Time, and a shorter Tread. See **AMBLE**.

**RACKET**, a kind of Bat, to strike the Ball withal at Tennis. See **TENNIS**.

It consists of a kind of Lattice, or Net-work of Cat-gut, strain'd very tight over a Circle of Wood with a Handle or Shaft of a moderate length.

*Pasquier* observes, that antiently they used no *Rackets* at Tennis, but play'd with the Palm of the Hand; and hence, he conjectures it is, that the *French* call Tennis-Play, *Jeu de Paume*.

He adds, that *Rackets* were not introduced till a little before his Time. The *English* Word *Racket* is formed from the *French*, *Raquette*, which *Ménage* derives from the *Latin*, *Resiquetta*, a diminutive of *Retis*, *Reticus*, and *Reticulum*.

**RACKET**, is also a Machine, which the Savages of *Canada* bind to their Feet, to walk more commodiously over the Snow; made much in the manner of a Tennis-Racket.

Its Figure is a Lozange, whereof the two obtuse Angles are rounded off. It is bound about with very fine Thongs of Leather, the Mashs whereof are much smaller and closer than those of our *Rackets*.

In the middle is fitted a kind of Shoe, lined with Wool, or Hair; and tied on to prevent its sinking in the Snow.

They oblige the Person to take very long Steps, and as we say, to walk a great pace, to keep them from knocking against each other.

To *Rack Wines*, &c. is to draw them from off their Lees, after having stood long enough to clear and settle. See **WINE**.

Hence *Rack-Vintage* is frequently used for the second Voyage our Wine Merchants used to make into *France* for rack'd Wines; whence they used to return about the End of *December*.

**RADIAL** *Curves*, is a Term used by some Authors for Curves of the Spiral Kind, whose Ordinates, if they may be so call'd, do all terminate in the Center of the including Circle, and appear like so many *Radii* of that Circle; whence the Name. See **CURVE**. See also **SPIREL**.

**RADIALIS**, or **RADIÆUS Extensor**, in Anatomy. See **EXTENSOR Carpi**.

**RADIALIS**, or **RADIÆUS flexor**. See **FLEXOR Carpi**.

**RADIATED**, in Botany, an Epithet applied to round flat Flowers, consisting of a Disk, and a single row of longish pointed Leaves, ranged all around it in manner of Rays, or Spokes. See **FLOWER**.

The Word is also used in speaking of Medals, and in Heraldry; where the ancient Crowns are called *radiated Crowns*, *Corona Radiata*. See **CROWN** and **CORONET**.

**RADIANT-Point**, or **RADIATING-Point**, is any Point of a visible Object, whence Rays proceed. See **RAY**.

Every *Radiant-Point* diffuses innumerable Rays all around; But only those *Radiants* are visible from which right Lines may be drawn to the Pupil; because the Rays are all right Lines.

All the Rays proceeding from the same *Radiant* continually diverge; the Crystallin collects or reunites 'em again. See **DIVERGING**. See also **CRYSTALLIN**.

Every Ray carries with it the Species, or Image of the *Radiant*. See **SPECIES**.

**RADIATION**, in Physick, the Action of a Body diffusing Rays of Light. See **RAY**.

Every visible Body is a radiating Body; it being purely by means of its Rays that it affects the Eye. See **VISION**.

Yet no Body can *radiate*, unless it be either luminous or illuminated; since the Rays it diffuses must either be its own, or it must receive them from another Body. Therefore no Body is Visible unless it be either luminous or illuminated. See **BODY**, **LIGHT**, **COLOUR**, &c.

The Surface of a radiating Body may be conceived as consisting of Radiant-Points. See **RADIANT-Point**.

*Place of RADIATION* is that Space in a transparent Body, or Medium, through which a visible Body *Radiates*. See **MEDIUM**, &c.

**RADIATION**, or **IRRADIATION**, is also used by some Authors to express the manner of the Motion of the Animal Spirits; on a Supposition that they are diffused from the Brain towards all

Parts of the Body, through the little Canals of the Nerves, as Light is from a lucid Body. See **SPIRIT**.

But in lieu of a *Radiation*, many of the Moderns rather incline to the Opinion of the Circulation of the Spirits. See **CIRCULATION**.

**RADICAL**, **RADICALIS**, in Physicks, &c. something serving as a Basis or Foundation; or which, like a *Root*, is the Source, or Principle whence any thing arises. See **ROOT**.

The Schools talk much of a *Radical Moisture* in all Animals, which nourishes and preserves the vital Heat or Flame, as Oil does a Lamp; and which when exhausted, Life is extinguished.

Dr. *Quincy* observes that this *radical Moisture* is a mere Chimæra; unless we thereby mean the Mass of Blood which is the promptuary whence all the other Juices and Humours are derived; and which, while it circulates, sustains Life, &c. See **CALIDUM**. See also **FLAMMA**, **BLOOD**, &c.

In Grammar we use the Term *Radical Words* for Roots and Primitives; in opposition to Compounds or Derivatives. See **ROOT** and **PRIMITIVE**.

**RADICAL Sign**, in *Algebra*, the Sign or Character of the Root of a Quantity. See **ROOT**.

✓ is the Character of Radicality, and expresses the Square Root;  $\sqrt[3]{\phantom{x}}$ , the Cube Root, &c. See **CHARACTER**.

**RADICATION**, in Physick, the Action whereby Plants take Root, or shoot out Roots. See **ROOT**.

The *French* Royal Academy of Sciences have made a good number of curious Observations on the Germination and *Radiation* of Plants. See **VEGETATION**, **SEED**, **PLANTING**, **PERPENDICULARITY**, &c.

**RADICLE**, **RADICULA**, *little Root*; in Botany, is a little Point discovered by the Microscope in all Seeds, which in the growth of the Plant becomes the Root. See **ROOT**. See also **SEED**.

When, in sowing, the *Radicle* happens to light lowest; 'tis no wonder the Root should spread it self under Ground, and the Stem of the Plant rise up perpendicularly: But when the *Radicle* falls uppermost, by what means it is, that it changes its Position to favour the Ascent of the Stem, is one of the Wonders of Vegetation. A more particular Account whereof see under the Article **PERPENDICULARITY**.

**RADIOMETER**, a Name some Writers give to the *Radar Astronomicus*, or *Jacob's Staff*. See **JACOB'S STAFF**.

**RADIUS**, **RAY**, in Geometry, the Semidiameter of a Circle; or a right Line drawn from the Centre to the Circumference. See **SEMI-DIAMETER**, &c.

The *Radius* is also called, especially in Trigonometry, *sinus totus*, *whole sine*. See **SINE**.

'Tis implied in the definition of a Circle, and 'tis apparent from its Construction, that all the *Radii* of the same Circle are equal. See **CIRCLE**.

The Word is derived from the *Greek*  $\rho\acute{\alpha}\delta\omicron\varsigma$ , *rad*. *Eleta* uses the Word *Radius* for a Furrow.

**RADIUS**, in the higher Geometry. The *RADIUS* of the *Evoleta*. *RADIUS Curvedinis*, or *RADIUS Osculi*, is the right Line CM, Tab. *Analysis* Fig. 12. representing a Thread, by whose Evolution from off the Curve BC, whereon it was wound, the Curve AM is form'd. See **EVOLUTA** and **OSCULUM**.

**RADIUS Astronomicus**, an Instrument properly called *Jacob's Staff*, or *Cross Staff*. See **CROSS STAFF**.

**RADIUS**, in Opticks. See **RAY**.

**RADIUS**, in Mechanicks, is used for the Spokes, or Fellows of a Wheel; because issuing like Rays, from the Centre thereof. See **WHEEL**.

**RADIUS**, in Anatomy, is a long slender Bone of the Arm, descending along with the *Ulna* from the Elbow to the Wrist; called also, *foecile minus*, the *lesser foecile*. See **FOECILE**.

The *Radius* only touches the *Ulna* at its Extremities; at the upper whereof it is both received by, and also receives it; imaking, by both Articulations, an imperfect Kind of Ginglymus. See **ULNA**.

The upper End, rolling upon the *Ulna*, is cover'd with a Cartilage; and has a-top, a small round *Sinus*, which receives the outer Process of the *Humerus*: The lower-end is thicker than the upper, and has besides the lateral *Sinus*, two other *Sinus* at its Extremity which receive the Bones of the Wrist.

The *Radius* and *Ulna* are both a little crooked; by which means they are kept a-part, excepting at their Extremities; and are tied together by a strong membranous Ligament. See **ARM**.

The *Radius* has four proper Muscles, besides the *Biceps* common to it and the *Ulna*: The proper are two *Pronators*, and two *Supinators*. See **PRONATOR** and **SUPINATOR**. See also **BICEPS**.

**RADIX**. See **ROOT**.

**RADIX** is used among some Anatomists, for the Sole of the Foot. See **FOOT**.

**RADIX**, among Grammarians. See **RADICAL**.

**RAD-Knights**. See **ROD-Knights**.

**RAFTERS**, in Building, are pieces of Timber, which stand by Pairs upon the Reason, meet in an Angle at the Top, and help to compose the Roof of a Building. See **ROOF**.

'Tis a Rule in Architecture, that no Rafters shou'd stand farther than twelve Inches from one another.



For the Sizes or Scantlings of *Rafters*, its provided by Act of Parliament, that *principal Rafters* from 12 Foot 6 Inches, to 14 Foot 6 Inches long, be 5 Inches broad a-top, and 8 at the bottom, and 6 Inches thick.  
Those from 14, 6 to 18, 6 long, to be 9 Inches broad at the foot and 7 a-top, and 7 thick.  
And those from 18, 6, to 21, 6, to be 10 Inches broad at the foot, 8 a-top, and 8 Inches thick.  
*Single Rafters*, 6 Foot 6 Inches long, to be 4 and 3 Inches in their Square. Those 8 Foot long must be  $4\frac{1}{2}$  and  $3\frac{1}{2}$  Inches square.

**RAFFLING**, a Game with three Dice, wherein he who throws the greatest Pair, or Pair-Royal, in three Casts, wins. See **GAME** and **GAMING**.

The *Raffle* is properly the double or tripler. A *Raffle* of Aces, or Duces, carries it against meer Points.

*Raffling* is also used when a Company of Persons club to the Purchase of a Commodity; and he that throws the highest on the Dice takes it.

The Word probably comes from the base *Latin*, *risflare*, to rattle, plunder, take all away.

**RAG**, or **RAKE**, among Hunters, is a Company, or Herd of young Colts.

**RAGGED Hawk**, in Faulconry, is an Hawk that hath its Feathers broken. See **HAWK**.

**RAGGULED**, or **RAGULED**, or **RAGGED**, in Heraldry, is applied to an Ordinary, *Ex. gr.* a Cross, whose Out-Lines are jagged or knotted, as in the Figure adjoining. He beareth Sable, a Cross *Ragguled*, Or, by the Name of *Sloway*.

*Ragged* differs from indented, in that the latter is regular, and this former not.

The Bearing is very Antient: *Julius Cæsar* gave for his Badge, a Boar's Head, on a ragged Staff.

**RAGGULED** is sometimes also used in the Sense of *Truncated*, or *Couped*, and applied to a Branch that is saw'd from the Tree; or a Stock saw'd from its Root.

**RAGMAN's-Roll**, or rather **RAGMUND's-Roll**, a Roll or List denominated from its Author *Ragimund*, a Legat in *Scotland*, who calling before him all the beneficed Persons in that Kingdom, caused them, upon Oath, to give in the true Value of their Benefices; according to which they were taxed in the Court of *Rome*.

This Roll, among other Records, being taken from the *Scots* by our King *Edward I.* was re-delivered to them in the Beginning of *Edward III.*'s time.

**RAGOÛT**, or **RAGOO**, a Sauce, or Seasoning, to rouse or recover the Appetite when languishing or lost.

The Term is *French*, but naturaliz'd.

The Term is also used for a high-season'd Dish, prepared of Flesh, Fish, Greens, or the like, by stewing them with the Addition of Bacon, Salt, Pepper, Cloves, and the like.

We have *Ragoos* of Beef, of Cray-Fish, of Giblets, of Asparagus, of Endive, of Cocks-Combs, of Gammon, of Celery, &c.

The Ancients had a *Ragoût* call'd *Garum*, made of the Putrefied Guts of a certain Fish, which they kept till it dissolved by meer Force of Corruption, into a Sanies: This was held such a valuable Dainty among them, that *Pliny* observes, its Price equall'd that of the richest Perfumes.

**RAJA**, an *Indian* Term, used for a Kind of Idolatrous Princes, the remains of those who ruled there before the Conquest of the *Moguls*.

There are some *Rajas* who still retain a Kind of Sovereignty in the Mountains: The *Indians* call them *Rai*; the *Persians*, plurally, *Raijan*; our Travellers, *Rajas*, or *Ragias*.

The chief Lords of the *Moguls*, viz. the Vice-Roys, Governors of Provinces, and Chief Ministers of State, *F. Catrou* observes, are call'd *Ombas*; and the Idolatrous *Rajas*, or *Indian* Lords, who governed petty States before the Conquest of their Country, hold the same Rank at Court with the *Ombas*.

All the difference is, that the Children of the *Rajas* succeed their Fathers in the shew of the Sovereignty left them; whereas the Children of the Mahometan Lords lose all in losing their Fathers.

The *Indians* account four Ages from the Beginning of the World; and in the second, which lasted 1296000 Years, they hold the *Rajas* or *Kshatrys* had their Rise; chaste, noble, &c. though inferior to the *Bramans*. See **BRAMAN**.

Vice then began to creep into the World; Men only lived to 300 Years, and their Stature was reduced, &c. *Lett. Edit. & Cur.*

**RAIL**, in Architecture, is applied variously; particularly, to those pieces of Timber, &c. which lie Horizontally between the Pannels of Wainscot; to those that lie over and under Ballusters in Balconies, Stair-Cases, &c. and to the pieces of Timber that lie horizontally from Post to Post, in Fences with Pales or without.

**RAIN**, a very frequent and useful Meteor; descending from above in form of Drops of Water. See **METEOR** and **DROP**.

*Rain* is, apparently, a precipitated Cloud; as Clouds are nothing but Vapours rais'd from Moisture, Waters, &c. See **CLOUD**.

And Vapours are demonstratively nothing else but little Bubbles or *Vesiculæ* detach'd from the Waters, by the Power of the solar, or subterraneous Heat, or both. See **VAPOUR**.

These *Vesiculæ* being specifically lighter than the Atmosphere, are buoyed up thereby, till they arrive at a Region where the Air is a just Balance with them; and here they float, till by some new Agent they are converted into Clouds, and thence either into Rain, Snow, Hail, Mist, or the like. See **SNOW**, **HAIL**, &c.

But the Agent in this Formation of the Clouds into *Rain*, &c. is a little controverted; the generality will have it the Cold, which constantly occupying the superiour Regions of the Air, chills and condenses the *Vesiculæ*, at their Arrival from a warmer Quarter; congregates them together, and occasions several of them to coalesce into little Masses: By this Means their Quantity of Matter increasing in a greater Proportion than their Surface, they become an overload to the light Air, and accordingly descend in Rain.

Mr. *Derham* accounts for the Precipitation, hence; that the *Vesiculæ* being full of Air, when they meet with a colder Air than that they contain, their Air is contracted into a less Space, and consequently the watery Shell or Case render'd thicker, so as to become heavier than the Air, &c. See **COLD**.

Others only allow the Cold a Part in the Action, and bring in the Winds as Sharers with it; indeed 'tis clear, that a Wind blowing against a Cloud will drive its *Vesiculæ* upon one another; by which means several of them coalescing as before, will be enabled to descend; and the effect will be still more considerable if two opposite Winds blow towards the same Place. Add to this, that Clouds already form'd, happening to be aggravated by fresh Accessions of Vapour continually ascending, may thence be enabled to descend. See **WIND**.

Yet the grand Cause, according to *Robault*, is still behind: That Author conceives it to be the Heat of the Air, which after continuing for some time near the Earth, is at length carried up on high by a Wind, and there thawing the snowy *Villi*, or Flocks of the half-frozen *Vesiculæ*, reduces them into Drops; which coalescing, descend and have their Dissolution perfected in their Progress through the lower and warmer Stages of the Atmosphere.

Others, as Dr. *Clark*, &c. ascribe this Descent of the Clouds rather to an Alteration of the Atmosphere, than of the *Vesiculæ*; and suppose it to arise from a Diminution of the Spring or elastic Force of the Air. See **ELASTICITY**.

This Elasticity which depends chiefly or wholly on the dry terrene Exhalations, being weaken'd; the Atmosphere sinks under its Burthen; and the Clouds fall, on the common Principle of Precipitation. See **PRECIPITATION**.

Now, the little *Vesiculæ* by any, or all, of these Means, being once upon the Descent, will persist therein, notwithstanding the Increase of Resistance they every Moment meet withal in their Progress through still denser and denser Parts of the Atmosphere.

For, as they all tend towards the same Point, viz. the Centre of the Earth, the further they fall the more Coalitions will they make; and the more Coalitions, the more Matter will there be under the same Surface, the Surface only increasing as the Squares, but the Solidity as the Cubes; and the more Matter under the same Surface, the less Friction or Resistance there will be to the same Matter. See **BAROMETER**.

Thus if the Cold, the Wind, &c. happen to act early enough to precipitate the *Vesiculæ*, ere they are arrived at any considerable Height; the Coalitions being few in so short a Descent, the Drops will be proportionably small; and thus is form'd what we call *Dew*. See **DEW**.

If the Vapours prove more copious, and rise a little higher, we have a *Mist* or *Fog*. See **FOG**.

A little higher still, and they produce a *small Rain*, &c.

If they neither meet with Cold nor Wind enough to condense or dissipate them; they form a heavy, thick, *dark Sky*; which last, sometimes several Weeks. See **WEATHER**.

Hence we may account for many of the Phenomena of the Weather; e. gr. why a cold, is always a wet Summer; and a warm a dry one? Because the Principle of Precipitation is had in the one Case, and wanting in the other.

Why we have ordinarily most *Rain* about the Equinoxes? Because the Vapours arise more plentifully than ordinary in the Spring, as the Earth becomes loosen'd from the brumal Constipations; and because as the Sun recedes from us in Autumn, the Cold increasing, the Vapours that had linger'd above during the Summer Heats, are now dispatch'd down, &c.

Why a settled, thick, close Sky scarce ever *Rains* till it have been first clear? Because the equally diffused Vapours must first be condens'd, and congregated into separate Clouds, to lay the Foundations of *Rain*; by which means the rest of the Face of Heaven is left open, and pervious to the Rays of the Sun, &c. See **WEATHER**.

For other Phenomena of *Rain*, as they relate to the Weather-Glass, see **BAROMETER**.

As to the Quantity of *Rain* that falls; its Proportion in several Places at the same Time, and in the same Place at several Times; we have Store of Observations, Journals, &c. in the Memoirs of the French Academy, the *Philos. Transact.* &c. an Idea



Idea whereof will not be unacceptable.  
Upon measuring, then, the *Rain* falling yearly; its Depth, at a Medium, is found as in the following Table.

| Depth of RAIN falling yearly, and its Proportion in several Places. |    |               |  |         |
|---|----|---------------|--|---------|
|   |    |               |  | Inches. |
| At Townley in Lancashire, observ'd by Mr. Townley,                  | 42 | $\frac{1}{2}$ |  |         |
| Upminster in Essex, by Mr. Derham,                                  | 19 | $\frac{1}{2}$ |  |         |
| Zurich in Switzerland, by Dr. Scheutcher,                           | 32 | $\frac{1}{2}$ |  |         |
| Pisa in Italy, by Dr. Mich. Ang. Tili,                              | 43 | $\frac{1}{2}$ |  |         |
| Paris in France, by M. de la Hire,                                  | 19 |               |  |         |
| Lisle in Flanders, by M. de Vauban.                                 | 24 |               |  |         |

| Proportions of the RAIN of several Years to one another. |               |       |          |           |                |
|--|---------------|-------|----------|-----------|----------------|
|  | At Upminster. |       |          | At Paris. |                |
| 1700   | 19            | Inch. | 03 Cent. | 21        | Inch. 38 Cent. |
| 1701   | 18            |       | 69       | 27        | 78             |
| 1702   | 20            |       | 38       | 17        | 42             |
| 1703   | 23            |       | 99       | 18        | 51             |
| 1704   | 15            |       | 81       | 21        | 20             |
| 1705   | 16            |       | 93       | 14        | 82             |

| Proportion of the RAIN of the several Seasons to one another. |          |          |          |            |          |          |          |
|---|----------|----------|----------|------------|----------|----------|----------|
|   | Depth at | Depth at | Depth at |            | Depth at | Depth at | Depth at |
|   | Pisa.    | Upminst. | Zurich.  |            | Pisa.    | Upminst. | Zurich.  |
|   | Inch.    | Inch.    | Inch.    |            | Inch.    | Inch.    | Inch.    |
| 1708  |          |          |          | 1708       |          |          |          |
| Jan.  | 6 41     | 2 88     | 1 64     | July       | 0 00     | 1 11     | 3 50     |
| Febr.   | 3 28     | 0 46     | 1 65     | Aug.       | 2 27     | 2 94     | 3 15     |
| Mar.  | 2 65     | 2 03     | 1 51     | Sept.      | 7 21     | 1 46     | 3 02     |
| Apr.  | 1 25     | 0 96     | 4 69     | Oct.       | 5 33     | 0 23     | 2 24     |
| May   | 3 33     | 2 02     | 1 91     | Nov.       | 0 13     | 0 86     | 0 62     |
| June  | 4 90     | 2 32     | 5 91     | Dec.       | 0 00     | 11 97    | 2 62     |
| Half-Year.  | 28 82    | 10 67    | 17 31    | Half-Year. | 14 94    | 8 57     | 15 35    |

*Praternatural-RAINS*, as of *Blood*, &c. are very frequent in our Annals; and even Natural Histories, yet; if strictly pried into, will be all found other things than *Rain*.

*Bloody Rains*, Dr. Merret observes, are, certainly, nothing else but the Excrements of Insects.

Accordingly, *Gassendus* gives an Instance of a bloody Rain in France, which terrified the People; but which *Peirisc* found to be only red Drops coming from a sort of Butterfly that flew about in great Numbers, as he concluded from seeing such red Drops come from them; from the Drops not being laid on Buildings, or the outer Surfaces of Stones, &c. but in Cavities and Holes; and from those Walls only being tinged therewith that were next the Fields, not those in the Streets; and the first only to a little Height, such as Butterflies are used to fly to.

The same Dr. Merret adds, that 'tis most evident the *Rains of Wheat* are nothing but *Ivy-Berries*, swallowed by the Starlings, and again cast forth by Stool.

An Instance of such a *Rain* we have in the *Philosoph. Trans.* from the Country about *Bristol*, by Mr. *W. Cole*; who, upon examining the Drops, found them to be the Seeds of *Ivy-Berries*, blown down by fierce Winds from Towers, Churches, Chimneys, Walls, &c. where they had been left by Birds, chiefly Starlings and Choughs.

The *French* have a Tradition of a *Rain of Stones*, in a Plain six or seven Leagues long between *Arles* and *Marseilles*, call'd *la Crau*, which is now quite cover'd therewith.

The Fable has it, that *Hercules* in his Engagement with *Albion* and *Bregon*, in Favour of *Neptune*; wanting Darts, was assisted by *Jupiter* with a Shower of these Stones, seen to this Day. Another Account of their Origin, see under the Article *STONE*.

*RAINS*, in the Sea Language, is all that Tract of Sea to the Northward of the Equator, between 4 and 10 Degrees of Latitude; and lying between the Meridian of *Cape Verde*, and that of the Eastermost Islands of the same Name.

It takes its Name from the almost continual Calms, constant *Rains*, and Thunder and Lightning to a great Degree, found there. The Winds, when they do blow, are only small uncertain Gusts, and shift about all round the Compass; so that Ships are sometimes here detain'd a long while, and can make but little way.

*RAIN-BOW*, *IRIS*, or simply, the *Bow*, a Meteor in form of a party-coloured Arch or Semicircle, exhibited in a rainy Skie, opposite to the Sun; by the refraction of his Rays in the Drops of falling Rain. See *METEOR*, *RAIN*, and *REFRACTION*.

There is also a *secondary* or fainter *Bow*, usually seen investing the former, at some Distance; and among Naturalists we read of *Lunar Rainbows*, *Marine Rainbows*, &c.

The *Rainbow*, Sir *Isaac Newton* observes, never appears but where it rains in the Sun-shine; and may be represented artificially, by contriving Water to fall in little Drops like Rain; thro' which the Sun shining, exhibits a *Bow* to a Spectator placed between the Sun and the Drops; especially if a dark Body, e. gr. a black Cloath be disposed beyond the Drops.

*Anton. de Dominis* first accounted for the *Rainbow*, in 1611: He explain'd at large how it was form'd, by refraction and re-

flection of the Sun-beams in spherical Drops of Water; and confirm'd his Explications by Experiments made with Glass Globes, &c. full of Water. Wherein he was follow'd by *Des Cartes*, who mended and improved on his Account: But as they were both in the Dark as to the true Origin of Colours, their Explications are Defective, and in some things erroneous; which 'tis one of the Glories of the *Newtonian Doctrine* of Colours, to supply and correct.

#### Theory of the Formation of the RAIN-BOW.

To conceive the Origin of the *Rainbow*, let us consider what will befall Rays of Light coming from a very remote Body, e. gr. the Sun; and falling on a Globe of Water, such as we know a Drop of Rain to be.

Suppose then *ADKN* (*Tab. Opticks, Fig. 45.*) to be a Drop of Rain, and the Lines *EF*, *BA*, *ON*, to be Rays of Light coming from the Centre of the Sun; which, by reason of the immense Distance of the Sun, we conceive to be Parallel. See *Parallel RAY*.

Now the Ray *BA* being the only one that falls perpendicularly on the Surface of the Water; and all the rest obliquely; 'tis easily infer'd that all the other Rays will be refracted towards the Perpendicular. See *REFRACTION*.

Thus the Ray *EF*, and others, accompanying it, won't go on straight to *G*; but as they arrive at *HI*, deflect from *F* to *K*, where some of them, probably, escaping into the Air, the rest are reflected upon the Line *KN*, so as to make the Angles of Incidence and Reflexion equal. See *REFLEXION*.

Further, as the Ray *KN*, and those accompanying it, fall obliquely upon the Surface of the Globule; they cannot pass out into the Air, without being refracted, so as to recede from the Perpendicular *LM*; and therefore will not proceed straight to *Y*, but deflect to *P*.

It may be here observ'd, that some of the Rays arriving at *P*, do not pass out into the Air, but are again reflected to *Q*; where being refracted like the rest, they do not proceed right to *Z*, but declining from the Perpendicular *TV*, are carried to *R*: But since we here only regard the Rays as they may affect the Eye placed a little below the Drop, e. gr. at *P*, those which deflect from *N* to *Q*, we set aside as useless, because they never come at the Eye. On the contrary, it is to be observ'd, that there are other Rays, as 2, 3, and the like, which being reflected from 3 to 4, thence to 5, and from 5 to 6 may at length arrive at the Eye placed beneath the Drop.

Thus much is obvious: But to determine precisely the Quantities of Refraction of each Ray, there must be a Calculation: By such Calculation it appears that the Rays which fall on the Quadrant *AD*, are continued in Lines, like those here drawn in the Drop *ADKN*; wherein there are three things very considerable: *First*, That the two Refractions of the Rays in their Ingress and Egress are both the same Way, so that the latter does not destroy the effect of the former. *Secondly*, That of all the Rays passing out of *AN*; *NP*, and those adjoining to it, are the only ones capable of affecting the Sense; as being sufficiently close or contiguous; and because coming out parallel; whereas the rest are divaricated, and dispers'd too far to have any sensible Effect, at least to produce any thing so vivid as the Colours of the *Bow*. *Thirdly*, That the Ray *NP* has *Shade* or *Darkness* under it: For since there is no Ray comes out of the Surface *NA*, 'tis the same thing as if the Part were cover'd with an Opaque Body. We might add, that the same Ray *NP* has *Darkness* above it; since the Rays that are above it are ineffectual; and signify no more than if there were none at all.

Add to these, that all the effectual Rays have the same Point of Reflexion, i. e. the parallel and contiguous Rays; which alone are effectual after Refraction, will all meet in the same Point of the Circumference; and be reflected thence to the Eye.

Further it appears by Calculation, that the Angle *ONP*, included between the Ray *NP*, and the Line *ON* drawn from the Centre of the Sun, which is the Angle whereby the *Rainbow* is distant from the opposite Point of the Sun, and which makes the *Semidiameter of the Bow*; contains  $41^{\circ} 30'$ . The Method of determining it see hereafter.

But since beside those Rays coming from the Centre of the Sun to the Drop of Water, there are many more from the several Points of its Surface; there are a great many other effectual Rays to be considered; especially that from the uppermost, and that from the lowest Part of the Sun's Body.

Since then, the apparent Diameter of the Sun is about 16 Seconds, it follows that an effectual Ray from the upper Part of the Sun will fall higher than the Ray *EF*, by 16 Seconds: This does the Ray *GH*, (*Fig. 46.*) which being refracted as much as *EF*; deflects to *I*, thence to *L*; and at length emerging equally refracted with the Ray *NP*, proceeds to *M*; and makes an Angle *ONM*, of  $41^{\circ} 14'$  with the Line *ON*.

In like Manner the effectual Ray *QR* coming from the lowest Part of the Sun, falls on the Point *R*, 16 Minutes lower than the Point *F*, on which the Ray *EF* falls; and being refracted declines to *S*; whence it is reflected to *T*; where emerging into the Air, it proceeds to *V*; so, as the Line *TV*, and the Ray *OT* contain an Angle of  $41^{\circ}$  and  $46'$ .



Again, upon computing the Deflexions of the Rays, which, like the 23 (Fig. 45.) coming from the Centre of the Sun, and being received into the lower Part of the Drop, we have supposed to be twice reflected, and twice refracted, and to enter the Eye by Lines like that 67 (Fig. 47.); we find that which may be accounted effectual, as 67, with the Line 86 drawn from the Centre of the Sun, contains an Angle 867, of about 52 Degrees: Whence it follows that the effectual Ray from the highest Part of the Sun, with the same Line 86 includes an Angle less by 16 Minutes; and that from the lowest Part of the Sun, an Angle greater by 16 Minutes.

Thus, since ABCDEF is the Path of the efficacious Ray from the highest Part of the Sun to the Eye in F; the Angle 86 F becomes of about fifty one Degrees, and forty four Minutes. In like manner, since GHIKLM is the Way of an effectual Ray from the lowest Part of the Sun, to the Eye, the Angle 86 M becomes nearly of fifty two Degrees, and sixteen Minutes.

Since then we admit several Rays to be effectual, beside those from the Centre of the Sun; what we have said of the *Shade* will need some Alteration: For, of the three Rays described (Fig. 45 & 46.) only the two extreme ones will have a Shadow joining to them, and that only on the outer Side. Hence it is evident that these Rays are perfectly disposed to exhibit all the Colours of the *Prism*.

For the great Quantity of dense or intense Light, *i. e.* the Bundle of Rays collected together in a certain Point, *v. gr.* in the Point of Reflection of the effectual Rays, may be accounted as a lucid or radiant Body, terminated all around by *Shade*. But the several Rays thus emitted to the Eye are both of different Colours; that is, fitted to excite in us the Ideas of different Colours; and are differently refracted out of the Water into Air, notwithstanding their falling alike upon the refracting Surface. See COLOUR, &c.

Hence it follows that the different or heterogeneous Rays will be separated from one another, and will tend separate ways; and the homogeneous Rays be collected, and tend the same way: And therefore this lucid Point of the Drop, wherein the Refraction is effected, will appear fringed, or border'd with several Colours; that is, *red, green, and blue* Colours will arise from the extremes of the red, green, and blue Rays of the Sun transmitted to the Eye from several Drops one higher than another; after the same manner as is done in viewing lucid, or other Bodies through a *Prism*. See PRISM.

Thus, adds Sir *Isaac Newton*, the Rays that differ in refrangibility, will emerge at different Angles; and consequently, according to their different Degrees of Refrangibility, emerging most copiously at different Angles, will exhibit different Colours in different Places. See REFRACTION.

A great number then of these little Globules being diffused in the Air, will fill the whole Space with these different Colours; provided they be so disposed as that effectual Rays may come from them to the Eye; and thus will the *Rainbow*, at length, arise.

Now to determine what the *Disposition* must be; suppose a right Line drawn, from the Centre of the Sun through the Eye of the Spectator, as the Line VX, (Fig. 46.) call'd the *Line of Aspect*: Being drawn from so remote a Point, it may be esteem'd parallel to all other Lines drawn from the same Point: But a right Line falling on two Parallels makes the alternate Angles equal. See ALTERNATE.

If, then, an indefinite Number of Lines be imagin'd drawn from the Spectator's Eye to a part opposite to the Sun where it rains; which Lines make different Angles with the Line of Aspect, equal to the Angles of Refraction of the differently refractible Rays, *e. gr.* Angles of  $42^{\circ} 1'$ , and of  $40^{\circ} 16'$ . These Lines falling on Drops of Rain illumined by the Sun, will make Angles of the same Magnitude with Rays drawn from the Centre of the Sun to the same Drops. And therefore the Lines thus drawn from the Eye will represent the effectual Rays that occasion the Sensation of any Colour.

That, *e. gr.* making an Angle of  $42^{\circ} 1'$  representing the least refrangible or red Rays of the several Drops, and of  $40^{\circ} 16'$ , the most refrangible or violet Rays: The intermediate Colours, and refrangibilities will be found in the intermediate Space *Ee*. See RED, VIOLET, &c.

Now, 'tis known that the Eye being placed in the Vertex of a Cone, sees Objects upon its Surface as if they were in a Circle; and the Eye of our Spectator is here in the common Vertex of several Cones, form'd by the several Kinds of efficacious Rays, with the Line of Aspect. And in the Surface of that whose Angle at the Vertex or Eye is the greatest, and wherein the others are included, are those Drops or Parts of Drops which appear red; and in the Surface of that Cone whose Angle is least, are the purple Drops: And in the intermediate Cones are the green, blue, &c. Drops. Hence then several Kinds of the Drops must appear as if disposed into so many circular colour'd *Fascie* or Arches, as we see in the *Rainbow*.

This part of the Solution Sir *Isaac Newton* expresses more artfully thus: Suppose O (Fig. 48.) the Eye, and OP a Line Parallel to the Sun's Rays, and let POE, POF be Angles of  $40^{\circ} 17'$ , and  $42^{\circ} 2'$ . And suppose the Angles to turn about their common Side OP, with their other Sides OE and OF, they will describe the Bounds or Verges of the *Rainbow*.

For, if EF be Drops placed any where in the conical Surface described by OE OF; and be illumined by the Sun's Rays SE, SF, the Angle SEO being equal to the Angle POE, or  $40^{\circ} 17'$  shall be the greatest Angle in which the most refrangible Rays can, after Reflection, be refracted to the Eye; and therefore all the Drops in the Line OE shall send the most refrangible Rays most copiously to the Eye, and thereby strike the Senses with the deepest *Violet Colour* in that Region.

And in like Manner the Angle SFO being = to the Angle POF =  $42^{\circ} 2'$ , shall be the greatest, in which the least refrangible Rays after one Reflection can emerge out of the Drops; and these Rays shall come most copiously to the Eye, from the Drops in the Line OF, and strike the Senses with the deepest *red Colour* in that Region.

And by the same Argument the Rays, which have intermediate Degrees of Refrangibility, shall come most copiously from Drops between E and F, and so strike the Senses with the intermediate Colours, in the Order which their Degrees of Refrangibility require; that is, in the Progress from E to F, or from the inside of the Bow to the outside, in this Order, *Violet, Indigo, Blue, Green, Yellow, Orange, Red*: Though the Violet, by the mixture of the white Light of the Clouds, will appear faint, and incline to a *purple*.

And since the Lines OE OF may be situated any where in the abovemention'd conical Surface; what is said of the Drops and Colours in these Lines is to be understood of the Drops and Colours throughout the whole Superficies. Thus is the *primary*, or *inner Bow* form'd.

#### Secondary, or outer RAIN-BOW.

As to the secondary or fainter *Bow*, usually surrounding the former; in assigning what Drops would appear coloured, we excluded such as Lines drawn from the Eye, making Angles a little greater than  $42^{\circ} 2'$  should fall upon; but not such as should contain Angles much greater.

For, if an indefinite Number of such Lines be drawn from the Spectator's Eye, some whereof make Angles of  $50^{\circ} 57'$ , with the Line of Aspect; *e. gr.* OG; other Angles of  $54^{\circ} 9'$ , *e. gr.* OH; those Drops whereon these Lines fall, must of necessity exhibit Colours. Particularly those of  $50^{\circ} 57'$ .

*E. gr.* the Drop G will appear red; the Line GO being the same with an effectual Ray, which after two Reflections and two Refractions, exhibits a red Colour. Again, those Drops which receive Lines of  $54^{\circ} 9'$ , *e. gr.* the Drop H will appear Purple, the Line OH being the same with an effectual Ray which after two Reflections, and two Refractions, exhibits Purple.

Now, there being a sufficient Number of these Drops, 'tis evident there must be a *second Rainbow*, form'd after the like manner as the first.

Thus, Sir *Isaac Newton*: In the least refrangible Rays, the least Angle at which a Drop can send effectual Rays after two Reflexions, is found by computation to be  $50^{\circ} 57'$ , and in the most refrangible the least Angle is found  $54^{\circ} 7'$ .

Suppose, then, O the Place of the Eye, as before, and POG, POH to be Angles of  $50^{\circ} 57'$ , and  $54^{\circ} 7'$ . And these Angles to be turn'd about their common Side OP; with their other Sides OG, OH, they will describe the Verges or Borders of the *Rainbow* CHDG.

For, if GH be Drops placed any where in the conical Superficies described by OG OH, and be illumined by the Sun's Rays; the Angle SGO being equal to the Angle POG or  $50^{\circ} 57'$ , shall be the least Angle, in which the then least refrangible Rays, can, after two Reflections, emerge out of the Drops; and therefore the least refrangible Rays shall come most copiously to the Eye from the Drops in the Line OG, and strike the Sense with the deepest *Red* in that Region.

And the Angle SHO being equal to POH,  $54^{\circ} 7'$ , shall be the least Angle in which the most refrangible Rays, after two Reflections, can emerge out of the Drops; and therefore those Rays shall come most copiously to the Eye from the Drops in the Line OH, and so strike the Senses with the deepest *Violet* in that Region.

And by the same Argument, the Drops in the Region between G and H, shall strike the Senses with the intermediate Colours, in the Order which their Degrees of Refrangibility require; that is, in the Progress from G to H, or from the inside of the Bow to the outer, in this Order: *Red, Orange, Yellow, Green, Blue, Indigo, Violet*.

And since the Lines OG, OH, may be situated any where in the conical Surface; what is said of the Drops and Colours in these Lines, is to be understood of the Drops and Colours every where in these Superficies.

Thus are form'd two Bows, an *interior*, and stronger, by one Reflection; and an *exterior* and fainter by two; the Light becoming weaker and weaker by every Reflexion.

Their Colours will lie in a contrary Order to one another; the first having the Red without, and the Purple within; and the second the Purple without and Red within; and so of the rest.

#### Artificial RAIN-BOW.

This Doctrine of the *Rainbow* is confirm'd by an easy Experiment: For upon hanging up a Glass Globe full of Water in the Sun-



Sun-shine, and viewing it in such a Posture as that the Rays which come from the Globe to the Eye, may, with the Sun's Rays include an Angle either of  $42^{\circ}$ , or  $50^{\circ}$ ; if, e. gr. the Angle be about  $42^{\circ}$ ; the Spectator, supposed at O, will see a full red Colour in that Side of the Globe opposite to the Sun, as at F. And if that Angle be made a little less, suppose by depressing the Globule to E, the other Colours, Yellow, Blue, and Green, will appear successively, in the same Side of the Globe, also exceedingly bright.

But if the Angle be made about  $50^{\circ}$ , suppose by raising the Globule G, there will appear a red Colour in that Side of the Globe towards the Sun; though that somewhat faint; and if the Angle be made greater, suppose by raising the Globe to H; the Red will change successively to the other Colours, Yellow, Green, and Blue.

The same thing is observ'd in letting the Globe rest, and raising, or depressing the Eye to make the Angle of a just Magnitude.

#### Dimensions of the RAIN-BOW.

Des Cartes first determin'd its Diameter by a tentative, and indirect Method; laying it down that the Magnitude of the Bow depends on the Degree of Refraction of the Fluid; and assuming the Ratio of the Sine of Incidence to that of Refraction, to be in Water as 250 to 157. See REFRACTION.

But, Dr. Halley has since, in the *Philosoph. Transact.* given us a simple, direct Method of determining the Diameter of the Rainbow from the Ratio of Refraction of the Fluid being given; or *vice versa*, the Rainbow being given, to determine the refractive Power of the Fluid. The *Praxis* is as follows.

First, *The Ratio of Refraction being given; to find the Angles of Incidence, and Refraction of a Ray which becomes effectual after any given Number of Reflections.* Suppose any given Line as AC (*Tab. Opticks, Fig. 49.*) which divide in D; so, as that AC be to AD in the Ratio of Refraction; and again divide it in E, so as AC be to AE as the given Number of Reflexions increased by Unity, is to Unity; with the Diameter CE describe a Semicircle CBE, and from the Centre A with the Radius AD describe an Arch DB intersecting the Semicircle in B. Then drawing AB, CB; ABC or its Complement to two right Angles, will be the Angle of Incidence; and ACB the Angle of Refraction required.

Secondly, *The Ratio of Refraction, and any Angle of Incidence being given to find the Angle which a Ray of Light emerging out of a refracting Sphere, after a given Number of Reflections, makes with the Line of Aspect, or an incident Ray; and consequently to find the Diameter of the Rainbow.* The Angle of Incidence, and the Ratio of Refraction being given, the Angle of Refraction is given; which Angle being multiplied by double the Number of Reflexions increased by 2, and double the Angle of Incidence subtracted from the Product, the Angle remaining is the Angle sought.

Thus supposing, the Ratio of Refraction to be, as Sir Isaac Newton has determined it, viz. as 108 to 81, in the red Rays, as 109 to 81 for the blue Rays, &c. the preceding Problem will give the Distances of the Colours in the

|               |   |                  |    |                        |
|---------------|---|------------------|----|------------------------|
| I. RAIN-BOW,  | { | Red $41^{\circ}$ | 12 | } The Spectator's Back |
|               |   | Blue 40          | 16 |                        |
| II. RAIN-BOW, | { | Red 50           | 58 | } being turned to      |
|               |   | Blue 54          | 9  |                        |

If the Angle made by a Ray after three or four Reflections, were required, and therefore the Diameters of the third and fourth Rainbow, (which are scarce ever seen, by reason of the great Diminution of the Rays, by so many repeated Reflexions) they will be found.

|               |   |                  |    |                       |
|---------------|---|------------------|----|-----------------------|
| III. Rainbow, | { | Red $41^{\circ}$ | 37 | } The Spectator being |
|               |   | Blue 37          | 9  |                       |
| IV. Rainbow,  | { | Red 43           | 52 | } turned towards the  |
|               |   | Blue 49          | 34 |                       |

Hence, the Breadth of the Rainbows is easily found: For the greatest Semidiameter of the first Bow, i. e. from Red to Red being  $42^{\circ} 1'$ , and the least, viz. from Purple to Purple  $40^{\circ} 16'$ ; the Breadth of the *Fascia* or Bow, measured a-cross from Red to Purple will be  $1^{\circ} 45'$ , and the greatest Diameter of the second Bow being  $54^{\circ} 9'$ , and the least  $50^{\circ} 58'$ , the Breadth of the *Fascia* will be  $3^{\circ} 10'$ . And hence the Distance between the two will be found  $8^{\circ} 15'$ .

In these Measures the Sun is only esteem'd a Point; wherefore as his Diameter is really about  $30'$  so much must be added to the Breadth of each *Fascia* or Bow, from Red to Purple, and so much be subtracted from the Distance between them.

This will leave the Breadth of the primary Bow,  $2^{\circ} 15'$ , that of the secondary Bow  $3^{\circ} 40'$ , and the interval between the Bows  $8^{\circ} 25'$ ; which Dimensions deduced by Calculation, Sir Isaac Newton assures us from his own Observations, agree very exactly with those found by actual Mensuration in the Heavens.

#### Particular Phenomena of the RAIN-BOW, with the Causes thereof.

From this Theory of the Rainbow, all the particular Phæno-

mena are easily deduced: Hence we see why the *Iris* is always of the same Breadth; by reason the intermediate Degrees of refrangibility of the Rays between Red and Violet, which are in extreme Colours, are always the same.

Secondly, Why it is more distinctly terminated on the Side of the Red, than on that of the Violet? There being no efficacious Rays in the Space adjoining to the red Drops, i. e. to the Space between the Bows; whence it terminates abruptly; whereas in the Space on the Side of the Violet ones there are some Rays emitted to the Eye, which though too feeble to affect it strongly, yet have this effect, that they soften the Violet Edge insensibly, so that 'tis difficult to determine precisely where it terminates.

Thirdly, Why the Bow shifts its Situation as the Eye does; and, as the popular Phrase has it, *flies those who follow it, and follows those that fly it*? The colour'd Drops being disposed under a certain Angle about the Line of Aspect, which is different in different Places: Whence, also, it follows that every different Spectator sees a different Bow.

Fourthly, Why the Bow is sometimes a larger Portion of a Circle, sometimes a less? Its Magnitude depending on the greater, or less Part of the Surface of the Cone, above the Surface of the Earth at the Time of its appearance; and that Part being greater or less as the Line of Aspect is more inclined or oblique to the Surface of the Earth; which inclination, or obliquity, is greater as the Sun is higher: Whence, also, the higher the Sun, the less the Rainbow.

Fifthly, Why the Bow never appears when the Sun is above a certain Altitude? The Surface of the Cone wherein it should be seen, being lost in the Ground, at a little Distance from the Eye, when the Sun is above  $42^{\circ}$  high.

Sixthly, Why the Bow never appears greater than a Semicircle, on a Plane? Since be the Sun never so low, and even in the Horizon; the Centre of the Bow is still in the Line of Aspect; which, in this Case, runs along the Earth, and is not all rais'd above the Surface.

Indeed, if the Spectator be placed on a very considerable Eminence, and the Sun in the Horizon; the Line of Aspect wherein the Centre of the Bow is, will be notably rais'd above the Horizon, (considering the Magnitude of the Circle whereof the Bow uses to be a Part.) Nay, if the Eminence be very high, and the Rain near, 'tis possible the Bow may be an entire Circle.

Seventhly, How the Bow may chance to appear inverted, i. e. the Concave Side be turn'd upwards? To wit, a Cloud happening to intercept the Rays, and prevent their shining on the upper Part of the Arch: In which Case only the lower Part appearing, the Bow will seem as if turn'd upside down: Which probably has been the Case in several Prodigies of this Kind, related by Authors.

Indeed the Bow may appear inverted from another Cause: For, if, when the Sun is  $41^{\circ} 46'$  high, his Rays fall upon the smooth Surface of some spacious Lake, in the middle whereof a Spectator is plac'd; and if, at the same time there be Rain falling to which the Rays may be reflected from the Lake: 'Twill be the same as if the Sun shou'd shine below the Horizon, and the Line of View be extended upwards: Thus the Surface of the Cone wherein the coloured Drops are to be placed, will be wholly above the Surface of the Earth.

But since the upper Part will fall among the unbroken Clouds; and only the lower Part be found among the Drops of Rain, the Arch will appear inverted.

Eighthly, Why the Bow sometimes appears inclined? The accurate roundness of the Bow depending on its great Distance, which prevents us from judging of it exactly; if the Rain which exhibits it, chance to be much nearer, we shall see its irregularities; and if the Wind in that Case drive the Rain so as the higher Part be further from the Eye than the lower, the Bow will appear inclined.

Ninthly, Why the Legs of the Rainbow sometimes appear unequally distant? If the Rain terminate on the Side of the Spectator, in a Plane so inclined to the Line of Aspect as to make an acute Angle on the left Hand, and an obtuse Angle on the right; the Surface of the Cone which determines what Drops will appear, will fall upon them in such manner as that those on the left Hand, will appear further from the Eye than those on the right. For the Line of Aspect being Perpendicular to the Plane of the Bow, if you suppose two rectangular Triangles a Right and Left, the Cathetus of each to be Line of View, and the Base the Semidiameter of the Bow, inclined as above: 'Tis evident, since those Angles of the Triangles, next the Eye, must always be the same, (viz.  $43^{\circ}$  in the inner Bow) the Basis of the Right-hand Triangle will appear much longer than that of the Left.

#### Lunar RAIN-BOW.

The Moon, sometimes, also, exhibits the Phenomenon of an *Iris* or Bow; by the Refraction of her Rays in the Drops of Rain in the Night-time. See MOON.

Aristotle says, he was the first that ever observed it; and adds, that it never happens, i. e. is never visible, but at the Time of the Full-Moon; her Light at other times being too faint to affect the Sight, after two Refractions, and one Reflection. The



The *Lunar Iris* has all the Colours of the *Solar*, very distinct and pleasant; only faint, in Comparison of the other; both from the different intensity of the Rays, and the different Disposition of the Medium.

In that mention'd *Philosoph. Transact.* N<sup>o</sup>. 331. Mr. *Thoresby* observes, the largeness of the Arch was not so much less than that of the Sun, as the different Dimensions of their Bodies, and their Distances from the Earth should seem to require: But, as to its intireness and the Beauty of its Colour, it was admirable. It continued about 10 Minutes ere the interposition of a Cloud hinder'd its Observation.

*Marine RAIN-BOW.*

The *Marine* or *Sea-Bow*, is a Phænomenon sometimes observ'd in a much agitated Sea; when the Wind sweeping Part of the Tops of the Waves, carries them aloft; so that the Sun's Ray falling upon them, are refracted, &c. as in a common Shower; and Paint the Colours of the Bow.

*F. Bourzes*, in the *Philosoph. Transact.* observes, that the Colours of the *Marine Rainbow* are less lively, distinct, and of less duration than those of the common *Bow*; that there are scarce above two Colours distinguishable, a dark Yellow on the Side next the Sun, and a pale Green on the opposite Side.

But these Bows exceed as to Number, there being sometimes 20 or 30 seen together: They appear at Noon-Day, and in a Position opposite to that of the common Bow, i. e. the Concave Side is turn'd upwards, as, indeed, it's necessary it should be, from what we have shewn in accounting for the Phænomena of the *Solar Bow*.

To this Class of Bows may be referr'd a Kind of *white, colourless Rainbows*, which *Mentzoli*, and others, affirm to have seen at Noon-Day. *M. Mariotte* in his *IVth Essai de Physique*, says, these Bows are form'd in Mists, as the others are in Showers, and adds, that he has seen several both after Sun-rising, and in the Night.

The want of Colours he attributes to the Smallness of the Vapours which compose the Mist: We should rather Account for it from the exceeding Tenuity of the little *Vesiculae* of the Vapour; which being in effect only little watery Pellicles bloated with Air, the Rays of Light undergo but little Refraction in passing out of Air into them; too little to separate the differently coloured Rays, &c.

Hence the Rays are reflected from them, compounded as they came, that is, White. See REFRACTION.

*Robault* mentions colour'd Rainbows on the Grass; form'd by the Refractions of the Sun's Rays in the Morning Dew. *Trait. de Phys.*

RAISER, in Building, a Board set on-edge under the fore-side of a Step, Stair, &c. See STAIR, &c.

RAISING, in the Manage, one of the three Actions of a Horse's Legs; the other two being the *Stay* and the *Tread*; which see.

The *Raising*, or lifting up of his Leg in Caprioles, Curvets, &c. is esteem'd good, if he perform it hardily and with ease; not crossing his Legs, nor carrying his Feet too much out or in; yet bending his Knees as much as is needful.

RAISING-Pieces, in Architecture, are Pieces that lie under the Beams, on Brick or Timber, by the Side of the Houte.

RAISINS, Grapes prepared by drying them in the Sun, or in Ovens; to fit them for keeping, and for some medicinal Purposes. See CURRANTS.

Of these there are various Kinds: As *Raisins of Damascus*; thus call'd from the capital City of *Syria*, in the Neighbourhood whereof they are cultivated. They are much used in the Composition of *Pisans*, together with Jujubes and Dates; are brought flat and seeded, of the Size of the Thumb; whence 'tis easy judging of the extraordinary Bulk of the Grape, when fresh. Travellers tell us of Bunches weighing 25 Pounds. Their Taste is faintish and disagreeable.

*Raisins of the Sun*, a kind of Raisins brought from *Spain*, of a reddish or blueish Colour, seeded, very agreeable to eat.

There are various other Kinds, denominated from the Place where they grow, or the Kind of Grape, &c. as *Raisins of Calabria*, *Muscade Raisins*, &c.

RAITING, or RATING, the laying of Hemp, Flax, Timber, &c. when green, in a Pond or running Water, to season and dispose for future use. See SEASONING.

RAKE, of a Ship, is so much of her Hull as over-hangs at both Ends of her Keel.

That Part of it which is before, is called the *Rake forward on*; and that Part which is at the setting on of the Stern-Post, is call'd her *Rake aft-ward on*: When a Ship hath but a small *Rake* forward on, but is built with her Stern too streight up, she is called *Bluff-headed*.

*Rake* of the Rudder, is the hindermost Part of it. See RUDDER.

RAKING, of a Horse, is the drawing his Ordure with the Hand out of the Fundament, when he is Costive and cannot Dung. In order to this the Hand must be anointed with Sallet-Oyl or Butter.

RAKING-Table, among Architects, a Member hollowed in the Square of a Pedestal, or elsewhere. See CAVETTO, SCOTIA.

RALLYING, in War, the re-assembling, or calling together of Troops broken, routed, and put to flight.—A Horse is said to *Rake* when being *Shoulder-Splaid*, or having strain'd his Fore-Quarters, he goes so lame as to drag one of his Fore-Legs in a Circle.

RAM, in Astronomy. ? See ARIES.  
Battering RAM.

RAMADAN, a Sort of *Lent*, observ'd by the *Mahometans*; during which they fast the whole Day, with such extreme Superstition, that they dare not wash their Mouth, nor even swallow their Spit. See LENT and FASTING.

The Men indeed are allow'd to Bath themselves; but 'tis on Condition they don't plunge the Head under Water, lest some Drops enter by the Mouth or Ears, &c. But for the Women they are strictly forbid Bathing, for fear of taking in Water below.

To make amends, they Feast all the Night; and usually spend more this Month than in six others.

RAMAGE, a Term used for the Boughs or Branches of Trees. Hence,

*Ramage Hawk*, or *Falcon*, is one that is wild and coy, as having been long amidst the Boughs, preying for it self.

A *Falcon* retains this Name till he has left the *Eyrie*, being so called in *May*, *June*, *July*, and *August*. These are very rarely reclaimed.

RAMMER, an Instrument for driving down Stones or Piles into the Ground; or for the beating the Earth, and making it more solid for a Foundation. See FOUNDATION.

RAMMER, of a Gun, or Gun-Stick, a Rod or Staff used in charging a Gun; to drive home the Powder to the Breech, as also the Shot, and the Wad, which keeps the Shot from rolling out. See CHARGE.

The *Rammer* of a great Gun has a round Piece of Wood at one End; the other is usually rolled in a Piece of Sheep-Skin, fitted to the Bore of the Piece, in order to clear her after she has been discharged: Which they call *spunging the Piece*. See SPUNGE.

RAMIFICATION, the Production of Boughs or Branches; or of Figures resembling Branches. See BRANCH.

RAMIFICATIONS, in Anatomy, are the Divisions of the Arteries, Veins, and Nerves, arising from some common Trunk. See ARTERY, VEIN, and NERVE.

RAMPANT, in Heraldry, is applied to a Lion, Bear, Leopard, or other Beast, in a Posture of Climbing, or standing upright on his Hind-Legs, and rearing up his Fore-Feet.

It is different from *Saliant*, which is a Posture less erect. See SALIANT.

This Posture is to be specified in blazoning in all Animals, except the Lion and Griffin; it being their natural Situation.

The Term is *French*, and signifies literally, *creeping*.

RAMPART, in Fortification, a Mount or Mass of Earth, rais'd about the Body of a Place, to cover it from the great Shot; and form'd into Bastions, Curtains, &c. See FORTRESS, WALL, BASTION, &c.

Upon the *Rampart* the Soldiers continually keep Guard, and Pieces of Artillery are planted for the Defence of the Place.

Hence, to Shelter the Guard from the Enemies Shot, the out-side of the *Rampart* is built higher than the inside, i. e. a *Parapet* is rais'd upon it with a Platform. See PARAPET and PLATFORM.

Hence, also, Earth not being capable to be rais'd perpendicularly, like Stone; the *Rampart* is built with a *Talus* or Slope, both on the inner and outer-side. See TALUS.

The *Rampart* is sometime *lined*, i. e. fortified with a Stone Wall within-side; otherwise it has a *Berne*. See BERM.

'Tis incompass'd with a Moat or Ditch, out of which the Earth that forms the *Rampart* is dug. See DITCH.

The Height of the *Rampart* must not exceed three Fathom; this being sufficient to cover the Houses from the Battery of the Cannon: Neither ought its Thickness to be above 10 or 12, unless more Earth be taken out of the Ditch, than can be otherways bestowed.

The *Ramparts* of Half-Moons are the better for being low; that the small Fire of the Defendants may the better reach the Bottom of the Ditch: but yet it must be so high, as not to be commanded by the Covert-Way.

The Word is form'd from the *Spanish Amparo*, Defence, Covering.

RAMPART is also used in Civil Architecture, for the Space left void between the Wall of a City and the next Houses.

This is what the *Romans* call'd *Pomerium*, wherein it was forbid to build; and where they planted Rows of Trees, for the People to walk and amuse themselves under.

RAMUS, in Anatomy, &c. a Branch of a greater Vessel. See VESSEL.

*Ramus Anterior* is particularly used for a Branch of the subcutaneous Vein passing under the Muscles of the *Ulna*. *Ramus posterior*, a Branch of the same Vein running near the Elbow. See SUNCUTANEOUS.

RANCID, something mouldy, or musty; or that has contracted an ill Smell, by being kept close. See MOULDINESS.

The Word is particularly understood of old rusty Bacon. It comes from the *Latin Rancidus*, of *ranco*, to be rank.

RANDOM.



**RANDOM-Shot**, a Shot made when the Muzzle of a Gun is raised above the Horizontal Line, and is not design'd to shoot directly, or Point-blank. See GUNNERY.

The utmost *Random* of any Piece is about ten times as far as the Bullet will go Point-blank; and the Bullet will go farthest when the Piece is mounted to about 45 Degrees above the Level-Range. See RANGE.

The Distance of the *Random* is reckoned from the Platform to the Place where the Ball first grazes.

**RAN-FORCE-RING**, of a Gun, that which is next before the Touch-Hole. See ORDNANCE.

**RANGE**, in Gunnery, the Path of a Bullet, or the Line it describes from the Mouth of the Piece, to the Point where it lodges. See GUN, BULLET, &c.

If the Piece be laid in a Line Parallel to the Horizon, it is called the *Right or Level Range*. If it be mounted to 45 Degrees, the Ball is said to have the *utmost Range*; and so proportionably; all others between 00 Degrees, and 45°, being called the *intermediate Ranges*. See GUNNERY, PROJECTILE, &c.

**RANGER**, a sworn Officer of a Forest, or Park, whose Business it is to walk daily through his Charge, to drive back the wild Beasts out of the *Purlieus* or disforested Places, into the forest Lands; and to present all Trespasses done in his Bailiwick, at the next Court held for the Forest. See FOREST and PURLIEU.

The *Ranger* is made by the King's Letters, and has a Fee paid yearly out of the Exchequer, and certain Fee-Deer.

In the Charter *de Foresta*, mention is made of twelve Kind of *Rangers*.

**RANGES**, in a Ship, are two Pieces of Timber, going a-cross from Side to Side; one aloft, on the Fore-Castle, a little abaft the Fore-Mast; and the other in the Beak-head before the Wouldings of the Bow-sprit.

**RANGING**, in War, the disposing of Troops in a Condition proper for Engagement, or for Marching. The Army was *ranged* in Form of Battle to receive the Enemy; *ranged* in three Columns, for a March, &c.

In Building, the Side of a Work that runs straight, without breaking into Angles, is said to *range*, or *run range*.

**RANK**, a due Order; or a Place allotted a thing suitably to its Nature, Quality, or Merit. See ORDER.

Kings are Persons of the first *Rank* on Earth: In Cavalcades, Processions, &c. every Person is to observe his *Rank*. See PRECEDENCE.

**RANK**, in military Discipline, a Series or Row of Soldiers, placed Side by Side; a Number of which *Ranks* forms the Depth of the Squadron or Battalion, as a Number of *Files* does the Width. See FILE.

To *Close the Ranks*, is to bring the Men nearer; to *open*, to set them further a-part: To *double the Ranks*, is to throw two into the Space of one.

**RANK**, in respect of Ships. See RATE.

**RANT**, in the Drama, an extravagant Flight of Passion; overshooting Nature and Probability. See PROBABILITY.

*Lee's Tragedies* abound with *Rants*. The rankest, 'tis observ'd, frequently meet with Applause on the Stage.

We find Instances of *Rants*, even in our severest Poets. Such, e. gr. is that in the Beginning of *Ben. Johnson's Cataline*, where the Parricide speaking to *Rome*, says, *I'd plough up Rocks, steep as the Alps, in Dust; and lave the Tyrrhene Waters into Clouds; but I wou'd reach thy Head.*

**RANSOM**, a Sum of Money, paid for the Redemption of a Person out of Slavery; or for the Liberty of a Prisoner of War. See REDEMPTION.

In our Law-Books, *Ransom* is also used for a Sum paid for the pardoning of some notorious Crime. *Horn* makes this difference between *Ransom* and *Amerciament*, that *Ransom* is the Redemption of a Corporal Punishment. See AMERCIAMENT.

When one is to make a Fine, and *Ransom*, the *Ransom* shall be treble the Fine. *Crompt. Just.*

**RANULA**, in Medicine, a Tumour under the Tongue, which like a Ligament hinders a Child from speaking or sucking.

The *Ranula sub Lingua* is the same with what we otherwise call being *Tongue-tied*. See TONGUE.

The *Ranula* is usually caused by a short *Frenum* not permitting the Tongue to perform its proper Motions: At other Times, though rarely, there is a strong Concretion in that Part. Sometimes it is *oedematous*, at others *melicerous*, *scirrhus*, *black*, *livid*; in which Cases the Operation of Cutting is dangerous; and it grows to the Magnitude of a Bean or Chestnut.

If a short *vinculum* be the Cause, it is to be cut asunder with a Scalpar, and the Part gently touched with *Mell. Rosat.* and *Tinct. Myrrh*; being very careful not to cut the Arteries, Nerves, or Salival Glands in the Operation. See RANULARES.

**RANULARES**, or *RANINÆ VENÆ*, in Anatomy, two Veins under the Tongue, arising from the external Jugular, and running on either Side the *linea Mediana*. See TONGUE.

These Veins are opened with good Success in Quinzies.

They take their Denomination from a resemblance of their State to that of *little Frogs*, call'd in *Latin*, *Ranula*, because never out of Water.

**RAPACIOUS Animals**, in the general, are such as live upon Prey. See ANIMAL.

Naturalists divide Birds into *Rapacious*, *Carnivorous*, and *Frugivorous*. See BIRD.

The Characteristic Notes of Birds of Prey are; that they have a great Head, and a short Neck; hooked, strong, and sharp-pointed Beak and Talons, fitted for tearing of Flesh; strong and brawny Thighs, for striking down their Prey; a broad thick fleshy Tongue like that of a Human Creatures; 12 Feathers in their Train; and 24 Flag Feathers in each Wing. The two Appendices, or blind Guts, are always very short. See EAGLE, FALCON, HAWK, &c.

They have a membranous Stomach; and not a muscous one or a Gizzard, such as Birds have, that live on Grain.

They are very sharp-sighted; and gather not in Flocks, but generally speaking, are solitary; though Vultures will fly 50 or 60 in a Company.

**RAPE**, in Law, a *Ravishing*; or the having Carnal Knowledge of a Woman by Force, and against her Will.

If the Woman conceive the Law esteems it no *Rape*; from an Opinion that she cannot conceive unless she consent. *Cal. on Litt. lib. 2. cap. 11.*

This Offence is Felony in the Principal and his Aiders, by several Statutes; and the Criminal is excluded from the Benefit of his Clergy. See FELONY.

By the Civil Law, *C. de Raptu Virginum*, Ravishing is decreed Capital, unless the Woman, being a Maid, or Widow, may be married to the Ravisher. In *France* the Civil Constitution still obtains, and allows the Man to marry the Woman with her Consent.

By an Ordonnance 1639, the *Rape* of a Girl or a Boy are put on the same footing. *Fleta* observes, that by our Laws the Complaint must be made within forty Days, else the Woman may not be heard. *Lib. 3. Chap. 5.*

All Carnal Knowledge of a Maid before ten Years of Age, is deem'd by the Law Felony; *Stat. An. 8 Eliz. cap. 6.*

In *Bracton's Time*, the *Raptor* or *Ravisher*, was punished with the loss of his Eyes and Testicles, *Quia Colorem stupri Induxerunt.* 3 Inst. Fol. 60.

The Civilians make another Kind of *Rape*, call'd *Subornatio*, or *Rape of Subornation*, or *Seduction*; which is when a Person seduces, or entices a Maid to uncleanness, or even Marriage, and that by gentle Means; provided there be a considerable Disparity in Age or Condition between the Parties.

In this Case, the Father and Mother Intent their Action reciprocally for the *Crimen Raptus*, or *Subornationis*.

The *French Laws* make no difference between the *Rape* of Violence, and that of Sollicitation, or Subornation; they make both Capital.

This Kind of *Rape* our Laws call Ravishment. See RAVISHMENT.

**RAPE**, of the Forest, is a Trespass committed in the Forest by Violence. See FOREST.

This is mentioned in the Laws of *Henry I.* as one of the Crimes cognizable alone by the King.

**RAPE**, is also a Name given the Wood or Stalks of the Clusters of Grapes, when dried and freed from the Fruit.

The *Rape* is used in making Vinegar, serving to heat and sour the Wine: But 'tis first put into a Place to sour itself, before it is cast into the Vinegar Vessel; to which End, presently after the Vintage, it is carefully put up in Barrels, lest it take Air, otherwise it would heat it self, and be spotted: There is no other way of keeping *Rape*, hitherto discovered, but to fill the Vessel, wherein it is contain'd, with Wine or Vinegar. See VINEGAR.

**RAPR**, is also used for Part of a County, signifying as much as a *Hundred*. See HUNDRED.

Though, sometimes *Rape* is taken for a Division containing several Hundreds; thus *Suffex* is divided into six *Rapes*, viz. those of *Chichester*, *Arundel*, *Bramber*, *Lewis*, *Pevensey*, and *Hastings*; every one of which besides its Hundreds, has a Castle, River, and Forest belonging to it.

These Parts in other Counties, are called *Tithings*, *Lathes*, or *Wapentakes*. See TITHING, LATHE, &c.

**RAPIER**, a long, ordinary, old fashion'd cutting Sword, such as those wore by the common Soldiers. See SWORD.

Hence, to *take the Rapier*, is to enter in the Army.

The Word is form'd from the *Greek* *ραπίσην*, *cedere*, to smite, strike.

**RAPINE**, in Law. To take a thing in private against the Owner's Will, is properly *Theft*; but to take it openly, or by Violence, is *Rapine*. See ABACTIO.

RAPSODIST, { See } RHAPSODIST,  
RAPSODY, { See } RHAPSODY,

**RAPTU heredis**, a Writ laying for the taking away an Heir holding in Socage; of which there are two Sorts; one when the Heir is married, the other when not. See RAPR.

**RAPTURE**, *RAPTURA*, an Ecstasy, or Transport of Mind. See EXTRASY, ENTHUSIASM, RHAPSODY, &c.



**RARE**, in *Physicks*, a Body that is very porous, whose Parts are at great Distance from one another, and which contains but little Matter under a great deal of Bulk. See **RAREFACTION**; **BODY**, **PORE**.

In this Sense *Rare* stands opposed to *Dense*. See **DENSITY**. The Corpuscular Philosophers, viz. the *Epicureans*, *Gassendists*, *Newtonians*, &c. assert that Bodies are *rarer*, some than others, in virtue of a greater Quantity of Vacuity included between their Pores. The *Cartesians* hold, that a greater *rarity* only consists in a greater Quantity of *Materia Subtilis*, included in the Pores. Lastly, the *Peripateticks* contend, that *Rarity* is a new Quality superinduced upon a Body, without any Dependence, either on Vacuity, or subtle Matter. See **CARTESIAN**, &c.

**RAREFACTION**, in *Physicks*, the Action whereby a Body is render'd *Rare*; that is, whereby it comes to possess more room, or appear under a larger Bulk, without any Accession of new Matter. See **RARE**.

*Rarefaction* is opposed to *Condensation*. See **CONDENSATION**. In strictness, however, our more accurate Writers restrain *Rarefaction* to that Expansion of a Mass into a larger Bulk, which is effected by Means of Heat: All Expansion from other Causes they call *Dilatation*. See **HEAT** and **DILATATION**.

The *Cartesians* deny any such thing as absolute *Rarefaction*: *Extension*, with them, constituting the Essence of Matter, they are obliged to hold all *Extension* equally full. See **EXTENSION** and **PLENUM**.

Hence, they make *Rarefaction* to be no other than an Accession of fresh, subtle, and insensible Matter, which entering the Parts of a Body, sensibly distends them. See this disproved under **VACUUM**.

'Tis by *Rarefaction* that Gunpowder has its effects; and to the same Principle we owe our *Æolipiles*, *Thermometers*, &c. See **GUNPOWDER**, **THERMOMETER**, **ÆOLIPILE**, &c.

The Degree to which the Air is *rarefiable* exceeds all Imagination: *Mersennus*, long ago, by means of an intense Heat, found that Air might be rarified, so as to possess more than 70 times its former Space.

Mr. *Boyle* afterwards found, that Air, by its own Elasticity, and without the help of any Heat, would dilate itself so as to take up 9 times its former Space; then 31 times; then 60; then 150: at length, by many Degrees he found it would reach to 8000 times, then 10000, then 13679. See **ELASTICITY**.

Such is the *Rarefaction* of common Air, from its own Principle of Elasticity, and without any previous Condensation; but if it be compress'd, the same Author found its greatest Space when most rarified, is to its least when most condens'd, as 550000 to 1. See **COMPRESSION**.

Such an immense *Rarefaction*, Sir *Isaac Newton* shews, is inconceivable on any other Principle than that of a repelling Force inherent therein, whereby its Particles mutually fly from one another. See **ATTRACTION**, &c.

This repelling Force he observes is much more considerable in Air than in other Bodies, as being generated from the most fix'd Bodies, and that with much Difficulty, and scarce without Fermentation: Those Particles being always found to fly each other with the most Force, which when in Contact, cohere the most firmly. See **REPELLING-POWER**.

The Members of the *French Royal Academy* have bestowed a world of Attention on the different *Rarefactions*, or rather the different *Rarities* of the Air at different Heights. M. *Mariotte* established this as a Principle, from Experiments, that the different *Rarefactions* or Condensations of the Air follow the Proportion of the Weights wherewith 'tis press'd.

Hence, supposing the Mercury in the level of the Sea suspended to 28 Inches, which is the Weight of the whole Atmosphere; and that 60 Foot Height of Air are equivalent to a Line, or  $\frac{1}{12}$  of an Inch of Mercury; so that the Barometer at the Height of 60 Foot from the Sea, would fall a Line; 'tis easy finding what Height of Air would be equal to a Second, or any other Line of Mercury: For as 28 Inches of Mercury,  $\frac{1}{12}$  are to 28 Inches, so is the Height of 60 Foot of Air, to a fourth Term; which is the Height of Air corresponding to a second Line of Mercury.

And after the same manner may the Heights of Air corresponding to each Line be found; which will make a Geometrical Progression, the Sum whereof will be the whole Height of the Atmosphere. Of consequence a certain Part of that Sum will be the Height of a Mountain; at whose Top the Barometer shall have sunk a certain Quantity. See **MOUNTAIN**.

Mess. *Cassini* and *Maraldi*, upon measuring the Heights of several Mountains, found that this Progression of M. *Mariotte*, was defective; that it always gave the Height of the Mountains, and consequently the *Rarefactions*, less than they really were; and from some new Experiments M. *Amontons* found that the Principle will only hold in the mean *Rarefactions*, not in the Extremes. See **AIR**.

**RAREFACTIVES**, or **RAREFACIENTIA**, in Medicine, Remedies which open and enlarge the Pores of the Skin, to give an easy Vent to the Matter of Perspiration. See **PERSPIRATION**.

Such are Anise, Mallows, Pellitory, Camomile-Flowers, Linc-Seed, &c.

**RASANT**, in Fortification. *Rasant Flank*, or *Line*, is that Part of the Curtain, or Flank, whence the Shot exploded raze or glance along the Face of the opposite Bastion. See **FLANK**.

The Defence of the Bastion is *Rasant*. See **DEFENCE**.

**RASH**, in Medicine, an Eruption or Efflorescence upon the Skin, thrown out in Fevers or Surfeits. See **SURFEIT**, &c.

**RASP**, a sort of File. See **FILE**.

**RASPHUYS**, or *RASP-House*, a celebrated Work-house or House of Correction, at *Amsterdam*. See **WORK-HOUSE**.

**RASPATORY**, a Chirurgeons Instruments wherewith they scrape foul, carious, or fractured Bones.

**RASURE**, **RASEMENT**. See **ERASURE**.

**RATAFIA**, a fine spirituous Liquor, prepared from the Kernels, &c. of several Kinds of Fruits, particularly Cherries and Apricocks.

*Ratafia of Cherries* is prepared by bruising the Cherries, and putting them into a Vessel wherein Brandy has been kept; then adding to them the Kernels of the Cherries, with Strawberries, Sugar, Cinnamon, white Pepper, Nutmegs, Cloves; and to 20 Pound of Cherries, 10 Quarts of Brandy.

The Vessel is left open 10 or 12 Days, then stopp'd close, for two Months ere it be tapp'd.

*Ratafia of Apricocks* is prepared two ways; viz. either by boiling the Apricocks in white Wine, adding to the Liquor an equal Quantity of Brandy, with Sugar, Cinnamon, Mace, and the Kernels of the Apricocks; infusing the whole for 8 or 10 Days; then straining the Liquor, and putting it up for Use: Or, by infusing the Apricocks, cut in Pieces, in Brandy, for a Day or two; passing it through a straining Bag, and putting in the usual Ingredients.

**RATCH**, in Clock-Work, a sort of Wheel, which serves to lift up the Detents every Hour, and to make the Clock strike. See **CLOCK**.

**RATCHETS**, in a Watch, are the small Teeth at the Bottom of the Barrel, which stop it in winding up. See **WATCH**.

**RATE**, a Standard, or Proportion by which the Quantity or Value of a thing is adjusted. See **STANDARD**.

The Rates of Bread, &c. in *London*, are fix'd by Authority. See **ASSISE**.

The Rate of Interest, as now established by Law in *England*, is 4 per Cent. The Rate of Interest in *Italy* is 3 per Cent. In *Sweden* 6. In *France* 7. In *Spain* 10. In *Scotland* 10. In *Barbadoes* 10. In *Ireland* 12. In *Turky* 20. See **INTEREST**.

Low Rates of Interest advance the Prices of Land.

The Rates or Fares of Hackney-Coachmen, Chairmen, and Watermen, are fix'd by Act of Parliament, 14 Car. II. See **HACKNEY-COACH**, &c.

The Rates of Exchange, Factorship, &c. are different. See **EXCHANGE**, **FACTORAGE**, &c.

**RATE-TYTHE**. When Sheep, or other Cattle, are kept in a Parish for less time than a Year; the Owner must pay Tythe for them, *pro rata*, according to the Custom of the Place. See **TYTHE**.

**RATE**, of a Ship of War, is its Order, Degree, or Distinction, as to Magnitude, Burthen, &c. See **SHIP**, &c.

The Rate is usually accounted by the Length and Breadth of the Gun-Deck, the Number of Tuns, and the Number of Men and Guns the Vessel carries.

A First Rate Man of War has its Gun-Deck from 159 to 174 Feet in Length, and from 44 to 50 Foot Broad; contains from 1313, to 1882 Tuns; has from 706 to 800 Men; and carries from 96 to 110 Guns. See **NAVY**.

Second Rate Ships have their Gun-Decks from 153 to 165 Foot long; and from 41 to 46 broad; they contain from 1086 to 1482 Tuns; and carry from 524 to 640 Men; and from 84 to 90 Guns.

Third Rates have their Gun-Decks from 142 to 158 Foot in Length; from 37 to 42 Foot broad; they contain from 871 to 1262 Tuns; carry from 389 to 476 Men; and from 64 to 80 Guns.

Fourth Rates are in Length on the Gun-Deck, from 118 to 146 Foot; and from 29 to 38 broad; they contain from 448 to 915 Tuns; carry from 226 to 346 Men; and from 48 to 60 Guns.

Fifth Rates have their Gun-Decks from 100 to 120 Foot long; and from 29 to 31 broad; they contain from 259 to 542 Tuns; carry from 145 to 190 Men; and from 26 to 44 Guns.

Sixth Rates have their Gun-Decks from 87 to 95 Foot long; and from 22 to 25 Foot broad; they contain from 152 to 256 Tuns; carry from 50 to 110 Men; and from 16 to 24 Guns.

Note, The new-built Ships are much larger, as well as better than the old ones of the same Rate; whence the double Numbers all along; the larger of which express the Proportions of the new-built Ships, as the less those of the old ones.

For the Number of Vessels of each Rate in the *English* Fleet, see **NAVY**.

**RATEEN**, or **RATINE**, in Commerce, a thick woollen Stuff, cross'd; wove on a Loom with four Treddles, like Serges and other Stuffs that have the Crossing.

There are some *Ratines* dress'd and prepar'd like Cloths; others left simply in the Flair; and others where the Hair or Nap is friz'd.



*Ratines* are chiefly manufactured in *France, Holland, and Italy*; and are mostly used in Linings.

The Frize is a coarse *Ratine*; the Drugget a *Ratine* half Thread, half Wool.

**RATIFICATION**, an Act, approving of, and confirming something done by another, in our Name.

A Treaty of Peace is never sure till the Princes have *ratified* it. See **TREATY**.

All Procurator imports a promise of *Ratifying* and approving what is done by the Proxy or Procurator. After treating with a Procurator, Agent, Factor, &c. A *Ratification* is frequently necessary on the Part of his Principal.

**RATIFICATION** is particularly used in our Laws for the Confirmation of a Clerk in a Benefice, Prebend, &c. formerly given him by the Bishop, &c. where the right of Patronage is doubted to be in the King.

**RATIFICATION** is also used for an Act confirming something we our selves have done in our own Name. An Execution, by a Major, of an Act pass'd in his Minority, is equivalent to a *Ratification*.

**RATIO, REASON**, in Arithmetick and Geometry, that Relation of homogeneous things which determines the Quantity of one from the Quantity of another, without the intervention of any third. See **RELATION**.

The homogeneous things thus compared, we call *the Terms of the Ratio*; particularly, that referr'd to the other, we call the *Antecedent*; and that to which the other is referr'd, the *Consequent*. See **TERM**, &c.

Thus, when we consider one Quantity, by comparing it with another, to see what Magnitude it has in Comparison of that other; the Magnitude this Quantity is found to have in Comparison thereof is call'd the *Ratio, Reason*, of this Quantity to that; which some think would be better express'd by the Word *Comparison*. See **COMPARISON**.

*Euclid* defines *Ratio* by the *Habitude or Relation of Magnitudes of the same Kind in respect of Quantity*.—But this Definition is found defective; there being other Relations of Magnitudes which are constant, yet are not included in the Number of *Ratios*; such as that of the Right Sine, to the Sine of the Complement in Trigonometry.

*Hobbs* endeavour'd to amend *Euclid's* Definition of *Ratio*, but unhappily; for in defining it, as he does, by the *Relation of Magnitude to Magnitude*; his Definition has not only the same Defect with *Euclid's*, in not determining the particular Kind of Relation; but has this further, that it does not express the Kind of Magnitudes, which may have a *Ratio* to one another.

*Ratio* is frequently confounded with *Proportion*; yet ought they by all means to be distinguished, as very different things. *Proportion*, in effect, is an Identity, or Similitude of two *Ratios*. See **PROPORTION**.

Thus, if the Quantity A be triple the Quantity B; the Relation of A to B, *i. e.* of 3 to 1, is call'd the *Ratio* of A to B. If two other Quantities, C, D, have the same *Ratio* to one another that A and B have, *i. e.* be triple one another; this sameness of *Ratio* constitutes *Proportion*; and the four Quantities A : B :: C : D, are in *Proportion*, or *Proportional* to one another.

So that *Ratio* exists between two Terms, *Proportion* requires more.

There is a twofold *Comparison* of Numbers: By the first, we find how much they differ, *i. e.* by how many Units the Antecedent exceeds, or comes short of, the Consequent.

This Difference is call'd, the *Arithmetical Ratio*, or *Exponent* of the Arithmetical Relation or *Habitude* of the two Numbers. Thus if 5 and 7 be compared, their *Arithmetical Ratio* is 2.

By the second Comparison, we find how oft the Antecedent contains, or is contain'd in the Consequent; *i. e.* as before, what Part of the greater is equal to the less.

This *Ratio*, being common to all Quantity, may be call'd *Ratio* in the General, or, by way of Eminence. But it is usually called *Geometrical Ratio*; because express'd, in Geometry, by a Line, though it cannot be express'd by any Number.

*Wolffius*, better distinguishes *Ratio*, with regard to Quantity in the general, into *Rational*, and *Irrational*.

*Rational Ratio*, is that which is as one rational Number to another. *e. gr.* as 3 to 4. See **NUMBER**.

*Irrational Ratio*, is that which cannot be express'd by Rational Numbers.

Suppose, for an Illustration, two Quantities A and B; and let A be less than B. If A be subtracted as often as it can be, from B, *e. gr.* five times, there will either be left nothing or something. In the former Case A will be to B, as 1 to 5; that is, A is contain'd in B five times; or  $A = \frac{1}{5} B$ . The *Ratio*, here, therefore, is *rational*.

In the latter Case, either there is some Part, which being subtracted certain times from A, *e. gr.* three times, and likewise from B, *e. gr.* 7 times leaves nothing; or there is no such Part, if the former: A will be to B, as 3 to 7, or  $A = \frac{3}{7} B$ , and therefore the *Ratio, Rational*. If the latter, the *Ratio* of A to B, *i. e.* what Part A is of B, cannot be express'd by rational Numbers; nor any other way than either by Lines, or by infinite approaching Series. See **SERIES**.

The *Exponent* of a *Geometrical Ratio* is the Quotient arising from the Division of the Antecedent by the Consequent: Thus the Exponent of the *Ratio* of 3 to 2, is  $1 \frac{1}{2}$ ; that of the *Ratio* of 2 to 3, is  $\frac{2}{3}$ ; for when the less Term is the Antecedent, the *Ratio*, or rather the *Exponent*, is an improper Fraction. Hence the Fraction  $\frac{2}{3} = 3 : 4$ . If the Consequent be Unity, the Antecedent itself is the Exponent of the *Ratio*: Thus the Exponent of 4 to 1 is 4. See **EXPONENT**.

If two Quantities be compared without the Intervention of a third; either the one is equal to the other, or unequal: Hence, the *Ratio* is either of *Equality* or *Inequality*.

If the Terms of the *Ratio* be unequal, either the less is referr'd to the greater, or the greater to the less: That is, either the less to the greater, as a Part to the Whole; or the greater to the less as the Whole to a Part: The *Ratio* therefore determines how often the less is contain'd in the greater, or how often the greater contains the less, *i. e.* to what Part of the greater, the less is equal.

The *Ratio* the greater Term has to the less, *e. gr.* 6 to 3, is called the *Ratio of the greater Inequality*. The *Ratio* the less Term has to the greater, *e. gr.* 3 to 6, is called the *Ratio of the less Inequality*.

This *Ratio* corresponds to Quantity in the General, or is admitted of by all Kinds of Quantities, discrete or continued, Commensurable, or Incommensurable. Discrete Quantity, or Number does likewise admit of another *Ratio*.

If the less Term of a *Ratio* be an aliquot Part of the greater, the *Ratio* of the greater Inequality is said to be *Multiplex*, *Multiplex*: And the *Ratio* of the less Inequality, *Submultiplex*. See **MULTIPLE**.

Particularly, in the first Case, if the Exponent be 2, the *Ratio* is call'd *duple*; if 3, *triple*, &c. In the second Case, if the Exponent be  $\frac{1}{2}$ , the *Ratio* is call'd *Subduple*; if  $\frac{1}{3}$ , *Subtriple*, &c.

*E. gr.* 6 to 2 is in a *triple Ratio*; because 6 contains two thrice. On the contrary, 2 to 6 is in a *Subtriple Ratio*, because 2 is the third Part of 6. See **DUPLE**, **SUBDUPLE**, &c.

If the greater Term contain the less once; and over and above, an aliquot Part of the same; the *Ratio* of the greater Inequality is call'd *Superparticularis*; and the *Ratio* of the less *Subsuperparticularis*.

Particularly, in the first Case, if the Exponent be  $1 \frac{1}{2}$ , it is call'd *Sesquialterate*; if  $1 \frac{2}{3}$ , *Sesquitercia*, &c. In the other, if the Exponent be  $\frac{2}{3}$ , the *Ratio* is call'd *Subsesquialtera*; if  $\frac{2}{4}$ , *Subsesquitercia*, &c.

*E. gr.* 3 to 2 is in a *Sesquialterate Ratio*; 2 to 3 in a *Subsesquialterate*.

If the greater Term contain the less once, and over and above several aliquot Parts; the *Ratio* of the greater Inequality is call'd *Superpartiens*; that of the less Inequality, *Subsuperpartiens*.

Particularly, in the former Case, if the Exponent be  $1 \frac{1}{3}$ , the *Ratio* is call'd *Superbipartiens tertias*; if the Exponent be  $1 \frac{1}{4}$ , *Supertripartiens quartas*; if  $1 \frac{2}{5}$ , *Superquadrupartiens septimas*, &c. In the latter Case, if the Exponent be  $\frac{4}{3}$ , the *Ratio* is call'd *Subsuperbipartiens tertias*; if  $\frac{5}{4}$ , *Subsupertripartiens quartas*; if  $\frac{7}{5}$ , *Subsuperquadrupartiens septimas*.

*E. gr.* the *Ratio* of 5 to 3 is *Superbipartiens tertias*; that of 3 to 5, *Subsuperbipartiens tertias*.

If the greater Term contain the less several times; and, besides, some quota Part of the same; the *Ratio* of the greater Inequality is call'd *Multiplex Superparticularis*; and the *Ratio* of the less Inequality, *Submultiplex Subsuperparticularis*.

Particularly, in the former Case, if the Exponent be  $2 \frac{1}{2}$ , the *Ratio* is call'd, *Dupla Sesquialtera*; if  $3 \frac{1}{2}$ , *triple Sesquialtera*, &c. In the latter Case, if the Exponent be  $\frac{5}{2}$ , the *Ratio* is call'd *Subdupla Subsesquialtera*; if  $\frac{7}{3}$ , *Subtriple Subsesquialtera*, &c.

*E. gr.* the *Ratio* of 16 to 5 is *triple Sesquiquinta*; that of 4 to 9, *Subdupla Subsesquiquarta*.

Lastly, if the greater Term contain the less several times, and several aliquot Parts thereof besides; the *Ratio* of the greater Inequality is call'd *Multiplex Superpartiens*; that of the less Inequality, *Submultiplex Subsuperpartiens*.

Particularly, in the former Case, if the Exponent be  $2 \frac{2}{3}$ , the *Ratio* is call'd, *dupla Superbipartiens tertias*; if  $3 \frac{1}{3}$ , *triple Superbipartiens tertias*, &c. In the latter Case, if the Exponent be  $\frac{8}{3}$ , the *Ratio* is call'd *Subdupla Subsuperbipartiens tertias*; if  $\frac{10}{3}$ , *Subtriple Subsuperbipartiens tertias*, &c.

*E. gr.* the *Ratio* of 25 to 7 is *triple Superquadrupartiens septimas*; that of 3 to 8, *Subdupla Subsuperbipartiens tertias*.

These are the various Kinds of *Rational Ratios*; the Names whereof, though they occur but rarely among the modern Writers, (for in lieu thereof they use the smallest Terms of the *Ratios*, *e. gr.* for *duple*, 2 : 1, for *sesquialterate*, 3 : 2) yet are they absolutely necessary to such as converse with the ancient Authors.

*Clavius* observes, that the Exponents denominate the *Ratios* of the greater Inequality, both in Deed and Name; but the *Ratios* of the less Inequality, only in Deed, not in Name. But 'tis easy finding the Name in these; if you divide the Denominator of the Exponent, by the Numerator.



E. gr. if the Exponent be  $\frac{1}{2}$ , then  $5:8=1\frac{1}{2}$ ; whence it appears the Ratio is call'd *Subsupertripartiens quintas*.

As to Names of Irrational Ratio's, no-body ever attempted them.

Same, or *Identic Ratio's*, are those whose Antecedents have an equal respect to their Consequents, i. e. whose Antecedents divided by their Consequents, give equal Exponents. See IDENTITY.

And hence may the Identity of Irrational Ratio's be conceived.

Hence, First, as oft as the Antecedent of one Ratio contains its Consequent, or what ever Part it contains of its Consequent, so oft, or such Part of the other Consequent does the Antecedent of the other Ratio contain: Or, as oft as the Antecedent of the one is contain'd in its Consequent, so oft is the Antecedent of the other contain'd in its Consequent.

Secondly, If A be to B as C to D, then will  $A:B::C:D$ ; or  $A:B=C:D$ . The former of which is the usual Manner of representing the Identity of Ratio's; the latter is that of the excellent *Wolffius*; which has the Advantage of the former, in that the middle Character  $=$ , which denotes the sameness, is scientific, i. e. expresses the Relation of the thing represented, which the other  $::$  does not. See CHARACTER.

Two equal Ratio's, e. gr.  $B:C=D:E$ , we have already observed, do constitute a Proportion: Of two unequal Ratio's, e. gr.  $A:B$  and  $C:D$  we call  $A:B$  the Greater; if  $A:B > C:D$ ; on the contrary we call  $C:D$  the lesser, if  $C:D < A:B$ .

Hence, we express a greater and less Ratio thus. E. gr. 6 to 13 has a greater Ratio, than 5 to 4; for,  $6:3 (=2) > 5:4 (=1\frac{1}{4})$ . But 3 to 6 has a less Ratio than 4 to 5, for  $\frac{3}{2} = 1\frac{1}{2} < \frac{4}{5}$ .

The Ratio is said to be compounded of two or more other Ratio's, which the Factum of the Antecedents of two or more Ratio's has to the Factum of their Consequents. Thus 6 to 7 is in a Ratio compounded of 2 to 6, and 3 to 12.

Particularly, if it be compounded of two, it is call'd a Duplicate Ratio; if of three, a Triplicate; if of four, Quadruplicate; and in the general Multiply, if it be composed of several similar Ratio's. Thus  $48:3$  is a duplicate Ratio of  $4:1$  and  $12:3$ .

#### Properties of Ratio's of Quantities.

First, Ratio's similar to the same third, are also similar to one another; and those similar to Similar, are also similar to one another.

Secondly, If  $A:B=C:D$ ; then, inversely,  $B:A=D:C$ .

Thirdly, Similar Parts P and p have the same Ratio to Wholes T and t; and if the Wholes have the same Ratio, the Parts are similar.

Fourthly, If  $A:B=C:D$ ; then, alternately,  $A:C=B:D$ . And hence,  $A=C$ ; hence, also, if  $A:B=C:D$ ; and  $A:F=C:G$ ; we shall have  $B:F=D:G$ . Hence, again, if  $A:B=C:D$ ; and  $F:A=G:C$ ; we shall have  $F:B=G:D$ .

Fifthly, Those things which have the same Ratio to the same, or equal things, are equal: & vice versa.

Sixthly, If you multiply any Quantities, as A and B, by the same or equal Quantities; their Products D and E will be to each other as A and B.

Seventhly, If you divide any Quantities as A and B, by the same or equal Quantities, the Quotients F and G will be to each other as A and B.

Eighthly, The Exponent of a compound Ratio is equal to the Factum of the Exponents of the simple Ratio. See EXPONENT.

Ninthly, If you divide either the Antecedents, or the Consequents of similar Ratio's,  $A:B$  and  $C:D$  by the same E; in the former Case, the Quotients F and G will have the same Ratio to the Consequents B and D; in the latter, the Antecedents A and B will have the same Ratio to the Quotients H and K.

Tenthly, If there be several Quantities in the same continued Ratio A, B, C, D, E, &c. the first, A is to the third, C, in a duplicate Ratio, to the fourth, D, in a Triplicate, to the fifth E, in a Quadruplicate, &c. Ratio of the Ratio of the first, A, to second, B.

Eleventhly, If there be any Series of Quantities in the same Ratio, A, B, C, D, E, F, &c. the Ratio of the first, A, to the last, F, is compounded of the intermediate Ratio's,  $A:B, B:C, C:D, D:E, E:F, &c.$

Twelfthly, Ratio's compounded of Ratio's, whereof each is equal to another, are equal among themselves. Thus the Ratio's  $90:3=960:32$  are compounded of  $6:3=4:2$ , and  $3:1=12:4$ ; and  $5:1=20:4$ .

For other Properties of similar or equal Ratio's, see PROPORTION. Ratio, in our Law Writers, is used for a Reason, or Judgment given in a Cause. Hence, *ponere ad rationem*, is to Cite one to appear in Judgment, *Walsingh.* 88.

RATIO-STATUS, RAGIONE de Stato. See REASON of State.

RATIOCINATION, the Action of REASONING. See REASONING.

RATION, in the Forces, a Pittance, or Proportion of Am-

munition, Bread, Drink, or Forrage, distributed to each Soldier and Seaman for his daily Subsistence. See AMMUNITION, &c.

The Rations of Bread are regulated by Weight.—The Officers have several Rations according to their Quality, and the Number of Attendants they are obliged to keep.

The Horse have Rations of Hay and Oats, when they cannot go out to Forrage.—The Ship's Crews have their Rations of Bisket, Pulse, and Water, proportion'd according to their Stock.

When the Ration is augmented on Occasions of Rejoycing, it is call'd double Ration.

The usual Ration at Sea, particularly among the Portugese, &c. is a Pound and half of Bisket, a Pint of Wine, and a Quart of fresh Water per Day; And each Month an Arrobo or 31 Pound of Salt Meat, with some dried Fish and Onions.

Some write Racion, and borrow the Word from the Spanish Racion. But they both come from the Latin Ratio; and in some Parts of the Sea they call it Reason.

RATIONABILI parte bonorum, a Writ which lies for the Wife, against the Executors of her Husband denying her the third Part of her Husband's Goods, after Debts and Funeral Expences paid. See GOODS.

Fitzherbert quotes Magna Charta and Glanville, to prove that by the Common Law of England, the Goods of the deceased, his Debts first paid, should be divided into three Parts; whereof his Wife to have one, his Children a second, and the Executors a third. Adding, that this Writ lies as well for the Children, &c. as the Wife. But it seems only to obtain where the Custom of the Country makes for it.

RATIONABLES Expensæ, Reasonable Expences; the Commons in Parliament, as well as the Proctors of the Clergy in Convocation, were antiently allow'd Rationabiles Expensæ; that is, such Allowance as the King, considering the Prices of all things, shall judge meet to impose on the People, to pay for the Subsistence of their Representatives. See REPRESENTATIVE, &c.

This in the 17th of Edward II. was 10 Groats per Day for Knights, and 5 for Burgeses. Afterwards, 4 Shillings a Day for Knights, and 2 Shillings for Burgeses; which was then deem'd an ample Retribution both for Expences, for Labour, Attendance, Neglect of their own Affairs, &c. See PARLIAMENT.

RATIONABILIBUS divisis, is a Writ that lies where two Lords have the Seigneuries joining together, for him that finds his Waste encroached upon, within the Memory of Man, against the Encroacher; thereby to rectify the Bounds of the Seigneuries: in which Respect Fitzherbert calls it, in its own Nature, a Writ of Right.

RATIONAL, Reasonable. See REASON.

RATIONAL, or true Horizon, is that whose Plane is conceived to pass through the Centre of the Earth; and which therefore dividesthe Globe into two equal Portions, or Hemispheres. See HORIZON.

'Tis call'd the Rational Horizon, because only conceived by the Understanding; in opposition to the sensible or apparent Horizon, which is visible to the Eye. See SENSIBLE.

RATIONAL Quantity or Number, a Quantity or Number Commensurable to Unity. See NUMBER and UNITY.

Supposing any Quantity to be 1, there are infinite other Quantities, some whereof are Commensurable to it either simply, or in Power; these Euclid calls, Rational Quantities. See QUANTITY.

The rest, that are Incommensurable to 1, he calls, Irrational Quantities, or Surds. See SURD.

RATIONAL Integer, or whole Number, is that whereof Unity is an aliquot Part. See NUMBER and ALIQUOT Part.

RATIONAL fraction, or broken Number, is that equal to some aliquot Part or Parts of Unity. See FRACTION.

RATIONAL mixt Number, is that consisting of an Integer and a Fraction, or of Unity, and a broken Number.

Commensurable Quantities are defined by being to one another, as one Rational Number to another.

For Unity is an aliquot Part of Unity; and a Fraction has some aliquot Part common with Unity: In things, therefore, that are as a Rational to a Rational Number, either the one is an aliquot Part of the other, or there is some common aliquot Part of both: Therefore they are Commensurable. See COMMENSURABLE.

Hence, if a Rational Number be divided by a Rational, the Quotient is a Rational.

RATIONAL Ratio, is a Ratio whose Terms are Rational Quantities; or a Ratio which is as one Rational Number to another, e. gr. as 3 to 6. See RATIO.

The Exponent of a Rational Ratio is a Rational Quantity. See EXPONENT.

RATIONALE, an Account, or Solution of some Opinion, Action, Hypothesis, Phenomenon, or the like, on Principles of Reason.

Hence Rationale has become the Title of several Books; the most considerable is the *Rationale of the Divine Office*, by Guill. Durandus, a celebrated School Divine, Bishop of Mende; finish'd in 1286, as he himself tells us.

RATIONALE, is also an antient sacerdotal Vestment, wore by the High-Priest under the old Law; and call'd by the Hebrews *יורק*, *hufschon*;



*hoshen*; by the *Greeks* *hoshen*; by the *Latins* *Rationale* and *Pectorale*; and by the *English* Translators, *Breast-Plate*. See *PECTORALE*.

The *Rationale* was a Piece of embroider'd Stuff wore on the Breast, about a Span-square.

*Du Cange* describes it as a double Square of Thread of four Colours, interwove with Gold, and set with twelve precious Stones in four Rows, whereon were engraven the Names of the twelve Tribes; and fasten'd to the Shoulder by two Chains and two Hooks of Gold.

The Form of the *Rationale* was prescribed by God himself, *Exod.* 28.

The *Rationale* appears to have been also antiently wore by the Bishops under the new Law. But Authors are in doubt about its Form; some will have it resemble that of the *Jews*; others take it to be only the *Pallium*. See *PALLIUM*.

*RATIONALIS*, an Officer mentioned in several antient Inscriptions.

*Lampridius*, in the Life of *Alex. Severus*, uses *Rationalis* as synonymous with *Procurator*. See *PROCURATOR*.

The *Rationales* were Intendants, or Surveyors under the Emperors; and though *Lampridius* pretends they were first established by *Severus*; 'tis evident there were some under *Augustus*.

*RATIONIS* Os, in Anatomy, the Bone of the Fore-head, otherwise call'd *Os Frontis*. See *FRONTIS*.

*RATTLE*, among the Antients, was accounted a Musical Instrument, of the pulsatile Kind; call'd by the *Romans*, *Crepitaculum*. See *MUSICK*.

Mr. *Malcolm* takes the *Tintinnabulum*, *Crotalum*, and *Sistrum*, to have been only so many different Kinds of Rattles. See *CROTALUM*, *SISTRUM*, &c.

The Invention of the *Rattle* is ascribed to *Archytas*; whence *Aristotle* calls it, *αρχυτας πλατύνη*, *Archytas's Rattle*.

*Diogenianus* adds the Occasion of the Invention; viz. that having Children, he contriv'd this Instrument to prevent their tumbling other things about the House. So that how much soever some Instruments have chang'd their uses, the *Rattle* we are sure has preserv'd its.

*RATLINES*, or as the Seamen call them, *RATLINGS*; those Lines which make the Ladder Steps, to get up the Shrouds and Puttocks: Hence call'd the *Ratlins of the Shrouds*.

*RAVELIN*, in Fortification, was antiently a flat Bastion, placed in the middle of a Curtain. See *BASTION* and *CURTAIN*.

'Tis since made a detach'd Piece, composed only of two Faces, which make a Salient Angle, without any Flanks; and raised before the Curtains or Counterscarp, and commonly call'd an *Half-Moon*.

A *Ravelin* is a Triangular Work resembling the Point of a Bastion, with the Flanks cut off.

Its use before a Curtain, is to cover the opposite Flanks of the two next Bastions. 'Tis used also to cover a Bridge or a Gate; and is always placed without the Moat.

What the Engineers call a *Ravelin*, the Soldiers generally call a *Demi-Lune*, or *Half-Moon*. See *DEMI-LUNE*, &c.

There are also double *Ravelins*, which serve to defend each other. They are said to be *double* when they are join'd by a Curtain.

*RAVISHMENT de Gard*, is a Writ which lies for him who took from the Guardian, the Body of his Ward. See *GUARDIAN*, *WARD*, &c.

*RAVISHMENT*, in Law, an unlawful taking either a Woman, or an Heir in Ward.

Sometimes it is also used in the same Sense as *Rape*. See *RAPE*.

*RAY*, *RADIUS*, in Opticks, a Line of Light, propagated from a radiant Point, through an unresisting Medium. See *LIGHT*, *RADIANT*, &c.

Sir *Isaac Newton* defines *Rays* to be the least Parts of Light, whether successive in the same Line, or Cotemporary, in several Lines.

For, that Light consists of Parts of both Kinds, appears hence, that one may stop what comes this Moment in any Point, and let pass that which comes the next; and again, may stop what comes in this Point, and let pass that in the next. Now, the least Light, or Part of Light which may be thus stopp'd alone, he calls a *Ray of Light*.

If the Parts of a *Ray* of Light do all lie straight between the Radiant and the Eye, the *Ray* is said to be *direct*: The Laws and Properties whereof make the Subject of *Opticks*. See *OPTICKS*.

If any of them be turned out of the Direction, or bent in their Passage, the *Ray* is said to be *refracted*. See *REFRACTION*.

If it strike on the Surface of any Body, and be driven back, it is said to be *reflected*. See *REFLECTION*.

In each Case, the *Ray*, as it falls either directly on the Eye, or on the Point of Reflection, or of Refraction, is said to be *incident*. See *INCIDENCE*.

Again, if several *Rays* be propagated from the Radiant Equidistantly from one another, they are call'd *Parallel Rays*. See *PARALLEL*.

If they come inclining towards each other, they are call'd *Converging Rays*. See *CONVERGING*.

And if they go continually receding from each other, they are call'd *diverging Rays*. See *DIVERGING*.

'Tis from the Circumstances of *Rays*, that the several Kinds of Bodies are distinguished in Opticks. A Body, e. g. that diffuses its own Light, or emits *Rays* of its own, is call'd a *Lucid*, or *Luminous Body*. See *LUMINARY*.

If it only reflect *Rays* it receives from another, it is call'd an *illuminated Body*.

If it only transmit *Rays*, it is call'd a *transparent Body*. See *TRANSPARENCY*.

If it intercept the *Rays*, or refuse them Passage, it is call'd an *Opake Body*. See *OPACITY*.

Hence, no Body Radiates, i. e. emits *Rays*, unless it be either luminous, or *illuminated*. See *RADIATION*.

'Tis by means of *Rays* reflected from the several Points of illuminated Objects to the Eye, that they become *visible*; and that Vision is perform'd; whence such *Rays* are call'd *visual Rays*. See *VISUAL*.

In effect we find that any Point of an Object is seen in all Places to which a right Line may be drawn from that Point: But it is allow'd, nothing can be seen without Light, therefore every Point of an Object diffuses innumerable *Rays* every way.

Again, from other Experiments it appears that the Images of all Objects, whence right Lines may be drawn to the Eye, are painted in the Eye, behind the Crystallin, very small, but very distinct.

And lastly, from other Experiments, that each *Ray* carries with it the Species, or Image of the radiating Point: And that the several *Rays* emitted from the same Point are again united in one Point, by the Crystallin, and thus thrown on the *Retina*. See *VISION*.

'Tis the Spissitude, or closeness of the *Rays* emitted from a luminous Body, that constitutes the *Intenseness of the Light*. Yet the Direction wherein the *Rays* strike the Eye, have a good Sway. In effect, a Perpendicular *Ray*, striking with more force than an Oblique one, in the Ratio of the whole Sine to the Sine of the Angle of Obliquity, (as follows from the Laws of *Percussion*) a Perpendicular *Ray* will affect the Eye more vividly than an Oblique one in that Ratio.

If then the Spissitude of the *Rays* be equal, the Intensity will be as the Direction; if the Direction be the same, the Intenseness will be as the Spissitude. If both differ, the Intenseness will be in a Ratio compounded of the Direction and the Spissitude.

Hence, *First*, If Light be propagated in Parallel *Rays* thro' an unresisting Medium, its Intensity will not be varied by Distance.

*Secondly*, If Light be propagated in *diverging Rays*, thro' an unresisting Medium, its Intensity will decrease in a duplicate Ratio of the Distances from the radiant Point, reciprocally. See *QUALITY*.

*Thirdly*, If Light be propagated in *converging Rays* through an unresisting Medium; its Intensity will increase in a duplicate Ratio of the Distances from the Point of Concurrence, reciprocally.

*Fourthly*, If the Breadth of an illuminated Plane be to the Distance of the radiant Point, as 1 to 2000000, 'tis the same thing as if the *Rays* struck upon it Parallel: And hence, since the Diameter of the Pupil of the Eye, when largest, scarce exceeds  $\frac{1}{4}$  of an Inch; the *Rays* will fall upon it Parallel, as to Sense, at the Distance of 3860 *English* Feet, which is nearly 6 Furlongs. See *LIGHT*.

The effect of Concave Lenles, and Convex Mirrors, is to make Parallel *Rays* diverge; converging *Rays*, become Parallel; and diverging *Rays* to become more divergent. See *MIRROR*.

The effect of Convex Lenles, and Concave Mirrors, is to make Diverging *Rays* become Parallel; Parallel *Rays* become Convergent, and Converging *Rays* to Converge the more. See *LENS*.

The *Rays* of Light are not Homogeneous, or Similar, but differ in all the Properties we know of, viz. Refrangibility, Reflexibility, and Colour. See *REFRANGIBILITY*, &c.

'Tis probable from the different Refrangibility, that the other Differences have their Rise; at least it appears, that those *Rays* which agree or differ in this, do so in all the rest.

Thus from the different Sensations the differently disposed *Rays* excite in us, we call them, *red Rays*, *yellow Rays*, &c. See *COLOUR*.

The effect of the *Prism* is to separate and sort the different Kinds of *Rays*, which come blended promiscuously from the Sun; and to throw each Kind by it self, according to its Degree of Refrangibility and Colour, Red to Red, Blue to Blue, &c. See *PRISM*.

Besides, Refrangibility, and the other Properties of the *Rays* of Light already ascertain'd by Observation and Experiment, Sir *Isaac Newton* suspects they may have many more; particularly a Power of being inflected, or bent by the Action of distant Bodies; and those *Rays* which differ in Refrangibility, he conceives likewise to differ in this *Flexibility*.

In passing by the Edges and Sides of Bodies, he conceives that the *Rays* may be bent several times backwards and forwards, with a Motion like that of an Eel; and that those *Rays* which fall on



Bodies are reflected or refracted ere they arrive at the Bodies. And adds, that they may be refracted, reflected, and inflected; all on the same Principle; acting in different Circumstances. See INFLECTION, &c.

Again, Do not the Rays falling on the Bottom of the Eye excite Vibrations in the Retina; which being propagated along the Fibres of the Optic Nerve into the Brain cause Vision? And don't several sorts of Rays make Vibrations of several Bignesses, which excite Sensations of several Colours, much after the manner as the Vibrations of the Air, according to their several Bignesses, excite Sensations of several Sounds? See SOUND.

Particularly, don't the most refrangible Rays excite the shortest Vibrations to make a Sensation of a deep Violet; and the least Refrangibles, the largest, to make a Sensation of a deep Red? And the several intermediate Kinds of Rays, Vibrations of intermediate Bignesses, to make Sensations of the intermediate Colours?

And may not the Harmony and Discord of Colours arise from the Proportion of these Vibrations; as those of Sound depend on the Vibrations of the Air: For some Colours, if viewed together, are agreeable, as Gold and Indigo; others Disagreeable? See CONCORD and HARMONY.

Again, Have not the Rays of Light several Sides endued with several Original Properties?

Every Ray of Light has two opposite Sides, originally endued with a Property whereon the unusual Refraction of Island Crystal depends; and other two opposite Sides not endued with that Property. See CRYSTAL.

Lastly, Are not the Rays of Light very small Bodies emitted from shining Substances?

Such Bodies may have all the Conditions of Light: And there is that Action and re-action between transparent Bodies and Light, which very much resembles the attractive Force between other Bodies. Nothing more is required for the Production of all the various Colours, and all the Degrees of Refrangibility, but that the Rays of Light be Bodies of different Sizes; the least of which may make Violet, the weakest and darkest of the Colours, and be the most easily diverted by refracting Surfaces from its rectilinear Course; and the rest as they are bigger and bigger, may make the stronger and more lucid Colours, Blue, Green, Yellow, and Red. See VIOLET, RED, &c.

Nor is any thing more requisite for the putting of the Rays into Fits of easy Reflexion, and easy Transmission, than that they be small Bodies, which by Attraction, or some other Force, excite Vibration in the Bodies they act upon; which Vibrations being swifter than the Rays, overtake them successively, and agitate them to as by Degrees to increase and decrease their Velocity, and thereby put them into those Fits. See TRANSMISSION.

Lastly, The unusual Refraction of Island Crystal looks very much as if it were perform'd by some attractive Virtue lodg'd in certain Sides both of the Rays and the Crystal.

Common RAY, in Opticks, is sometimes used for a right Line drawn from the Point of the Concourse of the two Optical Axes, through the middle of the right Line which passes by the Centre of the Pupil of the Eye. See AXIS.

Principal RAY, in Perspective, is the Perpendicular Distance between the Eye, and the Vertical Plane, or Table, as some call it. See PERSPECTIVE.

Pyramid of RAYS. See PYRAMID.

Pencil of RAYS. See PENCIL.

RE, in Grammar, &c. an inseparable Particle, or Preposition, added at the beginning of Words, to vary, double, or otherwise modify and circumstance their Meaning.

The modificative *Re* was first introduced by the *Latins*, from whom it is borrow'd into most of the modern Tongues. *Priscian* derives it from *retro*, backwards; others rather derive *retro* from *re*; others derive *re* from the *Greek* *πίω*, easy, or from *πίω*, I flow.

The effect of the *Re* is various: usually it signifies *again*, *re-sum*, *re-joyn*, *re-sign*, *re-sume*, *re-course*, *re-bound*, *re-cite*, *re-hear*, *re-cognize*, *re-compare*, *re-double*, *re-linguish*, &c.

Sometimes it stands for *contra*, *advers*, *against*; as in *re-luctance*, *re-cumbent*, *re-cline*, &c.

Sometimes for *super*, *over*, as in *re-dundant*; sometimes for *supra*, *longe*, *far* as in *re-moving*, &c.

RE, in Musick. See NOTE.

REACH, in the Sea Language, the Distance between any two Points of Land that lie in a right Line one from another.

RE-ACTION, in Physicks, the Action whereby a Body acted upon, returns the Action, by a Reciprocal one, upon the Agent: See ACTION.

The *Peripateticks* define *Reaction* to be that which a passive Body returns upon the Agent, by means of some Quality contrary to that receiv'd therefrom; in the same Part wherewith the Agent acted; and at the same time: As if Water, while it is heating by the Fire, does, at the same time, cool the same Fire.

It was known, even in the Schools, that there is no Action in Nature, without *Reaction*; and it was a Maxim among them, *Omni Agenti, Agendo repatitur*.

But the Equality of the Actions was not known: Sir I. Newton establish'd it as one of the Laws of Nature, that *Action and Reaction are equal and contrary*; or that the mutual Actions of two Bodies striking one against another, are exactly equal, but in contrary Directions; or in other Words, that by the Action and Reaction of Bodies one on another, there are produced equal Changes in each; and those Changes are impress'd towards directly contrary Parts or Ways. See LAW of NATURE.

Thus, whatever Body presses or draws another, is equally press'd or drawn by it again: If any one press a Stone with his Finger, his Finger is much press'd by the Stone.

If a Horse by a Rope, &c. draw a Stone, the Horse will be equally drawn by the Stone; for the Rope being stretch'd both ways alike, endeavours to relax itself again, and by that means draws the Horse towards the Stone, and hinders the Progression of the Horse, as much as it forwards that of the Stone.

If any Body striking against another, doth by its Force any way change its Motion, it self will undergo the same Change in its own proper Motion, but towards a contrary Part; from the Reaction of that Body, and the Equality of its mutual Pression.

By these Actions are produced equal Changes, not indeed of the Velocities, but of the Motions of Bodies; (that is, of such Bodies as have no impediment any other way) for the Changes of their Velocities being made towards contrary Parts, (because the Motions are equally changed) are reciprocally Proportional to the Bodies themselves. See MOTION.

Some of the School Philosophers deny any such thing as *Reaction*, properly so call'd, at all; urging that Action arises only from the Ratio of the greater Inequality; that is, we are only to account for Action the Excess of the Action, or what the Agent does more than is returned by the Patient. But the Equality between Action and Reaction, sets aside the Exception.

READINGS, in Criticism. *Various Readings*, *Varia Lektionen*, are the different Manners of reading the Text of Authors in ancient Manuscripts: A Diversity arising from the Corruption of Time, or the Ignorance of Copists. See TEXT.

A great Part of the Business of the Critics lies in settling the Readings, by confronting the various Readings of the several Manuscripts, and considering the Agreement of the Words and Sense.

The various Readings in the Bible and Classic Authors, are almost innumerable.

READINGS are also used for a sort of Commentary or Gloss on a Law, Text, Passage, or the like; to shew the Sense an Author takes it in, and the Application he conceives to be made of it.

RE-AFFORESTED, is where a Forest having been disafforested, is again made a Forest; as the Forest of *Dean* was by an Act of Parliament in the 20th of King Charles II. See FOREST, AFFOREST, DISAFFOREST, &c.

RE-AGGRAVATION, in the *Romish* Ecclesiastical Law, the last Monitory, published after three Admonitions, and before the last Excommunication. See MONITORY.

E're they proceed to fulminate the last Excommunication, they publish an Aggravation, and *Reaggravation*. *Fewret* observes, that in France the Minister is not allow'd to come to *Reaggravation*, without the Permission of the Bishop or Official, as well as that of the Lay Judge. See EXCOMMUNICATION.

REAL, REALE, is applied to a Being that actually exists; in which Sense it coincides with *Actual*. See ACTUAL. See also REALITY.

*Real*, in Law, is oppos'd to *Personal*.

*Real Estate*, is that consisting in Lands, Tenements, &c. See PERSONAL.

*Real Action*, that whereby the Plaintiff lays Title to Land, &c. See ACTION.

Customs are said to be *real*; that is, they determine all Inheritances within their Extent; and none may dispose of them, but according to the Conditions allow'd by the Customs where they are situate.

REAL Horizon. See HORIZON.

REAL, or RIAL, or RYAL, a *Spanish* Silver Coin; being the eighth Part of the Piaster or Piece of Eight. See PIASTER.

The *Real* is equal to about Six-pence  $\frac{1}{2}$  Sterling. See COIN.

The Silver *Real* is equal to 34 Silver Maravedis; the Copper *Real* to 34 Copper Maravedis, which only amount to 18 Silver Maravedis. See MARAVEDIS.

There are also *Reals* of Eight, *Reals* of four, *Reals* of two, and half *Reals*.

The *Reals* of eight are the Piasters; those of four, half Piasters, &c.

Great Quantities of *Reals*, or *Reals* of Eight, are carried into the *East-Indies*, where they are divided into three Classes, and received on different Footings, viz. the *Old Real*, known by the *Chapelot* around, whereof 100 are Current for 215 *Roupias*; the *second*, known by the largeness of its Beads, Current at 212  $\frac{1}{2}$  *Roupias* for 100; and the *new* at 208  $\frac{1}{2}$  *Roupias* for 100 *Reals*. See ROUPIA.

The Word in the Original *Spanish*, *Reale*, signifies *Royal*. REALGAL, or RIALGAL, a Mineral; a kind of red Arsenic, differing from the common Arsenic, which is white; and



from Orpiment, which is yellow. See ARSENIC and ORPIMENT.

There are two Kinds of *Realgal*, the one *natural*, and the other *factitious*: The Natural is calcined in the Mine by the subterraneous Fires: The Factitious, which is the more common, is calcined by a common Fire.

Some able Druggists doubt whether there be any such thing as a native *Realgal*.

The *Realgal* is a violent Poison; yet less Caustic than the common Arsenic. 'Tis of some use in Chirurgery. See ARSENIC.

In the History of the *French Academy*, we have an account of a Cup brought to *Paris* by the Embassadors of *Siam*, and presented there, as a Remedy used by that People against all Diseases. Upon an Examination, which had like to have cost M. *Hombert* dear, he found it to be a kind of *Realgal*, or red Arsenic, more Caustic than ours.

Its use, among the *Siamese*, he takes to have been the same with that of *Regulus* of Antimony; viz. to give an emetic Quality to the Wine drunk out of it.

As the Dose of Medicines is much stronger in the torrid Zone than among us, (the Quantity of *Ipecacuanha*, e. gr. ordinarily taken by the *Indians*, being twenty times as great as that among us) 'tis very possible a Cup of *Realgal*, though enough to Poison an *European*, may prove a gentle Medicine to a *Siamese*.

REALISE, in Commerce, a Term little known in Trade before the Year 1719, when those immense Fortunes began to be made in *France* and *England*, by the Business of Actions or Stock.

By *Realising*, is meant the Precaution many of those who had gain'd most, took, to convert their Paper into real Effects, as Lands, Houses, rich Moveables, Jewels, Plate; but above all into Current Species.

A Precaution, capable of ruining the State; but which the *French* Regency had the Wisdom to frustrate, by taking proper Measures to have the Money, thus ready to be hoarded up, returned to the Publick.

REALISTS, a Sect of School Philosophers, form'd in opposition to the *Nominalists*. See NOMINALIST.

Under the *Realists* are included the *Scotists*, *Thomists*, and all, excepting the Followers of *Ocham*. See SCOTIST, THOMIST, &c.

Their distinguishing Tenet is, that Universals are *Realities*, and have an actual Existence, out of Idea and Imagination; or, as they express it in the School Language, *a parte rei*: Whereas the *Nominalists* contend that they exist only in the Mind; are only Ideas, or Manners of conceiving things. See UNIVERSAL.

Doc. Odon, or Oudart, a Native of *Orleans*, afterwards Abbot of *St. Martin de Tournay*, was the chief of the Sect of the *Realists*: He wrote three Books of Dialecticks; where, on the Principles of *Boethius*, and the Antients, he maintain'd that the Object of that Art is *Things*, not Words: Whence the Sect took its Rise and Name.

REALITY, REALITAS, in the Schools, a diminutive of *res*, thing; first used by the *Scotists* to denote a thing which may exist of it self, or which has a full and absolute Being of it self, and is not considered as a Part of any other: Yet a *Reality* is conceived as something less than *Res*; and accordingly every *Res* is supposed to contain a Number of *Realities*, which they otherwise call *Formalities*.

Thus, e. gr. in a Man, according to the Doctrine of the *Scotists*, are a Number of *Realities*, viz. a Substance, Life, Animal, and Reason.

Some distinguish *Reality* into Subjective and Objective.

REALM, a Kingdom; or a Country which gives its Head or Governour the Denomination of King. See KING, MONARCHY, GOVERNMENT, &c.

The Word is form'd of the *French*, *Royaume*, which denotes the same thing.

REAR, a Term frequently used in Composition, to denote something behind or backwards in respect of another; in opposition to *Van*, or *Vant*, before.

It is form'd by Corruption of the *French*, *Arriere*, signifying the same thing.

REAR, in a military Sense, is used for the Hind-part of an Army, &c. in opposition to the Front, or Face thereof. See FRONT.

REAR-Guard, is that Part of an Army which marches last; following the main Body, to hinder or stop Deserters. See GUARD.

REAR-Half-Files, are the three hindermost Ranks of a Battalion, when it is drawn up six Deep. See FILE.

REAR-Line, of an Army encamped, is the second Line; it lies about four or five hundred Yards Distant from the first Line, which is call'd the Reserve Line. See LINE.

REAR-Rank, is the last Rank of a Battallion, or Squadron, when drawn up. See RANK.

REAR-Admiral, is the Admiral of the third and last Squadron of the Royal Fleet. See ADMIRAL, SQUADRON, and FLEET.

REASON, RATIO, a Faculty, or Power of the Soul, whereby it distinguishes Good from Evil, Truth from Falshood. See SOUL and FACULTY.

*Reason* is, properly defined, that Principle, whereby, compa-

ring several Ideas together, we draw Consequences from the Relations they are found to have. See IDEA and RELATION.

Some of the later School Philosophers define Reason the Comprehension of many Principles which the Mind successively can conceive, and from which Conclusions may be drawn.

Others conceive Reason as no other than the Understanding of self, considered as it discourses. See UNDERSTANDING and DISCOURSE.

*Chauvin* thinks it is better defined, a very diffusive, innate Notion or Idea, arising from a continued Attention.

Reason, Mr. *Lock* observes, comprehends two distinct Faculties of the Mind, viz. *Sagacity*, whereby it finds intermediate Ideas; and *Illation*, whereby it so orders and disposes of them as to discover what Connection there is in each link of the Chain whereby the Extremes are held together, and thereby, as it were, draws into view the Truth sought for.

*Illation*, or Inference, consists in nothing but the Perception of the Connection there is between the Ideas in each Step of the Deduction, whereby the Mind comes to see either the certain Agreement or Disagreement of any two Ideas; as in Demonstration, in which it arrives at Knowledge: Or their probable Connection, on which it gives or withholds its Assent; as in Opinion. See KNOWLEDGE and OPINION.

Sense and Intuition reach but a little way: the greatest Part of our Knowledge depends upon Deductions and intermediate Ideas. In those Cases, where we must take Propositions for true, without being certain of their being so, we have need to find out, examine, and compare the Grounds of their Probability: In both Cases, the Faculty which finds out the Means, and rightly applies them to discover Certainty in the one, and Probability in the other, is that which we call Reason.

In Reason, therefore, we may consider four Degrees: First, The discovering and finding out of Proofs. See INVENTION.

Secondly, The regular and methodical Disposition of them, and laying them in such Order, as their Connection may be plainly perceived. See METHOD.

Thirdly, The perceiving of their Connection; and,

Fourthly, The making a right Conclusion. See CONCLUSION.

Reason fails us in several Instances: As, First, Where our Ideas fail. See IGNORANCE.

Secondly, It is often at a loss because of the Obscurity, Confusion, or Imperfection of the Ideas it is employed about: Thus, having no perfect Idea of the least Extension of Matter, nor of Infinity, we are at a loss about the Divisibility of Matter.

Thirdly, Our Reason is often at a stand because it perceives not those Ideas which would serve to shew the certain or probable Agreement or Disagreement of any two other Ideas.

Fourthly, Our Reason is often engaged in Absurdities and Difficulties, by proceeding upon false Principles, which being followed, lead Men into Contradictions to themselves, and Inconsistency in their own Thoughts.

Fifthly, Dubious Words, and uncertain Signs, often puzzle Men's Reason, and bring them to a Non-plus.

Though the deducing one Proposition from another, be a great Part of Reason, and that about which it is usually employed; yet the principal Act of Ratiocination is the finding the Agreement or Disagreement of two Ideas one with another, by the Intervention of a third. As a Man, by a Yard, finds two Houses to be of the same Length, which could not be brought together to measure their Equality by Juxta-Position.

Words have their Consequences as the Signs of such Ideas and Things agree, or disagree, with what they really are; but we observe it only by our Ideas. See REASONING.

Hence we may be able to form an Idea of that ordinary Distinction of things, into such as are according to, those that are above, and those contrary to Reason.

According to Reason, are such Propositions, whose Truth we can discover by examining and tracing those Ideas we have from Sensation and Reflection, and by natural Deduction find to be true or probable.

Above Reason are such Propositions, whose Truth or Probability we cannot by Reason derive from those Principles.

Contrary to Reason, are such Propositions as are inconsistent with, or irreconcilable to, our clear and distinct Ideas.

Thus the Existence of one God, is according to Reason: The Existence of more than one God, contrary to Reason: The Resurrection of the Body after Death, above Reason. Above Reason may be also taken in a double Sense; viz. above Probability, or above Certainty.

They who Dispute most against the Power and Privileges of Human Reason, do it because their own Reason persuades them to that Belief; and so, whether the Victory be on their or our Side, are equally defeated.

They seek to terrify us with the Example of many great Wits, who by following this *Ignis fatuus*, (to they call the only Pole Star God has given us to direct our Course by) have fallen into wild and ridiculous Opinions, and increas'd the Catalogues of Heresies to so great a Number: But these Men either followed not their Reason, but made it follow their Will; or first hood-wink'd it by Interest and Prejudice, and then bad it shew them the way; or were wanting in those necessary Diligences required for so doubtful



doubtful a Passage: Or, if, without any of these, the Weakness of their Understanding had deceived them, the Error is neither hurtful to themselves, nor would be to others, if this Doctrine of governing ourselves by our own Reason, and not by Authority and Example, were established. *Disc. concern. Hum. Reas.*

'Tis not the use of such Liberty, but the appropriating it to ourselves, that is the Cause of all the Disorders charged thereon: For those who lay a Restraint on other Men's Reason, have first made use of their own to settle them, and do make use of it in this very restraining of others. *Ibid.*

REASON, in Matters of Religion, it used in opposition to Faith. See FAITH.

This use of the Word, Mr. Lock takes to be in it self very improper: For Faith is nothing but a firm assent of the Mind; which if it be regulated, as it is our Duty, cannot be afforded to any thing but upon good Reason, and so cannot be opposite to it.

He that believes without having any Reason for believing, may be in love with his own Fancies, but neither seeks Truth, as he ought, nor pays the Obedience due to his Maker, who would have him use those discerning Faculties he has given him, to keep him out of Mistake and Error.—But since Reason and Faith are by some Men opposed, it may be necessary to consider them together.

Reason, as contradistinguished to Faith, is the Discovery of the Certainty or Probability of such Propositions, or Truths, which the Mind arrives at by Deductions made from such Ideas which it has got by the use of its natural Faculties, viz. by Sensation or Reflection.

Faith, on the other Hand, is the Assent to any Proposition upon the Credit of the Proposer, as coming immediately from God; which we call Revelation. See REVELATION.

REASON, in Logic, &c. a necessary or probable Argument; or an Answer to the Question, *cur est?* Why is it?

As, if it be enquired, Why do the Subject and Predicate agree? And it is answer'd, Because they are spoke of the same thing: This last Enunciation is a Reason.

Hence, say the Schoolmen, Because, *quia*, is the Sign or Character of a Reason, as *non*, no, of a Negation, and *est*, is, of an Affirmation.

They make three Kinds of Reasons, *Rationes*; viz. *Ratio ut*, that; *ne*, lest; and *quia*, because. For, answering to a Question, *cur*, Why; we begin with because, *quia*; as, Why do you study? that I may become learned; which is the *Ratio ut*. Again, Why do you study? Lest I should be ignorant; which is the *Ratio ne*. Lastly, Why is a Body tangible? Because Matter is impenetrable; which is the *Ratio quia*.

The Reason *ut*, properly denotes the End, or final Cause; the Reason *ne*, the Beginning; and accordingly the one is called the Beginning, the other the End; and the Reason *quia*, left, the only Reason, properly so called.

Among Metaphysicians, REASON is used in the same Sense with Essence; or that whereby any thing is what it is. See ESSENCE.

This is sometimes also call'd *formal Reason*, as representing the thing under that Form or Nature under which it is conceived.

REASON, in Mathematicks. See RATIO.

REASON of State, *Ratio Status*, in Matters of Policy, a Rule or Maxim, whether it be Good, or Evil, which may be of Service to the State.

Reason of State, is properly understood of something that is necessary and expedient for the Interest of the Government, but contrary to moral Honesty or Justice.

The Politicians have a long time disputed about the *Ratio Status*: Whether States and Governments are tied down to the same Laws of Morality with individual Persons; or whether things, otherwise Immoral and Unlawful, may not be practic'd on urgent Occasions, by way of Reason of State.

The Question is, Whether any thing be Unlawful, or prohibited a State, that is necessary to that State; or whether it be allow'd to preserve it self on any Terms.

The Phrase is borrowed from the *Italians*, who first used *Ragione di Stato* in this Sense.

REASONABLE Aid, a Duty which the Lord of the Fee anciently claimed of his Tenants holding in Knight's Service, or in Socage; towards the marrying his Daughter, or the making his eldest Son Knight. See SERVICE, SOCAGE, &c.

It is taken away by the Stat. 2. Car. II.

REASONING, RATIOCINATION, the exercise of that Faculty of the Mind call'd Reason; or Reason deduced into Discourse. See REASON.

The Agreement or Disagreement of two Ideas, does not appear from the bare Consideration of the Ideas themselves; unless some third be called in, and compared, either separately or conjointly therewith: The Act, then, whereby from Ideas thus disposed and compared, we judge this or that to be so or not so, is call'd Reasoning.

Robault defines a Reasoning to be a Judgment depending on some Antecedent Judgment: Thus; having judged that no even Number can be composed of five uneven Numbers; and that ten is an even Number; to conclude that ten cannot be divided into five uneven Parts, is a Ratiocination, or Reasoning.

This agrees with Father Mallebranche's Doctrine, one of the great Points whereof is, that Reasoning, on the Part of the Understanding, is only a meer Perceiving. See PERCEPTION.

That excellent Author endeavours to shew, that as to the Understanding, there is no Difference between a simple Perception, a Judgment, and a Reasoning, except in this, that the Understanding perceives a simple thing without any Relation to any thing else, by a simple Perception.

That it perceives the Relations between two or more things in a Judgment.

And, lastly, that it perceives the Relations that are between the Relations of things in a Reasoning. So that all the Operations of the Understanding are no more than meer Perceptions. See JUDGMENT.

Thus, e. gr. when we conclude, that 4 being less than 6; twice 2 being equal to 4, are of Consequence less than 6; we do no more than perceive the Relation of the Inequality between the Relation of twice two and four, and the Relation of 4 and 6. See UNDERSTANDING.

The manner of proceeding justly in Reasoning, so as to arrive with the greater safety at the Knowledge of Truth, makes what we call Method. See METHOD.

For the real Benefit of Logic to Reasoning, see LOGIC and SYLLOGISM.

RE-ATTACHMENT, in Law, a second Attachment of him who was formerly attach'd, and dismits'd the Court without Day; as by the not coming of the Justices, or the like Casualty. See ATTACHMENT.

Brook makes Reattachment either General or Special.

General is where a Man is reattached for his Appearance on all Writs of Assize lying against him: Special, for one or more certain Writs.

RE-BAPTISANTS, a Sect in Religion, who maintain that People irregularly baptized, are to be baptized a-fresh. See BAPTISM.

The Anabaptists are Rebaptisants; baptizing those at Maturity who had been before baptized in Childhood. See ANABAPTIST.

St. Cyprian, and Pope Stephen, had mighty Differences about the Rebaptisation of converted Hereticks.

Donatus was condemn'd at Rome in a Council, for having rebaptized some Persons who had fallen into Idolatry after their first Baptism. See DONATIST.

REBATE, REBATEMENT, Prompt Payment, in Commerce, a Term much used at Amsterdam, for a Discount or Abatement in the Price of certain Commodities, when the Buyer advances the Sum in hand for which he might have taken time. See DISCOUNT.

The Rebate is estimated by Months; and is only allowed for certain Kinds of Merchandizes, which, according to the Custom of Amsterdam, are,

|                       |                        |                            |
|-----------------------|------------------------|----------------------------|
| German Wools,         | } which are<br>fold at | } Months Rebate.           |
| Ashes, and Pot-Ashes, |                        |                            |
| Italian Silks,        |                        |                            |
| Sugars of Brasil,     |                        |                            |
| Spanish Wools,        |                        |                            |
|                       |                        | 15<br>18<br>33<br>18<br>21 |

That is, these Commodities are sold for ready Money; only deducting or rebating the Interest of the Money, which ought not to be paid till the End of 15, 18, &c. Months.

This Interest, call'd Rebate, is usually regulated on the Footing of 8 per Cent. per Annum.

The Reason of this Expedient is, that the Merchants having not always wherewithal to pay for their Goods in hand, by means of the Rebatement, such as have, will find their Account in it; and such as have not, will be engaged to discharge themselves as soon as possible, in hopes of the Discount.

REBATEMENT, in Heraldry, a Diminution or Abatement of the Dignity of the Figures or Bearings in a Coat of Arms. See ABATEMENT.

REBELLION, originally signified a second Resistance, or Rising of such as had been formerly overcome in Battle by the Romans and had yielded themselves to their Subjection.

'Tis now generally used for a traiterous taking up of Arms against the King, either by his own natural Subjects, or by those formerly subdued.

Rebel is sometimes also used in our antient Statutes, for a Person who wilfully breaks a Law; and sometimes for a Villain disobeying his Lord.

Commission of REBELLION. See COMMISSION.

REBELLIOUS Assembly, a gathering of twelve Persons, or more, intending or going about, practising, &c. unlawfully, and of their own Authority, to change any Laws of the Realm; or to destroy the Enclosure of any Park or Ground enclosed, Banks of Fish-Ponds, Pools, Conduits, &c. to the intent the same shall remain void, or to the Intent to have way in any of the said Grounds; or to destroy the Deer in any Park, Fish in Ponds, Conies in any Warren, Dove-Houses, &c. or to burn Stacks of Corn, or to abate Rents, or Prices of Victuals. See RIOT, &c.

REBOUND. See RECOIL.



**REBUS**, a Name-Device, as *Cambden* englishes it; or an enigmatical Representation of some Name, &c. by using a Figure, or Picture, instead of a Word, or Part of a Word. See **DEVISE**.

Such is that of the Gallant, mentioned by *Cambden*, who express'd his love to *Rose Hill*, by painting in the Border of his Gown, a *Rose*, a *Hill*, an *Eye*, a *Loaf*, and a *Wall*; which in the *Rebus-Style*, reads, *Rose Hill I love well*.

The *Picards* have the Honour of the Invention of this notable Kind of Wit; whence the *French*, to this Day, call it, *Rebus de Picardie*. *Cambden* adds, that the *English* first learnt it of them in the Reign of our *Henry III.* by means of the *Garrisons* we then had in *Calais*, *Guines*, and other Places bordering on *Picardy*.

Its Origin is by *Ménage*, &c. ascribed to the Priests of *Picardy*, who, it seems, antiently, in *Carnaval-Time*, used every Year to make certain Libels entitled, *de Rebus quæ geruntur*, being Raileries on what Intrigues and Transactions had passed about the City; wherein they made great use of such sort of Equivoques and Allusions, breaking and joining Words, and supplying them with Paintings.

Thus in the *Rebus* of *Picardy*, says *Morat*, a Horse-comb, *Etrille*; a Scythe, *faux*; and a Calf, *veau*, make *Etrille Fauveau*. But the Practice has been since prohibited, by reason of the Scandal.

*Cambden* tells us, the *Rebus* was in wonderful Esteem among our Forefathers; and that he was no-body who could not Hammer out of his Name an Invention by this Wit-craft, and Picture it accordingly.

The *Sieur Des Accords*, has made an ample Collection of the most famous *Rebus de Picardie*. And Mr. *Cambden* has done something of the same Kind in his Remains.—The Abbot of *Ramsay*, he tells us, engraved in his Seal a *Ram* in the *Sea*, with this Verse, to shew he was a right *Ram*, *Cujus signa gero, dux Gregis est ut ego*.—Sir *Thomas Caval*, (*Caval* signifying a Horse) engraved a galloping Horse in his Seal, with this limping Verse, *Thomæ Creditis, cum cernitis ejus Equum*.—So *John Eagleshead* bore in his Seal an Eagle's Head with this Motto around it, *Hoc Aquila Caput est; signumq; figura Johannis*.

*Bolton*, Prior of *St. Bartholomew's*, signified his Name by a Bolt thrust through a Tun.—*Isip*, Abbot of *Westminster*, a Man highly in favour with *Henry VII.* had a quadruple *Rebus* for his single Name; sometimes he set up in his Windows an *Eye* with a Slip of a Tree; and sometimes an *I* with the said Slip; in other Places one slipping Boughs in a Tree; and in others, one slipping from a Tree; with the Word, *I-slip*.

*Thomas*, Earl of *Arundel*, signified his Name by a Capital *A* in a *Rundle*. *Morton*, the great Archbishop of *Canterbury*, was contented to use *Mor* upon a *Tun*; and sometimes a Mulberry call'd *Morus*, out of a *Tun*. So *Luton*, *Thornton*, *Ashton*, &c. signified their Names with a *Lute*, a *Thorn*, an *Ash*, upon a *Tun*. So a *Hare* on a *Bottle* was the Device of *Harebottle*; a *Mag-pye* on a *Goat*, of *Pigot*; a *Hare* by a Sheaf of *Rye* in the *Sun*, of *Harrison*: *Lionel Duckett* used a *Lion* with an *L* on its Head, whereas it should have been on its Tail: Had the *Lion* been eating a *Duck*, says *Cambden*, it had been a rare Device, worth a *Duckat* or a *Duck-egg*. *Garret Dewes* signified his Name on his Sign by two Men in a *Garret* casting *Dewes* at Dice.

*Abel Drugger's* Device in *Ben. Johnson's* *Alchymist*, and *Jack of Newberry* in the *Spectator*, are known to every Body.—But the *Rebus* being once rais'd to the Signs, grew out of Fashion at Court, and has been left to hang there ever since: Indeed Attempts have been lately made for its Rescue by a Reverend Divine, in his *Tunbridge-Love-Letters*, &c.

Yet has the *Rebus* Antiquity on its Side, as having been in use in the pure *Augustan Age*: *Cicero*, in a Dedication to the Gods, inscribed *Marcus Tullius*, with a little Pease, call'd by the *Latins* *Cicer*; by us, *Chick-Pease*. And *Julius Caesar*, in some of his Coins, used an *Elephant*, call'd *Cæsar* in the *Mauritanian* Tongue. Add to these, that the two Mint Masters in that Age, *L. Aquilius Florus*, and *Voconius Vitulus*, used, the first a *Flower*, the second a *Calf*, on the Reverse of their Coins.

**REBUTTER**, in Law, when a Man grants Land secured to the use of himself and the Issue of his Body, to another in Fee, with Warranty; and the Donee leasing out the Land to a third Person for Years: The Heir of the Donor impleads the Tenant; alledging the Land was in Tail to him; and the Donee comes in, and by virtue of the Warranty made by the Donor, repels, or rebuts, the Heir: Because, though the Land was intailed to him, yet he is Heir to the Warrantor likewise.

This is call'd a *Rebutter*, from *Re*, and the *French*, *bouter*, to repel, or bar.

Again, if I grant to the Tenant to hold *Sine Impetitione Vastii*, and afterwards implead him for Waste; he may debar me of the Action, by shewing my Grant, which is likewise a *Rebutter*.

**RECAPITULATION**. See **PALINODY**.

**RECAPITULATION**, in Oratory, &c. a Part of the Peroration; call'd also, *Anacephaleosis*. See **PERORATION**, &c.

*Recapitulation* is a summary of the preceding Discourse; or a concise, transient Enumeration of the principal things insisted on at large therein; whereby the Force of the whole is collected into one View.

An Instance of this may be given in the Peroration of *Cicero's*

*Manilian*: *Quare cum Bellum ita Necessarium sit ut negligi non possit: Ita Magnum ut Accuratissime sit Administrandum; & cum ei Imperatorem præficere possitis, in quo sit excimia belli scientia, singulari Virtus, Clarissima auctoritas, egregia fortuna: Dubitabit, Quis?*

**RECAPTION**, in Law, a second Distress of one formerly distrain'd for the same Cause, and also during the Plea grounded on the former Distress. See **DISTRESS**.

It is also a Writ lying for the Party thus distrained.

**RECEIPT**, or **RECEIT**, in Commerce, an Acquittance or Discharge; or an Act whereby it appears a thing has been paid off, or acquitted.

Where the *Receit* is on the back of a Bill, &c. 'tis usually call'd an *Indorsement*. See **INDORSEMENT**.

Among *Mechanicks*, &c. *Receit* usually makes the second of the three Articles of an Account: The *Receit* contains the Moneys received; the two others the Expence, and the Return or Balance.

**RECEIPT**, or **RESCERT**, in Law, is an Admission, or receiving of any Person to plead his Right, in a Cause formerly commenced between two other Persons.

As if a Tenant for Life, or Years, brings an Action; he in the Reversion comes in, and prays to be received, to defend the Land, and to plead with the Demandant.

*Rescit* is also applied to an Admittance of Plea, though the Controversy be only between two.

*Rescit of Homage* is the Lord's receiving Homage of his Tenant, at his admission to the Land. See **HOMAGE**.

**RECEIPT** of the Exchequer, } See { **EXCHEQUER**.  
**RECEIPT**, in Medicine, } { **RECIPE**.

**RECEIVER**, a Vessel used in Chymistry, Pneumatics, &c. See **RECIPIENT**.

**RECEIVER**, is also an Officer; whereof there are various Kinds, denominated from the particular Matters they Receive, the Places where, or the Persons for whom, &c.

As, *Receiver of Rents*: *Receiver General* of the Customs. See **CUSTOMS**.

*Receiver* of the Fines, upon Original Writs in Chancery.

*Receiver General* of the Dutchy of *Lancaster*, who gathers all the Revenues and Fines of the Lands of the said Dutchy, all Forfeitures, Assessments, &c. See **DUTCHY**, &c.

**RECEIVER**, **RECEPTOR**, and **RECEPTATOR**, in Law, is used commonly in the Evil Part, for such as knowingly receive stolen Goods from Thieves, and conceal them.

The Crime is Felony, and the Punishment Transportation.

**RECEPTACULUM Chyli**, or *Cisterna Chyli*, or **RECEPTACULUM Commune**, in Anatomy, a Reservoir or Cavity near the left Kidney, into which the lacteal Vessels do all Discharge their Contents. See **LACTEAL**.

This Receiver, call'd from its Inventor *Ductus Pecquetus*, lies under the Emulgent and great Arteries, between the two Origins of the Diaphragma. Hither do the lacteal Vessels of the second Order, bring the Chyle after its being diluted, and render'd thinner by the Lympha in the Glands of the Mesentery. See **CHYLE** and **MESENTERY**.

In a Preparation of this Part, by filling it with Mercury, Mr. *Cowper* found it to consist of three several large Trunks; two of them more than a Quarter of an Inch in Diameter.

This Division is only observed in human Bodies, in whom Dr. *Drake* thinks its erect Position makes it necessary, in order to take off the Resistance which would arise from the Pressure of the Chyle and Lympha, were it contained in a single Receiver. In Quadrupeds, its Horizontal Position may make one Trunk sufficient.

Its *Osculi* or Exit is upwards in the Thorax, and thence call'd the *Thoracic Duct*. See **THORACIC DUCT**.

**RECEPTION**, **RECEPTIO**, Receiving, in Philosophy, the same with *Passion*, considered as opposed to *Action*.

The Schoolmen, however, make some Difference: The Receptive *Passion*, say they, does not tend to the destruction of the Being, as *Passion* does; but to the Perfection thereof: It is conceived as the Acquisition of some new Reality or Modification, by means of the *Action* of another.

**RECEPTION** is also popularly used for the manner of treating or entertaining a Person; and of the Solemnities and Ceremonies practiced on that Occasion.

The Queen of *Sweden's* Reception into *Paris* was one of the most Magnificent these Ages have seen. The Reception of Embassadors is usually done with a great deal of Pomp.

**RECEPTION**, is sometimes also used for the act of approving, accepting, and admitting a thing.

The Canon Law only binds where it is receiv'd: The Civil Law is received in some Countries.

The *French* would never receive the Council of *Trent*, the *Spanish* Inquisition, nor the Dogmata of the *Ultramouline* Canonists.

**RECEPTION**, in Astrology, is a Dignity befalling two Planets when they exchange Houses; e. gr. when the Sun arrives in Cancer, the House of the Moon; and the Moon, in her turn, arrives in the Sun's House.



The Term is also used when two Planets exchange Exaltation.

**RECESSION** of the Equinoxes. See PRECESSION.

**RECESSUS Imperii**, *Recess of the Empire*, a Phrase used in speaking of the Affairs of Germany; signifying a Collection of the Votes or Determinations of a Dyet. See DYET.

At the end of each Dyet, ere it breaks up, they gather together all their Resolutions, and reduce them into Writing; the Act which contains them they call *Recessus Imperii*, because made when on the Point of retiring.

There being, now, no Articles of Succours for the War against the Turks, which used to make the greatest Part of the *Recessus Imperii*; they are at a loss for Matter to fill them with, as well as for the Manner of drawing them up. *Mozambano*.

The Disorders in the Imperial Camber of *Spires* were so great, that in 1654, they made several Regulations therein; inserted in the *Recessus Imperii*. Id. See CHAMBER.

**RECHABITES**, a Kind of Religious Order among the ancient Jews, instituted by *Jonathan* the Son of *Rechab*; comprehending his Family and Posterity.

Their Founder prescribed them three things; First, Not to drink any Wine. Secondly, Not to build any Houses, but to dwell under Tents. Thirdly, Not to sow any Corn, or Plant any Vines.

The *Rechabites* observ'd these Rules with a great deal of strictness, as appears from *Jeremy xxxv. 6, &c.*

Whence, *St. Jerom* in his xiii Epistle to *Paulinus*, calls them *Monachi, Monks*.

This *Jonathan* lived under *Josias* King of *Judah*; his Father *Rechab*, from whom his Posterity were denominated, descended from *Raguel* or *Jethro*, Father-in-law to *Moses*, who was a *Cinean*, or of the Race of *Cin*; whence *Cinean* and *Rechabite*, are used as synonymous in Scripture.

**RECHANGE**, or **RE-EXCHANGE**, in Commerce, a second Payment of the Price of Exchange; or rather the Price of a New Exchange, due upon a Bill of Exchange that comes to be protested; and to be refunded the Bearer, by the Drawer, or Endorser. See EXCHANGE.

The Occasion of *Rechange* is, when the Bearer of a Bill of Exchange, after protesting it for want either of Acceptance, or of Payment, borrows Money on his own Promise, Bond, or the like; or draws a Bill of Exchange in the Place where the Payment was to be made, on the Person who furnished the first; for which he pays a second Exchange, which being added to the first already paid, the Drawer of the first Bill makes two Exchanges, properly call'd *Exchange* and *Re-exchange*. See BILL and PROTEST.

The Bearer of a protested Bill has a right to recover both the one and the other on the Drawer. Yet the simple Protestation the Bearer makes in the Act of Protest, that he will take up a like Sum at *Re-exchange*, for want of his Bill being accepted or paid; is not sufficient to entitle him to demand the Reimbursement of his *Rechange*; unless he make it appear he has actually taken up Money in the Place whereon the Bill was drawn.

Otherwise, the *Rechange* will only amount to the Restitution of the first Exchange, with Interest, the Expences of Protesting, and of the Journey, if there have been any.

If a Bill of Exchange, payable to the Bearer, or Order; come to be protested, the *Rechange* is only due upon the Drawer for the Place where the Remittance was made; not for those Places where it may have been negotiated; at least, the Drawer has a Right to be refunded his *Rechange* for those Places, by the Endorser.

Indeed the *Rechange* is due from the Drawer upon all Places where a Power of Negotiating is given by the Bill, and upon all others, if the Power of Negotiating be Indefinite.

Lastly, The Interest of the *Rechange*, of the Expences of the Protest, and the Journey, are only due from the Day of the Demand.

'Tis supposed to be the *Gibelins* driven out of *Italy* by the Faction of the *Guelphs*, and shelter'd at *Amsterdam*, who first established the Custom of *Rechange*, on pretence of the Interests, Damages, and Expences they underwent, when the Bills given them for the Effects they had been obliged to abandon, were not accepted, but came to be protested. See BILL of Exchange.

**RECHANGE** is also used at Sea for such Tackle as is kept in Reserve aboard the Ship, to serve in Case of failure of that already in Use. See TACKLE.

The *Levantine* use the Word *Respect*, or *Respit* in the same Sense.

**RECHARGE**, of a Fire-Arm, is a second loading or Charge. See CHARGE.

The *Recharge* should never be so deep as the first Charge, lest the Piece being over-heated should burst.

**RECHACING**, in Hunting, the driving back of the Deer, or other Beasts, into the Forests, Chaces, &c. which had straggled out into the Copses, or Thickets, &c. See FOREST, &c.

Antiently there were Offices of *Rechacers* of the Deer, bestowed by the King on Gentlemen, or old Hunters, with Salaries for the keeping of running Dogs, to *recharge* the Deer into

the Forests, and then to beat them off, without pursuing any farther. See PURLIEU.

**RECHEAT**, in Hunting, a Lesson which the Huntsman winds on the Horn, when the Hounds have lost their Game; to call them back from pursuing a Counter-scent.

**RECIPE**, in Medicine, a Prescription, or Formula of a Remedy, appointed to be administered to a Patient. See PRESCRIPTION.

'Tis thus call'd, because always beginning with the Word *Recipe*, Take; ordinarily express'd by *R*.

**RECIPIANGLE**, or **RECIPIENT-ANGLE**, a Mathematical Instrument, serving to take the Quantity of Angles; especially in the making of Plans of Fortifications.

The *Reciangle* is a popular Instrument among the *French*, but little known among us: 'Tis usually very simple; in Form of a Square, or rather a Bevel; consisting of two Arms or Branches, riveted together, and yet moveable, like a Sector on the Centre or Rivet.

To take an Angle with it, they lay the Centre of the Protractor to the Joint, and the Degrees cut by the Edge shew the Quantity of the Angle: Otherwise the Angle made by the two Rulers is drawn on Paper, and then measured with a Protractor.

Sometimes there is a Circle divided into Degrees, added over the Centre or Rivet, with an Index to shew the Degrees without a Protractor: At other times the under Branch is divided.

To measure a Salient Angle with any of the *Reciangles*, apply the Insides to the Lines that form the Angle; for a re-entering Angle, apply the outsides, &c.

**RECIPIENT**, **RECEIVER**, in Chymistry, an Appendage of an Alembic, Retort, &c. being a Vessel luted to the Beak thereof, to receive the Liquor rais'd in Distillation, &c. See ALEMBIC, RETORT, DISTILLATION, &c.

**RECIPIENT** is also Part of the Apparatus of an Air Pump; being a Glass Vessel placed a-top of the Plate, for the Air to be exhausted from. See AIR-PUMP.

To an Air-Pump belong various *Recipients*, of various Forms and Sizes, and serving for various Purposes. See VACUUM.

**RECIPROCAL**, something that is Mutual, or which is return'd equally on both Sides, or affects both Parties alike. See MUTUAL.

Thus, we say, the end of Human Society is to afford each other *reciprocal* Aid.—There are *reciprocal* Duties between the Prince and his Subjects, the Husband and Wife, &c.

The *Lex Talionis* establishes a kind of *Reciprocation* of Justice.

There is a *Reciprocal* Action between the Agent and Patient, See REACTION.

If two similar Triangles be cut by Parallel Lines, the Sections of the Lines will be Proportional; and *Reciprocally*, if the Sides be cut Proportionably, the Sides are similar. See TRIANGLE.

**RECIPROCAL**, in Logick, is applied to Terms which have the same Signification, or are convertible; as *Reasonable Animals*, and *Man*. See CONVERTIBLE and TERM.

The Schoolmen define *Reciprocation*, a Conversion of the several Terms in an Enunciation. And Terms are said to be converted in an Enunciation, when the Predicate is put in the Place of the Subject, and *reciprocally*, the Subject in that of the Predicate.

Thus Rationality and Risibility are said to *reciprocate*; for we say, equal a Rational is Risible; and a Risible is Rational.

**RECIPROCAL**, in Grammar, is applied to certain Verbs and Pronouns, in some of the Modern Languages; in regard of their turning or reflecting the Noun, or Person upon himself.

Thus the Pronoun-relative *himself*, refers *Cato* to *Cato's* self. See PRONOUN.

The *Abbe de Dangeau*, defines *Reciprocal Verbs* to be those whose Nominative is Plural, and denotes Persons acting mutually on one another: As, *Ces quatre hommes s'entrebattoient*; These four Men fought together. *Pierre & toi vous vous louez*; Peter and you Praise one another, &c.

*Reciprocal* Verbs are a Species of those which that Author calls *Pronominals*, and which he distinguishes into *Reciprocal* and *Identical*. See VERB.

**RECIPROCAL**, in Poetry, is applied to Verses which run the same both backwards and forwards; call'd also *Recurrents*. See RECURRENTS.

**RECIPROCAL Figures**, in Geometry, are such as have the Antecedents and Consequents of the same Ratio in both Figures; as *Tab. Geometry Fig. 22. Here,*

$$A : B :: C : D, \text{ Or,}$$

$$12 : 4 :: 9 : 3$$

That is, as much longer as the Side A, in the first Rectangle, is than B; so much deeper is the Side C in the second Rectangle, than the Side D in the first; and consequently, the Length of one is compensated by the Depth of the other.

Also as the Side A is  $\frac{1}{3}$  longer than the Side C, so the Side B is  $\frac{1}{3}$  longer than D: Wherefore the Rectangles must needs be equal. See RECTANGLE.

This is the Foundation of that Catholick Theorem; that the Rectangle of the Extremes must always be equal to that of the Means: And consequently, the Reason of the Rule of Three, or Golden Rule. See RULE.



For, suppose there was given any three Numbers, or Quantities, Geometrically Proportional, as A, B, and C; and that it were required to find a fourth, D, Proportional to them: Since  $A : B :: C : D$ , therefore  $AD = BC$ , and consequently,  $D = \frac{BC}{A}$ , that is, the fourth Term is equal to the Quotient of the second, multiplied by the third Term, divided by the first.

Or thus, in Numbers: Suppose given 12, 4, and 9; required a fourth Proportional. Now as  $12 : 4 :: 9 : Q$ . But  $12 Q = 4 \times 9 = 36$ . Therefore  $Q = \frac{4 \times 9}{12} = 3$ . by dividing both Sides by 12.

And hence it follows, that if any two Triangles, Parallelograms, Prisms, Parallelipeds, Pyramids, Cones, or Cylinders, have their Bases and Altitudes reciprocally Proportional, those two Figures or Solids are equal to one another; and *vice versa*, if they are equal, their Bases and Altitudes are reciprocally proportionable. See TRIANGLE, PARALLELOPIPED, PRISM, CONE, CYLINDER, &c.

RECIPROCAL Proportion, is when in four Numbers, the fourth is lesser than the second, by so much as the third is greater than the first; and *vice versa*.

This is the Foundation of the Inverse, or indirect Rule of Three, thus;  $4 : 10 : 8 : 5$ . See RULE.

There is great Use made of this Reciprocal Proportion, by Sir Isaac Newton, and others, in demonstrating the Laws of Motion. See PROPORTION.

RECITATION, the Act of reciting, or delivering a Discourse, either in the way of Narration, Rehearsal, Declamation, or Reading.

RECITATIVE Music, a Kind of Singing, that differs but little from ordinary Pronunciation; such as that wherein several Parts of the Liturgy are rehears'd in Cathedrals; or that wherein the Actors ordinarily deliver themselves on the Theatre, at the Opera, &c. See SINGING and OPERA.

The Italians value themselves on their Performance in the Recitative Way. The Recitatives, or Recitatives, in our Opera's, usually tire the Audience, by reason they don't understand the Language; the Songs make them amends. See SONG.

RECITATIVE Style, is the Way of Writing accommodated to this Sort of Music. See STYLE.

RECKONING, in Navigation, the estimating of the Quantity of the Ship's Way; or of the run between one Place and another. See SAILING and DISTANCE.

This is best perform'd by means of the Log-Line; the manner of applying which see under its proper Article, LOG-LINE.

Yet is this liable to great Irregularities.—*Vitruvius* advises an Axis to be pass'd through the Sides of the Ship, with two large Heads propending out of the Ship; wherein are to be included Wheels touching the Water, by whose Revolution the Space pass'd over in any given time, may be measured. The same has been lately recommended by *Snellius*: But there are few who have wrote of Navigation, but have shewn the insufficiency of this Method.

RECLAMING, or RECLAIMING, in our ancient Customs, the Action of a Lord pursuing, prosecuting, and recalling his Vassal, who had gone to live in another Place, without his Permission. See LORD and VASSAL.

RECLAIMING is also used in a similar Sense, for the demanding of a Person or thing to be delivered up, or surrender'd, to the Prince or State it properly belongs to; when, by any irregular Means it has come into the Possession of another. See CLAIM.

An Officer was sent to reclaim the Vessel seiz'd by the Algerines, contrary to the Terms of the Treaty of Peace. The Ministry reclaim'd the late Cashier of the South-Sea Company, who had refused himself in Flanders, but in vain.

RECLAIMING, in Falconry, is the Calling of a Hawk, or Bird of Prey back to the Fist.

The Sparrow-Hawk, Goffe-Hawk, &c. are reclaimed with the Voice: The Falcon only by shaking the Lure.

So that Luring, with regard to the Falcon, is more proper than Reclaiming. See LURE.

The Partridge is also said to reclaim her Young ones, when she calls them together upon their scattering too much.

RECLINATION, of a Plane in Dialling, the Number of Degrees which a Dial-Plane leans backwards, from an exactly upright or vertical Plane, i. e. from the Zenith. See PLANE.

The Reclination is easily found, by means of a Ruler and a Quadrant; for having drawn an Horizontal Line on the Plane, by a Level or Quadrant, and to it another Line at Right Angles; apply a Ruler, so that one End of it may hang over, or reach beyond the Plane: Then will a Quadrant, applied to the under Edge of the Ruler, shew the Degrees and Minutes of the Plane's Reclination; accounting from that Side of the Quadrant that is contiguous to the Edge of the Ruler. See DIAL, QUADRANT, &c.

RECLINER, in Dialling, or RECLINING Dial, is a Dial whose Plane reclines from the Perpendicular; i. e. leans from you when you stand before it. See RECLINATION.

When this Reclination is equal to the Height of the Pole, the Dial is said to be Equinoctial.

A Declining RECLINER, or Declining RECLINING Dial, is a Dial which neither stands perpendicularly, nor opposite to one of the Cardinal Points. See DECLINER.

RECLUSE, among Religious, a Person close shut up in a very narrow Cell of a Hermitage, or other Religious House; and cut off, not only from all Conversation of the World, but even of the House. See HERMIT, &c.

The Word is chiefly used for such as thus imprison themselves out of Devotion, to do Penance. It is sometimes also applied to incontinent Wives, whom their Husbands procure to be kept in a perpetual Prison in some Convent. See CONVENT, &c.

Recluses were antiently very numerous: They were, then, a kind of Solitaires who shut themselves up in some little Cell, with a Vow never to stir out of it. See SOLITARY.

None were admitted to this Oath till they had given sufficient Proofs of their Abstinence, and had leave from the Bishop or the Abbot of the Monastery where they were shut up; for the Cells of the Recluses were always to join to some Monastery.

The Prelates Permission being obtain'd, they were tried for a Year in the Monastery; out of which, during that time, they never stir'd. See PROBATION.

They were then admitted to their Vow of Stability, in the Church before the Bishop; which done, and the Recluse enter'd his little Cell, the Bishop set his Seal on the Door.

The Cell was to be very small, and very exactly closed. See CELL.

The Recluse was to have every thing within it necessary to life; and, even, if he were a Priest, an Oratory consecrated by the Bishop with a Window which look'd into the Church, through which he might make his Offerings at the Mass, hear the Singing, sing himself with the Communicants, and answer those who talk'd to him. But this Window was to have Curtains before it, both within-side and without; so that the Recluse might neither see nor be seen.

Indeed he was allow'd a little Garden in his Reclusion, to Plant a few Herbs, and take fresh Air: Adjoining to his Cell was that of his Disciples, which he was very rarely without, with a Window, through which they serv'd him with Necessaries, and received his Instructions.

When it was judg'd proper to have two or three Recluses together, their Cells were made Contiguous to each other, with Windows of Communication: If any Women would consult them, or confess to them, it was to be in the Church, and in the Face of all the World.

Where there were two or three Recluses together, they were never to hold any Conference, but on spiritual Matters; and to confess to each other: Where there was but one, he was to confess and examine himself.

If the Recluse fell sick, his Door was opened for People to come in and assist him; but he was not allowed to stir out on any Pretence whatever.

These Articles are extracted from a Rule, compiled for the Recluses, by *Grimlaic*, a Priest in the IXth Century.

There were also Women Recluses, who led the same Life, in Proportion. St. *Viborade* lived a Recluse at St. Gall, and was there martyriz'd by the Hungarians in 825. See RECLUSION.

RECLUSION, the State of a Recluse; or the Cell and other Appurtenances thereof. See RECLUSE.

F. *Helyot* gives a particular Account of the Ceremonies practiced at the Reclusion of a Woman, in that of the Mother of Cambray, Institutrix of the Order of the Presentation of Notre Dame.

A Cell being built for her in 1625, adjoining to the Church of St. Andrew in Thurnay: The Bishop waited for her early in the Morning at the Church Door. Upon her Arrival, prostrating her self at the Feet of that Prelate, he gave her his Benediction, conducted her to the Grand Altar; and, there blessing a Mantle, Veil, and Scapulary, put them on her, and gave her a new Name.

Having here made her Vow, and the Bishop having harangued the People in Praise of the new Recluse; he conducted her Processionally to her Reclusion, the Clergy all the way singing, *Veni Sponsa Christi*, &c.

Here the Bishop blessing her a-fresh, consecrated the Reclusion, and shut her up in perpetual Confinement.

RECOGNITION, an Acknowledgement.

The Word is particularly used in our Law Books, for the Title of the first Chapter of the Stat. 1 Jacob. I. whereby the Parliament acknowledged the Crown of England, after the Death of Queen Elizabeth, to have rightfully descended to King James.

RECOGNITION, in the Drama. See DISCOVERY.

RECOGNITIONE annullanda per vim & duritiam facta, is a Writ to the Justices of the Common-Bench, for sending a Record touching a Recognizance, which the Recognizor suggests to have been acknowledged by Force and hard dealing; that if it so appear it may be disannulled. See RECOGNIZANCE.



**RECOGNIZANCE**, or **RECOGNISANCE**, in Law; a Bond, or Obligation of Record, testifying the *Recognisor* to owe to the *Recognisee*, a certain Sum of Money. See **BOND**.

*Recognisee*, a certain Sum of Money. See **BOND**. It is *recognized*, or acknowledged in some Court of Record, or before some Judge, Master in Chancery, or Justice of the Peace.

Mere *Recognizances* are not sealed, but enrolled; and Executed, by force thereof, is of all the *Recognisor's* Goods or Chattels, (except draught Beasts, or Implements of Husbandry) and the Moiety of his Lands.

**RECOGNIZANCE** is also used in our antient Statutes, for the Verdict of the twelve Jurors impanelled upon an Assize; hence called *Recognitors*. See **JURY** and **VERDICT**.

**RECOGNISEE**, is he to whom one is bound in a *Recognizance*.

**RECOIL**, or **REBOUND**, the Resilition of a Body, chiefly a Fire-Arm; or the Motion whereby, upon Explosion, it starts backwards. See **GUN**, **MORTAR**, &c.

The greater the Charge, *ceteris paribus*, the greater the Recoil.—By an Experiment made by the Royal Society, and related in the *Philosoph. Transact.* it was found that Cannons charg'd to a certain Degree, throw the Ball from right to left of their own Direction; but that the Cannons themselves *Recoil* from left to right.

Some of the Gentlemen of the French Academy, doubting the Justness of the Observation, M. Cassini, the younger, undertook to repeat the Experiment; which he did by means of a Machine, as like that of England as he could; and that tried over, and over again.

The Result was, that the Ball, when the Gun had liberty to recoil, was always thrown to the right of the Point to which it was thrown when the Gun was fix'd without a possibility of rebounding; but then the Recoil was always made the same way, viz. to the right; and he never found that contrariety of Directions between the Ball and the Rebound, observ'd in the English Experiment.

**RECOLLECTION**, a Mode of Thinking, whereby those Ideas sought after by the Mind, are with Pain and Endeavour found, and brought again to view. See **MEMORY** and **REMINDANCE**. See also **MODE**, **THINKING**, &c.

**RECOLLECTS**, a Congregation of reform'd Franciscans, call'd also *Friars Minor of St. Francis, of the strict Observance*. See **FRANCISCAN**.

They were established about the Year 1530; when, some Religious of the Order of St. Francis, willing to keep his Rule to the Letter; Clement VII. gave them Houses, particularly *Tulles* in the *Limosin*, and *Murat* in *Auvergne*, whether they might retire, and receive such as were disposed to follow them.

The same Year he approved the Reform; and in 1584 it was carried into Italy. See **REFORM**.

**RECONCILIARI**, in our old Law-Books, &c. A Church is said *reconciliari*, to be *reconciled*, when 'tis consecrated afresh, after having been polluted or profaned; as by the Possession of Pagans or Hereticks, &c. See **CHURCH**, **CONSECRATION**, **PROFANATION**.

**RECONNOITRE**, in War, to go view and examine the State of things, in order to make a report thereof.

Thus we say, a Body of Horse were sent to *Reconnoitre* the Enemy's Army, to *Reconnoitre* their Camp, the Ground, the Condition of the Roads, Rivers, &c.

To *Reconnoitre* the Coasts, to *Reconnoitre* a Port, &c.

A General is to go *Reconnoitre* in Person, the Place to be besieged, in order to learn its Situation, Avenues, its Strengths and Weaknesses.

The Word is pure French, signifying literally, to know, recollect.

**RECONNOITRE** is also used at Sea: thus, to *Reconnoitre* a Vessel, a Fleet, &c. is to approach near enough to examine the Rate and Burthen of a Vessel, &c. the Force it may have a-board, what Nation it is of, &c.

To *Reconnoitre* a Land or Shore, is to observe its Situation, in order to find what Land it is.

**RECORD**, in Law, an authentick and uncontrollable Testimony of any thing in Writing, contain'd in Rolls of Parchment, and preserv'd in Courts; thence call'd Courts of *Record*. See **COURT**, **ROLL**, &c.

*Records* are said to be *vetustatis & veritatis, Vestigia*.

An Act committed to Writing in any of the King's Courts, during the Term wherein it is written, is alterable; being no *Record*; but that Term once ended, and the Act enrolled, it is a *Record*, and of that Credit, that admits no Alteration or Proof to the contrary.

Lawyers reckon three sorts of *Records*; viz. a Judicial *Record*, as Attainder, &c. a Ministerial *Record* upon Oath, as an Office of Inquisition found; and a *Record* made by Conveyance and Consent, as a Fine, or Deed enrolled, and the like.

**RECORD**, among Fowls: a Bird is said to *record*, when it begins to tune or sing within itself; to form its Notes, and dispose its Organs for singing.

The Cock Thrush is distinguished from the Hen in *recording*; the first being more loud and frequent than the second.

**RECORDARE facias**, a Writ directed to the Sheriff to re-

move a Cause depending in an inferiour Court, as Hundred-Court, County-Court, Court of antient Detmesne, &c. to the King's Bench, or Common-Pleas.

'Tis thus call'd because it commands the Sheriff to make a Record of the Proceedings either by himself or others; and then to send up the Cause.

**RECORDER**, a Person whom the Mayor, or other Magistrate of any City or Town Corporate having Jurisdiction or a Court of *Record* within their Precincts, does associate with him, for his better Direction in Matters of Justice, and Proceedings according to Law. See **MAYOR**, &c.

He is usually a Man versed and experienced in the Common Law.—In some Towns which have their particular Affizes within themselves, and no Mayor, the *Recorder* is the Judge.

**RECORDO & processu mittendis**, is a Writ to call a Record, together with the whole Proceedings in the Cause, out of an inferiour Court into the King's Court.

**RECOVERY**, in a Legal Sense, an obtaining of any thing by Judgment, or Trial at Law; answering to the *Evictio* of the Civilians.

There is a *true*, and a *feigned Recovery*.

*True Recovery* is an actual or real *Recovery* of any thing, or the value thereof, by Judgment; as if a Man sue for any Land, or other thing, and have a Verdict and Judgment for him.

A *feigned*, or *common Recovery*, call'd by the Civilians, *quedam fictio Juris*, is a certain Form or Course prescribed by Law to be observed for the better assuring of Lands and Tenements to us; the end and effect whereof is to discontinue and destroy Estates Tail, Remainders, and Reversions, and to bar the Intails thereof. See **TAIL**, **REMAINDER**, **REVERSION**, &c.

This *Recovery* is either with a *single*, or a *double Voucher*.

In the first there are three Parties required, the *Demandant*, the *Tenant*, and the *Vouchee*.

The *Demandant* is he who brings the Writ of Entry, and may be term'd the *Recoverer*: The *Tenant* is he against whom the Writ is brought, and may be call'd the *Recoveree*.

The *Vouchee* is he whom the *Tenant* Voucheth, or calls to Warrant for the Land in Demand. See **VOUCHEE**.

A *Recovery* with double Voucher, is where the *Tenant* voucheth one, who voucheth another, or the common *Vouchee*.

The Point is a little quaint and perplex'd: To explain it; Suppose a Man desirous to cut off an Estate Tail in Lands or Tenements, to the End that he may sell, give, or bequeath them; the first thing he does, is to cause a feign'd Writ of Entry, *sur Desseisin in le post*, to be brought, of the Lands of which he intends to dock the Entail; and in a feign'd Declaration thereupon made, pretends he was desseis'd by him, who by a feign'd Fine, or Deed of Bargain and Sale, is named and supposed to be *Tenant* of the Lands.

This feign'd *Tenant*, if it be a *single Recovery*, is made to appear and vouch a poor Fellow, the Bag-bearer of Writs of the *Custos brevium* of the Common-Pleas; (where alone these common *Recoveries* are allowed) who makes Default: Upon which a Judgment is by this Fiction enter'd, that the *Demandant* shall recover, and have a Writ of Seisin for the Possession of the Lands in Question; and that the *Tenant* shall recover the Value of the Lands against the Lands of the *Vouchee* Bag-bearer, (who has not a Foot) which is an imaginary Satisfaction for the Heir in Tail, though he is to be never the better for it.

By this means one *Edward Howes*, a Bag-bearer, and common *Vouchee*, in the space of 20 Years, pass'd, or suffer'd to be recover'd against him, a great Part of the Lands of England; obliging his own Lands to answer the Value of those recover'd against the Tenants or Remainders in Tail.

**RECOUPE**, in Law, to Rebate or Discount. See **REBATE** and **DISCOUNT**.

Thus, if a Man have ten Pounds issuing out of certain Lands, and he Disseises the *Tenant* of the Land; in an Assize brought by the Disseisee the Disseisor shall *recoupe* the Rent in the Damages.

The Word is pure French, form'd of *re* and *Couper*, to cut again.

A *RECOUPE* is also a quick, sharp Reply to a peremptory Demand. See **REPARTEE**.

**RECREANT**, in our old Law-Books, implies Cowardly, Faint-hearted. See **CHAMPION**, **COMBAT** and **DUEL**.

Hence, *Recreantise*. See **CRAVEN**.

*Recreant* was so reproachful a Word, that *Glanville* would not describe it.

*Recreantes Equi* is used by *Plata*, lib. 2. cap. 2. for dull, jaded Horses.

**RECREMENT**, *Fæces*, in Medicine, &c. some superfluous Matter mixed with other that is useful. See **FÆCES**.

Sometimes it also signifies such secreted Juices in the Body, as are afterwards of use to the OEconomy; as the Lympha, Gall, &c. which are thus called in contradistinction to *Excrements*, which are expell'd out of the Body, as of no further use. See **EXCREMENT**.

**RECRIMINATION**, a Posterior Accusation brought by the accused against his Accuser, upon the same Fact.

When



When two Parties have made their mutual Complaint at the same time; the Business is first, to determine who shall be the Accuser, and who the Accused; i. e. on whom shall fall the Re- crimination.

Re- crimination is of no force till the Criminal have been purged legally.

RECRUDESCENCE, in Medicine, is when a Disease that was gone off returns again. See RELAPSE.

RECTANGLE, in Geometry, call'd also Oblong, and long Square, a Quadrilateral rectangular Figure, (MLIK, Tab. Geome- try, Fig. 60.) whose opposite Sides (OP and NQ, as also ON and PQ) are equal. See QUADRILATERAL.

Or, a Rectangle is a Parallelogram, whose Sides are unequal, but Angles right. See PARALLELOGRAM.

To find the Area of a Rectangle; Measure the length of the Sides ML and MI; and multiply them by one another: The Product is the Area of the Rectangle.

Thus ML being 345 Foot, and MI = 123 Foot; the Area will be found 42435 Square Feet.

Hence, 1<sup>o</sup>, Rectangles are in a Ratio compounded of that of their Sides ML and IK; and therefore Rectangles which have the same Height, are to each other as their Bases; and those which have the same Base are to each other as their Heights.

2<sup>o</sup>, If therefore there be three Lines in continual Pro- portion, the Square of the middle one is equal to the Rectangle of the two Extremes. See PROPORTION.

3<sup>o</sup>, If there be four right Lines in continual Proportion; the Rectangle under the Extremes is equal to the Rectangle under the middle Terms.

4<sup>o</sup>, If from the same Point A Fig. 41. be drawn two Lines; one whereof, AD, is a Tangent to a Circle, the other a Secant AB: the Square of the Tangent AD, will be equal to the Rectangle under the Secant AB; and that Part of it without the Circle, AC.

5<sup>o</sup>, If two or more Secants Aa, AB, &c. be drawn from the same Point A; the Rectangles under their Wholes and their Parts without the Circle, will be equal. See SECANT.

6<sup>o</sup>, If two Chords intersect each other, the Rectangles un- der their Segments will be equal. See CHORD.

RECTANGLE, in Arithmetick, is the same with Product or Factum. See PRODUCT and MULTIPLICATION.

RECTANGLED, RIGHT-ANGLED, Triangle, is a Tri- angle, one of whose Angles is right, or equal to 90<sup>o</sup>.

There can be but one right Angle in a plain Triangle; there- fore a rectangled Triangle, cannot be equilateral. See TRI- ANGLE.

RECTANGULAR, in Geometry, is applied to Figures, and Solids which have one or more Angles, Right. See ANGLE, &c.

Such are Squares, Rectangles, and rectangled Triangles among plain Figures; Cubes, Parallelipeds, &c. among Solids. See FIGURE, SOLID, &c.

Solids are also said to be Rectangular with respect to their Si- tuation: Thus, if a Cone, Cylinder, &c. be Perpendicular to the Plane of the Horizon, 'tis called a Rectangular or Right Cone; a Rectangular, &c. Cylinder. See CONE and CYLIN- DER.

The Antients used the Phrase Rectangular Section of a Cone, to denote a Parabola; that Conic Section, before Apollonius, being only considered in a Cone whose Section by the Axis would be a Triangle, Right-angled at the Vertex.

Hence it was that Archimedes entitled his Book of the Qua- drature of the Parabola, by the Name of Rectanguli Coni Sectio.

RECTIFICATION, the Act of Rectifying, i. e. of correct- ing, remedying, or redressing some Defect or Error, in respect either of Nature, Art, or Morality. See RIGHT, RECTITUDE, &c.

The Word is compound of *rectus*, right, direct, and *fio*, I become.

RECTIFICATION, in Chymistry, is the repeating of a Distil- lation or Sublimation several times; in order to render the Sub- stance purer, finer, and freer from Aqueous, or Earthy Parts. See DISTILLATION.

Rectification is a reiterated Depuration of a distill'd Matter, e. gr. Brandy, Spirits, or Oils; by passing them again over their Fæces, or Marc, to render them more subtiler, and exalt their Virtues. See SPIRIT, &c.

Fix'd Salts are rectified by Calcination, Dissolution, or Phil- tration. See SALT, DISSOLUTION, &c.

Metals are rectified, i. e. refined, by the Conpel; Regulus's, by repeated Fusions, &c. See METAL, REFINING, &c.

RECTIFICATION, in Geometry, is the finding of a right Line equal to a Curve. See CURVE.

All we need to find the Quadrature of the Circle, is the Recti- fication of its Circumference; it being demonstrated, that the Area of a Circle is equal to a Rectangled Triangle, whose two Sides comprehending the right Angle, would be the Radius, and the right Line equal to the Circumference. See CIRCLE and CIRCUMFERENCE.

To rectify the Circle, therefore, is to Square it: Or rather, both the one and the other are impossible.

For the various Attempts to rectify the Circle, in order to the Quadrature, &c. See QUADRATURE of the Circle.

The Rectification of Curves is a Branch of the higher Geome- try; wherein the use of the new-invented Integral Calculus, or Inverse Method of Fluxions, is very conspicuous.—For, since a Curve Line may be conceived to consist of innumerable right Lines, infinitely small; if the Quantity of one of them be found by the differential Calculus; their Sum, found by the Integral Calculus, gives the length of the Curve.

Thus, since  $MR=dx$ ,  $mR=dy$ ; and therefore  $Mm$ , or the Element of the Curve will be  $\sqrt{dx^2+dy^2}$ .

If then, from the differential Equation, we substitute the Va- lue either of  $dx^2$ , or of  $dy^2$ , to the particular Curve, we shall have the particular Element, which being integrated, gives the length of the Curve. See CALCULUS, Integralis and FLUX- IONS.

Indeed, the Element of the Curve is sometimes more com- modiously determined from some particular Circumstances; in- stances whereof we shall give in the Rectification of the Parabola and Cycloid.

#### To rectify the Parabola.

For, the Parabola, we have  $adx=2ydy$

$$\frac{a^2 dx^2 = 4y^2 dy^2}{dx^2 = 4y^2 dy^2 : a^2}$$

$$\sqrt{(dx^2+dy^2)} = \sqrt{(dy^2+4y^2 dy^2 : a^2)} = dy \sqrt{(aa+4yy) : a^2}$$

To render this Element of the Curve Integrable; let it be re- solv'd into an Infinite Series; (See SERIES.) Then in a general Theorem,

$$n=2 \quad m=1 \quad P=a^2 \quad Q=4y^2 : a^2 \quad Pm : n=a=A$$

$$\frac{m}{n} AQ = \frac{1}{2} a \cdot 4y^2 : a^2 = -2y^2 : a = B.$$

$$\frac{m-n}{2n} BQ = -\frac{1}{4} \cdot \frac{2y^2}{a} \frac{4y^2}{a^2} = -\frac{2y^4}{a^3} = C$$

$$\frac{m-2n}{3n} CQ = -\frac{3}{2} \cdot \frac{2y^4}{a^3} \frac{4y^2}{a^2} = \frac{4y^6}{a^5} = D$$

$$\frac{m-3n}{4n} DQ = -\frac{4}{3} \cdot \frac{4y^6}{a^5} \frac{4y^2}{a^2} = -\frac{10y^8}{a^7}, \text{ \&c. in Infinitum.}$$

Wherefore,  $dy \sqrt{(aa+4yy) : a} = dy + \frac{2y^2 dy}{a^2} - \frac{2y^4 dy}{a^3} + \frac{4y^6 dy}{a^5} - \frac{10y^8 dy}{a^7}, \text{ \&c.}$  Whose Integral  $y + \frac{2y^3}{3a^2} - \frac{2y^5}{5a^3} + \frac{4y^7}{7a^5} - \frac{10y^9}{9a^7}, \text{ \&c.}$  Whose Infinite expresses the Parabolic Arch AM. Tab. Analysis, Fig. 18.

Hence, First, Let AC, and DC (Tab. Analysis, Fig. 19.) be the Conjugate Axes of an Equilateral Hyperbola; then will  $AC=DC=a$ . Suppose  $MP=2y$ ,  $QM=x$ ; then will  $AP=x-a$ ; consequently, by reason PB,  $AP=PM^2 : xx-aa=4yy$ , and hence  $xx=4yy+aa$ ; consequently,  $x=\sqrt{(4yy+aa)}$ . If then  $qm$  be supposed Infinitely near  $QM$ , we shall have  $Qq=dy$ ; and therefore the Element of the Area  $CQMA=d\sqrt{(aa+4yy)}$ . The Rectification of the Parabola therefore depends on the Qua- drature of the Hyperbolic Space.

It is to be here noted that all Integrations or Summations, are reduced to the Quadratures of Curves; in what Cases soever they be used, so that to have them perfect, the Rule laid down under Quadrature of the Logistic Curve, must be observed through- out.

#### To Rectify the Cycloid.

Let  $AQ=x$   $AB=1$ , then will  $Qq=MS=dx$ ,  $PQ=\sqrt{(x-xx)}$ . And hence:  $AP=\sqrt{x}=x^{\frac{1}{2}} : 2$ ; consequently by rea- son of the Similitude of the Triangles APQ and MmS,

$$AQ : AP :: MS : Mm$$

$$x : x^{\frac{1}{2}} :: 2 : dx : x-1 : 2dx.$$

Therefore  $Mm$  is the differential of the Cycloidal Arch AM  $=x^{\frac{1}{2}}-1 : 2dx$ . Wherefore  $\int x^{\frac{1}{2}}-1 : 2dx = 2x^{\frac{1}{2}}-2 = 2AP$  is the Arch AM.

The Rectification of Curves Mr. de Moivre shews may be ob- tain'd by considering the Fluxion of the Curve as an Hypothe- nuse of a Rectangular Triangle, whose Sides are the Fluxions of the Ordinate and Abscissa; Care being taken in the Expression of this Hypothenuse, that only one of the Fluxions be remaining, as also only one of the indeterminate Quantities, viz. that whose Fluxion is retained; an Example will render this clear.

The Right Sine CB (Fig. 20.) being given, to find the Arch AC.—Let  $AB=x$ .  $CB=y$ .  $OA=r$ . CE the Fluxion of the Ab- scissa, ED the Fluxion of the Ordinate, CD the Fluxion of the Arch CA. From the Property of the Circle  $axx-xx=yy$ , whence  $2rx-2xx=2ydy$ , and therefore  $\dot{x}=y\dot{y}$ ; But  $\dot{C}D = \dot{y}y + \dot{x}x = \dot{y}y + r\dot{y} - x\dot{y} = \dot{y}y + \frac{y^2 \dot{y}}{r-2xx+xx} + \frac{y^2 \dot{y}}{r-yy} = \frac{r\dot{y}}{\sqrt{r^2-yy}}$  therefore  $CD = \frac{r\dot{y}}{\sqrt{r^2-yy}} = \frac{1}{\sqrt{r^2-yy}} + r\dot{y} = r\dot{y} + \frac{r\dot{y}}{\sqrt{r^2-yy}}$

And consequently, if  $rr-yy$  be thrown into an Infinite Series, and the several Members of it be multiplied into  $r\dot{y}$ , and then the



Quantity of each be taken, we shall have the Length of the Arch AC.

**RECTIFIED Spirits, &c.** are such as have undergone the Operation of Rectification, or have been distill'd over and over, to separate from them any heterogeneous Matter, which might have arisen with them in the former Distillations. See RECTIFICATION.

Hence we say, *Spirit of Wine twice rectified, thrice rectified, &c.* See SPIRIT.

'Tis the Rectification that makes the Difference between Brandy and rectified Spirits of Wine. See BRANDY.

**RECTIFIER**, in Navigation, is an Instrument used for determining the Variation of the Compass, in order to rectify the Ship's Course, &c. See VARIATION and COURSE.

It consists of two Circles, either laid upon, or let into one another, and so fastened together in their Centres that they represent two Compasses, the one fixed, the other moveable; each divided into 32 Points of the Compass, and 360 Degrees, and numbered both ways, from the North and the South, ending at the East and West in 90 Degrees.

The fixed Compass represents the Horizon, in which the North, and all the other Points are liable to Variation.

In the Centre of the moveable Compass is fastened a Silk Thread, long enough to reach the outside of the fixed Compass. But if the Instrument be made of Wood, an Index is used instead of the Thread. See COMPASS.

**RECTIFYING of Curves, &c.** See RECTIFICATION.

**RECTIFYING of the Globe, or Sphere**, is a previous adjusting and preparing of the Globe or Sphere, for the Solution of Problems, &c.

'Tis done by bringing the Sun's Place in the Ecliptic on the Globe, to the Graduated Side of the Brass Meridian; elevating the Pole above the Horizon, as much as is the Latitude of the Place; fitting the Hour Index exactly to twelve at Noon; and screwing the Quadrant of Altitude, (if there be Occasion) to the Zenith.

All this is comprehended under the Term, *Rectify the Globe*.

When this is done, the Celestial Globe represents the true Position of the Heavens, for the Noon of that Day it is rectified for. See GLOBE and SPHERE.

**RECTILINEAR, right-lined**, in Geometry, is applied to Figures whose Perimeter consists of right Lines. See FIGURE, PERIMETER LINE, &c.

**RECTITUDE, RECTITUDO, RECTUM**, in Matters of Philosophy, refers either to the act of judging, or of willing; and therefore whatever comes under the Denomination of *Rectitude*, is either what is true, or what is good: These being the only Objects about which the Mind exercises its two Faculties of Judging and Willing. See TRUTH and GOOD.

The *Rectitude of the Mind*, considered as it *Judges*, i. e. of the Faculty of Judgment, consists in its Agreement and Conformity to the Nature and Reason of things; in its determining and deciding about them, according to what their Constitutions, Properties, Uses, &c. really are. See JUDGMENT. See also LOGIC, &c.

The *Rectitude of the Mind*, considered as it *will*, call'd also *Moral Rectitude*, or *Uprightness*, consists in the choosing and pursuing of those things which the Mind, upon due Inquiry and Attention, clearly perceives to be Good; and avoiding those that are Evil. See WILL.

**RECTITUDINES**, in Law, Rights or legal Dues, belonging either to God or Man.

**RECTO**, in Law, a Writ usually call'd a *Writ of Right*; of such a Nature, as that whereas other Writs in real Actions are only to recover the Possession of the Lands, &c. in Question, lost by the Plaintiff or his Ancestor; This Aims to recover both the Seisin thus lost, and the Property of the thing; so that both Rights are here pleaded together; that of Property, and that of Possession. See PROPERTY and POSSESSION.

If a Man lose his Cause upon this Writ, he is without all Remedy. See RIGHT.

There are two Kinds of this Writ: *Rectum patens*, a Writ of right Patent; and *Rectum clausum*, a Writ of Right Close.

The first is so called, because sent open.—It lies only for him that hath Fee-simple in the Lands sued for.

The Writ of Right Close, is directed to the Lord of antient Demesne, and lies for those who hold their Lands and Tenements by Charter, in Fee-simple, or in Fee-Tail, or for Term of Life, or in Dower, if they be ejected out of such Lands or disseis'd.

In such Case a Man or his Heirs may sue out the Writ of Right Close, directed to the Lord of antient Demesne, commanding him to do him Right in his Court.

This is also call'd *breve parvum de Recto*.

Indeed, the Writ of Right Patent is extended in Practice beyond its original Intention: For a Writ of Right of Dower, which lies for the Tenant in Dower, is Patent; and so in several other Cases. *Fitzherb.*

**RECTO de Dote**, a Writ of Right of Dower, which lies for a Woman that has received Part of her Dower, and proceeds to demand the Remnant in the same Place, against the Heir. See DOWER.

**RECTO de Dote unde nihil habet**, is a Writ of Right which lies in Case where the Husband having divers Lands and Tenements, has assured no Dower to his Wife; and she is thereby driven to sue for her Thirds against the Heir, or his Guardian.

**RECTO de rationabili parte**, a Writ that lies between Privies of Blood, as Brothers in Gavel-Kind, or Sisters, or other Coparceners, as Nephews and Nieces; and for Land in Fee-simple.

Thus, if a Man lease his Land for Life, and afterwards dye, leaving Issue two Daughters, and after, the Tenant for Life likewise dies; the one-Sister entering on all the Land, and so deforming the other, the Sister so deformed shall have this Writ to recover her Part.

**RECTO quando Dominus remittit**, a Writ of Right, which lies in Case where Lands or Tenements in the Seignior of any Lord, are in Demand by a Writ of Right.

If the Lord hold no Court; or at the Prayer of the Demandant or Tenant, send his Writ to the King's Court, to put the Cause thither for that time; this Writ issues for the other Party, and has its Name from the Words comprised, which is the true Occasion thereof.

**RECTO de advocatipne Ecclesie**, a Writ of Right, lying where a Man has Right of Advowson, and the Incumbent dying, a Stranger presents his Clerk to the Church; and he not having brought his Action of *quare Impedit non darrein Presentment* within six Months, has suffered the Stranger to usurp upon him.

**RECTO de Custodia Terræ & Heredis**, a Writ which as to Lands holden in *Capite*, or by Knights Service, is become useless by the Stat. 12 Car. II. But not where there is a Guardian in Socage, or appointed by the last Will of the Ancestor.

**RECTO sur Disclaimer**, a Writ which lies where the Lord, in the Court of Common-Pleas does avow upon his Tenant, and the Tenant disclaims to hold of him; upon which Disclaimer he shall have this Writ.

**RECTOR**, of a Parish, the *Parson*; or he who has the Charge or Cure of a Parish Church. See PARSON.

If the prædial Tythes of the Parish be Impropriated, i. e. in Lay Hands, instead of *Rector*, the Parson is call'd *Vicar*. See VICAR.

In England are reckoned 3845 Rectories. See PARISH.

The Name *Rector* denotes him Governour, or Ruler, *quia tantum Jus in Ecclesia Parochiali habet, quantum Prælati in Ecclesia Collegiata*. See PARSONAGE.

**RECTOR**, is also the chief Elective Officer in several Foreign Universities; particularly that of *Paris*. See UNIVERSITY.

The *Rector* is chosen a-fresh every three Months: Antiently he was chose every six Weeks. The Alteration was made by the Legate of Pope Nicholas III. in 1278. He is chose out of the Faculty of Arts.

While that Faculty, and the Faculty of Theology were united, one Officer had the Inspection of both, under the Title of *Chancellor*: Upon their Division, a *Rector* was created. He makes a solemn Procession four times a Year, attended by the Doctors, Batchellors, &c. in their Formalities.

**RECTOR** is also used in several Convents for the Superior, or Officer who governs the House. See SUPERIOR.

The Jesuits use it for the Superiors in such of their Houses, as are either Seminaries, or Colleges. See JESUIT, COLLEGE, SEMINARY, &c.

**RECTORY, RECTORATE**, a Parish-Church, Parsonage, or Spiritual Living, with all its Rights, Glebes, and Tithes. See CHURCH, PARISH, PARSON, RECTOR, &c.

**RECTUM**. See RIGHT and RECTITUDE.

**RECTUM**, in our old Law-Writers, is also used for a Trial or Accusation.

*Commune Rectum*, for a Trial at Law, or in the common Course of Law.—*Stare ad Rectum*, denotes to stand a Trial.—*Rectum rogare*, to petition the Judge to do right.

**RECTUM**, in Anatomy, is the last of the large Intestines. See INTESTINE.

It is thus call'd, because it passes straight from the *Os Sacrum* to the *Anus*; without making any turns or Circumvolutions, as all the other Guts do.

Its length is usually about a Hands-breadth; and its Capacity, the thickness of three Fingers.

Its upper Part is tied fast to the *Ossa Sacrum*, and *Coccygis*, by means of the *Peritonæum*; and in Men to the Neck of the Bladder, in Women to the *Vagina Uteri*: Its lower end, the *Anus*, is furnished with three Muscles. See ANUS.

The first, the *Sphincter Ani* serving to shut it, and prevent the Excrements from passing out Involuntarily. See SPHINCTER, &c.

The other two, the *Levatores Ani*, which serve to raise or pull back the *Rectum* after the Expulsion of the Excrements; which especially after hard Stools, is apt to be too far protruded. See LEVATOR ANI.

**RECTUS**, in Anatomy, a Name common to several Muscles; on account of the straightness of their Course from their Origin to their Insertion; having particular Denominations from the Parts to which they minister: As the *Rectus Abdominis*, *Rectus Femoris*, *Rectus Capitis Lateralis*, *Major Externus*,—*Minor Externus*,—*Major*



*Major Internus*,—*Minor Internus*, and *Rectus Palpebrae*.

**RECTUS Abdominis**, is a Muscle of the lower Belly, which arises from the *Sternum*, and the Extremity of the last two Ribs; and goes straight down to the fore-part of the *Abdomen*, to be inserted in the *Os Pubis*. See **ABDOMEN**.

It hath three or four Innervations, or rather tendinous Coarctations of its fleshy Fibres, which divide the Belly of it, as it were, into so many distinct Muscles.

It has Veins and Arteries, which creep on its Inside from the Mamillary and Epigastrick Vessels, which communicate together, that the Blood may return by the Mamillary Veins, when the Passage is stopped by the Epigastrick which are compress'd in Women with Child.

**RECTUS Femoris**, is a Muscle of the Leg, which arising from the lower Part of the Spine of the *Ilium*, and descending between the two *Vasti*, is inserted into the *Patella*. See **FEMUR**.

**RECTUS Palpebrae**, is a Muscle that lifts up the Eye-lid: It riseth from the Bottom of the Orbit of the Eye, where the Optic Nerves pierce the Cranium, and passing above the *Superbus*, is inserted by a large Tendon to the Border of the Eye-lid. See **PALPEBRAE**.

**RECTUS Capitis Lateralis**, a pair of short thick fleshy Muscles, rising from the superior Part of the Transverse Processes of the first Vertebra of the Neck, whence it ascends, and is inserted into the *Os Occipitis*. See **HEAD**.

Its use is to move the Head laterally towards either Shoulder: When they act together, being Antagonists, they keep it steady.

**RECTUS Externus Capitis Major**, the third pair of Muscles of the Head, arising fleshy and tendinous from the upper Part of the double Spine of the second Vertebra of the Neck, and spreading in its Ascent, is inserted into the Posterior Part of the *Os Occipitis*.—It serves to draw the Head directly back upon the first Vertebra.

**RECTUS Externus Minor**, a Pair of Muscles arising from the Hind-part of the first Vertebra of the Neck; and inserted into the middle of the *Os Occipitis*.

It serves likewise to draw the Head directly backwards.

These two Muscles are also call'd *Renuentes*.

**RECTUS Internus Capitis Major**, a Pair of Muscles arising from the Fore-part of the five Interior Transverse Processes of the first Vertebra of the Neck, near its great Hole.

**RECTUS Internus Minor**, lies on the Fore-part of the first Vertebra, like the *Rectus Minor*, on the Back-part; and is inserted into the Anterior Appendix of the *Os Occipitis*, immediately under the former.

These serve to nod the Head forwards, being Antagonists to the *Rectus Externus*, or *Renuentes*, on the back of the Head; and are hence also called *Amuantes*.

**RECTUS in Curia**, in Law, is one that stands at the Bar, and no Man objects any thing against him.

When a Man hath reversed the Outlawry, and can participate of the Benefit of the Law, he is *Rectus in Curia*. See **OUTLAWRY**.

**RECURRENT**, in Anatomy, a Nerve arising from the *Par Vagus*, and distributing several Branches to the Larynx, to assist in the formation and modulation of the Voice; thence also call'd the *Vocal Nerve*. See **NERVE**. **VOICE**, &c.

It has its Name *Recurrent* from its reascending or running back again from the Thorax, to the Larynx.

These are really two *Recurrents*, right and left; the left arises from the Trunk of the *Vagus*; the right from a *Plexus* thereof, immediately under the *Clavicle*.—They both run up along the *Trachea*, to which they impart some Twigs, and end at last in the Muscles of the Larynx.

Their Office appears partly hence, that a Dog is not able to bark after they are cut. See **LARYNX**.

**RECUSANTS**, Persons who refuse to acknowledge the King's Supremacy. See **SUPREMACY**.

Such are the Roman Catholics, who hold the Pope to be over him; hence called *Popish Recusants*. See **POPE** and **KING**.

The Romanists are not charged with double Taxes, &c. merely as Romanists, but as *Recusants*.

**RECUSATION**, an Act whereby a Judge is desired to refrain from judging some certain Cause, on account of his Relation to one of the Parties; of some Capital Enmity, or the like.

A Relation within the fourth Degree, is deem'd a legal Cause of *Recusation*, as also the Judge's being God-father, &c. of one of the Parties.

**RED**, in Physicks, one of the simple or primary Colours of natural Bodies, or rather of the Rays of Light. See **BODY**, **RAY**, and **COLOUR**.

The *Red Rays* are those of all others the least refrangible: Hence, as Sir *Isaac Newton* supposes the different Degrees of Refrangibility to arise from the different Magnitudes of the luminous Particles whereof the Rays consist; the *red Rays*, or *red Light*, is concluded to be that which consists of the largest Particles. See **REFRANGIBILITY**.

Authors distinguish three general Kinds of *Red*: One bordering on the *Blue*, as *Columbine*, or Dove Colour, Purple, and Crimson. See **PURPLE**, &c.

Another bordering on *Yellow*, as *Flame-Colour* and *Orange*. See **ORANGE**, &c.

Between these Extremes is a Medium partaking neither of the one nor the other; which is what we properly call *Red*.

Acids turn Black, Blue, and Violet, into *Red*; and *Red* into *Yellow*; and *Yellow* into a very pale *Yellow*.—Alkali's change *Red* into Violet, or Purple and *Yellow* into *feuillemort*, or dead Leaf Colour. See **ACID** and **ALCALI**.

Terrestrial and Sulphureous Matters become *Red* by extreme Heat; and some, at length, Black; as we see in Brick, *red Bole*, *red Chalk*, *Slate*, *Pumice*, &c. which when vitrified by a burning Glass, become Black.

Lobsters become *Red* by a moderate Fire; and by a violent one, Black. Mercury and Sulphur mix'd and heated over a moderate Fire, make a beautiful *Red* call'd *Artificial Cinnabar*. See **CINNABAR**.

An acid Spirit, as Lemon Juice, being poured on a blue Solution of Turnsol, turns it into a beautiful *Red*.—Alkali restores it to its original Blue. Filtrating of the *reddest* Wine takes from it all its *red* Colour.

*M. De la Hire* observes, that a very luminous Body view'd through a Black one, always appears *Red*: As when the Sun is seen shining through a black Cloud. He adds, that many People who see all the other Colours perfectly well, yet have no Idea of *Red*, and only see it as *Black*. See **BLUE**.

**RED**, in Dying, is one of the five Simple or Mother Colours of the Dyers. See **DYING**.

Some reckon seven Kinds or Casts of *Red*: viz. *Scarlet Red*, *Crimson Red*, *Madder Red*, *Half-Grain Red*, *Lively Orange Red*, and *Scarlet of Cochineel*.—But they may be all reduced to three; according to the three principal Drugs which give the Colours; which are Vermillion, Cochineel, and Madder.

The fine *Scarlet*, call'd *Scarlet of the Gobelins*, is made of *Agaric*, Water prepared with Bran and turn'd a little fourth, Wood and *Scarlet Grain*, or Vermillion. Some Dyers add Cochineel, and others Fennigreek; brightening it with four Water, *Agaric*, Tartar, and Turmeric. See **SCARLET**.

*Crimson Red* is made with four Water, Tartar, and Cochineel Mestique. See **CRIMSON**.

*Madder Red* is made with Madder; to which some add Realgal, or Arsenic; others common Salt, or other Salts, with Wheat Flower; or *Agaric* with Spirit of Wine, with Galls or Turmeric. See **MADDER**.

The *Half-Grain* is made with *Agaric* and four Water, half *Scarlet-Grain*, half Madder, and sometimes Turmeric.

The *Half Crimson* is made of half Madder, half Cochineel.

As to the *lively Orange Red*, the Stuff must be first laid in *Yellow*, then in a Liquor made of Goat's Hair, (which has been boiled several times with Madder, and now) dissolved over the Fire with certain Acids, as Urine, Tartar, &c.

The *Scarlet of Cochineel*, or *Dutch Scarlet*, is made with Starch, Tartar, and Cochineel; after first boiling it with Alum, Tartar, Sal-Gemma, and Aqua-Fortis wherein Tin has been dissolved. See **COCHINEEL**.

Besides these seven *Reds*, which are good and allow'd Colours, there is also a *Brasil Red*; which is discouraged, as fading easily. See **BRASIL**.

Of the seven good *Reds*, only four have particular Casts or Shades: The *Madder Red*, *Crimson Red*, the *lively Orange Red*, and the *Scarlet of Cochineel*.

The Casts or Shades of *Crimson*, are the *Flesh-Colour*, *Peach-Colour*, *Carnation-Rose-Colour*, and *Apple-Tree-Flower-Colour*.—Those of Madder, are *Flesh-Colour*, *Onion-Peel-Colour*, and *Flame-Colour*.—Those of the *Orange* are the same with those of the *Crimson*. *Scarlet*, besides the Shades of all the rest has some peculiar to it self, as *Cherry-Colour*, *Fire-Colour*, &c.

**RED**, in Painting.—For Painting in Oil Colours they use a *Red* call'd *Cinnabar* or Vermillion; and another call'd *Lacca*. See each in its Place, **CINNABAR**, **VERMILLION**, and **LACCA**.

In Limning, and Fresco, for a *Violet Red*, instead of *Lacca* they use a natural Earth found in *England*; for a *Brown Red* they use *Oker*. See **REDDLE**, **OKER**, &c.

**RED**, in Heraldry. See **GULES**.

**RED**, in Cosmeticks, a Fucus or Paint wherewith the Ladies enliven their Cheeks and Lips.

There are two Kinds of *Reds*; the one in Leaves, call'd *Spanish Red*; the other a Liquor, which is an Extract of *Scarlet Dye*.

**RED Arsenic**. See **ARSENIC**.

**REDDENDUM**, in Law, a Clause in a Lease, &c. whereby the Rent is reserv'd to the Lessor.

**REDDITARIUM**, an ancient Law Term, for a *Terrier Roll*, or Rental, in which the Rents and Services of Manour are set down. See **ROLL** and **RENT**, **TERRIER**, &c.

**REDDITION**, in Law, is a Judicial Acknowledgement that a thing in Question belongs to the Demandant.

**REDDLE**, **RUDDLE**, or *Red Chalk*, a Red Fossile Stone, which has its particular Mine or Quarry; and is used by Painters, &c. to make *Red-Pencils*, or *Craions* for designing. The best is the Produce of *England*; is moderately hard; easy to cut or Saw into long Slips. The Goldsmiths and Gilders also use it to burn the Gold-Leaf they use.—Some call *Reddle*, *Lapis Hematit*; supposing it to have a particular Faculty of stopping Blood: But others



others will have the real *Hematites* to be another Stone. See *HEMATITES*.

**REDEEMABLES**, are Lands, Funds, &c. sold with a Reservation of the Equity of Redemption. See *REDEMPTION*. Crown Lands are *redeemable* for ever; others only for a certain time. See *FUND*.

**REDEMPTION**, in Law, a Faculty or Right of re-entering upon Lands, &c. that have been sold, and assign'd; upon reimbursing the Purchase-Money, with legal Costs.

Bargains wherein the Faculty, or as some call it, the *Equity of Redemption*, is reserved; are only a Kind of Pignorative Contracts.

A certain time is limited, within which the Faculty of Redemption shall be exercised; and beyond which it shall not extend.

**REDEMPTIONS**, in our old Law-Writers, denotegrievous Mulcts imposed by way of Commutation for the Head or Life of the Delinquent. See *RANSOM* and *MISERICORDIA*.

**REDENS**, or **REDANT**, or **REDAN**, in Fortification, a Kind of Work indented in Form of the Teeth of a Saw, with Salient and Re-entering Angles, to the end that one Part may defend another. See *WORK*, *DEFENCE*, &c.

It is also call'd Saw-work: The Faces Flank one another.

*Redans* are frequently used in the fortifying of Walls, where it is not necessary to be at the Expence of building Bastions; as when they stand on the Side of a River, a Marsh, the Sea, &c.

The Parapet of the Corridor is frequently *redented*. See *PARAPET* and *COUNTERSCARP*.

**REDINTEGRATION**, in the Civil Law, the Action of restoring a Person to the Enjoyment of a thing, whereof he had been illegally dispossessed.

In France, where a Person is despoiled of his Property, he claims it again by a *Redintegratio*, or Action of Restitution.

The *Redintegratio* must be demanded within a Year and a Day, otherwise it is precluded.

**REDINTEGRATION**, in Chymistry, the restoring of any mixt Body, or Matter, whose Form has been destroyed by Calcination, Corrosion, Sublimation, or the like; into its former Nature and Constitution.

The *Redintegratio* of Mercury is properly call'd *Revivification*. See *REVIVIFICATION*.

Mr. Boyle has an express Treatise on the *Redintegration* of Salt-Petre; where he shews that after reducing it by Fluxion into fix'd Nitre, which is next of-kin to Salt of Tartar in all its Properties; he could presently *Redintegrate* it by pouring a sufficient Quantity of Spirit of Nitre to it; i. e. he could re-produce true Crystals of the usual Form and Virtue. See *SALT-PETRE*.

'Tis a strong Objection against the Chymical Principles, that you cannot *redintegrate* the Body they were procured from, by re-mixing them. See *PRINCIPLE* and *ELEMENT*.

This seems to argue that the Body did not properly consist of such Elements. Or that they were not originally contain'd in it, but were rather produced by the Fire. See *FIRE*, &c.

**REDHIBITION**, in the Civil Law, an Action in a Court whereby to annul the Sale of some Moveable, and to oblige the Seller to take it back again, upon the Buyer's finding it damag'd, or that there was some personal Cheat, &c.

The *Redhibition* has Place in several Cases, in the Body of the Civil Law.—If a Horse was sold that had the Glanders, were broken-winded, or founderd, 'twas a *redhibitory Case*; and the Buyer might be obliged to take him again within nine Days.

**REDISSEISIN**, in Law, a Disseisin made by him, who once before was found and adjudg'd to have disseis'd the same Man of his Lands or Tenements; for which there lies a special Writ, call'd a *Writ of Redisseisin*.

**RED-MANS**, or **RADMANS**, in Domesday, and other ancient Books, are probably the same with *Rod*, or *Rad-Knights*; viz. Men who by the Tenure or Custom of their Lands were to ride with or for the Lord of the Manour about his Business.

**REDOUBT**, **REDUCT**, in Fortification, a small square Fort, without any Defence but in Front; used in Trenches, Lines of Circumvallation, Contravallation, and Approach; as also for the lodging of *Corps de Garde*, and to defend Passages. See *FORT*.

In marshy Grounds, *Redoubts* are often made of Mason's Work, for the Security of the Neighbourhood: Their Face consists of from ten to fifteen Fathom; the Ditch round them from eight to nine Foot broad and deep; and their Parapets have the same thickness.

The Word is form'd from the Latin, *reductus*.

**REDRESSING**, the rectifying or setting of any thing straight again. See *RECTIFICATION*.

Trees and other Plants have a natural Faculty of *redressing* themselves, when by any external Cause they are forced out of the Perpendicular. See *PERPENDICULARITY*.

To *redress* Grievances, is to reform or remove them.

To *redress* a Stag, among Hunters, is to put him off his Changes.

**REDSEAR**. See *IRON*.

**REDUBBORS**, those who buy stolen Cloaths, &c. and to

the End they may not be known, turn them into some other Colour or Fashion, &c.

**REDUCING Scale**, is a thin broad piece of Box, with several different Scales of equal Parts, and Lines thereon; for turning Chains and Links into Acres and Rods, by Inspection. See *REDUCTION*, &c.

It is used by Surveyors to reduce Maps or Draughts from one Dimension into another: It is sometimes call'd the *Surveying Scale*. See *SCALE*.

**REDUCT**, is a military Term, signifying an advantageous Piece of Ground, entrench'd and separated from the rest of the Place, Camp, &c. for an Army, Garrison, &c. to retire to in case of Surprise.

**REDUCT**, in Building, a Quirk, or little Place, taken out of a larger, to make it more uniform and regular; or for some other Convenience, as for little Cabinets aside of Chimneys, Alcoves, &c.

**REDUCT**, among Chymists, is a Powder by which calcin'd Metals and Minerals are reduced again to their *Regulus*, or pure Substance. See *REGULUS*, *CALX*, &c.

**REDUCTION**, **REDUCTIO**, in the Schools, a manner of bringing a Term or Proposition, which before was opposite to some other, to be equivalent thereto.

*Reduction* is effected by the Addition or Retrenchment of a Negative Particle. Thus to reduce this Proposition: *No Man is an Animal*, to be equivalent to its opposite, *Every Man is an Animal*; I drop the Negative, and say, *Man is an Animal*.—After the like manner might the Term, *every Man*, be reduced, by adding the Negative, and saying, *there is no Man*.

**REDUCTION of Propositions**, is used in a more general Sense, for any Expression of a Proposition, by another Proposition equivalent thereto. See *PROPOSITION*.

To a *Reduction*, therefore, there are two Propositions requir'd; the *reduced* and *reducing*; which are considered as the Extremes thereof; and to be connected in the *Reduction*, by means of the Particle *that is*, which here has the effect of a Copula.

As here, *Only Animals think; that is, Animals think, and nothing beside Animals think*.—Where the Proposition preceeding the Particle, is *reduced*, and the Subject of the *Reduction*; that following the Particle, *reduces*, and has the Effect of the Predicate of the *Reduction*: And the Particle *that is*, acts as a Copula, importing, not barely that the Proposition is express'd by another, but by another equivalent one, or as it were the same.

**REDUCTION of Syllogisms**, is a regular changing or transforming of an imperfect Syllogism into a perfect one: Or it is a change of a Syllogism in respect of form, whereby the Necessity of the Illation or Inference is made more evident. See *SYLLOGISM*.

*Reduction* obtains in Syllogisms of the second and third Figure; as also in the indirect Modes of the first.—By it these are all brought to the first. See *MOOD* and *FIGURE*.

There are two Kinds of this *Reduction*, the one *Direct* or *Offensive*, perform'd meerly by a Conversion of one or both the Premisses, or by a Transposition thereof; as when *CAMESTRES* is reduced to *CELAENT*.

The other *Indirect*, call'd *per Impossibile*, or *ad Absurdum*, whereby the Person who denies the Goodness and Legitimacy of an imperfect Syllogism, is reduced to assert or grant something absurd and impossible; or contradictory to some other thing maintained by him.

Suppose *E. gr.* a Person granting the Premisses of the following Syllogism, denies the Conclusion.—*All Fraud is prohibited, but some Trading is not prohibited, therefore some Trading is not Fraud*.—We thus proceed against him: If the Syllogism be not good, the Antecedent is just, but the Consequent false; and therefore the contrary of the Conclusion must be true: Now, I take the contrary of the Conclusion which you thus give, viz. all Trading is Fraud; and of that with the other Premise of the former Syllogism, viz. the Major, which you likewise grant, make a new Syllogism; thus, *All Fraud is prohibited; all Trading is Fraud; therefore all Trading is prohibited*. But this Proposition, *all Trading is prohibited*; and the other, *some Trading is prohibited*, which you granted me in the first Syllogism, are Contradictories.

**REDUCTION**, in Arithmetick, is the converting of Monies, Weights and Measures into the same Value in other Denominations; *e. gr.* Pounds into Shillings and Pence; or Shillings and Pence into Pounds.

The *Reductions* of the principal Moneys, Coins, Weights, and Measures, Antient and Modern, Foreign and Domestick, are found under the respective Articles, *MONEY*, *COIN*, *WEIGHT*, *MEASURE*, *POUND*, *FOOT*, &c.

*Reduction* is of two Kinds: 1<sup>o</sup>. *Descending*; when a Quantity is to be brought from a higher Denomination to a lower.

This is done by considering how many of the next less Denomination are contained in the next greater before, and by that Number multiplying the greater. See *MULTIPLICATION*.

Thus Pounds are reduced into Shillings by multiplying by 20; Shillings, into Pence, by multiplying by 12; and Pence into Farthings, by multiplying by 4. See *POUND*, &c.

*Troy Pounds* are reduced into Grains, by multiplying by 12, 20, and 24. And *Averdupois Hundreds* into Ounces, by 4, 28, and 16. See *OUNCE*, &c.

The 2<sup>o</sup>. *Ascending*; when a lower Denomination be to be reduced to an higher



In order to this, divide the least by so many of its Denominations as are contained in the next greater: Thus 24720 Pence, divided by 12, and the Quotient, by 20, give 103 Pounds. See DIVISION.

If there remain any thing in each Division, 'tis respectively either odd Pence, or Shillings: Thus 6713 Pence reduced, gives 27*l.* 19*s.* 5*d.* cut off the last, the rest is the Pounds required.

To expedite the Practice, several compendious Ways of *Reduction* have been invented. See PRACTICE.

Thus Ells are turn'd into Yards, by adding a fourth to the Number of Yards; and into Ells *Flemish* by adding a fifth.—Ells *Flemish* are reduced into Yards, by subtracting a Quarter.—Ells *Flemish* reduced to Ells *English* by multiplying by six, and cutting off the right hand Figure. See ELL, &c.

Great Pounds of Silk of 24 Ounces, are reduced to Pounds of 16 Ounces, by adding one Half. Pounds of 16 Ounces into Pounds of 24, by subtracting three Quarters.

REDUCTION of Fractions. See FRACTION.

REDUCTION of Equations, in Algebra, is the clearing them from all superfluous Quantities, bringing down the Quantities to their lowest Terms, and separating the known Quantities from the unknown; 'till, at length, only the unknown Quantity is found on one Side, and unknown ones on the other. See EQUATION.

The *Reduction* of an Equation is the last Part of the Resolution of the Problem. See RESOLUTION.

The end of all Algebraical Operations, is to have the unknown Letter alone in one Member of the Equation; and in the other, all the known Letters, without any mixture of unknown; for, in this Case, 'tis evident the Value of the unknown Quantity is found.

This *Reduction* is effected by adding the Quantities subtracted, subtracting those added; multiplying those divided, and dividing those multiplied; extracting the Roots out of Powers, and raising Roots to Powers; so as still to preserve an Equality. See EQUALITY.

This suffices for the *Reduction* of simple Equations; but for higher Equations, the Process is less obvious.

From the manner wherein Powers are form'd, 'tis evident, that as the unknown Letter is rais'd to a higher Power, it will be found, in its lower Powers, mix'd and combined so many more times with known Quantities, and of consequence will be so much the more difficult to be disengaged therefrom. And the difficulty is the same, where there are several unknown Letters multiplied singly one against another, and again multiplied by known Letters. See PROBLEM.

The *Reduction* of the Equation being made; from the last Quantity thus gain'd, the Geometrical Construction is to be deduced. See CONSTRUCTION.

REDUCTION of a Figure, a Design, or Draught, is the making a Copy thereof either larger or smaller than the Original; still preserving the Form and Proportion. See FIGURE.

The grand use of the proportional Compasses is in the *Reduction* of Figures, &c. whence they are also called *Compasses of Reduction*. See COMPASSES.

There are various Methods of reducing Figures, &c. The most easy is by means of the Pentagraph or Parallelogram; but this has its Defects. See PENTAGRAPH.

The best and most usual Methods of *Reduction*, are as follow.

To reduce a Figure: As ABCDE, *Tab. Geometry, Fig. 64.* into a less Compass: about the middle of the Figure, as *z*; pitch on a Point; and from this Point draw Lines to its several Angles A, B, C, &c. Then drawing the Line *ab* Parallel to AB, *bc* Parallel to BC, &c. you will have the Figure *abcde* similar to ABCDE.

If the Figure *abcde* had been required to be enlarged, there needed nothing but to produce the Lines from the Point beyond the Angles, as *zD*, *zC*, &c. and to draw Lines, *viz.* DC, DB, &c. Parallel to the Sides *ac*, *ab*, &c.

To reduce a Figure by the Angle of Proportion.

Suppose the Figure ABCDE (*Fig. 65.*) required to be diminished in the Proportion of the Line AB, to *ab* (*Fig. 66.*) draw the indefinite Line GH, (*Fig. 67.*) and from G to H set off the Line AB: On G describe the Arch HI. Set off the Line *ab* as a Chord on HI, and draw GI. Then with the Angle IGH, you have all the Measures of the Figure to be drawn.

Thus, to lay down the Point *c*, take the Interval BC, and upon the Point G describe the Arch KL; also, on the Point G describe MN; and upon A with the Distance MN describe an Arch cutting the preceding one in *c*, which will determine the Side *bc*. And after the same manner are all the other Sides and Angles to be described.—The same Process will serve to enlarge the Figure.

To reduce a Figure by a Scale.

Measure all the Sides of the Figure, *e. gr.* ABCDE, by a Scale; and lay down the same Measures, respectively, from a smaller Scale in the Proportion required. See SCALE.

To reduce a Map, Design, or Figure, by Squares.

Divide the Original into little Squares, and divide a fresh Paper

of the Dimensions required, into the same Number of Squares; which will be larger, or less than the former, as the Map is to be enlarged or diminished.

This done in every Square of the second Figure, draw what you find in its Correspondent one in the first. See MAP, &c.

REDUCTION to the Ecliptic, in Astronomy, is the difference between the Argument of Latitude, as NP, (*Tab. Astronomy, Fig. 26.*) and an Arch of the Ecliptic NR, intercepted between the Plane of a Planet, and the Node N. See ECLIPTIC.

To find the Reduction: The Angle of Inclination PNR, and the Argument of Latitude NP being given; find, by the Doctrine of Sphericks, the Arch NR: Subtract NR and NP from each other, the Remainder is the *Reduction*.

REDUCTION into the first Matter, a Term which the Alchemists use when they find their Substances putrify, and grow black.

Or rather *Reduction* is the converting of a dry Matter into a Liquid, particularly Water; which they hold the Principle of all things. See WATER, PRINCIPLE, &c.

The *Reduction* of Metals into their first Matter or Principles, they teach, can only be effected by Mercury; nothing else being able to loosen the fix'd Sulphur of metallic Bodies, which binds them together. See METAL and MERCURY.

REDUCTION, in Chirurgery, is an Operation whereby a dislocated, luxated, or fractured Bone, is restored to its former Place. See BONE, LUXATION, DISLOCATION, FRACTURE.

The *Reduction* is always performed ere any Remedy be applied.

REDUNDANCE, or REDUNDANCY, a fault in Discourse, arising from a superfluity of Words. See PLEONASM.

Words, perfectly synonymous, are *Redundant*, and ought to be retrench'd.—*Redundancy* makes the Style weak and languid.

REDUNDANT Hyperbola, is a Curve of the higher Kind, thus called because it exceeds the Conic Section of that Name in the Number of its Hyperbolic Legs; being a Triple Hyperbola, with six Hyperbolic Legs. See CURVE and HYPERBOLA.

REDUPLICATION, in Rhetoric, a Figure wherein a Verse begins with the same Word as the preceeding one ends. See VERSE.

REDUPLICATION, in Logick, is a Kind of Condition express'd in a Proposition, indicating or assigning the Manner wherein the Predicate is attributed to the Subject.

The usual *Reduplicating* Words are *quatenus*, *as*, *so far as*, *consider'd as*, *inasmuch as*, &c. Hence,

REDUPLICATIVE Proportions, are such wherein the Subject is repeated, with some Circumstance or Condition: Thus, Men, as Men, are Rational: Kings, as Kings, are subject to none but God.

REE, a Portuguese Coin. See COIN and MILLREE.

REED, an ancient Jewish Measure. See MEASURE.

Answerable to this is the *Canna* or *Cave* of some modern Nations. See CANE.

REEF, a Term in Navigation—When there is a great Gale of Wind, they commonly roll up Part of the Sail below, that by this means it may become the narrower, and not draw so much Wind; which contracting or taking up of the Sail, they call a *Reef*, or *Reefing the Sail*.

So also when a Top-Mast is sprung, as they call it, that is, crack'd, or almost broken in the Cap; they cut off the lower Piece that was near broken off, and setting the other Part, now much shorter, in the Step again, call it a *Reef'd Top-Mast*.

REEL, in the Manufactures, a Machine serving for the Office of *Reeling*. See REELING.

There are various Kinds of *Reels*; some very simple, others very complex; of the former Kind, those most in use are,

1<sup>o</sup>. A little *Reel* held in the Hand, consisting of three Pieces of Wood; the biggest and longest whereof (which does not exceed a Foot and a half in length, and  $\frac{1}{4}$  of an Inch in Diameter) is traversed by two other Pieces disposed different Ways.

2<sup>o</sup>. The Common *Reel*, or *Windlass*, which turns upon a Pivot, and has four Wings, travers'd by long Pins or Sticks, whereon the Skain to be *reel'd* is put, and which are drawn closer, or open'd wider, according to the Skain.

Other *Reels* used in particular Arts, are explain'd under their particular Articles; as the *Reel* used in the milling of Silk, under the Article MILLING: And that in the *Reeling* or Winding of Silks, under the Article SILK, &c.

REELING, in the Manufactories, the winding of Thread, Silk, Cotton, or the like, into a Skain, or upon a Bottom; to prevent its intangling. See SILK, &c.

'Tis also used for the charging or discharging of Bobins or Quills, to use them in the Manufacture of different Stuffs, as Thread, Silk, Cotton, &c.

*Reeling* is perform'd different Ways, and by different Engines. See REEL.

RE-ENTERING Angle, in Fortification. See ANGLE.

RE-ENTRY, in Law, the resuming or retaking that Possession which we had lately fore-gone. See ENTRY.

As, if I make a Lease of Land, or Tenement, I do therefore forego the Possession; and if I do condition with the Lessee, That for Non-payment of the Rent at the Day, it shall be lawful for me to *Re-enter*; this is as much as if I conditioned to take again



gain the Lands, &c. into my own Hands, and to recover the Possession by my own act, without the Assistance of Judge, or other Process.  
**RE-EXTENT**, in Law, a second Extent made upon Lands or Tenements, on Complaint made, that the former Extent was partially executed. See **EXTENT**.  
**REEVE of a Church**, is the Guardian of it; or the Church-Warden. See **CHURCH-WARDEN**.  
**So, Shire-Reeve** is the Sheriff, or Guardian of a County. See **SHERIFF**.  
**And Port-Reeve**, the Warden of a Port or Haven. See **PORT**.

**REEVING**, in the Sea Language, is the putting a Rope through a Block.—Hence, to pull a Rope out of a Block, is call'd *unreeving* it.

**REFECTION**, among Monks and Ecclesiasticks, a Repast or spare Meal; merely sufficing for the support of Life. See **MEAL** and **REPAST**.

*Refectio* is also used in antient Authors for a Duty or Service incumbent on any Person to provide Meals, for Ecclesiasticks, or even Princes. See **PROCURATION**.

**REFECTORY**, or **REFECTUARY**, a spacious Hall in Convents, and other Communities, where the Monks, Nuns, &c. take their Refections or Meals in common.

The *Refectory* of the *Benedictines* of St. George at Venice, designed by *Palladio*, is one of the finest in the World. *Daviler*.

**REFERENDARIUS**, in antient Customs, an Officer who exhibited the Petitions of the People to the King; and acquainted the Judges with his Commands.

An Officer of this Kind, *Spelman* observes, we had in England, in the time of the Saxons.

**REFERENCE**, in Writing, &c. a Mark, relative to another similar one in the Margin, or at the Bottom of the Page; where something omitted in the Text, is added; and which is to be inserted either in Reading or Copying. See **CHARACTER**.

A Copist must be very expert at taking *References*.—*References* are also used in Books; where, things being but imperfectly handled, the Reader is directed to some other Part or Place where they are more amply explained.

Dictionaries are full of *References*; denoted by *See*, or *Vide*.—By means of these *References*, the Dictionarist settles a Correspondence between the several Parts of his Work; and gives his Dictionary most of the Advantages of a regular continued Treatise. See **DICTIONARY**.

Indices or Tables are only *References* to the several Parts of the Work, where the several Matters are handled. See **INDEX**.

**REFINING**, the Art or Act of purifying a thing; or of rendering it finer, cleaner, and purer. See **PURIFYING**, and **CLARIFYING**.

*Refining* is chiefly understood of Metals, Sugar, and Salts. See **METAL**, &c.

#### REFINING of Gold.

The *Refining* of Gold is perform'd three Ways: Either with Antimony, with Sublimate, or with Aqua-Fortis; which last Method, much the most usual and least dangerous of the three, is call'd *Depart*, or *parting*; the Process whereof see under the Article **GOLD** and **DEPART**.

#### Method of Refining Gold with Antimony.

They here use a Wind-Furnace; (a Description whereof may be seen under the Article **FURNACE**;) with an ordinary Crucible, of a Size answerable to the Quantity of Gold to be refined; observing that the Gold and Antimony together don't above half fill it.

The Gold being melted in the Crucible, the Antimony is thrown in, in Powder.—The Proportion of the Mineral to the Metals, is eight Ounces to a Pound, if the Gold be between 22 and 16 Carrats fine; If it be beneath 16 Carrats, they use about five Quarters of a Pound to eight Ounces: The coarser the Gold, still the more Antimony is required.

As soon as the Antimony is in the Crucible, 'tis cover'd up; and after charging the Furnace with Charcoal, they put on its Capital; which stands till such time as the Crucible be left quite bare; then, the Capital being taken off, and the Crucible set to cool in the Furnace it self, till such time as it may be taken out by the Hand, they break it, to get out the *Button* or *Culot*, which is a Mass of fine Gold remaining at the Bottom with the Faeces of the Antimony the Silver and Copper alloy and sometimes little Particles of Gold it self over it.

Though the Gold thus prepared be very pure, yet the Antimony gives it such a harsh brittle Quality, that it ceases to be Ductile; and must be soften'd by the Fire with Salt-petre and Borax, to bring it to itself.

For this Operation they prepare what they call a *Dry-Coppel*; that is, a Coppel made of Crucible Earth, which does not imbibe like the Coppels made of Ashes. See **COPPEL**.

The Coppel being sufficiently heated in the *refining* Furnace, they put the Gold in it, and cover it up with Charcoal.

As soon as the Gold is dissolved, which is very soon, by reason of the remains of the Antimony, they blow it with the Bellows to drive the Mineral entirely away, which now goes off in Smoak; adding to it, as soon as the Fumes cease, a little Salt-petre and Borax, in Powder, which collect the Impurities remaining upon the Dissolution, and fix the Gold in the Coppel, in form of a Plate.

The Gold being taken out of the Coppel, and melted afresh in a Crucible, with an Addition of two Ounces of Salt-petre and as much Borax, in Powder to each eight Ounces of Gold, as soon as it ceases to fume, they cast it into an Ingot; which upon trial is found 23 Carrats, 26 thirty seconds finer.

As to the Particles of Gold which may have been left behind with the Alloy in the Faeces of the Antimony, they get them out by a dry Coppel, with the same Meltings and Ingredients as are used in softening the former.—And when they are assured, by the Essay, of the Share of Gold that Matter contains, they refine it to separate the Copper; and afterwards make the *Depart*.

As to the Gold which may be left sticking to the dry Coppels, they get it out by breaking, and pulverizing the Crucibles, and by repeated Lotions of the Powder thereof in several Waters; much after the manner of the *Lavadero's*. See **LAVADERO**.

#### Refining of Gold by means of Sublimate.

The Process is begun like that with Antimony; *i. e.* in the same Furnace, with the same Coal, the same Fire, and the same Crucibles.

The Gold being melted in the Crucible, they cast in the Sublimate, not pulveriz'd, but only broke in Pieces.—As to the Proportion; to 8 Ounces of Gold to be refined, they put an Ounce, or Ounce and a half, or even two Ounces, if the Gold be of 22 Carats; three Ounces, if 20 Carats; and 5 or 6 Ounces, if it only be from 18 to 12 Carats. In which last Case they part the Sublimate into two; putting half at a time, with the Gold, into a new Crucible; which, when the Operation is over, leaves the Gold of 18 or 20 Carats, according to its fineness before.—After this, they raise it by the Fire, as follows;

The broken Sublimate being put into the Crucible with the melted Gold, the Crucible is immediately cover'd up, to smother the Mineral: Which done, the Furnace is fill'd with Charcoal, and the Capital put on.—A quarter of an Hour afterwards they take off the Capital, lay the Crucible bare, and give the Gold Air, *i. e.* blow off all the Ashes and other Impurities that may be floating on the liquid Gold, with a Pair of Bellows, the Nettle whereof is crooked.

This they repeat again and again, till all the Impurities of the Gold being carried off, by virtue of the Sublimate, it be found of a bright glittering Colour; After which 'tis taken out of the Crucible, and the Gold cast into an Ingot.

The Method of *Refining* by Sublimate is both more complete and cheaper than that by Antimony; but they are both exceedingly dangerous, by reason of their sulphurous and arsenical Exhalations: The only difference in their Malignity consisting in this, that the Poison of the Antimony is slower than that of the Sublimate. See **SUBLIMATE**, &c.

Gold may also be *refined* with Lead and Ashes; but this is a Method seldom used, excepting in Essays. See **ESSAY**.

#### REFINING of Silver.

There are two Ways of *refining* Silver: The one with Lead; the other with Salt-petre. The best and cheapest is that with Lead; though that with Salt-petre still obtains in many Places, for want of Workmen who understand the Process of the latter.

We shall here only give that with Salt-petre; referring for the other to the Article **SILVER**.

*Refining with Salt-petre* is perform'd in a Wind-Furnace.—The Silver to be *refined* having been reduced into Grains, of the Size of a little Pea, by pouring it, when melted, into a Tub of common Water; 'tis heated over again in a Boiler. After this they put it in a Crucible, and along with it, to every eight Ounces of Metal, two of Salt-petre.

The Crucible is now covered up with an Earthen lid, in form of a Dome, exactly luted; which lid, however, is to have a little Aperture in the middle.

The Crucible being put in the Furnace, and cover'd with Charcoal, which is only to be lighted by Degrees, at length, they give it the full force of the Fire to put the Metal into a perfect Fusion. Thus they repeat three times successively, at an Interval of a Quarter of an Hour.

After the third Fire they uncover the Furnace, and let the Crucible cool; and at length break it, to get out the Silver, which is found in a *Button* or *Culot*; the Bottom whereof is very fine Silver; and the top mix'd with the Faeces of the Salt-petre, and the Alloy of the Silver, and even some Particles of fine Silver.

The *Culot* being separated from the Impurities, is melted in a new Crucible, and into the Dissolution is thrown Charcoal Dust, and the whole briskly work'd together. Then, the Crucible being cover'd up again, and the Furnace charged with Coal, a second Fire is given it.



This done, the Ashes and other Impurities are blown from off the Top of the Metal, till it appear as clear as a Looking-Glass; and then an Ounce of Borax broke in Pieces is thrown in.

Lastly, the Crucible being cover'd up again, they give it the last Fire; after which 'tis cast into Ingots; which are found eleven Penny-Weights, and sixteen Grains fine.

To recover the Silver that may be left in the Fæces, or Scoria, they pound them, and give them repeated Lotions in fresh Waters. See LAVADERO.

REFINING of Copper, is only perform'd by giving the mineral Matter several Lotions before the melting it; and then giving it several repeated Fusions. See COPPER.

REFINING of Tin is perform'd much after the same Manner as that of Copper. See TIN.

Though, we may distinguish two Kinds of fineness of this Metal: The one arising from its Fusion; that Tin taken first out of the Coppers wherein it is melted, being always purer than that towards the Bottom.

The other Kind of fineness is that given the Tin by adding some other Metal or Mineral to it, to render it more founding, as well as more bright: Such is Tin of Antimony, Pewter, &c. See PEWTER, &c.

REFINING of Iron, begins likewise by the melting it. See IRON and IRON-WORKS.

The greater Degree of Fusion the Mineral has, the more the Metal is purified: But this first Fusion is not sufficient.—To render the Iron malleable, and fit it to endure the File, it must be melted a second time; then forged or beaten a long time with huge heavy Hammers, wrought by the Water; then heated in the Fire, and at last reduced on the Anvil, into Bars of several Thicknesses. See FORGING.

The more the Iron is heated in the Fire; and the more 'tis beaten, whether hot or cold, the finer it becomes. See IRON.

Steel is only Iron refined to a great Degree by heating it, with some other Ingredients which close up the Pores, and soften the Grain thereof. See STEEL.

REFINING of Lead, is perform'd like that of most other imperfect Metals, by frequent Meltings, still scumming it ere it be cold, and casting in Tallow, and other Kinds of Fat.

They also make Assays of Lead; not to refine it, but to see if it be pure, and without Mixture of any other Metal. See LEAD.

REFINING of Sugar.—The Operation is begun by several strong Lixiviums or Lyes of Lime-Water and Eggs, Shells and all, mix'd and beaten together.

This first Refining is perform'd in the Caribees and other Places where the Sugar-Canes are cultivated; and only serves for the brown or coarser Sugars.

When these are imported into Europe, the Sugar-Bakers take them up, and refine them further, by a second Operation, or rather a Repetition of the first.

To render the Sugar very fine, fit for Confections, they usually give it a third Refining; wherein they only use the Whites of Eggs, and their Shells beaten together, and thrown into the melted Sugar; which is call'd *clarifying the Sugar*. See SUGAR.

REFINING of Salt-petre.—The Salt being put in an Earthen or Iron Vessel, as much Spring-Water is pour'd on it as suffices to dissolve it. The Vessel is then put over a gentle Fire; and as soon as the Water begins to boil, Alumn-Powder is thrown into it: The Proportion is, one Pound of Alumn to 128 Pound of Salt-petre; and a little Vinegar is added. As it boils, the Scum is to be taken off; and thus is it refined. See SALT-PETRE.

For the REFINING of other Matters, as Camphor, Vermillion, Sulphur, Lapis, Salt, Borax, &c. See CAMPHOR, VERMILLION, SULPHUR, SALT, &c.

REFLECTING Telescope, }  
REFLECTING Microscope, } See { TELESCOPE.  
REFLECTING Dial, } { MICROSCOPE,  
 } { DIAL.

REFLECTION, or REFLEXION, in Mechanics, the return, or regressive Motion of a Moveable occasioned by the Resistance of a Body, which hindered its pursuing its former Direction. See MOTION, RESISTENCE, &c.

'Tis controverted, whether there be any Moments Rest or Interval between the Incidence and the Reflection? For the Affirmative, stand the *Peripateticks*, and all who conceive the reflected Motion to be different from the Incident one of the same Body.—The Motion of Incidence, according to these Authors, is wholly lost and destroyed by the Resistance of the Obstacle struck against; and the moveable is thus render'd absolutely quiescent in the Point of Contact; till a new Motion of Reflexion is produced therein, from a contrary Cause.

The *Cartesians* assert the Negative; absolutely denying any Rest at all between the Incidence and Reflection: Urging, that if the Motion were once destroyed, though but for a Moment, there would be nothing to excite it again; but the Body would persevere in that new State, as much as if it had been at Rest a thousand Years. See REST and LAW of NATURE.

Accordingly, *Robault*, and others, define Reflection to be no other than a Change of Determination; or a Continuation of the former Motion in a new Direction. See DETERMINATION, &c.

As, say they, a Pendulum, when arrived at its greatest Sweep, does not stop; so a hard Body, striking on another hard one, does not rest, but pursues its Motion the contrary Way, according to the established Law of Nature; and this from the immediate Influence or Impulse of the Cause that first moved it.—But this Doctrine is now generally set aside.

Reflection is conceiv'd by the latest and best Authors, as a Motion peculiar to elastic Bodies, whereby, after striking on others which they cannot remove, they recede, or turn back, by their elastic Power. See ELASTIC Bodies.

On this Principle it is asserted, that there may be, and is a Period of Rest between the Incidence and Reflection; since the reflected Motion is not a Continuation of the other, but a new Motion, arising from a new Cause or Principle, viz. the Power of Elasticity. See ELASTICITY.

'Tis one of the great Laws of Reflection, that the Angle a reflected Body makes with the Plane of the reflecting Obstacle, is equal to that wherein it struck on that Obstacle. See ANGLE and INCIDENCE.

For the several Laws of Motion observed in the REFLECTION of Bodies, see the Article PERCUSSION.

REFLECTION of the Rays of Light, in Opticks, is a Motion of the Rays, whereby, after impinging on the solid Parts of Bodies, or rather, after a very near approach thereto, they recede or are driven therefrom. See REFLEXIBILITY.

The Reflection of the Rays of Light from the Surfaces of Bodies, is the means whereby they become Visible. See VISION.

And the Disposition of Bodies to reflect this or that Kind of Rays most copiously, is the Cause of their being of this or that Colour. See COLOUR.

The Reflection of Light from the Surfaces of Mirrors, makes the Subject of Catoptricks. See CATOPTRICKS.

The Reflection of Light, Sir Isaac has shewn, is not effected by the Rays striking on the very Parts of the Bodies; but by some Power of the Body equally diffused throughout its whole Surface, whereby it acts upon the Ray, by attracting or repelling it without any immediate Contact. See RAY.

This Power he shews to be the same whereby, in other Circumstances, the Rays are refracted; and whereby they are at first emitted from the lucid Body. See LIGHT.

The Arguments he produces to this Purpose are as follow.

1°. Because the Surfaces of polished Glasses, which to the Eye appear smooth, are yet in reality very rugged and uneven; (polishing being nothing but the grating, scratching, and breaking of the coarser Protuberances, by means of Sand, Glass, Putty, or Tripoly). If the Rays of Light, therefore, were reflected by striking on the solid Parts of the Glass, the Reflections would never be so accurate as we find they are; but the Rays would even be as much scatter'd by the most polish'd Glass, as by the roughest.—It remains, therefore, a Problem, how Glass polished by fretting Substances, can reflect Light so regularly as it does; which Problem is scarce otherwise to be solved than by saying, that the Reflexion of a Ray is effected, not by a single Point of the reflecting Body, but by some Power of the whole Body, evenly diffused all over its Surface, and by which it acts on a Ray without immediate Contact: For that the Parts of Bodies do act upon Light at a Distance, is already shewn under the Article INFLECTION.

2°. If the Colours separated by a Prism placed at the Entrance of a Beam of Light into a darkened Room, be successively cast on a second Prism placed at a greater Distance from the former, in such manner as that they all fall alike, or with an equal obliquity upon it; the second Prism may be so inclined to the incident Rays, that those which are of a blue Colour shall be all reflected by it, and yet those of a red Colour pretty copiously transmitted.—Now, if the Reflexion were caused by the Parts of the Air or Glass, we would ask, why, at the same Obliquity of Incidence, the blue should wholly impinge on those Parts so as to be all reflected, and yet the red find Pores enough to be in a great Measure transmitted?

3°. Where two Glasses touch one another, there is no sensible Reflexion, and yet we see no Reason why the Rays should not impinge on the Parts of the Glass, as much when contiguous to other Glass, as when contiguous to Air.

4°. When the top of a Water-Bubble, by the continual subsiding and exhaling of the Water, grows very thin, there is such a little, and almost insensible Quantity of Light reflected from it, that it appears intensely black; whereas round about that black Spot, where the Water is thicker, the Reflexion is so strong as to make the Water seem very white.—Nor is it only at the least thickness of thin Plates or Bubbles, that there is no manifest Reflection, but at many other thicknesses, gradually greater and greater. For in one of our Author's Observations the Rays of the same Colour were by turns transmitted at one thickness, and reflected at another thickness, for an indeterminate Number of Successions: And yet in the Superficies of the thinned Body, where it is of one thickness, there are as many other Parts for Rays to impinge on, as where it is of any other thickness.

5°. If red and blue Rays, separated by a Prism, fall successively on a thin Plate of any pellucid Matter, whose thickness increases in continual Proportion, (such as a Plate of Air between two Glasses, the one Plane and the other a little Convex) the same



same Plate will, in the same Part, reflect all the Rays of one Colour, and transmit all those of the other; but in different Parts, will reflect the Rays of one and the same Colour, at one thickness, and transmit them at another; and thus alternately, and in infinitum.—Now it can never be imagined that at one Place the Rays which, for Instance, exhibit a blue Colour, should have the Fortune to strike on the solid Parts, and those which exhibit a Red to hit on the void Parts of the Body; and at another Place, where the Body is either a little thicker, or a little thinner, that on the contrary the Blue should hit on the Pores, and the Red upon the solid Parts.

6°. In the Passage of Light out of Glass into Air, there is a Reflexion as strong as in its Passage out of Air into Glass, or rather a little stronger, and by many Degrees stronger than in its Passage out of Glass into Water.

Now it seems improbable that Air should have more reflecting Parts than Water or Glass: But if that should be supposed, yet it will avail nothing; for the Reflexion is as strong or stronger when the Air is drawn from the Glass by the Air-Pump, as when it is adjacent to it.—If any should here object, on *Des Cartes's* Hypothesis, that though the Air be drawn out, there is a subtle Matter remaining to supply its Place, which being of a denser Kind, is better fitted for the Reflexion of Light than any other Body: Beside that we have elsewhere shewn such subtle Matter to be fictitious; and that supposing its Existence, and its reflecting Power, no Light could ever have been propagated, but must have been all reflected back to the lucid Body, immediately after it was first emitted; The following Experiment does evidently convict it of fallacy.

7°. If Light in its Passage out of Glass into Air strike more obliquely than at an Angle of 40 or 41 Degrees, it is wholly reflected, if less obliquely it is in great Measure transmitted.—Now it is not to be imagined, that Light at one Degree of obliquity should meet with Pores enough in the Air to transmit the greater Part of it, and at another Degree should meet with nothing but Parts to reflect it wholly; especially considering that in its Passage out of Air into Glass, how oblique soever be its Incidence, it finds Pores enough in the Glass to transmit a great Part of it.—If any suppose that it is not reflected by the Air, but by the outmost superficial Parts of the Glass, there is still the same Difficulty: Besides, that such a Supposition is unintelligible, and will also appear to be false by applying Water behind some Part of the Glass instead of Air: For so, in a convenient obliquity of the Rays, suppose of 45 or 46 Degrees, at which they are all reflected where the Air is adjacent to the Glass; they shall be in great Measure transmitted where the Water is adjacent to it: Which argues, that their Reflexion or Transmission depends on the Constitution of the Air and Water behind the Glass, and not on the striking of the Rays upon the Parts of the Glass; the Rays not being reflected till they have reached the last Part of the Surface, and are begun to go out. For if in going out they fall upon the Surface of Oil or Water, they proceed; the Attraction of the Glass being balanced by an equal Force the contrary Way; and prevented from having its effect by the Attraction of the Liquor adhering to it: But if the Rays in passing out of this last Surface fall into a Vacuum which has no Attraction, or into Air which has but little, not enough to counter-balance the effect of the Glass; in this Case the Attraction of the Glass draws them back, and reflects them.

This will appear still more evident, by laying two Glass Prisms, or the object Glasses of two Telescopes, the one Plane and the other a little Convex, upon each other, so as they may neither touch, nor yet be too far a-part. For that Light which falls on the hind Surface of the first Glass, where the Glasses are not above  $\frac{1}{10}$  Part of an Inch a-part, will be transmitted through the Surface, and through the Air or Vacuum between the Glasses, and pass into the second Glass: But if the second Glass be taken away, then the Light passing out of the second Surface of the first Glass into the Air or Vacuum, will not proceed but return into the first Glass, and be reflected.

Whence it follows, that the Rays are drawn back again by some Force in the first Glass; there being nothing else to occasion their return.—And hence too, it follows, that the Reflexion is not effected by means of any subtle Matter, contiguous to the hind Surface, according to the Principles of *Des Cartes*; since that Matter ought to reflect them when the Glasses were nearly contiguous, as well as when the second Glass is quite removed.

Lastly, If it be asked how some of the Rays come to be reflected, and others transmitted; And why they are not all alike reflected; supposing the Reflexion owing to the Action of the whole Surface? The same great Author shews, that there are both in the Rays of Light, and in the Bodies themselves, certain Vibrations, (or some such Property) impress'd on the Rays, by the Action either of the Luminary that emits them, or of the Bodies that reflect them; by means whereof it happens that those Rays in that Part of their Vibration which conspires with the Motion of the Parts of the Body, enter the Body, are refracted and transmitted; but those in a contrary Part of their Vibration reflected. See VIBRATION and MEDIUM. See also REFRACTION and TRANSMISSION.

Add, that every Ray of Light, in its Passage through any refracting Surface, is put into a certain transient Constitution or State, which

in the Progress of the Ray returns at equal Intervals, and disposes the Ray at each return to be easily transmitted through the next refracting Surface; and between each Return to be easily reflected by it.

These alternate Dispositions, which Sir Isaac Newton calls *sits of easy Reflexion*, and of *easy Transmission*, he accounts for by supposing that the Rays of Light, in impinging on Bodies, excite Vibrations therein, which happening to move faster than the Rays, when a Ray is in that Part of the Vibration which conspires with its Motion, it passes through; but when in the contrary Part of the Vibration, is beat back again: Whence every Ray is successively disposed to be easily reflected, or easily transmitted, by every Vibration which overtakes it. See TRANSMISSION.

REELECTION, in Catoptricks, is the return of a Ray of Light from the polish'd Surface of a Speculum or Mirror, driven thence by some Power residing therein. See MIRROR and CATOPTRICKS.

The Ray thus returned is called a *Reflex*, or *reflected Ray*, or *Ray of Reflexion*; and the Point of the Speculum whence the return commences, the *Point of Reflexion*.

Thus the Ray AB (*Tab. Opticks, Fig. 26.*) proceeding from the Radiant A, and striking on the Point of the Speculum B; being returned thence to C; BC represents the *reflected Ray*, and B the *Point of Reflexion*: In respect whereof AB represents the *Incident Ray*, or *Ray of Incidence*, and B the *Point of Incidence*. See POINT and RAY.

Again, a Line as CG drawn from any Point as C of the reflected Ray BC, perpendicular to the Speculum, is call'd the *Cathetus of Reflexion*, or *Cathetus of the Eye*: As a Line AF, drawn from the Radiant Perpendicular to the Speculum, is call'd the *Cathetus of Incidence*. See CATHETUS.

Of the two Angles which the reflected Ray BC makes with the Mirror, the smallest, CBE, is called the *Angle of Reflexion*: As, of the two Angles the incident Ray makes with the Speculum, the smallest ABD is called the *Angle of Incidence*. See ANGLE.

If the Mirror be either Concave, or Convex, the smallest Angles the Ray makes with a Tangent to the Point of Reflexion and Incidence, are the *Angles of Reflexion* and Incidence.

The Angle CBH which the reflected Ray makes with a Perpendicular to the Point of Reflexion, is call'd the *Inclination of the reflected Rays*; as the Angle ABH is called the *Inclination of the Incident Ray*.

#### The General Laws of REFLECTION.

1°. If a Ray of Light be reflected from a Speculum of any form; the Angle of Incidence is ever equal to the Angle of Reflexion.—This Law obtains in Percussions of all Kinds of Bodies, and consequently must do so in those of Light. See LAWS of PERCUSSION.

It might therefore be here assumed as an Axiom: But 'tis of that Importance, and its Demonstration so beautiful, that we cannot omit it.—Suppose, then, DC (*Fig. 54.*) an incident Ray, propagated from the Radiant A: Here, though the Motion of the Ray be simple, yet its Determination in the Line DC being oblique with respect to the Obstacle, is really compounded of two Determinations; the one along DE, the other along DG. See COMPOUND Motion.

The Force along DC, therefore is equal to the two Forces along DG and DH. But the Obstacle GF only opposes one of the Determinations; viz. that along DG, (for it cannot oppose a Determination Parallel to it self, as DE;) therefore only the Force along DG will be lost by the stroke; that along DH or GC remaining entire.—But a Body perfectly Elastic, (such as we suppose the Ray of Light) will recover by its Elasticity, the force it lost by the Shock. See ELASTICITY.

The Ray, therefore, will recover the Force DG or CH. Thus, retaining both its Forces, and both its former Determinations HC and CF; after Percussion; it will be impell'd along CF and CH, by the same Forces as before along DH and DG. By its compound Motion, therefore, it will describe the right Line CE, and that in the same time as DC; and HE and DH will be equal, as being described by the same Force. Now, the two Triangles DCH and CHE are equal, and consequently their similar Angles equal. Since then, HCA = HCF; DCA the Angle of Incidence, is equal to ECF the Angle of Reflexion. Q. E. D.

This Law is confirmed in Light by an easy Experiment. For a Ray of the Sun falling on a Mirror, in a dark Room, through a little Hole; you'll have the Pleasure to see it rebound, so as to make the Angle of Reflexion equal to that of Incidence. See CAMERA Obscura.

The same may be shewn various other Ways: Thus, e. gr. Placing a Semicircle FIG (*Tab. Opticks, Fig. 26.*) on a Mirror DE, its Centre on B, and its Limb Perpendicular to the Speculum; and assuming equal Arches, Fa and Gc; place an Object in A, and the Eye in C: Then will the Object be seen by a Ray reflected from the Point B. And if B be cover'd, the Object will cease to be seen.

Hence, 1°. If a Ray of Light, as HB, fall Perpendicularly on the Surface of a Speculum DE, it will be reflected back upon it self.

2°. From



2°. From the same Point of a Speculum, several Rays cannot be reflected to the same Point; for in that Case all the several Angles of Reflection would be equal to the same Angle of Incidence; which is absurd.

3°. One Ray as AB cannot be reflected to two or more Points; for in that Case all its Angles of Reflection would be equal to the same Angle of Incidence; which is as absurd as before. See RADIANT.

II. Each Point of a Speculum reflects Rays falling on it, from each Part of an Object.

Hence, since several Rays coming from several Parts of a radiant Object, cannot be reflected from the same Point of a Speculum to the same Point; the Rays that flow from different Points of the Object, are separate after Reflection: And hence each Ray shews the Point whence it proceeded. See VISION.

On this Principle it is that the Rays reflected from Mirrors or Looking-Glasses, exhibit the Appearances of Objects placed before them. See LOOKING-GLASS.

And hence we easily conceive why rough Bodies exhibit no Images; in regard they reflect the Light in such Manner as to confound Rays which proceed from different Points, by means of their Eminences and Cavities, their alternate Rifings and Fallings.—But for this, all hard Bodies would be Mirrors.

III. If the Eye C, and the radiant Point A change Places; the Point will continue to radiate upon the Eye, in the same Course or Path as before.

For if the Object be removed from A to C, it will still radiate on its former Point of Reflexion B; but there can be but one right Line drawn between the two Points G and D; and the Rays are right Lines. Therefore that which was before the Ray of Reflexion, will now be the Ray of Incidence; and since it will be reflected under the same Angle as that under which it fell, that which was before the Ray of Incidence, will, now be the Ray of Reflexion. So that the Object removed to C, will radiate on the Eye placed in A, by the right Lines CB and BA. Q. e. d.

Hence, an Object is seen by the reflected Ray AB, with the Eye placed in A, the same, as if the Eye were in AC, and the Object in A.

The Truth of this Theorem is so easily confirm'd by Experiment, that some, with Euclid, assume it as a Principle; and demonstrate the great Law of Reflection therefrom.—Thus: Suppose the Angle of Incidence a little greater than the Angle of Reflection; then will the Angle ABF be greater than that CBE. Wherefore, changing the Places of the Eye and the Object, the Angle CBE will become the Angle of Incidence; and therefore CBE greater than ABF, by the Supposition. So that the same Angle ABF will be both greater and smaller than the other CBE; which being absurd, ABE cannot be greater than CBE.—The same Absurdity will follow, if you suppose the Angle of Incidence less than the Angle of Reflection.—Since then the Angle of Incidence can neither be greater nor less than that of Reflection, it must be equal to it.

IV. The Plane of Reflection, that is, the Plane wherein the Incident and reflected Ray are found, is perpendicular to the Surface of the Speculum; and in spherical Specula passes through the Centre.

Hence the Cathetus both of Incidence and Reflexion is in the Plane of Reflection.

That the Plane of Reflection is perpendicular to the Speculum, is assum'd by Euclid, Alhaxon, and others, as a Principle, without any Demonstration; as being evident from all Observation and Experiment.

IV. The Image of an Object seen in a Mirror, is in the Cathetus of Incidence.

This the Antients assumed as a Principle: And, hence, since the Image is certainly in the reflected Ray, they infer'd it must appear in the Point of Concourse of the reflected Ray with the Cathetus of Incidence; which indeed holds universally in plane and spherical Mirrors, and usually in concave ones; a few Cases only excepted, as is shewn by Kepler.

For the particular Laws of REFLECTION, arising from the Circumstances of the several Kinds of Specula, or Mirrors, Plane, Concave, Convex, &c. see them laid down under the Article MIRROR.

REFLECTION of the Moon, is a Term used by some Authors, for what we otherwise call her Variation; being the third Inequality in her Motion, whereby her true Place out of the Quadratures, differs from her Place twice equated. See MOON.

REFLECTION is also used in the Copernican System, for the Distance of the Pole from the Horizon of the Disk; which is the same thing as the Sun's Declination in the Ptolemaick System. See DECLINATION.

REFLECTION is also figuratively used for an Operation of the Mind, whereby, turning as it were back upon it self, it makes it self and its own Operations its Object; and considers or contemplates the Manner, Order, and Laws, which it observes in Perceiving, Reasoning, Willing, Judging, Doubting, Believing, &c. and frames it self new Ideas of the Relations discover'd therein. See SOUL, FACULTY, PERCEPTION, IDEA, &c.

REFLEX, REFLECT, in Painting, is understood of those Places in a Picture which are supposed to be illumined by a Light reflected from some other Body represented in the same Piece. See LIGHT.

Or Reflexes may be defined those Places which beside the general Light that illumines the whole Piece, receive some particular Light, from their Situation with respect to some more illumined polished Body that reflects Part of the Rays it receives upon them. See COLOUR.

Reflexes are scarce sensible except in the shadowed Parts.—The Management of the Reflexes requires a world of Accuracy and Skill.—All reflected Light is supposed to carry with it Part of the Colour of the Body which reflects it; so that those Places which receive this Light, must have their Colours mix'd or flexes from different Objects, differently colour'd, and those again receive Reflexes from others.—The Painter therefore must have a View to every Circumstance of the Colour, Light and Position of each Figure; must consider what effect each has on other, and pursue Nature through all the Variety of Mixtures. See CLAIR-OBSCURE.

REFLEX Vision, or REFLECTED Vision, is that performed by means of Rays reflected from the polish'd Surfaces of Objects to the Eye. See VISION and REFLECTION.

Reflex Vision is the Subject of Catoptricks. See CATOPTRICKS.

Under Reflex Vision come all the Phenomena of Specular Mirrors of all Kinds. See MIRROR.

REFLEXIBILITY of the Rays of Light, is that Property whereby they are disposed to be reflected. See REFLECTION.

Or it is their Disposition to be turned back in the same Medium, from any other Medium on whose Surface they fall.—Hence those Rays are said to be more or less Reflexible, which are returned back more or less easily under the same Incidence. See RAY.

Thus if Light pass out of Glass into Air, and by being inclined more and more to the common Surface of the Glass into Air, begins at length to be totally reflected by that Surface; those Sorts of Rays which at like Incidences are reflected most copiously; or the Rays which by inclining begin soonest to be totally reflected, are most Reflexible.

That the Rays of Light are endued with different Degrees of Reflexibility, was first discovered by Sir Isaac Newton; and is shewn by the following Experiment.—Applying a Prism DFE, (Tab. Opticks, Fig. 55.) whose Angles are each 45°. to the Aperture C of a darkened Room, in such manner as that the Light is reflected from the Base in G: The Violet Rays are seen first reflected in HG; the other Ray continuing still refracted in IK.—After the Violet, the Blue are all refracted, then the Green, &c. See PRISM.

Hence it appears, that the differently colour'd Rays, differ in Degree of Reflexibility. See COLOUR.

From other Experiments it appears, that those Rays which are most reflexible, are also most refrangible. See REFRACTIBILITY.

REFLUX of the Sea, the Ebbing of the Water; or its return from the Shore. See EBB.

It is thus call'd, as being the opposite Motion to the Flood, or Flux. See FLUX and TIDE.

REFORM, a Re-establishment or Revival of a former neglected Discipline; or a Correction of reigning Abuses. See REFORMATION.

The Term is much used in a Monastic Sense, for the reducing an Order or Congregation of Religious to the antient Severity of the Rule, from which it had gradually swerved; or even for the improving on the antient Rule and Institution it self, and voluntarily making it more severe. See ORDER and RELIGIOUS.

In the like Sense the Order of St. Bernard is said to be only a Reform of that of St. Benedict. See BERNARDINE and BENEDICTIN.

To REFORM, in a military Sense, is to reduce a Company, Regiment, or other Body of Men, either by disbanding the whole, or only breaking a Part, and retaining the rest; or sometimes by incorporating them in other Regiments.

Hence REFORMADO, a Reformed Officer, or one whose Troop or Company is suppress'd in a Reform, and he continued either in whole or half Pay, doing Duty in the Regiment.

A Reformed Captain on Foot follows the Company, and assists the standing Officer as a second; but still maintains his Degree and Precedence. See CAPTAIN.

REFORMATION, the Act of Reforming, or Correcting an Error, or Abuse in Religion, Discipline, &c.

The Reformation of the Roman Calendar by Pope Gregory, was effected in the Year 1582. chiefly by the Advice of Aloysius Lilius, and Clavius. See CALENDAR.

The Reformation of Religion, called by Way of Eminence, the Reformation, was begun by the Elector of Saxony, at the Solicitation of Luther, about the middle of the sixteenth Century. See LUTHERANISM.

King Henry VIII. of England, happening to have then a Pique against Pope Clement VII. by reason of his persisting in not allowing of his Divorce from Queen Catherine of Austria, fell in with the Torrent, abolished the Pope's Supremacy, seiz'd the Monasteries, and other Religious Houses; and divided their Lands among the Nobility and Gentry.



In every thing else he persevered a Papist.—So that the Reformation went on but lamely in his time.—Under his Son Edward VI. it went much further; but was all undone again by his Successor Queen Mary, who re-established the antient Superstitions.

But the Executions of above 500 People, who were burnt for the Protestant Faith in the five Years of her Reign, so alienated the People from Popery, that Queen Elizabeth, her Sister, found it no hard Matter to carry the Reformation to its full Length; and to settle it on the Foot whereon it now stands among us. See PROTESTANT, CALVINIST, &c.

RIGHT OF REFORMATION, *Jus Reformationis*, is a Right which the Princes of Germany claim to reform the Church in their respective Territories; as being invested with the spiritual as well as the temporal Power.

The *Jus Reformationis* is annex'd to the Principality; by this they have the Power of Conscience, the Disposition of Ecclesiastical Revenues, &c. as they enjoy'd the same at the Treaty of Munster in 1624.

REFRACTED Ray, or Ray of REFRACTION. See RAY and REFRACTION.

REFRACTED Dials, are such as shew the Hour by means of some refracting transparent Fluid. See DIAL.

If a Pin or Stick be set up, or any Point be assign'd in a concave Bowl or Dish, for the Centre of the Dial; and a horizontal Dial be applied over the same; assigning the meridian Line on the Edges of the Bowl; and marking out the rest of the Hour Lines also on the Edges of the Bowl: Then taking away the horizontal Dial, and elevating a String or Thread from the End of the said Pin over the meridian Line, as much as is the Latitude or Elevation of the Pole of the Place.—Then, by bringing the Thread to cast a Shadow on any Hour-Point formerly mark'd out on the Edges of the Bowl, by a Candle or the like; that Shade in the Bowl is the true Hour-Line: And if the Bowl be full of Water, &c. when this is done; it will never shew the true Hour by the Shadow of the Top of the Pin, but when filled again with the same Liquor.

REFRACTION, in Mechanics, the Deviation of a moving Body from its direct Course, by reason of the different Density of the Medium it moves in; or a Flexion and Change of Determination, occasioned by a Body's falling obliquely out of one Medium into another of a different Density. See MEDIUM.

Thus a Ball A, (*Tab. Mechanicks, Fig. 52.*) moving in the Air in the Line AB, and falling obliquely on the Surface of the Water CD, does not proceed straight to E, but deviates or is inflected to B.—Again, if the Ball moving in Water in the same Line AB should fall obliquely on a Surface of Air CD; it will not proceed straight to E, nor yet deflect to F, but to G.

Now the Deflection in each Case is call'd the *Refraction*; and the two Cases are distinguished by means of the Perpendicular MI; that, BG being called *Refraction towards the Perpendicular*, or to the *Axis of Refraction*; and the other BF, *Refraction from the Perpendicular*, or from the *Axis of Refraction*.

These *Refractions* are supposed to arise hence, that the Ball arriving at B, in the first Case, finds more Resistance from the Side O, i. e. from the Side of the Water, than from the Side P, or that of the Air; and in the latter more Resistance from the Side P, which is now the Side of the Water, than the Side O which is that of the Air.

In effect the great Law of *Refraction* which holds in all Bodies, and all Mediums, is, That a Body passing obliquely out of a less into a more resisting Medium, is refracted from the Perpendicular; and in passing out of a more into a less resisting Medium, is refracted towards the Perpendicular.

Hence the Rays of Light falling out of Air into Water are refracted towards the Perpendicular; whereas a Ball thrown into the Water is refracted from it; by reason Water, which resists the Motion of Light less than Air, resists that of the Ball more: Or, to speak more justly, by reason Water, by its greater Attraction, accelerates the Motion of the Rays of Light more than Air does: For that this is the true Cause of *Refraction*, at least in Light, shall be shewn under REFRACTION of Light.

To have a Body refracted, 'tis necessary it fall obliquely on the second Medium.—In perpendicular Incidences there is no *Refraction*.

Vossius, indeed, and Snellius imagined they had observed a perpendicular Ray of Light undergo a *Refraction*; a perpendicular Object appearing in the Water nearer than in reality it was: But this was to attribute that to a *Refraction* of the perpendicular Rays, which was owing to the divergency of the oblique Rays after *Refraction*, from a nearer Point.

Yet is there a manifest *Refraction* even of perpendicular Rays found in Island Crystal. See ISLAND CRYSTAL.

Robault adds, that though an oblique Incidence be necessary in all other Mediums we know of; yet the Obliquity must not exceed a certain Degree.—If it do, the Body will not penetrate the Medium, but be reflected, instead of refracted.—Thus Cannon Balls in Sea Engagements, falling very obliquely on the Surface of the Water, are observed to mount a-loft again, and frequently to sweep the Men from off the opposite Decks: And the like happens to the little Stones wherewith Children make their Ducks and Drakes.

The Antients confounded *Refraction* with *Reflexion*; and 'twas

Sir Isaac Newton, who first taught us the Difference between them.—He shews withall, that there is a good deal of Analogy between them; and particularly in the Case of Light. See REFLECTION and REFRACTION of Light.

The Laws of *Refraction* of the Rays of Light in Mediums differently terminated, i. e. whose Surfaces are Plain, Concave, Convex, &c. make the Subject of Dioptricks. See DIOPTRICKS.

By *Refraction* it is that Convex Glasses, or Lens's collect the Rays, magnify Objects, Burn, &c. and that concave Lens's disperse the Rays, diminish Objects, &c. See LENS's, CONVEX, and CONCAVE.

Hence the Foundation of Microscopes, Telescopes, &c. See MICROSCOPE and TELESCOPE, &c.

By *Refraction* it is, that all remote Objects are seen out of their real Places; particularly, that the heavenly Bodies are apparently higher than they are in reality, &c. See APPARENT and PLACE. See also REFRACTION Astronomical.

REFRACTION of Light, in Opticks, is an inflexion or deviation of the Rays from their rectilinear Course upon falling obliquely out of one Medium into another, of a different Density. See RAY.

The *Refraction* of Light Sir Isaac Newton shews is not perform'd by the Rays falling on the very Surface of Bodies; but without any Contact, by the Action of some Power of the Bodies equally diffused throughout their Surfaces; by which same Power acting in other Circumstances, they are also emitted and reflected. See LIGHT.

The same Arguments whereby we have proved that *Reflection* is perform'd without immediate Contact, go a great way towards demonstrating the same of *Refraction*: To which may be added the following ones.

1°. Because if when Light falls out of Glass into Air, with the utmost Obliquity it will be transmitted at, it be then made to fall a little more obliquely, it becomes wholly reflected.—For, the Power of the Glass after it have refracted Light emerging as obliquely as possible, supposing the Rays to fall still more obliquely, will be too strong to let any of the Rays pass; consequently, instead of being refracted they will be all reflected.

2°. Because in thin Lamellæ, or Plates of Glass, Light is reflected and refracted several times alternately, as the thickness of the Lamellæ increases in arithmetical Progression.—For here it depends on the thickness of the Lamina which of the two it shall do; whether reflect it, or let it be transmitted.

3°. Because whereas the Powers of other Bodies both to reflect and refract Light are very nearly Proportional to their Densities; yet unctuous and sulphurous Bodies are found to reflect more strongly than according to their Densities.—For as the Rays act more strongly on those Bodies to kindle them, than on others; so do they, again, by their mutual Attraction, act more strongly on the Rays to refract them.

Lastly, Because not only those Rays transmitted through Glass are found to be refracted, but also those passing in the Air, or in a Vacuum near its Extremities, or even near the Extremes of many Opake Bodies, e. gr. the Edge of a Knife, undergo a similar Inflexion, from the Attraction of the Body. See INFLECTION.

The manner wherein *Refraction* is perform'd by meer Attraction, without Contact, may be thus accounted for.—Suppose HI (*Tab. Opticks, Fig. 56.*) the Boundary of two Mediums, N and O; the first the Rarer, e. gr. Air; the second the Denser, e. gr. Glass; the Attraction of the Medium here will be as their Densities.—Suppose PS to be the Distance to which the attracting Force of the denser Medium exerts itself within the Rarer.

Let now a Ray of Light Aa fall obliquely on the Surface which separates the Mediums; or rather, on the Surface PS, where the Action of the second and more resisting Medium commences. All Attraction being perform'd in Lines perpendicular to the attractive Body, as the Ray arrives at a, it will begin to be turned out of its rectilinear Course, by a superior Force wherewith it is attracted by the Medium O, more than by the Medium N, i. e. by a Force wherewith it is driven towards it in a Direction perpendicular to its Surface.—Hence the Ray is bent out of its right Line, in every Point of its Passage between PS and RT, within which the Attraction acts. Between those Lines, therefore it describes a Curve aBb. But beyond RT, being out of the Sphere of Attraction of the Medium N, it will proceed uniformly in a right Line, according to the Direction of the Curve in the Point b.

Again, suppose N the denser and more resisting Medium, O the Rarer; and HI the Boundary, as before; and let RT be the Distance to which the denser Medium exerts its attractive Force within the Rarer: Even when the Ray has pass'd the Point B, it will be within the Sphere of superior Attraction of the denser Medium; but that Attraction acting in Lines perpendicular to its Surface, the Ray will be continually drawn from its straight Course BM perpendicularly towards HI: Thus having two Forces or Directions, it will have a compound Motion, whereby instead of BM it will describe Bm; which Bm, will in strictness be a Curve.

Lastly, After it has arrived in m, being out of the Influence of the Medium N, it will persist uniformly in a right Line, in the Direction wherein the Extreme of the Curve leaves it.

Thus we see how *Refraction* is performed, both toward the Perpendicular, and from it.



But Note, the Attraction of the denser Medium, *e. gr.* N, is continually diminishing as the Ray proceeds from B, towards the limit of Attraction RT; in regard fewer and fewer Parts still come to act: at IH, *e. gr.* all the Parts between that and PS attract, but at RT, none but those in the Line HI.—Note also, that the Distance between PS and RT being small, when we consider *Refractions*, no Notice is taken of the Curve Part of the Ray; but we consider it as consisting of two straight Lines, CB, AB, or *m* B, AB.

REFRACTION, in Dioptricks, is the Inflection or bending of the Rays of Light, in passing the Surfaces of Glasses, Lenses, and other transparent Bodies of different Densities.

Thus a Ray, as AB, (*Tab. Opticks, Fig. 56.*) falling obliquely from the Radiant A, upon a Point B, in a diaphanous Surface, HI rarer or denser than the Medium along which it was propagated from the Radiant; it has its Direction there alter'd by the Action of the new Medium, and instead of proceeding to M deviates, *e. gr.* to C.

This Deviation is called the *Refraction of the Ray*: BC the *Refracted Ray*, or *Line of Refraction*; and B the *Point of Refraction*. See RAY, LINE, and POINT.

The Line AB is call'd the *Line of Incidence*, or *Ray of Incidence*; and in respect hereof B is also called the *Point of Incidence*. See INCIDENCE.

The Plane wherein both the incident and *reflected* Rays are found, is called the *Plane of Refraction*; a right Line BE drawn in the *refracting* Medium perpendicular to the *refracting* Surface in the Point of *Refraction* B, is call'd the *Axis of Refraction*—And a right Line DB drawn perpendicular to the *refracting* Surface, in the Point of Incidence B, along the Medium through which the Ray fell, is called the *Axis of Incidence*. See PLANE, AXIS, &c.

The Angle ABI included between the incident Ray, and the *refracting* Surface, is called the *Angle of Incidence*; and the Angle ABD included between the incident Ray, and the Axis of Incidence, is call'd the *Angle of Inclination*—The Angle MDC which the *refracted* Ray makes with the Incident, is call'd the *Angle of Refraction*; and the Angle CBE which the *refracted* Ray makes with the Axis of *Refraction*, is call'd the *refracted Angle*. See ANGLE.

#### General Laws of REFRACTION.

I. A Ray of Light in its Passage out of a rarer, into a denser Medium, *e. gr.* out of Air into Glass, is *refracted* towards the Perpendicular, *i. e.* towards the Axis of Refraction.

Hence, the *refracted* Angle is less than the Angle of Inclination; and the Angle of *Refraction* less than that of Incidence; as they would be equal, were the Ray to proceed straight from A to M.

Hence, also a Ray perpendicular to the *refracting* Surface, will pass through without being *refracted*; as it cannot be *refracted* to the Perpendicular. The physical Cause thereof is, that the Attraction of the denser Medium, which in Incidences oblique to its Surface acting perpendicular to that Surface, draws the Ray out of its Course: This Attraction, we say, in a perpendicular Incidence, acts in the Direction of the Ray.

II. The Ratio of the Sine of the Angle of Inclination, to the Sine of the *refracted* Angle, is fix'd and constant; *viz.* If the *Refraction* be out of Air into Glass, it is found greater than as 114 to 76; but less than 115 to 76; that is, nearly as 3 to 2.

This Ratio, assign'd by *Huygens*, agrees with another of Sir Isaac Newton, who makes the Sine of the Angle of Inclination to the Sine of the *refracted* Angle, as 31 to 20; which is, likewise, nearly as 3 to 2.—Indeed there is some Difference in the Quantity of *Refraction*, in different Kinds of Glass; but in physical Matters, Precision is not necessary.—In Rain Water, *Des Cartes* found, the Ratio of the Sine of the Angle of Inclination, to the Sine of the *refracted* Angle, as 250 to 187, that is, nearly as 4 to 3; which agrees with Sir Isaac Newton's Observation, who makes it as 529 to 396.—In Spirit of Wine, the same great Author makes the Ratio as 100 to 73; which is not far from the sesquitercian Ratio.—In Air he makes it as 3851 to 3850.

Whence the different *refractive* Power in different Fluids arises, is not determined.—Clear Water, of all others, *refracts* the least; and if impregnated with Salts, its *Refraction* is increased in Proportion to the Quantity of Salt. Sir Isaac Newton shews, that in many Bodies, *e. gr.* Glass, Crystal, a Selenites, Pseudo-Topaz, &c. the *refractive* Power is proportionable to their Densities; only in sulphurous Bodies, as Camphire, Oil Olive, Amber, Spirit of Turpentine, &c. the Power is two or three times greater than in other Bodies of equal Density; yet they have the *refractive* Power with respect to each other, nearly as their Densities.—As to Air, he shews that a Ray of Light in traversing quite thro' the Atmosphere, is *refracted* the same it would be were it to pass with the same Obliquity out of a Vacuum into Air of equal Density with that in the lowest Part of the Atmosphere. See AIR.

From the Law just laid down, it follows that one Angle of Inclination, and its corresponding *refracted* Angle being found by Observation; the *refracted* Angles corresponding to the several other Angles of Inclination, are easily computed.—Now, *Zabnius* and *Kircher* have found, that if the Angle of Inclination be 70°. the

*refracted* Angle will be 38° 50'; on which Principle *Zabnius* has constructed a Table of *Refractions* out of Air into Glass, for the several Degrees of the Angle of Inclination; a Specimen whereof follows.

| Ang. of Incl. | Refracted Angle. | Angle of Refraction. | Ang. of Incl. | Refracted Angle. | Angle of Refraction. |
|---------------|------------------|----------------------|---------------|------------------|----------------------|
| 10            | 0° 40' 5"        | 0° 19' 55"           | 10            | 0° 39' 10"       | 3° 20' 44"           |
| 2             | 1 20 6           | 0 13 54              | 20            | 13 11 35         | 6 48 25              |
| 3             | 2 0 3            | 0 59 56              | 30            | 19 29 29         | 10 30 31             |
| 4             | 2 40 5           | 1 19 55              | 45            | 28 9 19          | 16 50 41             |
| 5             | 3 20 3           | 1 39 57              | 90            | 41 51 40         | 48 8 20              |

Hence it appears that at an Angle of Inclination less than 20° the Angle of *Refraction* out of Air into Glass, is almost  $\frac{1}{2}$  of the Angle of Inclination: And therefore a Ray is *refracted* to the Axis of *Refraction*, by almost a third Part of the Quantity of its Angle of Inclination.—And on this Principle it is that *Kepler* and most other dioptrical Writers, demonstrate the *Refractions* in Glasses.

The constant Ratio of the Sines of the Angles of Inclination, and the *refracted* Angles was first discovered by *Willeb. Snellius*.—'Tis vulgarly attributed to *Des Cartes*; who having seen it in *Snellius's* MS. first published it in his *Dioptricks*, without naming *Snellius*; as we are inform'd by *Huygens*.

Indeed, as the Rays of Light are not all of the same Degree of *Refrangibility*; this constant Ratio must be different in different Kinds.—The Ratio therefore observed by Authors is to be understood of Rays of the mean *Refrangibility*, *i. e.* of green Rays. The Difference of *Refraction* between the least and most *refrangible* Rays, that is between Violet and red Rays, Sir Isaac Newton shews is about  $\frac{1}{4}$  Part of the whole *Refraction* of the mean *Refrangible*; which Difference he owns is so small, that there seldom needs to be any regard had to it. See REFRACTION.

III. When a Ray passes out of a denser into a rarer Medium, *e. gr.* out of Glass into Air, it is *refracted* from the Perpendicular, or from the Axis of *Refraction*.—And hence the Angle of *Refraction* is greater than the Angle of Inclination.

Hence, also, if the Angle of Inclination be less than 30°, MBC is nearly equal to  $\frac{1}{2}$  of MBE.—Therefore MBC is one half of CBE: Consequently, if the *Refraction* be out of Glass into Air; and the Angle of Inclination less than 30°; the Ray is *refracted* from the Axis of *Refraction* by almost one half Part of the Angle of Inclination.—And thus is the other dioptrical Principle used by most Authors after *Kepler*, to demonstrate the *Refractions* of Glasses.

If the *Refraction* be out of Air into Glass, the Ratio of the Sine of Inclination to the Sine of the *refracted* Angle is as 2 to 3; if out of Air into Water, as 4 to 3: Therefore, if the *Refraction* be the contrary way, *viz.* out of Glass or Water into Air; the Ratio of the Sines in the former Case, will be as 2 to 3, in the latter as 4 to 3.

IV. A Ray falling on a Curve Surface, whether Concave or Convex; is *refracted* after the same Manner as if it fell on a Plane which is a Tangent to the Curve in the Point of Incidence.

For the Curve and plain Surface touching it, have an infinitely small Part common to them both, (each being originally generated by the Flux of a Point). But a Ray is *refracted* in such a little Part; therefore 'tis the same as if it were *refracted* in such a Plane.

V. If A right Line EF (*Fig. 57. and 58.*) cut a *refracting* Surface GH at right Angles; and if from any Point in the denser Medium as D be drawn DC Parallel to the incident Ray AB: This will meet the *refracted* Ray in C; and will be to it as the Sine of the *refracted* Angle to the Sine of the Angle of Inclination.

Hence, if BC pass out of Glass into Air, it is in a subsequalterate Ratio to CD; if out of Air into Glass, in a sesquialterate Ratio to CD.

Hence, also, if Light pass out of Water into Air; CB is in a subsequitercian Ratio to CD; if out of Air into Water in a Sesquiquartan.

#### Laws of REFRACTION in Plane Surfaces.

1°. If parallel Rays be *refracted* out of one transparent Body into another of different Density, they will continue Parallel after *Refraction*.

The physical Reason is, that being parallel, their Obliquity, or Angle of Incidence is the same: But at equal Obliquities we have shewn the *Refraction* is equal; consequently the Parallelism which they had before the *Refraction*, will be retain'd after it.

But this may be also demonstrated Geometrically, thus: If the Rays be perpendicular to the *refracting* Surface, they will pass without any *Refraction*; consequently being parallel before their Passage, they will be so after it. If they fell Obliquely, as AB and DC; the Angles of Incidence  $\alpha$  and  $\mu$ ; and consequently, also the Angles of Inclination  $\alpha$  and  $\mu$ , will be equal. But the Sines of the Angles of Inclination  $\alpha$  and  $\mu$ , have the same Ratio to the Sines of the *refracted* Angles  $m$  and  $n$ ; therefore the *refracted* Angles  $m$  and  $n$  are also equal; consequently the *refracted* Rays parallel.

Hence a Glass, plain on both Sides, being turn'd directly to the Sun; the Light passing through it will be propagated after the same



same manner as if the Glass were away : For the Rays being Perpendicular will pass without Refraction.—If the Glass be turn'd obliquely to the Sun, the Light after Refraction will be of the same Intensity as before; the Intensity depending on the Spissitude or Closeness of the Rays, and on the Angle wherein they strike the Object, or the Eye, both which are here unvaried. See RAY.

2. If two Rays CD and CP, (Fig. 59.) proceeding from the same Radiant C, and falling on a Plane Surface of a different Density, so as the Points of Refraction D and P are equally distant from the Cathetus of Incidence GK; the refracted Rays DF and PQ have the same virtual Focus, or Point of Dispersion G. See VIRTUAL.

Hence, 1°. Since in Rays very near each other, the Distance from the Cathetus is the same as to Sense; very near Rays will diverge from the same Point G, i. e. have the same virtual Focus G.—And hence, 2°. When refracted Rays falling on the Eye are placed out of the Cathetus of Incidence, are either equally distant from the Cathetus, or very near each other; they will flow upon the Eye, as if they came to it from the Point G; consequently the Point C will be seen by the refracted Rays as in G.

3. If a Ray CD fall obliquely out of a thinner into a closer Medium, having a plane Surface; the Distance of the Radiant Point CK has a less Ratio to the Point of Dispersion, or virtual Focus KG, than the Sine of the refracted Angle to the Sine of the Angle of Inclination.—But if the Distance of the Point of Refraction from the Cathetus of Incidence KD be less than the eleventh or nineteenth Part of the Distance of the radiant Point CK; and if in the former Case the tenth, in the latter the hundredth Part thereof be so small that it can't be assign'd or need not be minded, then will CK be to KG, as to Sense: in the Ratio of the Sine of the refracted Angle, to the Sine of the Angle of Inclination.

Hence, 1°. If the Refraction be out of Air into Glass, the Distance of the Point of Dispersion of Rays near the Cathetus, is Sesquialterate, of the radiant Point; of more remote Rays, greater than Sesquialterate.

Hence, 2°. If the Eye be placed in a denser Medium, Objects in a Rarer will appear more remote than they are; and the Place of the Image in any given Case, may be determined from the Ratio of the Refraction.—Thus to Fishes swimming under Water; Objects out of the Water must appear further distant than in reality they are.

4. If a Ray GD fall obliquely out of a denser, into a rarer Medium AB; the Distance of the radiant Point GK, has a greater Ratio to the Distance of the Point of Dispersion KC, than the Sine of the refracted Angle has to the Sine of the Angle of Inclination.—In the other Case of the preceding Theorem, KG will be to KC, as to Sense, in the Ratio of the Sine of refracted Angle, to the Sine of the Angle of Inclination.

Hence, 1°. If the Refraction be out of Glass into Air, the Distance of the Point of Dispersion of Rays near the Cathetus of Incidence, is Subsesquialterate of the Distance of the radiant Point. That of the more remote Rays is less than the Subsesquialterate.

But, 2°. if the Refraction be out of Water into Air; the Distance of the Point of Dispersion of Rays near the Cathetus, is Subsesquitercian; of those more remote, less than Subsesquitercian.

And 3°. The Eye therefore being in a rarer Medium, Objects placed in a Denser appear nearer than they are; and the Place of the Image may be determined in any given Case by the Ratio of Refraction.—Hence the Bottom of a Vessel full of Water, is rais'd by Refraction, to a third Part of its Height, with respect to an Eye perpendicularly over the refracting Surface; and hence Fishes, and other Bodies under Water, appear nearer than they really are.

5. If the Eye be placed in a rarer Medium, an Object seen in a denser Medium, by a Ray refracted in a plane Surface, will appear larger than it really is.—If the Object be in a rarer, and the Eye in a denser Medium, the Object will appear less than it is.—And in each Case the apparent Magnitude is to the real one in a Ratio compounded of the Distance of the Point to which the Rays tend before Refraction, from the refracting Surface FL (Fig. 60) to the Distance of the Eye GL, from the same, and of the Distance of the Object from the Eye GM, to its Distance from a Point to which the Rays FL tend before Refraction.

Hence, 1°. If the Object AB be very remote; FM will be physically equal to GM; and therefore the real Magnitude MB to its apparent one MH, as GL to FL, or the Distance of the Eye G from the refracting Plane to the Distance of the Point of Convergence F from the same Plane.

Hence, 2°. Objects under Water, to an Eye in the Air, appear larger than they are; and to Fishes under Water, Objects in the Air appear less than they are.

Laws of REFRACTION in Spherical Surfaces, both Concave and Convex.

1. A Ray of Light DE (Fig. 61) Parallel to the Axis of a denser Sphere, after a single Refraction in E, falls in with the Axis in the Point F, beyond the Centre C.

For the Semidiameter CE drawn to the Point of Refraction E, is perpendicular to the Surface KL, and is therefore the Axis of Refraction; but a Ray out of a rarer into a denser Medium, we have shewn, is refracted towards the Perpendicular, or the Axis of Refraction; therefore the Ray DE will converge to the Axis of the Sphere AF; and will, therefore at length concur with it; and that beyond the Centre C, in F; because the Angle of Refraction FEH is less than the Angle of Inclination CEH.

2. If a Ray DE fall on a spherically Convex Surface of a denser Medium, parallel to its Axis AF; the Semidiameter CE will be to the refracted Ray EF in the Ratio of the Sine of the refracted Angle to the Sine of the Angle of Inclination: But the Distance of the Focus or Point of Concurrence to the refracted Ray FE is in the Ratio of the Sine of the refracted Angle to the Sine of the Angle of Inclination.

3. If a Ray DE fall on a denser spherically Convex Surface KL, Parallel to the Axis AF; the Distance of the Focus from the refracting Surface FB, is to its Distance from the Centre FC; in a Ratio greater than that of the Sine of the Angle of Inclination to the Sine of the refracted Angle.—But if the Rays be very near the Axis, and the Angle of Inclination BCE of a few Degrees; the Distances of the Focus from the Surface, and the Centre FB and FC, will be, nearly, in the Ratio of the Sine of the Angle of Inclination, to the Sine of the refracted Angle.

Hence, 1°. If the Refraction be out of Air into Glass; in the Case of Rays near the Axis,  $BF : FC :: 3 : 2$ . And in the Case of the Rays remoter from the Axis,  $BF : FC > 3 : 2$ . Consequently in the former Case,  $BC : BF :: 1 : 3$ ; and in the latter  $BC : BF < 1 : 3$ .

And 2°. If the Refraction be out of Air into Water; in the former Case,  $BF : FC :: 4 : 3$ ; and in the latter,  $BF : FC > 4 : 3$ . Consequently in the former  $BC : BF :: 1 : 4$ , and on the latter  $BC : BF < 1 : 4$ .

Hence, 3°. Since the Sun's Rays are Parallel, as to Sense; if they fall on the Surface of a solid Glass Sphere, or of a Sphere full of Water, they will not concur with the Axis within the Sphere. So that Vitellio was mistaken when he imagined that the Sun's Rays falling on the Surface of a Crystallin Sphere, were refracted to the Centre. See Focus.

4. If a Ray DE (Fig. 62) fall out of a denser into a rarer spherical Medium; after Refraction it will diverge from the Axis; and the Distance of the Point of Dispersion, or the virtual Focus from the Centre of the Sphere, FC, will be to its Semidiameter CE in the Ratio of the Sine of the refracted Angle to the Angle of Refraction; but to the Portion of the refracted Ray drawn back, FE, in the Ratio of the Sine of the refracted Angle to the Sine of the Angle of Inclination.

5. If a Ray ED fall Parallel to the Axis AF on the spherically Convex Surface KL, of a rarer Medium, out of a denser; the Distance of the Point of Dispersion from the Centre, FC, is to its Distance from the Surface FB: In a Ratio greater than that of the Sine of the refracted Angle to the Sine of the Angle of Inclination.—But if the Rays DE be very near the Axis FA, the Ratio will be very nearly the same with that of the refracted Angle to the Sine of the Angle of Inclination.

Hence, 1°. If the Refraction be out of Glass into Air; in the Case of Rays near the Axis,  $FC : FB :: 3 : 2$ . Consequently  $BC : FB :: 1 : 2$ . Therefore in the Case of Rays more remote from the Axis,  $BC : FB < 1 : 2$ .

2°. If the Refraction be out of Water into Air; in the former Case  $FC : FB :: 4 : 3$ . Consequently  $BC : FB :: 1 : 3$ ; in the latter Case, therefore,  $BC : FB : 1 < 1 : 3$ .

3°. Since then the Point of Dispersion F is more remote from the refracting Surface KL, if the Rays proceed out of Water, than out of Glass, into Air; Parallel Rays are less dispers'd in the former Case than in the latter.

6. If a Ray HE (Fig. 61) fall parallel to the Axis FA, out of a rarer, on the Surface of a spherically concave denser Medium; the refracted Ray EN will be made to recede from the Point of the Axis F; so as FE will be to FC, in the Ratio of the Sine of the Angle of Inclination, to the Sine of the refracted Angle.

7. If a Ray EH fall parallel to the Axis FB on the Concave Surface KL of a spherical denser Medium, from a rarer; the Distance of the Point of Dispersion from the refracting Surface FB; is to Distance from the Centre, FC, in a Ratio greater than that of the Sine of the Angle of Inclination, to the Sine of the refracted Angle. But if the Rays be very near the Axis, and the Angle BCE very small; BH will be to BC very nearly in the Ratio of the Sine of the Angle of Inclination; to the Sine of the refracted Angle.

Hence, 1°. If the Refraction be out of Air into Glass; in the Case of the Rays near the Axis,  $FB : FC :: 3 : 2$ ; in the Case of Rays more remote from the Axis  $FB : FC :: > 3 : 2$ ; consequently in the former,  $BC : FC :: 1 : 2$ ; And hence, in the latter,  $BC : FC < 1 : 2$ .

Hence also 2°. If the Refraction be out of Air into Water; in Case of the Rays near the Axis;  $FB : FC :: 4 : 3$ . In the Case of Rays more remote from the Axis  $FB : FC > 4 : 3$ . Consequently in the first Case  $BC : FC :: 1 : 3$ . And hence, in the latter,  $BC : FC > 1 : 3$ .



And hence, 3°. Since the Point of Dispersion F, is further from the Centre C, if the Refraction be in Water than in Air; the Rays will be less dispers'd in the latter Case than in the former.

8. If the Ray HE (Fig. 62.) fall parallel to the Axis AF, from a denser, upon the Surface of a spherically Concave rarer Medium; the refracted Ray will concur with the Axis AF, in the Point F; so as the Distance of the Point of Concourse from the Centre CF, may be to the refracted Ray FE in the Ratio of the Sine of the refracted Angle, to the Sine of the Angle of Inclination.

#### Doctrine of REFRACTION in Glasses, Lens's, &c.

1°. *Refraction in a Glass Prism.*—If a Ray of Light DE (Fig. 62.) fall obliquely out of Air on a Prism ABC; being refracted towards the Perpendicular, instead of proceeding to F it will decline to G, i. e. towards a Line HI, drawn Perpendicular to the Surface AB in the Point of Refraction E.—Again, since the Ray EG passing out of the Glass into Air falls obliquely on CB; it will be refracted to M: so as to recede from the Perpendicular NGO. And hence the various Phenomena of the Prism. See PRISM.

2°. *Refraction in a Convex Lens.*—If Parallel Rays AB, CD, and EF, (Fig. 63.) fall on the Surface of a Lens 2B 3K; the perpendicular Ray AB will pass unrefracted to K, where emerging into Air perpendicular, as before, it will proceed straight to G. But the Rays CD and EF falling obliquely out of Air into Glass, in D and F, will be refracted towards the Axis of Refraction, (i. e. towards Lines HI and LM drawn perpendicular to the refracting Surface in the Points of Refraction F and D;) and decline to R and Q.—Again, emerging obliquely out of the Glass into the Surface of the Air, they will be refracted from the Perpendicular; and therefore DQ will not proceed to X but to G; and FP, not to V but to G: Thus likewise might all the other Rays falling on the Surface of the Glass, be shewn to be refracted so as to meet the others about the Point G. See FOCUS.

Hence the great Property of Convex Glasses; viz. That they collect Parallel Rays, or make them converge into a Point. See CONVEXITY.

3°. *Refraction in a Concave Lens.*—Parallel Rays AB, CD, EF, (Fig. 64.) falling on a Concave Lens GBHMK; the Ray AB falling perpendicular on the Glass at B, will pass unrefracted to M; where being still perpendicular, it will pass into the Air, without Refraction to L. But the Ray CD falling obliquely on the Surface of the Glass, will be refracted towards the Perpendicular NDO, and proceed to Q; and the Ray DQ, again, falling obliquely out of the Glass upon the Surface of Air, will be refracted from the Perpendicular RQS, and proceed to V. After the same manner might the Ray EF be shewn to be refracted to Y, and thence to G.

Hence the great Property of Concave Glasses, viz. That they disperse Parallel Rays, or make them diverge. See CONCAVITY.

4°. *Refraction in a plain Glass.*—If Parallel Rays EF, GH, IL, (Fig. 65.) fall obliquely on a plain Glass ABCD; the Obliquity being the same in all, by reason of their Parallelism, they will be all equally refracted towards the Perpendicular; and accordingly being still parallel at M, O, and Q, will pass out into the Air equally refracted, again, from the Perpendicular, and still Parallel. See PARALLEL, and LOOKING-Glass.

Thus will the Rays EF, GH, and IL, at their entering the Glass, be inflected towards the right; and in their going out as much inflected to the left; so that the first Refraction is here undone by the second: Indeed, not so as that the Object is seen in its true Place.—For the Ray BQ being produced back again, will not coincide with the Ray LI; but will fall to the right thereof; and this the more as the Glass is thicker: However, as to the Point of Colour, the second Refraction does really undo the first. See COLOUR.

5°. *Refraction in Island Crystal.*—The Laws of Refraction in Island Crystal differ very much from those laid down in other Substances; for here is a double Refraction, contrary ways, whereby not only oblique Rays are split or divided into two, and refracted to opposite Parts, but even perpendicular Rays are also split, and one half of them refracted.

For the Theory hereof, see Island CRYSTAL.

The particular Laws of Refraction in the several Kinds of Lens's, see under the Article LENS.

REFRACTION, in Astronomy, or REFRACTION of the Stars, is an Inflection of the Rays of those Luminaries, in passing through our Atmosphere; whereby the Altitudes of the heavenly Bodies are apparently increas'd. See STAR and ALTITUDE, &c.

This Refraction arises hence, that the Atmosphere is unequally dense in different Stages or Regions; rarest of all a-top, and densest at bottom; which Inequality in the same Medium, makes it equivalent to several unequal Mediums. See AIR and ATMOSPHERE.

Sir Isaac Newton has shewn that a Ray of Light in passing from the highest and rarest Part of the Atmosphere, down to the lowest and densest, undergoes the same Refraction it would do in passing immediately, at the same Obliquity, out of a Vacuum into Air of equal Density with that in the lowest Part of the Atmosphere.

The effect of this Refraction may be thus conceived. Suppose ZV (Tab. Astronomy, Fig. 57.) a Quadrant of a vertical Circle, described from the Centre of the Earth T, under which is AB; a Quadrant of the Circumference of the Earth; and GH a Quadrant of the Surface of the Atmosphere: And suppose SE a Ray of Light emitted by a Star at S, and falling on the Atmosphere at E.—This Ray coming out of the Aethereal Medium, which is much rarer than our Air, or perhaps out of a perfect Vacuum, and falling on the Surface of the Atmosphere, will be refracted towards the Perpendicular: And since the upper Air, again, is rarer than that near the Earth, and grows still denser as it approaches us: The Ray, in its Progress will be continually refracted, so as to arrive at the Eye in the Curve Line EA.

Supposing, then the right Line AF to be a Tangent to the Arch in A, the Ray will enter the Eye A, according to the Direction of AF.—And since Objects are always seen in that Line, according to the Direction wherof the Rays enter the Eye, the Star will appear in AF; that is, in the Heavens at Q, which is nearer the Zenith than the Star really is.

Hence arise the Phenomena of the Crepusculum, or Twilight. See CREPUSCULUM.

And hence also it is that the Moon is sometimes seen eclipsed, when she is below the Horizon, and the Sun above it. See ECLIPSE.

That there is a real Refraction of the Stars, &c. is deduced not only from physical Considerations, and from Arguments a priori, and a Similitudine; but also from precise Astronomical Observations: Thus,

The Distance of the two Stars, *Spica Virginis*, and the *Lion's-Tail*, when near the Meridian, or even near the West, is constantly found 35° 2'. But when the *Lion's-Tail* is risen in the East 34° 30' high, *Spica Virginis* is observ'd to be in almost the same vertical Circle.—Add to this, an Observation of the *Dutch*, who winter'd at *Nova Zembla* in 1597, from whom the Sun totally disappeared on the 14th of November; and again began to appear on the 24th of January, which was six Days sooner than he should have return'd, according to Astronomical Calculations; as is observed in the *Acta Eruditorum*, A. 1697.—Nor must it be omitted that *Charles XI.* King of *Sweden*, being in 1694, at *Tornou*, in *West-Bothnia*, in the Latitude of 65° 33', observ'd that the Sun never set between the 14th and 15th Day of June; but was visible in the middle of the Night: The following Year he appointed two Mathematicians, *Bilembergius* and *Spolius*, to observe the same more accurately; who accordingly found that at *Tornou* in the middle of the Night, between the 10th and 11th of June, the Sun was  $\frac{1}{2}$  of his Diameter above the Horizon; and on the 14th of June at *Kangis*, in the Latitude of 66° 15', they found the Sun at Midnight, two Diameters above the Horizon.

Hence 'tis argued, That as all Light is propagated in right Lines, no Rays could reach the Eye from a Luminary below the Horizon, unless they were deflected out of their Course at their Entrance into the Atmosphere: 'Tis evident, therefore, the Rays are refracted in passing through the Atmosphere.

Hence, the Stars appear higher by Refraction than they really are; so that to bring the observ'd or apparent Altitudes to the true ones, the Quantity of Refraction must be subtracted. See ALTITUDE.

And hence, as the Antients were unacquainted with the Refraction; reckoning upon too great Altitudes, 'tis no Wonder they sometimes committed considerable Errors.

From the Doctrine of Refractions it appears that we never see the real Sun rising or setting, but only a Phantom, or Image thereof; the Sun himself being at that time hid below the Horizon.

And from the Observations just mentioned, it follows, that the Refractions are greater near the Pole, than at a less Latitude; doubtless from the greater Density of the Atmosphere, and the greater Obliquity of the Incidence.

M. de la Hire, assures us, he could never find any Differences in the Meridian Altitudes of the Stars; so that the Refractions remain always the same.—Though he owns, near the Horizon the different Constitution of the Air, &c. may occasion some Variations in the Refractions.

Stars in the Zenith are not subject to any Refraction.—Those in the Horizon have the greatest.—From the Horizon the Refraction continually decreases to the Zenith: All which follows hence, that in the first Case the Rays are perpendicular; in the second their Obliquity is greatest; in the third, 'tis continually increasing.

At the same Altitudes the Sun and Stars all undergo the same Refraction; for at equal Altitudes the incident Rays have the same Inclinations: but the Sines of the refracted Angles are as the Sines of the Angles of Inclination, &c.

Indeed Tycho Brahe, who first deduced the Refractions of the Sun, Moon, and fix'd Stars from Observation; makes the Solar Refractions greater than those of the fix'd Stars; and the Lunar Refractions sometimes greater than those of the Stars, sometimes less.—But the Theory of Refractions (which we have observed is owing to Snellius) was not fully understood in his Age.—De la Hire and Cassini, find the Refraction the same in all.

M. de la Hire gives us a Table of the Refractions of the Stars, in their several Degrees of Altitude; deduced from the surest and most accurate Observations; as follows.

Till



Table of REFRACTIONS of the Heavenly Bodies, at the several Degrees of Altitude.

| Alt. | Refract. | Alt. | Refract. | Alt. | Refract. | Alt. | Refract. | Alt. | Refract. | Alt. | Refract. |
|------|----------|------|----------|------|----------|------|----------|------|----------|------|----------|
| 0    | 32' 0"   | 16   | 3' 26"   | 30   | 1' 51"   | 46   | 1' 9"    | 61   | 0' 40"   | 77   | 0' 17"   |
| 1    | 26' 35"  | 17   | 3' 23"   | 31   | 1' 47"   | 47   | 1' 7"    | 62   | 39       | 78   | 15       |
| 2    | 20' 43"  | 18   | 3' 12"   | 32   | 1' 43"   | 48   | 1' 6"    | 63   | 37       | 79   | 14       |
| 3    | 15' 44"  | 19   | 3' 1"    | 33   | 1' 40"   | 49   | 1' 4"    | 64   | 35       | 80   | 12       |
| 4    | 12' 26"  | 20   | 2' 51"   | 34   | 1' 36"   | 50   | 1' 2"    | 65   | 33       | 81   | 11       |
| 5    | 10' 26"  | 21   | 2' 44"   | 35   | 1' 33"   | 51   | 1' 0"    | 66   | 32       | 82   | 10       |
| 6    | 9' 8"    | 22   | 2' 38"   | 36   | 1' 30"   | 52   | 0' 58"   | 67   | 31       | 83   | 8        |
| 7    | 8' 8"    | 23   | 2' 31"   | 37   | 1' 27"   | 53   | 56       | 68   | 30       | 84   | 7        |
| 8    | 7' 1"    | 24   | 2' 24"   | 38   | 1' 24"   | 54   | 54       | 69   | 28       | 85   | 6        |
| 9    | 6' 17"   | 25   | 2' 18"   | 39   | 1' 22"   | 55   | 52       | 70   | 26       | 86   | 4        |
| 10   | 5' 41"   | 26   | 2' 12"   | 40   | 1' 19"   | 56   | 50       | 71   | 25       | 87   | 3        |
| 11   | 5' 11"   | 27   | 2' 7"    | 41   | 1' 17"   | 57   | 48       | 72   | 24       | 88   | 2        |
| 12   | 4' 46"   | 28   | 2' 3"    | 42   | 1' 15"   | 58   | 46       | 73   | 23       | 89   | 1        |
| 13   | 4' 25"   | 29   | 1' 59"   | 43   | 1' 13"   | 59   | 44       | 74   | 21       | 90   | 0        |
| 14   | 4' 7"    | 30   | 1' 55"   | 44   | 1' 11"   | 60   | 42       | 75   | 20       |      |          |
| 15   | 3' 51"   |      |          | 45   | 1'       |      |          | 76   | 18       |      |          |

*Tycho Brahe* will have the *Refractions* of the Sun to vanish at the Altitude of  $46^{\circ}$ ; those of the Moon at  $45^{\circ}$ , and those of the fix'd Stars at  $20^{\circ}$ : But *Cassini* has found that they reach even to the Zenith.—Indeed *Tycho* represented all the *Refractions* less than they are; except the horizontal one, which he made too big: For he makes the horizontal *Refraction* in the Sun  $34'$ ; in the Moon  $33'$ ; in the fix'd Stars  $30'$ . *De la Hire* and *Cassini* make it  $32'$  in all the heavenly Bodies. *Tycho*, again, makes the *Refraction* of the Sun at  $33^{\circ}$  Altitude, to be  $55''$ ; but *Cassini* 1,  $43''$ .

*Fa. Laval* in 1710,  $22^{\circ}$  Jan. observ'd the meridian Altitude of the Sun to be  $70^{\circ} 25' 50''$ ; and on the 23 of June, observ'd the same to be  $70^{\circ} 26' 0''$ , which is  $10''$  more, that should be less.—Having met with some like Observations before, he takes occasion to suspect the *Refraction* to be varied according to the different Winds which blow from the different Quarters.—When the North-West Wind blows, he thinks the *Refraction* is the greatest; and adds, from Observations made at St. Baume, and St. Pilon, that the *Refraction* at 24 Fathoms above the Surface of the Sea, is double that at 600 Fathoms. See HORIZON.—*Huygens* long ago observ'd the *Refraction* to be chang'd every Hour; tho' his Experiments were made at very little Altitudes, and in Terrestrial Objects.

The *Refraction* diminishes the right and oblique Ascensions of a Star; and increases the Descensions: It increases the Northern Declination; diminishes the Southern. See ASCENSION, DESCENSION, &c.

*Refraction*, in the Eastern Part of the Heavens, diminishes the Longitude of a Star; but increases the same in the Western Part of the Heavens: It diminishes the Southern Latitude, and increases the Northern. See LONGITUDE and LATITUDE.

The *Refraction* therefore, is by no means to be over-look'd in Astronomy.—'Tis absolutely necessary to the determining of the Phenomena of the heavenly Motions, to a Degree of Accuracy; so that the antient Astronomy, where no regard was had to it, must of necessity have been exceedingly defective on this very account. See ASTRONOMY.

To observe the REFRACTION of a Star, &c.

1°. Observe the meridian Altitude of a Star near the Zenith; whence the Latitude of the Place being known, the true Declination of the Star is easily had, the Star being now void of any sensible *Refraction*. See DECLINATION.

2°. Observe the Altitude of the same Star in any other Degree, and note the Time by a Pendulum. 3°. For the given Time of Observation, from the Declination of the Star, compute its true Altitude. See ALTITUDE.

This being thus found less than the Altitude observ'd; subtract the one from the other; the Remainder is the *Refraction* for that Moment, in that Degree.

*Refraction of Altitude*, is an Arch of a vertical Circle, as *sf*, (Tab. Astronomy, Fig. 28.) whereby the Altitude of a Star *SE*, is increas'd by the *Refraction*. See ALTITUDE.

*Refraction of Declination*, is an Arch of a Circle of Declination, as *sl*, whereby the Declination of a Star *DS* is increas'd or diminish'd by the *Refraction*. See DECLINATION.

*Refraction of Ascension and Descension*, is an Arch of the Equator, *sd*, whereby the Ascension and Descension of a Star, whether right or oblique, is increased or diminished; by means of the *Refraction*. See ASCENSION, &c.

*Refraction of Longitude*, is an Arch of the Ecliptic, *ts*, whereby the Longitude of a Star is increas'd or diminished by means of the *Refraction*. See LONGITUDE, &c.

*Refraction of Latitude*, is an Arch of a Circle of Latitude *sl*, whereby the Latitude of a Star, *ts*, is increased or diminished by means of *Refraction*. See LATITUDE.

REFRACTION of Light, the Disposition of the Rays to be refracted. See REFRACTION.

A greater or less *Refrangibility* is a Disposition to be more or less refracted, in passing at equal Angles of Incidence, into the same Medium. See LIGHT, MEDIUM, &c.

That the Rays of Light are differently *refrangible*, is the Foundation of Sir *Isaac Newton's* whole Theory of Light and Colours.—The Truth of the Principle will appear from the following Experiments.

1°. A Ray of Light being received through a little round Hole into a dark Room, upon a Glass Prism, ABC, (Tab. Opticks, Fig. 55.) in such manner as to pass through it near the Angle C; the various Colours of the Rainbow will be seen painted in all their Splendor on a white Paper, EF; viz. the Red in E, then the Yellow, then Green, Blue, and at last Purple, or Violet; and on whatever Body you receive the Light, still the Colours will be the same.

Yet this colour'd Light is still propagated, like other Light, in right Lines; 'tis reflected, too, like other Light, from a Mirror, and refracted through a Lens; yet retains its Colours both after Refraction and Reflection.—When collected into a Focus, the Rays degenerate into a very bright White; but upon diverging again from the Focus, resume their former Colours.

Hence, 1°. Since nothing here happens to the Rays in passing the Prism, but that they are refracted, both in entering, and in quitting it: (See PRISM.) Light is converted into those Colours by mere Refraction.

2°. Since the colour'd Rays are still propagated in right Lines, if reflected from Mirrors, or refracted in Lens's; they still retain all the Properties of Light, and therefore are still Light.

3°. Since the several colour'd Rays decussated and mix'd together in the Focus, appear White; but after Separation, beyond the Focus, recover their former Colours; therefore Red, Yellow, Green, Blue, and Purple Rays mix'd together in a convenient Proportion, constitute a Resplendent white. See WHITE.

Note, The Experiment will succeed if the Room be not dark, only the Colours will be the less vivid.

2. A Prism DEF (Fig. 66.) being so disposed as that the Refractions of the Rays both at their Entrance and Exit, are equal; (which is obtain'd, by turning it slowly round its Axis, till the colour'd Light, which now rises, and now falls, appear stationary between the two.) In the middle Space between the Prism and the colour'd Light painted on the Wall, place another Prism GH to receive the colour'd Light LM. After a second Refraction in this second Prism the colour'd Light painted on the Wall, IK, will be inclined to a like Light NO, seen there, even when the Prism GH is removed; so as the blue Extremities N and I will be further a-part than the red ones K and O.

Hence, 1°. The blue Rays must of Necessity be more refracted than the red ones; and there is, likewise, an unequal Refraction in the intermediate Rays.

Hence, therefore, the Sun's Rays are not all of the same *Refrangibility*; consequently, not of the same Nature. See RAY.

3. Those Rays are most *Refrangible*, which are most *Reflexible*. See this proved under REFLEXIBILITY.

The Difference between *Refrangibility* and *Reflexibility* was first discover'd and publish'd by Sir *Isaac Newton* in 1675, in the *Phil. Transact.* and from that time vindicated by him, from the Objections of several Authors; particularly F. *Pardies*, M. *Mariotte*, Fr. *Linus*, or *Lin*, and other Gentlemen of the English College at Liege: At length it was more fully laid down, illustrated, and confirm'd by great variety of Experiments in his *Immortal Opticks*.

But, further, as not only those Colours of Light produced by Refraction in a Prism, but also those reflected from Opake Bodies have their different Degrees of *Refrangibility* and *Reflexibility*; and as a white Light arises from a Mixture of the several colour'd Rays; the same great Author concluded all homogeneous Light to have its proper Colour, corresponding to its Degree of *Refrangibility*, and not capable of being chang'd by any Reflexions, or any Refractions; that the Sun's Light is composed of all the primary Colours; that all compound Colours arise from a mixture of the primary ones, &c. See COLOUR.

The different Degrees of *Refrangibility*, he conjectures to arise from the different Magnitude of the Particles whereof the different



rent Rays consist.—Thus the most refrangible Rays, i. e. the red ones, he supposes to consist of the largest Particles; the least Refrangible, i. e. the Violet Rays, of the smallest Particles; and the intermediate Rays, Yellow, Green, and Blue, of Particles, of intermediate Sizes. See RED, GREEN, VIOLET, &c.

REFRACTION, in Commerce, a Term sometimes used by Merchants, where there has been an oversight in an Account, to the Prejudice of a Person, who thereupon demands Restitution of so much, added or omitted by Mistake.

You must make me a *Refraction* of five Pound forgot in your Account.—I'll Deduct or make you *Refraction* of 30s. charged inadvertently in my Bill.

REFRET, in Musick. See RITORNELO.

REFRIGERATIVE, in Medicine, a Remedy or Diet which refreshes the inner Parts by cooling them.

Such, usually, are Ptilans, Clysters, Potions, &c. See PTISANS, &c.

REFRIGERATORY, in Chymistry, a Cooler; or a Vessel, filled with cold Water, placed about the Head of an Alembic, to cool and condense the Vapours rais'd thither by the Fire, and to convert them into a Liquor, to be discharged thence through the Beak. See DISTILLATION, ALEMBIC, SPIRIT, WATER, &c.

The Water in the *Refrigeratory* is to be changed from time to time, as it begins to grow warm.

Sometimes they content themselves with wrapping a wet Cloth about the Head of the Alembic, instead of a *Refrigeratory*: But the more usual Method now used to supply the Place of the *Refrigeratory*, is by a Worm, or spiral Pipe running through a Tub of cold Water.—Distillation is perform'd by Evaporation and Refrigeration. See EVAPORATION, &c.

REFUGE, REFUGIUM, in our old Customs, a Sanctuary or Asylum. See SANCTUARY and ASYLUM.

At Paris is a Hospital called the *Refuge*, wherein dissolute Women are shut up. See MAGDALEN.

REFUGEES, French-Calvinists, who by the Revocation of the Edict of Nantz, in 1685, have been constrain'd to quit their Country, and retire for Refuge into Holland, Germany, England, &c. to save themselves from the necessity of abandoning their Religion. See EDICT.

REGAL, something belonging to a King. See KING.

*Regalis* is of the same import with *Royal*; the former being form'd of the Latin *Rex*; the other of the French, *Roy*, King. See ROYAL.

REGAL Fishes. See ROYAL Fishes.

REGALE, in the French, *Jurisprudence*, is a Right belonging to the King over all Benefices. See BENEFICE.

The *Regale* consists in enjoying the Revenues of Bishopricks during the vacancy of their Sees; and of presenting to the Benefices dependant thereon, which become vacant during that time, and 'till a Successor have taken the Oath of Fidelity, and have procured Letters Patents, to secure him from the *Regale*.

The Enjoyment of the Fruits of the See is called the *Temporal Regale*; that of presenting to Benefices the *spiritual Regale*.

Some refer the Origin of the *Regale* to the time of Clouis, and say the Clergy granted this Privilege to the King, upon his defeating the *Visigoths*; others say, Pope Adrian gratified *Charlemain* with it, in a Council held at Rome.—'Tis observ'd by others, that the *Regale* was originally no more than a Ward, or Administration; and that the Kings were only Depositories of the Fruits of the vacant Bishopricks, and appointed *Oeconomi* to look to them during the Vacancy. See OECONOMIES.

'Tis added, that the Kings of the first and second Race never enjoy'd any such Privilege, and that it was only introduced in the twelfth Century, in favour of Investitures. See INVESTITURE.

REGALE, REGALIO, a magnificent Treat or Entertainment, given Embassadors, or other Persons of Distinction, to divert or do them Honour.

In Italy 'tis usual at the Arrival of any Traveller of Eminence, to send him a *Regale*; that is, a Present of Fruits, Sweet-Meats, &c. by way of Refreshment.

REGALIA, in Law, the Rights or Prerogatives of a King. See KING.

These are reckoned by Civilians to be six; 1°. Power of Judicature. 2°. Power of Life and Death. 3°. Power of War and Peace. 4°. Masterless Goods. 5°. Assessments. 6°. Minting of Money. See ROYALTIES.

REGALIA is also used for the several Parts of the Apparatus of a Coronation; as the Sceptre with the Cross; Sceptre with the Dove; St. Edward's Staff; four several Swords; the Globe; the Orb with the Cross, &c. used at the Coronation of our Kings. See CORONATION.

REGALIA, of the Church, are those Rights and Privileges which Cathedrals, &c. enjoy by Grants, and other Concessions of Kings. See CHURCH, CATHEDRAL, &c.

Sometimes the Term is used for the Patrimony of the Church; as *Regalia Sancti Petri*, &c. and particularly for such Lands and Hereditaments as have been given by King's to the Church.—*Cepimus in Manum nostram Baroniam & Regalia quae Archiepiscopus Eborum de nobis tenet.* Pryn. Lib. Ang.

These *Regalia* while in Possession of the Church, were subject to the same Services as all other temporal Inheritances; and after

the Death of the Bishop reverted to the King, 'till he invested another with them; which in the Reigns of William the Conqueror, and some of his immediate Successors, was frequently done, and as oft did the Bishops make Complaint thereof, as appears from *Malmesbury*, *Neubrigen*, &c. See BISHOP.

This last Author says, that great Complaint was made against Henry II. *Quod Episcopatus Vacantes, & provementia perciperet commoda, diu vacare voluit, & Ecclesiasticis potius sibus applicanda in fiscum redegit.* See TEMPORALITY, BENEFICE, &c.

REGALIA facere, is used for a Bishop's doing Homage or Fealty to the King, when he is invested with the *Regalia*.

Thus *Malmesbury*, in *Anselm*. *Regalia pro more istius temporis faciens principi 7 Kalend. Octobris, Cantuarie assedit.*

REGALIS Aqua, or Aqua REGIA, an Acid corrosive Spirit or Water, serving, as a Menstruum, to dissolve Gold. See DIS-SOLUTION.

The Basis or essential Ingredient of *Aqua Regia*, is common or Sea Salt; which is the only Salt in Nature that will operate on Gold. See GOLD and SALT.

There are divers Ways of preparing it; for, in effect, the Salt will not fail of its End, in what form soever applied.—The common Way is by mixing common Salt, or Sal Armoniac, with Spirit of Nitre; or with common Aqua Fortis, which is made of Nitre and Vitriol. See AQUA Fortis.

It has its Name from its dissolving Gold, reputed among Chymists, the King of Metals.

*Aqua Regalis* dissolves Gold, but not Silver; *Aqua Fortis* Silver, but not Gold.—For the reason hereof see MENSTRUUM.

REGARD, of the Forest, the oversight or inspection thereof; or the Office or Province of the *Regarder*; which is to go through the whole Forest, and every Bailiwick thereof, before the holding of the Sessions of the Forest, or Justice Seat; to see and enquire of the Trespasses therein. See FOREST.

*Ad videndum, ad Inquirendum, ad Imbreviandum, ad certificandum, &c.* See REGARDER.

REGARD is also used for the Extent of the *Regarder's* Charge, i. e. for the whole Forest; or all the Ground that is Parcel thereof. See PURLIEU.

REGARDANT, in Heraldry, is understood of a Lion, or other Beast of Prey, bore in a Posture of looking behind him, with his Face towards his Tail.

Others apply it to a Beast which only shews the Head, and some Part of the Neck, as moving from out of some Division of the Coat into another.—He bears Azure, three Bends, Or, in a chief Argent, charg'd with a Lion regardant Gules.

Villain REGARDANT, or *Regardant to the Manour*, is an ancient Officer, or Retainer to the Lord; thus called because charged to do all base Services within the Manour, to see the same freed of all filthy and loathsome things that might annoy it. *Coke on Littleton*, Fol. 120.

REGARDER, REGARDATOR *Forestae*, an ancient Officer of the King's Forest, whose Business was every Year, upon Oath, to make a *Regard*, i. e. take a View of the Forest Limits; also to enquire of all Offences and Defaults committed by the Foresters within the Forest, and of all the Concealments of them, and whether all the other Officers did execute their respective Duties or not. See FOREST.

*Manwood* refers this Institution to King Henry II. but *Spelman* thinks the Name, at least, was given since, and that they were the same with those Officers called *Custodes Venationis*. See REGARD.

REGEL, or RIGEL, a fix'd Star of the first Magnitude, in Orion's Left Foot.—Its Longitude, Latitude, &c. see among the rest of the Constellation ORION.

REGENERATION, in Theology, the Act of being born again by a spiritual Birth, or of becoming a Child of God. See CONVERSION.

*Regeneration* is perform'd by the washing of the Holy Spirit, whereof Baptism is the Sign. See BAPTISM.

When an Infidel is converted, Baptism is administered as a Sign of *Regeneration*.

REGENT, a Person who governs a Kingdom during the Minority, or the Absence of the King. See VICERoy.

In France, the Queen Mother has the Regency of the Kingdom, under the Title of *Queen Regent*, while the King is a Minor.—Some have urged that Women being incapable of succeeding to that Crown, were incapable of the *Regency*; but Custom has declared in their favour. See SALIC.

REGENT is also used for a Professor of Arts or Sciences, who holds a Class, or set of Pupils, in a Colledge. See COLLEGE.

The Foreign Universities are generally composed of Doctors, Professors and Regents. *Regent* and Scholar are Relative Terms. See TUTOR.

*Regent* is generally restrain'd to the lower Classes, as *Regent* of Rhetoric, *Regent* of Logic, &c. those of Philosophy are rather call'd Professors. See PROFESSOR.

REGIFUGE, REGIFUGIUM, a Feast held in ancient Rome on the sixth of the Calends of March, i. e. on our 24th of February, in Memory of the Expulsion of their Kings, particularly of Tarquin's flying out of Rome on that Day. See FAST.

Some will have this Feast to bear the Name from the *Rex Sacrorum*, King of the Sacrifices, flying out of the Comitia, or the Place



Place of Assembly; as soon as the Sacrifice was over; in Imitation of the Flight of *Tarquin the Proud*.

Some Critics and Antiquaries will have *Regifugium*, the same with *Fugalis*; others hold them to be different. See *FUGA*.

**REGICIDE**, a King-killer.—The Term is also used for the Act itself of murdering of a King; of *Rex* and *Cædo*, I slay.

*Regide* is chiefly used in speaking of the Persons concern'd in the Trial, Condemnation, and Execution of King *Charles* the First.

**REGIMEN**, in Medicine, a Rule or Course of living, with regard to eating, drinking, cloathing, and the like; accommodated to some Disease, and to the particular Course of Medicine the Patient is under. See *DIET*.

'Tis doubted whether the hot or cold *Regimen* be most convenient in Fevers.—The hot *Regimen* which antiently obtained in the Small-Pox, begins to be disused.—The *Regimen* is very different in different Countries: *Bartholin* says, a Slice of Bacon, in *Denmark*, is an usual Dish for a Person in a high Fever. The Word is pure *Latin*, and signifies Government and Rule.

**REGIMEN**, in Chymistry and Alchymy, is the Method of ordering and conducting any thing, that it may answer its Intention.

Thus, *Regimen of the Fire*, is the manner of making and ordering a Fire, and the Degrees thereof. See *FIRE* and *DEGREE*.

*Regimen of the Work*, that is, of the *Philosopher's Stone*, call'd the *Work of Patience*, is the Rule and Conduct to be observ'd to attain Projection. See *PHILOSOPHERS Stone*, and *PROJECTION*.

There are three things to be chiefly regarded in the *Regimen of the Work*—The first to administer a gentle, easy Heat, at the beginning of the Coction.

The second to continue this external Heat according to the Season of the Work; always observing four Seasons, as in the common and astronomical Year: The beginning being the Winter, the Progress the Spring, then Summer, and lastly Autumn, which is the time of Maturity and Perfection of the Stone: In all which the Heat is to be augmented in Proportion to the Augmentation observ'd in Nature.

It is to be added, that the Work may not be begun in any Season, but regard is to be had to the Seasons of Nature; least the Winter of the Work be found in the Summer of the Year, &c. Which, however, is to be understood of the Day wherein the Mercury is put in the *Ovum Philosophicum*; not of that when it is begun to be set at Liberty from the Prisons Nature had inclosed it in.

The third is that in augmenting the Fire, the Augmentation be not of a whole Degree at once; the Spirits being unable to bear such Violence; but a Degree is to be divided into four Parts, and one Part to be taken at a time. See *DEGREE*.

All the Operations of the first *Regimen*, are occult and invisible: In the second *Regimen* comes Putrifaction, which is the first sensible Change; shewing it self by its black Colour. See *PUTRIFACTION*, &c.

**REGIMEN**, or **GOVERNMENT**, in Grammar, is that Part of Syntax or Construction which regulates the Dependency of Words; and the Alterations which one occasions in another. See *SYNTAX* and *CONSTRUCTION*.

Thus we say, the *Regimen* of a Verb active, is an Accusative, i. e. a Verb active governs an Accusative; or requires that the Noun which receives its Action be in the Accusative Case. See *VERB*, *ACCUSATIVE*, &c.

Prepositions have some *Regimen*, i. e. they require certain Cases in the Nouns they are prefix'd to; by which they are distinguished from Adverbs which have none. See *PREPOSITION* and *ADVERB*.

The *Regimen*, or Construction of Government, is entirely arbitrary; and differs in all Languages; one Language forming its *Regimen* by Cases, as the *Latin* and *Greek*; others by Particles, in lieu thereof, as the *English*, by *of*, *to*, &c. the *French*, *Spanish*, and *Italians*, by *de*, *à*, *da*, &c. See *CASE*.

There are, however, some general Maxims which hold in all Languages—as 1<sup>o</sup>. That there is no Nominative Case in any Sentence but has a Reference to some Verb either express'd or understood. See *NOMINATIVE*.

2<sup>o</sup>. That there is no Verb but has its Nominative Case, either express'd or understood.—Indeed in Languages which have proper Accusatives, as the *Latin*, before Infinitives there is an Accusative, not a Nominative Case: as *Scio petrum esse doctum*.

3<sup>o</sup>. There is no Adjective but has a Relation to some Substantive. See *ADJECTIVE*, &c.

4<sup>o</sup>. That there is no Genitive Case but is govern'd by some other Noun; inasmuch as that Case always expresses the Possessor, which must be governed by the possess'd.—This Rule does not hold so apparently in the modern as the antient Languages; in regard the Particles *of*, *de*, &c. which are the proper Signs of the Genitive Cases, are frequently used as Prepositions. See *GENITIVE*.

5<sup>o</sup>. That the *Regimen* of Verbs is frequently laid on different Kinds of Relations, according to Custom or Usage; which yet does not change the specific Relation of each Case, but only shews that Custom has made Choice of this or that, according to Fancy.—Thus the *Latin* say, *Juvare aliquem*, & *opitulari ali-*

*is*, to help one.—Thus the *French* say, *servir quelqu'un* & *servir à quelqu'un*, to serve one.—Thus the *English* say, *Fight one*, or *Fight with one*.—And thus in *Spanish* most of the Verbs active govern indifferently either a Dative or an Accusative. Sometimes, also, the Verb admits of several *Regimens*; as, *præstare alicui*, or *alicui*, *Eripere mortem alicui*, or *alicui a morte*.

Indeed the different *Regimen* sometimes makes an Alteration in the Sense; in which, particular regard is to be had to the usage of the Language.—Thus the *Latin*, *cavere alicui*, signifies to watch, or be careful of the preservation of any one: *Cavere alicui*, to beware of him.

There is one very common Fault in *Regimen*, which our accurate Writers should be careful to avoid; viz. the using of two Verbs that require different Cases, together, as only governing one Case: As in this Example; after *embracing* and giving his Blessing to his Son; where, *embracing* requiring an Accusative, and *giving* a Dative Case, the *Regimen*, or Construction of the first Verb with the Noun is irregular: *embrace to a Son*.

The same may be observ'd in Nouns; as I conjured him by the Memory and the Friendship he bore my Father; where *Memory* does not agree with the Verb *he bore*.

**REGIMENT**, in War, a Body of Troops of Horse, or Companies of Foot, commanded by a Colonel. See *COLONEL*.

The Number of Men in a *Regiment* is as undetermined as that of the Men in a Troop or Company. See *TROOP* and *COMPANY*.

There are *Regiments* of Horse, that are not above 300 Men; and there are some in *Germany* of 2000; and the *Regiment* of *Picardy* in *France* consists of 120 Companies, or 6000 Men.

The *French Regiments* of Horse are not commanded by a Colonel, as the Foot are, but by a *Mestre de Camp*. See *MESTRE de Camp*.

Some observe, that there were no *Regiments* of Horse before the Year 1637. 'Till then the Troops were loose, and independent of each other, not incorporated into a Body or *Regiment*. See *GUARD*.

**REGIO Assensu**, is a Writ whereby the King gives his Royal Assent to the Election of a Bishop. See *BISHOP*.

**REGION**, **REGIO**, in Geography, a Country; or a particular Division of the Earth; or a Tract of Land inhabited by People of the same Nation. See *EARTH*, *NATION*, &c.

The modern Astronomers divide the Moon into several *Regions* or Provinces, to each whereof they give its Name. See *MOON*.

**REGION** in Physiolgy.—Authors divide the Atmosphere into three Stages, call'd the *upper*, *middle*, and *lower Regions*. See *ATMOSPHERE*.

The lowest is that wherein we breath; and is bounded by the Reflexion of the Sun's Rays; that is, by the Height to which they rebound from the Earth. See *RAY*.

The *middle* is that wherein the Clouds reside, Meteors are form'd, &c. extending from the Extremity of the *lowest*, to the tops of the highest Mountains. See *METEOR*, *CLOUD*, *MOUNTAIN*, &c.

The *upper* commences from the Tops of the Mountains, and reaches to the utmost Limits of the Atmosphere.—In this reigns a perpetual, equable Calmness, Clearness, and Serenity. See *AIR*.

Some Authors use the Term *Elementary Region*, for the Space of the whole Atmosphere, from the Earth to the Sphere or Heaven of the Moon; because within this are contained the four Elements, and all Elementary Bodies. See *ELEMENT* and *ELEMENTARY*.

*Ethereal Region* is used for the whole extent of the Universe, including the Orb of the fix'd Stars, &c. See *UNIVERSE*.

**REGION**, in Anatomy, is a Division of the human Body. See *BODY*.

Anatomists divide the Body into three *Regions*, or *Venters*. See *VENTER*.

The *upper Region* is that of the Head; reaching as low as the first *Vertebra*; and comprehending the animal Organs, the Brain, &c. See *HEAD*, &c.

The *middle Region* is that of the Thorax or Breast, which *Hippocrates* calls the upper Venter, and which reaches from the Clavicles to the Diaphragm; wherein are contained the vital Parts, as the Heart, Lungs, &c. See *HEART*, *LUNGS*, &c.

The third or *lower Region* is the Abdomen or Belly, &c. containing the natural Parts, destin'd for Digestion, Purgation, and Generation. See *ABDOMEN*.

**REGIONARY**, **REGIONARIUS**, in Ecclesiastical History, a Title given from the fifth Century, to Persons who had the Charge and Administration of the Church Affairs within a certain District or Region.

At *Rome* there were antiently seven *Regionary Deacons*, who presided over a kind of Hospitals, and look'd to the Distribution of Alms. See *DRACON*.

There were also *Regionary Subdeacons*, and *Regionary Notaries*, *Regionary Bishops*, &c. See *NOTARY*.

A *Regionary Bishop* was properly a Missionary invested with an Episcopal Character, but without being attach'd to any particular See; that he might be at Liberty to go preach, and perform other Functions of his Ministry, whither soever the Spirit of God, and the Wants of the People should call him. See *MISSIONARY*.

RE-



**REGISTER, REGISTRUM**, a publick Book, serving to enter and record Memoirs, Acts, and Minutes, to be had recourse to, occasionally, for the justifying of Matters of Fact, &c. See RECORD.

*Menage* derives the Word, by Corruption, from *Registrum*, a Book containing Extracts of several Books, &c. collected together: *Dicitur registrum quasi iterum gestum*.—Others derive it from the old French, *gister*, to lie down in a Bed, &c.

The Law of *Scotland* is render'd very easy and regular, by means of the great Number of publick Registers, for the recording of the Conveyances of Lands, &c. of private Persons.—Of these there are two Kinds: The one *General*, fix'd at *Edinburgh*, under the Direction of the *Lord Register*, who before the Union was the fifth Officer of State, and besides the Registry, was Clerk of the Parliament, Treasury, Exchequer, and Session.

The other is particularly kept in the several Shires, Stewarties, and Regalities.—The Clerks hereof are obliged to transmit the Registers of their respective Courts, to the general Register; and the Notaries their Protocols: And here they are so disposed, that on demand the Lieges can have a view of any Writs which the Law requires to be register'd, or which Parties for their Security have thought fit to record.

The Registers were first set on Foot by Act of Parliament under King *James VI.* to the unspeakable Advantage of the Subject.

No Man can have a right to any Estate, but it must be registered within forty Days of his becoming seiz'd of it, otherwise 'tis null: By this means all secret Conveyances are cut off.

REGISTER is also used for the Clerk or Keeper of a Register, or Registry. See CLERK.

Of these we have several, denominated from the Registers they keep—as Register of the High Court of Delegates; Register of the Arches Court of Canterbury; Register of the Court of Admiralty; Register of the Prerogative Court; Register of the Garter, who is always Dean of *Windfor*. See DELEGATE, ARCHES, ADMIRALTY, PREROGATIVE, GARTER, &c.

REGISTER of a Parish-Church, is a Book wherein the yearly Baptisms, Marriages, and Burials of each Parish, are orderly registered. See PARISH, &c.

This Practice was laudably instituted by that great, but unfortunate Person, *Thomas Cromwell*, Earl of *Essex*, Anno 1538. while he was Vicar-General to King *Henry VIII.* See BILL of Mortality.

REGISTER is also the Title of a Book, containing the Forms of most of the Writs used in Common Law; call'd the Register of Writs. See WRIT.

This Register, *Coke* on *Littleton* observes, is one of the most antient Books of the Common Law.

REGISTER-Ships, or Ships of REGISTER, in Commerce, are Vessels to which the King of *Spain*, or the Council of the *Indies*, grant Permissions to go and traffick in the Parts of the *Spanish West-Indies*. See COMMERCE.

They are thus called because the Ships are to be registered before they set sail from *Cadix*, which is the Place where they usually load for *Buenos Ayres*.

These Vessels, by the Tenor of the Permit, are not to exceed three hundred Tuns: But there is that good understanding between the Merchants and the Council of the *Indies*, that Ships of five or six hundred Tun frequently pass un-noted.

The Permissions cost thirty thousand Pieces of Eight, each: But were they to cost an hundred thousand the Merchants would be Gainers, and the King of *Spain* a Loser.—For though the Quantity and Quality of the Merchandises on-board, be always express'd; yet, by Force of Presents, the Officers here and in the *Indies*, allow them to load and unload vastly more than the Permission expresses.—Vessels whose Certificate only mentions twelve thousand Skins, and an hundred thousand Pieces of Eight, have been known to have on-board above four Millions in Gold and Silver; twenty six thousand Skins, &c. So that the King of *Spain's* Fifth, and his other Dues, were almost nothing to what they should be.

Add to this, that in the Years 1702, 1703, &c. these Register Vessels, countenancing and backing each other, sold their Commodities for above three hundred per Cent. Profit.—A Hat was sold for 18 Pieces of Eight; an Ell of ordinary Cloth for 12 Pieces of Eight, &c.

Among the Register Vessels may be reckoned a Ship of five hundred Tuns, which the King of *Spain* allows the *English South-Sea Company* to send each Year to the Fairs held at *Porto Bello*, *Carthagena*, &c. See COMPANY.

REGISTER, among Letter-Founders, is one of the inner Parts of the Mould wherein the Printing-Types are cast. See LETTER.

Its use is to direct the joining them justly together again, after opening them to take out the new-cast Letter. See LETTER-FOUNDRY.

REGISTERS, in Chymistry, are Holes, or Chinks, with Stopples to them, contrived in the Sides of Furnaces, to regulate the Fire, i. e. to make the Heat immediately more intense, or remiss, by opening them to let in the Air, or keeping them close, to exclude it. See FURNACE, FIRE, HEAT, DEGREE, &c.

REGISTRING, in Printing, the disposing of the Press so as that the Lines and Pages printed on one Side of the Sheet, meet exactly against those on the other; which is done by means

of two Points in the greater or outward Tympan. See PRINTING.

REGISTRY, comprehends the Office, Books, and Rolls wherein the Proceedings of Chancery, or any spiritual Court, are register'd or recorded. See REGISTER, RECORD, ROLL, &c.

REGIUS-Professors.—King *Henry VIII.* founded five Lectures in each of our Universities; viz. of Divinity, Hebrew, Greek, Law, and Physick; the Readers of which Lectures are in the University Statutes, called *Regii Professores*. See PROFESSOR.

REGIUS Morbus. See JAUNDICE.

REGLET, or RIGLET, in Architecture, a little flat narrow Moulding, used chiefly in Compartments, and Pannels, to separate the Parts or Members from one another, and to form Knobs, Frets, and other Ornaments. See MOULDING, FRET, &c.

The Riglet, according to *Daviler*, differs from the Fillet and Listel, in that it projects equally, like a Ruler. See FILLET and LIST.

The Word is a diminutive of the French, *Regle*, Rule.

REGLETS, or RIGLETS, in Printing, are thin Rulers, or slips of Wood of different Dimensions, placed in the Chase, between the Pages, and at the extremes thereof, to keep them steady, and hold them tight. See PRINTING.

The Reglets make the chief Part of what they call the Furniture of the Chase. See CHASE.

They are particularly denominated from the Place they are in, in respect of the Pages, Head-Sticks, Foot-Sticks, Gutter-Sticks, &c.

The Term is also used abroad for a Ruler of Metal,  $\frac{1}{2}$  of an Inch long, but which may be lengthened out by joining several together; used to separate the Columns, in Books that have several in the same Page; as also for Lines to Place the Notes on in Printing of Musick.

Lastly, Reglet, is also a little thin slip of Wood used by some Compositors to take off the Lines from the Composing-stick, and Place them on the Gally, as fast as compos'd. See COMPOSITOR, GALLEY, &c.

REGRATOR, a Law Word, formerly used for one that bought Wholesale, or by the Great, and sold again by Retail.

The Term is now chiefly used to denote one that Buys and Sells again any Wares, or Victuals in the same Market or Fair, or within five Miles of it.

REGRATOR is also used for a Person who furbishes up old Moveables, to make them pass for new. See FURBISHER.

Among Masons, &c. to regrate a Stone, is to take off the outer Surface of an old Hewn Stone, with the Hammer and Ripe, in order to whiten and make it look fresh again. See STONE and MASONRY.

REGRESSION, or Retrogradation of Curves, &c. See RETROGRADATION, &c.

REGULA. See RULE.

REGULA, in Architecture. See ORIO.

REGULAR denotes the Relation of any thing that is agreeable or conformable to the Rules of Art. See RULE.

Thus we say, a Regular Proceeding.—A Regular Building.—A Regular Poem, &c. Regular Verb, &c. See VERB, POEM, &c.

In this Sense the Word stands oppos'd to Irregular, or Anomalous. See ANOMALOUS, &c.

REGULAR Figure, in Geometry, is a Figure which is both equilateral, and equiangular; i. e. whose Sides, and consequently, Angles, are all equal. See FIGURE.

The Equilateral Triangle and Square are regular Figures. See SQUARE and TRIANGLE.

All other regular Figures consisting of more than four Sides, are called Regular Polygons. See POLYGON.

Every regular Figure may be inscribed in a Circle. See CIRCLE.

For the Dimensions, Properties, &c. of Regular Figures, see POLYGON.

REGULAR Body, call'd also Platonic Body, is a Solid terminated on all Sides by regular and equal Planes, and whose solid Angles are all equal. See BODY and PLANE.

The Regular Bodies are five in Number; viz.—The Cube, which consists of six equal Squares; the Pyramid or Tetrahedron of four equal Triangles; the Octahedron of Eight; the Dodecahedron of 12; and the Icosahedron of twenty; see each under its proper Article, CUBE, TETRAHEDRON, OCTAHEDRON, &c.

Beside these five there can be no other Regular Bodies in Nature.

To measure the Surface and Solidity of the five regular Bodies.

The Solidity, &c. of the Cube is shewn under the Article CUBE.

The Tetrahedron being a Pyramid, and the Octahedron a double Pyramid; and the Icosahedron consisting of twenty triangular Pyramids; and the Dodecahedron of twelve Quinquangular ones, whose Bases are in the Surface of the Icosahedron and Dodecahedron, and their Vertices meeting in a Centre: The Solidities of these Bodies are all found from what we have shewn under the Article PYRAMID.

Their Surface is had by finding the Area of one of the Planes, from the Lines that bounds it; (see TRIANGLE); and multiplying the Area thus found by the Number from which the Body is denominated; e. gr. for the Tetrahedron by 4; for the Hexahedron or Cube, by six; for the Octahedron by 8; for the Dodecahedron by 12;



and for the Icosihedron by 20.—The Product is the superficial  
See AREA and SUPERFICIES.

portions of the Sphere, and of the five Regular Bodies inscribed  
therein: The Diameter of the Sphere being 2.

|   |     |       |
|---|-----|-------|
| The Circumference of a great Circle is, | 6.  | 28318 |
| Surface of a great Circle,              | 3.  | 14159 |
| Surface of the Sphere,                  | 12. | 56637 |
| Solidity of the Sphere,                 | 4.  | 18859 |
| Side of the Tetrahedron,                | 1.  | 62299 |
| Surface of a Tetrahedron,               | 4.  | 6188  |
| Solidity of a Tetrahedron,              | 6.  | 15132 |
| Side of a Cube or Hexahedron,           | 1.  | 1547  |
| Surface of the Hexahedron,              | 8.  |       |
| Solidity of the Hexahedron,             | 1.  | 5396  |
| Side of an Octahedron,                  | 1.  | 41421 |
| Surface of the Octahedron,              | 6.  | 9282  |
| Solidity of the Octahedron,             | 1.  | 33333 |
| Side of the Dodecahedron,               | 6.  | 71364 |
| Surface of the Dodecahedron,            | 10. | 51462 |
| Solidity of the Dodecahedron,           | 2.  | 78516 |
| Side of the Icosihedron,                | 1.  | 65146 |
| Surface of the Icosihedron,             | 9.  | 57454 |
| Solidity of the Icosihedron,            | 2.  | 53616 |

If one of these Bodies be required to be cut out of the Sphere  
of any other Diameter; say, as the Diameter of the Sphere 2,  
is to the Side of any one Solid, inscribed in the same, (suppose  
the Cube 1. 1547.) so is the Diameter of any other Sphere (sup-  
pose 8.) to 9. 2376, the Side of the Cube inscrib'd in this latter  
Sphere.

Let  $dr$ , then, (Tab. Geometry, Fig. 81.) be the Diameter of a  
ny Sphere, and  $da \frac{2}{3}$  of it.  $= ab = br$ . Erect the Perpendiculars  
 $ae$ ,  $ef$ , and  $bg$ ; and draw  $de$ ,  $df$ ,  $er$ ,  $fr$ , and  $gr$ ; then will (1.)  $re$   
be as the Side of the Tetrahedron; (2.)  $df$  is the Side of the  
Hexahedron; (3.)  $de$  is the Side of the Octahedron. (4.) And  
cutting  $de$  in extreme and mean Proportion in  $b$ ,  $db$  will be the Side  
of the Dodecahedron. (5.) Setting the Diameter  $dr$  up perpen-  
dicularly at  $r$ ; from the Centre  $c$ , to its Top, draw the Line  $cg$ ,  
cutting the Circle in  $g$ .—Let fall the Perpendicular  $gb$ ; so is  $br$   
the Side of the Icosihedron.

REGULAR Curves, are such whose Curvity proceeds continually  
in the same uniform Geometrical Manner.—Such are the Perime-  
ters of the Conic Sections. See CURVE, CONIC Section, &c.

Such as have a Point of Inflection, or Regression; and which  
being continued to a certain Point, turn themselves a contrary  
Way, are call'd Irregular Curves.—Such are the Conchoid, and  
the solid Parabola, which has a Square for its Parameter. See  
FLEXION and RETROGRESSION.

REGULAR Architecture, Fortification, &c. See ARCHITEC-  
TURE and FORTIFICATION.

REGULAR, in the Monastic Sense, is a Person who has made  
the Vows in some Religious House. See RELIGIOUS and  
VOW.

Under Regulars are comprehended the whole Body of Monks.  
See MONK.

The Denominations of Regular, in this Case, arises hence, that  
they are bound to observe the Rule of the Order they are en-  
ter'd into. See RULE and ORDER.

Hence, Regular Priest is used for a Priest who is in some Re-  
ligious Order; in opposition to a Secular Priest, who lives in the  
World, or at large. See SECULAR.

A Cardinal is reputed both Regular and Secular, and is enti-  
tled to the Rights of both. See CARDINAL.

Regulars may be promoted to Bishopricks and Archbishopricks,  
as well as Seculars; but their Promotion secularizes them; the  
Episcopal Dignity dispensing them from the Observation of the  
Rule whereof they have made Profession. See SECULARISA-  
TION.

REGULAR Canons. See CANON.

REGULAR Benefices, are such as can only be held by Monks or  
Religious; or at least, *per cupientem profiteri*, a Person desirous  
to embrace the Monastic Life. See BENEFICE.

'Tis a Maxim in the Romish Canon Law.—*Regularia Regula-  
ribus*, i. e. Regular Benefices are to be confer'd on Regular Priests.

—The Abbies that are Chiefs of their respective Orders are all  
Regular, and can only be served by Monks or Cardinals. See  
ABBY.

All Benefices are presumed Secular, unless they be proved Re-  
gular.

Antiently, the Regular Benefices were almost all confer'd by  
way of Administrations or Curacies; the Religious Incumbents  
being always *ad Manum* of their Superiours, who displaced them  
at Pleasure.—Hence the common Maxim among the Canonists,  
*omne Beneficium regulare manuale*.

The Benefices affected to Regulars are Abbies, Conventual  
Priories, Simple Priories, and Claustral Offices.—They may be  
confer'd on Seculars in Commendam. See COMMENDAM.

REGULAR Places, are those within the Boundary or Inclo-  
sure of the Convent; as the Cloister, Dormitory, Chapter, and  
Refectory.—In opposition to those destined for Guests, and for

the Necessaries of the House, which are reputed without the  
Inclosure.

REGULATION, a Rule or Order prescribed by a Superior,  
for the uniform and orderly Management of some Branch of Po-  
licy, Justice, or the like. See LAW and STATUTE, ORDI-  
NANCE, &c.

REGULATOR, of a Watch, is a small Spring belonging to  
the Balance; serving to adjust the going, and make it either pro-  
ceed faster or slower. See WATCH, &c.

REGULO, a Title given to the Sons of the Emperors of  
China.

The Emperor's eldest Son, whom we call the first Regulo, was  
the only one of all his Children in favour; till, of a sudden,  
Matters took a new Face. From some new Intelligences, the  
Emperor learnt the Innocence of the hereditary Prince whom  
he had deposed, and the Artifices that had been used to ruin  
him: Particularly, that the Regulo, to succeed therein, had had  
recourse to Magick, and at the Instigation of certain Lame, or  
Tartar Priests, had procured a Statue to be buried in Tartary;  
accompanying the Ceremony with several Magical Operations.  
Upon this, Orders, were instantly sent to seize the Lame, and to  
dig up the Statue: The Regulo had his Palace assign'd him for a  
Prison. Let. Edif. & Cur.

REGULUS, petty King, in our antient Customs, a Term fre-  
quent in the Saxon Councils, signifying a Comes or Count. See  
COUNT and EARL.

Hence, Subregulus, was used for a Vice-comes, or Vicount: Tho'  
in many Places the two seem used indifferently for the same Dig-  
nity.

Thus in the Archives of the Cathedral of Worcester, Uthredus,  
sometimes styles himself Regulus, and sometimes Sub-regulus of the  
City of Worcester.

But in other Places we find Offi, Rex Merciorum; Uthredus,  
Regulus; Aldredus, Subregulus, &c.

REGULUS, in Chymistry, is the finest and purest Part of a  
Metal or Mineral, which sinks or precipitates to the bottom of  
the Crucible or Furnace, in melting a Mineral, or metallic Ore.  
See METAL, MINERAL, FUSION, &c.

To procure the Regulus's of Metals, &c. Flux Powders are  
commonly used; as Nitre, Tartar, &c. which purge the sulphu-  
rous Part adhering to the Metal, by attracting and absorbing it to  
themselves. See FLUX Powder.

Regulus is principally used for that of Antimony, which is a  
ponderous metallic Powder, that upon fusing some of that Mine-  
ral in its crude State, sinks to the bottom, leaving the Scoria or  
Impurities a-top. See ANTIMONY.

The Alchymists will have this Matter called Regulus, i. e.  
little King, as being the first born of the Royal metallic Blood;  
which is really a Son, but not a perfect Man, i. e. not yet a per-  
fect Metal for want of Time and proper Nourishment.

Antimony purified by simple Fusion, is call'd Regulus of An-  
timony; or Regulus Antimonii stellatus Philosophorum.

But the more common way of reducing it into a Regulus is  
with the Addition of Flux Powders, as Tartar and Nitre. See  
FLUX Powder.

The Scoria found at the top of this Regulus is violently emetic,  
as well as the Regulus itself, whereof if Cups or drinking Vessels  
be cast, the Wine put into them will become vomitive.

Of this Regulus cast in Moulds are made those common-  
ly called the Antimonial Pills, weighing about eight or ten Grains  
each, one of which being swallowed, will operate considerably  
both by Vomit and Stool.

These Pills having thus performed their Office, and being dis-  
charged the Body, will serve the same Purpose again and again;  
whence they have obtained the Name of perpetual Pills.—The Virtue  
of this Regulus is not however inexhaustible, as has been imagined;  
for by repeated Infusions in Wine, though the Liquor be made  
violently Emetic at first, yet by Degrees it loses its Force, and at  
length ceases to be Vomitive.

Martial REGULUS of Antimony is a Mixture of the Nails of  
Horse's Shoes, melted with the Regulus.

In this Operation the Iron dissolving and absorbing the sulphu-  
rous Parts of the Antimony, more strongly than the Fluxes in  
the former Case; and turning it into a Crocus; the Antimony is  
hereby brought to a greater Degree of Purity, and render'd more  
efficacious than in the common Regulus. See IRON, SULPHUR,  
&c.

This Regulus is sometimes further purified by repeated Fusions  
and Detonations, with the Addition of fresh Antimony, and  
more Nitre, alternately.

REGULUS, in Astronomy, is a Star of the first Magnitude, in  
the Constellation Leo; call'd also from its Situation, Cor Leonis,  
or the Lion's Heart; and by the Chaldeans, Kalbeled, or Kalbe-  
loeld, from an Opinion of its influencing the Affairs of the Hea-  
vens; as is observed by Theon. See STAR.

The Longitude of Regulus, as fix'd by Mr. Flamsteed, is 25°  
31' 20"; and its Latitude 0°. 26' 38" North. See LEO.

REHABILITATION, in the Civil and Canon Law, an Acti-  
on whereby a Prince or Pope, by Dispensations or Letters Pa-  
tents, restore a Delinquent to the Condition he was in before his  
Delinquency. See DEGRADATION, &c.



The King alone can *Rehabilitate* an Officer noted, condemned and degraded; or a Gentleman who has derogated from his Degree. See **NOBILITY**.

The Pope alone pretends to *Rehabilitate*, i. e. to render capable of Benefices, and Orders, such as had fallen into Herefy, or other Irregularities.

In *Romish* Countries, an Ecclesiastick who assists at the Execution of a Sentence of Death, is to be *rehabilitated*, by an Absolution call'd a *Servis*. See **ABSOLUTION**.

**REHEARSAL**, in Mulick and the Drama, an Essay or Experiment of some Composition, made in private, previous to the Representation or Performance thereof in publick; to habituate the Actors or Performers, and make them more ready and perfect in their Parts.

There is a new Tragedy in *Rehearsal*.—The *Rehearsal* of the Anthem, &c.

**REIMBURSEMENT**, in Commerce, the Action of repaying, or returning what Monies a Person had received, by way of advance, &c. or what another has disbursed or paid for us.

A Person who gives a Bill of Exchange in Payment, is to *reimburse* it; if it come to be protested, for want of being accepted or paid. See **BILL**, **PROTEST**, &c.

**REIMBURSING** is also used for the paying the Price a Commodity costs its Owner.—Thus he has surrendered to me the Lot of Merchandice adjudged to him at the Sale at *London*, by the Directors of the *East-India Company*; on Condition of *reimbursing* the Price of the Purchase, with the Expences of Carriage, and a Profit of 5 per Cent.

**REINFORCED Ring**, of a Canon, is that next after the Trunnions, betwixt them and the Vent. See **ORDNANCE**.

**REINFORCEMENT**, in War, a supply, or new Provision of Men, Arms, Ammunition, &c.

**REINS**, in Anatomy, the *Kidneys*; or that Part of an Animal whereby the Urine is separated from the Blood. See **KIDNEYS**. See also **URINE**.

The Word, according to *Varro*, is form'd from the Greek, *ῥέειν*, *Quasi Rivi obsecuti humoris ab iis oriantur*.—The Greeks call the *Rein*, *ῥέειν*, from the Verb, *ῥέειν*, to Snow, Rain. See **NEPHRITIC**.

In the Manage, we say, a Horse should have *double Reins*; which is when he has them a little more elevated on each Side of the Back-bone, than upon it; so that passing your Hand along it, you find it large, well furnished and double, by the Hollow that goes all along the Back-bone.—The Back should be firm, and not Hollow, or bending from the Withers to the Croup, but straight. See **HORSE**.

The **REINS** of Horses, are also two straps of Leather meeting in the Bridle-Hand of the Horseman, in order to make the Bit bear, and keep the Horse under Subjection. See **BRIDLE**.

A *False Rein* is a Lath of Leather, passed sometimes through the Arch of the Banquet, to bend the *Horse's Neck*.

**REINSTATING**, the restoring of a Person or Thing to its former State or Condition, from whence it had been disturbed or displaced.

**REINTEGRATION**. See **REDINTEGRATION**.

**REIS**, or **RE**, or **RES**, a little *Portuguese* Copper Coin, nearly equal to the *French Denier tournois*, or to a third Part of the *English Farthing*. See **COIN**.

The *Reis* is both a Current and an imaginary Money; the *Portuguese* usually reckoning by *Reis*, as the *Spaniards* by *Maravedis*. See **MARAVEDIS**.

Strangers in treating with them, are frequently surprized with Demands of several thousand *Reis*, when the Matter betwixt them is only of a few Pieces of Eight; the *Millreis*, or thousand *Reis*, only making 6 s. 3 d. *Sterl.*—750 of them are equal to the Piece of Eight. See **MILLREIS**.

**REITTERS**, an ancient Title given the *Germans* Cavalry.—The Word is originally *German*, and signifies a Horseman, or Cavalier.

**REJOYNDER**, in Law, an Answer or Exception to a Replication. See **REPLICATION**.

The Order in the Court of Chancery is thus.—First, the Defendant puts in an Answer to the Plaintiff's Bill, which is sometimes call'd an *Exception*: The Plaintiff's Answer to this is call'd a *Replication*; and the Defendant's Answer to that, a *Rejoynder*. See **BILL** and **CHANCERY**.

The Civilians call it *Duplicatio*. See **DUPLICATION**.

**REJOYNTING**, in Architecture, the filling up the Joints of the Stones in old Buildings, &c. when wore Hollow by Course of Time, or Water.

*Rejoynting* is perform'd with the best Mortar; as that of Lime, and Ciment; sometimes, also with Plaister, as in the Joints of Vaults, &c. See **MORTAR**, &c.

**REITERATION**, the Act of repeating a thing, or doing it a second time. See **REPETITION**.

The Church does not allow of the *Reiteration* of Baptism. See **BAPTISM**.

St. Gregory observes, that 'tis no *Reiteration*, when there are wanting Proofs of the thing's being regularly done before. See **REBAPTIZANTS**.

In Pleurisies, the Physicians order the bleeding to be *reiterated* six or seven times. See **PLEURISY**.

**REITERATING**, in Printing. See **PRINTING**.

**RELAPSE**, a return or back-sliding into a Danger, or Evil out of which a Person had escaped.

Feyers, Dropsies, &c. are Diseases into which *Relapses* are very frequent and dangerous.—Such a Person is *relapsed* into a He-  
refy he had abjured.

**RELATION**, in Philosophy, the mutual Respect of two things; or what each is, with regard to the other.

The Word *Relation* is form'd a *referendo*; as consisting in this, that one thing is *refer'd* to another: Whence it is also call'd *Respect*, *Habitude*, *Comparison*, &c. See **COMPARISON** and **HABITUDE**.

The Idea of *Relation* we acquire, when the Mind so considers any thing, that it doth, as it were, bring it to, and set it by, another; and carry its view from the one to the other.—Hence the Denominations given to things intimating this Respect, are call'd *Relatives*; and the things so brought together, are said to be *Related*.

Thus when I call *Caius*, *Husband*; or this Wall *whiter*; I intimate some other Person or Thing in both Cases, with which I compare *him* or *it*.—Hence, the Wall is call'd by the Schoolmen, the *Subject*; the thing it exceeds in whiteness, the *Term*; and the whiteness the *Foundation* of the Relation.

*Relation* may be considered two Ways; either on the Part of the Mind referring one thing to another; in which Sense *Relation* is only a Mode or Affection of the Mind, whereby we make such Comparison: Or on the Part of the things refer'd, which being no other than Ideas, *Relation*, in this Sense, is only a new Idea resulting or arising in the Mind, upon considering of two other Ideas.—So that *Relation*, take it which way you will, is only the Mind; and has nothing to do with the things themselves. See **IDEA**.

Any of our Ideas, Mr. *Lock* observes, may be the Foundation of *Relation*.—Though where Languages have failed to give correlative Names, the *Relation* is not so easily taken Notice of: As in Concubine, which is a *Relative* Name, as well as Wife.

There is, in effect, no Idea but is capable of an infinite Number of *Relations*: Thus one single Man may at once sustain the *Relations* of Father, Brother, Son, Husband, Friend, Subject, General, *European*, *Englishman*, Islander, Master, Servant, Bigger, Less, &c. to an almost infinite Number; he being capable of as many *Relations*, as there can be occasions of comparing him to other things, in any manner of Agreement or Disagreement, or any respect whatsoever.

The Ideas of *Relations* are much clearer and more distinct, than of the things *related*; because the Knowledge of one simple Idea is oftentimes sufficient to give the Notion of a *Relation*: But to the knowing of any substantial Being, an accurate Collection of sundry Ideas is necessary. See **SUBSTANCE**.

The Perceptions we have of the *Relations* between various Ideas wherein the Mind acquiesces, makes what we call *Judgment*.—Thus, when I judge 2 times 2 make 4, or does not make 5; I only perceive the Equality between 2 times 2 and 4; and the inequality between 2 times 2 and 5. See **JUDGMENT**.

The Perceptions we have of the *Relations* between the *Relations* of various things, constitutes what we call *Reasoning*.—Thus when from this, that 4 is a smaller Number than 6; and that twice 2 is equal to 4; I gather that twice 2 is a less Number than 6; I only perceive the *Relation* of the Numbers twice 2 and 4, and the *Relation* of 4 and 6. See **REASONING**.

The Ideas of Cause and Effect, we get from our Observation of the Vicissitude of Things, while we perceive some Qualities or Substances begin to exist, and that they receive their Existence from the due Application and Operation of other Beings.—That which produceth, is the Cause; that which is produced, the Effect. See **CAUSE** and **EFFECT**.

Thus Fluidity in Wax is the Effect of a certain Degree of Heat, which we observe to be constantly produced by the Application of such Heat.

The Denomination of Things taken from time, are for the most part only *Relations*.—Thus when it is said, that Queen *Elizabeth* lived sixty-nine, and reigned forty-five Years, no more is meant, than that the Duration of her Existence was equal to sixty-nine, and of her Government to forty-five annual Revolutions of the Sun: And so are all Words answering to how long.

Young and Old, and other Words of Time, that are thought to stand for positive Ideas, are indeed *Relative*; and intimate a *Relation* to a certain length of Duration, whereof we have the Idea in our Minds.—Thus we call a Man young or old, that hath lived little or much of that Time, which Men usually attain to: And thus a Man is called young at twenty, but an Horse old, &c.

There are other Ideas, that are truly *Relative*, which we signify by Names that are thought positive and absolute; such as great and little, strong and weak.—The things thus denominated, are referred to some Standards with which we compare them: Thus we call an Apple Great, which is bigger than the ordinary Sort of those we have been used to; and a Man weak, that has not so much Strength or Power to move, as Men usually have, or those of his own Size.

Authors give various Divisions of *Relations*.—The School Philosophers commonly divide them into those of *Origination*, under which are comprehended the *Relations* of Cause and Effect: Those of



of Negation, which are between opposite things: And those of Affirmation, which are Relations of Agreement between Whole and Part, the Sign and Thing signified, the Adjunct and Subject.—This Division is founded upon this, that the Mind can only compare things three Ways, viz. by inferring, denying, and affirming.

Others divide *Relations* into those of *Origination*; those of *Agreement*, e. gr. Similitude, Parity, &c. those of *Diversity*; and those of *Order*, as Priority, Posteriority, &c.

Others divide them into *Prædicamental*, *Transcendental*, and *Prædicamental*.—Under the first come those *Relations* between things that belong to the same Prædicament; e. gr. between Father and Son. To the latter belong those which are more general than the Prædicaments, or are of different Prædicaments; as the *Relations* of Substance and Accident; of Cause and Effect; of Creator, e. gr. and Creature. See TRANSCENDENTAL, &c.

Mr. Lock gives us a Distribution of *Relations* on a different Bottom.—All simple Ideas, he observes, wherein are Parts or Degrees, afford an occasion of comparing the Subjects wherein they are, to one another, in respect of those simple Ideas: As, whiter, sweeter, more, less, &c.—These, depending on the Equality and Excess of the same simple Idea, in several Subjects, may be call'd *proportional Relations*.

Another occasion of comparing things being taken from the Circumstances of their Origin, as Father, Son, Brother, &c. These may be called *natural Relations*.

Sometimes, the Foundation of considering things, is some Act whereby any one comes by a moral Right, Power, or Obligation to do something: Such are General, Captain, Burgher; these are instituted and *voluntary Relations*, and may be distinguished from the natural, in that they are alterable and separable from the Persons to whom they sometimes belonged, though neither of the Substances so related be destroyed. But *natural Relations* are not alterable, but are as lasting as their Subjects.

Another *Relation* is the Conformity or Disagreement of Men's voluntary Actions to a Rule, to which they are refer'd, and by which they are judged of: These may be called *Moral Relations*.

It is this Conformity or Disagreement of our Actions to some Law (whereby Good or Evil is drawn on us from the Will and Power of the Law-maker, and is what we call *Reward* or *Punishment*) that renders our Actions morally Good or Evil. See GOOD and EVIL.

Of these moral Rules or Laws, there seem to be three sorts, with their different Enforcements. First, the Divine Law: Secondly, Civil Law: Thirdly, the Law of Opinion or Reputation. By their *Relation* to the first, our Actions are either Sins or Duties. To the second, Criminal or Innocent; to the third, Virtues or Vices. See SIN, VIRTUE, VICE, &c.

RELATION, in Logic, is an Accident of Substance: accounted one of the ten Categories or Predicaments. See PREDICAMENT and CATEGORY.

Each Substance admits of an Infinity of *Relations*.—Thus the same Peter, considered with regard to Henry, is in the *Relation* of a Master with regard to John, in that of a Tenant; with regard to Mary, in that of a Husband, &c. Again, with regard to one Person, he is rich, with regard to another poor; with regard to another, he is far, near, tall, short, a Neighbour, Stranger, learned, unlearned, good, bad, equal, &c.

'Tis disputed among the School Philosophers, whether or no the *Relation* be a thing formally and really distinct from the Foundation of the Substance. See SUBSTANCE.

RELATION, is also used in the School Theology, to denote certain of the divine Perfections, call'd *personal* ones; in regard by these one Divine Person is refer'd to another, and distinguished from it. See PERSON.

Hence they teach, that in God there is one Nature, two Processions, three Persons, and four *Relations*. See TRINITY.

These *Relations* are Paternity, Filiation, active Spiration, and passive Spiration. See PATERNITY, &c. See also FATHER, SON, SPIRIT, &c.

RELATION, in Geometry, Arithmetic, &c. is the Habitude, or Respect of two Quantities to one another, with regard to their Magnitude.—This we more usually call *Ratio*, *Reason*. See RATIO.

The Equality or Sameness of two such *Relations*, we call *Proportion*. See PROPORTION.

RELATION, in Grammar, is the Correspondence which Words have to one another in Construction. See CONSTRUCTION.

Faulty and irregular *Relations* are the things chiefly to be guarded against, in writing correctly; they make the Sense obscure, frequently equivocal.—Thus: The Orator was attended to with a Coldness, which was the more remarkable, as the Audience were under some Emotion ere he began.—Here, *Coldness* being put indistinctly, the Relative *which*, can have no just and regular *Relation* thereto. See RELATIVE.

RELATION is also frequently used for *Analogy*, or what several things have in common. See ANALOGY.

In Painting, Architecture, &c. a certain *Relation* of the several Parts and Members of the Building or Picture, constitutes what we call *Symmetry*. See SYMMETRY.

RELATION *Inharmonical*, is a Term in musical Composition,

signifying a harsh Reflection of Flat against Sharp, in a cross Form; viz. When some harsh and displeasing Discord is produced, in comparing the present Note of another Part.—Harris.

RELATION, in Law, is where two things, as Times, &c. are considered, as if they were one, the thing subsequent being considered as taking effect, by *Relation*, at the time preceding.

As if A deliver a Writing to B, to be delivered to C, as the Deed of A; the Writing shall be deem'd to be deliver'd to C, at the time when it was given to B.

So Bills in Parliament to which the King assents on the last Day of Parliament, shall relate, and be of Force from the first Day thereof. Coke calls it *fiat in Juris*. See DAY, TIME, &c.

RELATIVE Propositions, are such as include some Relation and Comparison. See PROPOSITION.

Thus, where the Treasure is, there will the Heart be.—As much as thou hast, so much thou art worth, &c. are *Relative Propositions*.

RELATIVE Place,  
RELATIVE Time,  
RELATIVE Gravity,  
RELATIVE Levity, &c.

} See { PLACE.  
TIME.  
GRAVITY,  
LEVITY, &c.

RELATIVE Terms, in Logic, are Words which imply a *Relation*, or a thing considered as compared to another. See RELATION.

*Relative Terms* include a Kind of Opposition between them; yet so, as that the one cannot be without the other.

Such are *Father* and *Son*, *Husband* and *Wife*, *King* and *Subjects*, &c.

RELATIVE, in Grammar, is a Word or Term which in the Construction answers to some Word fore-going, called the *Antecedent*. See ANTECEDENT.

Pronoun RELATIVE, which Buffier chuses rather to call *Modificative* or *Determinative*, is a Particle added after a Noun, or personal Pronoun, with which it has an Affinity, so that without them it signifies nothing; its only use being to express in what view they are considered. See PRONOUN.

Of this Kind, in the *Latin*, are *qui*, *que*, *quod*, &c. in the *English*, *who*, *which*, *whom*, &c. as in the Book *which* you are reading; the Man *whom* you seek; he *who* told it, &c.—Where *which*, *whom*, and *who* only follow the Noun or Pronoun, to refer or determine them to some particular thing; as to seeking, reading, &c.

Frequently, the Noun or Pronoun wherewith the *Relative* or Pronoun is join'd, is understood: As, I know *who* did that. Where 'tis evident I mean, I know the Person who did, &c.

RELAY, a fresh Equipage, Horse, &c. sent before, or appointed to be ready, for a Traveller to change; to make the greater Expedition; as in riding Post.

The Term is borrow'd from the *French Relais*, which signifies the same thing.—In *France*, the General of the Posts entitles himself, Superintendent of the *Relays*.

RELAYS, in Hunting, are fresh Sets of Dogs, or Horses, or both, disposed here and there, for readiness, in Case the Game come that way, to be cast off, or to mount the Hunters; in lieu of the former, which are supposed to want respite. See HUNTING.

RELAY, in Tapistry, is an opening left in a Piece of Tapistry, where the Colours or Figures are to be chang'd; because on those Occasions the Workmen are changed; or else, the Places are left to be filled up till the rest of the Work is done. See TAPISTRY.

RELAXATION, in Medicine, &c. the loosening or slackening of the Tone or Tension of the Fibres, Nerves, Muscles, &c. See TENSION, TONE, &c. See also FIBRE.

The *Relaxation* of a Muscle is supposed to be effected, either by the Perspiration of the nervous Spirits, or the Regress of the Spirits, Blood, &c. which inflated its Fibres; or by the contraction of the Air, in the Globules of Blood before expanded by the sudden influx and admixture of the Spirits, &c. See MUSCLE, and MUSCULAR Motion.

RELAXATION, in Chirurgery, is a preternatural Extension, or straining of a Nerve, Tendon, Muscle, or the like; either thro' Violence or Weakness.

*Hernias* are Descents or *Relaxations* of the Intestines, &c. See HERNIA.

From the same Cause arise Descents or Prolapsions of the Anus, &c. See PROCDENTIA and PROLAPSUS.

RELAXATION, in Law, is used for a *Releasing*. See RELEASE. In this Sense we say the *Relaxation* of an Attachment, in the Court of Admiralty.

The Tenor of Indulgences is a *Relaxation*, or Diminution of the Pains of Purgatory. See INDULGENCE.

RELEASE, in Law, an Instrument, whereby Estates, Rights, Titles, Entries, Actions, and other things are sometimes extinguished and annull'd, sometimes transferr'd, sometimes abridg'd, and sometimes enlarged.

A *Release* is either in *Fact*, or in *Law*.—A *Release* in *Fact*, is that which the very Words expressly declare.—A *Release* in *Law*, is that which doth acquit by way of Consequence, or Intendment of Law.



**RELEGATION**, a kind of Exile, or Banishment, wherein the obnoxious Person is commanded to retire to a certain Place prescribed, and to continue there till he be recalled. See **EXILE**.

My Lord *Coke* calls *Relegation* a Banishment for a time only: *Courtin* more adequately defines *Relegation* a Banishment to a certain Place for a certain Term.

In *Rome* *Relegation* was a less severe Punishment than *Deportation*, in that the *relagated* Person did not thereby lose the Rights of a *Roman* Citizen, nor those of his Family, as the Authority of a Father over his Children, &c. See **BANISHMENT**.

**RELICKS**, **RELIQUE**, in the *Romish* Church, certain Remains of the Bodies or Cloaths of some Saint or Martyr, devoutly preserved in Honour to his Memory, carried at Processions, kiss'd, rever'd, &c. See **SAINT**, **MARTYR**, **PROCESSION**, &c.

The Abuses in Points of *Relicks* are most flagrant: *F. Mabilion*, a *Benedictine*, complains of the great Number of suspected *Relicks* exposed on Altars: He owns that were there to be a strict Inquisition into the *Relicks*, vast Numbers of spurious ones would be found offer'd every where to the Piety and Devotion of the Faithful: And adds, that Bones are frequently consecrated, so far from belonging to Saints, that in all probability they don't belong to Christians.

The *Catacombs* are an inexhaustible Fund of *Relicks*; yet 'tis still disputed who were the Persons interr'd here. See **CATACOMB**.

In the eleventh Century a Method was introduced of trying supposed *Relicks* by Fire.—Those which did not consume in the Fire were reputed genuine; the rest not. See **PURGATION**, &c.

'Tis an antient Custom, which still obtains, to preserve the *Relicks* in the Altars whereon Mass is celebrated.—To this purpose, a square Hole is made in the middle of the Altar, big enough to receive the Hand; and herein is the *Relick* deposited, wrapp'd in red Silk, and inclosed in a leaden Box. See **ALTAR**.

The *Romanists* alledge a good deal of Antiquity in behalf of their *Relicks*.—The *Manichees*, it seems out of hatred to the Flesh, which they held an evil Principle, are recorded as refusing to honour the *Relicks* of Saints; which is esteemed a kind of Proof that the *Catholicks* did it in the first Ages. See **MANICHEE**.

Indeed Folly and Superstition got into Religion but too early.—Even the touching of Linnen Cloaths on *Relicks*, from an Opinion of some extraordinary Virtue derived therefrom, appears to be as antient as the first Ages; there being a Hole made in the Coffins of the forty Martyrs at *Constantinople*, expressly for this Purpose.

**RELICTA Verificatio**, in Law, is when a Defendant relinquishes his Proof or Plea; and thereupon Judgement is entered for the Plaintiff.

**RELICT**. See **WIDOW**.

**RELIEF**, **RELIEVIUM**, *Levamen*, in Law, a Fine paid to the chief Lord, by a Person at his coming to the Inheritance of Land held in Capite, or Military Service. See **FINE**, **LORD**, **TENURE**, &c.

*Relief* is usually to the value of a Years Rent or Revenue.

The Origin of the Custom is thus.—A Feudatory or beneficiary Estate in Lands, being at first only granted for Life; after the Death of the Vassal it return'd to the Chief Lord, and was hence call'd *Feudum Caducum*, q. d. fallen to the Lord by the Death of the Tenant. See **FEE**.

In Course of Time these feudatory Estates being converted into Inheritances by the Connivance and Consent of the Lord; when the Possessor of such Estate died it was call'd *Hereditas Caduca*, q. d. an Inheritance fallen to the Lord; from whom it was to be recover'd, by the Heirs paying a certain Sum of Money.

This was said *Relevare hereditatem caducam*, and the Money thus paid was call'd *Relevamen*, *Relievium*, or *Relief*.

This *Relief* was established after the Conquest.—For 'till that time *Heriots* were paid the Lord, at the Death of his Tenant; consisting of Horses, Arms, &c. See **HERIOT**.

But upon the Conquest, the poor People being deprived of all such things by the *Normans*, a Sum of Money was substituted in lieu thereof, which was call'd a *Relief*; and continues in some Places to this Day.—However, 'tis true, *Relief* and *Heriot* are frequently confounded in antient Writers.

**RELIEF** *Reasonable*, call'd also *Lawful*, and *antient Relief*, is that enjoined by some Law, or fix'd by antient Custom; and which does not depend on the Will of the Lord.—Thus in a Charter of King *John*, mentioned by *Matt. Paris*.—*Si quis Comitum vel Baronum Nostrorum sive aliorum tenentium de nobis in Capite per servitium militare, mortuus fuerit & cum decesserit haeres suus plenae aetatis fuerit, & relevium debeat, habeat hereditatem suam per Antiquum Relevium*.

What this was may be seen in the Laws of *William the Conqueror*, &c. *Bracton* says, this Fine was call'd a *Relief* quia hereditas quae jaciens fuit per Antecessoris decessum relevatur in manus heredum, &c.

A *Relief* is also paid in **Spceage Tenure**, or *petit Serjeanty*;

where a Rent or other thing is paid by rendering as much in the Rent or Payment reserved.

By the Custom of *Normandy*, *Relief* is due for Lands held in Villenage, as well as in Fee.—By the Custom of *Paris*, *Relief* is not due upon Successions in the direct Line.

The Quantity of the *Relief* is very different: There are *single Reliefs*, *double Reliefs*, &c. The Quality, too, is diverse: There are *Reliefs of Property*, paid by the Heir: *Reliefs of Bail*, or *Trover*, paid by a Guardian for his Minor, or by the Husband for the Fiefs of his Wife, &c. *Relief of Horse and Arms*, &c.

By the Laws of King *Canutus*, the *Relief* of an Earl, paid the King, was eight War-Horses with their Bridles and Saddles, four Loricas, four Helmets, four Swords, four Hunting-Horses, and a Palfrey.—The *Relief* of a Baron or Thane was four Horses, &c.

**RELIEF**, in Chancery, is an Order sued out for the dissolving of Contracts and other Acts, on account of their being unreasonable, prejudicial, grievous, or from some other Nullity, either *de Jure*, or *de Facto*. See **CHANCERY** and **EQUITY**.

Minors obtain *Relief* against Acts pass'd in their Minority.—Majors have *Relief* in cases of enormous Damage, Deceit, Violence, over-reaching, extravagant Bargains, &c.

Among the *Romanists* 'tis a Rule, that the Church obtains *Relief* any time, and against all Acts pass'd in its Prejudice: No Prescription prevailing against it. See **PRESCRIPTION**.

**RELIEF**, of a Hare, among Hunters, is the Place where she goes to feed in the Evening. See **HUNTING**.

**RELIEF**, in Sculpture. See **RELIEVO**.

**RELIEVE**, in the Military Sense.—To *Relieve* is to take the Post of another Body.

Hence, to *Relieve* the Guard, to *Relieve* the Trenches, &c. is to bring fresh Men upon the Guard, or the Trenches, and to send those to rest who have been upon Duty before. See **GUARD**, **TRENCH**, &c.

They also say, *Relieve a Sentinell*, *Relieve the Steers-Man*, &c.

**RELIEVO**, or **RELIEF**, *Imbossment*, in Sculpture, is applied to a Figure which projects, or stands out, prominent, from the Ground or Plain whereon it is form'd; whether that Figure be cut with the Chissel, moulded, or cast. There are three Kinds of *Relievo*; viz. *Alto*, *Basso*, and *Demi-Relievo*.

The *Alto Relievo*, *Haut Relief*, or, *high Relievo*, is when the Figure is form'd after Nature, and projects as much as the Life.

*Basso-Relievo*, *Bass-Relief*, or *low Relievo*, is when the Work is but rais'd a little from its Ground; as we see in Medals, and in the Frontispieces of Buildings; particularly the Histories, Festoons, Foliages, and other Ornaments in Friezes.

*Demi-Relievo* is when one half of the Figure rises from the Plan, i. e. when the Body of the Figure seems cut in two, and one half is clapp'd on a Ground.—When in a *Basso Relievo* there are some Parts that stand clear out, detach'd from the rest, the Work is call'd a *Demi-Bosse*.

**RELIEVO**, in Architecture, is the Projecture of any Ornament. See **PROJECTURE**.

This, *Daviler* observes, is always to be proportioned to the Magnitude of the Building it adorns; and the Distance at which it is to be viewed. If the Work be insolated and terminated on all Sides, it is call'd a *Figure in Relievo*, or a *round Imbossment*. Such are Statues, Acroters, &c.

**RELIEVO**, in Painting, is the Degree of Force or Boldness wherewith the Figures seem, at a due Distance, to stand out from the Ground of the Painting, as if really imboss'd.

The *Relievo* depends much on the Depth of the Shadow, and the Strength of the Light; or on the Height of the different Colours bordering on one another; particularly on the difference of the Colour of the Figure from that of the Ground. See **SHADOW**, **COLOURING**, &c.

When the Light is well chosen, to make the nearest Parts of Figures advance; and well diffused on the Masses, still diminishing insensibly, and terminating in a large spacious Shadow, brought off insensibly, the *Relievo* is said to be *bold*, and the *Clair-obscur*, well understood. See **CLAIR-OBSCURE**.

They also say *Embroderies in Relievo*; in opposition to those that are flat.

**RELIGION**, that Worship or Homage due to God, considered as Creator, Preserver, Redeemer, &c. See **GOD**, **THEOLOGY**, &c.

The Foundation of all Religion is, that there is a God, and that he requires some Service at the Hands of his Creatures.—From the different Manners wherein we arrive at the Knowledge of this Service; Religion is divided into *natural* and *revealed*.

*Natural Religion* is whatever we descry to be due and meet by the meer Dictates of natural Reason; as, to love, and honour God, not to abuse his Creatures, &c. See **NATURAL**, **REASON**, &c.

*Revealed Religion* is what we learn to be due from some supernatural Means; as by an express Declaration of God himself, by the Mouths of Prophets, &c. See **PROPHECY**.

The first flows immediately from the Relation between the Creature and the Creator: The latter does not follow from such a Re-



Relation, but is super-added from the mere Will and Pleasure of the Creator.

The first we ordinarily call *Morality*, or *Ethicks*; because immediately conversant about the Manners and Duties of Men towards one another; and towards themselves, considered as Creatures of that Being. See *MORALITY*, *ETHICKS*, &c.

The latter we call, by way of Eminence, *Religion*, as being the Rule of our Duty immediately to God himself. See *REVELATION*.

The first supposes a God, a Providence, a future State, Rewards and Punishments; the latter likewise supposes an immediate Mission from God himself, attested by Miracles, &c. See *MIRACLE*.

*RELIGION* is particularly used for the special System of Faith and Worship, which obtains in this or that Country; in this or that Sect; this or that Age, &c.

In this Sense we say the *Romish Religion*, the *Reform'd Religion*, the *Religion of the Greeks*, the *Mahometan Religion*, *Jewish Religion*, &c. See *JEWS*, *MAHOMETANS*, &c. under their proper Heads.

The *Siamese* hold the Diversity of *Religions*, i. e. the different Manners of honouring God, to be pleasing to him; inasmuch as they have all the same Object, all tend to the same End, though by different Means. *Claude*.

The Sentiment of these Idolaters is doubtless more just than that of our Zealots, who hold all but those of their own Religion odious to God.

The several Sects in *Religion*, see under their proper Articles: See also *SECT*.

*RELIGION*, again, is applied to a military Order, consisting of Knights who live under some certain Rule, &c. See *KNIGHT*, *MILITARY ORDER*, &c.

In this Sense we say the *Religion of Malta*, &c. See *MALTA*.

The Term is sometimes also used for a Convent.—Thus we say, there are *Religions* of Men, i. e. Monks; *Religions* of Women, i. e. Nuns.—There are new *Religions* established every Day, i. e. new Monasteries built. See *MONK*, &c.

The *Religion* is used absolutely for the reform'd in *France*; thus we say, *d'Ablancourt*, and *Dacier*, were of the *Religion*.

*RELIGIOUS*, a Person engaged by a solemn Vow to the monastic Life; or a Person shut up in a Monastery, to lead a Life of Devotion and Austerity; under some Rule or Institution. See *VOW* and *RELIGIOUS ORDER*.

The Male *Religious* we popularly call *Monks*; the Females, *Nuns*. See *MONK*, &c.

*M. Nicole* observes, that some Domestick Chagrins, and a certain Pride, which leads People to abscond when they cannot make a Figure to their Mind, makes as many *Religious* as real Piety.—He adds, that a Girl must be made *Religious* for no other reason, but because she can't be married answerable to her Condition.

A *Religious* can't make any Will.—By the Council of *Trent*, a *Religious* may reclaim his Vows within five Years. See *RECLAIM*.

Antiently the *Religious* were all Laymen, and it was even prohibited them to take up Orders.—In 1557 the Parliament of *Paris* made a difficulty of receiving a Bishop of *Laon* to the Oath of a Duke and Peer, by reason of his being a *Religious*: Yet a *Religious* being promoted to a Bishoprick, is thenceforth secularized or dispensed from the Observation of his Rule. See *REGULAR*.

In ancient Deeds and Conveyances of Lands, we often find the Seller restrain'd from giving or alienating it, *Viris Religiosis vel Judeis*, to *Religious*, or to *Jews*; to the end the Land might not fall into Mortmain. See *JUDAISM* and *MORTMAIN*.

In a Memorial directed by King *John* to his Viscounts, they are order'd to proclaim through their respective Counties, that no Body, as they love their Bodies and Cattel, injure the *Religious* or Clerks, either in Word or Deed; on Penalty of being hang'd up on the next Oak.—*Nulli scut deligunt Corpora & Catalla sua malum faciant vel dicant viris Religiosis vel Clericis.—Si quem inde attingere possimus ad proximum Quercum eum suspendi faciemus.*

*RELIGIOUS ORDER*. See *ORDER*.

Most military Orders pretend, likewise, to be *Religious*; as those of *Malta*, who make Vows, &c. See *MALTA*.

*RELIQUA*, the Remainder or Debet, which a Person finds himself a Debtor in, upon the balancing and liquidating an Account.

Hence, *Reliquitary*, the Debtor of a *Reliqua*; as also a Person who only pays piece-meal.—The Term *Reliqua* is pure *Latin*.

*RELIQUARY*, a Shrine or Casket, in which the Relicks of a dead Saint are kept. See *SHRINE*, *RELICK*, &c.

*RELIQUIÆ*, *RELICKS*, in Antiquity, the Ashes and Bones of the Dead, that remained after the burning of their Bodies; and which they very religiously kept in Urns, and afterwards laid them up in Tombs. See *FUNERAL*.

*REMAINDER*, in Law, an Estate in Lands, Tenements, or Rents, given to a Person at second Hand, to be enjoy'd after the Decease of another, to whom the same is given immediately, or at first Hand.

A Man grants Lands to one for Term of Life, the *Remainder* to another for the Term of his Life; which *Remainder* may be either for a certain Time, or in Fee Simple, or Fee Tail.

*Speelman* makes the difference between a *Remainder* and *Reversion* to consist in this; that by a *Reversion*, after the appointed Term, the Estate returns to the Donor, or his Heirs, as the proper Fountain; whereas by *Remainder* it goes to some third Person, or Stranger. See *REVERSION*.

*Glanville* observes, that Bishops and Abbots, in regard their Baronies are the King's Alms, cannot give any Part thereof by way of *Remainder*. See *BISHOP*.

*REMAINDER*, in Mathematicks, is the difference; or that which is left after the taking of a lesser Number, or Quantity, from a greater. See *SUBTRACTION*.

*REMARRYING*, the repeating of a Marriage; or the going through the Solemnities of a second Marriage. See *MARRIAGE*.

Clandestine and uncanonical Marriages are deem'd null; and the Parties are to be re-married in form; at least to avoid Disputes.

It was antiently expressly forbid to re-marry in the first Year of Viduity.—*M. Bayle* observes, that a Person who does not re-marry is answerable to the Publick for all the Time lost in his Viduity, or Widdower-hood. See *WIDOW*, *VIDUITY*, &c.

*REMEDY*, *REMEDIUM*, in Physick, a Medicine, or Preparation applied either internally or externally, for the Cure of a Disease. See *MEDICINE*.

Emplasters, Unguents, Cataplasms, &c. are *Topical Remedies*. See *TOPICAL*.

Mercury and the Bark are Specific Remedies. See *SPECIFIC*.

Mineral Waters, and Ass's Milk, and Country-Air, are usually the last Remedies.

Salivation is sometimes call'd by way of Eminence, the *Remedy*. See *SALIVATION*.

When Remedies are stuff'd with too many Ingredients, they load the Stomach with a slimy Mucilage, which swelling does more hurt than good.

*REMEMBRANCE*, is when the Idea of something formerly known, recurs again into the Mind, without the Operation of the like Object, on the external Sensory. See *MEMORY* and *REMINISCENCE*.

*REMEMBRANCERS* of the *Exchequer*, are three Officers, or Clerks therein. See *EXCHEQUER*.

These are the *King's Remembrancer*; the *Lord Treasurer's Remembrancer*; and the *Remembrancer of the First-Fruits*.

The *King's Remembrancer* enters into his Office all Recognizances taken before the Barons, for any of the King's Debts, for Appearance, or for observing Orders; and makes out Process against the Collectors of Customs, Subsidies, and Fifteenths, for their Accounts.—All Informations upon penal Statutes are entered in this Office, and there all Matters upon *English Bills* in the *Exchequer-Chamber* remain.—He makes the Bills of Composition upon penal Laws, takes the Stalment of Debts; has delivered into his Office all manner of Indentures, Fines, and other Evidences whatsoever that concern the assuring of any Lands to the Crown: He every Year, in *crastino annuarum*, reads, in open Court, the Statute for Election of Sheriffs, and gives them their Oath, and reads the Oath of all the Officers of the same, when they are admitted.

The *Lord Treasurer's Remembrancer*, is charged to put the Treasurer and the rest of the Judges of that Court, in remembrance of such things as are to be called on, and dealt in for the King's behoof.—He makes Process against all Sheriffs, Escheators, Receivers, and Bailiffs, for their Account: Process of *Fieri facias*, &c. Extent for any Debts due to the King, either in the Pipe, or with the Auditors, makes Process for all such Revenues as are due to the King, by reason of its Tenures.—He also makes Record, whereby it appears whether Sheriffs, or other Accomptants, pay their Profers due at *Easter* and *Michaelmas*.—He makes another Record, whether Sheriffs or other Accomptants keep their Days of Profixion: All Estreats of Fines, Issues, and Amerciaments, set in any of the Courts of *Westminster*, or at the Assizes or Sessions, are certified into this Office, and are by him delivered to the Clerk of the Estreats to write Process upon them, &c.

The *Remembrancer of the First-Fruits*, takes all Compositions and Bonds for First-Fruits and Tenth; and makes Process against such as do not pay the same. See *FIRST-FRUIT*.

*REMINISCENCE*, is that Power of the Humane Mind, whereby it recollects itself, or calls again to its Remembrance such Ideas or Notions as it had really forgot: In which it differs from Memory, which is a treasuring up of things in the Mind, and keeping them there, without forgetting them. See *MEMORY*.

Hence Memory may be considered as a continual *Remembrance*; and *Remembrance*, as an interrupted Memory. See *MEMORY*.

How near (a-kin soever the two Faculties may seem, yet they are generally found separated; so that they who excell in the one, are defective in the other. See *RECOLLECTION*, *RETENTION*, &c.

The antient *Platonists* were of Opinion, that all Learning and Knowledge consisted in the *Reminiscence* or Recollection of Notices which had been in the Soul before its Union with the Body. See *PLATONISM*.

*REMINISCERERE*, the second Sunday in *Lent*; antiently thus called from the first Word of the *Introit* of the Mass said for that Day, *Reminiscere Miserationum tuarum*.



**REMISSION**, in Physics, the Abatement of the Power or Efficacy of any Quality; in opposition to the Increase of the same, which is call'd its *Intension*. See **INTENSION**.

In all Qualities capable of Intension and *Remission*, the Intension decreases as the Squares of the Distance from the Centre of Action reciprocally. See **QUALITY**.

**REMISSION**, in Medicine, is, when a Distemper abates, but does not go quite off, before it returns again; as it is common in Fevers which do not quite intermit. See **FEVER**.

**REMISSION**, in Law, &c. the Pardon of a Crime, or the giving up the Punishment due thereto. See **PARDON**.

**REMIT**, in Commerce.—To *remit* a Sum of Money, Bill, or the like, is to send a Sum of Money, &c. See **REMITTANCE**.

To *remit* is also used among Bankers for what is accustomed to be given a Banker, or as it were, discounted with him, for his giving a Bill of Exchange. See **EXCHANGE**.

To *remit* is also to give up Part of his Due to a Debtor; as, I would *remit* you a fourth of what you owe on Condition of paying me the rest in Hand.

**REMITTANCE**, in Commerce, the Traffic or Return of Money from one Place to another, in Bills of Exchange, Orders, or the like. See **COMMERCE**, **EXCHANGE**, &c.

The *Remittance* is properly a Bill of Exchange, or the like, sent to a Correspondent, and the Content thereof to be receiv'd by him, of some other Person on whom it is drawn.

Such a Merchant has *remitted*, or made a *Remittance* of five thousand Pounds in Bank Notes, to his Correspondent at London.—I will *remit* you, or make you a *Remittance* of five hundred Crowns in three Bills of Exchange, drawn on N. Banker in your City, and payable at Sight.

By means of these *Remittances*, large Sums of Money are return'd from one City to another, without Danger, without Carriage, &c.

In London 'tis easy getting *Remittances* upon any City in the World: In the Country 'tis more difficult. *Remittances* are not easily had upon Copenhagen. See **BILL of Exchange**.

**REMITTANCE**, is also used in speaking of the Payment of a Bill of Exchange.—Thus, I have receiv'd an hundred Pistoles on your *Remittance*.—Mr. N. Banker in your City, should have paid you two hundred Crowns on my *Remittance*.

**REMITTANCE**, is also the Due or Fee allow'd the Banker, both for his Wages, the Tare of Money, and the different Value of the Species, in the Place where you pay the Money, and where he *remits* it.

The *Remittance* at London is very high.—This *Remittance* is more usually call'd **CHANGE** and **RECHANGE**, which see.

**REMITTER**, in Law.—Where a Man has two Titles to Land, and is seized by the latter; and that proving Defective, he is *remitted* or restored to the former more antient Title: This is call'd a *Remitter*, from the Latin, *remittere*, to send back.

If Land descend to him that had Right to it before, he shall be *remitted* to his better Title if he please. *Doctor* and *Student*.

**REMONSTRANCE**, an Expostulation or humble Supplication address'd to a King, or other Superior; to beseech him to reflect on the Inconveniences, or ill Consequences of some Order, Edict, &c.

The Parliament is gone in a Body to make humble *Remonstrances* to the King, on the subject of such a Declaration.

**REMONSTRANCE**, is also used for an expository Council or Advice; or a gentle, handsome Reproof, made either in general or particular, to apprise or to correct some Fault.—A Mother makes *Remonstrances* to her Daughter, &c.

**REMONSTRANTS**, **REMONSTRANTES**, was a Title given the *Arminians*, by reason of the *Remonstrances* they made in 1610, against the Synod of Dort, wherein they were condemn'd. See **ARMINIAN**.

*Episcopius* and *Grotius* were at the Head of the *Remonstrants*. See **CONTRA-REMONSTRANTS**.

**REMORA**, in Natural History, a little Fish, resembling a Herring, with Crest and Fins; call'd by the *Greeks*, *Echeneis*.

'Tis much talk'd of by the Antients; who, as we find from *Pliny*, lib. 32, unanimously believ'd it had the force to stop a Vessel in full Sail; and hence call'd it *Remora*, a *remorand*.—But the Moderns hold it a Fiction; inasmuch as in all their Navigations, which are much more considerable than those of the Antients, they have never met with any thing like it.

**REMORA**, among Surgeons, is also an Instrument to set broken Bones withal. See **FRACTURE**.

**REMOUNT**, in War.—To *remount* the Cavalry, is to furnish Troopers or Dragoons with fresh Horses, in lieu of such as have been kill'd or disabled in the Service.

**REMPLY**, in Heraldry, something *filled up*. The Term is chiefly used to denote that the Chief is quite filled up with a square Piece of another Colour, leaving only Border for the proper Colour of the Chief about the said Piece.

**RENAL**, something belonging to the Reins, or Kidneys. See **REIN** and **KIDNEY**.

**RENALES Glandulae**, in Anatomy, are Glands thus call'd, because situate near the Reins or Kidneys; first discovered by *Bar. Eustachio*, Native of *San Severino*, in Italy. See **GLAND**.

They are also call'd *Capsulae Atrabiles*; in regard the Cavity

is always found full of a blackish Liquor; and by others, *Renales Succenturiati*, because resembling the Reins in form. See **RENALES Succenturiati**.

**RENCOUNTER**, the Encounter of two little Bodies or Parties of Forces; in which Sense it is used in opposition to *Battel*.—'Twas no *Battel*; 'twas only a *Rencounter*.

In single Combats, *Rencounter* is used in opposition to *Duel*.—When two Persons fall out, and fight on the Spot, without having premeditated the Combat, 'tis call'd a *Rencounter*.—'Tis no *Duel*, 'tis a *Rencounter*. See **DUEL**.

The Word is form'd from the French, *Rencontre*, meeting. **RENCOUNTER**, or **RENCOTRE**, in Heraldry, is applied to Animals when they shew the Head in Front, with both Eyes, &c. or the Face stands right forward; as if they came to meet the Person before them.

Indeed in the Deer, this is call'd *Massacre*, and in the Leopard 'tis the natural Situation.—He bears Sable, in *Rencounter*, a Golden Fleece.

**RENDER**, in Law, a Term used in levying a Fine. A Fine is either single, whereby nothing is granted; or with *Render*, whereby something is *render'd* back again, by the Cognitor to the Cognisor; or double, which containeth a Grant, or *render back again* of some Rent, Common, or other thing out of the Land it self, to the Cognisor. See **FINE**.

We also say, there are certain things in a Manor which lie in *Prender*, i. e. may be taken by the Lord or his Officers when they please, without the Tenants leave: And others which lie in *Render*, that is, must be *render'd* or answer'd by the Tenant; as Rents, Reliefs, Heriots, and other Services. See **PRENDER**.

Some Service consists in Seifance; some in *Render*. *Perkins*.

**RENDERING**, in Building. See **PARGETTING**.

**RENDEZ-VOUS**, a Place appointed to meet in at a certain Day and Hour.

The Word is French; and is found so handy, that most Nations use it in its Purity, for want of a Word of equal import in their respective Languages.

A general *Rendezvous* of the Army.—The Regiments have their particular *Rendezvous*, call'd *Quarters of Assembly*. See **QUARTER**.

The Virtue of a Woman is already shaken when she gives a *Rendezvous*. *St. Evremond*.

**RENEGATE**, **RENEGADO**, a Person who has apostatized or renounced the Christian Faith, to embrace some other Religion; particularly Mahometanism. See **APOSTATE**.

'Tis the *Renegado's* who prove the most barbarous to the Christians when they fall into their Hands.

The *Renegade* is thus called, *quasi re-negat-Christum*.—*Hoveden* mentions it in the Year 1192, under the Name of *Renec*, from the French, *re-nier*, to deny again.

**RENES Succenturiati**, in Anatomy, are Glands thus called as resembling the Figure of the Reins; and hence accounted a kind of *secondary Reins*; *Succenturiatus* signifying something in the Place of another. See **SUCCENTURIATI**.

They are also called *Capsulae Renales*, and *Glandulae Renales*. See **RENALES**.

**RENEWING** of Leases and Lives. See **REVERSION**, **ANNUITY**, **POLITICAL ARITHMETICK**, &c.

**RENITENCY**, **RENITENTIA**, among Philosophers, that Force in solid Bodies, whereby they resist the Impulse of other Bodies; or react as much as they are acted on. See **REACTION**. See also **RESISTANCE**.

**RENT**, in Law, a Sum of Money, or other Consideration issuing yearly out of Lands and Tenements, alienated on that Condition. See **REVENUE**.

It is thus called from the corrupt Latin, *Rendita*, for *reddita* of *redditus*; because, as *Fleta* tells us, *retrioit & quotamus reddit*.

The *Rents* of all the Lands of England and Wales appear by the Computations of *Dr. Davenant*, and *Mr. King*, from the late Land-Tax, to be nearly 10 Millions *per Annum*; those of the Houses not let with the Lands, to be two Millions more; and those of all other Hereditaments, to be two Millions more; in all 14 Millions. See **REVENUE**.

The Lawyers ordinarily reckon three sorts of *Rent*; viz. *Rent-Service*, *Rent-charge*, and *Rent-sick*.

*Rent-Service*, is where a Man holds his Lands of his Lord by Fealty, and certain Rent; or by Fealty-Service, and certain Rent; or that which a Man making a *Lease* to another for Term of Years, reserveth yearly to be paid for them. See **SERVICE FEALTY**, **RESERVE**, &c.

*Rent-Charge*, is where a Man makes over his Estate to another by Deed indented, either in Fee, or Fee-tail, or for Term of Life; yet reserves to himself, by the same Indenture, a Sum of Money yearly to be paid to him, with Cause of Distress for Non-payment.

*Rent-sick*, or *Dry-Rent*, is that which a Man making over his Estate by Deed indented, reserveth yearly to be paid to him, without Cause of Distress mentioned in the Indenture. See **METEGAVEL**.

**RENTS of Assize**, are the certain Rents of Freeholders, and antient Copyholders; thus called because assized and certain: In opposition to *redditus mobiles*.



**RENTS** *Resolute*, are reckoned among the *Farm Rents*, to be paid by the *Stat. 22. Car. II.* and are such *Rents* or *Tithes* as were formerly payable to the Crown from the Lands of Abbies and other Religious Houses: Which Lands, upon the Dissolution of the Abbies, being demised to others, the said *Rents* were still reserved and made payable to the Crown.

**RENTER-WARDEN**, an Officer in most of the Companies of *London*; whose Business is to receive the *Rents* or Profit belonging to the Company. See **TREASURER**.

**RENTING**, in the Manufactories, the sewing of two Pieces of Cloth, edge to edge, without doubling them; so as that the Seam scarce appears at all; hence also called *Fine-drawing*.

**Serges, &c.** are sewed; Cloths *reuter'd*.—To *reuter* in Tapistry, is to work new Warp into a piece of Tapistry damaged, eaten by the Rats, &c. and on this Warp to restore the antient Pattern, or Design.—The Warp is to be of Woollen, not Lin.—Among the Titles of the Tapistry-makers, is included that of *Renters*.

The Author of one of the *Lett. Edif. & Cur.* speaking of the great Dexterity of the *Renters* in the *East Indies*, assures us, that if you tear a Piece of fine Mullin, and give it one of them to mend, it shall be impossible for you to discover the Place where it is rejoined, even though you had make a Mark to know it.

The Dexterity of our own *Renters* is such, as puts them in a Condition to defraud the King, by sowing a Head or Slip of *English* Cloth, on a Piece of *Dutch*, *Spanish*, or other Foreign Cloth; or a Slip of Foreign Cloth on a Piece of *English*, so as to pass the whole, as of a Piece; and by that means avoid the Duties, Penalties, &c.

The Trick was first discovered in *France*, by M. *Savary*, Author of *Diſſon. de Commerce*.

The Word is form'd from the *French*, *rentraire*, which signifies the same thing; and which *Menage* after *Salmafius*, derives from the *Latin*, *textura*; as if it were making a Tillue or Web, instead of a Seam.

**RENTING** is particularly used for a Rent, or Hole, happening in the dressing or preparing of a Piece of Cloth, artfully sew'd up or mended with Silk.

All *Renterings* are reputed Defects or Blemishes; and ought to be allow'd for in the Price of the Piece.—Hence, M. *Savary* establishes it as a Rule, which is certainly founded on natural Equity, that every Manufacturer mark the *Renterings* of his Cloaths with a Piece of Packthread tied to the Liff; to direct the Draper to the Spot: And that the Draper apprise the Taylor or other Person, to whom he sells it, of the same; that he mayn't come to Damage in the cutting; there being Instances of Drapers condemned to take back their Cloth, when cut to Pieces, for omitting to mention the *Renterings*, and other Flaws.

On this occasion M. *Savary* extolls the Procedure of an *English* Merchant, who sending a Piece of Cloth damaged in one Spot, to his Correspondent at *Paris*, put a Piece of Gold in the damaged Place, to make up the Damage.—But as this Example is perhaps the only one of its Kind, that Author recommends it to the Merchant or Draper to unfold all the Pieces entirely, as they come to him; to discover the *Renterings* and other Flaws, in order to make the Clothier accountable for them.

**RENUENTES**, in Anatomy, a pair of Muscles of the Head, thus called as being Antagonists to the *Annuentes*; and serving to throw the Head backwards, with an Air of Refusal. See **HEAD**.

From their Situation they are also called *Rectus Capitis Minor*. See **RECTUS CAPITIS**.

**RENUNCIATION**, the Act of renouncing, abdicating, or relinquishing any Right, real or pretended. See **ABDICATION**, &c.

*Renunciations* are sometimes *express*; as by Contracts, &c. sometimes *tacit*, as by contrary Acts.

To *renounce* a Succession, a Community, &c. is to pass a solemn Act before a Notary, or other publick Officer, whereby a Person declares he will not intermeddle in a Succession, or Profit in a Company; but surrenders his Part, and quits all Pretensions.

*Diocletian* renounced the Empire to live as a Philosopher.—The late King *Philip* of *Spain*, by the Treaty of *Utrecht*, was obliged to *renounce* the Succession of the Crown of *France*; to which he was Heir Presumptive: And has since by a voluntary Act *renounced* his own Crown, in favour of his Son.—*Renunciations* of Kings are always suspected. See **RESIGNATION**.

**RENVERSE**, *invertail*, in Heraldry, is when any thing is set with the Head downwards, or contrary to its natural Way of Being.—Thus a Chevron *renverso* is a Chevron with the Point downwards.—The same Term we use when a Beast is laid on its Back.

**REORDINATION**, the Act of conferring Orders a second time. See **ORDINATION**.

The Ceremony of Ordination impresses what the Divines call an indelible Character; and cannot, therefore, be repeated: Yet is *Reordination* practiced in *England*, with regard to the Dissenting Ministers, who conform to the Church; The Bishops pretending that they alone have Right to confer Holy Orders, and that every Priest or Minister who does not receive them at their Hands, has no lawful, regular Vocation.

This proves a great Obstacle to the Re-union of those Ministers to the Church of *England*; many of whom, otherwise disposed to conform, have scrupled to be *Re-ordain'd*; inasmuch as *Re-ordination* implies their former Vocation to be null; that they had administer'd the Sacraments without any Right thereto; and that all their ministerial Acts were invalid. See **PRESBYTERIAN**.

In the eleventh Century, the Crime of Simony having been very flagrant; many People fell into the Error to believe that the Simoniacal Bishops could not Ordain validly; and that those who had received Orders at their Hands should be *re-ordain'd*.

The People of this Sentiment made a Party of themselves; and were distinguished by the Title of *Re-ordinantes*.

**REPSILVER**, was Money antiently paid by Servile Tenants to their Lords; to be eas'd of the Service of reaping his Corn. See **SERVICE**.

**REPAIRING**, in Building, &c. See **REPARATION**.

The *Repairing* of large Walls, Doors, Ceilings, Coverings, &c. belongs to the Proprietor or Landlord.

The Locatory or Tenant is only charged with *small Repairs*, as Glass-Windows, Locks, &c. call'd *LOCATIVE Repairs*.

To *repair* a Statue, or other Piece of Sculpture, is to touch up a Statue, &c. (cast in a Mould) with a Chissel, Graver, or other Instrument; to finish the Places which have not come well off.

To *repair* a cast Figure or Statue, they clear off the Barb, and what is redundant in the Joints and Projectures. See **STATUE**. See also **FOUNDERY**.

To *repair* a Medal, is to retouch it; so as rusty and defaced as it was, to render it clean, neat, and perfect.—In order to this, they take off the Rust with a Graver, touch up the Letters, polish the Ground, and raise and restore the Figures which before were scarce seen.

When the Figures are gnaw'd or broke, they fit a Piece of Mastic, or Cement on the Spot; and on this cut with a Graver so dextrously that the Figures appear entire and well kept.—Yet nothing spoils Medals so much as *repairing* them. See **MEDAL**.

**REPAIRS**, in Hunting, are the Haunts or Places that the Hare runs to. See **HUNTING**.

**REPAIRERS**, Artificers who chase Figures, and beautify Sword-Hilts, &c. See **CHASING**.

**REPARATION**, the Act of repairing, re-establishing, retrieving, or mending a Building, or other Work, damaged or gone to decay. See **REPAIRING**.

The Enemy *repair'd* the Breach as soon as 'twas made.—The Establishment of Turn-pikes is for *repairing* of the Roads.

An Ecclesiastical Patron is by antient Customs obliged to repair the Choir or *Chancel* of a Church, and the Parishioners the *Nave*. See **RESTAURATION**.

**REPARATIONE facienda**, is a Writ which lies in divers Cases; *e. gr.* where three are Tenants in Common, or joint Tenants *pro indiviso*, of an House, &c. fallen to decay, and the one being willing to *repair* it, the other two will not; in this Case the Party willing shall have this Writ against the other two.

**REPARTITION**, a dividing or sharing a thing a second time. See **PARTITION**.

There are so many Deficiencies found this Year in the Taxes of this Parish, that there must be a *Repartition* on the Inhabitants; or a new Imposition.

**REPARTY**, a ready, smart Reply; especially in Matters of Wit, Humour, or Raillery.—'Tis dangerous attacking this Lady, her *Reparties* are so keen.

*Wicquefort* observes a World of difference between a free sprightly *Reparty*; and an offensive Sarcasm. See **SARCASM**.

The Word, in the Original *French*, *Repartie*, has the same Signification.

**REPAST**, **REPASTUM**, a Meal, or Refection, taken at a stated Hour. See **REFECTION**.

In old Law Books, *Repast* is particularly used for a Meals-meat given to servile Tenants, while at Work for their Lord.

The *French* call their Meal, *Repast*; the *Latins*, *Passus*; the *Italians* and *Spaniards*, *Passo*. See **MEAL**.

The *Repasts* whereof the Scripture has preserved the Memory, shew that the antient *Hebrews* were not very delicate in their Eating.—*Abraham*, a Man of Wealth and Eminence, entertaining the Angels, serves them with Cakes baked under the Ashes, a fatted Calf hastily dress'd, and Milk and Butter.—But the Quantity makes amends for the Quality: Three Measures of Flower, and a whole Calf, for three Persons.

*Joseph* to shew his respect to his Brother *Benjamin*, order'd him a Portion of Meat five times as big as that of his other Brothers.

In Antiquity the *Repasts* were frequently Sacrifices; for which Reason we find them often prepared by Kings themselves. See **SACRIFICE**.

**REPEALING**, in Law, the revoking or annulling of a Statute by Authority of Parliament. See **PARLIAMENT**.

No Act of Parliament shall be *repealed* in the same Session it was made in. See **SESSION**.

*Brook* uses the Word *Repellance* in the same Sense.

**REPEAT**,



**REPEAT**, in Musick, a Character shewing that what was last play'd or sung, must be *repeated*, or gone over again. See **REPETITION**.

The *Repeat* serves instead of writing the same thing twice over.—There are two Kinds of *Repeats*; the *great* and the *small*.

The first is only a *double Bar*, dotted on each Side; or two parallel Lines drawn perpendicular a-cross the Staff; with Dotts on either Hand: See its Form under **CHARACTERS of Musick**.

This Mark shews that the preceding Strain is to be *repeated*; that is, if it be near the Beginning of the Piece, all hitherto sung, or play'd, is to be *repeated*; or if towards the End of a Piece, all from such another Mark.

In Gavots, we usually find the *Repeat*, at about the third Part of the Piece.—In Minuets, Borees, Courants, &c. towards the End.

Some make this a Rule, that if there be Dotts on each Side the Bar, they direct to a *Repetition* both of the preceding and the following Strain; if there be only Dotts on one Side then, only the Strain on that Side to be *repeated*.

The *small Repeat* is where only some of the last Measures of a Strain are to be repeated.—This is denoted by a Character set over the Place where the *Repetition* begins, (see **CHARACTERS in Musick**) and continues to the End of the Strain.

When the Song ends with a *Repetition* of the first Strain, or Part of it, instead of a *Repeat*, they use the Words *da Capo*, i. e. from the beginning.

**REPELLENT**, **REPELLENS**, in Medicine, a Remedy which *repels* or drives back a morbid Humour into the Mass of Blood, from which it was unduly secreted. See **HUMOR** and **MEDICINE**.

Or, *Repellents* are Medicines which prevent such an afflux of the Fluids to any particular Part, as will raise it into a Tumour; or drive them back when they are collected. See **TUMOR**.

To form an Idea of the Manner of their Operation, it may be observ'd, that all Tumors arise either from an increase in the Velocity or Quantity of the Fluids, or a Weakness in some particular Part; though sometimes both concur.—Now an increase in the Velocity of the Fluids makes them more forcibly push against, and distend all the Parts in their Circuit; if therefore any Part be unequally pressed or relaxed by external Injuries, that will be more elevated than any other; and for want of equal Resistance with the rest of the Body, will at length receive such a Quantity of Fluid, as will raise it into a Tumor, especially if any of its Vessels be obstructed: Because the Protrusion of fresh Matter, *a tergo*, will continue to add thereunto, till the Part is on the utmost stretch, and can hold no more. See **BLOOD**.

In this Case, all those Means are said to be *repellent*, which check the growth of the Tumor, and assist the reflux Blood in taking up the obstructed Matter, and washing it again into the common Stream.

This Intention is chiefly favoured by Evacuation and Revulsion; for whatsoever lessens the Quantity of the Fluid, will diminish the force upon the tumefied Part.—But it concerns us most to know how external Application to the Part itself, helps this Affair.

Herein a Medicine comes to be *repellent*, by consisting of such subtle Parts, as may transmit some of them through the Pores, and help to render the obstructed Matter more fluid, so that it comes the more easy to be loosened, and fall again into the circulating Current.—But in this Case there is a Hazard of such things likewise putting the obstructed Humour into a Ferment, whereby it sooner turns into Pus, and then they come under the Denomination of Suppuratives or Ripeners. See **SUPPURATIVE**.

What, therefore, in the most strict Sense, is to be reputed a *Repeller*, is that which astringes and strengthens the Part, so as to make it resist any such Lodgment. See **ASTRINGENT** and **STRENGTHENER**.

These are such whose Qualities are most manifest in their Coldness, and drying Properties: But there are so few Instances wherein Bandage is not better than such Application, that very little comes to be used for that purpose. In Hemorrhages, and Ouzings out of Scrum, so as to deform the Skin; Simples of this Nature mostly take place; which answer their Ends in astringing the Fibres, whereby those Apertures are so closed, as not to admit through them afterwards any such fluid.

Some things also answer this End only by stimulating the Fibres of the tumefied Part, so as to give them sudden and forcible Twitches, whereby the obstruction is sometimes loosened and shook away, as it were, into the reflux Current.—Such a sort of Motion will be occasioned by the sudden Application of any thing extremely cold, as common Water; but the Practice is seldom safe, because if the first Efforts which the Fibres are put upon by those means, do not succeed in breaking away the inclosed Matter, they will be strained, and not able afterwards to repeat their natural Vibrations: The Consequence of which is weakening the Part, which will render the Tumor more obstinate.

**REPELLING Power**, **Vi**; **REPELLENS**, in Physicks, is a certain Power or Faculty residing in the minute Particles of natural Bodies, whereby they mutually fly from each other. See **POWER** and **PARTICLE**.

This Power is the reverse of the *Attractive Power*. See **ATTRACTIVE**.

Sir Isaac Newton having established the attractive Power of Matter from Observation and Experiment; argues, that as in Algebra, where positive Quantities cease, there Negative ones commence; so in Physicks, where the attractive Force ceases, there a *repelling Force* must begin.

But that there is such a Force does likewise appear from Observation. See **REPULSION**.

As the *repelling Power* seems to arise from the same Principle as the attractive, only exercised in different Circumstances; is govern'd by the same Laws: Now the attractive we find is stronger in small Bodies than in great ones, in Proportion to the Masses.—Therefore the *repelling* is so too. But the Rays of Light are of all others the most minute Bodies we know of; therefore of all others their *repelling Force* must be the greatest. See **RAY**.

Sir Isaac Newton computes that the attractive Force of the Rays of Light is above 100000000000000 times as strong as the Force of Gravity on the Surface of the Earth: Hence arises that inconceivable Velocity wherewith Light must move, to reach from the Sun to our Earth in seven Minutes. For the Rays emitted from the Body of the Sun by the vibrating Motion of its Parts, are no sooner got without the Sphere of Attraction of the Sun, than they come within the Action of the *repelling Power*. See **LIGHT**.

The Elasticity, or springiness of Bodies, or that Property whereby after having their Figure alter'd by any external Force, they return to their former Figure, follows from the *repelling Power*. See **ELASTICITY**, **AIR**, &c.

**REPERCUSSION**, in Mechanicks. See **REFLECTION**.

**REPERCUSSION**, in Musick, a frequent Repetition of the same Sounds. See **REPETITION**.

This frequently happens in the Modulation; where the essential Chords of each Mode, or of the harmonical Triad, are to be beat oftener than the rest; and of these three Chords the two Extremes, i. e. the final and the predominant one, (which are properly the *Repercussion* of each Mode) oftener than the middle one.

**REPERTORY**, **REPERTORIUM**, a Place wherein things are orderly disposed, so as to be easily found when wanted.

The Indices of Books are *Repertories*, shewing where the Matters sought for are handled. See **INDEX**.

Common Places are a kind of *Repertories*, very useful to the learned. See **COMMON Place**.

*Repertorium Anatomicum*, is a large Hall near an Amphitheatre of Dissections, where Skeletons both human and brutal, are orderly preserved.—Such is the *Repertory* of the French King's Garden at Paris.

**REPETITION**, **REPITITIO**, the re-iterating of an Action. See **REITERATION**.

Habitudes are acquired by the frequent *Repetition* of Actions. See **HABIT**.

Musicians and Comedians make several *Repetitions* of their Concerts and Comedies, e'er they perform for good. See **REHEARSAL**.

The School Philosophers call the *Repetition* of the same numerical Effect in another Place, the *Replication* of that Effect. See **REPLICATION**.

**REPETITION**, in Musick, a re-iterating or playing over again of the same Part of a Composition; whether it be a whole Strain, a Part of a Strain, or a double Strain.

The *Repetition* is denoted by a Character, called a *Repeat*, which is varied so as to express the various Circumstances of the *Repetition*. See **REPEAT**.

When the Song ends with a *Repetition* of the last Strain, or a part of it; the *Repetition* is denoted by *da Capo*; that is, from the Beginning.

**REPETITION**, *Reply*, is also used in Musick, when after a little Silence, one Part *repeats* or runs over the same Notes, the same Intervals, the same Motions, in a word, the same Song, which a first Part had already gone over during the Silence of this.

**REPETITION**, *Reply* is also a doubling, or trebling, &c. of an Interval; or a Reiteration of some Consonance or Dissonance: Thus a fifteenth is a *Repetition* of the Octave, i. e. a double Octave or second Octave. See **OCTAVE**.

**REPETITION**, in Rhetorick, a Figure whereby the Orator repeats the same Word or Phrase over again.

Of this there are two Kinds.—In the first, the Word is repeated precisely in the same Sense: As, Oh, *Jerusalem, Jerusalem*, who killest the Prophets, &c. *my God, my God*, why hast thou forsaken me.

Such *Repetitions* have the same effect in Discourse, with second strokes of the Pencil in Painting; they render the Colours more strong and lively.

Sometimes the Orator begins again and again with the same Word; of which we have an Instance in the beginning of Cicero's first Oration against *Cataline*: *Nihil ne te Nocturnum praesidium palatii, nihil urbis Vigilie, nihil timor populi, nihil consensus bonarum omnium, nihil hic Munitissimus habendi Senatus locus, nihil forum erat vultusq; moverunt!* Where the Word *nihil* so often re-iterated gives an admirable Force and Vehemence to the Discourse.—  
Again,



Again, the same Author: *Quem senatus damnavit, quem Populus R. damnavit, quem omnium existimatio damnavit, eum vos sententiis vestris absolvetis?* Again, *Non feram, non patiar, non sinam.*

The second Kind of *Repetition*, call'd *πλοκή*, *Ploce*, is a *Repetition* of the same Word, in the same Phrase; but in such manner as that some new Idea or Character is added to the Word, in the second, which it had not in the first: As *Corydon* is always *Corydon*: *Ex illo Corydon, Corydon est tempore nobis*; by which we signify that *Corydon* is no ordinary Person; and that nothing can distinguish him but the *Repetition* of his own Name: As if we should say, *He is Corydon; that is enough.*—By the same Figure our Saviour speaks, when he says, *Let your Language be Yea, yea, and Nay, nay.*

**RE-PLANTING**, in Gardening, the Action of planting a second time. See **PLANTING**.

The Gardeners use to displant their Tulips every Year, and replant them.—Lettices must be displanted and replanted yearly, to make them head and knit.—If Strawberries, &c. be not displanted, and replanted once in a few Years, they degenerate.

The Gardeners have a Proverb, that if the Devil were to replant his Wife, he'd cut off her Head.

**REPLEADER**, in Law, is to plead over again what was once pleaded before. See **PLEA** and **PLEADING**.

**REPLEGIARE** *De Averiis*, a Writ brought by one whose Cattel are distrain'd, and put in the Pound by another, upon Security given the Sheriff to pursue, or answer the Action at Law against the Distrainer. See **REPLEVY**.

**REPLETION**, in Medicine, a *Plenitude*, or *Plethora*. See **PLENITUDE** and **PLETHORA**.

*Repletion* is more dangerous than *Inanition*.—Bleeding and Diet are the great Resources when a Person is incommoded with a *Repletion*. See **DIET**, &c.

*Repletion* is sometimes also used where the Stomach is overladen, with too much eating or drinking.—The Physicians hold all *Repletion* prejudicial; but that of Bread the worst. See **BREAD** and **SURFEIT**.

**REPLETION**, in the Canon Law, is where the Revenue of a Benefice or Benefices is sufficient to fill or occupy the whole Right or Title of the Graduate who holds them. See **BENEFICE**, **GRADUATE**, &c.

When there is a *Repletion*, the Party can demand no more by Virtue of his Degrees.—In *England*, where Benefices are not affected to Degrees, *Repletion*, strictly speaking, has no Place. See **PLURALITY**.

In *France*, 600 Livres, or 45 *l. Sterl. per Annum*, make a *Repletion*, when the Benefice is obtain'd otherwise than by his Degree; and 30 *l. per Annum*, when it is obtain'd by virtue of a Degree.

**REPLEVY**, **REPLEVIE**, or **REPLEVIN**, in Law, from the *Latin replegiare*, to re-deliver to the Owner upon Pledges of Surety; is the bringing of a Writ called *Replegiari facias*, by him whose Cattel or Goods are distrained by another upon any Cause; and giving Security to the Sheriff, that on delivery of the thing distrain'd, he will prosecute the Action against the Person who made the Distress. See **DISTRESS**.

In the Stat. 24 of *Henry III.* we read of *Canes replegiati*, Hounds replevied, in a Case between the Abbot of *St. Albans*, and *Geoffrey Childwin*.

Goods may be *replevied* two ways; viz. by *Writ*, which is that used by the common Law.—And by *Plaint*; which is that by statute Law, for the more speedy having again the Cattel and Goods.

**REPLEVISH**, in Law, is to let one to Mainprise, upon Surety. See **MAINPRISE**.

**REPLICATION**, **REPLICATIO**, in Logic, the assuming or using the same Term twice in the same Proposition.

In the like Sense they say *Reduplication*.

Some Philosophers use the Phrase *Replicatio Mundi*, *Replication* of the World for its Conversion, or turning round.

The human Soul is also said to be in a Place *replicatively*, *replacative*, when conceived to be all in the whole, and all in every Part thereof. See **SOUL**.

**REPLICATION**, in Law, is an Exception of the second Degree, made by the Plaintiff to the first Answer of the Defendant. See **REJOINDER**.

The *Replication* is particularly that which the Plaintiff replies to the Defendant's Answer in Chancery, and which is either *general* or *special*. The *special* is grounded upon Matter arising out of the Defendant's Answer, &c. The *general* is so called from the general Words therein used.

**REPORT**, the Relation made upon Oath, by Officers or Persons appointed to visit, examine, state, or estimate, any thing.

Damages, Repairs, &c. are judged from the Reports of experienced Persons.—Provisions for Persons wounded are only granted on the Reports of Chirurgeons, &c. In Cases of Rapes a Report of Matrons is had. See **JURY**.

**REPORT**, in Law, is a publick Relation of Cases judiciously argued, debated, resolved, or adjudged in any of the King's Courts of Justice, with the Cause and Reason of the same, delivered by the Judges.

When the Chancery, or any other Court, refers the stating of some Case, or comparing an Account, &c. to a Master in Chancery, or other Referee, his Certificate therein is call'd a *Report*.

**REPOSITORY**, **REPOSITORIUM**, a Store-house or Place where things are laid up and kept.—In this Sense we say the *Repository* of the Royal Society, &c. See **MUSEUM**.

**REPOSE**, in Poetry, &c. See **REST**.

**REPOSE**, in Painting, is used for certain Masses or large Systems, or Assemblages of Light and Shade; which being well conducted, prevent the Confusion of Objects and Figures; by engaging and taking up the Eye so as it can't attend to the other Parts of the Painting, for some time: And thus leading it to consider the several Groups gradually, and as it were to proceed from Stage to Stage.—See **LIGHT**, **SHADOW**, **CLAIR-obscur**, &c.

**REPOSITION** of the Forest, an Act whereby certain Grounds made *purlieu*, upon a second view are laid to the Forest again. See **FOREST**, and **PURLIEU**.

The Word is form'd from the *Latin re* and *ponere*, to lay again.

**REPRESENTATION**, in the Drama, the Exhibition or Action of a theatrical Piece; including the Scenes, Machines, the Recitation, &c. See **SCENE**, **MACHINE**, **RECITATION**, &c.

Sir *Richard Steel's* Principle is, that the Design of a Play is not to be read but *represented*; so that 'tis on the Stage, not in the Press it is to be judged of: And the Pit, not the Publick, are the Judges. See **THEATRE**.

**REPRESENTATIVE**, one that personates, or supplies the Place of another; and is invested with his Right and Authority.

The Word *Representative* is equivalent to a *Procurator* or *Proxy*. See **PROCURATOR** and **PROXY**.

Thus we say the King is the *Representative* of God on Earth: Magistrates, *Representatives* of the King. See **KING**, **MAGISTRATE**, &c.

The Commons are the People's *Representatives* in Parliament. See **COMMONS**, **PARLIAMENT**, &c.

There is this defect in the Constitution of our Parliament; that whereas all *Englishmen* who have considerable Estates, ought not to be tax'd without their own Consent, in Parliament by themselves, or their *Representatives*: Copy-holders, whereof some have a thousand Pounds a Year, have no Voice in the Election of Knights of the Shire. *Chamberl.*

**REPRIEVE**, in Law, a suspending or deferring the Progress and Execution of the Law upon a Prisoner, for the present time.

A *Reprieve* is properly a Warrant from the King, for suspending the Execution of a Person condemn'd.—The King cannot pardon a condemn'd Person without the Concurrence of Parliament, but he frequently *reprieves* him for 99 Years.

**REPRIMAND**, a sharp authoritative Reproof. Such a Person was *reprimanded* in Court, by the Bench, &c.

**REP-SILVER**, Money antiently paid by servile Tenants to their Lord, to be quitted of the Duty of reaping his Corn. See **SILVER**.

**RERE-WARD**, *arrieregarde*, the Rear of an Army. See **REAR**.

**REPRIZALS**, **REPRISALIA**, in the Civil Law, a Right which Princes have to retake from their Enemies, such things as they unjustly detain from them; or things equivalent thereto.

When a Place is taken or held from a Prince, he seizes another by way of *Reprisal*.—Sometimes he takes Men of the opposite Party, by Right of *Reprisals*.—The *Romans* call'd it *Clarigatio*. See **CLARIGATIO**.

**REPRISALS** is also used for a Letter or Permission which a Prince sometimes gives a Subject, upon a full Cognizance of the Cause; authorizing him to retake from the first Persons he meets withal of the opposite Party, as many Effects as make an Equivalent to what have been violently forced from him; and for which the opposite Prince has refused to do him Justice.

These Permissions are also called *Letters of Mark*, and in the Stat. 27 *Edw. III. Law of Marquiere*; in regard, a Person denied Justice in another Man's Territory; redresses himself by Goods belonging to Men in that Territory. This Merchant has seiz'd the Effects of the *Spaniard* Don ——— because the *Spaniards* had seiz'd his; and no redress could be had at the Court of *Madrid*.

The Word is form'd from the *Italian*, *Represaglia*, which signifies the same thing.

**REPRISE**, or **REPRIZE**, in the Commerce by Sea, a Merchant Ship which having been taken by a Corsair, Privateer, or other Enemy; is retaken or recover'd by a Vessel of the contrary Party.

When a Vessel thus retaken has been 24 Hours in the Hands of the Enemy, 'tis deem'd a lawful Prize. See **PRIZE**.

If the *Reprise* have been made within the 24 Hours; the Vessel is to be restored to the Proprietor, with every thing therein, upon his allowing one third to the Vessel who made the *Reprise*.

If the *Reprise* have been abandon'd by the Enemy, either in a Tempest, or from any other Cause, before it have been led into any Port, it is to be restored to the Proprietor.



The Word is *French*, and signifies a *re-sumption* or *re-taking*.

**REPRISES**, in Law, are Deductions, Draw-backs, or Duties paid yearly out of a Manor, or Lands.—Such are Rent-charges, Pensions, Fees of Stewards or Bailiffs, &c.

Thus we say, the Manor of *Doll* yields 40 *l.* per Annum, *ultra Reprizas*, besides all *Reprizes*.

**REPROBATION**, in Theology, a Decree or Resolve which God has taken from all Eternity, to punish Sinners, who shall dye in Impenitence. See DECREE.

*Reprobation* stands in Polemical Divinity in direct opposition to *Predestination*. See PREDESTINATION.

The Divines hold it a Symptom of *Reprobation*, when a Sinner is harden'd so as not to feel any further Remorse or Misgivings of Conscience. See CONSCIENCE, REMORSE, &c.

The Casuists distinguish *positive* and *negative Reprobation*.

*Positive Reprobation* is that whereby God is supposed to create Men with a positive and absolute Decree to damn them eternally.

This Opinion of *Reprobation*, is countenanc'd by St. *Augustin*, and others of the Fathers, and strongly maintained by *Calvin*, and most of his Followers.—Something like it is also found in the 39 Articles of the Church of *England*, but 'tis now generally exploded as injurious to God. See CALVINIST, &c.

*Negative*, or *Conditional Reprobation*, is that whereby God, though he create all Men with a sincere desire to save them, and furnishes them with the necessary Means thereto, so as all may be saved if they will; yet, sees, there are several who will not do it, with the Aids he shall afford them, how powerful soever: And sees, at the same time, they would do it with certain other Aids, which he sees, but will not give them.—O *Altitudo!* &c. See GRACE.

**REPRODUCTION**, the Action whereby a thing is produced a-new, or grows a second time. See PRODUCTION.

When the Stock of an Oak, Fruit-Tree, &c. is cut off short, it reproduces an infinity of young Shoots. See STOCK.

By *Reproduction* is usually understood the Restauration of a thing before existing, and since destroyed. See RESTAURATION.

The *Reproduction* of several Parts of Lobsters, Crabs, &c. makes one of the great Curiosities of natural History.—That in lieu of an organical Part of an Animal cut off, another should arise perfectly like it, may seem inconsistent with the modern System of Generation; where the Animal is supposed to be wholly form'd in the Egg. See GENERATION and EGG.

Yet has the matter of Fact been well attested by the Fishermen, and even by several Virtuoso's who have taken the Point into Examination.—The Legs of Lobsters, &c. consist each of five Articulations; now when any of the Legs happen to break by any Accident, as in walking, &c. which frequently happens, the Fracture is always found to be at a Suture near the fourth Articulation; and what they thus lose is precisely reproduced in some time afterwards: That is, a part of a Leg shoots out, consisting of four Articulations; the first whereof has two Claws as before; so that the loss is entirely repaired.

If a Lobster's Leg be broke off by design at the fourth or fifth Arriculation, what is thus broke off always comes again.—But 'tis not so if the Fracture be made in the first, second, or third Articulation. In those Cases the *Reproduction* is very rare, if things continue as they are.—But what is exceedingly surprising, is, that they don't: For upon visiting the Lobster maim'd in these barren and unhappy Articulations, at the end of two or three Days, all the other Articulations are found broke off, to the fourth; and 'tis suspected they have performed the Operation on themselves, to make the *Reproduction* of a Leg certain.

The Part reproduced is not only perfectly like that retrench'd, but also in a certain space of time equal to it.—Hence it is, that we frequently see Lobsters, which have their two big Legs unequal; and that in all Proportions.—This shews the Youth of the legs.

A Part thus reproduced being broke, there is a second *Reproduction*.—The Summer, which is the only Season of the Year when the Lobsters eat, is the most favourable time to the *Reproduction*. 'Tis then perform'd in four or five Weeks: whereas it takes up eight or nine Months in any other Season.

The small Legs are reproduced, but more rarely, as well as more slowly than the great ones: The Horns do the same. See CRAB'S-EYES.

**REPTILES**, in natural History, a kind of Animals, denominated from their *creeping* or advancing on the Belly; or a Genus of Animals and Insects which instead of Feet, rest on one Part of the Body, while they advance forward with the rest. See ANIMAL, INSECT, &c.

Such are Earth-Worms, Snakes, Catterpillars, &c.

Indeed, most of the Class of *Reptiles* have Feet; only those very small, and the Legs short in Proportion to the Bulk of the Body. See FEET and LEGS.

The Naturalists observe a World of artful Contrivance for the Motion of *Reptiles*.—Thus, particularly, in the Earth-worm, Dr. *Willis* tells us, the whole Body is only a Chain of annular Muscles; or, as Mr. *Dorham* says, 'tis only one continued spiral Muscle, the orbicular Fibres whereof by being contracted, render each Ring narrower and longer than before: By which

means it is enabled, like the Worm of an Augre, to bore its Passage into the Earth.—Its *reptile* Motion may also be explained by a Wier wound on a Cylinder, which when slip'd off, and one end extended and held fast, will bring the other nearer it. So the Earth-worm having shot out or extended its Body, (which is with a wreathing) it takes hold by those small Feet (which and so contracts the hinder Part of its Body.—Dr. *Tyson* adds, that when the fore-part of the Body is stretch'd out, and applied to a Plane at a Distance, the Hind-part relaxing and shunning, is easily drawn towards it as a Centre.

Its Feet are disposed in a quadruple Row, the whole length of the Worm; with which, as with so many Hooks, it fastens down sometimes this, and sometimes that Part of the Body to the Plane, and at the same stretches out, or drags after it another.

The creeping of Serpents is effected after a somewhat different Manner; there being a difference in their Structure; in that they last have a Compages of Bones articulated together. The Body here is not drawn together, but as it were complicated; Part of it being applied on the rough Ground, and the rest ejaculated and shot from it; which being set to the Ground in its turn, brings the other after it.—The Spine of the Back, variously wreath'd, has the same effect in leaping, as the Joints of the Feet in other Animals; they making their Leaps by means of Muscles that extend the Plicæ or Folds.

The Word REPTILE is likewise used, abusively, for Plants and Fruits which creep on the Earth, or on other Plants, as wanting Strength of Stalk to sustain themselves.

Such are Cucumbers, Melons, &c. such also are Ivy, the Vine, &c.

The Word is form'd from the *Latin*, *repto*, I creep.

**REPUBLIC**, RES PUBLICA, *Commonwealth*, a popular State or Government; or a Nation governed by a Democracy. See DEMOCRACY.

The celebrated Republics of Antiquity, are those of Athens, Sparta, Rome, and Carthage.

At present there is scarce any such thing as a real Republic, i. e. as a strictly popular State.—Indeed the Venetians and Genovesi call their States Republics, but their Government is apparently oligarchic. See OLIGARCHY.

The Dutch come the nearest to the Character of a Republic; yet are they very defective, at least in the Sense and Severity wherewith Rome, Carthage, &c. were Republics. See STATES-GENERAL, PENSIONARY, &c.

'Tis a Remark of M. St. *Evremond*, that if the Dutch love the Republican Form, 'tis more for the sake of their Trade, than of their being free.

**REPUBLIC of Letters**, or of Learning, is a Phrase used in speaking collectively of the whole Body of the People of Study.

There is a Journal begun in Holland by M. *Bayle*, and continued by M. *Bernard*, consisting of Extracts of Books printed in the Course of the Year; called, *Nouvelles de la Republique des Lettres*; News from the Republic of Letters. See JOURNAL.

**REPUDIATION**, in the Civil Law, the Act of Divorcing. See DIVORCE.

**REPULSION**, REPULSIO, in Physicks, the Action of a repelling Power, whereby natural Bodies, under certain Circumstances, mutually fly each other. See REPELLING-POWER.

*Repulsion* is the Counter-Part to Attraction.—Attraction only reaches to a little Distance; where that terminates there *Repulsion* commences. See ATTRACTION.

Indeed we meet with many obvious Instances of *Repulsion* among Bodies, as between Water and Oil; and in general between Water and all unctuous Bodies: Between Mercury and Iron; as also between the Particles of Dusts, &c.

Thus, if a fat Body lighter than Water, be laid on the Surface thereof, or if a Piece of Iron be laid on Mercury; the Surface of the Fluid will be depress'd about the Bodies laid on it: A plain Indication of *Repulsion*; as the rising up of the Fluid about the Surfaces of other incumbent Bodies is of Attraction.

In the latter Case the Fluid is suspended by an attractive Power, above the Level, and kept from falling by its Gravity: In the former a Depression is made by the repelling Power, which the Liquor, notwithstanding its Gravity, cannot run down into and fill up.

Upon this depend all the Phenomena of very light Glass Bubbles floating on Water; about which, when clean, the Water rises; but when greas'd, the Water sinks into a Channel all around them.—Hence also it is that in a Glass Vessel of Water the Fluid stands higher all about the Edges near the Glass, than towards the Middle: But when the Glass is filled till the Water run down on all Sides, then, it stands higher at the middle than at the Sides.—Hence, also in a Glass not full of Water, a clean Glass Bubble always runs to the Side, by reason the Pressure which is upon it towards the Middle, is partly taken off by the attractive Force wherewith the Water is rais'd near the Edge. If the Glass be so full as to be ready to run over, the Bubble returns from the Side towards the Middle; the Force wherewith the Water is rais'd in the Middle, taking off Part of the Pressure.

Just the reverse happens, if the Bubble be greasy; in regard thereto, the Force whereby the Water and the Bubble repel each other, is greatest where the Water is highest. Two clean Bubbles,



bles, and two greasy ones always run towards each other; as being attracted. A greasy and a clean one always fly each other, as being repell'd.

**REQUEST**, in Law, a Supplication, or Petition prefer'd to a Prince, or a Court of Justice, begging Relief in some Conscienceable Cases where the Common Law granted no immediate Redress. See **EQUITY**.

The Term *Request* is now, since the Institution of Chancery, much disused; together with the Court of *Requests*, where *Requests* were cognizable.

The Court of **REQUESTS**, was an ancient Court of Equity, instituted about the 9th Henry VII. of like Nature, though inferior Authority, to the Court of Chancery; being appointed chiefly for the Relief of Petitioners who in conscienceable Cases should address themselves by way of *Request* to his Majesty.

The Chief Judge of this Court was the Lord Privy Seal, assisted by the *Masters of Requests*, who corresponded to our Masters of Chancery. See **MASTER**.

40 and 41 Eliz. it was adjudged, upon solemn Argument in the Court of Common-Pleas, that the Court of *Requests* was then no Court of Equity. See **COURT, CHANCERY, &c.**

In France the *Requetes Civiles*, Civil Requests, still obtain for the annulling of Contracts, &c. made by Surprise. See **PLAINET**.

They have eighty *Masters of Requests*, to take Cognizance of Causes between the Officers of the Crown, the Servants of the Household, &c.

**REQUEST**, in Hunting, is when the Dogs have lost the Quest or Track of the Beast, and must *Request*, or *Quest* it again. See **QUEST**.

Thus they say, to call to the *Request*, come to the *Request*. See **HUNTING**.

To *Request the Game*, is chiefly used when after having run it down the Night before, they seek it again the next Morning with the Blood-Hound, or the like. See **BLOOD-HOUND**.

**REQUIEM**, a Mass sung in the Romish Church for the rest of the Soul of a Person deceas'd. See **MASS**.

It is thus called, because the *Introit* begins with, *Requiem eternam dona eis Domine*, &c.

**RES**, thing. See **REALITY, ENS, ESSE, SUBSTANCE, &c.**

**RES Naturales,**

**RES Non Naturales,**

**RES Præter Naturales,**

} See { **NATURALS.**  
NON **NON Naturals.**  
PRÆTER **Præter Naturals.**

**RESCUIT, RECEPTIO**, an Admission or Receiving of a third Person to plead his Right, in a Cause formerly commenced between other two.

As, if a Tenant for Life or Years, brings an Action, he in the Reversion comes in and prays to be received, to defend the Land, and to plead with the Demandant.

**RESCUIT** is also applied to an admittance of Plea, though the Controversy be only between two.

**RESCUIT of Homage, Receptio Homagii**, denotes the Lord's receiving Homage of his Tenant at his Admission to the Lands. See **HOMAGE**.

**RESCISION, RESCISSIO**, in the Civil Law, an Action intended for the annulling or setting aside of an Act, Contract, or the like.

A Thing's being found damag'd or sold at above double the just Value, is a good Cause of *Rescission*. See **REDIMPTION**.

An Act or Contract thus annull'd, or rescinded, is call'd a *Rescissory*.

The Word is form'd from the *Latin*, *re* and *scindo*, q. d. I cut or divide again.

**RESCOUS, or RESCUE**, in Law, an illegal taking away and setting at Liberty of a Distress taken or a Person arrested, by Process or Course of Law.

This is properly a *Rescous in Fact*.—If one Distrain Beasts for Damage feasant in his Ground, and as he drives them in the Highway towards the Pound, they enter into the Owner's House, and he withholds them there, and will not deliver them upon Demand; this Detainer is a *Rescous in Law*.

*Rescous*, in Matters relating to *Treason*, is deem'd *Treason*; and in Matters concerning *Felony*, is *Felony*. See **TREASON, &c.**

He that commits such a *Rescue* or *Rescous*, is call'd *Rescussor*.

*Rescous* is also used for a Writ which lies for this Fact; call'd *Breve de Rescussu*.

**RESCRIBENDARY**, an Officer in the Court of *Rome*, who sets a Value upon Indulgences and Supplications. See **INDULGENCE**.

**RESRIPT**, an Answer delivered by an Emperor, or a Pope, when consulted by particular Persons, on some difficult Question or Point of Law; to serve as a Decision thereof.

The Civil and Canon Laws are full of such *Rescripts*.—When the *Rescript* was made in Answer to the Inquiry of a Community, it was call'd a *pragmatic Sanction*. See **PRAGMATIC**.

The *Papal Rescripts* are a kind of Bulls or Monitories, beginning with these Words, *Significavit nobis dilectus filius*, &c. They never obtained either in *England* or *France*, when contrary to the Liberties of the *English* and *Gallican* Churches; but were declared abusive. See **BULL**.

Among the *Romans* the contending Parties, and even the Ma-

gistrates themselves, frequently consulted the Emperor on the Measures they were to take in certain nice and difficult Cases; and the Answer returned by the Emperors on such Consultations, were call'd *Rescripts*.—These had not, indeed, the full force of Laws, but were deem'd a strong Prejudice or Presumption.

*Justinian* has inserted a great Number of them in the Code; and by that means given them the Authority they before wanted. See **CODE**.

The Author of the Life of the Emperor *Macrinus* observes of that Prince that he would have his Officers judge by Laws, not by *Rescripts*; as esteeming it absurd to admit the Wills of ignorant Men, such as *Commodus*, and *Caracalla*, for Rules of Judging; and because *Trajan* never gave any *Rescripts* at all, as being loth to countenance a Custom, where what is frequently granted as a favour, in particular Cases, might be afterwards pleaded as a Precedent.—'Tis added, that *Macrinus* had a Design to strip the *Rescripts* of all their Authority.

M. *Schulting*, in his Dissertations, does not at all approve of this Design; and to the Emperor's Reasons Answers, that indeed all *Rescripts* are not to be admitted; that those which appear dictated out of favour, are to be thrown aside; but those which appear founded in Reason, and natural Equity are, with *Justinian*, to be allowed.—He adds, that it can't be denied but the worst Emperors have frequently made good Laws, and useful *Rescripts*.

As to what is urged of the Emperor *Trajan's* never giving any *Rescripts*; it appears but ill supported.—For what is it but a *Rescript* that he delivers to *Pliny* on the Subject of the Christians, *Lib. 2. Epist. 28*? Or that on the *Iselastici*, *Lib. 10. Epist. 120*? The *Digest*, and *Pliny's* Epistle, need only to be opened and compared, to find *Rescripts* of *Trajan*.

**RESEANTISSA**, in Law. See **ESSOIN**.

**RESEARCH**, a diligent Search or Inquiry into any thing.—The Word is form'd of the *French*, *Recherche*, and literally denotes a second Search.

**RESEARCH**, in Musick, is a Kind of Prelude or Voluntary, play'd on the Organ, Harpsichord, Theorbo, &c. Wherein the Composer seems to *Search*; or look out for the Strains, and Touches of Harmony, which he is to use in the regular Piece to be play'd afterwards. See **PRELUDE**.

This is usually done off-hand, and consequently requires a Master's Skill.—When in a Motet the Composer takes the Liberty to use any thing that comes in his Head, without applying any Words to it, or subjecting himself to express the Sense or Passion thereof; the *Italians* call it *Fantasia Ricercata*; the *French*, *Recherche*; and our Musicians, *Research*.

**RESEARCHING**, in Sculpture, the Repairing of a cast Figure, &c. with proper Tools; or the finishing it with Art and Exactness, so as the minutest Parts may be well defined. See **FIGURE, STATUE, FOUNDERY, &c.**

**RESEISER**, in Law, a taking again of Lands into the King's Hands, whereof a general Livery, or *Ouster le Main*, was formerly misused; contrary to Order of Law. See **RESUMPTION**.

**RESEMBLANCE**. See **SIMILITUDE**.

**RESERVATION**, in Law, an Action or Clause whereby something is reserv'd, i. e. retain'd, kept, or secured to one's self. See **RESERVE**.

Thus, when a Man lets his Land, he *reserves* a Rent to be paid to himself for his Maintenance, &c. See **LEASE, TENANT, RENT, &c.**

*William the Conqueror* getting all the Lands of *England*, except those belonging to the Church and Religious Houses, into his Hands by Right of Conquest; bestowed a great Part thereof among his Followers, *reserving* some Retribution of Rents and Services to him and his Heirs; which *Reservation* is now, as it was before the Conquest, called the Tenure of the Lands. See **TENURE, SERVICE, &c.**

Sometimes *Reservation* signifies as much as an *Exception*; as when a Man lets an House, and *reserves* to himself one Room, that Room is excepted out of the Demise. See **EXCEPTION**.

*Mental Reservation* is a Proposition, which strictly taken, and according to the natural Import of the Terms, is false; but if qualified with something *reserved* in the Mind, becomes true. *Mental Reservations* are the great Refuge of Religious Hypocrites; who use them to accommodate their Consciences with their Interests: The Jesuits are zealous Advocates for *mental Reservations*; yet are they real Lyes, as including an Intention to deceive.

**RESERVE**, in Law, the same with *Reservation*. See **RESERVATION**.

He has settled the whole Estate on his Son, and has not made any *Reserve*.—Benefices are sometimes resign'd with *Reserve* of a Pension.—By the Canon Law, no Person may *reserve* to himself a Pension out of a Benefice, unless he have served it ten Years. See **RESIGNATION**.

In the *Romish* Church, the ordinary Priests have only a Power to absolve, in *reserve* of certain Cases; hence called *reserved Cases*, as being *reserved* to the Bishop. See **ABSOLUTION** and **CASE**.

The Court *reserves* the Cognizance of such an Affair to itself.—The Lawyers say, that no Prince ever grants such a Power by his Letters or Patents, but he *reserves* to himself a greater.



**Body of RESERVE**, or *Corps de RESERVE*, in War, the Forces disposed in the third or last Line of an Army drawn up for Battle. See **LINE** and **BATTLE**.

They are thus called because *reserv'd*, or destined to sustain the rest as occasion requires; and not to engage but in Case of Necessity.

**RESERVOIR**, **RECEPTACLE**, a Place where Water is collected and *reserv'd*, to be convey'd occasionally, through Pipes, &c. or to be spouted up, &c. See **WATER**, **FLUID**, &c.

The *Reservoir* in a Building is a large Basin, usually of Wood, lined with Lead, where Water is kept, to supply the Occasions of the House.—At *Canons*, the noble Seat of the Duke of *Chandos*, is a very large *Reservoir* a-top of the House; to which the Water is rais'd by a very curious Engine contrived for the Purpose.—This *Reservoir* is of such Capacity, as that besides supplying all Parts of the House by means of Pipes and Cocks, it likewise turns a Mill.

The *Reservoir* is sometimes also a large Basin of strong Masonry, glazed or paved at the Bottom; where the Water is reserved to feed *Jets d'Eau*, or spouting Fountains. See **FOUNTAIN**, &c.

Such is that huge one on the top of *Marly*, call'd *Trou d'Enfer*, Hell-Mouth, whose Surface, *Daviler* tells us, contains fifty Acres, and its Depth such, as under that Superficies to contain a hundred thousand Cubick Fathom of Water.

**RESERVOIR**, in Anatomy. See **RECEPTACLE**.

**RESET**, in Law, the receiving or harbouring an outlawed Person. See **OUTLAW**.

Hence a Receiver of an Out-lawed Person, is call'd a *Resetter*.

**RESIANCE**, in Law, a Man's Abode or Continuance in a Place.—The Word has the same Signification with regard to Lay-Men, as *Residence* with regard to Ecclesiasticks. See **RESIDENCE**.

*Glanville* observes, that in the antient Law, *Resiance* properly signified a Disease, whereby the Person was disabled from stirring out of Doors.—Whence their *Essoin de Resiantissa*, was the same as our *Essoin de Malo Lecto*. See **ESSOIN**.

**RESIDENCE**, in Canon and Common Law, the Abode of a Parson or Incumbent upon his Benefice; and his Assiduity in attending on the same. See **PARSON**, **BENEFICE**, &c.

The Default of *Residence*, call'd *Non-Residence*, unless where the Party have a Dispensation for the same, with us, is the Forfeiture of ten Pounds for each Month. See **NON-RESIDENCE**.

By the Canon Law, Beneficiaries are obliged to *Residence*, under Pain of Deprivation of their Benefices.—The Original Reason is, that in the primitive Church none were promoted to holy Orders, but such as had a Benefice in *promptu*; which they were obliged to serve; so that this Service was necessarily attach'd to the Order; and whoever was honoured therewith, at the same time was obliged to personal Service. See **ORDER** and **ORDINATION**.

But this strict Discipline was not observed long.—The Beneficiaries by Degrees got Dispensations from serving their Benefices themselves; and thus Pluralities got footing. See **PLURALITY**.

*France*, of all other Countries, seems to be that where *Residence* is the most strictly regarded.—All their *Curees*, or Ministers who have Cures of Souls, are obliged to actual *Residence*; and the Parliaments have declared all the Dispensations granted by Popes, &c. abusive; as esteeming the Obligation of *Residence* to be *Jure Divino*.

Under *Charles IX.* there was even a Design to re-establish the primitive Discipline in all its Severity; and in 1561, a Declaration was registered, appointing all Bishops to *reside*, conformably to the antient Canons, in their Bishopricks.—The same Parliament also forbade the Bishops to assume the Quality of Councillors of the King; in regard such a Quality was deem'd inconsistent with the indispensable Obligation they were under to reside in their Bishopricks.

*Du Pin* adds, that the *Procureur General*, Attorney General *Bourdin*, even seiz'd the Temporalities of such Bishops as continued in *Paris* fifteen Days after this Declaration; having first certified them, that if they had any Business there, he'd undertake the Management thereof.

**RESIDENCE**, in Chymistry, &c. the settling; or what remains of a Liquor, or other Substance in the Vessel, after Part of it has been pour'd or taken out; to change the Manner of the Operation on what is left.

**RESIDENT**, a publick Minister, who manages the Affairs of a King in the Court of a Prince, or petty State; or the Affairs of a Prince, or petty State, in the Court of a Prince. See **MINISTER**.

Thus the King of *England* has *Residents* in the Courts of the Electors, and other Princes of *Germany* and *Italy*; at the Republicks of *Genoa* and *Lucca*; and they reciprocally have *Residents* in the Court of *Great-Britain*.

*Residents* are a Class of publick Ministers inferiour to *Embassadors* and *Envoys*; but like them are under the Protection of the Law of Nations. See **EMBASSADOR** and **ENVOY**.

**RESIDENT**, in our antient Customs, was a Tenant who was obliged to *reside* on his Lord's Land, and not to depart from the same; called also, *Homme levant and Couchant*; and in *Normandy*, *Resseant du Fief*.

*Quantumcumque; de aliis teneat et magis obnoxius est.* &c. *residens esse debet cuius legius est Leg. H. I.*

**RESIDENTIARY**, a Canon installed to the Privilege and Profits of *Residence*. See **CANON**.

**RESIDUAL Figure**, in Geometry, the Figure remaining after Subtraction of a lesser from a greater. See **FIGURE**.

**RESIDUAL Root**, is a Root composed of two Parts or Members, only connected together with the Sign —.

Thus,  $a - b$ , or  $5 - 3$ , is a *Residual Root*; and is so called, because its true value is no more than its *Residue*, or Difference between the Parts  $a$  and  $b$ , or 5 and 3. See **ROOT**.

**RESIDUE**, the Remainder or Reliqua of an Account, Debt, or Obligation. See **REMAINDER** and **RELIQUA**.

*St. Paul*, in his Epistle to the *Romans*, speaks of a *Residue* according to the Election of Grace; meaning a Remnant or little Number of People preserved from Idolatry by an effect of the Grace of God.

**RESIGNATION**, or **RENUNCIATION**, in the Canon Law, the Surrender, or giving up of a Benefice into the Hands of the Collator. See **BENEFICE** and **COLLATOR**.

*Resignation* is of equal Import with *Surrender*; only the former is restrained to spiritual Benefices, and the latter to temporal Offices or Employments. See **SURRENDER**.

*Resignations* are either Simple or Conditional.

*Simple*, or *pure Resignations*, are those whereby the Incumbent strips himself of all his Right, absolutely, and without any Conditions or Reserve of Pension.—These are made to the Bishop, or Collator.

*Resignations in favour*, or *Conditional Resignations*, are such as are only made on Condition that such other Persons shall be invested therewith; so that the *Resignations* are null, unless the Conditions be punctually executed.

These *Resignations in favorem* are not of above 200 Years standing.—Strong Opposition was at first made to them; they being esteemed a kind of Succession or transmission of Benefices, as of Patrimonies belonging to a Family. Accordingly, these *Resignations* are not made into the Hands of the Ordinary, or Collator, as *pure Resignations* are; but to the Collator paramount, who in the *Romish* Church is the Pope: There being a suspicion of Simony, or other unlawful Paction therein; where admitted of in Prejudice to the Lay-Patron.

**RESIGNEE**, in Law, the Party to whom a thing is resigned. See **RESIGNATION**.

**RESIN**, **RESINA**, a fat, viscid, sulphurous Juice, oozing either spontaneously, or by Incision, from several kinds of Trees, particularly the Pine, Fir, &c. See **JUICE**, **PLANT**, &c.

Mastic is the *Resin* of the Lentisk. See **MASTIC**.

Camphor is also a kind of *Resin*. See **CAMPHOR**.

The best of all the Class of *Resins* is Turpentine. See **TURPENTINE**.

The *Coardest* is what we commonly call *Rosin*. See **ROSIN**.

*Resin* is properly a Juice of the Bark only. See **BARK**.

*Boerhaave* will have it to be the Oil of the Bark further inspissated by the Heat of the Sun, &c. so as to become friable. He adds, that it may be produced from any vegetable Oil, by boiling it much and long. See **OIL**.

If Turpentine be set over a gentle Fire, it first dissolves and becomes an Oil, then a Balsam, then Pitch, and then *Resin*; in which State it is friable in the Cold, fusible by Fire, and withal inflammable and combustible, and dissoluble in Spirit of Wine, but not in Water, which are the Characters of a *Resin*. See **WATER**, &c.

There are two kinds of *Resins*, the one liquid, the other dry and hard.

The first is the natural *Resin* as it flows from the Tree.—The second only differs from the first in that it is condensed by the Heat of the Sun, or by that of a culinary Fire.

*Resins* will incorporate with Oil, or rectified Spirits, but not with an aqueous Menstruum. See **PRECIPITATION**.

The Difference between *Resins* and Gums, consists in this, that *Resins* are more sulphurous, and Gums more aqueous; so that the first dissolve in Spirit of Wine, and the last in Water. See **GUM**.

*M. Tournefort* makes a kind of intermediate Class of vegetable Juices which he calls *Gum-Resins*; which dissolve partly in Spirit of Wine, partly in Water. See **GUM-Resin**.

Such are *Galbanum*, *Edellium*, *Oppopanax*, *Sagapenum*, &c.

The *Resin* of several Vegetables which abound with *Resinous Particles*, but not so as to yield any by Incision, as *Jalap*, *Benjamin*, *Scammony*, *Turbith*, &c. is thus obtained.—The Vegetable being grossly powder'd, is put into a Matrafs, and rectified Spirit of Wine poured on it, to the height of four Fingers above the Matter. Then the Neck of another Matrafs being luted into the former to make a double Vessel, the Matter is digested 3 or four Days in a Sand Heat, till it have given a good Tincture to the Spirit of Wine. Then the Dissolution is filtrated, and two thirds of the clear Liquor evaporated off, and the remainder pour'd into a large Vessel of Water, where it turns into a kind of Milk; whence, the *Resin*, in Time precipitates to the Bottom in a white Powder. This when wash'd and dried in the Sun, grows into the ordinary Consistence of a *Resin*.



**RESISTENCE**, or **RESISTING-Force**, in **Physicks**, any Force which acts contrarily to another, so as to destroy or diminish its Effect. See **FORCE**.

Of **Resistance**, there are various Kinds, arising from the various Natures and Properties of the resisting Bodies; and govern'd by various Laws: As the **Resistance of Solids**, the **Resistance of Fluids**, the **Resistance of the Air**, &c. The Doctrine of each whereof will be seen under the following Articles.

**RESISTENCE of Solids**, in **Mechanicks**, is the force wherewith the quiescent Parts of solid Bodies oppose the Motion of others contiguous therewith. See **SOLIDITY**, &c.

Of this there are two Kinds.—The first, where the resisting and resisted Parts, *i. e.* the moving and quiescent Parts, are only contiguous, and don't cohere; *i. e.* where they constitute separate Bodies or Masses.

This **Resistance** is what **M. Leibnitz** calls **Resistance of the Surface**; and we, properly, **Friction**; the Consideration whereof, being of the last Importance in the Doctrine of Machines, see its Laws under the Article **FRICTION**.

The second Case of **Resistance** is where the resisting and resisted Parts are not only contiguous but cohere, *i. e.* are Parts of the same continued Body or Mass.—This **Resistance** is what we may properly call **Renitency**; and was first considered by **Galileo**.

*Theory of the RESISTENCE or RENITENCY of the Fibres of solid Bodies.*

To conceive an Idea of this **Resistance** or **Renitency** of the Parts, suppose a cylindrical Body suspended vertically by one End.—Here, all its Parts being heavy, draw downwards; and tend to separate the two contiguous Planes, where the Body is the weakest: But all the Planes resist this Separation by the Force wherewith they cohere, or are bound together: Here then are two opposite Powers, the Weight of the Cylinder which tends to break it, and the Force of Cohæsion of the Parts which resists the Fracture.

If the Base of the Cylinder be increas'd, without increasing its Length; 'tis evident the Fracture will be increas'd in the same Ratio as the Base: but the Weight also increases in the same Ratio; whence it is evident that all Cylinders of the same Matter and Length, whatever their Bases be, have an equal **Resistance**, when vertically suspended.

If the Length of the Cylinder be increas'd without increasing the Base, its Weight is increased without increasing its **Resistance**; consequently the lengthening it weakens it.—To find the greatest Length a Cylinder of any Matter may have without breaking, there needs nothing but to take any Cylinder of the same Matter, and fasten to it the greatest Weight it will sustain ere it break; and then see how much it must be lengthened by the Addition of its Weight, 'till it equals its former Weight with the Addition of the foreign Weight.—By this means **Galileo** found a Copper-Wire, and of consequence any other Cylinder of Copper, might be lengthened to 4801 Braccios, or Fathoms of six Foot each.

If one end of the Cylinder were fix'd horizontally into a Wall, and the rest suspended thence, its Weight and **Resistance** would then act in a different Manner; and if it broke by the Action of its Weight, the Rupture would be at the End fix'd into the Wall. A Circle or Plane contiguous to the Wall, and parallel to the Base, and consequently vertical, would be detach'd from the contiguous Circle within the Plane of the Wall, and would descend. All the Motion is made on the lowest extremity of the Diameter, which remains immoveable, while the upper extremity describes a quadrant of a Circle, and till the Circle which before was vertical is now horizontal; *i. e.* till the Cylinder be entirely broken.

In this Fracture of the Cylinder 'tis visible two Forces have acted, and the one has overcome the other: The Weight of the Cylinder, which arose from its whole Mass, has overcome the **Resistance** which arose from the largeness of the Base; and as the Centres of Gravity are Points wherein all the Forces arising from the Weights of the several Parts of the same Bodies, are conceiv'd to be united, one may conceive the Weight of the whole Cylinder applied in the Centre of Gravity of its Mass, *i. e.* in a Point in the Middle of its Axis; and the **Resistance** of the Cylinder applied in the Centre of Gravity of its Base, *i. e.* in the Centre of the Base: It being the Base which resists the Fracture.

When the Cylinder breaks by its own Weight, all the Motion is on an immoveable Extremity of a Diameter of the Base.—This Extremity, therefore is the fix'd Point of a Lever, whose two Arms are the Radius of the Base, and half the Axis; and of consequence the two opposite Forces don't only act of themselves, and by their absolute Force, but also by the relative Force they derive from their Distance with regard to the fixed Point of the Lever.

Hence it evidently follows, that a Cylinder, *e. gr.* of Copper, which, vertically suspended, will not break by its own Weight if less than 480 Fathom long, will break with a less Length in a horizontal Situation; in regard the Length in this latter Case contributes two Ways to the Fracture; both as it makes it of such

a Weight, and as it is an Arm of a Lever to which the Weight is applied.—Hence, also, the smaller the Base is, the less Length or Weight will suffice to break it; both because the **Resistance** is really less, and because it acts by a less Arm of a Lever.

If two Cylinders of the same Matter, having their Bases and Lengths in the same Proportion, be suspended horizontally; 'tis evident that the greater has more Weight than the lesser, both on Account of its Length, and of its Base. But it has less **Resistance** on Account of its Length, considered as a longer Arm of a Lever, and has only more **Resistance** on Account of its Base.—Therefore it exceeds the lesser in its Bulk and Weight, more than in **Resistance**; and consequently must break more easily.

Hence, we see why upon making Models of Machines in small, People are apt to be mistaken as to the **Resistance** and Strength of certain horizontal Pieces, when they come to execute their Designs in large; by observing the same Proportion as in the small.—**Galileo's** Doctrine of **Resistance** therefore is no idle Speculation, but becomes applicable in Architecture and other Arts.

The Weight required to break a Body placed horizontally, being always less than that required to break it in a vertical Situation; and this Weight being to be greater or less according to the Ratio of the two Arms of the Lever: The whole Theory is always reducible to this; *viz.* to find what Part of the absolute Weight the relative Weight is to be, supposing the Figure of the Body known; which indeed is necessary, because 'tis the Figure that determines the two Centres of Gravity, or the two Arms of the Lever.—For if the Body, *e. gr.* were a Cone, its Centre of Gravity would not be in the Middle of its Axis, as in the Cylinder; and if it were a Semi-parabolical Solid, neither its Centre of Gravity would be in the Middle of its Length or Axis; nor the Centre of Gravity of its Base in the Middle of the Axis of its Base. But still, wheresoever these Centres fall in the several Figures, 'tis these that regulate the two Arms of the Lever.

It may be here observed, that if the Base wherby the Body is fastened into the Wall be not circular, but, *e. gr.* parabolical, and the Vertex of the Parabola a-top, the Motion of the Fracture will not be on an immoveable Point, but on a whole immoveable Line; which may be call'd the Axis of Equilibrium, and 'tis with regard to this, that the Distances of the Centres of Gravity are to be determined.

Now a Body horizontally suspended, being supposed such, as that the smallest addition of Weight would break it; there is an Equilibrium between its positive and relative Weight; and of Consequence those two opposite Powers are to each other reciprocally as the Arms of the Lever to which they are applied.—On the other Hand, the **Resistance** of a Body is always equal to the greatest Weight which it will sustain in a vertical Situation, without breaking, *i. e.* is equal to its absolute Weight. Therefore, substituting the absolute Weight for the **Resistance**, it appears that the absolute Weight of a Body suspended horizontally, is to its relative Weight as the Distance of its Centre of Gravity from the Axis of Equilibrium, is to the Distance of the Centre of Gravity of its Base from the same Axis.

The Discovery of this important Truth, at least of an equivalent hereto, and to which this is reducible, we owe to **Galileo**.—From this fundamental Proposition are easily deduced several Consequences.—As, for Instance, that if the Distance of the Centre of Gravity of the Base from the Axis of Equilibrium, be half the Distance of the Centre of Gravity of the Body; the relative Weight will only be half the absolute Weight: And that a Cylinder of Copper horizontally suspended, whose Length is double the Diameter, will break, provided it weigh half what a Cylinder of the same Base, 4801 Fathoms long, weighs. See **WEIGHT**.

On this System of **Resistance** of **Galileo**, **M. Mariotte** made a very subtle Remark, which gave Birth to a new System.—**Galileo** supposes that where the Body breaks, all the Fibres break at once; so that the Body always resists with its whole absolute Force; *i. e.* with the whole Force all its Fibres have in the Place where it is to be broke.—But **M. Mariotte** finding that all Bodies, even Glass it self, bends before it breaks, shews that Fibres are to be considered as so many little bent Springs, which never exert their whole Force till stretch'd to a certain Point; and never break till entirely unbent. Hence, those nearest the Axis of Equilibrium, which is an immoveable Line, are stretch'd less than those further off; and of Consequence employ a less Part of their Force.

This Consideration only takes Place in the horizontal Situation of the Body: In the vertical the Fibres of the Base all break at once; so that the absolute Weight of the Body must exceed the united **Resistance** of all its Fibres: A greater Weight is therefore required here, than in the horizontal Situation; *i. e.* a greater Weight is required to overcome their united **Resistance**, than to overcome their several **Resistances** one after another.—The Difference between the two Situations arises hence, that in the Horizontal there is an immoveable Point or Line, a Centre of Motion, which is not in the Horizontal.

**M. Varignon** has improved on the System of **M. Mariotte**, and shewn that to **Galileo's** System, it adds the Consideration of the Centre of Percussion.—The Comparison of the Centres of Gravity,



Gravity, with the Centres of Percussion, afford a fine view; and set the whole Doctrine in the most agreeable Light. See CENTRE.

In each System, the Base whereby the Body breaks, moves on the Axis of Equilibrium, which is an immoveable Line, in the same Base; but in the second, the Fibres of this Base are continually stretching more and more; and that in the same Ratio as they recede farther and farther from the Axis of Equilibrium, and of Consequence are still exerting a greater and greater Part of their whole Force.

These unequal Extentions, like all other Forces, must have some common Centre where they all meet; and with regard to which they make equal Efforts on each Side. And as they are precisely in the same Proportion as the Velocities which the several Points of a Rod moved circularly would have to one another; the Centre of Extention of the Base whereby the Body breaks, or tends to break, must be the same with its Centre of Percussion.—Galileo's Hypothesis, where Fibres stretch equally, and break all at once, corresponds to the Case of a Rod moving parallel to it self; where the Centre of Extention or Percussion does not appear, as being confounded with the Centre of Gravity.

The Base of Fracture being a Surface whose particular Nature determines its Centre of Percussion; 'tis necessary it be first known to find on what Point of the vertical Axis of that Base it is placed; and how far it is from the Axis of Equilibrium.—Indeed, we know, in the general, that it always acts with so much more Advantage as it is further from it, in regard it acts by a longer Arm of a Lever; and of Consequence 'tis the unequal Resistance of the Fibres in M. Mariotte's Hypothesis, which produces that Centre of Percussion; but this unequal Resistance is greater or less, according as the Centre of Percussion is plac'd more or less high on the vertical Axis of the Base, in the different Surfaces of the Base of the Fracture.

To express this unequal Resistance, accompanied with all the Variations it is capable of, regard must be had to the Ratio between the Distance of the Centre of Percussion from the Axis of Equilibrium, and the Length of the vertical Axis of the Base.—In which Ratio, the first Term, or the Numerator, is always less than the second or the Denominator: So that the Ratio is always a Fraction less than Unity; and the unequal Resistance of the Fibres in M. Mariotte's Hypothesis is so much the greater, or which amounts to the same, approaches so much nearer to the equal Resistance in Galileo's Hypothesis, as the two Terms of the Ratio are nearer to an Equality.

Hence it follows, that the Resistance of Bodies, in M. Mariotte's System is to that in Galileo's, as the least of the Terms in the Ratio is to the greatest.—Hence, also, the Resistance being less than what Galileo imagined, the relative Weight must also be less; so that the Proportion already mentioned between the absolute and relative Weight, cannot subsist in the new System, without an Augmentation of the relative Weight, or a Diminution of the absolute Weight: Which Diminution is had by multiplying the Weight by the Ratio, which is always less than Unity. This done, we find that the absolute Weight multiplied by the Ratio, is to the relative Weight, as the Distance of the Centre of Gravity of the Body from the Axis of Equilibrium, is to the Distance of the Centre of Gravity of the Base of Fracture, from the same Axis. Which is precisely the same thing with the general Formula given by M. Varignon, for the System of M. Mariotte. In effect, after conceiving the relative Weight of a Body, and its Resistance equal to its absolute Weight, as the two contrary Forces applied to the two Arms of a Lever, in the Hypothesis of Galileo; there needs nothing to convert it into that of M. Mariotte, but to imagine that the Resistance, or the absolute Weight is become less; every thing else remaining the same.

We have here only considered Bodies as to be broke by their own Weight.—It will amount to the same, if we suppose them void of Weight themselves, and to be broken by a Weight applied to their Extremities: Only it is to be observed, that a foreign Weight acts by an Arm of a Lever equal to the whole Length of the Body; whereas their own Weight being all united in their Centre of Gravity, is only the Distance of that Centre from the Axis of Equilibrium.

One of the most curious, and perhaps the most useful Questions in this Research, is to find what Figure a Body must have, that its Resistance may be equal in all its Parts; whether it be conceived as charg'd with a foreign Weight; or as only sustaining its own Weight.—We shall, here, only consider the latter Case, from which the former will be easily determined.

For a Body, then, suspended horizontally, to resist equally in all its Parts; 'tis necessary some Part of it being conceived as cut off in a Plane parallel to the Base of Fracture of the Body; the Weight of the Part retrench'd be to its Resistance, in the same Ratio, as the Weight of the whole to its Resistance; these four Powers acting by Arms of Levers proper to themselves.—Now the Weight of any Body thus conceived, is its whole Weight multiplied by the Distance of the Centre of Gravity of the Body, from the Axis of Equilibrium; and the Resistance is the Plane of the Base of Fracture multiplied by the Distance of the Centre of Gravity of the Base from the same Axis: Consequently these

four Quantities are to be proportional in the whole, and in each Part of a Solid of equal Resistance. From this Proportion M. Varignon easily deduces two Solids, which shall resist equally in all their Parts. Galileo had found one before: That discovered by M. Varignon, is in form of a Trumpet, and is to be fix'd into the Wall at its greater End; so that its Bigness and Weight is always diminish'd in Proportion as its Length or the Arm of the Lever whereby its Weight acts, increases. The added, (which seems very remarkable) that howsoever different the two Systems may be, the Solids of equal Resistance are the same in both.

For the RESISTENCE of a Solid supported at each Extreme; as of a Beam between two Walls. See BEAM.

RESISTENCE of Fluids, in Hydrostaticks, is the Force where with Bodies moving in fluid Mediums, are impeded and retarded in their Motions. See FLUID and MEDIUM.

#### Laws of the RESISTENCE of fluid Mediums.

A Body moving in a Fluid, is resisted from two Causes; the first, the Cohesion of the Parts of the Fluid.—For a Body in its Motion separating the Parts of a Liquid, must overcome the Force with which those Parts cohere. See COHESION.

The second is the Inertia, or inactivity of Matter, whereby a certain Force is required to move the Particles from their Places, in order to let the Body pass. See VIS INERTIAE.

The Retardation from the first Cause, is always the same in the same Space, the same Body remaining; be the Velocity what it will.—Hence, the Resistance increases as the Space run through; in which Ratio, the Velocity also increases; therefore the Resistance is as the Velocity it self. See VELOCITY.

The Resistance from the second Cause, when the same Body moves through different Liquids, with the same Velocity, follows the Proportion of Matter to be removed in the same time; which is as the Density of the Liquid. See DENSITY.

When the same Body moves through the same Liquid with different Velocities, this Resistance increases in Proportion to the Number of Particles struck in an equal Time; which Number is as the Space run through in that Line, that is, as the Velocity. But farther it increases in Proportion to the Force with which the Body strikes against every Part; which Force is also as the Velocity of the Body. And therefore if the Velocity be Triple, the Resistance is Triple, from a triple Number of Parts to be removed.—It is also triple from a stroke three times stronger against every Particle; therefore the whole Resistance is ninefold, that is, as the Square of the Velocity. Hence a Body moved in a Liquid, is resisted partly in a Ratio of the Velocity, and partly in a duplicate Ratio of it.

The Resistance from the Cohesion of Parts in Liquids, except glutinous ones, is not very sensible in respect of the other Resistance; which, increases in a Ratio of the Square of the Velocities, but the first in a Ratio of the Velocity itself. By how much the Velocity increases, by so much more do these Resistances differ; wherefore in swifter Motions the Resistance alone is to be considered, which is as the Square of the Velocity.

If a Liquid be included in a Vessel of a prismatical Figure, and there be moved along in it with equal Velocity, and in a Direction parallel to the Sides of the Prism, two Bodies, the one spherical, the other cylindric; so that the Diameter of the Base of the latter be equal to the Diameter of the Sphere; and the Cylinder be moved in the Direction of its Axis; these Bodies will suffer the same Resistance.

To demonstrate this, suppose the Bodies at rest, and that the Liquid moves in the Vessel, with the same Velocity that the Bodies had; by this the relative Motion of the Bodies, and the Liquid is not changed: Consequently the Actions of the Bodies on the Liquid, and of the Liquid on the Bodies, are not changed.—The Retardation which the Liquor suffers in passing by the Body, arises only from this, that in that Place it is reduced to a narrower Space; but the Capacity of the Vessel is equally diminished by each Body; therefore each Body produces an equal Retardation. And because Action and Reaction are equal to one another, the Liquid acts equally upon each Body; wherefore also each Body will be equally retarded, when the Bodies are moved, and the Liquid is at rest.

Resistance and Retardation are used indifferently for each other, as being both in the same Proportion; and the same Resistance always generating the same Retardation.—But with regard to different Bodies, the same Resistance frequently generates different Retardations; the Resistance being the Quantity of Motion, and the Retardation the Celerity.—For the Difference and Measure of the two, see RETARDATION.

The Retardations from this Resistance may be compared together, by comparing the Resistance with the Gravity.—It is demonstrated that the Resistance of a Cylinder, which moves in the Direction of its Axis, (to which the Resistance of a Sphere of the same Diameter is equal) is equal to the Weight of a Cylinder of that Liquid through which the Body moves, having its Base equal to the Body's Base, and its Height equal to half the Height, from which a Body falling in *vacuo*, may acquire the Velocity with which the Cylinder is moved through the Liquid.



From the given Celerity of the Body moved, the Height of the Liquid Cylinder is found, as also the Weight of it from the known specific Gravity of the Liquid, and Diameter of the Body. — Let a Ball, for Instance, of three Inches Diameter be moved in Water with a Celerity wherewith it would go sixteen Foot in a Second: From Experiments on falling Bodies, and others made on Pendulums, it has been found that this is the Celerity which a Body acquires in falling from a Height of four Foot; therefore the Weight of a Cylinder of Water, of three Inches Diameter, and two Foot high, that is, a Weight of about six Pound and three Ounces, is equal to the Resistance of the aforesaid Ball. See DESCENT.

Let the Resistance so discovered be divided by the Weight of the Body, which determines its Quantity of Matter, and you will have the Retardation.

#### RESISTENCE of fluid Mediums to the Motion of Pendulums.

The Arch described by a Pendulum oscillating in *vacuo*, with the Celerity it has acquir'd in descending, is equal to the Arch described by the Descent; but the same does not happen in a Fluid, and there is a greater Difference between those Arches the greater the Resistance is; that is, the greater the Arch is which is describ'd in the Descent.

Let the Resistance of the Liquid be in Proportion to the Velocity; and let two Pendulums, entirely alike, oscillating in a Cycloid, perform unequal Vibrations, and begin to fall the same Moment; they here begin to move by Forces that are as the Arches to be described. If those Impressions alone, which are made the first Moment, be considered; after a given Time the Celerities will be in the same Ratio, as in the Beginning; for the Retardations which are as the Velocities themselves, cannot change their Proportions, the Ratio between Quantities not being changed by the Addition and Subtraction of Quantities in the same Ratio. Therefore in equal Times, however the Celerities of Bodies are changed in their Motion by the Resistance, the Spaces gone through, are as the Forces in the Beginning; that is, as the Arches to be described by the Descent; therefore after any time the Bodies are in the correspondent Point of those Arches. But in these Points the Forces generated are in the same Ratio as in the Beginning, and the Proportion of the Celerities, which is not varied by the Resistance, suffers no Change from the Gravity. In the Ascent, Gravity retards the Motion of the Body; but in correspondent Points, its Actions are in the same Ratio as in Descents. And therefore every where in correspondent Points, the Celerities are in the same Ratio. But as in the same Moments the Bodies are in their correspondent Points, it follows that the Motion of both is destroy'd in the same Moment, that is, they finish their Vibrations in the same Time. The Spaces run through in the Time of one Vibration, are as the Forces by which they are run thro'; that is, the Arches of the whole Vibrations are as the Arches described by the Descent, the doubles whereof are the Arches to be described in *Vacuo*. The Defects of the Arches to be described in Liquids from the Arches to be described in *Vacuo*, are the Differences of Quantities in the same Ratio, and are as the Arches describ'd by the Descent. See PENDULUM.

#### RESISTENCE of Fluid Mediums to the Motion of falling Bodies.

The Resistences are as the Squares of the Celerities, and therefore every where in correspondent Points, as the Squares of the Arches described by the Descent, in which Ratio also, the Retardations are; but as each of them keep the same Proportion in corresponding Points, the Sums of them all will be in the same Proportion; that is, the whole Retardations, which are the Defects of the Arches described in the Liquid, from the Arches to be described in *Vacuo*, or which is the same, the Difference between the Arches described in the Descent, and the next Ascent. Therefore these Differences, if the Vibrations are not very unequal, are nearly as the Squares of the Arches described by the Descent: Which is also confirm'd by Experiments in greater Vibrations; for in these the Proportion of Resistance, here considered, obtains.

A Body freely descending in a Fluid is accelerated by the respective Gravity of the Body, which continually acts upon it, yet not equally, as in a Vacuum: the Resistance of the Liquid occasions a Retardation, that is, a Diminution of Acceleration, which Diminution increases with the Velocity of the Body. Now there is a certain Velocity, which is the greatest a Body can acquire by falling; for if its Velocity be such that the Resistance arising from it becomes equal to the respective Weight of the Body, its Motion can be no longer accelerated; for the Motion here continually generated by the respective Gravity, will be destroy'd by the Resistance, and the Body forced to go on equally. A Body continually comes nearer and nearer to this greatest Celerity, but can never attain to it.

When the Densities of a Liquid Body are given, the respective Weight of the Body may be known; and by knowing the Diameter of the Body, it may be found from what Height a Body falling in *Vacuo*, can acquire such a Velocity, as that the Resistance in a Liquid shall be equal to that respective Weight,

which will be that greatest Velocity above mentioned. — If the Body be a Sphere, it is known that a Sphere is equal to a Cylinder of the same Diameter, whose Height is two third Parts of that Diameter; which Height is to be increased in the Ratio wherein the respective weight of the Body exceeds the weight of the Liquid, in order to have the Height of a Cylinder of the Liquid, whose weight is equal to the respective weight of the Body; but if you double this Height, you will have a Height from which a Body falling in *Vacuo*, acquires such a Velocity as generates a Resistance equal to this respective weight, and which therefore is the greatest Velocity which a Body can acquire falling in a Liquid from an infinite Height. Lead is eleven times heavier than Water, wherefore its respective weight is as to the weight of Water as 10 to 1; therefore a leaden Ball, as it appears from what has been said, cannot acquire a greater Velocity in falling in Water, than it would acquire in falling in *Vacuo*, from an Height of  $13\frac{1}{3}$  of its Diameters.

A Body lighter than a Liquid, and ascending in it by the Action of the Liquid, is moved exactly by the same Laws as an heavier Body falling in the Liquid. Wherever you place the Body, it is sustained by the Liquid, and carried up with a Force equal to the Difference of the weight of the Quantity of the Liquid, of the same Bulk as the Body, from the weight of the Body. Therefore you have a Force that continually acts equably upon the Body, by which not only the Action of the Gravity of the Body is destroyed so as that it is not to be considered in this Case, but the Body is also carried upwards by a Motion equably accelerated, in the same manner as a Body heavier than a Liquid descends by its respective Gravity; but the equability of the Acceleration is destroyed in the same Manner by the Resistance, in the Ascent of a Body lighter than the Liquid, as it is destroyed in the Descent of a Body heavier.

When a Body specifically heavier than a Fluid is thrown up in it, it is retarded upon a double Account; on Account of the Gravity of the Body, and on Account of the Resistance of the Liquid; consequently, a Body rises to a less Height than it would rise in *Vacuo* with the same Celerity. But the Defects of the Height in a Liquid from the Heights to which a Body would rise in *Vacuo* with the same Celerities, have a greater Proportion to each other than the Heights themselves; and in less Heights the Defects are nearly as the Squares of the Heights in *Vacuo*.

RESISTENCE of the Air, in Pneumatics, is the Force wherewith the Motion of Bodies, particularly Projectiles, is retarded by the Resistance of the Air or Atmosphere. See AIR and PROJECTILE.

The Air being a Fluid, the general Laws of the Resistance of Fluids obtain therein; only the different Degrees of Density in the different Stages or Regions of the Atmosphere, occasion some irregularity. See ATMOSPHERE.

#### The different RESISTENCE of the same Mediums to Bodies of different Figures.

Sir Isaac Newton shews, That if a Globe and a Cylinder of equal Diameters, be moved with equal Velocity in a thin Medium, consisting of equal Particles, disposed at equal Distances, according to the Direction of the Axis of the Cylinder; the Resistance of the Globe will be less by half than that of the Cylinder.

Solid of the least RESISTENCE. — From the last Proposition the same Author deduces the Figure of a Solid, which shall have the least Resistance of any containing the same Quantity of Matter and Surface. See SOLID.

The Figure is this. — Suppose DNFB (Tab. Mechanicks, Fig. 57.) to be such a Curve, as, that if from any Point N, be let fall a Perpendicular NM, to the Axis AB; and from a given Point G, be drawn a right Line GR, parallel to a Tangent to the Figure in N, and cut the Axis when continued, in R: A Solid described by the Revolution of this Figure about its Axis AB, moving in a Medium from A towards B, is less resisted than in any other circular Solid of the same Area, &c. Newt. Princ. p. 327.

The Resistance of a Globe, perfectly hard and in a Medium, whose Particles are so too; is to the Force wherewith the whole Motion may be either destroy'd or generated which it has when at the time, when it has described four thirds of its Diameter; as the Density of the Medium to the Density of the Globe. — Hence also, the same Author infers that the Resistance of a Globe, is, *ceteris paribus*, in a duplicate Ratio of its Velocity. Or its Resistance is *ceteris paribus*, in a duplicate Ratio of its Diameter. Or, *ceteris paribus*, as the Density of the Medium. Lastly, that the actual Resistance of a Globe is in a Ratio compounded of the duplicate Ratio of the Velocity, and of the duplicate Ratio of the Diameter, and of the Ratio of the Density of the Medium.

In these Articles the Medium is supposed to be discontinuous, as Air probably is: If the Medium be continuous, as Water, Mercury, &c. where the Globe does not strike immediately on all the Particles of the Fluid generating the Resistance, but only on those next it, and those again on others, &c. the Resistance will be less by half. And a Globe in such a Medium undergoes a Resistance which is to the Force where-



wherewith the whole Motion it has after describing eight thirds of its Diameter might be generated or taken away, as the Density of the Medium to the Density of the Globe.

The *Resistance* of a Cylinder moving in the Direction of its Axis is not alter'd by any Augmentation or Diminution of its Length: And therefore is the same with that of a Circle of the same Diameter moving with the same Velocity in a right Line perpendicular to its Plane.

The *Resistance* of a Cylinder moving in an infinite unelastic Fluid, arising from the Magnitude of a transverse Section; is to the Force wherewith its whole Motion while it describes four times its Length may be taken away or generated; as the Density of the Medium to that of the Cylinder, very nearly.

Hence, the *Resistances* of Cylinders moving Length-wise, in infinitely continued Mediums, are in a Ratio compounded of the duplicate Ratio of their Diameters, and the duplicate Ratio of their Velocities; and the Ratio of the Density of the Mediums.

The *Resistance* of a Globe in an infinite unelastic Medium is to the Force whereby its whole Motion while it describes eight thirds of its Diameter, might be either generated or taken away; as the Density of the Fluid to the Density of the Globe, *quam proxime*.

Mr. James Bernoulli demonstrates the following Theorems.

*Resistance of a Triangle.*—If an Isosceles Triangle be moved in a Fluid according to the Direction of a Line perpendicular to its Base; first, with the Vertex foremost, and then with its Base; the *Resistances* will be as the Legs, and as the Square of the Base, and as the Sum of the Legs.

The *Resistance* of a Square moved according to the Direction of its Side, and of its Diagonal, is as the Diagonal to the Side.

The *Resistance* of a Circular Segment, less than a Semicircle carried in a Direction perpendicular to its Basis, when it goes with the Base foremost, and when with its Vertex foremost, (the same Direction and Celerity continuing;) is as the Square of the Diameter, to the same, less  $\frac{1}{2}$  of the Square of the Base of the Segment. Hence the *Resistances* of a Semicircle when its Base and when its Vertex go foremost, are to one another in a sesquialterate Ratio.

*Resistance of a Parabola.*—A Parabola moving in the Direction of its Axis first with its Basis, and then its Vertex foremost, has its *Resistances* as the Tangent to an Arch of a Circle, whose Diameter is equal to the Parameter, and the Tangent equal to half the Basis of the Parabola.

The *Resistance* if Vertex goes foremost, may be thus computed: Say, as the Sum (or Difference) of the Transverse Axis, and *Latus Rectum*, is to the transverse Axis; so is the Square of the *Latus Rectum* to the Square of the Diameter of a certain Circle, in which Circle apply a Tangent equal to half the Basis of the Hyperbola or Ellipsis.—Then say again, as the Sum and Difference of the Axis and Parameter, is to the Parameter; so is the aforesaid Tangent to another right Line. And farther as the Sum (or Difference) of the Axis and Parameter, is to the Axis: So is the circular Arch corresponding to the aforesaid Tangent, to another Arch. This done, the *Resistances* will be as the Tangent to the Sum (or Difference) of the right Line thus found, and that Arch last mentioned.

In the general, the *Resistances* of any Figure whatever going now with its Base foremost, and then with its Vertex, are as the Figures of the Base to the Sum of all the Cubes of the Elements of the Base divided by the Squares of the Element of the Curve Line.

All which Rules may be of use in the Construction of Ships, and in perfecting the Art of Navigation universally: As also for determining the Figures of the Bobs of Pendulums for Clocks, &c. See SHIP, NAVIGATION, PENDULUM, &c.

RESOLUTION, RESOLUTIO, SOLUTIO, in Physicks, the Reduction of a Body into its original or natural State, by a Dissolution or Separation of its aggregated Parts. See DISSOLUTION.

Thus, Snow and Ice are said to be resolved into Water; a compound is resolved into its Ingredients, &c. See SNOW, COMPOUND, &c.

Water resolves into Vapour by Heat; and Vapour is again resolved into Water by Cold. See VAPOUR, HEAT, &c.

Some of the modern Philosophers, particularly, Mr. Boyle, M. Mariotte, Boerhaave, &c. maintain that the natural State of Water is to be congel'd, or be in Ice; inasmuch as a certain Degree of Heat, which is a foreign and violent Agent, is required to make it Fluid; so that near the Pole, where this foreign Force is wanting, it constantly retains its fix'd or Icy-State. See WATER.

On this Principle, the *Resolution* of Ice into Water, must be an improper Phrase. See FREEZING.

RESOLUTION, in Chymistry, is the Reduction of a Mass or mix'd Body into its component Parts, or first Principles; by a proper Analysis. See PRINCIPLE, ANALYSIS, &c.

The *Resolution* of Bodies is perform'd variously; by Distillation, Sublimation, Dissolution, Fermentation, &c. See each Operation under its proper Article, DISTILLATION, &c.

RESOLUTION, in Logic, is a Branch of Method, call'd also Analysis. See METHOD and ANALYSIS.

The Business of the *Resolution* is to investigate or examine the Truth or Falshood of a Proposition, by ascending from some particular known Truth, as a Principle, by a Chain of Consequences, to another more general one, in Question. See PROPOSITION, TRUTH, &c.

*Resolution*, or the analytic Method, stands in direct opposition to *Composition*, or the synthetic Method; in which last we descend from some general known Truths, to a particular one in Question. See COMPOSITION.

For an Instance of the Method of *Resolution*.—Suppose the Question this: Whether on the Supposition of Man's Existence we can prove that God exists?

To resolve this, our Method is thus.—“Mankind did not always exist: 'Tis evident from a thousand Considerations, that Species had a Beginning; and that, according to all History, no 6000 Years ago: But if it had a Beginning, there must be some Cause of its Beginning; something to induce it to exist then more than it did before; in effect there must be a Cause or Author of its Existence, for from nothing, nothing arises: This Cause, whatever it is, must at least have all the Faculties we find in ourselves; for none can give more than he has: Nay, he must have others which we have not, since he could do what we cannot do, *i. e.* Create, make Man exist, &c.—Now, this Cause either exists still, or has ceas'd to do so: If the former, he did not exist from Eternity; for what is from Eternity is necessary, and can neither by it self nor any other Cause be reduced to nothing: If the latter, it must have been produced from some other; and then the same Question will return upon the Producer.—There is then some first Cause; and this Cause has all the Properties and Faculties we have; nay more, existed from Eternity, &c. Therefore, from the Supposition of Man's Existence, it follows there is a God, &c.

RESOLUTION, or SOLUTION, in Mathematicks, is an orderly Enumeration of the several things to be done, to obtain what is required by a Problem. See PROBLEM.

Wolffius makes a Problem to consist of three Parts.—The Proposition, (which is what we properly call the Problem) the Resolution, and the Demonstration. See PROPOSITION, &c.

The general Tenor of all Problems is, Those things being done which are enjoin'd by the Resolution; the thing is done which was to be done.

As soon as a Problem is demonstrated, it is converted into a Theorem; whereof the Resolution is the Hypothesis; and the Proposition the Thesis. See THEOREM, THESIS, &c.

For an Idea of the Process of a Mathematical Resolution, see RESOLUTION Algebraical.

RESOLUTION, in Algebra, or Algebraical, is of two Kinds; the one practiced in numerical Problems, the other in Geometrical ones. See ALGEBRA.

To resolve a given numerical Problem algebraically, the Method is thus: 1°. Distinguish the given Quantities from the Quantities sought; and Note the former with the first Letters of the Alphabet, and the latter with the last. See QUANTITY.

2°. Find as many Equations as there are unknown Quantities; if that can't be, the Problem is indeterminate; and one or more of the sought Quantities may be assumed at Pleasure.—The Equations, unless they be contain'd in the Problem it self, are found by Theorems relating to the Equality of Quantities. See EQUATION and EQUALITY.

3°. Since in an Equation the unknown Quantities are mix'd with the known; it must be reduced in such manner as that only one unknown Quantity be found on one Side, and none but known Quantities on the other.—This Reduction is perform'd by adding the subtracted Quantities, dividing the multiplied Quantities, and multiplying the divided ones, extracting the Roots out of Powers, raising Roots to their Powers, &c. so as that the Equality may be still preserved. See REDUCTION.

To resolve a Geometrical Problem Algebraically.

The Process in the former Article is to be observed throughout: But as it rarely happens we come at an Equation in geometrical Problems by the same means as in numerical ones; there are some further things to be noted: First then, Suppose the thing done which was proposed to be done.—2°. Examine the Relations of all the Lines in the Diagram, without any regard to known or unknown; in order to find which depend on which; and from which being had, what others are had, whether by similar Triangles, or Rectangles, &c.—3°. To obtain the similar Triangles or Rectangles, the Lines are to be frequently produced, till they become either directly or indirectly equal to given ones, or intersect others, &c. Parallels and Perpendiculars to be frequently drawn: Points to be frequently connected; and Angles to be made equal to others.

If thus you don't arrive at a neat Equation; examine the Relations of the Lines in another Manner.—Sometimes 'tis not enough to seek the thing directly, but another thing must be sought, whence the first may be found.

The Equation being reduced, the Geometrical Construction to be deduced therefrom, which is done in various Manners, in the



the various Kinds of Equations. See CONSTRUCTION of Equations.

RESOLUTION, in Medicine, the Coction or Alteration of the Crude peccant Matter of any Disease, either by the natural Strength of the Patient, or of its one accord, or by the Application of Remedies; whereby its Bulk, Figure, Cohesion, &c. are so far chang'd as that it ceases to be Morbid, and becomes soundable. See COCTION, DISEASE, &c.

This, the learned *Boerhaave* observes, is of all others the most perfect Cure, where 'tis effected without any Evacuation; as supposing the Matter favourable, the Constitution excellent, and the Medicines good. See CRISIS, &c.

RESOLUTION, in Musick, is when a Canon, or perpetual Fugue is not wrote all on the same Line, or in one Part; but all the Voices that are to follow the *Guida*, or first Voice, are wrote separately, either in *Score*, i. e. in separate Lines, or in separate Parts, with the Pauses each is to observe, in the Beginning, and in the Tone proper to each.

RESOLUTION, in Grammar. See REDUCTION.

RESONANCE, RESOUNDING, in Musick, &c. a sound return'd by the Air inclosed in the Bodies of String-Musical-Instruments; as Lutes, &c. or even in the Bodies of Wind-Instruments, as Flutes, &c. See SOUND, MUSICK, INSTRUMENT, &c.

We also say, Elliptic, and parabolic Vaults, *resound* strongly, i. e. reflect or return the Sound. See ECCHO.

The Mouth, and the Parts thereof, as the Palate, Tongue, Teeth, Nose, and Lips, *Monf. Dodart* observes, contribute nothing to the Tone of the Voice; but their effect is very great as to the *Resonance*. See VOICE.

Of this we have a very sensible Instance in that vulgar Instrument called the *Jews-Harp*, or *Trompe de Bearn*: For, if you hold it in your Hand, and strike the Tongue or Spring thereof, which makes all the Sound of the Instrument, it scarce yields any Noise at all. But, holding the Body of the Instrument between the Teeth, and striking the Spring as before, it makes a musical Buzz, which is heard to a good Distance, and especially the lower Notes.

So also in the *Haut-bois*, the Tone of the Reed is always the same; being a sort of a Drone: The Chief variety is in the Tone of the *Resonance*, produced in the Mouth by the greater or less Aperture, and the divers Motions of the Lips. See HAUTBOY.

RESOLVENTS, RESOLVENTIA, in Medicine, Remedies proper to *resolve* and dissipate Tumors and Gatherings; to soften Hardnesses; and by their Tenuity and Warmth, evacuate redundant or peccant Humours through the Pores. See RESOLUTION.

Under this Class come various Unguents, Emplasters, &c. See DISCUTIENT.

RESPECTU *computi vice comitis habendo*, a Writ for the repaying a Sheriff's Accompt, upon just Occasion. See SHERIFF.

It is directed to the Treasurer and Barons of the Exchequer.

RESPIRATION, RESPIRATIO, the Act of *Respiring*, or Breathing. See AIR and BREATH.

*Respiration* is an involuntary Motion of the Breast, whereby the Air is alternately taken in and thrown out: It therefore includes two contrary Motions; the one call'd *Inspiration*, whereby the Fluid is received into the Cavity of the Lungs. See INSPIRATION.

And the other *Expiration*, whereby it is again expell'd. See EXPIRATION.

The principal Organs of *Respiration* are the Lungs, Trachea, Larynx, &c. the Description whereof see under their proper Articles, LUNGS, TRACHEA, LARYNX, &c.

For the manner wherein *Respiration* is performed.—'Tis to be observed, that the Lungs, when suspended in the open Air, by the contractive Power of the muscular Fibres which tie together the squamous Parts of the Bronchia, are reduced to less Space than that they possess'd while in the Cavity of the Thorax: And when thus contracted, if a Quantity of new Air be injected through the Glottis, they again become distended, so as to possess an equal, nay a greater Space than that assign'd them in the Thorax. See MUSCLE.

Hence it appears, that the Lungs, by their proper Force, are always endeavouring to contract themselves into less Compass than they possess when inclosed in the Thorax, and that therefore they are always in a State of violent Dilatation while the Man lives.—For the Air that encompasses them in the Thorax, shut up between their external Membrane and the Pleura, is not of equal Density with common Air.

In effect, the ingress of the Air through the Glottis into the Lungs, is always free, but that on the out-side wherewith they are compress'd, is impeded by the Diaphragm, so as it cannot enter the Thorax in Quantity sufficient to make an Equilibrium.

Since then, in *Inspiration*, the Air enters the Lungs in greater Quantity than it was before; it will dilate them more, and will overcome their natural Force.—The Lungs therefore are wholly Passive in the Matter: What it is that acts must be learnt from the Phenomena.

1°. Then, it is observ'd, that in *Inspiration*, the nine upper Ribs articulated to the Vertebrae and the Sternum, rise Archwise towards the Clavicles; and the three lower are turn'd downwards;

and the eighth, ninth, and tenth, are drawn inwards. 2°. that the Abdomen is dilated; and 3°. the Thorax enlarged. 4°. the Diaphragm is brought from its convex and sinuous Position to a flat Figure.

Now, as these are the only visible Actions in *Inspiration*, the Cause thereof must be refer'd to them; or rather to the Muscles of these Parts, which are the Intercostals, the Subclavian, &c.

The Capacity of the Thorax being enlarged by the Action of these Muscles on the Ribs, &c. a Space is left between the Pleura and the Surface of the Lungs; so that the Air entering the Glottis inflates them till such time as they become contiguous to the Pleura and Diaphragm.—In this Case, now, the Air presses the Lungs as much as the Thorax resists them. And hence, the Lungs become at rest; the Blood passes less freely, and is forced in less Quantity into the left Ventricle of the Heart, and so less comes into the Cerebellum, and its Nerves; and the arterial Blood acts less on the intercostal Muscles and Diaphragm.

The Causes, therefore, which at first dilated the Thorax, grow weaker, consequently the Ribs become depress'd; the distended Fibres of the Muscles of the Abdomen restore themselves; the Viscera thrust the Diaphragm up again into the Thorax, the Space whereof being thus contracted, the Air is drove out of the Lungs; and thus is *Expiration* perform'd.

Immediately, the Blood being quickened in its Motion, begins to flow stronger and more plentifully to the Cerebellum and Muscles; and thus the Causes of the Contraction of the Inter-costals and Diaphragm, being renewed, *Inspiration* is repeated.

Such is the true, immediate, adequate Manner of vital *Respiration*. See HEART.

For the uses and effects of *Respiration*, they are greatly disputed among Anatomists.—The learned *Boerhaave* takes the principal uses thereof to be the further Preparation of the Chyle, its more accurate Mixture with the Blood, and its Conversion into a nutritious Juice proper to repair the Decays of the Body. See NUTRITION.

*Borelli* takes the great use of *Respiration* to be the admission and mixture of Air, with the Blood, in the Lungs, in order to form those elastic Globules it consists of; to give it its red florid Colour; and to prepare it for many of the uses of the OEconomy: but how such Admission should be effected is hard to say.—'Tis impossible it should be done in the pulmonary Arteries; nor can it be proved in the pulmonary Veins.—In effect, such a Communication must be hindered and obstructed by the Airs distending the Vesiculæ, and compressing the Veins, in *Inspiration*; by the slimy Humor that lubricates the Membrane lining the inside of the Trachea. Add to this, the difficult Passage of Air through such small Pores as will admit Water; and the ill Effect Air ordinarily has when admitted into the Blood. See PORE and WATER.

As to the Arguments for such Communication, *viz.* the florid Colour the Blood here first assumes, and the absolute Necessity of *Respiration* to Life; they are both well accounted for otherwise. See BLOOD.

Other Authors, as *Sylvius*, *Etmuller*, &c. take a great use of *Respiration* to be, by the Neighbourhood of the cold nitrous Air, to cool the Blood coming reeking hot out of the right Ventricle of the Heart, through the Lungs; and to act as a Refrigeratory. See REFRIGERATORY.

*Mayow*, and others, assert one grand use of *Expiration* to be to throw off the fuliginous Vapours of the Blood along with the expell'd Air; and for *Inspiration*, he asserts that it conveys a nitro-aerial Ferment to the Blood, to which the animal Spirits and all muscular Motion are owing.

But Dr. *Thurston* rejects all these from being principal uses of *Respiration*, which he shews to be to move or pass the Blood from the right to the left Ventricle of the Heart, and so to effect the Circulation. See CIRCULATION.

Whence it is that Persons hang'd, drown'd, or strangled, so suddenly dye, *viz.* because the Circulation of the Blood is stop'd; and for the same Reason it is that Animals dye so speedily in the Air-Pump. See DROWNING, VACUUM, &c.

He Instances an Experiment by Dr. *Croon*, before the Royal Society, who, by strangling a Pullet, so as not the least Sign of Life appeared; yet by blowing into the Lungs through the Trachea, and so setting the Lungs a playing, he brought the Bird to Life again.—Another Experiment of the same Kind is that of Dr. *Hook*, who after hanging a Dog, cut away the Ribs, Diaphragm, and Pericardium, as also the Top of the Wind-Pipe, that he might tie it on to the Nose of a pair of Bellows; and thus by blowing into the Lungs he restored the Dog to Life, and then ceasing to blow, the Dog would soon fall into dying Fits, but recover again by blowing; and thus alternately as long as he pleas'd.

This use of *Respiration* Dr. *Drake* not only confirms, but carries farther; making it the true Cause of the Diastole of the Heart; which neither *Borelli*, Dr. *Lower*, nor Mr. *Cowper* had well accounted for. See DIASTOLE.

The Weight of the incumbent Atmosphere he shews to be the true Antagonist to all the Muscles, serving both for ordinary *Inspiration*, and the Contraction of the Heart.—As in the Elevation of the Ribs, that Author observes, the Blood by the Passage opened for it, is in a Manner solicited into the Lungs; so in the Depression thereof by the Subsidence of the Lungs, and the contraction of the Blood Vessels, consequent thereon, the Blood is



forcibly driven through the pulmonary Vein into the left Ventricle of the Heart. And this, together with the general Compression of the Body by the Weight of the Atmosphere, is that Power which causes the Blood to mount in the Veins, after the Force impress'd on it by the Heart, is spent; and which forces the Heart itself, from its natural State of Contraction, to that of Dilatation. See HEART.

The reciprocal Dilatation and Contraction of the superficial Dimensions of the Body consequent on *Respiration*, are so necessary to animal Life, that there is no Animal how imperfect soever as to want it.

Though most Kinds of Fishes and Insects want both Lungs and moveable Ribs, and consequently have no dilatable Thorax, yet that Want is made up to them by an analogous Mechanism. Fishes, for Instance, have Gills which do the Office of Lungs, receiving and expelling alternately the Water, whereby the Blood Vessels suffer the same Alteration of Dimensions as they do in the Lungs of more perfect Animals. See GILLS.

Insects having no Thorax, or separate Cavity for the Heart and Lungs or Air-Vessels, have the latter distributed through the whole Trunk of their Bodies; by which they communicate with the external Air through several Spiracles or Vent-Holes, to which are fastened so many little Trachee or Wind-Pipes, which send their Branches to all the Muscles and Viscera, and seem to accompany the Blood-Vessels all over the Body, as they do in the Lungs only, of the more perfect Animals.—By this Disposition, in every Inspiration, the whole Body of these little Animals is inflated, and in every Expiration compress'd; consequently the Blood-Vessels must suffer a Vicissitude of Extension and Compression.

The only Animal exempted from this necessity of Breathing, is a Foetus: But this, while included in the Womb, seems to have little more than a vegetative Life, and ought scarce to be reckoned among the Number of Animals: 'Tis rather a Graft on, or Branch of the Mother. See FOETUS.

The *Laws of Respiration*, are of the last Importance to a right understanding of the animal OEconomy; for which reason a Computation of the Force of the *respiring Organs*, and of the stress and pressure of the Air upon the same, will not be unacceptable.—It may therefore be observed, that by blowing into a Bladder, a considerable Weight will be rais'd by the mere Force of the Breath: For with a Bladder that is oblong, nearly of a cylindrical Figure, and tied at both Ends, if a Pipe be fixed at one End, and a Weight at the other, and the Pipe fastened at such a Distance from the Ground, as just allows the Weight to rest upon the Ground; the Bladder by an easy Inspiration will raise seven Pound Weight, and by the greatest Inspiration of a pretty strong Man, twenty eight Pound Weight.

Now, the Force by which the Air enters this Pipe, is that Force by which it is driven out of the Lungs; if therefore the Force by which the Air enters the Pipe can be determined, we shall have the Force by which the Air is drove into the Trachea.—But the Pressure of Air upon the Bladder is equal to twice the Weight it can raise; because the upper Part of the Bladder being fixed, it resists the Force of the Air, just as much as the Weight at the other End. And again, since the Air presses every way equally, the whole Pressure will be to that Part of it which presses on the Orifice of the Pipe, as the whole Surface of the Bladder is to the Orifice of the Pipe; that is, as the Surface of a Cylinder, whose Diameter, for instance, is four Inches, and Axis seven, is to the Orifice of the Pipe.

Thus, if the Diameter of the Pipe be 0.28, and its Orifice 0.616; the Surface of the Cylinder will be 88. Therefore, as 88 : 0.616 :: 14. double the least Weight rais'd, to 0.098, which is almost 2 Ounces; and in raising the greatest Weight it is near 7 Ounces.

These therefore are the Forces by which the Air is drove through the Trachea, in an easy and a strong Expiration.—Now if we consider the Lungs as a Bladder, and the Larynx as a Pipe; the Pressure upon the Orifice of the Trachea, when the Air is drove out, will be to the Pressure upon the Lungs, as the whole Surface of the Lungs to the Orifice of the Trachea.

Suppose, *e. gr.* the Diameter of the Larynx to be 5; the Orifice of the Larynx will be 0.19. And suppose the two Lobes of the Lungs to be two Bladders, or Spheres, whose Diameters are each six Inches; their Surfaces are each 113 Inches, and the Pressure on the Larynx will be to the Pressure upon the whole external Surface, as 0.19 to 226, which is as 1 Pound 1189; and therefore if the Pressure upon the Larynx in an ordinary Breathing be two Ounces, the Pressure upon the whole external Surface of the Lungs will be 148 Pounds; and the utmost Force, when the Pressure upon the Larynx is seven Ounces, will be equal to 520 Pound.—But the Lungs are not like an empty Bladder, where the Air presses only upon the Surface; for they are full of Vesicles, upon the Surface of each of which the Air presses as it would upon the Surface of an empty Bladder; and therefore to know the whole Pressure of the Air, we must determine the internal Surfaces of the Lungs.

To do this, suppose that  $\frac{1}{3}$  Part of the Lungs is taken up with the Branches of the Trachea, that another third Part the Blood-Vessels fill, and the remainder is Vesicles, where we suppose the chief Pressure upon the Blood-Vessels to be made: Now,

both Lobes of the Lungs contain 226 solid Inches, of which one third, or 75 Inches, are full of Vesicles.—Let the Diameter of each Vesicle be  $\frac{1}{10}$  Part of an Inch, the Surface of a Vesicle will be .001256, and the Solidity .000043; by which Sum if we divide 75 (the Space filled by the Vesicles); the Quotient gives us 17441860 for the Number of Vesicles in both Lobes of the Lungs.—This Number multiplied by .001256, the Surface of a Vesicle gives the Sum of the Surfaces of all the Vesicles, to wit, 21906.976 Inches. And therefore the Pressure upon the Larynx will be to the Pressure upon the whole Surface of the Lungs, as 0.19 to 21906.976; and consequently, when in an ordinary Expiration the Pressure upon the Larynx is two Ounces, the Pressure on the whole internal Surfaces of the Lungs will be 14412 Pound Weight; and the utmost Force of the Air in Breathing, when the Pressure upon the Larynx is seven Ounces, will be 50443 Pound Weight.

Though these seem to be prodigious Weights, yet it must still be understood, that the Pressure upon each Part of the Surface of the Lungs equal to the Orifice of the Larynx, is not greater than it is at the Larynx; and that these vast Weights arise from the vast Extent of the Surfaces of the Vesicles upon which it was necessary that the Blood should be spread in the smallest capillary Vessels, that each Globule of Blood might, as it were, immediately receive the whole Force and Energy of the Air, and by that be broke into smaller Parts fit for Secretion and Circulation.

And hence we may learn the mechanical Reason of the Structure of the Lungs: For, being the whole Blood of the Body was to pass through them in order to receive the Effect of the Air, and that this could not be unless the Blood were diffused in small capillary Vessels; it was necessary that the Surfaces upon which they were to be spread, should be proportioned to their Number: Which is admirably well provided for by the wonderful Fabrick of the Lungs.

If the Gravity of the Air was always the same, and if the Diameter of the Trachea, and the time of every Expiration were equal in all; this Weight upon the Lungs would be always the same. But since we find by the Barometer, that there is three Inches difference between the greatest and the least Gravity of the Air, which is a tenth Part of its greatest Gravity; there must be likewise the Difference of a tenth Part of its Pressure upon the Lungs at one time and another: For the Momenta of all Bodies, moved with the same Velocity, are as their Gravities. See BAROMETER.

This is a Difference which such as are asthmatic must be very sensible of; especially if we consider that they likewise breathe thicker, that is, every Expiration is performed in less time; if in half the time, and the same Quantity of Air drawn be in, then the Weight of the Air upon the Lungs must be 57648 Pounds, of which a tenth Part is 5764 Pounds: And consequently asthmatic People upon the greatest rise or fall of the Barometer, feel a difference of the Air, equal to above one third of its Pressure in ordinary Breathing. See ASTHMA, WEATHER, &c.

Again, if the Trachea be small, and its Aperture narrow, the Pressure of the Air increases in the same Proportion as if the times of Expiration were shorter; and therefore a shrill Voice is always reckoned amongst the prognostick Signs of a Consumption, inasmuch as that proceeds from the narrowness of the Larynx or Trachea; and consequently increases the Pressure of the Air upon the Lungs, which upon every Expiration beats the Vessels so thin, that at last they break, and a spitting of Blood comes on apace. See PHTHISIS.

RESPIRE, RESPECTUS, in Law, &c. a Delay, Forbearance, or Prolongation of Time, granted any one for the Payment of a Debt, or the like.

*Menage* derives the Word *Respite* from the Latin, *respiētus*; as *despite* from *despectus*.—*Du Cange* will rather have it come from *respirare*, to Breathe; *Respite* being, in effect, a breathing-while, granted a Debtor, &c.

Letters of RESPIRE, or CREDIT, are Instruments antiently granted by Sovereign Princes to honest, but unfortunate Debtors, to screen them from their too rigorous Creditors.

These still obtain in France.—They were first introduced by Pope Urban II. in favour of the *Croisiers*, i. e. of Persons who went to the Holy War. See CROISES.

S. Louis granted three Years *Respite* to all who made the Voyage of the Holy Land with him.—In the Customary of Normandy, *Respite* is a judicial Delay, or Demur, given to Procedures.

RESPIRE of Homage, is a forbearance of the Homage due from the Vassal or Tenant holding by Homage, or by Knight-Service to his Lord. See HOMAGE, &c.

Antiently those who held by these Tenures, paid a small Sum every fifth Year into the Exchequer, to be *respi'd* doing their Homage or Service.

By Stat. 12 Car. II. this *Respite* of Homage is taken away, as a Charge arising from Knight-Service; which is thereby likewise annull'd. See TENURE, &c.

RESPONDEAT Superior, a Law Phrase.—Where the Sheriffs are removeable, as in London, for Insufficiency; *Respondet Superior*, that is, the Mayor and Aldermen are to answer for them. See SHERIFF, &c.



For the Insufficiency of a Bailiff of a Franchise, *Respondent Superior*, that is, the Lord of the Franchise is to answer.

**RESPONSALIS**, in Law, he who appears for another in Court at a Day assign'd.

*Fleta* makes this Difference between *Responsalis*, *Effonator*, and *Attornatus*. That the *Effonator* came only to alledge the Cause of the Parties Absence, be he Demandant or Tenant; and *Responsalis* come for the Tenant, not only to excuse his Absence, but to signify what Trial he meant to undergo, the Combat or the Country. See **ATTORNEY**.

**RESPONDENT**, in the Schools, a Person who maintains a Thesis in any Art or Science. See **THESIS**.

He is thus call'd as being to answer all Objections propos'd by the Opponent or Impugner, &c. See **OPPONENT**.

The *Respondent's* Business is to see whether the Opposition made by the contrary Party be just and Legitimate; or whether some of the Laws and Conditions of Opposition be not broke, which is call'd *Ignoratio Elenchi*.—He is also to examine the Moods and Figures of the Syllogisms, to see whether the Premisses be just, &c. And through the whole to answer rather by Distinguo's than by direct Negation. See **SYLLOGISM**, **MOOD**, **FIGURE**, **DISTINCTION**, &c.

**RESPONDENT**, in Law, a Person who undertakes to answer for another; or binds himself as Security for the good Behaviour of one another. See **SURETY**.

The *Respondent* is to answer for the Damages done by the Person for whom he responds.—There are four Ordonnances of the Kings of France, whereby the Citizens are expressly forbid to take Servants without *Respondents*, bound in Writing.

The Word is form'd from the Latin, *respondere*, to answer; q. d. *pro alio spondere*, to promise for another.

**RESPONSARY Song**, an Anthem in which the Quiristers sing by turns. See **ANTHEM**.

**RESPONSE**, **RESPONSAL**, **RESPONSATIO**, an Answer, Reply, or Reparty.

The Word is but little used, except for the Answers made to the Priest, by the People, in the Litany, the Psalms, and other Parts of the Office.

It has its use too in speaking of the Opinions or Answers of the ancient *Juriconsulti*; when consulted on Points of Law. See **CIVIL LAW** and **JURISCONSULTI**.

The fifty Books of the *Digest* are compos'd of *Responsa prudentum*, the Responses of *Papinian*, *Ulpian*, *Scevola*, &c. collected by *Justinian*, who afterwards gave them the Force of Laws. See **DIGEST**.

The Responses of the Emperors were properly call'd *Rescripts*. See **RESRIPT**.

**RESPONSIONS**, **RESPONSIONES**, a Term used in the military Orders, for certain Pensions or Charges which the Knights, or the Commanderies they held, paid to the Order.

Such a Knight-Templer paid a *Responsion* of fifty Pounds per Annum to his Order, on Account of such a Commandery. See **COMMANDERY** and **CONVENTUAL**.—In *Rot. Parl.* 9 Richard II. it is written *Responsies*.

**RESSAUT**, in Architecture, the effect of a Body which either Projects or Sinks; i. e. stands either more out, or in, than another; so as to be out of the Line or Level therewith.

Such is a Socle, an Intablature, a Cornice, &c. upon an Avant Corps, arriere Corps, or the like.

The Term is French; and but little used in English; though the want of a Word of equal Import, pleads for its Naturalization.

**RESSORT**, a Term purely French; yet frequently used by our late Writers.

The Word in its popular meaning signifies Spring, or the Force of Elasticity.—Hence it is also used for a Jurisdiction, and the Extent or District thereof; as, when we say such a thing belongs to his *Resort*; a Judge out of his *Resort* has no Authority.

But its chief use among us is for a Court or Tribunal, where Appeals are judged; or for a Court or Person who judges finally and ultimately, and whence there is no Appeal. See **COURT**, **APPEAL**, &c.

The House of Lords judge *en dernier Resort*, i. e. in the last *Resort*.—Presidials judge in the last *Resort*, of all Criminals prosecuted by the Provosts of the Marshals.

**RESSORT**, is also used in a Writ of Tayle or Cousenage, in the same Sense as *Descent* in a Writ of Right. See **DESCENT**, **TAYLE**, **COUSENAGE**, **RIGHT**, &c.

**RESSOURCE**, a Term purely French, yet used by our English Writers.

It signifies a Means or Foundation of Man's recovering himself from his Fall or Ruin; or an after-Game for the repairing his Damages.

This Merchant has Credit and Friends still left; he has great *Resources*.—His last *Resource* was to throw himself into a Convent.—The Jargon of a Distinction, is the ordinary *Resource* of a Divine at a Pinch.

*Skinner* derives the Word from the French, *resoudre*, to resolve: A *Resource* strictly and literally, expresses a Means which presents itself a-fresh.

**REST**, **QUIES**, in Physicks, the Continuance of a Body in the same Place: Or its continual Application or Contiguity to

the same Parts of the ambient and contiguous Bodies. See **SPACE**.

*Rest* is either *absolute* or *relative*; as *Place* is. See **PLACE**.

Some define *Rest* by the State of a thing without Motion; and hence, again, *Rest* becomes either *absolute* or *relative*, as Motion is. See **MOTION**.

Sir *Isaac Newton* defines *true* or *absolute Rest* to be the Continuance of a Body in the same Part of absolute and immoveable Space: And *relative Rest* to be the Continuance of a Body in the same Part of relative Space.

Thus, in a Ship under Sail, *relative Rest* is the Continuance of a Body in the same Region of the Ship, or the same Part of its Cavity.—*True*, or *absolute Rest* is its Continuance in the same Part of universal Space, wherein the Ship with its Cavity and Contents are all contain'd.

Hence, if the Earth be really and absolutely at *rest*, the Body *relatively at rest* in the Ship, will *really* and *absolutely* move; and that with that Velocity wherewith the Vessel moves.—But if the Earth do likewise move, there will then arise a real and absolute Motion of the Body at *rest*, partly from the real Motion of the Earth in absolute Space; and partly from the relative Motion of the Ship on the Sea.—Lastly, if the Body be likewise *relatively* moved in the Ship, its real Motion will arise partly from the real Motion of the Earth in immoveable Space, and partly from the relative Motions of the Ship on the Sea, and of the Body in the Ship.

Thus, if that Part of the Earth where the Ship is, move Eastward with a Velocity of 10010 Parts; and the Vessel be carried by the Winds Westward 10 Parts; and at the same time a Seaman aboard walk with a Velocity 1 Part: The Seaman will be moved *really* and *absolutely* in immoveable Space Eastwards, with 10001 Parts of Velocity; and *relatively* on the Earth, with nine Parts of Velocity Westwards. See **EARTH**.

'Tis an Axiom in Philosophy, that Matter is indifferent as to *Rest*, or Motion. See **MATTER** and **BODY**.

Hence, Sir *Isaac Newton* lays it down as a Law of Nature, that every Body perseveres in its State either of *Rest* or uniform Motion; except so far as it is disturbed by external Causes. See **NATURE**.

The Cartesians will have Firmness, Hardness, or Solidity of Bodies to consist in this, that their Parts are at *Rest*, with regard to each other: And this *Rest* they establish as the great Nexus, or Principle of Cohæsion, whereby the Parts are connected together. See **FIRMNESS**, **HARDNESS**, &c.

Fluidity, they add, consists in a perpetual Motion of the Parts, &c.—But the *Newtonian* Philosophy furnishes us with much better Solutions. See **SOLIDITY**, **FLUIDITY**, and **COHÆSION**.

**REST**, **REPOSE**, in Poetry, is used for the *Cæsura*, which, in *Alexandrian* Verses, falls on the sixth Syllable; and in Verses of ten or eleven Syllables, on the fourth. See **CÆSURA**.

This Verse is naught, there wants a *Rest* in it.—The *Rest* shou'd never fall on a Monosyllable, whereon the Voice may not dwell: 'Tis call'd *Rest* because the Ear, and the Pronunciation have both a repose or respite.

**REST**, in Musick, is a Pause or Interval of Time, during which there is an Intermision of the Voice or Sound. See **PAUSE** and **TIME**.

*Rests* are sometimes used in *Melody*, that is in Musick of a single Part, to express some simple Passion, or even for Variety sake; but more usually in *Harmony*, or in Compositions of several Parts, for the sake of the Pleasure of hearing one Part move on while another *rests*; and this interchangeably. See **MELODY** and **HARMONY**.

*Rests* are either for a whole Bar, or more than a Bar, or but for the Part of a Bar.—When the *Rest* is for a part, it is express'd by certain Signs corresponding to the Quantity of certain Notes or Time; as Minim, Crotchet, &c. and is accordingly call'd *Minim-rest*, *Crotchet-rest*, &c.

The Characters or Figures whereof, see under **CHARACTERS of Musick**; where the Note and corresponding *Rest* are found together.

When any of those Characters occur either on Line or Space; that Part is always silent for the Time of a Minim, or Crotchet, &c.—Sometimes a *Rest* is for a Crotchet and Quaver together; or for other Quantities of Time, for which there is no particular Note: In which Case the Signs of Silence are not multiplied; but such Silence is express'd by placing together as many *rests* of different Time, as make up the designed *Rest*.

When the *Rest* is for a whole Bar, the Semibreve *Rest* is always used.—If the *Rest* be for two Measures, 'tis mark'd by a Line drawn a-crofs a whole Space.—For three Measures 'tis drawn a-crofs a Space and a half; and for four Measures a-crofs two Spaces. But to prevent Ambiguity, the Number of Bars is usually writ over the Sign.

Some of the more antient Writers in Musick, make these *Rests* of different Value in different Species of Time.—E. gr. The Character of a Minim-*Rest*, in common Time, say they, expresses the *Rest* of three Crotchets in triple Time; in that the Triples  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{1}{4}$ , it always marks an half Measure, how different soever these may be among themselves.

They add that the *Rest* of a Crotchet in common Time is a *Rest* of three Quavers in the Triple  $\frac{3}{4}$ ; and that the *Quaver Rest* of



of common Time is to equal to three Semi-quavers in the Triple  $\frac{3}{2}$ . But this variety in the Use of the same Characters, is now laid aside.

**RESTAUR, RESTOR**, in antient Customs, the Remedy or Recourse which Assurers have against each other, according to the Date of their Assurances; or against the Masters, if the Average arise through his Default, as through ill loadings, want of caulking, or want of having the Vessel tight. See ASSURANCE.

The Word is also used for the Remedy or Recourse a Person has against his Guarantee or other Person, who is to indemnify him from any Damage sustain'd.—Hence *Restaurant* and *Restauratio*.—In the lower *Latin* they also use the Words, *Restor* and *Restour*.

**RESTAURATION, RESTORATION**, the Act of re-establishing, or setting a thing in its former good Estate.

Thus we say, the *Restoration* of a Minor to the Possession of his Effects, alienated in the Time of his Minority. In the *French* Laws is an antient *Formula*, used for the restoring a Person to his good Name, after he has been wrongfully accused and condemned.

Sour and decay'd Beer and Ale are *restored* various Ways.—By a handful of Wheat thrown into the Vessel, or by Salt made of the Ashes of Barly-Straw, put into the Vessel and stir'd.

*Glauber* commends three or four handfuls of Beech Ashes applied in the same manner.—Chalk scraped into it, renders it drinkable immediately. The same effect is produced by calcined Oyster-Shells, burnt Egg-Shells, Sea-Shells, or Crab's Eyes. See BEER, ALE, BREWING, &c.

In *England* we say, the *Restoration*, by way of Eminence, for the return of King *Charles II.* in 1660; after the *Interregnum*. See *INTERREGNUM*.

The 29th of *May* is an Anniversary Festival held in Commemoration of the *Restoration*: The *Restoration* of Regal and Episcopal Government. See *CIVIL-WAR*.

**RESTAURATION**, in Architecture, the Repairing of all the Parts of a Building gone to decay, either through the Course of Time, or other Injuries; in such manner as that it is not only re-established in its first Form, but considerably augmented. See REPAIR and REPARATION.

'Tis evident from the Plinths of the Corinthian Columns of the Pantheon, which are almost wholly under Ground, that the Pavement of this Temple is only a *Restoration* made in the Time of *Septimius Severus*. *Daviler*.

The Temple of Concord, behind the Capitol at *Rome*, having been burnt long after it was built, and having angular Bases different from the rest; seems to have been restored from the Ruins of several antient Buildings. *Id.*

**RESTAURATION**, in Sculpture, is the repairing of a mutilated Statue, &c. See MUTILATION, &c.

Most of the Antique Statues have undergone the *Restoration*; as the *Farnese Hercules*, the *Faunus* in the *Villa Borghese* at *Rome*, The Wrestlers in the Gallery of the Great Duke of *Florence*; the *Venus of Arles* in the Gallery at *Versailles*.—But these *Restorations* have only been made by the ablest Sculptors. *Daviler*.

**RESTINCTION**, in Chymistry, the quenching of a Metal or Mineral in some Lquor; in order either to correct, or give it some new Quality, Power, &c. See EXTINGUISHING, &c.

**RESTITUTION**, in Physicks, the returning of elastick Bodies forcibly bent, to their natural State; properly call'd, the *Motion of Restitution*. See ELASTICITY.

Contraction being the proper and natural Action of muscular Fibres, some Authors ascribe Dilatation to a Motion of *Restitution*; but the Expression, as well as the Idea, are very faulty. See FIBRE, MUSCULAR, &c. See also HEART, &c.

**RESTITUTION**, in a moral and legal Sense, is the Act of restoring a Person to his Right; or of returning something unjustly taken or detain'd from him. See RESTAURATION.

*Restitution* is reducible to commutative Justice; and till it be made, the Casuists determine the Party all the while guilty of Theft. See JUSTICE, INJURY, &c.

The illegal Incumbents of Benefices are condemn'd to a *Restitution* of the Fruits of the Benefices.—In the *Romish* Church Assurers, &c. are obliged to a *Restitution* of their ill-gotten Goods, otherwise the Priest has no Authority to give him Absolution. See USURY.

*Restitution in Integrum*, is used for what is otherwise called *Rescission*. See RESCISSION.

Religious obtain *Restitution* against their Vows, i. e. are freed from their Obligation, when they protest against them within five Years of their Profession. See VOW, &c.

In the History of *Germany* for the XVIIth Century, the first Day of *January* 1624, is call'd the *Term of Restitution*: Because by the Peace of *Munster*, then concluded, the *Lutheran* and *Calvinist* Princes were obliged to *restitute*, restore what they had taken from the *Roman* Catholick Churches in their Territories, till that Day.

**RESTITUTIONS of Medals**, or **RESTITUTED Medals**, is a Phrase used by Antiquaries, for such Medals as were struck by the Emperors, to renew or retrieve the Memory of their Predecessors. See MEDAL.

Hence it is that in several Medals we find the Letters *R E S T*.—*Claudius* was the first who begun this Practice, by striking a

fresh several Medals of *Augustus*. *Nero* did the same; and *Tiberius*, after the Example of his Father, struck *Restitutions* of most of his Predecessors.

*Gallian* struck a general *Restitution* of all the preceding Emperors in two Medals, the one bearing an Altar, the other an Eagle, without the *REST*. *F. Jobert* chuses rather to call them *Conservations* than *Restitutions*, as being done quite a new.

**RESTITUTIONE Temporalium**, a Writ which lies where a Man is elected and confirmed Bishop of a Diocese; for the Recovery of the Temporalities or Barony of the said Bishoprick. See BISHOP, TEMPORALITIES, &c.

It is directed from the King to the Escheator of the County.

**RESTITUTIONE extracti ab Ecclesia**, a Writ antiently granted for the restoring a Man to the Church or Sanctuary from which he had been forced away. See SANCTUARY.

**RESTIVE**, a Term applied to a Horse, &c. that stops, or runs back, instead of advancing forwards.

In the Manage, a *restive* Horse is a rebellious, refractory, broken Horse; which only goes where it will, and when it will.—The Word is form'd from the *Latin*, *restivus*, which signifies the same thing.

**RESTORATIVE**, in Medicine, a Remedy proper for the restoring and retrieving of Strength and Vigour. See REMEDY.

*Restoratives* belong to the Class of Balsamicks. See BALSAMICK.

The Medicines that come under this Denomination are of an emollient, softening Nature, but nutritive withal; and are rather administred to repair the Wastes of the Constitution, than to alter and rectify its Disorders. See NUTRITION.

Such are the Leaves of white Maiden-hair, *Adiantum Nigrum*; black Hellebore; Rocket, *Eruca*; Scabious; *Tusilago*; Colts-Foot; Bohea-Tea; Chick-peas; Hops; Chocolate; Pistach-Nuts; Balsom of *Tolu*; Bdellium; Benzoin; Storax; Eryngo; Iris; Satyrion, &c. See HELLEBORE, TEA, PISTACH, CHOCOLATE, BALSOM, BDELLIUM, STORAX, &c.

**RESTRAINT**, is when an Action is hindered or stop'd, contrary to Volition, or the Preference of the Mind. See LIBERTY, NECESSITY, WILL, VOLITION, VOLUNTARY, &c.

**RESTRICTION**, the Act of moditying, limiting, or restraining a thing to narrower Bounds.

General Laws always bear some *Restriction*.—In Contracts 'tis usual to have *restrictive Clauses*, which bind the Dispositions down to certain Bounds. See CLAUSE, CONDITION, &c.

*Mental* RESTRICTION. See RESERVATION.

Among Logicians, *Restriction* is understood of the limiting a Term, so as to make it signify less than it usually does.—In this Sense the Name *Philosopher* is restrain'd to *Aristotle*; *Great* to *Alexander*; *City* to *Rome*, &c.

'Tis observed to be good arguing affirmatively from a non-restrain'd to a restrain'd Term, but not contrarily: And negatively, from restrain'd to a non-restrain'd Term; but not contrarily.

**RESTRINGENT**, in Medicine. See ASTRINGENT.

**RESULT**, what is gathered from a Conference, an Examen, Meditation, Discourse, or the like; or the Conclusion and Effect thereof.

The Assembly was so tumultuous that there was no knowing the *Result*.—The usual *Result* of Disputes, Mr. *Bayle* observes, is that each Person remains more attach'd to his own Opinion.

**RESUMMONS**, a second Summons; or calling a Man to answer an Action where the first Summons is defeated, or suspended by any Occasion; as the Death of a Party, &c. See SUMMONS.

**RESUMPTION**, in a large Sense, signifies the taking again into the King's Hands such Lands or Tenements as before, upon false Suggestion, or other Error, he had delivered to the Peer, or granted by Letters Patent to any Man.

**RESUMPTION**, in the Schools, a summary Repetition, or running over of an Argument; or of the Substance thereof, in order to refute it.

The Respondent *resumed* all the Points of the Objection, and answers them one by one. See RECAPITULATION, &c.

**RESUMPTION** is also used by Logicians for the reduction of some figurative or quaint Proposition, to a more intelligible and significant one.—As, *Peter* is half-dead over; that is, he is half fuddled.—The Meadows smile; that is, look pleasant.

**RESUMPTIVE**, in Pharmacy, an Epithet given to a kind of Unguent, used to recruit and restore arid languishing Constitutions, and to dispose the dry Body to receive Nourishment.—'Tis called in *Latin*, *Unguentum resumptivum*. See RESTORATIVE and UNGUENT.

**RESURRECTION, RESUSCITATION**, the Act of returning to a new, or second Life, after having been dead. See LIFE and DEATH.

The great Argument for the Truth of Christianity, and that urged with the most Force and Conviction for the same; is drawn from the *Resurrection* of our Saviour.—The Circumstances thereof are such as almost admit of a Demonstration; which has accordingly been attempted on the strict Principles of the Geometricians. See *Dissertation on the Resurrection*.

The Christians generally believe the *Resurrection* of the same identic Body, the very same Flesh and Bones at the Day of Judgment.—The two principal philosophical Objects against it are these.



1°. The same Piece of Matter or Substance may happen to be a Part of two or more Bodies.—Thus a Fish feeding on a Man, and a Man afterwards feeding on the Fish; Part of the Body of the first Man becomes first incorporated with the Fish, and afterwards in the Fish, with the last Man. Again, Instances have been known of one Man's feeding immediately on another; and among the Cannibals of the *West Indies* the Practice is frequent.

Now, where the Substance of one is thus converted into the Substance of another, each can't arise with his whole Body; and to which shall the common Part be allotted?

To this Objection some answer, that as all Matter is not fit or disposed to be assimilated to the Body, and incorporated with it: Human Flesh may very probably be of this Kind, and therefore what is thus eaten, may be again excreted and carried off.—But Mr. *Leibnitz's* Answer seems the more solid.—All that is essential to the Body, he urges, is the original Stamen, which existed in the Semen of the Father; nay, and on the footing of the modern Theory of Generation, which existed in the Semen of the first Man. This we may conceive as the most minute Speck or Point imaginable, and therefore not to be separated, or tore asunder, and any Part of it united with the Stamen of any other Man. All this Bulk we see in the Body, is only an Accretion to this original Stamen; an Addition of foreign Matter, of new Juices to the primary, solid Stamen. There is therefore no reciprocation of the proper Matter of the human Body. See STAMEN, SOLID, &c.

The second Objection is this.—The human Body, we know by the late Discoveries in the Animal OEconomy, is continually changing: A Man has not entirely the same Body to Day as he had Yesterday; and it is even computed, that in less than seven Years time, his whole Body undergoes a change, and not a Particle of the same Body remains.—Which of these many Bodies, then, which the same Person has in the Course of his Life, is it that shall rise? Or does all the Matter that has ever belong'd to him, rise again? Or does only some particular System thereof? The Body, e. gr. he had at 20, at 30, or at 60 Years old? If only this or that Body arise, how shall it be rewarded or punished for what was done by the other? With what Justice does one Person suffer, &c. for another?

To this it may be answered, on Mr. *Lock's* Principles, that personal Identity, or the sameness of a rational Being, consists in Self-consciousness; in the Power of considering it self the same thing in different Times and Places.—By this every one is to himself what he calls *self*; without considering whether that self be continued in the same or divers Substances. So far reaches the Identity of that Person. 'Tis the same self now it was then; and 'twas by the same self which now reflects on an Action, that Action was performed.

Now, 'tis this personal Identity is the Object of Rewards and Punishments, which we have observed may exist in different Successions of Matter; so that to render the Rewards and Punishments just and pertinent, nothing needs but that we rise again with such a Body as that we retain the Consciousness of our past Actions. See IDENTITY.

RESUSCITATION. See RESURRECTION and REVIVIFICATION.

RETAINER, or RETEINER, in Law. See RETEINER.

To RETAIN, spoken of Mares, signifies to hold, i. e. to Conceive after Covering.

RETAINING-FEE, is the first Fee given to a Serjeant or Counsellor at Law, whereby to make him sure, that he shall not be on the contrary Side. See FEE.

RETAIL, in Commerce, &c. the buying of Goods in the Great, or by Wholesale, and selling them out again in small Parcels.—*Quivem integram ementes, per minutores eam partes distrabant.* See COMMERCE.

RETALIATION, the Act of returning like for like. See TALIONIS Lex.

RETARDATION, in Physicks, the Act of *retarding*, that is, of delaying the Motion or Progress of a Body, or of diminishing its Velocity. See MOTION.

The Retardation of moving Bodies arises from two great Causes: The Resistance of the Medium, and the Force of Gravity.

The Retardation from the Resistance is frequently confounded with the Resistance it self; because with respect to the same moving Body, they are in the same Proportion. See RESISTANCE.

With respect to different Bodies, however, the same Resistance often generates different Retardations.—For if Bodies of equal Bulk, but different Densities, be moved through the same Fluid, with equal Velocity, the Fluid will act equally on each; so that they will have equal Resistances, but different Retardations. And the Retardations will be to each other as the Velocities which might be generated by the same Forces in the Bodies proposed; That is, they are inversely as the Quantities of Matter in the Bodies, or inversely as the Densities.

Suppose, then, Bodies of equal Density, but of unequal Bulk, to move equally fast through the same Fluid; the Resistances increase according to their Superficies, that is, as the Squares of their Diameters; but the Quantities are increased in Proportion to the Cubes of the Diameters: the Resistances are the Quanti-

ties of Motion, the Retardations are the Celerities arising from them; and dividing the Quantities of Motion, by the Quantities of Matter, you will have the Celerities; therefore the Retardations are directly as the Squares of the Diameters, and inversely as the Cubes of the Diameters, that is, inversely as the Diameters themselves.

If the Bodies be equal, move equally swift, and are of the same Density, but moved through different Liquids; their Retardations are as the Densities of those Fluids. See FLUID.

When Bodies equally dense, and of Bulk equal, are carried through the same Liquid with different Velocities, the Retardations are as the Squares of the Velocities. See DENSITY, &c.

The Retardation from Gravity is peculiar to Bodies projected upwards.—A Body thrown upwards is retarded after the same Manner as a falling Body is accelerated; only in the one Case the Force of Gravity conspires with the Motion acquired; and in the others acts contrary to it. See ACCELERATION.

As the Force of Gravity is uniform, the Retardation from that Cause will be equal in equal times. See GRAVITY.

Hence, as 'tis the same Force which generates Motion in the falling, and diminishes it in the rising Body, a Body rises till it has lost all its Motion; which it does in the same time wherein a Body falling would have acquired a Velocity equal to that wherewith the Body was thrown up. See PROJECTILE.

Thus also, a Body thrown up will rise to the same Height from which falling it would acquire the Velocity wherewith it is thrown up: Therefore the Heights which Bodies thrown up with different Velocities can rise to, are to each other as the Squares of the Velocities. See PROJECTILE and DESCENT.

Hence the Retardations of Motions may be compared together: For they are first, as the Squares of the Velocities; secondly, as the Densities of the Liquids, through which the Bodies are moved; thirdly, inversely as the Diameters of those Bodies; lastly, inversely, as the Densities of the Bodies themselves.

The Numbers in the Ratio compounded of those Ratio's, express the Proportion of the Retardations; multiplying the Square of the Velocity by the Density of the Liquid, and dividing the Product by the Product of the Diameter of the Body, multiplied into its Density, and working thus for several Motions; the Quotients of the Divisions will have the same compound Ratio to one another.

#### General Laws of RETARDATION of Motion.

1°. If the Motion of a Body be *uniformly retarded*; that is, if its Celerity be diminished equally in equal Times, the Space it passes over is one half of that it would pass over in the same time by an uniform Motion.

2°. The Spaces described in equal times by an uniformly retarded Motion; decrease according to the uneven Number, 9, 7, 5, 3, &c.—See farther under ACCELERATION.

RETCHING, or REACHING, the Effort or Endeavour to Vomit. See NAUSEA and VOMITING.

RETE Mirabile, in Anatomy, a small Plexus, or Net-work of Vessels in the Brain. See PLEXUS and BRAIN.

It surrounds the *Glandula Pituitaria*, and is very conspicuous in Brutes, but either not existent in Man, or so very minute that its Existence is fairly doubted.

*Willis* will have it to consist of Arteries, Veins, and Nerves; *Viesiens* of Arteries only, and others, of Arteries and small Veins.—*Viesiens* asserts, with many other Anatomists, that there is no Rete Mirabile in Man, in the Horse, Dog, &c. 'Tis found in the Calf, Sheep, Goat, &c.

It was first observed, and described by *Galen*; who upon finding it in some Brutes, concluded it to be likewise in Man: but all we see like it in Man, is, that on the Sides of the Pituitary Gland, where its Place should be, the Carotid Arteries make a double Flexure, in Form of *∞*, before they penetrate the *Dura Mater*.

The use of the Rete Mirabile, *Galen* takes to be for concocting and elaborating the animal Spirits; as that of the *Epididymides* is for elaborating the Seed. See SPIRIT and SEED.

Dr. *Willis* thinks, with more probability, it may serve to bridle the too rapid Incursions of the Blood into the Brain of those Creatures whose Head hangs down much; to separate some of the superfluous serous Parts of the Blood, and send them to the Salival Glands as the Blood enters the Brain; and to obviate Obstructions which may happen in the Arteries.

RETE Penny, in ancient Records, a customary Due of one Penny for every Person, to the Parish-Priest.

RETEINER, or RETAINER, in Law, a Servant not menial nor Domestic; that is, not continually dwelling in the House of his Lord or Master; but only wearing his Livery, and attending on special Occasions. See SERVANT.

This Livery was anciently given by great Men, and frequently for the Maintenance of Quarrels; whence it was justly prohibited by several Statutes; as, 1 *Richard II.* on Pain of Imprisonment, and grievous Forfeiture to the King. See LIVERY, YEOMAN, &c.

It was further prohibited by other Statutes of the succeeding Kings, whereby the Delinquents were subjected to make Ransom at the King's Pleasure; and Knights and Esquires hereof du-



ly attained, were to lose their said Liveries, and forfeit their Fees for ever.

**Edward IV.** added a special Penalty of five Pounds per Month on every Man that gave such Livery, and as much on every Person so retained, either by Writing, Word, or Oath.—But most of the Statutes are repealed by a Statute 3 Car. I.

**RETENTIO, RETINENTIA**, in our Law Books, is sometimes used to signify *Retinue*. See **RETINUE**.

**RETENTION, RETENTIO**, a Faculty of the human Mind, whereby in order to a farther Progress in Knowledge, it keeps or retains those simple Ideas which it before received by Sensation or Reflection. See **FACULTY, IDEA, &c.**

This is done two ways.—First, by keeping the Idea which is brought into the Mind for some time actually in view; called *Contemplation*. See **CONTEMPLATION**.

Secondly, By reviving those Ideas in our Minds, which have disappeared, and have been, as it were, laid out of sight: this is *Memory*, which is, as it were the Repository of our Ideas. See **MEMORY**.

Our Ideas being nothing but actual Perceptions in the Mind, which cease to be any thing, when there is no Perception of them; this laying up of our Ideas in the Repository of the Memory, amounts to no more than this, that the Mind has a Power in many Cases to revive Perceptions it once had; with this additional Perception annexed to them, that it has had them before. See **PERCEPTION**.

It is by the Assistance of this Faculty, that we are said to have all those Ideas in our Understanding which we can bring in sight, and make the Objects of our Thoughts, without the help of those sensible Qualities, which first imprinted them there. See **UNDERSTANDING**.

Attention and Repetition help much to the fixing Ideas in our Memories; but those which make the deepest and most lasting Impressions, are such as come accompanied with Pleasure and Pain.—Ideas but once taken in, and never again repeated, are soon lost; as those of Colours, in such as lose their Sight when very young.

The Memory in some Men is tenacious, even to a Miracle; but yet there seems to be a constant Decay of all our Ideas, even of those which are struck deepest; and in Minds the most *Retentive*: So that if they be not sometimes renew'd, the Print wears out, and at last there remains nothing to be seen. See **TRACE**.

Those Ideas which are often renewed by a frequent Return of the Objects or Actions that produce them, fix themselves best in the Memory, and remain longest there: Such are the original Qualities of Bodies; viz. Solidity, Extension, Figure, Motion, &c. and those that almost constantly affect us, as Heat and Cold; and those that are the Affections of all kinds of Beings, as Existence, Duration, Number; which are seldom quite lost, while the Mind retains any Ideas at all. See **QUALITY, HABITUDE, &c.**

**RETENTION**, is also used in Medicine, &c. for that State of Contraction in the Solids, or vascular Parts of the Body, which makes them hold fast their proper Contents. See **SOLID, VESSEL, &c.**

In this Sense *Retention* stands opposed to *Evacuation*, or *Excretion*. See **EVACUATION** and **EXCRETION**.

*Retention* and *Excretion* make one of the six Non-Naturals. See **NON-NATURAL**.

**RETENTION** is frequently considered as a Disorder; and defined the Act of retaining the Excrements, Humours, &c. so as they cannot be voided out of the Body. See **EXCREMENT**.

A *Retention* of Urine is very painful and dangerous. See **URINE**.

'Tis a *Retention* of peccant Humours which causes such a Disease.

**RETIARII**, in Antiquity, a kind of Gladiators. See **GLADIATOR**.

The *Retiarii* were denominated from *Rete*, a Net which they made use of against their Antagonist, who was call'd *Secutor*, Follower. See **SECUTORES**.

This Net they carried under their Buckler, and when opportunity serv'd, cast it on the Head of their Antagonist, and in this condition kill'd him with a Trident which they bore in the other Hand.

**Lipsius**, &c. observe that they fought in Tunics, and were furnished with Sponges to wipe off the Sweat, Blood, &c. and to stop their Wounds.—The Word is form'd from the *Latin, Rete, net*; or, perhaps from *Retejiculum*, for they call'd their Net, *Jaculum*, and sometimes in one Word, *Retejaculum*.

**RETICENCY, RETICENCY, RETICENTIA**, a Figure in Rhetoric, whereby we make oblique mention of a thing, in pretending to pass it over unmentioned. See **FIGURE**.

Thus: To say nothing of the Nobility of his Ancestors: I forbear to speak of his Courage, and pass over the Severity of his Morals. See **PRÆTERITION**.

**RETICULA, RETICULE**, in Astronomy, a Contrivance for the exact measuring of the Quantity of Eclipses; introduced about fifty Years ago by the Royal Academy of Paris. See **ECLIPSE**.

The *Reticule* is a little Frame, consisting of thirteen fine silken Threads, equidistant from each other, and Parallel; placed in the Focus of object Glasses of Telescopes; that is, in the Place where the Image of the Luminary is painted, in its full Extent.—Of Con-

sequence, therefore, the Diameter of the Sun or Moon is hereby seen divided into twelve equal Parts or Digits; so that to find the Quantity of the Eclipse, there is nothing to do but to number the luminous and the dark Parts. See **DIGIT**.

As a Square *Reticule* is only proper for the Diameter, not for the Circumference of the Luminary. 'Tis sometimes made Circular, by drawing six concentrick equi-distant Circles, which represent the Phases of the Eclipse perfectly.

But 'tis visible that the *Reticule*, whether square or circular, ought to be perfectly equal to the Diameter or Circumference of the Star, such as it appears in the Focus of the Glass; otherwise the Division cannot be just.

Now this is no easy Matter to effect, by reason the apparent Diameter of the Sun and Moon differ in each Eclipse; nay that of the Moon differs from it self in the Progress of the same Eclipse.

Another Imperfection in the *Reticule* is, that its Bigness is determined by that of the Image in the Focus; and of consequence will only fit one certain Magnitude.

But **M. de la Hire** has found a Remedy for all these Inconveniences; and contrived that the same *Reticule* shall serve for all Telescopes, and all Altitudes of the Luminary in the same Eclipse.—The Principle whereon his Invention stands, is, that two Object-Glasses applied against each other, having a common Focus, and there forming an Image of a certain Magnitude; this Image will increase in Proportion as the Distance between the two Glasses is increas'd, as far as a certain Limit.

If then a *Reticule* be taken of such Magnitude as just to comprehend the greatest Diameter the Sun or Moon can ever have in the common Focus of two Object-Glasses applied to each other; there needs nothing but to remove them from each other, as the Star comes to have a less Diameter, to have the Image still exactly comprehended in the same *Reticule*.

Another Improvement is, that whereas the silken Threads are subject to swerve from the Parallelism, &c. by the different temperature of the Air; a *Reticule* may be made of a thin Looking-Glass, by drawing Lines or Circles thereon, with the fine Point of a Diamond; which shall be safe from any Alteration of the Air.

**RETICULAR Body, Corpus RETICULARE**, in Anatomy, a Body of Vessels lying immediately under the Cuticle or Scarf-Skin. See **CUTICLE, &c.**

These Vessels contain a mucous Liquor, from the Tincture whereof **Malpighi** imagines the Colour of the Skin to be derived; founding his Conjecture on this, that the Cutis as well as Cuticle of Blacks, is white; and that they differ in no other Circumstance from those of Europeans, but in this particular. See **NEGRO**. See also **CUTIS** and **PAPILLA**.

**RETICULARIS Plexus**, in Anatomy, the Choroides. See **CHOROIDES**.

'Tis thus call'd because the Fibres are interwoven like a Net.

**RETICULUM**, the Caul, or *Omentum*; a Name sometimes given from its Net-like Structure. See **OMENTUM**.

**RETIFORMIS Lacis**, in Anatomy, the same with *Rete Mirabile*. See **RETE**.

**RETINA**, in Anatomy, and Opticks, one of the Tunics of the Eye; call'd also *Amphiblastroides, retiformis, and reticularis*, as being wove in manner of a Net. See **TUNIC** and **EYE**.

The *Retina* is the last or innermost of the Coats of the Eye lying immediately under the Choroides. See **CHOROIDES**.

'Tis form'd of an Expansion of the medullary Part of the Optic Nerve; whence, it is found very thin, soft, white, &c. resembling the Substance of the Brain, with the transparency of the Horn of a Lanthorn. See **OPTIC NERVE**.—When separated from the Choroides, it runs into a mucous Mass, or Lump.

The *Retina* is usually supposed to be the great Organ of Vision, which is effected by means of the Rays of Light reflected from each Point of Objects, refracted in their Passage through the aqueous vitreous and crystallin Humours, and thus thrown on the *Retina*; where they paint the Image of the Object; and where they make an Impression, which is continued thence, by the fine Capillaries of the Optic Nerves, to the Sensory. See **VISION**.

Indeed, whether the *Retina* or the Choroides be the principal Organ of Vision, and that whereon the Images of Objects are represented; has been much controverted between several Members of the French Academy, particularly Mess. **Mariotte, Pecquet, Perrault, Mery**, and **de la Hire**.

**Mariotte** first stood up for the Choroides, and was seconded by **Mery**; the rest asserted the Rights of the *Retina*.

The *Retina* was always judg'd to have all the Characters of the principal Organ.—'Tis situate in the Focus of the Refractions of the Humours of the Eye; and of Consequence receives the Vertices of the Cones of Rays, proceeding from the several Points of Objects. It is very thin, and consequently very sensible. It has its Origin from the Optic Nerve; and is it self wholly nervous, and 'tis the common Opinion that the Nerves are the Vehicles of all Sensations. Lastly, It communicates with the Substance of the Brain, where all Sensations terminate. See **BRAIN, SENSATION, &c.**

As to the Choroides, its use was supposed to be to stop the Rays, which the extreme tenuity of the *Retina* should let pass, and



and to do the same Office to the *Retina* which the Quicksilver does to a Looking-Glass; especially in Animals wherein it is black. See CHOROIDES.

But from an Experiment of a Cat plunged in Water, M. *Mery* conceiv'd a different Opinion.—He observ'd the *Retina* to disappear on that Occasion, as well as all the other Humours of the Eye; but the Choroides still to appear distinctly, and even with all the lively Colours it has in that Animal.—Hence he concluded, that the *Retina* was as transparent as the Humours, but the Choroides, opaque. Consequently the *Retina* was not a proper Instrument to terminate and stop the Cones of Rays, or to receive the Images of Objects; but that the Light must pass through it, and could only be stop'd on the Choroides; which therefore would become the principal Organ of Vision.

The black Colour of the Choroides in Man is extremely favourable to this Sentiment: The principal Organ should seem to require that the Action of the Light should terminate on it, as it arrives; which 'tis certain it here does in the black that absorbs all the Rays, and reflects none; and it should also seem necessary that the Action of the Light should be stronger on the Organ of Sight than any where else. Now, 'tis certain that the Light being received and absorbed in a black Body, must excite a greater Vibration there than any where else; and hence it is that black Bodies are inflamed by a burning Glass much sooner than white ones. See BLACKNESS, &c.

The Situation of the Choroides behind the *Retina* is another Circumstance on its Side; M. *Mery* having observed the same Position of the principal Organ behind a mediate Organ in the other Senses; which makes a happy Analogy.—Thus the Cuticle extended over the Skin, is the mean Organ of feeling; but the Cutis underneath is the principal Organ. The like is observed in the Ear, Nose, &c.

The *Retina*, therefore, should seem, a kind of mediate or secondary Organ, serving to break the too strong Impression of the Light on the Choroides, or to preserve it; which is the use ascribed to the Cuticle.—Add to all this, that the *Retina* is insensible, as having its Origin from the medullary Substance of the Brain, which is so too; and the Choroides, on the contrary, very sensible, as arising from the *Pia Mater*, which is certainly so in a great Degree. See NERVE, MEDULLA, MENIX.

This last Argument being doubted of, M. *Mery* was engaged to prove it; which he did before the Royal Academy, where he shew'd that the Optic Nerve is not compos'd like the other Nerves, of Fibres; that 'tis only a Train of the Medulla inclosed in a Canal, out of which it is easily separable. See OPTIC NERVE.

This Structure of the Optic Nerve, hitherto unknown, shews that the *Retina* can be no Membrane; 'tis only a Dilatation of the Medulla, inclosed under two Membranes, and a Medulla is no proper Substance to be the Seat of a Sensation.—It can scarce serve for any thing but to filtrate the Spirits necessary for the Action of Vision.—The Vibration whereby the Sensation it self is effected, must be made on a Part more solid, more firm, and more susceptible of a brisk Impression.

RETINUE, the Attendants or Followers of a Prince, or Person of Quality; chiefly in a Journey.

In Law, those Persons are said to be of a Nobleman's *Retinue* who belong to him in Quality either of Servants or Retainers. See RETAINER.

RETIRADE, in Fortification, a kind of Retrenchment made in the Body of a Bastion, or other Work, which is to be disputed Inch by Inch, after the first Defences are dismantled. See RETRENCHMENT, &c.

It usually consists of two Faces, which make a re-entering Angle. See RE-ENTERING.

When a Breach is made in a Bastion, the Enemy may also make a *Retirade*, or a new Fortification behind it. See BASTION.

RETIRED Flank, in Fortification. See FLANK.

RETORT, in Chymistry, a kind of crooked Matrass, or a round, bellied Vessel, either of Earth or Glass, with a slender crooked Beak, or Nose, to which the Recipient is to be fastened. See MATRASS.

When the *Retort* is of Glass, 'tis usually lin'd with a Lute or Past an Inch thick; to enable it to bear the Fire the better. See FIRE and HEAT.

The *Retort* serves to draw Spirits and Oils from Woods, Gums, Minerals, Earths, and other Matters which require a strong Fire. See SPIRIT, &c.

The *Retort* is a kind of Compendium or Improvement of the Cucurbit and Bolt-head; answering all the Purposes of both, without the Assistance of a Capital or Head, which the other frequently require. See DISTILLATION, &c.

RETRACTION, the Act of unsaying what a Person had said, or wrote. See RECANTATION.

*Galileo* made a public *Retraction* of his *Doctrine of the World, de Mundo*, after its being censured and condemned by the Popes.

Among St. *Augustin's* Works is a Book of *Retractions*; where, however, the Word is to be understood in a new Sense; not as if he recanted or unsaid any thing he had taught, but only treated of the same Matter, or handled the same Subject a second Time. This Sense the Word will very well bear; being a compound of *re* and *tracto*, I handle, treat of.

RETRACTION, in Anatomy, the Contraction or shortening of a Part. See CONTRACTION.

The *Retraction* of the Nerves takes away the Use of the Limbs. See NERVE.

The Word is form'd from the *Latin*, *retrahere*, to draw back.

RETRACTS, among Horsemen, pricks in the Horse's Feet, arising from the Fault of the Farrier in driving Nails that are weak, ill-pointed, or are driven amiss. See SHOE.

These, unless timely prevented, fester, and prove very dangerous.—When the Farrier, in shoeing, perceives the Horse to shrink at every blow on the Nail; 'tis a sign of a *Retract*; and the Nail is to be pull'd out again, which is done without any harm.

When the Horse halts immediately after he is shod, 'tis concluded some of the Nails press the Veins, or touch him in the Quick.

To find where the Grievance lies, they knock the Nails round with a Hammer, till the Horse's shrinking upon hitting a particular Nail, discovers the Place.

Some Farriers give this as a Rule, that throwing Water on the Hoof, the Place where he is hurt will be dry sooner than any of the rest. The Places where the Horses are most usually prick'd, are the Heel in the Fore-foot, and the Toe in the Hind-foot. See HOOF.

RETRACTOR, *Ala Nasi*, in Anatomy, a pair of Muscles, call'd also *Elevator Labii superioris*. See ELEVATOR.

RETRAHENS *Auriculum*, in Anatomy, a pair of Muscles of the external Ear; consisting of a Parcel of fleshy Fibres, which in some Bodies are divided into three distinct Muscles, arising from the *Os Temporale*, and fix'd to the hind Part of the *Concha*. See AURICLE.

But these Muscles are so small in Men, that the Auricle is seldom moveable at all. See EAR.

RETRAXIT, in Law, is where the Plaintiff comes into Court in Person, alone, or with the Detendant; and declares he will proceed no further.

A *Retraxit* is peremptory, and a perpetual Bar; and may be pleaded as such to the Plaintiff in the same Action for ever.

RETREAT, in War, a retiring or moving back again of an Army, or Part thereof.

What they call a *Retreat* in the Armies is really a Flight; only a Flight made by Design, and with Conduct.

The Skill and Ability of the General, is known by his *Retreats*, more than his Engagements.—The *Retreat* of ten thousand *Greeks* under the Command of *Xenophon*, has been admired in all Antiquity.

To sound a *Retreat*, secure a *Retreat*, &c.

RETREAT, or RELAY, in Masonry, a little Recess or Diminution of the thickness of a Wall, Rampart, &c. in Proportion as 'tis rais'd. See WALL, &c.

The *Retreat* is properly the Diminution of a Wall, without Side; or the Contraction of its upper Courses more than the Foundation.—Where the Foundation is very large, they usually make two or three *Retreats*.—Parapets are always built with *Retreats*.

RETRENCHMENT, literally signifies something cut off a thing, and taken from it; in which Sense it coincides with Subtraction, Diminution, &c.—The Word is *French*, *Retranchement*, form'd of *re* and *trancher*, to cut.

RETRENCHMENT, in Architecture, Carpentry, &c. is used not only for what is cut off from a Piece when too large, in order to a better proportioning it, or some other Convenience; but also for the Projectures taken out of Streets, publick Ways, &c. to render them more even, and in a Line.

By a gradual *Retrenchment* of the ordinary Quantity of Food, a Man may bring himself to a great Degree of Abstinence. See ABSTINENCE, FASTING, FOOD, &c.

The Reformation of the Calendar in 1582, occasioned a *Retrenchment* of ten Days which had crept into the Account more than there should have been. See CALENDAR.

The Frugality so much boasted of among the ancient *Roman* St. *Everemond* observes, did not so much consist in a voluntary Abstinence or *Retrenchment* of things superfluous, as a coarse and sordid Way of employing or using them.

RETRENCHMENT, in War, the Fortification of a Camp; or any Kind of Work cast up to strengthen or defend a Post against the Enemy. See FORTIFICATION, DEFENCE, WORK.

Such are Ditches, with Parapets, Gabions, Fascines, &c. for a covering, &c. See DITCH, &c.

The Enemy came with Design to oblige them to raise the Siege, but could not force the *Retrenchments*.

RETRENCHMENT is particularly used for a simple *Retirade* made on a Horn-work or Bastion; when 'tis intended to Dispute the Ground Inch by Inch.

'Tis usually a re-entering Angle, whose Faces Flank each other; and fortified with Ditches, Parapets, Gabions, &c. See RETIRADE.

RETRIBUTION, a handsome Present, Gratuity, or Acknowledgment, given in lieu of a formal Salary or Hire, to Persons employ'd in Affairs that do not so immediately fall under Estimation, nor within the common Commerce of Money.

Those



Those who minister'd at the Altar antiently lived of *Retributions*, which they received for the Services they did the Church. But these *Retributions* were afterwards judg'd proper to be fix'd to precise Sums. See TITH.

**RETRIEVE**, **RETROUVER**, to recover, get again, or repair a thing lost or damaged. See **RECOVERY**, **REPARATION**, &c. To **RETRIEVE**, in Falconry, signifies to spring or find Partridges again, which have been once sprung before. See **HAWKING**.

**RETROACTIVE**, in Law.—New Laws and Statutes, we say, have no *retroactive* Effect; that is, they have no Force or Effect as to what is already pass'd; nor can be alledg'd as Rules for any thing done before their Promulgation.—Their Authority is wholly as to what is to come.

Indeed we have some Instances of Laws that have a *Retro-spect*, or *Retroaction*, i. e. were made with express Design to extend to things already pass'd.—These we usually call Laws *ex post-facto*. See **LAW**, &c.

The Word is compounded of the *Latin*, *retro*, backwards; and *ago*, I act.

**RETROCESSION**, the Act of going backwards; more usually express'd by *Retrogression* or *Retrogradation*. See **RETROGRADATION**, &c.

**RETROCESSION** of the Equinox. See **PRÆCESSION**.

**RETROCESSION** of Curves, &c. See **RETROGRADATION**, **CONTRARY FLEXURE**, &c.

**RETROGRADE**, **RETROGRADUS**, something that goes backwards, or in a Direction contrary to its natural one.

Such is the Motion of the Lobster, the Crab, &c.

The Word is form'd from the *Latin*, *retro*, backwards; and *gradior*, I go.

If the Eye and the Object move both the same way, but the Eye much faster than the Object; the Object will appear to be *Retrograde*, i. e. to go back, or to advance the contrary Way from what it really does. See **VISION of Motion**.

Hence, the Planets in some Parts of their Orbits appear to be *Retrograde*. See **PLANET** and **RETROGRADATION**.

**RETROGRADE Order**, in Matters of Numeration, is when in lieu of accounting 1, 2, 3, 4, we count 4, 3, 2, 1. See **PROGRESSION**, **SERIES**, **NUMBER**, &c.

**RETROGRADE Verses** are such as give the same Words, whether read backwards or forwards; call'd also *reciprocal Verses*, and *Recurrents*; such is,

*Signa te Signa temerè me tangis et Angis.*

**RETROGRADATION**, or **RETROGRESSION**, the Act or Effect of a thing moving backwards. See **RETROGRADE**.

**RETROGRADATION**, in Astronomy, is an apparent Motion of the Planets, wherein they seem to go backwards in the Ecliptic, and to move contrary to the Order or Succession of the Signs. See **PLANET**, **ECLIPTIC**, &c.

When a Planet moves in *consequentia*, i. e. towards the following Signs, or according to the Order of the Signs, as from Aries to Taurus, from Taurus to Gemini, &c. that is, from West to East, it is said to be *direct*. See **DIRECT**.

When it appears for some Days in the same Point of the Heavens, it is said to be *Stationary*. See **STATIONARY**.

And when it goes in *Antecedentia*, i. e. towards the antecedent Signs, or contrary to the Order of the Signs, viz. from East to West, it is said to be *Retrograde*. See **ANTECEDENTIA**, **SIGN**, &c.

The Sun and Moon always appear direct.—*Saturn*, *Jupiter*, *Mars*, *Venus*, and *Mercury*, sometimes direct, sometimes Stationary, and sometimes *Retrograde*. See **SATURN**, **JUPITER**, **VENUS**, &c.

The superior Planets are *Retrograde* about their Opposition with the Sun; the inferior ones about their Conjunction. See **OPPOSITION** and **CONJUNCTION**.

The Intervals of Time between two *Retrogradations* of the several Planets, are unequal.—In *Saturn* 'tis a Year and 13 Days; in *Jupiter* a Year and 43 Days; in *Mars* two Years 50 Days; in *Venus* one Year 220 Days; in *Mercury* 115 Days.

Again, *Saturn* continues *Retrograde* 140 Days, *Jupiter* 120, *Mars* 73, *Venus* 42, *Mercury* 22: Yet are not the several *Retrogradations* of the same Planet constantly equal.

These Changes of the Courses and Motions of the Planets are not real: but apparent, when view'd from the Centre of the System, i. e. from the Sun, they appear always uniform and regular.—The Inequalities arise from the Motion and Position of the Earth whence they are view'd, and are thus accounted for.

Suppose PQO (*Tab. Astronomy*, Fig. 58.) a Portion of the Zodiac ABCD the Earth's Orbit, and EMGHZ the Orbit of a superior Planet, e. gr. *Saturn*. And suppose the Earth in A, and *Saturn* in E; in which Case he will be seen in the Zodiac at the Point O.—If now *Saturn* remain'd without any Motion, when the Earth arrives at B, he would be seen in the Point of the Zodiac L, and would appear to have described the Arch OL, and to have moved according to the Order of the Signs from West to East. But because while the Earth is passing from A to B, *Saturn* likewise moves from E to M, where he is seen in Conjunction

on with the Sun, he will appear to have described the Arch OQ greater than that OL.

In this State, now, the Planet is direct, and its Motion, from West to East, or according to the Order of the Signs. And its Motion, now that it is in Conjunction with the Sun and most remote from us, is quicker than at any other time. See **DIRECTION**.

The Earth arriving at C, while *Saturn* describes the Arch MG, he will be observed in the Zodiac at R. But the Earth being advanced to K, and *Saturn* to H, so as the Line KH joining the Earth and *Saturn*, be for some time Parallel to it self, or nearly so; *Saturn* will be seen all that time in the same Point of the Zodiac at P, and with the same fix'd Stars, and is therefore *Stationary*. See **STATION**.

But the Earth being come to D, and *Saturn* arrived in opposition to the Sun in X, he will appear in the Zodiac in V, and will seem to have been *Retrograde*, or to have gone backwards through the Arch PV.—Thus the superior Planets, on Optical Considerations, are always *Retrograde*, when in Opposition to the Sun. See **SUN**, **OPPOSITION**, &c.

The Arch which the Planet describes while thus *Retrograde*, is call'd the *Arch of Retrogradation*. See **ARCH**.

The Arches of *Retrogradation* of the several Planets are not equal.—That of *Saturn* is greater than that of *Jupiter*; that of *Jupiter* than that of *Mars*, &c.

**RETROGRADATION of the Nodes**, is a Motion of the Line of the Nodes, whereby it continually shifts its Situation from East to West, contrary to the Order of the Signs; completing its *Retrograde* Circulation in the Compsals of about 19 Years: After which Time either of the Nodes having receded from any Point of the Ecliptic returns to the same again. See **NODE**.

**RETROGRADATION of the Sun**.—When the Sun is in the torrid Zone, and has his Declination, AN, (*Tab. Astronomy*, Fig. 9.) greater than the Latitude of the Place AZ, but either Northern or Southern as that is; the Sun will appear to go backwards, or to be *Retrograde* both before and after Noon. See **SUN** and **ZONE**.

For, draw the vertical Circle ZGN to be a Tangent to the Sun's Diurnal Circle in G, and another ZON, through the Sun in O.—'Tis evident all the intermediate vertical Circles cut the Sun's diurnal Circle twice: First, in the Arch GO, and the second time in the Arch GL.—Wherefore, as the Sun ascends thro' the Arch GO, it continually arrives at further and further Verticals. But as it continues its Ascent through the Arch GL, it returns to its former Verticals; and therefore is seen *Retrograde* for some time before Noon.

The same, it may be shewn after the same manner, it does for some time after Noon.

Hence, as the Shadow always tends the opposite Way to that of the Sun, the Shadow will be *Retrograde* twice every Day in all Places of the Torrid Zone, where the Sun's Declination exceeds the Latitude. See **SHADOW**.

**RETROGRADATION**, or **RETROGRESSION**, in the higher Geometry, is the same with what we otherwise call *contrary Flexion*. See **CONTRARY FLEXION**.

The *Retrogression* of Curves may be thus conceived.—Suppose a Curve Line AFK, (*Tab. Geometry*, Fig. 82.) to be partly Concave, partly Convex, in respect of the Right Line AB, or in respect of the determinate Point B; the Point F which separates the Concave Part of the Curve from the Convex, or which makes the end of one, and the beginning of the other, is call'd the *Point of contrary Flexion*, when the Curve is continued from F towards the same Side as before.—When the Curve is continued backwards towards A, then is F the Point of *Retrogression*. See **POINT** and **CURVE**.

**RETROGRESSION**, or **RETROCESSION**, the same with *Retrogradation*. See **RETROGRADATION**.

**RETROMINGENTS**, in natural History, a Class or Division of Animals, whose Characteristic is, that they stale or piss backwards; as Cows, &c. See **ANIMAL**.

The Word is compounded of the *Latin*, *retro*, backwards, and *mingo*, I make Water.

**RETROPANNAGIUM**, **RETROPANNAGE**, in our ancient Law-Books, *Afterpannage*; or what is left when the Beasts have done. See **PANNAGE**.

*Et debent habere Retropannagium a Festo Sancti Martini usque ad Festum Pur. Beate Mariae. Petitio in Parl. temp. Edw. III.*

**RETROSPECT**, a look or view backwards. See **RETROACTIVE**.

**RETURN**, in Law, hath two several Acceptations.

The one in the *Return of Writs* by Sheriffs and Bailiffs; which is only a Certificate made to the Court by the Sheriff, Bailiff, &c. of what is done with regard to the Execution of the Writ directed to them. See **Writ**.

Such also is the *Return of a Commission*, which is a Certificate, or Answer of what is done by the Commissioners, to whom such Commissions, Precepts, Mandates, or the like, are directed.

The other Application of the Word *return*, is in Case of a Replevin; for if a Man distrain Cattle for Rent, &c. and afterwards justify or avow his Act, so as it is found lawful, the Cattle before



fore delivered unto him that was distrain'd, upon Security given to prosecute the Action, shall now be returned to him that distrained them. See DISTRESS, REPLEVY, &c.

RETURNS are also certain Days in each Term, peculiarly set apart for the several Kinds of Proceedings, in any Cause to be determined. See TERM, &c.

They are also call'd *Days in Bank*. See DAY.  
*Hillary Term* has four such Returns.—viz. *Octabis Hillarii*, eight Days after *Hillary Day*; *Undena Hillarii*, fifteen Days; *Crastina Purificationis*, the Day after the Purification; and *Octabis Purificationis*, eight Days after, inclusive.

*Easter Term* has five Returns; viz. *Quindena Pasche*, fifteen Days after *Easter*; *Tres Pasche*, three Weeks after; *Mense Pasche*, the Day-Month after *Easter*; *Quinque Pasche*, the Day five Weeks from *Easter*; and *Crastino Ascensionis Domini*, the Day after *Ascension-Day*.

*Trinity Term* has four Returns; viz. *Crastino Trinitatis*, the Day after *Trinity*; *Octabis Trinitatis*, eight Days after, inclusive; *Quindena Trinitatis*, fifteen Days after; and *Tres Trinitatis*, three Weeks after.

*Michaelmas Term* has six Returns; viz. *Tres Michaelis*, three Weeks after *Michaelmas*; *Mense Michaelis*, the Day-Month after *Michaelmas*; *Crastino Annularum*, the Day after *All-Souls*; *Crastino Martini*, the Day after *Martinmas Day*; *Octabis Martini*, eight Days after, inclusive; and *Quindena Martini*, fifteen Days. See TERM.

RETURN, in Building. A Side or Part that falls away from the Fore-side of any straight Work, is call'd the *Return*.

RETURNS of a Trench, in Fortification, are the turnings and windings which run from the Lines of a Trench. See TRENCH.

RETURNO habendo, or RETURNUM Averiorum, a Writ which lies for him who has avow'd a Distress made of Cattle, and proved his Distress to be lawfully taken; for the Return of the Cattle distrain'd unto him, which before were replevied by the Party distrain'd, upon Surety given to pursue the Action. See DISTRESS, &c.

The same Writ is granted when the Plaintiff or Action is removed by *Recordare*, or *Acedas ad Curiam*, into the Court of Common-Pleas; and he whose Cattle were distrain'd, makes Default, and does not prosecute his Action. See

RETURNUM Irreplegiabile, a Writ Judicial, sent out of the Common-Pleas to the Sheriff, for the final Restitution or Return of Cattle to the Owner, unjustly distrain'd as Damage-feasant, and so found by the Jury before Justices of Assize in the County, or otherwise, through Default of Prosecution. See RETURN, DISTRESS, REPLEVY, &c.

REVE, or GREVE, in antient Customs, the Bailiff of a Franchise or Manor; thus call'd, especially in the Western Parts. See GREVE.

Hence *Shir-reve*, Sheriff, *Port-greve*, Church-reve, &c. See SHERIFF, PORTGREVE, &c.

REVE is also used in antient Customs for a Duty or Imposition on Merchandises imported or exported. See DUTY and CUSTOM.

M. du Cange derives the Word from the *Latin*, *rogare*, to ask; as being a Tribute antiently granted Princes at their Request, as a Free-Gift.

REVEILLE, a Beat of the Drum, intended to give Notice that it is Day-break; and that the Soldiers are to rise, and the Centries forbear challenging. See DRUM.

The Word is *French*, form'd of the Verb *reveiller*, to awake.

REVELATION, the Act of revealing, or making a thing publick which before was a secret, or unknown.

The Revelation of a Confession made by the Confessor, is adjudg'd in the *Romish Church*, to deserve the most exemplary Punishment. See CONFESSION.

The Word *Revelation* is used, by way of Eminence, for the Discoveries made by God to his Prophets, &c. and by them to the World. See PROPHECY.

The *Romanists* have two huge Volumes of the Revelations of St. Bridget. See LEGEND, VISION, &c.

The Word is form'd from the *Latin*, *revelo*, of *re* and *volum*, q. d. unvail.

REVELATION, in Religion, is the Discovery which God has made to the World by the Mouths of his Prophets; of certain Points of Faith and Duty, which they could not learn from natural Reason. See NATURE, REASON, FAITH, &c.

Religion is divided into natural Religion; and Revelation, or revealed Religion. See RELIGION.

The Christian Revelation is that made by Christ, and his Apostles, in the New Testament. See TESTAMENT.

The Jewish Revelation is that made by Moses and the Prophets, in the Old Testament. See BIBLE, PROPHET, &c.

A late Author observes, somewhat invidiously, that 'tis the common Method of all new Revelations, to be built on Precedent ones.—Thus, the Mission of Moses to the *Israelites*, supposes a former Revelation to *Abraham*, &c. The Mission of Christ supposes that of Moses; and the pretended Mission of *Mahomet*, supposes the Mission of Christ. The Mission of *Zoroaster* to the *Persians*, supposes the Religion of the *Magi*, &c.

The general Foundation of all Revelation is this, That God is pleas'd Man should know something relating to himself, his own Nature, Dispensation, &c. which the natural Faculties he was pleas'd to create him withal, could not attain to; and that he requires some Duty or Service at our Hands, more than what necessarily follows from the Relation we are under to him as our Creator, Preserver, &c.

Particular or occasional Revelations have their particular Genius's, Characteristics, and Designs.—That made by Moses and the Prophets, chiefly related to the Nation of the Jews, considered as the Descendants of *Abraham*: Its Design seems to have been to rescue that People from their Slavery; to settle them in a new Plantation; to give them a set of Laws; to new form their Manners; to support them under Difficulties and Dangers of their Enemies, from an Opinion of their being under the immediate Direction and Appointment of God; to keep them from intermixing again with their Neighbours, from an Opinion of their being a chosen People, and of a Messiah to be born among them; and to lay a Foundation of a Restoration, in case of their being oppress'd, from the Opinion of a Deliverer.—To some or other of these Ends do all the Old Testament Prophecies seem to tend.

The Christian Revelation is founded on a Part of the Jewish.—The Messiah promis'd in the one, is reveal'd in the other. All the rest of the Jewish Revelation, which related peculiarly to the Jewish People, is here set a-side; and only that Part of it which was to affect the World in general, we mean that relating to the coming of the Messiah, is here built upon. See MESSIAH.

Indeed it must be own'd the Jews ever look'd on this Part as peculiar to themselves, as any of the rest: The Messiah was promis'd to them; he was to be their Deliverer, their Restorer, &c.—But upon the taking Place of this new Revelation, a new Scene was opened—This Part of the old Revelation, it was shewn, was all Typical, or Allegorical; and the Prophecies relating hereto, not to be understood in their primary or literal Sense. The Messiah was not to be the Restorer of the Jewish Sovereignty and Liberties, which were now fallen into the Hands of the *Romans*, but to restore and re-establish the World, who had lost their original Righteousness, and were become Slaves of Sin; to preach Repentance and Remission, and at last to suffer Death, that all who believ'd in him, might not die, but have everlasting Life.

Such is the Tenor and Design of the Christian Revelation, which in the Event, was so far from being what it had been apprehended to be, by the People to whom it was first promis'd; that it proved the very Reverse; and instead of re-establishing and confirming the other Branches of their Revelation, superseded, and set them all aside.—The Pale was now broken down, and the being of the Seed of *Abraham*, ceas'd to be a Privilege; all the World being invited on the same Terms with the Jews.

The Consequence was, that the Jews denying this to be the Messiah that had been promis'd to them, as not able to see the Prophecies fulfilled in him, for want of the typical Meanings thereof, were generally excluded from the Privileges of that Mission which had been supposed wholly intended for them; And had their Ruin compleated from the very means whence they expected their Redemption. See TYPE, PROPHECY, &c.

REVELS, Entertainments of Dancing, Masking, Gaming, Acting of Comedies, Farces, &c. antiently very frequent in Inns of Courts, at certain Seasons, and in Noblemen's, &c. but now much disused.

The Officer who has the Direction or ordering hereof, was call'd the *Master of the Revels*.

The Word is form'd from the *French*, *reveiller*, to awake.

REVENUE, the yearly Rent or Profits arising to a Man from his Lands, Possessions, &c. See RENT.

The Revenue of this Manor consists in Tiths, Rents, &c. See MANOR, &c.

The Revenues of the English Clergy were first fix'd by King *Ethelwolf*, Anno 855; who granted them for ever, the Tith of all Goods, and the tenth Part of all the Lands of *England*, free from all Secular Service, Taxes, Impositions, &c. See TITH and CLERGY.

The certain Revenues of the King of *England* were antiently greater than those of any King in *Europe*; and 'till the time of the Civil Wars they enjoy'd in Domains and Fee-Farm Rents almost enough to Discharge all the ordinary Expences of the Crown, without any Tax or Imposition on the Subject.

Upon the Restauration, the Crown Revenues being found much alienated, and the Crown Charges increas'd; the Parliament settled a yearly Revenue of 1,200,000 *l.* upon the King; so much as the former Crown Revenues fell short of that Sum, to be rais'd on Goods exported and imported, upon Liquors, and Fire-Hearths. See DUTY, &c.

At the Death of King *Charles II.* the Revenue amounted to 1,800,200 *l.* per Ann.—In King *James II.* Time, it was rais'd to 2,000,000 *l.* which was computed to be one tenth of the Revenues of the whole Kingdom.

At the same time the Revenues of the King of *France* were computed at seven Millions Sterling; and those of the States of *Holland*,



*Holland*, at three Millions.—For more Particulars of this Kind, see *POLITICAL Arithmetic*.

**REVENUE**, in Hunting, a Mass of Flesh, formed chiefly of a Cluster of whitish Worms on the Heads of Deer, and occasioning them to cast their Horns, by gnawing the Roots thereof. See *HEAD, HORN, &c.*

The *Revenue* distill'd, is said to help Women in Travel.

**REVENUE** is also used for a new Tail of a Partridge, growing out after the loss of a former.—The *Revenue* is measured by Fingers. Thus we say, a Partridge of two, three, four Fingers *Revenue*.

The Word *Revenue* is French, form'd from *revenir*, to return.—Whence *Revenue* is sometimes used in antient Authors for a Return: As the *Revenue* of Easter. See *RETURN*.

**REVERBERATION**, in Physicks, the Act of a Body repelling or reflecting another, after its unpinging thereon. See *REFLECTION*.

In the Glass-Men's Furnaces, the Flame *reverberates*, or bends back again, to scorch the Matter on all Sides.

Echo's are occasioned by the *Reverberation* of Sounds from arch'd Obstacles. See *ECHO*.

The Word is form'd from the *Latin*, *re* and *verbero*, I beat again.

*Reverberation* and *Refilition* refer to the same Action; only the one to the Agent, the other to the Patient.—A polished Body *reverberates* the Rays all around: The *Refilition* of the Rays does not arise from their striking against the solid Parts of Bodies. See *RESILITION* and *REFLECTION*.

**REVERBERATION**, in Chymistry, a kind of Circulation of the Flame, by means of a *Reverberatory*; or the return of the Flame from the top of the Furnace, back to the Bottom. See *REVERBERATORY*.

*Reverberation* is of two Kinds.—The first with a close Fire; that is, in a *Reverberatory* Furnace, where the Flame has no Vent a-top; being cover'd with a Dome, or Capital, which repels its Action back on the Matter, or the Vessel that contains it, with increased Vehemence.

After this Manner are Refining, the Distillation of acid Spirits, &c. perform'd. See *DISTILLATION* and *REFINING*.

*Reverberation* with an open Fire, is that performed in a Furnace or *Reverberatory*, whose Registers are all open; chiefly used in Calcination. See *CALCINATION*, *AIR*, &c.

**REVERBERATORY**, or *REVERBERATING Furnace*, is a Chymical Furnace built close all around, and cover'd a-top with a Capital of Bricks or Tiles, so as not to give any Vent to the Heat or Flame, but to determine it to *Reverberate* or turn back from the Brick Work with new Force, upon the Matters placed at Bottom. See *REVERBERATION*.

When the Fire has no Vent or Passage a-top, 'tis a *whole Reverberatory*; when the middle of the Capital is open, and only the Sides close, so that there is only a half Circulation of the Flame, 'tis call'd a *half Reverberatory*.

The *reverberating* Furnace is chiefly used for the Fusion of Metals, and Minerals, and other Occasions where the most intense Heat is required, as in Assaying, &c. Whence it is also called the *Melting Furnace*, and *Assaying Furnace*. See *FURNACE*, *FIRE*, *FUSION*, *ASSAY*, &c.

**REVEREND**, a Title of Respect given to Ecclesiasticks. See *TITLE* and *QUALITY*.

The Religious Abroad are call'd *Reverend Fathers*; Abbesses, Prioreesses, &c. are call'd *Reverend Mothers*. See *ABBOT*, *RELIGIOUS*, &c.

With us, Bishops are *Right Reverend*, and Archbishops *Most Reverend*.—In France their Bishops, Archbishops, and Abbots, are all alike *Reverendissimo's*, *most Reverends*. See *BISHOP*, &c.

**REVERIE**, a Term purely French, yet now frequently used in English.

It signifies, literally, a Delirium, Raving, or Distraction. See *DELIRIUM*.

Thus we say, 'tis an ill Sign when the Patient falls into a *Reverie*.

Hence it comes, likewise, to be used for a ridiculous, extravagant Imagination, Action, or Proposition; a Chimera or Vision.—Thus we say, Authors obtrude abundance of their *Reveries* upon us for solid Truths.

But its most ordinary use among English Writers is for a deep, disorderly Musing, or Meditation; equivalent to what we popularly call a *Brown-study*.—Thus: A little Distraction I would allow; but for that continued Series of *Reveries* some People are guilty of, who are ever absent from the Place where you see them, and are never present any where, 'tis inexcusable.

**REVERSE**, in Law, &c.—To *Reverse*, *reverser*, signifies to undo, repeal, or make void. See *REPEAL*, *ANNUL*, &c.

The Word is formed of the *Latin*, *re*, again, and *versus*, turn'd.

**REVERSE**, of a Medal, Coin, &c. is the second, or back-side; in Opposition to the Head or principal Figure. See *COIN*, *MEDAL*, &c.

F. Chamillart, a Jesuit, has an express Dissertation on this Point, whether or no the *Reverses* of Medals have always a Regard to the Emperor's or Emperess's whose Heads are represented on the Front Side of the Medal? He says, that till of late the

Antiquaries have made no doubt of it; but that there are now several Authors of another Opinion.

**REVERSE**, in Fencing, a Back-stroke. See *GUARD*, *FENCING*, &c.

**REVERSED**, in Heraldry, a thing turned backwards, or upside-down.

**REVERSED Talon**, in Architecture. See *TALON*.

**REVERSING**, or *RENVERSING*, in Music, the inverting of the Order of the Parts; that is, the placing of the higher Part or Treble, in the room of the lower Part or Bass. See *PART*, *BASS*, *TREBLE*, &c.

*Reversing* is frequently practiced in figurative Counterpoint, where the Bass serves as Treble; and the Treble, at the same time, as Bass; and all this, in such manner, as that the Harmony, though very different, is yet as correct as before the *reversing*, when the Parts were in their natural Order.

To know how to dispose the Parts, so as the *reversing* mayn't do any Damage, is a secret, whereon M. Broffard has promis'd a Treatise express.

A *revers'd Figure*, or *Counterfugue*, call'd by the Italians, *per contrarii movimenti*, is when the Guida falls; and the other instead of imitating in falling, imitates in rising; or a Figure *per Arsis* and *Thesis*. See *ARSIN*.

**REVERSION**, in Law, is defined by Coke, a returning of Lands, &c. into the Possession of the Donor, or his Heirs; after the Expiration of the Term for which they were given or granted. See *DONATION*, &c.

The Word has a double Acceptation.—The first is, *Jus revertendi cum status Possessionis defecerit*, which is no more than an Interest in the Land, when the Occupation or Possession of it shall fall.

The second is, when the Possession and Estate, which was parted with for a time, ceaseth, and is determined in the Persons of the Alienees, Assignees, Grantees, or their Heirs; or effectually returns to the Donor, his Heirs or Assigns, whence it was derived.

This is the most proper Signification of the Word, which is derived from *Revertor*: *Et apte dici non potest Reversio Antequam revertatur in factu*. Littlet.

The Difference between a *Reversion* and a Remainder consists in this, that a Remainder is general, and may remain or belong to any Man but him that granteth or conveyeth the Land, &c. See *REMAINDER*.

Whereby a *Reversion* is to himself, from whom the Conveyance of the Land, &c. proceeded, and is commonly perpetual, as to his Heirs also.—And yet sometimes *Reversion* is confounded with Remainder.

For the Values of *Reversions*, or Estates in *Reversion*, the little Book of Tables for renewing and purchasing College, and Church Leases, printed at Cambridge in 1700, and recommended by Sir Isaac Newton, furnishes us with a very useful Table, which shews what one Pound due at the end of any Number of Years to come, not exceeding 40, is worth in ready Money, at 5, 6, 7, 8, 10, and 12 per Cent. per Ann.

Suppose, it required, what 1 l. due a Year hence, is worth in ready Money: To find this by the common Operations, the Method is this.—Let 100 l. with the Interest of a Year added to it, be the first Term in the Rule of Three; 100 l. the second, and 1 l. the third; (for as 100 l. with its Interest going on to the end of the Year, is to a bare 100 l. then due; So mult 1 l. with its growing Interest, be to the Decrease of 1 l. at the Years end) then, at 6 l. e. gr. and 10 l. per Cent. the Work will stand thus:

As, 106 . 100 : : 1 . . 94339, or 18 s. 10 d.  $\frac{1}{4}$ .

110 . 100 : : 1 . . 90909, or 18 s. 2 d.

Whence it appears, that 1 l. due a Year hence, at 6 l. per Cent. is worth 18 s. 10 d.  $\frac{1}{4}$ ; and at 10 per Cent. to 18 s. 2 d. So that 18 s. 10 d.  $\frac{1}{4}$  ready Money, is worth 20 s. to be paid a Year hence at 6 per Cent.; and 18 s. 2 d. ready Money, is worth 20 s. to be paid a Year hence at 10 per Cent. See *INTEREST*.

But this Table shortens the Work.—To find by it how to renew a Lease of 21 Years, that hath but one Year lapsed, at the Rate of 10 per Cent; look into the same, and under the Rate of Interest mentioned, and right against 21 Years, in the common Angle of meeting, you have 2 s. 8 d.  $\frac{1}{4}$ . which is the Fine to be paid to renew one Year lapsed in the said Lease; supposing the Rent to be 1 l. per Annum. For it is 21 Years ere the Lease is compleated, in which time the Fine of 2 s. 8 d.  $\frac{1}{4}$ . will amount to 20 s. and therefore by paying that Fine, the Lease may fairly be made up again.

Suppose again, an Estate in Fee-simple, whose real Value is 100 l. but mortgaged, or Leased out for 20 Years; what is the *Reversion* of it now worth at 6 l. per Cent. Interest?—By the Table you find, that 1 l. to be paid 20 Years hence, is worth but 6 s. 2 d.  $\frac{1}{4}$ . and multiplying that by 100, you'll find 100 times 6 s. 2 d.  $\frac{1}{4}$ . is 30 l. 00 s. 00 d. 100 times 2 d. or 200 d. makes 00 l. 16 s. 8 d. and 100 times  $\frac{1}{4}$ , or 30 makes 00 l. 6 s. 3 d. the Sum is 31 l. 2 s. 11 d. which is the present Value of 100 l. to be paid 20 Years hence.



A TABLE of *Reversions* shewing what 1 *l.* due any Number of Years hence, under 41, is worth in ready Money at 5, 6, 7, 8, 10, and 12 *l. per Cent.*

| Years. | 5 per Cent. | 6 per Cent. | 7 per Cent. | 8 per Cent. | 10 p. Cent. | 12 p. Cent. |
|--------|-------------|-------------|-------------|-------------|-------------|-------------|
|        | s. d. q.    | s. d. q.    | s. d. q.    | s. d. q.    | s. d. q.    | s. d. q.    |
| 1      | 19 0 2      | 18 10 1     | 18 8 0      | 18 6 0      | 18 2 0      | 17 10 1     |
| 2      | 18 1 2      | 17 9 1      | 17 5 2      | 17 1 3      | 16 6 1      | 15 11 1     |
| 3      | 17 3 1      | 16 9 2      | 16 3 3      | 15 10 1     | 15 0 3      | 14 3 0      |
| 4      | 16 5 1      | 15 10 0     | 15 3 0      | 14 8 1      | 13 8 0      | 12 8 2      |
| 5      | 15 8 0      | 14 11 1     | 14 3 1      | 13 7 1      | 12 5 0      | 11 4 0      |
| 6      | 14 11 0     | 14 1 0      | 13 4 0      | 12 7 0      | 11 3 2      | 10 1 3      |
| 7      | 14 2 2      | 13 3 2      | 12 5 1      | 11 8 0      | 10 3 0      | 9 0 3       |
| 8      | 13 6 1      | 12 6 2      | 11 7 2      | 10 9 2      | 9 4 0       | 8 1 0       |
| 9      | 12 10 2     | 11 10 0     | 10 10 2     | 10 0 0      | 8 5 3       | 7 2 2       |
| 10     | 12 3 1      | 11 2 0      | 10 2 0      | 9 3 0       | 7 8 2       | 6 5 0       |
| 11     | 11 8 0      | 10 6 1      | 9 6 0       | 8 6 3       | 7 0 0       | 5 9 0       |
| 12     | 11 1 2      | 9 11 1      | 8 10 2      | 7 11 1      | 6 4 2       | 5 1 2       |
| 13     | 10 7 1      | 9 4 2       | 8 3 2       | 7 4 0       | 5 9 2       | 4 7 0       |
| 14     | 10 1 0      | 8 10 0      | 7 9 0       | 6 9 2       | 5 3 0       | 4 1 0       |
| 15     | 9 7 2       | 8 4 0       | 7 3 0       | 6 3 2       | 4 9 1       | 3 7 3       |
| 16     | 9 2 0       | 7 10 2      | 6 9 1       | 5 10 0      | 4 4 1       | 3 3 0       |
| 17     | 8 1 2       | 7 5 0       | 6 4 0       | 5 4 3       | 3 11 1      | 2 11 0      |
| 18     | 8 4 0       | 7 0 0       | 5 11 0      | 5 0 0       | 3 7 0       | 2 7 0       |
| 19     | 7 11 0      | 6 7 0       | 5 6 1       | 4 7 1       | 3 3 0       | 2 4 1       |
| 20     | 7 6 1       | 6 2 3       | 5 2 0       | 4 3 2       | 2 11 2      | 2 1 0       |
| 21     | 7 2 0       | 5 10 2      | 4 10 0      | 3 11 3      | 2 8 2       | 1 10 0      |
| 22     | 6 10 0      | 5 6 2       | 4 6 0       | 3 8 0       | 2 5 2       | 1 8 0       |
| 23     | 6 6 0       | 5 3 0       | 4 2 2       | 3 4 3       | 2 2 3       | 1 5 2       |
| 24     | 6 2 1       | 4 11 1      | 3 11 1      | 3 1 3       | 2 0 1       | 1 3 3       |
| 25     | 5 10 3      | 4 8 0       | 3 8 1       | 2 11 0      | 1 10 0      | 1 2 0       |
| 26     | 5 7 1       | 4 4 3       | 3 5 1       | 2 8 1       | 1 8 0       | 1 0 2       |
| 27     | 5 4 1       | 4 1 3       | 3 2 2       | 2 6 0       | 1 6 1       | 11 0        |
| 28     | 5 1 0       | 3 10 3      | 3 0 0       | 2 3 3       | 1 4 2       | 10 0        |
| 29     | 4 10 1      | 3 8 1       | 2 9 2       | 2 1 3       | 1 3 0       | 9 0         |
| 30     | 4 7 2       | 3 6 1       | 2 7 2       | 1 11 3      | 1 1 3       | 8 0         |
| 31     | 4 5 1       | 3 3 1       | 2 5 1       | 1 10 0      | 1 1 0       | 7 0         |
| 32     | 4 2 1       | 3 0 2       | 2 3 2       | 1 8 1       | 11 1        | 6 1         |
| 33     | 4 0 0       | 2 10 1      | 2 1 2       | 1 6 3       | 10 1        | 5 2         |
| 34     | 3 9 2       | 2 8 3       | 2 0 0       | 1 5 1       | 9 1         | 5 1         |
| 35     | 3 7 2       | 2 6 2       | 1 10 2      | 1 4 0       | 8 2         | 4 2         |
| 36     | 3 5 1       | 2 5 1       | 1 9 0       | 1 3 0       | 7 3         | 4 0         |
| 37     | 3 3 1       | 2 3 2       | 1 7 2       | 1 2 0       | 7 0         | 3 1         |
| 38     | 3 1 2       | 2 2 0       | 1 6 2       | 1 1 0       | 6 1         | 3 0         |
| 39     | 2 11 3      | 2 0 0       | 1 5 0       | 1 0 0       | 5 3         | 3 0         |
| 40     | 2 10 0      | 1 11 0      | 1 4 0       | 0 11 0      | 5 1         | 2 2         |

**REVERSION of Series**, in Algebra, is a Method finding of a natural Number from its Logarithm given; or the Sine from its Ark; or the ordinate of an Ellipsis from an Area given to be cut off from any Point in the Axis. See **SERIES**. See also **LOGARITHM**, **SINE**, **ORDINATE**, &c.

**REVERT**, in Law; a thing is said to *revert* when it returns or falls back to its first Owner. See **REVERSION**.

All Honours, and Royal Fees, alienated, *revert* to the Crown; or are *revertible*.—Apanages, or Portions of younger Sons of Kings, are granted on Condition of *Reversion*. See **APANAGE**.

**REVESTIARY**, or **REVESTRY**. See **VESTRY**.

**REVIEW**, in War, the shew or Appearance of a Body of Soldiers ranged in form of Battle; and afterwards made to file off; to see if the Companies be compleat, or to receive their Pay, &c.

The General always *Reviews* his Troops before they go into Winter-Quarters, &c. See **QUARTER**.

**REVIEW**, in Chancery.—A *Bill of REVIEW* is, where the Cause has been heard, and the Decree sign'd and enroll'd; but some Error in Law appers in the Body of the Decree; or some new Matter discovered in Time after the Decree made. See **DECREET**.

This Bill is not exhibited but by Leave of the Court. See **BILL**, **CHANCERY**, &c.

**REVIVOR**, in Law.—A *Bill of REVIVOR* is where a Bill has been exhibited in Chancery against one who answers; but be-

fore the Cause is heard, or at least before the Decree is enrolled, one of the Parties dies.

In this Case, a *Bill of Revivor* must be brought, to the End the former Proceedings may stand *revived*; and the Cause be finally determined. See **BILL**.

**REVISE**, among Printers, a second Proof of a printed Sheet. See **PRINTING**.

**REVIVIFICATION**, or **RESUSCITATION**, in Chymistry, the Art of restoring a mix'd Body to its first State, after it had been alter'd and disguis'd by Dissolution, Calcination, or the like.

Thus Cinnabar and other Preparations of Mercury, are *revived*, or *revivified* into fluid Mercury.—*Olaus Borrichius* assures us, that having tormented Mercury with several Fires, for the Space of a whole Year; having reduced it into Water, Turbith, into Ashes, &c. it *revivified*, and resumed its first Form in the middle of the Flames, by the Attraction of Salt of Tartar. See **MERCURY**.

Gold, and other Metals, 'tis said, may be recovered or *revivified* into running Mercury, by the use of certain Salts, which penetrating the Substance of the Metals, absorb the fixing Sulphur or Cement by which the Mercury was before bound into a malleable Mass. See **METAL**, **GOLD**, &c.

**REVIVING**, in Law, a renewing of Rents and Actions, after they had been extinguished. See **RENT**, **EXTINGUISHMENT**, &c.

**REVOCATION**, in Law, the Act of *revoking*, calling back, or annulling a Power, Grant, &c. made before.



The *Revocation* of an Offer after it is accepted of, is invalid.—All preceding Wills or Testaments are *revoked* by the last.—A Prior Claustral is *revocable* at Pleasure.—The *Revocation* of the Edict of Nantz was fatal to the French Protestants. See EDICT.

REVOLT. See REBELLION.

REVOLUTION, in Politics, is a grand Turn or Change of Government.

There are no States in the World but have undergone frequent *Revolutions*.—The Abbot de Vertot has furnish'd us with two or three good Histories, of the *Revolutions* of Sweden, the *Revolutions* of Rome, &c.

The *Revolution*, is used by Way of Eminence, for the great Turn of Affairs in England in 1688; when King James II. abdicating, the Prince and Princess of Orange were declared King and Queen of England, &c. See ABDICATION.

The Word is form'd from the Latin, *re-volvere*, to roll backwards.

REVOLUTION, in Geometry. The Motion of any Figure quite round a fix'd Line, as an Axis, is called the *Revolution* of that Figure; and the Figure so moving is said to *Revolve*. See AXIS.

Thus a right angled Triangle revolving round one of its Legs, as an Axis, generates by that *Revolution*, a Cone. See CONE.

REVOLUTION, in Astronomy, is the Period of a Star, Planet, Comet, or other Phenomenon; or its Course from any Point of its Orbit, till it return to the same. See PLANET, PERIOD, &c.

The Planets have a twofold *Revolution*; the one about their own Axis, usually called their *Diurnal Rotation*, which constitutes what we call their *Day*. See DIURNAL and DAY.

The other about the Sun, called their *Annual Revolution*, or *Period*; constituting their *Year*. See ANNUAL and YEAR.

Saturn, according to Kepler, makes his *annual Revolution* in the Space of 29 Years, 174 Days, 4 Hours, 58' 25" 30". Jupiter in 11 Years, 317 Days, 14 Hours, 49' 31" 56". Mars 1 Year, 321 Days, 23 Hours, 31' 56" 49". Venus in 224 Days, 17 Hours, 41' 55" 14". Mercury in 87 Days, 23 Hours, 14' 24". See SATURN, JUPITER, MARS, &c.

REVULSION, in Medicine, the turning of a violent Flux of Humours, from one Part of the Body to another, either neighbouring or opposite, Part. See HUMOUR, DERIVATION, &c.

In very dangerous Wounds, where the loss of Blood is great, and the stopping it speedily enough, impracticable; 'tis usual to open a Vein in some remote Part, to cause a *Revulsion*; that is, to turn the Course of the Blood from the former Part. See PHLEBOTOMY.

*Revulsions* are also caused by Cupping, Friction, &c. See CUPPING and FRICTION.

The Term *Revulsion* is also used for a great Turn or Revulsion of Humours in the Body.—Sudden Diseases are occasioned by great *Revulsions* of Humours, which fall all at once on certain Parts.

RHABDOIDES, in Anatomy, a Name given the second true Suture of the Skull; call'd also the *Sagittal Suture*. See SUTURE.

The Word is form'd from the Greek, *ῥαβδος*, Rod, or Staff, and *ειδος*, form.

RHABDOLOGY, in Arithmetick, a Name sometimes given to the Method of performing the two most difficult and operose Rules, *viz.* Multiplication and Division, by the two easiest, *viz.* Addition and Subtraction; by means of two little Rods or Laminæ, whereon are inscribed the simple Numbers, and which are to be shifted according to certain Rules.

These Rods are what we popularly call *Neper Bones*, from their Inventor, a *Scotish* Baron, who likewise invented Logarithms.

For their Description and Use, see NEPERS-BONES.

RHABDOMANCY, an ancient Method of Divination, perform'd by means of Rods, or Staves; whence its Name, from the Greek *ῥαβδος*, Rod, and *μαντεία*, Divination. See DIVINATION.

St. Jerom makes mention of this Kind of Divination, in his Commentary on *Hoseah*, Chap. iv. 12. where the Prophet says in the Name of God, *My People ask Council at their Stocks; and their Staff declareth unto them: Which Passage that Father understands of the Grecian Rhabdromancy.*

The same he finds over again in *Ezekiel* xxi. 21, 22. where the Prophet says, *For the King of Babylon stood at the parting of the Way, at the Head of the two Ways, to use Divination; he made his Arrows bright: Or as St. Jerom renders it, he mix'd his Arrows, he consulted with Images, he look'd in the Liver.*

If it be the same Kind of Divination that is mentioned in the two Passages; *Rhabdromancy* must have been the same Superstition with *Belomancy*. See BELOMANCY.

In effect the two are ordinarily confounded.—The Seventy themselves Translate the *ῥαβδος* of *Ezekiel* by *ῥαβδος*, a Rod; though in strictness it signify Arrows.

This, however, is certain, the Instruments of Divination mentioned by *Hoseah*, are different from those of *Ezekiel*. In the former, 'tis *נֶחֱשׁ, or so, וְקֶלֶב, maklo*, his Wood, his Staff: In the

latter *קֶלֶב, kishin*, Arrows. Though 'tis possible they might use Rods or Arrows indifferently; the military Men Arrows, and the rest Rods.

It appears by the Laws of the *Frisones*, that the ancient Inhabitants of Germany practiced *Rhabdromancy*.—The *Scythians* were likewise acquainted with the use hereof; and *Herodotus* observes, lib. iv. That the Women among the *Alani* sought and gathered together fine straight Rods or Wands, and used them in the like Superstition.

RHAGADES, in Medicine, a Greek Term used for the Chaps or Clefts in the Lips. See LIPS.

RHAGADES, are also a sort of little chap'd Ulcers of the Oedematous Kind; form'd of a sharp, saline Humour, and occasioning a great Contraction, and streightening of the Part, which is by this means shrivell'd up like a wet Parchment when held to the Fire. See OEDEMATOUS.

They arise chiefly on the Fundament, the Neck of the Womb, the Preputium, and even the Mouth; in which last Case the Patient is not able to speak, chew, or the like.

They are sometimes moist, and of a cancerous Nature, eating deep, and difficult of Cure; but are more commonly of a less malignant tendency, being the Consequences of a Diarrhæa, Dysentery, or the like. See TUMOR, ULCER, &c.

RHAGOIDES, in Anatomy, the second Coat, or Tunic of the Eye; more usually call'd the *Uvea*. See UVEA.

It has its Name *Rhagoides* as resembling a Grape-stone. In this is the Hole call'd the *Pupil*. See PUPIL.

RHAPONTICUM, a medicinal Root, in form resembling Rhubarb; and nearly of the same Virtues.—'Tis frequently mix'd with Rhubarb by those who send that Drug into Europe: They are distinguish'd by this, that the Rhubarb is usually in roundish Pieces, the internal Streaks or Lines whereof run transverse: And *Rhaponticum* in longish Pieces, having its Streaks running length-wise.—Besides, that *Rhaponticum* chew'd in the Mouth, leaves a Viscidity behind it, which Rhubarb does not. See RHUBARB.

The scarcity of the *Rhaponticum* of the Levant, occasions the *Mountain Rhaponticum*, or *Monk's Rhubarb*, to be frequently substituted for it, which is a wild *Hypolapathum*.—They are distinguish'd by this, that the former is yellow without, and reddish within; but the latter blackish without and yellow within.

Dr. Quincy, however, confounds the two, when he says, the *Rhaponticum* grows plentifully in England; and that 'tis only used as an Alterative, and does not come up to a Cathartic.

'Tis certain, what now obtains in the Shops, under the Name of *Rhaponticum*, is no other than the *Mountain Rhapontic*, or *Monk's Rhubarb*; and is much inferior in Virtue to the *Rhaponticum Verum*.

The *Rhaponticum* was thus call'd, *q. d.* Root of Pontus; because chiefly produced in the Country of Pontus, in Asia.

RHAPSODI, RHAPSODISTS, in Antiquity, Persons who made a Business of singing Pieces of Homer's Poems.

Cuper informs us, that the *Rhapsodi* were cloath'd in red when they sung the Iliad; and in blue when they sung the Odyssey.

They perform'd on the Theatres; and sometimes for Prizes, in Contests of Poetry, Singing, &c.

After the two Antagonists had finish'd their Parts, the two Pieces, or Papers they were wrote in, were joined together again; whence the Name, *viz.* from *ῥάπτω, sio*, I join together; and *ὁδὸς*, Ode, Song.

But there must have been other *Rhapsodi* of more Antiquity than these; People who compos'd Heroic Poems, or Pieces in Praise of Heroes and Great Men, and sung their own Compositions from Town to Town for a Livelihood: Of which Profession was Homer himself.

Hence, some Criticks instead of the former Derivation, fetch *Rhapsodist* from *ῥαβδος ἄδην, to sing with a Laurel Rod in the Hand*, which it seems was the Badge of the Primitive *Rhapsodi*.

*Philochorus*, again, derives the Word from *ῥάπτω ὁδὸν, to procure Pieces of Poetry to be compos'd*, as if they were not the Authors of the Poems they sung. This Opinion, to which *Schæfer* inclines, reduces these *Rhapsodi* to the first Kind.—In effect, 'tis probable that they were all of the same Class, whatever Distinction some Authors may Imagine; and that their Business was to sing or rehearse Poems, either of their own, or other People's Composition, as might best serve their Purpose, the getting of a Penny. So that we don't apprehend it any Injury to them, to set them on the Foot of our Ballad-singers; many of whom, no doubt, Pen their own Ditties. After Homer's Time, 'tis no wonder they confin'd themselves altogether to his Pieces, for which the People had the utmost Veneration: Nor is it surprising they should erect Stages, &c. and Dispute the Point of Recitation in Fairs and Markets.

RHAPSODOMANCY, an ancient Kind of Divination perform'd by pitching on a Passage of a Poet at hazard, and reckoning on it as a Prediction of what was to befall. See DIVINATION and CHANCE.

There were various Methods of practicing *Rhapsodomancy*.—Sometimes they wrote several Verses or Sentences of a Poet, on so many Pieces of Wood, Paper, or the like; shook them together in an Urn, and drew out one, which was accounted the Lot. Sometimes



Sometimes they cast Dice on a Table, whereon Verses were wrote; and that whereon the Dye lodg'd, contain'd the Prediction.

A third Manner was by opening a Book, and pitching on some Verse, at first Sight. This Method they particularly call'd the *Sortes Prænestinae*; and, afterwards, according to the Poet the *Sortes Homericae*, *Sortes Virgilianæ*, &c. See SORTES.

RHAPSODY, in Antiquity, a Discourse in Verse, sung or rehearsed by a *Rhapsodist*. See RHAPSODY.

Others will have *Rhapsody* properly to signify a Collection of Verses, especially those of *Homer*; which having been a long time dispersed in Pieces and Fragments, were at length by *Pisistratus's* Order, digested into Books, call'd *Rhapsodies*: From the Greek *ῥάπτω*, *ῥαπτο*, I sew; and *ὁδὸς*, Verse, Song.

Hence, among the Moderns, *Rhapsody* is used for an Assemblage of Passages, Thoughts, and Authorities, raked together from divers Authors, to compose some new Piece.—*Lipsius's* Politicks make such a *Rhapsody*, wherein there is nothing of the Author's own, but Conjunctions and Particles.

RHETORICIANS, a Sect of Hereticks in *Egypt*, denominated from their Leader *Rhetorius*.

The distinguishing Doctrine of this Heresiarch, as represented by *Philastrius*, was, that he approved of all the Heresies before him; and taught that they were all in the right. What *Philastrius* mentions of him appears so absurd and ridiculous that St. *Augustin*, *Heres. 7.* could not persuade himself it was true.

RHETORIC, RHETORICA, the Art of speaking copiously on any Subject, with all the Advantages of Beauty and Force. See SPEAKING.

My Lord Bacon defines *Rhetoric*, very Philosophically, the Art of applying and addressing the Dictates of Reason to the Fancy, and of recommending them there, so as to affect the Will and Delires.—The End of *Rhetoric*, the same Author observes, is to fill the Imagination with Ideas and Images which may assist Nature, without oppressing it.

*Cicero* defines *Rhetoric* the Faculty of discovering what every Subject affords of use for Persuasion.—Hence, as every Author must invent Arguments to make his Subject prevail; dispose those Arguments thus found out in their proper Places; and give them the Embellishments of Language proper to the Subject; and, if his Discourse be to be delivered in Publick, utter them with that Decency and Force which may strike the Reader: *Rhetoric* becomes divided into four Parts, *Invention*, *Disposition*, *Elocution*, and *Pronunciation*; each whereof see under its proper Head, INVENTION, DISPOSITION, ELOCUTION, and PRONUNTIATION.

The Word is form'd from the Greek *ῥῆω*, *dico*, I speak; whence *ῥήτορ*, Speaker, Orator, and *ῥητορικὴ*.

*Rhetoric* and *Oratory* differ from each other as the Theory from the Practice; the *Rhetorician* being he who prescribes the Rules of Eloquence; and the Orator he who uses them to Advantage; and speaks Elegantly, &c.—Ordinarily, however, the two are used indifferently for each other. See ORATORY.

RHEUM, a thin serous Humour, occasionally oozing out of the Glands about the Mouth and Throat. See HUMOUR.

A Fluxion of *Rheum*, usually happening after taking Cold, occasions Excoriations and Inflammations of the Fauces, Lungs, &c. See FLUXION and DEFLUXION.

RHEUM is also used for a *Catarrh*, or a Defluxion of such Humours on the Trachea, and the neighbouring Parts; occasioning a Coughing, Spitting, Hoarseness, Running at the Nose. See CATARRH, COUGH, HOARSENESS, &c.

The *Rheum* is not caus'd by a Pituira falling from the Brain on these Parts, as the Antients imagined, there being no Passage from the Brain thither; but from a thin, sharp, serous Humour, oozing out of the Extremities of the Glands of these Parts.

The most ordinary Occasion of *Rheums*, is external Cold; especially the being exposed to it when the Body is much heated.—And hence the Disorder it self is popularly call'd a Cold. See COLD.

*Rheums* falling on the Breast, Lungs, &c. are dangerous; others, not very violent, serve to clear the Head, &c. The usual Remedies are Astringents, Agglutinants, and Absorbents. See ASTRINGENT, &c.

The Word is form'd from the Greek, *ῥῆω*, *fluo*, I flow.

RHEUMATISM, in Medicine, a painful Disorder felt in various Parts of the external Body, accompanied with Heaviness, Difficulty of Motion, and frequently a Fever.

Or, a *Rheumatism* is a Pain usually wandering, but sometimes fixed in the muscular and membranous Parts of the Body; happening chiefly in Autumn.

The proper Seat of the *Rheumatism* is supposed to be in the Membrana Communis of the Muscles; which it renders rigid and unfit for Motion without great Pain. See MEMBRANE.

This Disease is either universal or particular.—*Universal Rheumatism* is that which attacks all the Parts of the Body, even the internal ones.

*Particular Rheumatism* is that which is confined to particular Parts: In which Case the Pains are usually eritic, passing from one Side to another; but sometimes fix'd, call'd also a windy and scorbutic *Rheumatism*.

The *Rheumatism* bears a great Analogy to the Gout; whence some call it the *universal Gout*.—The Difference between them consists in this, that the *Rheumatism* attacks not only the Joints, as the Gout does, but also the Muscles and Membranes between the Joints. See GOUT.

A Fit of the *Rheumatism* is frequently preceded by a Fever of two or three Days; and sometimes by a Shivering.—The Attack happens in various Parts of the Body, as the Hands, Arms, Thighs, Legs, Feet, &c. a Redness, Swelling, and Lameness often succeeding.

The Pain sometimes fixing on the Loins, and reaching as far as the *Os Sacrum*; the Disorder is call'd *Lumbago*; and bears a near resemblance to the *Nephritis*; being only distinguishable therefrom by this, that the latter is attended with a Vomiting, which the former is not.

The *Rheumatism* is supposed to arise from a sharp serous Humour thrown on the sensible Parts, and occasioning a Pain by its Vefication.—Dr. *Quincy* says, it proceeds from the same Cause, as that whereby the mucilaginous Glands become stiff and gritty in the Gout. See GOUT.

Dr. *Musgrave* takes it to be occasioned by a sharp alkaline Salt, rather than an acid one; from this Consideration, that the Urine of *Rheumatic* People does not afford above a thirtieth Part of the Alkaline Salt found in that of healthful People.

Hence, he conjectures, that the Salt is retain'd in the Blood, implicated and embarrass'd in the Pituira; by which means it forms a Viscidity which occasions all the Pains and Tumours of the *Rheumatism*.

The expoling of the Body too suddenly to the cold Air, after having heated it to a great Degree; is the most usual remote Cause.—The Cure is by Evacuation, chiefly, according to *Sydenham*, by repeated Phlebotomy, with a plentiful Use of Volatiles and Diluters.

*Schmitzius* recommends Sudorificks; and *Musgrave*, Catharticks, and Emeticks.

It usually proves a tedious, lasting Disease; holding for several Months, sometimes Years; not continually but by Paroxysms.

In aged Persons, and those of weak Constitutions, and decay'd Viscera, it sometimes seizes the Head.

RHEXIS, or RHEGMA, among Occulists, a Rupture of the Cornea of the Eye. See CORNEA.

The Word is form'd from the Greek *ῥήγνις*, rupture, of *ῥήγνυμαι*, *frango*, I break.

RHIME, RIME, or RHYME, in Poetry. See RHYME.

RHINE-Land-Rod, in Fortification, &c. a Measure of ten Foot, call'd also *Decempeda*, &c. See MEASURE, FOOT, and DECEMPEDA.

RHINE-Grave, in Germany, a Count Palatine of the *Rhine*. See GRAVE and PALATINE.

RHODIUM Lignum, Rhodian-Wood. See ASPALATHUM.

RHODON, in Pharmacy, from *ῥόδον*, *Rosa*; a Name given to some Compositions wherein the Rose is the chief Ingredient; as *Diarrhodon*. See DIARRHODON, &c.

Hence also *Rhodosccharum*, q. d. *Sugar of Roses*, &c. See ROSE.

RHOMBOIDES, in Geometry, a quadrilateral Figure, whose Sides and Angles are unequal; but the opposite ones equal. See FIGURE.

Or, *Rhomboides* is a quadrilateral Figure, whose opposite Sides and Angles are equal; but is neither equilateral nor equiangular. Such is the Figure NOPQ, (*Tab. Geometry, Fig. 24.*)

For the Method of finding the Area of a *Rhomboides*, see RHOMBUS.

RHOMBOIDES, in Anatomy, a Muscle, thus called from its Figure. See MUSCLE.

It lies under the *Cucullaris*, and arises from the two inferior Spines of the Neck, and four superior of the Back; and is inserted fleshy into the whole Brain of the Scapula, which it draws backwards, and a little upwards.

RHOMBUS, in Geometry, an obliquangular Parallelogram; or a quadrilateral Figure, whose Sides are equal and parallel; but the Angles unequal, two of the opposite ones being obtuse, the other two acute. See FIGURE.

Such is the Figure ABCD, *Tab. Geometry, Fig. 83.*

To find the Area of a *Rhombus*, or *Rhomboides*.—Upon CD, which is here assumed as a Base, let fall a perpendicular AE; which will be the Altitude of the Parallelogram: Multiply the Base by the Altitude, the Product is the Area.

Thus, if CD be = 456, and ADE = 234; the Area will be found 106704.

For it is demonstrated that an oblique angular Parallelogram is equal to a Rectangle upon the same Base CD, and of the same Altitude CE. (See PARALLELOGRAM.) But the Area of a Rectangle is equal to the Factum of the Base into the Altitude. Therefore the Area of an obliquangular Triangle is equal to the same. See RECTANGLE.

The Word is form'd of the Greek *ῥόμβος*, of *ῥομᾶν*, to encompass.

RHOMBUS, among Surgeons, is a sort of Bandage of a *Rhomboidal* Figure. See BANDAGE.

RHOPALIC Verses, among the Antients, a kind of Verses which



which began with Monosyllables, and were continued in Words growing gradually longer and longer to the last, which was the longest of all. See VERSE.

They had their Name from the Greek *ροπαλόν*, a Club, which, like them begins with a slender tip, and grows bigger and bigger to the Head.—Such is that Verse of Homer,

Ω μάκαρ' Ἀτρεΐδῃ μοι γέννηται, δολιχόδακτυλον.

And this Latin one,

*Spes Deus æternæ est stationis Conciliator.*

**RHOPOGRAPHI**, in Antiquity, a Name given to certain Painters, who confined themselves to low Subjects; such as Animals, Plants, Landscips, &c.

The Title was also given to such as cut Figures of Men, &c. in Box, Phileria, Yew, &c. in Gardens.

The Word is form'd from the Greek *ροπος*, Toys, or odd Ware, and *γραφω*, I write, I paint.

**RHUBARB**, a medicinal Root, large, compact, and heavy; yellow without, of a Nutmeg Colour within; an astringent, bitterish Taste; and an agreeable, aromatic Smell: Of great use in Medicine, as a Purgative. See ROOT and PURGATIVE.

Considering the mighty Use of this Drug, 'tis surprizing we should know so little of the Place where the Plant grows that produces it.—Some say it comes from the Kingdom of *Boutan*, in the Extremities of *India*; others, that 'tis found in the Provinces of *Xenfi* and *Suchen* in *China*. Others will have it only grow in *Persia*; and others on the Confines of *Muscovy*; deriving its Name from *Rba*, the River among us call'd *Volga*, and *Barbarum*, q. d. Root found by the Barbarians on the River *Rba*.

*Rhubarb*, in Latin, *Rhabarbarum Officinarium*, was not known of the Antients; and their *Rhaponticum*, which indeed resembles it, is not the real *Rhubarb*. See RHAPONTICUM.

Good *Rhubarb* steep'd in Water gives it a Saffron Colour; and when broke, looks bright, with somewhat of a Vermillion Cast.—Some Druggists have the Art of renewing their old Roots, by giving them a yellow hue; but the Cheat is easily known by handling them; the Powder wherewith they colour them sticking to the Fingers.

*Rhubarb* is esteemed an excellent Cathartic; proper for a Diarrhæa, to fortify the Stomach, and to create an Appetite.

M. *Boulduc* informs us, in the Memoirs of the French Academy, that he drew Extracts from *Rhubarb* both with Water and Spirit of Wine; but the purgative Virtue, he says, was much more visible in the former than the latter; which shews that it consists more in a Salt than an Oil.—He observes, however, that *Rhubarb* taken in Substance, has a still better effect; and adds, that of all the Operations he could make with it, none gave any Credit to the common Opinion, which ascribes an astringent Quality to it.

*Monks RHUBARB*. See RHAPONTICUM.

*White RHUBARB*. See MECHOACAN.

**RHUMB**, or **RUMB**, or **RUM**, **RHOMBUS**, in Navigation, a vertical Circle, of any given Place; or the Intersection of a Part of such a Circle with the Horizon. See VERTICAL.

*Rhumbs* therefore coincide with *Points* of the World, or of the Horizon. See POINT and HORIZON.

And hence the Mariners distinguish the *Rhumbs* by the same Names as the *Points*, and *Winds*. See WIND.

They usually reckon 32 *Rhumbs*; which are represented by the 32 Lines in the Rose, or Card of the Compass. See COMPASS.

*Aubin* defines a *Rhumb* by a Line on the terrestrial Globe, Sea-Compass, or Sea-Chart, representing one of the 32 Winds which serve to conduct a Vessel.—So that the *Rhumb* a Vessel pursues is conceiv'd as its *Route* or *Course*. See COURSE.

*Rhumbs* are divided, and subdivided like *Points*.—Thus, the whole *Rhumb* answers to the Cardinal Point.—The half *Rhumb*, to a collateral Point, or makes an Angle of 45° Degrees with the former.—The Quarter *Rhumb* makes an Angle of 22° 30' therewith.—And the half-quarter *Rhumb* makes an Angle of 11° 15'. See CARDINAL, COLLATERAL, QUARTER, &c.

A Table of the *Rhumbs*, or *Points*, and their Distances from the Meridian, see under the Article WIND.

**RHUMB-LINE**, or **LOXODROMIA**, in Navigation, is the Line which a Ship keeping in the same collateral Point or *Rhumb*, describes, throughout its whole Course. See LOXODROMIA.

The great Property of the *Rhumb Line*, or *Loxodromia*, and that from which some Authors define it, is, that it cuts all the Meridians under the same Angle. See MERIDIAN.

This Angle is call'd the *Angle of the Rhumb*, or *Loxodromic Angle*. See ANGLE.

The Angle which the *Rhumb Line* makes with any Parallel to the Equator is call'd the *Complement of the Rhumb*. See COMPLEMENT.

#### Nature and Origin of the RHUMB-LINES.

An Idea of the Origin and Properties of the *Rhumb-Line*, the great Foundation of Navigation, may be conceived thus.—A

Vessel beginning its Course, the Wind wherewith it is driven makes a certain Angle with the Meridian of the Place; and as 'tis supposed the Vessel runs exactly in the Direction of the Wind, it makes the same Angle with the Meridian which the Wind makes.

Supposing, then, the Wind to continue the same, as each Point or Instant of the Progress, may be esteem'd the Beginning; the Vessel always makes the same Angle with the Meridian of the Place where it is each Moment, or in each Point of its Course, which the Wind makes.

Now, a Wind, e. gr. that is North-East, and which of Course makes an Angle of 45°, with the Meridian, is equally North-East wherever it blows; and makes the same Angle of 45° with all the Meridians it meets.—A Vessel therefore driven by the same Wind, always makes the same Angle with all the Meridians it meets withal on the Surface of the Earth.

If the Vessel sail North and South, it makes an Angle infinitely acute with the Meridian, i. e. 'tis parallel to it, or rather fails in it.—If it run East and West, it cuts all the Meridians at right Angles.

In the first Case it describes a great Circle; in the second, either a great Circle, viz. the Equator, or a Parallel to it.—If its Course be between the two, it does not then describe a Circle; since a Circle drawn in such a manner would cut all the Meridians at unequal Angles, which the Vessel cannot do.

It describes, therefore, another Curve, the essential Property whereof is, that it cuts all the Meridians under the same Angle.—This Curve is what we call the *Loxodromic Curve*, *Rhumb-Line*, or *Loxodromy*. See CURVE.

'Tis a kind of Spiral, which, like the Logarithmic Spiral, makes an Infinity of Circumvolutions without ever arriving at a certain Point to which it still tends, and towards which it approaches every step. See SPIRAL.

This asymptotic Point of the *Rhumb-Line* is the Pole; to which were it possible for it to arrive, it would find all the Meridians conjoin'd, and be lost in them. See POLE.

The Course of a Vessel, then, except in the two first Cases, is always a *Rhumb-Line*; which Line is the Hypotenuse of a Rectangle-Triangle, whose two other Sides are the Ship's Way or Distance run in Longitude and Latitude. Now the Latitude is usually had by Observation, (See LATITUDE); and the Angle of the *Rhumb*, with one or other of the two Sides, by the Compass. See COMPASS.

All therefore that is required by Calculation in Sailing, is the Value of the length of the *Rhumb-Line*, or Ship's Course. See COURSE.

But as such Curve Line would prove very perplexing in the Calculation; it was necessary to have the Ship's Way in a right Line; which right Line however must have the essential Property of the Curve Line, viz. to cut all the Meridians at right Angles.—The Method of effecting which see under the Article CHART and MERCATOR.

If PA, PF, PG, &c. (Tab. Navigation, Fig. 19.) be supposed Meridians, AI the Equator, and AE another great Circle of the Sphere: AO will represent a *Rhumb-Line*, the Angles whereof with the several Meridians, being less than those of the great Circle; it follows, that the *Rhumb* is not a great Circle of the Sphere.—If a Ship therefore be at first directed towards E, and constantly persist in the same *Rhumb*, it will never arrive at the Place E, but at the Place O which is further from the Equator.

Hence, as on the Surface of a Sphere, the shortest Way between A and O is an Arch of a great Circle between A and O; the *Rhumb-Line* is not the shortest Way, or least Distance from one Place to another. See CIRCLE, SPHERE, DISTANCE, &c.

#### Application of RHUMB-LINES in Navigation.

1°. If the Meridians PA, PC, PD, &c. be not very far apart, the *Rhumb-Line* AHG is divided by the equidistant Parallels BI, KH, EG, &c. into equal Parts.

Hence, 1°. the Parts of the *Rhumb* AI, and AG, are as the Latitudes AL and AN of the Places I and G.—2°. Since the Arches AB, IK, HF, are equal in Magnitude, and therefore unequal in Number of Degrees; the Sum of the Arches, call'd the *Latitudo Mecodynamicum*, or *Miles of Longitude*, is not equal to the Difference of Longitude AB of the Places A and G. See MECODYNAMICUM.

2°. The Length of the *Rhumb-Line* AG is to the Change or Difference of Latitude GD, in the same Ratio, as the whole Side to the Co-sine of the Angle of the *Rhumb*.

Hence, 1°. the *Rhumb* sail'd on being given, together with the Difference or Change of Latitude, turn'd into Miles; the length of the *Rhumb-Line*, or the Distance from the Place A to the Place G upon the same *Rhumb*, is had by the Rule of Three.—2°. The *Rhumb* being given, together with the Quantity of the Ship's Way on the same *Rhumb*, i. e. the length of the *Rhumb* AG; the Difference of Latitude DG, is had by the Rule of Three, in Miles to be converted into Degrees of a great Circle.—3°. The Difference of Latitude DG being given in Miles; as also the Length of the *Rhumb-Line* AG; the Angle of the *Rhumb*, and



consequently the *Rhumb* fail'd on is had by the Rule of Three.—4°. Since the Co-sine is to the whole Sine as the whole Sine to the Secant; the Difference of Latitude GD, is to the Length of the *Rhumb-Line* AG, as the whole Sine to the Secant of the Angle of the *Rhumb*.

3°. The Length of the *Rhumb-Line*, or of the Ship's Way in the same *Rhumb* AG, is to the *Latus Mecodynamicum*, or *Mecodynamic Side* AB+IK+HF, as the whole Sine to the Sine of the *Loxodromic Angle* GAP.

Hence, 1°. The *Rhumb*, or Angle of the *Rhumb*, being given, as also the Ship's Way in the same *Rhumb-Line* AG; the *Mecodynamic Side* is had by the Rule of Three, in Miles; i. e. in the same Measure wherein the Length of the *Rhumb* is given.—2°. In like manner, the *Mecodynamic Side* AB+IK+HF being given; as also the *Rhumb-Line*, or Ship's Way AG; the *Rhumb* fail'd in is found by the Rule of Three.

4°. The Change of Latitude GD, is to the *Mecodynamic Side* AB+IK+HF; as the whole Sine, to the Tangent of the *Loxodromic Angle* PAG or AIB.

Hence, the *Rhumb*, or *Loxodromic Angle* PAG, and the change of Latitude GD, being given; the *Mecodynamic Side* is found by the Rule of Three.

5°. The *Mecodynamic Side* AB+IK+HF is a mean Proportional between the Aggregate of the *Rhumb* AG, and the Change of Latitude GD and their Difference.

Hence, the Change of Latitude GD, and the *Rhumb-Line* AG, being given in Miles; the *Mecodynamic Side* is found in the same Measure.

6°. The *Mecodynamic Side* AB+IK+HF being given; to find the Longitude AD.

Multiply the Change or Difference of Latitude GD by six, which reduces it into Parts, of ten Minutes each: Divide the Product by the *Mecodynamic Side*; the Quotient gives the Miles of Longitude answering to the Difference of Latitude in ten Minutes. Reduce these Miles of Longitude in each Parallel into Differences of Longitude, from a *Loxodromic Table*. The Sum of these is the Longitude required. See LONGITUDE.

7°. If a Ship sail on a North or South *Rhumb*, it describes a Meridian; if on an East or West *Rhumb*, it describes either the Equinoctial, or a Parallel thereto. See SAILING.

8°. To find the *Rhumb* between two Places, by Calculation, or Geometrically. We have two Canons, or Proportions: The first, —As the Radius, is to the Co-sine of the middle Latitude; so is the Difference of Longitude to the whole Departure from the Meridian, in the Course between the two Places proposed.

The second,—As the Radius is to the half Sum of the Co-sines of both Latitudes; or (rather for Geometrical Schemes) as the Diameter, is to the Sum of the Co-sines of both Latitudes; so is the Difference of Longitude, to the Departure from the Meridian.

For an Example of the former Proportion.—Let the *Rhumb* be required between *Cape Finisler*, Latitude  $43^{\circ}$ , Longitude  $7^{\circ} 20'$ ; and *St. Nicholas Isle*, Latitude  $38^{\circ}$ , Longitude  $352^{\circ}$ . The middle Latitude is  $40^{\circ} 30'$ , the Complement  $49^{\circ}$  Degrees  $30'$ ; and the Difference of Longitude  $15^{\circ} 20'$ . Out of these lesser equal Parts, prick down  $15^{\circ}$  from C to L, (Fig. 20.) and describe the Arch BL with  $60^{\circ}$  of the Chords, and make it equal to  $49^{\circ} 30'$ , and draw CD continued farther to A.—From L take the nearest Distance to AC which is equal to LM, and make it one Leg of a Right-angled Triangle; make the other Leg the Difference of Latitude  $5^{\circ}$ , which prick from the equal Parts from L to F.—Then, the extent MF measured on the said Parts, shews the Distance to be  $13^{\circ} 24'$ ; which, allowing 20 Leagues to a Degree, is almost 268 Leagues.—Then, with the Radius CB setting one Foot at M, cross the *Rhumb* Triangle at GH; which extent measured on the greater Chord is almost  $22^{\circ}$ , the Complement whereof is  $68^{\circ}$ ; and so much is the *Rhumb* from the Meridian between the two Places, amounting to 6 Points, and upwards of 80 Minutes.

For an Instance of the latter Proportion.—Let it be required to find the *Rhumb* and Distance between the *Lizard* and *Bermudas*. The Latitude of the *Lizard* being  $56^{\circ}$ , and that of *Bermudas*  $32^{\circ} 20'$ , or  $32^{\circ} 41$  Centesims, and their Difference of Longitude,  $55^{\circ}$  Degrees; draw the Lines AC and CD (Fig. 21.) at Right Angles, and with  $60^{\circ}$  of the lesser Chords describe the Quadrant HI, and prick the Radius from I to D; so is CD the Diameter; then count both Latitudes from H to F and G, the nearest Distance from F to CI, is the Co-sine of *Bermudas* Latitude, which prick from C to E: Again, the nearest Distance from G to CI, is the Co-sine of the *Lizard's* Latitude, which place from C to S, so is CS the Sum of both Co-sines; draw DS, and prick down 55 Degrees, the Difference of Longitude from C to V, out of the greatest equal Parts, and draw VB Parallel to DS, so is CB the Departure from the Meridian in the Course between both Places.—Making that, therefore, one Leg of a Right-angled Triangle, prick down  $17^{\circ} 59$  Centesims, the Difference of Latitude between those Places, out of the same equal Parts from C to L, and draw BL.—This represents the Course and Distance between the *Lizard* and *Bermudas*; and the extent LB measured on the same equal Parts, shews the Distance to be  $44^{\circ} 31$  Centesims, which allowing 20 Leagues to a Degree, is 886 Leagues.

Then, to find the Course.—With  $60^{\circ}$  of the Chords, setting one Foot in L, with the other make Marks at Y and Z; then the Extent ZY, measured on the Chords, shews the *Rhumb* to be  $66^{\circ} 37'$  Minutes from the Meridian. This Proportion in the present Example, holds very just, according to *Mercator's Chart*; whereas the former Proportion, by the middle Latitude, would have given the *Rhumb*  $67^{\circ} 2'$ , from the Meridian, and the Distance 902 Leagues.

Again, making CA equal to CV, a Line joining LA would be the Course and Distance according to the same Longitudes and Latitudes laid down on the Plain Chart; whereby the Course should be 72 Degrees 17 Minutes from the Meridian, and the Distance 1155 Leagues. See SAILING, CHART, &c.

RHYAS, in Medicine, a Diminution or Consumption of the *Caruncula Lachrymalis*, situate in the great Canthus or Angle of the Eye. See CARUNCULA.

The *Rhyas* is used in opposition to the *Encanthis*, which is an excessive Augmentation of the same Caruncle. See ENCANTHIS.

The Cause of the *Rhyas* is a sharp Humour falling on this Part; and gnawing and consuming it by Degrees; though it is sometimes also produced by the too great Use of Catharticks in the *Fistula Lachrymalis*.—It is cured by Incarnatives.

The Word is form'd from the Greek  $\rho\acute{\iota}\nu\alpha\iota$ , to flow.

RHYME, RHIME, RYME, or RIME, in Poetry, &c. the similar Sound, or Cadence and Termination of two Words which end two Verses, &c. See VERSE.

Or *Rhyme* is a Similitude of Sound between the last Syllable or Syllables of one Verse, and the last Syllable or Syllables of a Verse succeeding either immediately or at the Distance of two or three Lines.

*Rhyme* is a modern Invention, the Product of a *Gothick Age*: *Milton* calls it the *Modern Bondage*. Yet some Authors will have it, the *English*, *French*, &c. borrow their *Rhyme* from the *Greeks* and *Latins*.—The *Greek* Orators, say they, who endeavour'd to tickle the Ears of the People, affected a certain Cadence of Periods, ending in a Consonance, and call'd them  $\epsilon\rho\mu\iota\sigma\tau\acute{\epsilon}\lambda\epsilon\upsilon\tau\alpha$ . The *Latins*, who imitated them, call'd these measur'd Phrases, *similiter desinentia*.

This Affectation increas'd as the *Latin* Tongue declin'd; so that in the later *Latin* Writers, scarce any thing is more common than *rhyming* Periods.

The *French*, and from them the *English*, &c. retain'd this Cadence of *Rhyme*, which seem'd to them more pretty, and even more agreeable than the measur'd Verses of the *Greek* and *Roman* Poets.—This kind of *Latin* Poetry in *Rhyme* was much in Vogue in the XIIth Century; and the Verses thus running were call'd *Leonine Verses*; for what Reason *Cambden* owns he does not know; (for a Lion's-Tail, says he, does not answer to the middle Parts as these Verses do) but doubtless they had their Name from a Canon call'd *Leoninus*, who first compos'd them with Success, and of whom we have several Pieces remaining, address'd to Pope *Adrian IV.* and *Alexander III.* See LEONINE Verses.

*Cambden* has given us a Collection of *Latin Rhymes* of our ancient *English* Writers; among whom *Walter de Mapes* Archdeacon of *Oxford*, in the Time of King *Henry II.* makes a principal Figure: Especially for two Pieces, the one in Praise of Wine, beginning,

*Mibi est propositum in Taberna mori,  
Vinum sit appositum morientis eri;  
Ut dicant, cum Venerint, Angelorum Chori,  
Deus sit propitius huic petatori.*

The other against the Pope, for forbidding the Clergy their Wives; beginning,

*Prisciani Regula penitus cassatur,  
Sacerdos per hic & hæc olim declinatur;  
Sed per hic solummodo, nunc articulatur,  
Cum per Nostrum præfulem hæc amoveatur.*

Since the Restoration of Learning in the 16th Century, Attempts have made to banish *Rhyme* out of the modern Poetry, and to settle the *English* and *French* Verses on the footing of the ancient *Greek* and *Latin* ones; by fixing the Quantities of the Syllables, and trusting wholly to those, and the Numbers or Measure. See QUANTITY, NUMBERS, &c.

This, *Milton* has done with great Success, in his *Paradise Lost*, and other Pieces; and after him *Philips*, *Addison*, and some others.—Verses of this Kind we call *Blank Verses*. See BLANK.

The *French* have attempted the same, but not with the same Success.—*Jodelot* made the first Essay; and after him *Passerat*; but they fail'd. *Passerat* and *Rapin* follow'd them, and fail'd like them. Their Hexameter and Sapphic Verses were neither imitated nor approved; and the Cadence of *Rhyme* was prefer'd to Quantity, or to long and short Syllables. *Des Portes* likewise made some Essays of Verses constructed of long and short Verses without *Rhyme*, but the Attempt only serv'd to convince the World that this Kind of Measure is inconsistent with the Genius of the *French* Tongue.



To succeed in such kind of Verses there must be a Liberty of varying the Arrangement of the Words, or of changing their Situation as may best suit the Occasions of the Poet; of making the Substantive either go before, or follow after the Verb, as the Verse requires, &c. Now none of the modern Tongues admit of such an arbitrary Situation of the Words, equally with the Antient; yet none more than the *English*, nor less than the *French*. See CONSTRUCTION.

*Rhymes* are either *single*, or *double*, or *treble*; but the two last are now disused.

*Single Rhymes* are divided into perfect or whole *Rhymes*; and imperfect or half *Rhymes*.

A whole or perfect *Rhyme* is where there is a Similitude of Sound, without any Difference; or where a thorough Identity of Sound appears in the Pronunciation of the two Syllables, notwithstanding that there may be some Difference in the Orthography.

An imperfect or half *Rhyme* is where there is a Similitude with a Difference, either in respect of the Pronunciation or the Orthography; but chiefly the former.

In the time of S. Louis, the *French* began to be more exact in their Versification; and to distinguish their *Rhymes* into *Masculine* and *Feminine*; and to observe a regular Mixture of the two, in their Verses.

The Invention of this Mixture is usually attributed to Marot; however 'twas Ronsard who first practiced it with Success.—The *Feminine Rhyme* is that where the last Syllable of the *Rhyme* ends with an *e* Mute or Quiescent: As in *Dove*, *Belle*, &c.—*Masculine Rhymes* are those of all other Words. Menage observes that *Masculine Rhymes* close the Periods better: But that *Feminines*, being the softer and more languishing, end more agreeably, especially in mournful Subjects.

They also distinguish further between *rich Rhymes*, which are those where the two Words terminate alike, through the whole two last Syllables, as *squabble* and *rabble*, &c.—*Plain Rhymes* are those where the two rhyming Verses succeed immediately to each other.—*Cross Rhymes*, those where the Verses are so disposed as that the first rhymes with the third, and the second with the fourth, &c.

They also distinguish *Normand Rhymes*, *Parisian Rhymes*, *Equivocal Rhymes*, &c.

RHYPTICKS, or RYPTICKS, RHYPTICA, in Medicine. See RYPTICKS.

RHYTHM, RHYTHMUS, in Musick, the Variety in the Movements, as to the quickness or slowness, length and shortness of the Notes. See NOTE.

Or, the *Rhythmus* may be defined more generally, the Proportion which the Parts of a Motion have to each other. See RHYTHMICA.

Aristides among the antient Musicians, applies the Word *Rhythmus* three Ways; viz. either to immoveable Bodies, when their Parts are rightly proportioned to each other; as a well-made Statue, &c. or to things that move regularly, as in handsome Walking, in Dancing, in the dumb Shews of the Phantomimes, &c. or thirdly, to the Motion of Sound, or the Voice; in which, the *Rhythmus* consists of long and short Syllables or Notes, join'd together in Succession in some kind of order, so as their Cadence on the Ear may be agreeable.

This, in Oratory constitutes what we call a *numerous Style*, and when the Tones of the Voice are well chosen, a harmonious Style. See STYLE and NUMBERS.

In effect, *Rhythmus* in the general is perceiv'd either by the Eye or Ear; and may either be with or without Metre: But the strict musical *Rhythm* is only perceiv'd by the Ear, and cannot exist without it.—The first exists without Sound, as in Dancing; in which Case it may be either without any Difference of Acute and Grave, as in a *Drum*, or with a Variety of these as in a *Song*.

The *Rhythmus* of the Antients, Mr. Malcolm observes, was very different from the Moderns.—The former was only that of the long and short Syllables of the Words and Verses: It depended altogether on the Poetry, and had no other Forms or Varieties than what the metrical Art afforded. The Changes therein are none but those made from one Kind of Metrum to another, as from *Jambic* to *Choric*, &c.

In the modern Musick, the Constitution of the *Rhythmus* differs from that of the Verse, so far, that in setting Musick to Words, the thing chiefly regarded is to accommodate the long and short Notes to the Syllables in such manner, as that the Words be well separated; and the accented Syllable of each Word so conspicuous, that what is sung may be distinctly understood. See MELODY.

Vossius in his Book *de Pannatum Cantu & viribus Rythmi*, extols the antient *Rhythmus*.—Though he owns 'twas confined to the metrical Feet; yet, so well did they cultivate their Language, especially in what relates to the *Rhythmus*; that the whole effect of the Musick was ascribed to it, as appears, says he, by that saying of theirs, *το μέτρον πάντων τῶν ἐν ᾧ ποιεῖται*. See MUSIC, PANTOMIME, &c. See also ODE, &c.

RHYTHM, RHYMUS, or RHYME, in the antient Poetry, was the Measure of the Feet, or the Number and Combination of long and short Syllables; call'd also *Quantity*. See QUANTITY.

Vossius attributes the whole Force of the antient Musick to their

happy *Rhythmus*. But this is somewhat inconceivable: Mr. Malcolm rather takes it that the Words and Sense of what was sung had the chief effect: Hence it was that in all the antient Musick the greatest Care was taken that not a Syllable of the Words should be lost, lest the Musick should be spoil'd.

Pancirollus seems of this Opinion; and the Reason he gives why the modern Musick is less perfect than the Antient, is, that we hear Sounds without Words. See MUSICK.

Vossius says, that *Rhythm* which does not express the very Forms and Figures of things, can have no effect; and that the antient poetical Numbers alone are justly contrived for this End.—He adds, that the modern Languages and Verse is altogether unfit for Musick; and that we shall never have any right Vocal Musick till our Poets learn to make Verses capable to be sung, i. e. till we new model our Languages, restore the antient Quantities and Metrical-feet, and banish our barbarous Rhimes.

Our Verses, says he, run all as it were on one Foot; so that we have not any real *Rhythmus* at all in our Poetry: He adds, that we mind nothing further than to have such a Number of Syllables in a Verse, of whatever Nature, and in whatever Order. But this is an unjust Exaggeration. See VERSE.

RHYTHMICA, RYTHMICE, in the antient Musick, that Branch of Musick which regulated the *Rhythmus*. See RHYTHMUS.

The *Rhythmica* consider'd the Motions; regulated their Measure, Order, Mixture, &c. so as to excite the Passions, keep them up, augment, diminish, or allay them.

Aristides and other antient Musical Writers, divid'd artificial Musick into *Harmonica*, *Rhythmica*, and *Metrica*. See MUSICK.

But the *Rhythmica* with them likewise comprehends dumb Motions, and, in effect, all *Rhythmical*, i. e. regular, Motion.

Porphyry divides Musick into *Harmonica*, *Rhythmica*, *Metrica*, *Organica*, *Poetica*, and *Hypocritica*. See each under its proper Article.

The Antients seem to have had no *Rhythm* in their Musick beside the long and short Syllables of their Words and Verses, which were sung, and always made a Part of their Musick; so that the *Rhythmica* with them was only the Application of the Metrical-Feet, and the various kinds of Verses used by them.—The Modern goes much further. See RHYTHM.

RYTHMOPÆIA one of the Musical Faculties, as they are call'd; which prescribes Rules for the Motions, or *Rhythm*.

The antient *Rhythmopæia* is very defective.—We find nothing of it in the Books of the Antients but some general Hints; which can scarce be call'd Rules. In their Explications there appears nothing but what belongs to the Words and Verses of their Songs, which is a strong Presumption they had no other. See RHYTHM.

RIAL, or RYAL, or REAL, a Coin struck, and Current in Spain. See REAL and COIN.

RIAL is also a Piece of Gold, antiently Current among us for ten Shillings.


In 1 Henry VI. by Indenture of the Mint, a Pound Weight of Gold of the old Standard was coined into 45 *Rials*, going for ten Shillings a-piece, or a proportionable Number of *half Rials*, going at five Shillings a-piece: Or *Rial Farthings*, which went at 2 s. and 6 d.

In 1 Henry VIII. the Gold *Rial* was ordered to go at 11 s. 3 d.—In 2 Eliz. Golden *Rials* were coined at 15 s. a-piece, when a Pound Weight of old Standard Gold was to be coined into 45 *Rials*.—In 3 Jac. I. the *Rose Rials* of Gold were coined at 30 s. a-piece, and the *Spurr-Rials* at 15 s. See MONEY.

RIBBAND, or RIBBOND, a narrow sort of Silk, chiefly used for Head Ornaments, Badges of Chivalry, &c. See SILK.

The Knights of the Garter wear a Blue *Ribband*, those of the Thistle, a Green *Ribband*. See COLLAR, GARTER, &c.

RIBBON, in Heraldry, is the eighth Part of a Bend. See BEND.

It is born a little cut off from the out-lines of the Escutcheon; thus;  He beareth Or, a *Ribbon Gulc*.

RIBS, COSTÆ, in Anatomy, long, arch'd Bones; serving to form, or sustain the inner-sides of the Thorax, or Breast. See BONE and THORAX.

The *Ribs* are in Number 24; twelve on each Side.—Their Figure is an imperfect Segment of a Circle, harder, rounder, and more incurvated towards their Articulation with the *Vertebra*, than at the other Extremity towards the *Sternum*, which is thinner, broader, and more spungy.

The *Ribs* are divided into *true*, or genuine, and *spurious*. The *true* are the seven upper Pair, which are thus distinguished, as forming the most perfect Arches, and as having a strong Articulation with the *Sternum*. See STERNUM.

The five lower are call'd *Nothæ*, or *Spurious*, as being smaller, shorter, and more cartilaginous than the rest, and not reaching so far as the *Sternum*, which makes their Articulation very lax; in regard they terminate in long, soft Cartilages, which bending upwards are join'd to the upper *Ribs*.

On the inside of the *true Ribs*, except the lowest, and sometimes the next to it, runs a pretty deep *Sinus*, reaching from the end towards the Spine, almost to its Juncture with the Cartilage.



All the *Ribs*, together with the *Sternum*, are rais'd by the respiratory Muscles, in the Action of Inspiration; by which means, and the Descent of the Diaphragm in that Action, the Cavity of the Thorax is enlarged for the more commodious Expansion of the Lungs. See RESPIRATION.

*Ribs of a Ship*, are the Timbers of the Puttocks, when the Planks are off; so called because they are bent like the *Ribs* of a Carcase or Skeleton.

*RICE*, a Grain or Seed of a leguminous Plant of the same Name; frequent in the *East-Indies*, in *Greece*, and *Italy*. See LEGUMINOUS.

The Grains, which grow in Clusters each terminated with a Spica or Beard, are inclosed severally in yellow rough Capsulæ, or Cafes. When stript off its Skin the Grain is almost oval; of a shining white Colour, and as it were transparent. It grows in moist marshy Places.

Throughout the *East*, and a great Part of the *Levant*, *Rice* is the principal Food, and serves for Bread. See BREAD.

In the *Indies*, the Women thrash and dress all the *Rice*, which is a very painful Office, that the Men leave them either out of Idleness, or Disrespect.

*Rice* is a great Food in the *Roman Catholick* Countries in time of Lent.—The ordinary Preparation is by first steeping it in Water, then boiling it in Milk.—Some make it into a sort of Farina, or Flower, by pounding it in a Mortar, after having first put it in hot Water, and again wash'd it out in cold.

*Rice* is of some use in Medicine, being esteem'd proper to soften and thicken sharp Humours, to moderate the Flux of the Belly.—The Northern Nations eat their Fowls and other Meats with *Rice* and Saffron.—The *Chinese* make a Wine of *Rice*, which is of an Amber Colour, tastes like *Spanish* Wine, and serves them for their common Drink.

In some Parts of *Europe* they also draw a very strong Brandy or Spirit from *Rice*. See BRANDY and SPIRIT.

*RICKETS*, RHACHITIS, in Medicine, a Disorder affecting the Bones of Children, and causing a considerable Protuberance, Incurvation, or Distortion thereof. See CHILDREN, BONE, &c.

It sometimes arises from a fault in swathing the Child; rolling him too tight in some Places, and too loose in others; placing him in an inconvenient, or too often in the same Posture, or suffering him to be long wet.—'Tis likewise attributed to the want of proper Motion, and the using of the Child to one Arm only; whence the Legs and Knees remain too long in the same incurvated Situation.

Or it may be occasioned by some Fault in the Digestion occasioning the Aliment to be unequally apply'd to the Body, by which some Parts of the Bones increase in Bulk more than the rest.

The *Rickets* usually appear between the first eight Months, and the sixth Year of the Child's Age: The Part it affects grows lax, flaccid, and weak; and if it be the Legs, they become unable to support the Body.—All the Parts subservient to voluntary Motion are likewise debilitated and enfeebled; and the Child grows pale, sickly, slothful, and cannot sit erect.

His Head generally becomes too large for the Trunk, and cannot be supported or managed by the Muscles of the Neck, which gradually wear away. Swellings, and knotty Excrescencies appear in the Wrists, Ancles, and Tops of the Ribs; and the Bones of the Legs and Thighs grow bowed or crooked.—The like Disorder sometimes seizes the Bones of the Arms.

If the Symptoms continue long, the Thorax becomes strait, a difficulty of Respiration comes on, as also a Cough, and a hectick Fever; the Abdomen swells, the Pulse grows weak and small, and the Symptoms increasing, at length prove mortal.

When the Child is able to talk before he can make use of his Legs, he is supposed to have the *Rickets*.

When the Disorder is taken early, it may be remedied by proper Bolsters and Bandages, suited to the Parts affected: But when the Bones are grown rigid and inflexible, other mechanical Contrivances, as Padding, strait Boots, and several sorts of Machines or Engines, made of Pastboard, Whalebone, Tin, &c. are made use of; to restore the distorted Bones to their natural straightness.

Cold Bathing is also found of Service in the *Rickets*, before the Distemper comes to be confirmed, during May and June; continuing him in the Water two or three Seconds at each Plunge.

Others chuse a Liniment of Rum and Palm Oil; and others a Plaster of Deminium and Oxycroceum, applied along the Back, to cover the whole Spine.—Dry Frictions over the whole Body, with a warm Linnen Cloth before the Fire, especially on the Parts affected, are found of Service. The Oil of Snails is famous for the same Intention, being what Drops from them, after bruising and suspending them in a Flannel Bag. With this the Limbs and spinal Bone, are anointed.

*RIDDLE*. See ENIGMA.

*RIDDLE*, or *RUDDLE*, is also a mineral Stone. See RUDDLE.

*RIDE*, of *Hazle*, or other Wood, is a Group or Plump of Spigs shooting out of the same Root, or Foot.

*RIDE*, in the Manage.—To *ride* signifies to learn to ride.—Thus, He *rides* under a good Master. See HORSE.

*RIDE*, in the Sea Language, is a Term variously applied.—Thus, a Ship is said to *Ride* when her Anchors hold her fast, so that she drives not away by the Force of the Wind or Tide.

A Ship is said to *Ride well*, when she is built so as not to over-beat herself into an Head Sea, as that the Waves overtake her (that is, overwhelm her) from Stem to Stern.

A Ship *Rides a-crofs*, when she *rides* with her Main-Yards and Fore-Yards hoisted up to the Hounds; and both Yards and Arms topped alike.

She is said to *Ride a Peek* when one End of the Yard is peeked up, and the other hangs down: This is also said of a Ship when in weighing, she is brought directly over her Anchor.

She is said to *Ride athwart*, when her Side is to the Tide.—And to *Ride betwixt Wind and Tide*, when the Wind hath equal force over her one Way and the Tide another.—If the Wind have more Power over her than the Tide, she is said to *Ride Wind Rode*.—She is said to *Ride Hawseful*, when in a Stress of Weather she falls so deep, that Water runs in at her Hawses.—She is said to *Ride Portoise*, when her Yards are struck upon the Deck, or when they are down Apportlast.

*RIDE AU*, in Fortification, a small Elevation of Earth, extending itself lengthways on a Plain; serving to cover a Camp, or give an Advantage to a Post.—It is also convenient for those who would besiege a Place at a near Distance, and to secure the Workmen in their Approaches to the Foot of a Fortrefs.

*RIDEAU*, is sometimes also used for a Ditch, the Earth whereof is thrown upon its Side. See DITCH.

The Word in its original *French* signifies a Curtain or Cover; form'd from the *Latin*, *Ridelium*.—*Borel* derives it from *ridere*.

*RIDERS*, in a Ship, are great Timbers both in the Hold and Aloft, which are bolted on to other Timbers to strengthen them, when the Ship is discovered to be too weakly built.

The Word *RIDER* is also used for after-Clauses, added to Bills, whilst they are depending in Parliament. See BILL.

*RIDGE*, in Building, the highest Part of the Roof or Covering of a House. See ROOF.

*Ridge* is particularly used for the Piece of Wood wherein the Rafters meet. See RAFTER.

*RIDGE-TYLE*. See TYLE.

*RIDGES of a Horse's Mouth*, are Wrinkles or Rifings of the Flesh in the Roof of the Mouth, running a-crofs from one Side of the Jaw to the other, with interjacent Furrows. See HORSE.

It is commonly in the third or fourth Ridge that the Farriers strike, in order to bleed a Horse whose Mouth is over heated.

*RIDGLING*, or *RIDGEL*, among Farriers, &c. the Male of any Beast that has been but half Gelt. See GELDING.

*RIDICULE*. See LAUGHTER, RISIBILITY, &c.

*RIDING*, a Division of *Yorkshire*, whereof there are three, viz. the *East-Riding*, *West-Riding*, and *North-Riding*.

In Indictments in that County, 'tis necessary the Town and *Riding* be express'd.

*RIDING-Clerk*, one of the six Clerks in Chancery, who, in his turn, for one Year, keeps the Controllment Books of all Grants that pass the Great Seal that Year. See CLERK, GRANT, &c.

*RIENS Arrear*, in Law, a kind of Plea used to an Action of Debt, upon Arrearages of Account, whereby the Defendant alleges that there is *nothing in Arrear*.

*Riens passe par le fait*, nothing passes by the Deed, is the Form of an Exception taken in some Cafes to an Action. See EXCEPTION, and DEED.

*Riens par Descent*, nothing by Descent, is the Plea of an Heir, where sued for his Ancestor's Debt; though he had no Lands from him by Descent. See DESCENT.

*RIER*, or *REER-County*, *Retro Comitatus*, is used in our Law Books in opposition to open County.

This appears to be some publick Place, which the Sheriff appoints for the Receipt of the King's Money, after the end of his County. See SHERIFF, &c.—*Fleta* says it is *Dies Craftinus, post comitatum*.

*RIGADOON*, a kind of Dance, borrowed originally from *Provence*; perform'd in Figure, by a Man and a Woman.—The *Rigadoon* is gay, pleasant, &c. The Word is form'd from the *French Rigodon*, which signifies the same thing.

*RIGGING of a Ship*, includes her whole Cordage; or all the Ropes belonging to her Masts, and Yards, &c. See CORDAGE, ROPE, &c.

A Ship is said to be *well-rigg'd* when all her Ropes are of their fit Size, in Proportion to her Burden.—She is *over-rigg'd*, when her Ropes are too big for her; which wrongs her much in her Sailing, and is apt to make her Heel. See SHIP.

*RIGHT*, in Geometry, something that lies evenly, and without inclining or bending one way or another.

Thus, a *Right Line* is that whose several Points all tend the same way. See LINE.

In this Sense *Right* signifies as much as *straight*, and stands opposed to *curved* or *crooked*. See CURVE.

*RIGHT Angle* is that form'd by two Lines falling perpendicularly on one another. See PERPENDICULAR.



The Quantity or Measure of a *Right Angle* is a Quadrant of a Circle, or  $90^\circ$ .—All *Right Angles* therefore are equal. See ANGLE.

In this Sense the Word *Right* stands opposed to *Oblique*. See OBLIQUE.

*RIGHT-Angled*, is understood of a Figure when its Sides are at Right Angles, or stand perpendicularly one upon another. See FIGURE.

This sometimes holds in all the Angles of the Figure, as in Squares and Rectangles: Sometimes, only in Part, as in *Right-angled Triangles*.

*RIGHT Sine* See SINE.

The Word here stands contradistinguished to *versed*. See VERSED.

*RIGHT Sphere*, is that where the Equator cuts the Horizon at Right Angles. See SPHERE.

Or, *Right*, or *Direct Sphere*, is that wherein the Poles are in the Horizon, and the Equator in the Zenith. See SPHERE.

Such is the Position of the Sphere with regard to those who live directly under the Equator.—The Consequences hereof are, that they have no Latitude nor Elevation of the Pole.—They can see nearly both Poles of the World; all the Stars rise, culminate, and set with them, and the Sun always rises and descends at right Angles to their Horizon, and makes their Days and Nights equal. See LATITUDE, STAR, RISING, DAY, NIGHT, &c.

In a *Right Sphere* the Horizon is a Meridian; and if the Sphere be supposed to revolve, all the Meridians successively become Horizons, one after another. See HORIZON, &c.

*RIGHT Ascension*, of the Sun, or a Star, is that Degree of the Equinoctial, accounted from the beginning of Aries, which rises with it in a *Right Sphere*. See ASCENSION.

Or, *Right Ascension*, is that Degree and Minute of the Equinoctial, counted as before, which comes to the Meridian with the Sun or Star, or other Point of the Heavens. See SUN, STAR.

The Reason of thus referring it to the Meridian, is, because that is always at Right Angles to the Equinoctial, whereas the Horizon is only so in a *Right* or direct Sphere. See SPHERE.

Two fix'd Stars which have the same *Right Ascension*, i. e. are at the same Distance from the first Point of Aries in a *Right Sphere*; or, which amounts to the same, are in the same Meridian, rise at the same time: If they be not in the same Meridian, the Difference between the time when they rise is the precise Difference of their *Right Ascension*.—In an oblique Sphere, where the Horizon cuts all the Meridians obliquely, different Points of the Meridian never rise or set together; so that two Stars on the same Meridian never rise or set at the same time; and the more Oblique this Sphere, the greater is the interval of time between them. See RISING, SETTING, HEIGHT, &c.

*RIGHT Sailing*, is when a Voyage is perform'd on some one of the four Cardinal Points. See SAILING and CARDINAL Point.

If a Ship sail under the Meridian; that is, on the North or South Points, she varies not in Longitude at all; but only changes the Latitude, and that just so much as the Number of Degrees she hath run. See LATITUDE.

If a Ship sail under the Equinoctial, upon the very East or West Points, she alters not her Latitude at all, but only changes the Longitude, and that just so much as the Number of Degrees she hath run. See LONGITUDE.

If she sail directly East or West, under any Parallel, she there also altereth not her Latitude, but only the Longitude; yet not according to the Number of Degrees of the great Circle she hath sailed in, as under the Equinoctial, but more according as the Parallel is remoter from the Equinoctial towards the Pole. For the less any Parallel is, the greater is the Difference of Longitude. See RHUMB.

*RIGHT Circle*, in the Stereographical Projection of the Sphere, is a Circle at Right Angles, to the Plane of Projection, or that which passed through the Eye. See CIRCLE, PROJECTION and STEREOGRAPHIC.

*RIGHT, Rectum*, in Logicks, Ethicks, &c. See RECTITUDE.

In this Sense the Word stands opposed to *Wrong*, *Erroneous*, *False*, &c. See ERROR, FALSHOOD, &c.

*RIGHT, Jus*, in Law, signifies not only a Property, for which a Writ of *Right* lies; but also any Title or Claim, either by Virtue of a Condition, Mortgage, or the like, for which no Action is given by Law, but only an Entry. See PROPERTY.

Thus is *Jus Proprietatis*, a Right of Propriety; *Jus Possessionis*, a Right of Possession: And *Jus Proprietatis & Possessionis*, a Right both of Property and Possession. See POSSESSION, &c.

This was formerly called *Jus duplicatum*.—As, if a Man be disseised of an Acre of Land, the Disseisee hath *Jus Proprietatis*; the Disseisor hath *Jus Possessionis*, and if the Disseisee release to the Disseisor, he hath *Jus Proprietatis & Possessionis*.

*Writ of RIGHT*. See RECTUM.

*RIGHT in Court*. See RECTUS in CURIA.

*RIGHT the Helm*, a Sea Phrase, ordering to keep the Helm even with the middle of the Ship. See HELM.

**RIGIDITY**, among Philosophers, a brittle-hardness; or that kind of hardness supposed to arise from the mutual Indentation of the component Particles within one another. See HARDNESS.

*Rigidity* is opposed to Ductility, Malleability, &c. See DUCTILITY.

**RIGOL**, a kind of musical Instrument, consisting of several Sticks bound together, only separated by Beads.—It makes a tolerable Harmony, being well struck with a Ball at the End of a Stick.

**RIGOR**, in Medicine, a convulsive Shuddering, from Cold or an Ague Fit. See HORROR, FEVER, AGUE, &c.

**RILL**, or **RIVULET**. See RIVER.

**RIM**, in a Watch or Clock, the Circumference, or circular Part of a Wheel. See WHEEL, WATCH, CLOCK, &c.

**RIMA**, literally denotes a Fissure or Chink.—Hence it is applied to several Parts of the Body, that bear a Resemblance thereto; as the *Rima Pudendi*, or *Fissura Magna*, the same with the *Vulva*; *Rima Laryngis*, is the Aperture of the Larynx, call'd the *Glottis*. See GLOTTIS, &c.

**RIMA**, is also used for a narrow Aperture of a small Cavity under the *Forix*, opening into the *Infundibulum*; call'd also the third Ventricle of the Brain. See BRAIN and VENTRICLE.

**RIME**, **RHIME**, or **RHYME**. See RHYME.

**RIND**, the Skin of any Fruit that may be cut off, or pared. See SKIN, FRUIT, &c.

The outer Coat of the Chestnut, set with prickles, is particularly called the *Urchin-like Rind*.

**RIND**, is also us'd for the Ble, or inner Bark of Trees; or that soft, whitish, juicy Substance, adhering immediately to the Wood. See TREE and WOOD.

Through this it is that the Sap, in the modern Theory of Vegetation, is supposed to return from the Extremities of the Branches to the Root; the Vessels hereof being supposed to do the Office of Arteries; whence Mr. *Boyle* calls them *Arterial Vessels*. See BARK. See also PLANT and VEGETATION.

**RING**, *Annulus*, a little moveable, put on the Finger, either by way of Ceremony, or of Ornament.

The Bishops Ring makes a Part of the Pontifical Apparatus; and is esteemed a Pledge of the spiritual Marriage between the Bishop and his Church. See BISHOP.

The Episcopal Ring is of very antient standing.—The fourth Council of Toledo, held in 633, appoints, that a Bishop condemned by one Council, and found afterwards innocent by a second, shall be restored, by giving him the Ring, Staff, &c.

From Bishops, the Custom of the Ring has pass'd to Cardinals, who are to pay, I know not what Sum, *pro Jure annuli Cardinalitii*. See CARDINAL.

*As to the Origin of Rings*.—*Pliny*, lib. xxxviii. Chap. 1. observes, that we are in the dark as to the Person who first invented, or wore the Ring; for that what is said of *Prometheus*, as also of *Midas's Ring*, are Fables. The first among whom we find the Ring in use, are the *Hebrews*, *Gen.* xxxviii. where *Judah's* Son, gives *Thamar* his Ring or Signet, as a Pledge of his Promise: But the Ring appears to have been in use at the same time among the *Egyptians*, from *Gen.* xli. where *Pharaoh* puts his Ring upon *Joseph's* Hand as a Mark of the Power he gave him. And in the third Book of *Kings*, Chap. xxi. *Jezabel* seals the Warrant she sent for the killing of *Naboth*, with the King's Ring.

The antient *Caldeans*, *Babylonians*, *Persians* and *Greeks*, had likewise the use of the Ring, as appears from several Passages in Scripture, and from *Quintus Curtius*, who tells us, that *Alexander* seal'd the Letters he wrote into *Europe*, with his own Seal; and those into *Asia* with *Darius's Ring*.

The *Persians* will have *Cyrius* the fourth King of their first Race, to have first introduced the Ring, to seal his Letters and other Acts withal.—The *Greeks*, *Pliny* thinks, knew nothing of the Ring in the time of the Trojan War: The Reason he gives is, that we find no mention thereof in *Homer*, but that when Letters, &c. were to be sent away, they were tied up, and the Strings knotted.

The *Sabins* had Rings in *Romulus's* time; and 'tis to them, probably, the Practice first came from the *Greeks*; and from them pass'd to the *Romans*; though 'twas some time ere it got footing there.—*Pliny* cannot learn which of the Kings of *Rome* first adopted it; but there are no Signs of it in any of their Statues, before those of *Numa*, and *Servius Tullius*. He adds, that it was in use among the antient *Gauls* and *Britons*. See SEAL.

*As to the Matter of Rings*.—There were some of one single Metal, and others of a Mixture, or of two. For the Iron and Silver were frequently gilt, or at least the Gold was inclosed within the Iron, as appears from *Artimidorus*, lib. ii. cap. 5.—The *Romans* were contented with Iron Rings a long time; and *Pliny* assures us, that *Marius* first wore a Gold one in his third Consulate, which was in the Year of *Rome* 650. Sometimes the Ring was Iron, and the Seal Gold; sometimes 'twas hollow, and sometimes solid; sometimes the Stone was engraven, and sometimes plain; and the Graving sometimes in *Relievo*, and sometimes in *Crenx*: The last call'd *Gemma Effigie*; the first, *Gemma Sculptura prominente*.

*As to the Manner of wearing the Ring*.—It has been various: From *Jeremy*, Chap. xxii. it appears that the *Hebrews* wore it on the right



**Right-Hand.** Among the *Romans*, ere they came to be adorned with Stones, and while the Graving was yet on the Metal, every body wore them at Pleasure, on what Hand and Finger he pleased.—When Stones came to be added, they wore them altogether on the Left-Hand; and it would have been held an excessive Foppery to have put them on the Right.

Pliny says, they were at first wore on the fourth Finger, then on the second, or Index; then on the little Finger; and at last on all the Fingers, excepting the middle one.—The *Greeks* wore it on the fourth Finger of the Left-Hand, as we are informed by *Aul. Gellius*, lib. x. and the Reason he gives for it is, that having found from Anatomy, that this Finger had a little Nerve that went straight to the Heart, they esteem'd it the most honourable, by reason of this Communication with that noble Part.—Pliny says, the *Gauls* and antient *Britons* wore it on the middle Finger.

At first they only wore a single Ring; then one on each Finger; and at length several on each Finger, *Martial*, lib. xi. Epig. 60. At last one on each Joint of each Finger, *Aristoph. in Nub.* &c.—Their Delicacy, at length went to that pitch, that they had their Weekly Rings. *Juvenal Sat.* VII. speaks of *Annuli Sennstres*; as also of Winter and Summer Rings. But of all others *Lampridius*, cap. 32. observes, *Heliogabalus* carried the Point furthest, who never wore the same Ring, or the same Shoe, twice.

Rings have been also wore in the Nose, as Pendants in the Ears.—*Bartholin* has an express Treatise, *de Annulis Narium*, of Rings of the Nostrils. St. *Augustin* assures us, 'twas the Fashion of the *Moors*; and *Pedro delle Valle* observes the same of the modern *Oriental*s.

In effect, there is no Part of the Body where it has not been wore.—Several *East-India* Travellers affirm, that the Natives commonly wear them in their Nose, Lips, Cheeks, and Chin. *Ramusio* tells us, that the Ladies of *Narsingua* in the *Levant*, and *Diodorus Siculus*, lib. 3. that those of *Ethiopia*, used to adorn their Lips with Iron Rings.

As to the Ears, the Custom still obtains of wearing Rings therein, both for Men and Women, all over the World. See PENDANT.

The *Indians*, particularly the *Guzzerattes*, have wore Rings on their Feet.—And when *Peter Alvarez* had his first Audience of the King of *Calicut*, he found him all covered with Stones set in Rings; Bracelets and Rings both on the Hands and Fingers, and even the Feet and Toes. *Louis Bartome* represents a King of *Pegu*, as still more extravagant, having Rings set with precious Stones on every Toe.

With regard to the Use of Rings.—The Antients had three different Kinds: The first serv'd to distinguish Conditions or Qualities. Pliny assures us, that the Senators at first were not allowed to wear the Gold Ring, unless they had been Ambassadors at some foreign Court. Nor was it even allowed them to wear the Gold Ring which was given them, in Publick; except on publick Occasions. At other times they wore an Iron one. And those who had had a Triumph, observed the same Rules.

At length the Senators and Knights were allow'd the common Use of the Gold Ring; but *Acron* on *Horace*, Lib. 2. Sat. VII. observes, they could not do it unless it were given them by the Pretor.

In after Days the Gold Ring became the Badge of the Knights; the People wearing Silver Rings, and the Slaves Iron ones. Tho' the Gold Ring was sometimes allow'd the People, and *Severus* granted it his common Soldiers. *Augustus* allow'd it the *Liberi*, or Freedmen; and though *Nero* made a Regulation to the contrary, yet it was soon set aside.

A second Kind of Rings were the *Annuli Sponsalitii*, Wedding Rings. Some carry the Origin of this Custom as far back as the *Hebrews*, on the Authority of a Text in *Exodus xxxv. 22.*—*Leon de Modena*, however, maintains that the antient *Hebrews* did not use any Nuptial Ring. *Selden*, in his *Uxor Ebraica*, Lib. II. Chap. 14. owns, that they gave a Ring in the Marriage, but that it was only in lieu of a Piece of Money of the same Value, which had used to have been given before.—The *Greeks* and *Romans* did the same; and from them the Christians took it up very early, as appears from *Tertullian*; and in some antient Liturgies, where we find the Form of Blessing the Nuptial Ring. See MARRIAGE.

The third Kind of Rings were those used as Seals, call'd *Cerographi*, or *Cirographi*, an Account whereof see under the Article SEAL.

*Richard Bishop of Salisbury*, in his Constitutions, Anno 1217, forbids the putting of *Rush-rings*, or any the like Matter, on Women's Fingers; in order to the debauching of them more readily: And he insinuates the Reason of his Prohibition, that there were some People weak enough to believe, that what was thus done in jest was a real Marriage.

*De Bzevil* in his Antiquities of *Paris*, says, 'twas an antient Custom to use a *Rush-ring* in the Marriage of such as had had an Affair together before Marriage. See CONCUBINE, &c.

**Ring**, in Astronomy.—The Ring of *Saturn* is a thin, luminous Circle, encompassing the Body of that Planet, but without touching the same. See SATURN.

The Discovery hereof is owing to *M. Huygens*, who after frequent Observation of *Saturn*, perceiv'd two lucid Points, or *Anse*, arising out from the Body, in a right Line. See ANSÆ.

Hence, as in subsequent Observations, he always found the same Appearance, he concluded that *Saturn* was encompass'd with a permanent Ring; and accordingly produced his new System in 1659.

The Plane of the Ring is inclined to the Plane of the Ecliptic in an Angle of  $23^{\circ} 30'$ .—It sometimes appears Oval; and according to *Campani*, its greatest Diameter is double its least. See PLANET.

RING, is also an Instrument used in Navigation, for taking the Altitudes of the Sun, &c. See ALTITUDE.

'Tis usually of Brass, about 9 Inches Diameter, suspended by a little Swivel,  $45^{\circ}$  from the Point whereof is a Perforation; which is the Centre of a Quadrant of  $90^{\circ}$  divided in the inner Concave Surface.

To use it, they hold it up by the Swivel, and turn it to the Sun, till the Sun-Beams falling through the Hole, make a Spot among the Degrees, which is the Altitude required.

This Instrument is prefer'd to the *Astrolabe* by reason the Divisions are here larger than on the *Astrolabe*. See ASTROLABE.

RING-Dial, is a kind of Dial, usually small, and portable; consisting of a Brass Ring, or Rim, seldom exceeding two Inches in Diameter, and one third of an Inch in Breadth. See DIAL.

In a Point of this Rim, is a Hole, through which the Sun-Beams being received, make a lucid Speck on the Concavity of the opposite Semicircle, which gives the Hour of the Day in the Divisions mark'd therein.

But it only holds good about the Times of the Equinox.—To have the Dial perform throughout the whole Year, the Hole is made moveable; and the Signs of the Zodiac, or the Days of the Month are mark'd on the Convex Side of the Ring; by means whereof the Dial is rectified for the Time.

To use it, put the moveable Hole to the Day of the Month, or the Degree of the Zodiac the Sun is in; then suspending it by the little Ring, turn it towards the Sun, till his Rays, as before, point out the Hour among the Divisions on the Inside.

Universal, or Astronomical RING-Dial, is a Ring-Dial which serves to find the Hour of the Day in any Part of the Earth; whereas the former is confined to a certain Latitude. See DIAL.

Its Figure see represented in Table, *Dialling*, Fig. 7. It consists of two Rings, or flat Circles, from two to six Inches in Diameter; and its Breadth, &c. proportionable.—The outward Ring A represents the Meridian of any Place you are at; and contains two Divisions of  $90^{\circ}$  each, diametrically opposite to one another; serving, the one from the Equator to the North, the other to the South Pole.—The inner Ring represents the Equator, and turns exactly within the outer, by means of two Points in each Ring at the Hour of 12.

A-cross the two Circles goes a thin Reglet or Bridge, with a Curser C, that Slides along the middle of the Bridge. In the Curser is a little Hole for the Sun to shine through.

The middle of this Bridge is conceiv'd as the Axis of the World, and the Extremities as the Poles; and on the one Side are drawn the Signs of the Zodiac, and on the other the Days of the Month. On the Edge of the Meridian slides a Piece, to which is fitted a Ring to suspend the Instrument by.

#### Use of the universal RING-Dial.

Place the Line *a* (on the middle of the sliding Piece) over the Degree of Latitude of the Place (e. gr.  $51^{\circ}$  for *London*) put the Line which crosses the Hole of the Curser to the Degree of the Sign, or Day of the Month. Open the Instrument so as the two Rings be at right Angles to each other, and suspend it by the Ring H, that the Axis of the Dial, represented by the middle of the Bridge, be Parallel to the Axis of the World. Then turn the flat Side of the Bridge towards the Sun, so as his Rays striking through the little Hole in the middle of the Curser, fall exactly on a Line drawn round the middle of the Concave Surface of the inner Ring; in which Case the bright Spot shews the Hour of the Day in the said Concave Surface of the Ring.

Note, The Hour of 12 is not shewn by this Dial; by reason the outer Circle, being then in the Plane of the Meridian, hinders the Sun's Rays from falling on the inner: Nor will this Dial shew the Hour when the Sun is in the Equinoctial, by reason his Rays, then, fall Parallel to the Plane of the inner Circle.

RING is also used for the Sound or Tone of a Bell. See BELL, SOUND, &c.

RING-Bone, among Farriers, &c. a hard callous Substance, growing in the hollow Circle of the little Pattern of a Horse, above the Coronet. See HORSE.

It sometimes goes quite round, like a Ring; whence its Name.

It is sometimes hereditary, derived from the Stallion, or Mare, but oftener comes by Accident, as a Strain, blow of a Horse, &c.

RING-Walk, among Hunters, a round Walk. See HUNTING.

RING-Worm, in Medicine, &c. See TETTER.

RIOT,



**RIOT**, in Law, the forcible doing of an unlawful thing, by three or more Persons assembled together for that Purpose.

The Word is form'd from the *Latin*, *riota*, or *arietare*, to run at each other as Rams do. Though, from an antient *Gaulish* Version of the Bible, quoted by *Skinner*, *Riot* shoud rather seem originally to signify Luxury and Excess; whence our *Riot* might proceed; in regard these are frequently attended with Quarrels.

For the Difference between a *Riot*, *Rout*, and unlawful Assembly, see *ROUT*, and *UNLAWFUL Assembly*.

*Kitchin* gives us the following Cafes of *Riots*.—viz. The Breach of Inclosures, Banks, Conduits, Parks, Pounds, Barns, the burning of Stacks of Corn, &c. *Lambard* adds, the beating a Man, and entering on a Possession forcibly.

By a late Act of Parliament, made on occasion of the frequent pulling down of Meeting-Houses, &c. by Mobs, or Riotous Assemblies, about the time of the last Rebellion; a *Riot* was made Felony, if the *Rioters* did not disperse after reading a Proclamation made for that Purpose.

**RIPENERS**, in Medicine, a sort of topical Remedies, call'd *Digestives*, *Maturantia*, &c. See *DRAWERS*, *DIGESTIVES*, *MATURANTIA*, &c.

**RIPENING**. See *MATURATION* and *DIGESTION*.

**RISING**, in Astronomy, the appearance of the Sun, a Star, or other Luminary above the Horizon, which before was hid beneath it. See *HORIZON*, *SUN*, *STAR*, &c.

By reason of the Refraction of the Atmosphere, the heavenly Bodies always rise before their time, i. e. are seen above the Horizon, while they really are below it. See *REFRACTION*.

There are three Poetical Kinds of *Rising* of the Stars.—The *Cosmical Rising*, when a Star rises at the same time with the Sun. See *COSMICAL*.

*Acronycal Rising* is when the Star rises at the same time that the Sun sets. See *ACRONYCAL*.

*Heliacal*, *Solar*, or *Apparent Rising*, is when the Star emerges out of the Sun's Rays near the Horizon, and is no longer hid in his Brightness; which happens about 20 Days after the Conjunction of such Star with the Sun; more or less, according to the Magnitude of the Star, its Distance, &c.

*Hesiod* long ago observ'd, that *Sirius* was hid 40 Days; viz. 20 Days before his *Cosmical Rising*, and 20 after.—Some Nations of *America*, and among others the Savages of *Cayenna*, regulate their Civil Year by the Course of *Sirius*; beginning it with the *heliacal Rising* of that Star.

To find the *Rising*, &c. of the Sun and Stars by the Globe. See *GLOBE*.

**RISIBILITY**, the Faculty of Laughing. See *LAUGHING*.

*Risibility* is commonly supposed an Attribute peculiar to Man; as being the only Creature capable of judging of what is ridiculous.—Some Philosophers go so far as to assert, that the Degree of Judgment is always seen in that of Laughter; Fools either have too little or too much.

Authors do not agree as to the peculiar Mechanism in Man, whereby Laughter is rais'd.—'Tis usually attributed to the Communication between the *Plexus Nervosus*, and the *Diaphragmatic Nerves*. See *CONSENT of Parts*.

**RISK**, **RISQUE**, the Hazard or Chance of a Loss, Damage, &c. See *CHANCE*.

There is a great *Risk* run in letting Goods go upon Credit to great Lords, Wives not authorized by their Husbands, and young People not yet arrived at the Age of Majority.

*Skinner* derives the Word from the *Spanish*, *Risco*, steep: *Covarruvias*, from *rigeo*. In the barbarous Greek, they say, *εἰς κινδύνον*, for *Periclitor*, I hazard; and *εἰς κινδύνον*, for *Lot*, Chance; which Words, as well as *Risque*, *Skinner* thinks, may be deduced from *εἰς κινδύνον*, for *ἀνακινδύνω τὸν κύβον*, to cast the Dice.

To prevent any *Risk* in Invoices of Merchandizes by Sea, 'tis usual to insure them. See *POLICY of Insurance*.

The *Risk* of Merchandizes commences from the Time they are carried aboard.—In Matters of Insurance, 'tis a Maxim, that all is never to be *risk'd* on one Bottom, or in the same Vessel; to denote, that Assurers must act with Discretion in the signing of Policies, and not hazard too much on each Vessel; there being more to be expected from several than from one.

**RISUS**. See *LAUGHTER*.

*Risus sardonius*, *sardonian Laughter* is a forced, spiteful Laughter; or a Laughter that does not go beyond the Teeth.—The Phrase is founded on this, that in *Sardinia* there is a venomous Plant, which occasions such a Contraction of the Muscles of the Face in Persons it kills, that they seem to dye Laughing.

*Risus Caninus* is a kind of Laughter wherein the Lips are contracted, so as to show all the Teeth.

**RITE**, in the School Divinity, the particular Manner or Form of celebrating or performing the Religious Ceremonies, which obtains in this or that Place. See *CEREMONY*.

The *Eastern* People, *Armenians*, &c. celebrate Divine Service according to the *Greek Rite*.—The *Western* World follow the *Latin Rite*, or that of the *Roman Church*.

The *English* observe the *Rite* of the Church of *England*, prescribed in the Book of Common-Prayer, &c. See *RITUAL*.

**RITORNELLO**, or **REPPEAT**, in Musick, the Burthen of

a Song, or a Repetition of the first Verses of the Song, at the end of each Stanza or Couplet. See *REPETITION*.

The Word is *Italian*, and signifies properly a little Return, or a short Repetition, such as that of an *Eccho*; or of the last Words of a Song; especially when the Repetition is made after a Voice by one or more Instruments.

But Custom has extended the use of the Word to all Symphonies, play'd before the Voices begin, and which serve by way of Prelude or Introduction to what follows.

In the Partitions or Score of the *Italian* Musick, we frequently find the *Ritornello's* signified by the Words *si suona*; to shew that the Organ, Spinnet, or the like, are to repeat what the Voice has been singing. See *REPEAT*.

**RITUAL**, a Church-Book, directing the Order and Manner of the Ceremonies to be observ'd in celebrating Divine Service, in a particular Church, Diocese, Religious Order, or the like. See *RITE*.

The antient Heathens had, likewise, their *Rituals*; call'd *Rituales Libri*; whereof those of the *Hetrurians* were famed.

These Books contain'd the Rites and Ceremonies to be observ'd in the building a City, in the consecrating a Temple or an Altar, in Sacrificing, Deifying, in dividing the *Curie*, Tribes, Centuries, and in general, all their Religious Ceremonies. See *SACRIFICE*, *APOTHEOSIS*, *ALTAR*, &c.

There are several Passages in *Cato's* Books, *De re rustica*, which may give us some Idea of the *Rituals* of the Antients.

**RIVAL**, **RIVALIS**, a Term of Relation, applied to two Persons who have the same Pretensions. See *CORRIVAL*.

'Tis properly used for a Competitor in Love; and figuratively for an Antagonist in any other Pursuit.—The Intrigues of Comedies and Romances usually turn on the Jealousies of *Rivals*, who dispute for the same Mistress.

The Lawyers derive the Word from the *Latin*, *Rivus*, Stream, *quod ab eodem rivo aquam hauriant*. *Donatus* supposes it to have taken its Name hence, that Beasts coming to drink at the same Brook, or Fountain, frequently quarrel.

*Cælius* says, that *Rivales* were originally such whose Fields were parted by a Brook or Rivulet; the Course whereof being liable to be varied several Ways, occasions frequent Disputes and Law-Suits.

**RIVAGE**, a Toll antiently paid to the King in some Rivers, for the Passage of Boats therein. See *FERRY*.

**RIVER**, **FLUVIUS**, **FLUMEN**, in Geography, a Stream or Current of fresh Water, flowing in a Bed or Channel, from a Source or Spring, into the Sea. See *WATER*, &c.

If the Stream be not large enough to bear Boats, or small Vessels, loaden; it is properly call'd in *English*, by the Diminutive, *Rivulet*, or *Brook*; by the *Latins*, *Rivus*; and the *French*, *Rivière*.—If it will only bear such Vessels, the *Latins* call it *Amnis*.—If it be considerable enough to carry larger Vessels, 'tis call'd by the general Name *River*; by the *Latins*, *Fluvius*, and *Flumen*; and by the *French*, *Fleuve*.—In all which, the Difference is only as to greater and less.

Some will have none to be properly *Rivers*, except those which bear the same Name from their Source to their Mouth.—Others, none but those which empty themselves immediately into the Sea; and not into any other River. See *SEA*.

*Rivulets* have their Rise, sometimes, from great Rains, or great Quantities of thaw'd Snow; especially in mountainous Places; as in the long Ridges in *Africa*, *India*, *Sumatra*, &c. But the generality of *Rivulets* arise from Springs. See *SPRING*.

*Rivers* themselves all arise either from the Confluence of several *Rivulets*, or from Lakes: Nor is there any great River, such as the *Rhine*, *Elbe*, &c. known to flow from a single Spring.—The *Volga*, e. gr. consists of above two hundred *Rivulets*, all flowing into it, before it reach the *Caspian*: And the *Danube* receives as many. *Pliny*, indeed, and *Cardan*, say, that the Nile receives none; but the later Travellers into *Abassia* assure us of the contrary.

The *Rhine*, *Rhoan*, *Danube*, *Borysthenis*, &c. arise originally from Springs in the Mountains; the Nile, *Volga*, the great River of *St. Laurence*, &c. from Lakes. See *LAKE*.

#### *Phænomena and Kinds of RIVERS.*

*Rivers* are found subject to great Alterations, at different Seasons of the Year, Day, &c. from frequent Rains, and melted Snow.—Thus in *Peru* and *Chili* many of the *Rivers* are almost insensible in the Night-time; and only flow by Day; as being then augmented by the Retolution of the Snow on the Mountains, *Andes*.—Thus the *Volga* abounds in Water in *May* and *June*; so as to cover the Sand-Banks, &c. which all the rest of the Year lie bare, so as scarce to allow a Passage to the loaden Ships.—Thus also the Nile, *Ganges*, *Indus*, &c. are frequently so increas'd as to overflow; and that either in the Winter, from Rain, or in the Summer, from the melting of the Snow.

Some *Rivers* bury themselves under Ground in the middle of their Course, and break out again in other Places, like new Rivers.—Thus the *Niger*, which some Cosinographers derive by a subterraneous Channel from the Nile, because it swells at the same time with the Nile without any other apparent Cause of its



swelling: The *Niger* it self meeting the Mountains of *Nubia*, is hid under them, and rises again on the Western Side of the Mountains. Thus also the *Tygris* is lost in the Mountain *Taurus*, &c.

*Aristotle*, and the Poets, mention several such *Rivers* about *Arcadia*: *Alpheus*, a *River* of *Arcadia*, is particularly famed.—This, being swallowed up in the Ground, is supposed by the *Greek* Authors to continue its Progress under Earth and Sea, into *Sicily*; where breaking up near *Syracuse*, it forms the *River Aréthusa*. The great Reason of this Opinion is, that every fifth Summer the *River Aréthusa* in *Sicily*, casts up the Dung of Cattel about the time of the Celebration of the Olympic Games, in *Achaia*, when the Dung of Victims was used to be cast into the *Alpheus*.

Some *Rivers* empty themselves into the Sea by one Mouth, some by several.—Thus the *Danube* opens into the *Euxine* Sea by seven Mouths, the *Nile* by seven, and the *Volga* by at least seventy. The Cause of this variety of Mouths *Varenius* attributes principally to Banks of Sand, &c. form'd therein; which gradually increasing, form Islands, whereby the Channel is divided into several Branches.—Indeed, the Antients tell us that the *Nile* formerly only emptied it self at one Mouth, call'd the *Ostium Canobicum*; and add, that the other six are Artificial.

The Channels of *Rivers*, except such as were form'd at the Creation, *Varenius* endeavours to prove to be all Artificial, and dug by Men.—His Reasons are, that when a new Spring breaks forth, the Water does not make it self a Channel, but spreads over the adjacent Land; so that the People have been necessitated to cut it a Channel to secure their Grounds; and that a great Number of Channels of *Rivers* are certainly known, from History, to have been dug by Men, &c.

As to the Question, whether those *Rivers* which run into others, have made themselves that way by their own Motion, or have been turn'd thither in Canals cut by Men? He takes the latter to be the more probable; and concludes the same of the Arms or Branches of *Rivers*; and of the Turns whereby Islands are form'd in the *Tanais*, *Volga*, &c.

To the Question, why we have no *Salt-Rivers*, when as there are many Salt Springs? He answers, that 'tis because Men having no Occasion for Salt Water, have not dug Channels to conduct the Water of Salt Springs; Salt being procurable at less expence. See *SALT*.

The Water of most *Rivers* flows impregnated with Particles of Metals, Minerals, Sands, oily and fat Bodies, &c.—Thus some *Rivers* bring Sands intermix'd with Grains of Gold; of which Kind is, 1°. a *River* in *Japon*; a second in the Islands *Lequeo*, near *Japon*; 3°. a *Rivulet* in *Africa*, call'd *Arroe*, breaking out of the Roots of the Mountains of the Moon, wherein are Gold Mines; 4°. a *River* in *Guinea*, where the Negroes separate the Gold Dust from the Sand, and sell it to the *Europeans*, who Traffick hither for that very purpose. 5°. In some *Rivulets* near the City of *Mexico*, are Grains of Gold taken up: especially after Rain; which is to be understood of all the other *Rivers*; none of which yield any thing considerable, except in rainy Seasons. 6°. In *Peru*, *Sumatra*, *Cuba*, *Hispaniola*, and *Guiana*. Lastly, there are several Brooks in the Countries about the *Alps*, especially *Tiro*, out of whose Waters Gold is drawn, though there be no Grains conspicuous therein. Add to this, that the *Rhine* in many Places brings a Golden Mud. See *GOLD*.

As to *Rivers* that bring Grains of Silver, Iron, Copper, Lead, &c. we find no mention of them in Authors; though doubtless there are great Numbers of each; and many of the medicinal Effects of mineral Waters are doubtless owing thereto.

We must not here omit a *River* in *Germany*, which is ordinarily supposed to change Iron into Copper.—The Truth is, there is no real Conversion of the Metal; all that is done is, that the Copper, and Vitriolic Particles in the Water, corrode the Iron, and detaching Parts thereof, by means of the Motion of the Water succeed in their room.

From this variety in the Mixture of the *River Water*, result various Qualities, different specific Gravities, different Colours, &c. See *Mineral-WATER*.

Some *Rivers*, at certain Seasons of the Year, swell, so as to overflow their Banks, and drown the neighbouring Lands.—Of these the most eminent is the *Nile*, which rises so as to cover all *Egypt*, except the Hills. The Inundation begins about the 17th Day of *June*, and increases for the space of forty Days; and decreases for as many: During which Period the Cities of *Egypt*, which are all built on Hills, appear as so many Islands.

To these Inundations *Egypt* owes all its Fertility; the Heavens there affording no Rain, or at least none in any respect considerable.—Hence as the Inundation is great or small, *Egypt*, for that Year is fruitful or barren.

The Antient *Greeks*, &c. were mistaken as to the Cause of this Inundation; no body in those Days having travelled up to its Source: But the modern *English* and *Portuguese* Traders into *Congo*, *Angola*, *Monomotapa*, &c. have let us into the Secret.—From them we learn that the Spring or Source of the *Nile* is in a large Lake call'd *Zaire*, round which are a great Number of huge Mountains, call'd the Mountains of the Moon. Now as these lie in the Southern Hemisphere, their Winter will be at the time

of our Summer: But by reason of their nearness to the Equator, (being only 10° distant from it) they never feel any notable Cold: Hence it is, that instead of Snow in the Winter, they have Rain every Day, at least two Hours before, and two after Noon. In effect, the Tops of these Mountains are always cover'd with Clouds, and the Rains almost continual. Hence Torrents are constantly gushing down from the Mountains; all ending in the Lake of *Zaire*; whence they flow into the Channel of the *Nile*, and other *Rivers* arising from the same Lake, as the *Cuama*, *Zaire*, &c. Hence the Inundation of the *Nile*.

The other *Rivers*, which have any notable stated Inundations, are; the *Niger*, which overflows at the same Time with the *Nile*. *Leo Africanus* says, it begins on the 15th Day of *June*, increases for 40 Days, and decreases as long.—The *Zaire*, a *River* of *Congo*, proceeding from the same Lake with the *Nile*, and therefore affected in the same Manner: The *Rio de la Plata* of *Brasil*, which *Maffeus* observes, overflows at the same time with the *Nile*: The *Ganges*: The *Indus*; both which last overflow in *June*, *July*, and *August*; at which Times the Natives save great Quantities of the Water in Ponds, to serve them the rest of the Year: Several *Rivers* flowing out of the Lake *Chiamay*, into the Bay of *Bengal*, which overflow in *September*, *October*, and *November*. These all bring a very great Fertility with them to the Ground: The *River Matoa* in *Cambolia*: The *River Parana*, or *Paranaguasa*, which some will have to be the same with the Silver *River*: Several *Rivers* in *Coromandelia*, a Part of *India*, overflowing in the rainy Months from the great Quantity of Water issuing off the Mountain *Gatis*: The *Euphrates*, which overflows *Mesopotamia*, certain Days in the Year. Lastly, the *River Sus* in *Nunidia*.

The *Rivers* most celebrated for their Length, Breadth, Swift-ness of Current, &c. are,—The *Nile*, which runs almost in a straight Course 2520 Geographical Miles. The *Niger*, which runs 2400 Miles. The *Ganges*, 1200 Miles. The *Ob*, 1600 Miles. The *Jenisea* in *Asia*, about the same Length with the *Ob*. The *River Orellana* in *America*, 60 Miles broad at its Mouth, and 5000 Miles long. The *Rio de la Plata*, 80 Miles broad at the Mouth. The *Orinoguan*, another *River* of *Brasil*: And the great *River* of St. *Laurence*, near 2500 Miles long.

*RIVER*, in *Phyicks*, a Water running by its own Gravity, in a Channel open above.—Such is *AE Tab. Hydrostatics, Fig. 34*.

#### Laws of the Motion of RIVERS.

The modern Philosophers endeavour to bring the Motion and Flux of *Rivers* to precise Laws; and with this View have applied Geometry and Mechanicks thereto: So that the Doctrine of *Rivers* is become a Part of the new Philosophy.

The *Italian* Authors have distinguished themselves herein, and 'tis chiefly to them we are indebted for the Improvement; particularly S. *Guglielmini*, who in his Treatise, *Della Natura de' Fiumi*, has abundance of new Observations and Discoveries relating thereto.

*Rivers*, he observes, usually have their Sources in Mountains or Elevations of Ground; and 'tis in their Descent from these, that they acquire the Velocity or Acceleration which maintains their future Current.—In Proportion as they advance further, this Velocity diminishes; by reason of the continual Friction of the Water against the Bottom and Sides of the Channel, of the various Obstacles they meet withal in their Progress; and of their arriving at length in Plains, where the Descent is less, and their Inclination to the Horizon, of consequence, greater.—Thus the *Renno*, a *River* of *Italy*, which gave Occasion in some Measure to these Speculations, is found near its Mouth, to have scarce a Descent of 52 Seconds.

If the acquired Velocity be quite spent through the many Obstacles; so that the Current becomes horizontal; there will then nothing remain to propagate the Motion, and continue the Stream, but the Height, or the perpendicular Pressure of the Water which is always Proportional to the Height.—And, happily for us, this Resource increases as the Occasion for it increases: For in Proportion as the Water loses of the Velocity acquired by the Descent, it rises and augments in Depth.

The upper Parts of the Water of a *River*, and those at a Distance from the Banks, may continue to flow from the single Cause or Principle of Declivity, how small soever it be; for not being detain'd by any Obstacle, the minutest Difference of Level will have its Effect: But the lower Parts, which roll along the Bottom, will scarce be sensible of so small a Declivity, and will only have what Motion they receive from the Pressure of the superincumbent Waters.

The natural Viscidity and Cohesion of the Particles of Water, and that Implication, as it were, which they seem to have with one another, makes the lower, which are moved by means of the Depth, carry along with them the upper, which in a horizontal Channel wou'd have no Motion at all, or in a Channel very little inclined, next to none. So that the lower, in this Case, communicate to the upper, a Part of the Motion they have receiv'd from it. Hence it frequently happens that the greatest Velocity of a *River* is about the middle of its Depth; such middle



Parts having the Advantage of being press'd with half the Depth of the *River*, and of being free, at the same Time, from the Friction of the Bottom.

To find whether the Water of a *River* almost Horizontal, flows by means of the Velocity acquired in its Descent, or by the Pressure of its Depth; set up an Obstacle Perpendicular thereto; and if the Water rise and swell immediately against such Obstacle, it runs in Virtue of its fall; or if it stop a little while, in Virtue of its Pressure.

*Rivers*, according to this Author, almost always make their own Beds.—If the Bottom have originally been a large Declivity; the Water in Consequence hereof falling with a great deal of Force, will have swept away the most elevated Parts of the Soil, and carrying them lower down, will gradually make the Bottom horizontal; where the Stream is swiftest, there will the Earth be most dug up, and consequently there the greatest Cavity will be made.

The Water having made its Bed horizontal, becomes so it self, and consequently rakes with the less Force against the Bottom; till at length that Force is only equal to the Resistance of the Bottom. The Bottom is now arrived at a State of Permanency, at least for a considerable Time; and the longer, according to the Quality of the Soil; Clay and Chalk resisting longer than Sand or Mud.

On the other Hand, the Water is continually gnawing and eating off the Brims of its Channel; and this with the more Force as by the Direction of its Stream it strikes more perpendicularly against them. By this means it has a continual Tendency to render them parallel to its own Course; and when it has arrived as near that as possible, it ceases to have any Effect in that Way. At the same time that it has thus rectified its Edges, it has enlarged its own Bed; that is, has lost of its Height, and consequently of its Force and Pressure: This it continues to do till there is an Equilibrium between the Force of the Water and the Resistance of its Banks, upon which they will remain fix'd.—And it is evident from Experience, that these Equilibriums are all real; inasmuch as we find that *Rivers* only dig and widen to a certain Pitch.

The very reverse of all these things does also happen.—*Rivers* whose Waters are thick and muddy, raise their Bed by letting Part of the heterogeneous Matters contain'd in them fall to the Bottom: They also contract their Banks by a continual Apposition of the same Matter in brushing over them. This Matter being thrown aside far from the Stream of Water, might even serve, by reason of the obscurity of the Motion, to form new Banks.

Now, these opposite Effects almost always seem to meet together, and are differently combined, according to the Circumstances; whence 'tis very difficult judging of the Result. Yet must this Combination be known very accurately, ere any Measures can be taken about *Rivers*, especially as to the diverting their Courses.—The *Lamona*, which emptied it self into the *Po*, being turn'd another Way to make it discharge it self into the *Adriatic*, was so alter'd, and its Force so far diminish'd, now that its Waters were left to themselves, that it rais'd its Bed a great Height, by continual Depositions of Mud; 'till it became much higher than the *Po*, in its utmost Accretions, and needed very high Banks or Dykes to keep it from overflowing. See ALLUVION.

A little *River* may be receiv'd into a large one, without either augmenting its Width or Depth.—This seeming Paradox arises hence, that the Addition of the little *River* may only go to move the Waters before at rest near the Banks of the large one, and thus augment the Velocity of the Stream, in the same Proportion as it does that of the Quantity of Water.—Thus the *Venetian* Branch of the *Po* swallowed up the *Ferrarese* Branch, and that of *Pauaro*, without any enlargement of its own Dimensions. And the same may be concluded proportionably of all other Accessions to *Rivers*; and in the general, of all new Augmentations of Water.

A *River* offering to enter into another, either perpendicularly, or in an opposite Direction, will be diverted by Degrees from that Direction, and obliged to make it self a new and more favourable Bed next the Mouth.

The Union of two *Rivers* into one, makes it flow the swifter, by reason in lieu of the Friction of four Shores, they have only two to surmount; and that the Stream being further distant from the Banks, goes on with the less Interruption; beside that a greater Quantity of Water moving with a greater Velocity digs deeper in the Bed, and of Course retrenches of its former Width.—Hence also it is that *Rivers*, by being united, take up less Space on the Surface of the Earth are more advantageous to low Grounds; which discharge their superfluous Moisture into them, and have less Occasion for Dykes to prevent their overflowing.

These Advantages are so considerable, that S. *Guglielmini* thinks them worthy of Nature's having had a View to them in her contriving to make the Confluence of *Rivers* so frequent as we find it.

To determine more precisely the general Laws of the Motion of *Rivers*, it may be observed that a *River* is said to remain in the same State, or to be in a permanent State, when it flows uniformly, so as to be always at the same Height in the same

Place. 2°. That a Plane, which cutting a *River* is perpendicular to the Bottom, as *p o n g*, is call'd the Section of a *River*.

Hence, when a *River* is terminated by flat Sides, parallel to each other, and perpendicular to the Horizon, and the Bottom also is a Plane, either horizontal, or inclined, the Section of the *River* with these three Planes makes Right Angles; and is a Parallelogram.

Now in every *River* that is in a permanent State, the same Quantity of Water flows in the same Time through every Section; for unless there be in every Place as great a Supply of Water, as what runs from it, the *River* will not remain in the same State. This will hold good, whatever be the Irregularity of the Bed, or Channel, from which in another respect several Changes in the Motion of the *River* may arise: For Example, a greater Friction, in Proportion to the Inequality of the Channel.

The Irregularities in the Motion of a *River* may be infinitely varied, nor can any Rules be given to settle them. All Irregularities must be set aside; and only the general Tenor or Flux be considered to examine the general Course of *Rivers*.

Suppose, then, the Water to run in a regular Channel, without any sensible Friction, and that the Channel is terminated with Plane Sides, parallel to one another, and Vertical; and also that the Bottom is a Plane, and inclined to the Horizon.—Let *ABC* be the Channel, into which the Water runs from a greater Reservoir or Head; and let the Water always remain in the same Height at the Head, so that the *River* may be in a permanent State: The Water here descends along an inclined Plane, and is accelerated; whereby, because the same Quantity of Water flows through every Section, the Height of the Water, as you recede from the Head of the *River*, is continually diminished, and its Surface will acquire the Figure, *i q v*.

To determine the Velocity of the Water in different Places; suppose the hollow of the Channel *ADCB* to be shut up with a Plane; if there be an Hole made in the Plane, the Water will spout the faster through the Hole, as the Hole is more distant from the Surface of the Water *HI*; and the Water will have the same Celerity that a Body falling from the Surface of the Water to the Depth of the Hole below it, would acquire: All which arises from the Pressure of the superincumbent Water.—There is the same Pressure, that is, the same moving Force, when the Obstacle at *AC* is taken away, upon which every Particle of Water enters into the Channel with the Celerity a Body would acquire in falling from the Surface of the Water to the Depth of that Particle. This Particle is moved along in an inclined Plane in the Channel, with an accelerated Motion; and that in the same manner, as if in falling vertically, it had continued its Motion to the same Depth below the Surface of the Water in the Head of the *River*.

So, if you draw the horizontal Line *it*, the Particle at *r* will have the same Celerity as a Body falling the length *i C*, and running down *Cr*, can acquire; which is the Celerity acquired by the Body in falling down *tr*. Therefore the Celerity of a Particle may be every where measured, by drawing from it a Perpendicular to the horizontal Plane, which is conceived to run along the Surface of the Water in the Head of the *River*; and the Velocity which a Body acquires in falling down that Perpendicular, will be the Celerity of the Particle; which is greater, the longer the Perpendicular is. From any Point, as *r*, draw *RS* perpendicular to the Bottom of the *River*, this will measure the Height or Depth of the *River*. Since *rs* is inclined to the Horizon, if from the several Points of that Line, you draw Perpendiculars to *it*, they will be shorter, the more distant they are from *r*, and the shortest of them also will be *sv*: Therefore the Celerities of the Particles in the Line *rs*, are so much the less, the nearer they are to the Surface of the *River*, and the lower Water is moved faster than the upper Water.

Yet the Celerities of those Waters, as the *River* runs on, continually approach nearer and nearer to an Equality: For the Squares of those Celerities are as *rs* to *sv*, the Difference of which Lines, as you recede from the Head of the *River* is continually lessened, because of the Height *rs*, which is also continually diminished as the Lines themselves are lengthened. Now as this obtains in the Squares, it will much more obtain in the Celerities themselves, whose Difference therefore is diminished as they increase.

If the Inclination of the Bottom be changed up to the Head of the *River*, so as to become *yz*, and a greater Quantity of Water flow into the Channel, it will be higher every where in the *River*, but the Celerity of the Water will not be changed.—For this Celerity does not depend on the Height of the Water in the *River*, but, on the Distance of the moved Particle from the horizontal Plane of the Surface at the Head continued over the said Particle; which Distance is measured by the Perpendicular *rt*, or *sv*; but these Lines, are not changed by the Afflux of Water, provided the Water remain at the same Height in the Basin or Head.

Suppose the upper Part of the Channel stop'd by an Obstacle, as *X*, which descends a little way below the Surface of the Water; here, the whole Water which comes cannot run through, therefore it must rise: But the Celerity of the Water below this Obstacle is not increased; and the Water that comes on, is continually



usually heaped up, so that at last it must rise so as to flow over the Obstacle, or the Banks of the River. If the Banks be raised, the Obstacle be continued; the Height of the Water would rise above the Line *i. e.*; but before that, the Celerity of the Water cannot be increased: In which Case the Height of all the Water in the Head will be increased; for, as we suppose the River in a permanent State, there must continually be as great a Supply of Water to the Head, as there runs from it down the Channel; but if less Water runs down, the Height must necessarily be increased in the Head, till the Celerity of the Water flowing under the Obstacle be increased to such Degree, that the same Quantity of Water shall run under the Obstacle, as used to run in the open Channel before.

RIVULET, a Diminutive of River. See RIVER.

RIXDOLLAR, a Silver Coin, struck in several States and free Cities of Germany; as also in Flanders, Poland, Denmark, Sweden, &c. See COIN.

There is but very little Difference between the Rixdollar and the Dollar, another Silver Coin struck in Germany; each being equal to the French Crown of three Livres, the Spanish Piece of Eight, or 4s. 6d. Sterling. See CROWN, &c.

The Rixdollar is one of the most Current and universal Coins in the World.—'Tis used equally in the Commerce of the Levant, the North, Muscovy, and the East-Indies.

ROAD, VIA, an open Way or Passage, which makes a commodious Communication between one Place and another. See WAY.

The Romans, of all other People, took the most pains in their Roads: The Labour and Expences they were at to render them spacious, straight, smooth, and agreeable to the very Extremities of their Empire, are incredible. See Bergier's History of the great Roads of the Roman Empire.

Usually, they strengthened the Ground by ramming it, laying it with Flints, Pebbles, or Sand; sometimes by a Lining of Masonry, Rubbish, Bricks, Potsherds, &c. bound together with Lime.

F. Menestriers observes, that in some Places in the *Lyonnois* he has found huge Clusters of Flints cemented with Lime, reaching 10 or 12 Foot deep, and making a Mass as hard and compact as Marble itself; and which, after resisting the Injuries of Time for 1600 Years, is still scarce penetrable by all the Force of Hammers, Mattocks, &c. and yet the Flints it consists of don't exceed the bigness of an Egg.

Sometimes they even paved their Roads regularly, with large, square Free-Stones; such is the *Appian* and *Flaminian Way*, &c. See PAVING.

The Roads paved of very hard Stones they usually call'd *Via Ferrea*, either because they resembled Iron, or because they resisted the Iron of the Horse's Feet, Chariots, &c.

Roads are either *Natural*, or *Artificial*; *Terrestrial*, or *Aquatic*, *Publick*, or *Private*.

A *natural Road* is that which has been frequented for a long succession of Time, and subsists with little Expence, by reason of its Disposition, &c.

*Artificial Road* is that made by Labour of the Hand, either of Earth, or Masonry; and wherein there were several Difficulties to be surmounted: Such are most of those along the Banks of Rivers, through Marishes, Lakes, &c.

*Terrestrial*, or *Land Roads*, are not only those made upon the Ground, but also those form'd of Earth heaped up in Manner of a Bank, and sustained by Spurs, Buttresses, and Counter-Forts.

*Aquatic Road*, is a Road made in the Waters, whether Current, as over Rivers, &c. or Stagnant, as Banks and Causeways over Morasses, Ponds, &c. See CAUSEWAY.

Under this Denomination are also comprehended navigable Rivers, and artificial Canals; as those in *Italy*, *Holland*, &c.

*Publick Road*, or *Grand Road*, is any common Road, whether straight, or a-cross, Military or Royal, &c.—*Private Road* is that made for the Convenience of some particular House, &c.

*Military Roads*, so call'd among the Romans, were grand Roads appointed for the marching of their Armies into the Provinces of the Empire, or for the Assistance of their Allies. See MILITARY.

The principal of these Roads in England, are *Watling-street*, *Ikenild-street*, *Fosi-way*, and *Erminage-street*; which see under the Article WAY.

*Double-Roads*, among the Romans, were Roads for Chariots, &c. having two Pavements, or Causeways; the one for those going one way, the other for those returning the other; to prevent clashing, stopping, and confusion.

These two Ways were separated from each other by a Bank raised in the Middle, paved with Bricks, for the Convenience of Foot-People, with Borders, mounting Stones from Space to Space, and military Columns to mark the Distance.—Such was the Road from Rome to *Ostia*; call'd *Via Portuentis*. See MILITARY.

*Subterraneous-Road*, is that dug in a Rock, with the Chissel, &c. and left vaulted.—Such is that of *Puzzuoli* near Naples, which is near half a League long, fifteen Foot broad, and as many high. See SUBTERRANEAN.

Strabo says it was made by one *Corcellus*, a Relation, probably, of *Nerva*; but it has since been widened by *Alphonfus* King of

*Arragon* and *Naples*, and made straight by the Viceroy.—There is another of the same Kind in the same Kingdom, between *Baie* and *Cuma*, call'd the *Grotto of Virgil*, because mentioned by the Poet in the sixth Book of his *Aeneid*. See GROTTA.

ROAD, in Navigation, a Place of Anchorage, at some Distance from Shore, and shelter'd from the Winds; where Vessels usually moor, to wait for a Wind or Tide proper to carry them into Harbour, or to set Sail. See HARBOUR, MOORING, ANCHOR, &c.

When the Bottom is clear of Rocks, and the Hold firm, and the Place well cover'd from a certain Wind; the Road is said to be good.

A wild ROAD, among Sailors, is one which has but a little Land on any Side.

The Roads within his Majesty's Dominions are free to all Merchant Vessels, either of his Subjects or Allies.—Captains and Masters of Ships who are forced by Storms, &c. to cut their Cables, and leave their Anchors in the Roads, are obliged to fix up Marks or Buoys, on Pain of a Forfeiture of their Anchors, &c. See BUOY.

The Masters of Ships coming to Moor in a Road, must cast Anchor at such Distance as that the Cables, &c. mayn't mix, on Pain of answering the Damages: When there are several Vessels in the same Road, the outermost to the Sea-ward, is obliged to keep a Light in his Lanthorn in the Night-time, to apprize Vessels coming in from Sea.

ROADER, among Sailors, a Ship that Rides at Anchor in a Road. See ROAD and ANCHOR.

ROB, in Pharmacy, a Preparation antiently much used, consisting of the Juices of Fruits, purified, and boil'd to a Consumption of two thirds of their Moisture. See MEDICINE, &c.

There are Robs made of Quinces, Mulberries, Elderberries, Aloes, Acacia, Liquorice, Barberries, Gooseberries, and other Fruits, for various Diseases.—The Juice of Grapes thus prepared, is particularly call'd *Sapa*; which *Sapa* is almost of the Consistence of a Syrup. See SAPA.

When only one third of the Humidity is boil'd away, 'tis call'd *Defrutum*; and when only boil'd to the Consistence of a soft Electuary, a *Resin*. See DEFUTUM and RESIN.

The Word Rob is pure Arabick; and signifies, originally, a Juice dried in the Sun, or over the Fire; that it may keep the longer without Damage.

Sometimes it also denotes a Composition of some Juice made up with Honey or Sugar; in which Sense it is confounded with *Loche* or *Lohoc*. See LOHOC.

The Rob is a Form now much out of use; though there are several directed in the College Dispensatory; as Robs of black Cherries, of Sloes, of Quinces, &c.

ROBBERY, in Law, a felonious taking away another Man's Goods, from his Person, Presence, or Estate, against his Will; putting him in Fear, &c.—This is sometimes call'd *violent Theft*. See THEFT.

The Word is said to have taken its rise hence, that antiently Robbers only took away the Robes or Cloaths from Travellers. Though my Lord Coke in the third of his *Institutes*, takes the Name to have had its rise from *Robin Hood*, who lived under *Richard I.* in the Borders of England and Scotland, by Robbery, burning Houses, Rape, and Spoil.

Hence also *Robbers-Men*, or *Robberds-Men*, mentioned in several Statutes for mighty Thieves.

ROBE, a Gown or Garment wore by Lawyers, Divines, and other Graduates; who are hence call'd *Gentlemen of the long Robe*. See GOWN.

The Robe is an ample Garment bore over the ordinary Cloaths, hanging down to the Feet.—'Tis fashion'd differently for Ecclesiasticks, and for Laymen.

At Rome, they gave the Name *Virile Robe*, *Toga Virilis*, to a plain kind of Gown which their Youth assumed when arrived at Puberty. This, they particularly denominated, *Prætexta*. See TOGA, PRÆTEXTA, VIRILE, PUBERTY, &c.

In some Universities, Physicians wear the red Robe.—In the *Sorbonne* the Doctors are always in Robes and Caps. Beadles, &c. wear Robes of two Colours.

Among the French Officers, &c. they distinguish those of the *short Robe*; which are such as have not been regularly examined.—They have also Barbers of the *short Robe*, who are such as are obliged to Practice in an inferior Way to those of the long Robe.

ROBE, is also taken in the general for, Civil Magistrature, or the Profession opposite to that of Arms. See MAGISTRATE.

In this Sense it was that *Cicero* said, *Cedant Arma Togæ*.

Master of the ROBES, is an Officer of the Household, who has the ordering of all his Majesty's Robes; as those of the Coronation, those of St. George's Feast, of Parliament, &c. as also of his wearing Apparel, Collar of SS's, &c.

He has several Officers under him, as a Clerk of the Robes, a Yeoman, three Grooms, a Page, a Brusher, Sempstrels, Laundress, Starcher; a Keeper of the Wardrobe at *Whitehall*, &c. See WARDROBE.

ROBERVALLIAN Lines, a Name given to certain Lines, used for the Transformation of Figures; thus call'd from their Inventor M. de Roberval. See TRANSFORMATION, &c.

The



The Abbot Galloys, in the Memoirs of the French Academy, An. 1693. observes, that the Method of transforming Figures, explain'd at the latter end of M. de Roberval's Treatise of Indivisibles, is the same with that since published by Mr. James Gregory, in his Universal Geometry; and that, by a Letter of Torricelli's, it appears that Roberval had invented this manner of transforming Figures, by means of certain Lines which Torricelli called *Robervallian Lines*.

He adds, that 'tis highly probable that J. Gregory first learned the Method in the Journey he made to Padua in 1668; the Method it self having been known in Italy from the Year 1646; though the Book was not published till the Year 1692.

This Account Dr. David Gregory has endeavour'd to refute, in Vindication of his Brother.—His Answer is inserted in the Phil. Transact. An. 1694. and the Abbot has rejoind'd in the French Memoirs of the Academy, An. 1703.

ROBIGALIA, or RUBIGALIA, in Antiquity. See RUBIGALIA.

ROBORANTIA, in Medicine, *Strengtheners*; or such Medicines as strengthen the Parts, and give new Vigour to the Constitution. See STRENGTHENER.

ROCAMBOLES, a mild, pleasing Sort of Garlick, by some call'd *Spanish Garlick*; being much of the Nature of Shalot; and well known in Cookery, in Quality of a Sauce.

ROCHET, a Lawn Garment, wore by Bishops and Abbots; resembling a Surplice, except in this, that the Sleeves are gathered at the Wrist; whereas the Surplice is quite open. See SURPLICE.

The Regular Canons of St. Augustin do also wear *Rochets* under their Copes.—*Ménage* derives the Word from the Latin *Rochettus*, a Diminutive of *Rochus*, used in the Writers of the lower Latin for *Tunic*; and formed originally from the German, *Rock*.

ROCHETS are also the Mantles wore on Days of Ceremony, by the Peers sitting in the English Parliament. See PEER and PARLIAMENT.

Those of Viscounts have two Bands or Borders and a half; those of Earls three; those of Marquisses three and a half; and those of Dukes four. *Larrey*.

ROCK, RUPES, a large Mass or Block of hard Stone, rooted in the Ground. See STONE.

There are various Ways of breaking Rocks with Wood, Gunpowder, &c. See QUARRY, WOOD, &c.

We have Roads, Grotto's, Labyrinths, &c. dug through Rocks. See ROAD, GROTTO, LABYRINTH, &c.

The Word is form'd of the Greek *ροε*, *Rima*, Cleft, Chink; and *ροε* from *ρηνυμαι*, I break; whence *ρουν*, a stony River.

Rock-Work, ROCAILLE. See SHELL-Work.

Rock-Crystal, or Crystal of the Rock, is that form'd by a Congelation of the lapidific Juices which trickle down in Rocks and Caverns. See CRYSTAL.

Rock-Alum, } See { ALUMN.  
Rock-Salt, } { SALT.

ROCKET, in Pyrotechnia, an artificial Fire-work, consisting of a cylindrical Case of Paper, filled with a Composition of certain combustible Ingredients; which being tied to a Stick, mounts in the Air to a considerable Height, and there bursts. See PYROTECHNIA and FIRE-WORKS.

The Rocket has a great Part in all Fire-Works of Entertainment, being not only used singly, but sometimes, also, as an Ingredient in others.

Besides the Rocket here defined, which is properly call'd the *Sky-Rocket*, there is another, which from the Sphere it moves in, the Water, is denominat'd *Water-Rocket*.—The Mechanism, Preparation, &c. of each whereof, we shall here describe.

#### Method of making a Sky-ROCKET.

1<sup>o</sup>. A Concave cylindrical Mould, or Frame, AB, *Tab. Miscellany*, Fig. 7. is turn'd, of hard Wood, with a Base BD, and a Capital HC, usually adorned with architectonical Mouldings.—The Cylinder is to be open at both Ends, and its Dimensions, for Rockets of various Sizes, as in the following Article.—When large, they are sometimes also made of Brass or Tin; and when small, of Bone.

2<sup>o</sup>. Of the same Matter with the Cylinder, is prepared a Quadra, or Foot E; in the middle whereof is turn'd a Hemisphere G, considerably less than that of the Cavity of the Frame; making the Cap or Head of another Cylinder IK, and reaching up within the Case; where 'tis kept steady by a Pin LM.

Authors don't agree about the Proportions.—*Semionowitz* prescribes those that follow. If the Diameter of the Aperture HN be equal to that of a Leaden-Ball of a Pound, or at most two Pound Weight; the Height of the Cylinder, with the Base and Capital HC, are to be seven Diameters of the Height of the Quadra FE 1 1/2. The Altitude of the Cylinder KI, 1. The Diameter IN 1/2. The Diameter of the Hemisphere G, 1/3. The Height of the Capital AC, 1.—The same Author adds, that he finds by abundant Experience, that if the Diameter of the Aperture be divided into 100 Parts, according to the different Weight

of the Leaden-Balls to whose Diameter 'tis equal, the following Numbers being multiplied by 7 give the Height HE.

| Weight of Leaden-Ball. | Subseptuple of Altitude HE. | Weight of Leaden-Ball. | Subseptuple of Altitude HE. |
|------------------------|-----------------------------|------------------------|-----------------------------|
| 1                      | 100                         | 20                     | 86                          |
| 2                      | 98                          | 30                     | 82                          |
| 4                      | 26                          | 40                     | 78                          |
| 6                      | 94                          | 50                     | 75                          |
| 10                     | 91                          | 70                     | 67                          |
| 15                     | 88                          | 100                    | 57                          |

The Frame being ready, a wooden Cylinder or Mould AB (Fig. 8. is provided, whose Diameter is 1/2 of the Aperture of the Frame, and its Length equal to the Height of the same; to which is fix'd a Haft or Hilt AD. About this Mould is a thick strong Paper roll'd, till such time as it fill the Cavity of the Frame. This done, where the Haft is join'd to the Cylinder, as at A, 'tis choak'd, i. e. firmly bound round with fine Pack-thread, so as to constringe or straighten the Cavity thereof.—The Part thus choak'd or bound up FG, (Fig. 9.) to be equal to the Hemisphere G.

The Case is now taken off the Mould, and put into the Cavity of the Frame, Fig. 7. the Choak GP upon the Hemisphere; and in this Disposition is fill'd with a Composition described in the following Article, ramm'd strongly in by means of a wooden Cylinder or Rammer fitting the Cavity, and a Mallet.

When fill'd, a Paper Cap of a conical Form is glued over the End of the Case fill'd last; and the Space left at-top fill'd with whole Gun-powder, to the Height of about one Diameter; then the Rocket bound, or choak'd in E, as before in G.

Lastly, the Rocket is bored, as is represented in a L. Fig. 9. care being taken to do it in the middle.—Some, indeed, bore the Rocket as they fill it, by thrusting a long, sharp Spike through the lower Basis, and drawing it out again when the Rocket is full. But 'tis best not to bore till the Rocket be to be used.

The boring is to go two thirds of the Height of the Rocket, abating one Diameter of the Cavity. The Diameter of the Bore in G is to be 1/2 of the Diameter of the Cylinder; and in L 1/4 of the lower Diameter.

To make the Rocket mount straight up, it is tied fast to the End of a long slender Stick, MN, eight times as long as the Rocket; in such manner as that when poiz'd on the Finger near the Touch-hole F, the Stick (which is usually made biggest at this End, and sloping gently to the other) may preponderate, tho' very little.—The Rocket thus equip'd, is hung at freedom, and lighted with Port-Fire.

Note, Some instead of a Stick to make the Rocket mount, furnish it with two Wings, as MN, (Fig. 10.) which have the same Effect: And instead of Paper some make the Cases of Wood, cover'd with Leather; others of a thin Iron Plate. And some, instead of a wooden Stick use an Iron Wire, with a Plummer at the end of it.

The Composition wherewith Rockets are fill'd, consists of the three following Ingredients, viz. Salt-petre, Charcoal, and Sulphur; all well ground: But the Proportions of these are various for Rockets of various Sizes; as in the following Table. Noting, that in small Rockets Gun-powder Dust is added.

Compositions for ROCKETS of various Sizes.

| Weight of Rocket. | Salt-pet. | Sulphur. | Charcoal. | Gun-powder Dust. |
|-------------------|-----------|----------|-----------|------------------|
| 100, or 60 lb     | 30 lb     | 10 lb    | 20 lb     |                  |
| 50 30             | 30        | 7        | 18        |                  |
| 20 18             | 42        | 12       | 26        |                  |
| 15 12             | 23        | 8        | 16        |                  |
| 10 9              | 62        | 9        | 20        |                  |
| 9 6               | 35        | 5        | 10        |                  |
| 5 4               | 64        | 8        | 16        |                  |
| 3 2               | 60        | 2        | 15        |                  |
| 1                 |           | 2        | 6         | 32               |
| Ounces.           | Oun.      | Oun.     | Ounce.    | Ounces.          |
| 9                 | 4         | 1        | 2         | 9                |
| 6                 | 12        | 1 1/2    | 4         | 15               |
| 3                 | 2         | 1/2      | 1 1/2     | 12               |
| 1                 |           | 1/4      | 2         | 15               |

Note, several Rockets being disposed round the Circumference of a Wheel, whether Circular or Polygonous, the Head of the one applied to the Tail of another, and the Wheel put in Motion; as one Rocket is spent another will take Fire: And the Wheel be continued in its Rotation.

As an additional Ornament to Rockets, 'tis usual to furnish them either with Stars or with Serpents, or Sparks, which take Fire when the Rocket bursts: And sometimes little Rockets are included in.



great ones, to take Fire when the great one is at its greatest height.

### To make Stars for ROCKETS.

Mix 3 Pound of Salt-petre, with 11 Ounces of Sulphur, 3 Ounces of beaten Gun-powder, and 10 of Antimony. Moisten the Mass with Gum-Water, and form it into little Balls of the Size of Filberds; drying them well, either in the Sun or an Oven. When dry inclose a Number of them in the Conical Cap of the Rocket.

### Method of making a Water-ROCKET.

Make a Rocket AB after the usual Manner, excepting in the Number of Choaks, express'd in Fig. 11.—Let its Diameter be equal to that of a Leaden-Ball of two or three Inches Diameter, and let it be bored to a third Part of its Height. Inclose the Rocket in a hollow Paper Cylinder; which smear over with melted Pitch or Wax, that it may resist the Moisture.

Note, The Weight of the Rocket is to be so proportioned to that of the Water, that the whole Cylinder may be immerg'd. Some instead of a Cylinder use a truncated Cone, or even a Spheroid; and some hang a Weight to the End at which 'tis lighted.

### Theory of the Flight of Sky-ROCKETS.

Mariotte takes the rise of Rockets to be owing to the Impulse or Resistance of the Air against the Flame: Dr. Desaguliers accounts for it otherwise.

Conceive the Rocket to have no vent at the Choak, and to be set on Fire in the conical Bore; the consequence wou'd be, either that the Rocket wou'd burst in the weakest Place, or that, if all its Parts were equally strong and able to sustain the Impulse of the Flame, the Rocket would burn out immovable.—Now, as the Force of the Flame is equable, suppose its Action downwards, or that upwards sufficient to lift 40 Pounds. As these Forces are equal, but their Directions contrary, they will destroy each other's Action. See ACTION and REACTION.

Imagine, then, the Rocket open'd at the Choak; by this means the Action of the Flame downwards is taken away, and there remains a Force equal to 40 Pounds acting upwards, to carry up the Rocket, and the Stick it is tied to.—Accordingly, we find that if the Composition of the Rocket be very weak, so as not to give an Impulse greater than the Weight of the Rocket and Stick, it does not rise at all: Or if the Composition be slow, so that a small Part of it only kindles at first, the Rocket will not rise.

The Stick serves to keep it perpendicular: For if the Rocket should begin to tumble, moving round a Point in the Choak, as being the common Centre of Gravity of Rocket and Stick, there wou'd be so much Friction against the Air, by the Stick between the Centre and the Point, and the Point wou'd beat against the Air with so much Velocity, that the Reaction of the Medium wou'd restore it to its perpendicularity.

When the Composition is burnt out, and the Impulse upwards is ceas'd, the common Centre of Gravity is brought lower, towards the middle of the Stick; by which means the Velocity of the Point of the Stick is decreased, and that of the Point of the Rocket increas'd: So that the whole will tumble down, with the Rocket-end foremost.

All the while a Rocket burns, the common Centre of Gravity is shifting and getting downwards, and still the faster and the lower as the Stick is the lighter: So that it sometimes begins to tumble, ere it be burn'd out: But, when the Stick being a little too heavy, the Weight of the Rocket bears a less Proportion to that of the Stick, the common Centre of Gravity will not get so low, but that the Rocket will rise strait, though not so fast.

ROD, VIRGA, VERGE, a Wand, or long slender Stick or Staff. See VERGE, STAFF, &c.

ROD, is also a Land-Measure of 16 Foot  $\frac{1}{2}$ , the same with Perch and Pole. See PERCH and POLE.

ROD, in Gauging. See GAUGING-ROD.

ROD-KNIGHTS, in ancient Customs. See REDMANS.

BLACK-ROD. See BLACK-ROD.

ROE, of a Fish, is that Part which contains the Sperm or Seed thereof. See FISH, SEED, &c.

That of Male-Fishes is usually distinguished by soft Roe, or Milt; that of the Female by hard Roe.

The soft Roe when squeez'd, yields a Liquor resembling Milk; whence its Name Milt: The French call it expressly Milk, lait.

See MILK.

That of Carps is esteemed an excellent Food.—M. Leeuwenhoek upon examining the Milt of a Cod-Fish with a Microscope, found it contain'd more living Animalcules than there are Men in the whole Earth. See EGG, ANIMALCULE, MICROSCOPE, &c.

ROE, one of the Beasts of Chase. See BEAST and GAME.

ROE-BUCK. See HUNTING.

ROE-BUCK, a Beast of Chase or Forest. See BEAST, GAME, &c.

The Roe-Buck is called an Hind the first Year; Gyrle the second; Hensel the third; Roe-Buck of the first Head the fourth; and a fair Roe-Buck the fifth.

The Roe-Buck is a Deer well known in Germany; and seems to have also been formerly known in England, though now the Race be extinct. See HUNTING.

ROGA, in Antiquity, Donatives, or Presents which the Augusti or Emperors made to the Senators, Magistrates, and even the People; and the Popes or Patriarchs to their Clergy. See DONATIVE.

The Emperors used to distribute these Roga on the first Day of the Year, or on their Birth Day; or on the Natalis Dies of the Cities.—The Popes and Patriarchs in Passion Week.

This Custom of Roga, or Largesses, was first introduced by the Tribunes of the People, to gain the Populace more effectually over to their Interest. The Emperors at length took it up, and made such Distributions to the People, and even the Soldiery, call'd by the Greek Writers in the middle Age ROGATOPEE.

Rogum is also found used for the ordinary Pay of the Soldiery.

The Word is derived by some from the Latin *erogare*, to give, distribute; according to others from *rogo*, I ask; hence, say they, it is that St. Gregory the Great calls such Distributions *Precaria*; as being to be demanded, in order to be had. See PRECARIÆ.

Others, again, derive it from the Greek *ρογος*, Corn; because it antiently consisted in Corn distributed among the Populace, the Soldiery, &c.

ROGATIO, in the Roman Jurisprudence, a Demand made by the Consuls, or the Tribunes, of the Roman People, when a Law was propos'd to be pass'd. See LAW.

The Demand was made in these Terms; *Do you will and appoint that (for Instance) War be declared against Philip?* This was the *Rogatio*; and what the People return'd in answer; as, *The Roman People do appoint War to be made against Philip*, was the *Decretum*, Decree.

However, the Word *Rogatio* is frequently used for the Decree it self; to distinguish it from a Decree of the Senate. See DECREE.

Frequently, also, *Rogation* is used in the same Sense with Law; because there never was any Law established among the Romans, but what was done by this kind of *Rogation*.—Otherwise it had been null. See LAW.

ROGATION-Week, the Week immediately preceding *Whitsunday*; thus call'd from three Fasts therein, viz. on the Monday, Tuesday, and Wednesday, call'd *Rogations*, or *Rogation Days*, because of the extraordinary Prayers and Processions then made for the Fruits of the Earth. See PROCESSION.

The first who appointed these *Rogations* was St. Mammercus, Bishop of Vienna, who in 474 assembled several Bishops, to implore the Mercy of God by a Fast of three Days; on occasion of an Incursion then made upon the Country by a great Number of wild Beasts.—Others say, 'twas first set on Foot by Mammercus in 468, on occasion of some publick Calamities.

ROGUE, in Law, an idle and sturdy Beggar; who for the first Offence is called a *Rogue of the first Degree*; and punish'd by whipping, and boring through the Gristle of the Right Ear with a hot Iron, an Inch in Compass: And for the second Offence is call'd a *Rogue of the second Degree*, and put to Death as a Felon, if he be above eighteen Years of Age. See FELON, &c.

ROLL, in the Manufactories, something wound or folded in a Circle. See ROLLING.

Few Stuffs are made up in *Rolls*, but Satins, Gawses, and Crape, which are apt to break, and take Plaits not easy to be got out if folded otherwise.—Ribbons, however, and Laces, Galloons, and Paduas of all Kinds, are thus roll'd.

To Roll hot—By an Arret of Council in 1698, Fullers, Shearmen, &c. in *Poistow*, are prohibited to Roll any Stuff hot, either by having Fire over or under it, or by heating the Rollers, or otherwise, on Forfeiture of 100 Livres for the first Offence; or of being degraded from the Privileges of Masterhip in Case of a Relapse.

The Antients made all their Books up in Form of *Rolls*, or little Columns; and in Cicero's Time, the Libraries consisted wholly of such *Rolls*.—The dearth of Parchment, and the cheapness of Paper, whereof the *Rolls* were made, were the Reason that scarce any but Paper *Rolls* were used. See PAPER, PARCHMENT, &c.

Vossius says, they pasted several Sheets end to end, when fill'd on one Side, and roll'd them up together; beginning with the last, which they call'd *Umbilicus*, and to which they fastened an Ivory or boxen Stick, to sustain the Roll.—To the other Extremity they pasted a Piece of Parchment, to cover and preserve it. See VOLUME, UMBILICUS, &c.

These *Rolls* were placed in the Libraries, perpendicularly, to the Horizon.—The Jews still preserve the antient usage of *Rolls* for the Books they read in their Synagogues. See BOOK-BINDING.

ROLL of Tobacco, is Tobacco in the Leaf, twisted on the Mill, and wound Twist over Twist, about a Stick or Roller.

The generality of Tobacco in America is there sold in *Rolls*, of various Weights: And 'tis not till after its Arrival in England, Spain,



*Spain, France, and Holland*, that it is cut.—*Roll Tobacco* is what is used both for chewing and rasping. See **TOBACCO**.

**ROLL, in Law**, a Schedule of Paper or Parchment, which may be wound up by the Hand into the fashion of a Pipe. See **SCHEDULE, &c.**

Of these there are in the Exchequer several Kinds, viz. the great *Wardrobe-Roll*, the *Cofferer's-Roll*, the *Subsidy-Roll*, &c. See **PIPE, &c.**

The Word is form'd from the *Latin Rotulus*, or *Rotulus*, because most Instruments and Expeditions in Law were antiently wrote on Papers, or Parchments sew'd or glued together: Whence the Words *enroll*, *controll*. See **ENROLL, CONTROLL, &c.**

**ROLLS of Parliament**, are the Manuscript Registers or *Rolls* of the Proceedings of our antient Parliaments. See **PARLIAMENT, REGISTER, &c.**

Before the use of Printing, and till the Reign of *Henry VII.* our Statutes were all engrossed in Parchment, (and by virtue of the King's Writ for that purpose) proclaimed openly in every County. See **ACT**.

In these *Rolls* we have a great many Decisions of difficult Points of Law, which were frequently in former Times refer'd to the Decision of that high Court. See **STATUTE, COMMON-LAW, &c.**

**Rider-ROLL**, a Schedule, or small Piece of Parchment, frequently sew'd or added to some Part of a *Roll*, or Record.

*Noy* observes that the Court *ex officio*, may award a *certiorari ad Informandum Conscientiam*; and that which is certified shall be annex'd to the Record, and call'd a *Rider-Roll*.

**ROLL, in the Customs**, is a List of the Names of several Persons of the same Condition, or enter'd in the same Engagement.—Thus,

**Court Roll**, in a Mannor, is that wherein the Names, Rents, and Services of each Tenant are copied and enrolled. See **COURT, MANOR, TENANT, RENT, SERVICE, &c.**

**Muste-Roll**, that wherein are enter'd the Soldiers of every Troop, Company, Regiment, &c. See **MUSTER**.

As soon as a Soldier's Name is wrote down on the *Roll*, 'tis Death for him to desert. See **DESERTION**.

**Calves-Head-ROLL**, is a *Roll* in the two Temples, wherein every Benchman is tax'd yearly at 2*s.* every Barrister at 1*s.* 6*d.* and every Gentleman under the Bar, at 1*s.* to the Cook, and other Officers of the House, in Consideration of a Dinner of Calves-Heads, provided in *Easter Term*. See **TEMPLE**.

**Ragman's-ROLL**, or *Ragimund's-ROLL*, is a *Roll* denominated from *Ragimund* a Legate in *Scotland*, who calling before him all the People who held Benefices in that Kingdom, caused them upon Oath to give in the Value of their *Eitates*; according to which they were afterwards tax'd in the Court of *Rome*.

**ROLLS, or Office of the Rolls**, in *Chancery-Lane, London*, is an Office appointed for the Custody of the *Rolls* and Records in *Chancery*. See **CHANCERY, RECORD, &c.**

The *Master* of this Office is the second Person in that Court; and in the Absence of the Lord Chancellor, sits as Judge. See **MASTER of the Rolls**.

This House or Office was antiently call'd *Domus Conversorum*; as being appointed by King *Henry III.* for the use of converted *Jews*; but their Irregularities occasioned King *Edward III.* to expell them thence; upon which the Place was deputed for the Custody of the *Rolls*. See **CONVERSORUM**.

A **ROLL of Parchment**, is the Quantity of sixty Skins. See **PARCHMENT**.

**ROLL, in Antiquity**.—From the Time of *Anastasi*, we find in the Hands of the Emperors, on Medals, a kind of narrow long *Roll*, or *Sachell*, the meaning whereof has puzzled the Antiquaries.

Some imagine it to be a *Roll* or Bundle of Papers, Memoirs, Petitions, &c. presented occasionally to Princes and Consuls.—Others take it to be a plaited Handkerchief, which the Persons who presided at the Games, cast forth as a Signal for their beginning.—Others will have it a Bag of Dust and Ashes, presented the Emperor at the Ceremony of his Coronation, and call'd *AKAKIA*, *q. d.* a Means of preserving Innocence, by the remembrance of Dust, &c. See **ACACIA**.

**ROLL, or ROLLER**, is also a Piece of Wood, of a cylindrical Form, used in the Construction of several Machines, and in several Works and Manufactures; though sometimes under other Names. See **ROLLING, CYLINDER, &c.**

'Tis on such *Rolls* that the Woollen, Silken, and other Threads are wound, whereof the Weaver's Works consist.—For which end each Loom has usually two, that of the Gause-Weavers, three. See **LOOM**.

In the Glass Manufacture they have a *running Roll*, being a thick Cylinder of cast Brass, serving to conduct the melted Glass to the end of the Table whereon large Looking-Glasses, &c. are to be cast. See **GLASS-WORK**.

The Founders use a *Roller* to work the Sand which they use in making their Moulds. See **FOUNDRY**.

The Presses call'd *Calenders*, as serving to Calender Stuffs withal, consist, among other essential Parts, of two *Rollers*. See **CALENDER**.

'Tis also between two *Rollers* that the Waves are given to Silks, Mohairs, and other Stuffs proper to be tabled. See **TADBY**.

**Prints, or Impressions from Copper-Plates**, are also taken by passing the Plate and the Paper between two *Rollers*. See **PRINT, and ROLLING-Press-Printing**.

**ROLLS, in Coining**, are two Iron Instruments of a cylindrical Figure, which serve to draw or stretch out the Plates of Gold, Silver, and other Metal; whereof the Planks or Pieces are to be form'd for the Species. See **COINING**.

**ROLLS, in Printing**, are two large Cylinders or Barrels of Wood, fastened in the middle of what they call the Cradle or Gallows of the Press; and which by means of a Cord, or Girt, passing over each, and a Handle, which gives Motion to one of them, draws the Carriage of the Press backwards and forwards. See **PRINTING**.

**ROLLS, in the Sugar-Works**, are two large Iron Barrels which serve to bruise the Canes, and express the Juice.

They are cast hollow, and their Cavities fill'd up with Wood; the Cylinders of which are properly the *Rollers*. See **SUGAR-Works**.

**ROLLS, or ROLLERS, among Carpenters, Masons, &c.** are plain Cylinders of Wood, seven or eight Inches in Diameter, and three or four Foot long; used for the removing of Beams, huge Stones, and other like Burthens, which are cumbersome, but not exceeding heavy.

These *Rollers* are placed successively under the Fore-part of the Massives to be removed; which, at the same time, are pushed forwards by Levers, &c. applied behind. See **LEVER**.

**Endless-ROLLS**.—When Blocks of Marble, or other excessive heavy Loads are to be removed; they use what they call *Endless-Rolls*.

These, to give them the greater Force, and prevent their bursting, are made of Wood jointed together by Cross-Quarters, are about double the length and thickness of the common *Roller*; and besides, are girt with several large Iron Hoops at each end.—At a Foot's Distance from the Ends are four Mortaises, or rather only two, but pierced through and through; into which are put the Ends of long Levers, which the Workmen draw by Ropes fastened to the Ends; still changing the Mortaise, as the *Roll* has made, a Quarter of a Turn.

**ROLL-Rich-Stones**, in Antiquity, a Series of huge Stones, ranged in a Circle, near *Morton in-Marsh*, in *Oxfordshire*.

There are a World of fabulous Traditions about them.—Among the Antiquaries, some take them to be a Monument of a Victory; others a Burying-Place; and others a Place for the Coronation of the *Danish Kings*.

**ROLLER**. See **ROLL**.

**ROLLING, REVOLVING, in Mechanics**, a kind of circular Motion, wherein the Moveable turns round its own Axis, or Centre, and continually applies new Parts of its Surface to the Body it moves upon. See **MOTION, REVOLUTION, AXIS, &c.**

Such is that of a Wheel, a Sphere, or the like.—Such, particularly, are the Motions of the Earth, the Planets, &c. See **WHEEL, PLANET, EARTH, &c.**

The Motion of *Rolling* is opposed to that of *Sliding*, wherein the same Surface is continually applied to the Plane it moves along. See **SLIDING**.

It must be noted, that in a Wheel, 'tis only the Circumference that properly *Rolls*; the rest proceeds in a compound, angular Kind of Motion, and partly *Rolls*, partly *Slides*.—The not distinguishing between which two, occasioned the difficulty of that celebrated Problem the *Rota Aristotelica*, *Aristotle's Wheel*. See **ROTA Aristotelica**, and **ANGULAR-Motion**.

The Friction of a Body in *rolling*, or the Resistance made to it by the roughness of the Plane it moves on, is found to be much less than the Friction in *Sliding*. See **FRICTION**.

Hence the great use of Wheels, *Rolls*, &c. in Machines; as much of the Action as possible being laid thereon, to make the Resistance the lesser. See **WHEEL, MACHINE, &c.**

For the Laws of Bodies rolling on inclined Planes, see **Inclined-PLANE, DESCENT, &c.**

**ROLLING-Press-Printing**. See **PRINTING**.

**ROMAN**, something belonging to the City of *Rome*.

The *Roman Commonwealth* lasted from the Expulsion of the *Tarquins*, to the Battle of *Pharsalia*, 460 Years.—The *Roman Empire*, from *Julius Caesar* and the Battle of *Pharsalia*, to *Constantine*, and the taking of *Constantinople* by the Turks in 330. lasted 378 Years. See **COMMONWEALTH, EMPIRE, &c.**

A *Roman Citizen*, at first, was only a Citizen of *Rome*; at length the Right of Citizenship was given to other Cities and People, both in *Italy* and the Provinces.—'Twas thus *St. Paul* was a *Roman Citizen*, *Acts* xvi. 21. 37, 38. xxii. 25, 26, 27. xxxiii. 27. the City of *Tarsus* in *Cilicia*, a Native of which he was, having the Right of *Roman Citizens*. See **CITIZEN**.

For the *Roman Senate*, their Magistracy, Consuls, Soldiers, Tribes, Courts, Names, Weights, Measures, Coins, and other Matters relating to the Antiquities of that People, their Policy, Religion, Laws, Customs, &c. see the respective Articles in this Work.

The *Roman Purple* is the Dignity of a Cardinal. See **CARDINAL**.

The *Roman, or Romish Church*, that whereof the Pope is Head; in opposition to the reformed Churches. See **CHURCH, POPE, &c.**



The *Roman Law* is the Civil Law, or the written Law, as compiled by the Emperor *Justinian*. See *CIVIL LAW*.

A *Roman Charity*, among Painters, is a Picture of a Woman suckling an old Man.—*Roman Knight*, &c. See *KNIGHT*, &c.

*King of the Romans*, in our Age, is a Prince elected, and design'd Successor to the German Empire. See *KING*, *EMPIRE*, and *ELECTOR*.

*ROMAN Games*, *Ludi Romani*, were solemn Games held in ancient Rome. See *GAME*.

They were thus call'd by way of Eminence, and on Account of their Antiquity; as having been instituted by *Romulus*.—They were also call'd, sometimes, *Magni Ludi*, from the great Pomp and Expence thereof; sometimes *Consualia*, because perform'd in Honour of the God *Neptune*, who was also call'd *Consus*, in his Quality of God of secret Councils. See *CONSUALIA*.

They also bore the Denomination of *Ludi Circenses*, because held in the *Circus*. See *CIRCENSES Ludi*, &c.

This Solemnity, *Halicarnassæus* observes, was originally instituted by *Evander*, in Honour of *Neptune* under the Name of *Evandria*; whence the Festival itself was call'd *Evandria*; and was afterwards renew'd by *Romulus* in Honour of the same Deity, only under another Name.

For *Romulus* needing the Advice of a God to council him in the Design he had to furnish his new Citizens with Wives, applied to the God of secret Council himself, *Consus*; proclaimed the *Consualia*, and invited his Neighbours all a-round to the first Celebration thereof.—The Consequence was, the Rape of the *Sabine Women*, who came to be Spectators thereof.

The great Ceremony in these Games consisted in the Cavalcade of Horses and Asses, adorn'd with Garlands; *Neptune* being reputed the first Author of Horse-riding.

Their Horses, here, were of two Kinds, viz. *πομπικοί*, or such as were merely led up and down for State; and *εργασίαι*, which were for Race and Exercise.

The other Diversions were Fencing, and that 'till one of the Combatants were kill'd on the Spot; fighting with Beasts, and at *Cestus*, or Whirlbats; Wrestling, Running, Leaping, Sea-Fights, Horse-Races, Chariot-Races, &c. See *CIRCUS*, *GLADIATOR*, &c.

These Games, *Livy* tells us, were improved, and render'd much more magnificent by *Tarquinius Priscus*.—*Manutius* says, they were held on the Eve of the Nones of September, i. e. on the 14th Day of the Month.

*ROMAN Order*, in Architecture, is the more usually called the *Composite*. See *COMPOSITE*.

*ROMAN Balance*, or *Statera Romana*, the Steel-Yard. See *BALANCE* and *STEEL-YARD*.

ROMAN Indiction, } See { INDICATION.  
ROMAN Year, &c. } YEAR, &c.  
ROMAN Language, &c. } LATIN, &c.

*ROMANCE*, antiently *ROMAUNT*, and *ROMANT*, a fabulous Relation of certain Intrigues and Adventures in the Way of Love and Gallantry; invented to entertain and instruct the Readers. See *FABLE*, *NOVEL*, &c.

*M. Fontenelle*, calls *Romances*, Poems in Prose; and the great *Bossu* is not averse to their being admitted as poetical Pieces. See *POEM* and *POETRY*.

Setting aside the Versification, 'tis certain an Epic Poem, and a *Romance* are almost the same thing.—The just Notion, therefore, of a *Romance*, is, that it is a Discourse invented with Art to please and improve the Mind and to form or mend the Manners, by Instructions disguis'd under the Allegory of an Action or Series of Actions, related in Prose, in a delightful probable, yet surprizing Manner. See *EPIC*.

A just *Romance* consists of two Parts, viz. a Moral, as its Foundation and End; and a Fable, or Action, as the Superstructure and Means. See *ACTION*, &c.

It must have the *Manners*; that is, the Characters must be distinguished, and the Manners must be necessary, and have all the other Qualities of Poetical Manners. See *MANNERS*.

The Incidents must be delightful, and to that end rightly disposed and surprizing.—The Sentiments fall under the same Rules as in the Drama. See *SENTIMENT*.

But the Diction is allow'd to be more lofty and figurative; as being a Narration; and not having Terror or Pity, but Admiration for its End. See *NARRATION*, *PASSION*, &c.

As these Kinds of Compositions have a long Time been little else but Histories of amorous Adventures, and Feats of Knight-Errantry: The Origin of *Romances* is refer'd to that of Love-Histories: And accordingly *Dearchus*, a Disciple of *Aristotle*, who first wrote of those Matters, is usually esteemed the Author of these.—Though *Phorinus* is of Opinion that *Anthontus Diogenes's* Book on the Errors and Amours of *Dionas* and *Deocyllis*, gave Birth to most of the Works of this Kind.

Be this as it will, 'tis certain the Antients have had their *Romances* as well as we.—Such are the Amours of *Rhodanis* and *Sinonides*, described in *Jambies*: Such is the *Romance* of *Leucippe* and *Clitophon*, composed by *Achilles Tatius*, a Greek Writer, afterwards a Bishop; Such are the four Books of incredible things,

wrote by *Damascius*: Such are the *Ethiopicks* of *Heliodorus*, wherein he relates the Amours of *Theagenes* and *Chariclea*.—Lastly, under the same Class may be rank'd the Fables of *Parthenius*, *Nicenus*, of *Athenagoras*, *Theodorus Prodomus*, *Eustathius*, and *Longus*.

Indeed Antiquity cou'd scarce be reconciled to such Pieces, and always look'd on them as abuses.—*Phorinus*, in his *Bibliotheca Cod. LXXXVII*. gives a frightful Account of that of *Tatius*; and the *Ethiopicks* of *Heliodorus*, though one of the modestest and most reserved Pieces of the Kind, met with very severe Treatment.—That Author was Bishop of *Tricca* in the fourth Century. *Nicephorus* tells us, that a Synod, considering the Danger which might accrue to Youth from reading of his *Romance*, authoriz'd as it was by the Dignity of its Author, propos'd it to him, either to suppress his Book, or renounce his Bishoprick; and that he chose the latter.—But this History is a little doubtful.

Be this as it will, *Heliodorus* has serv'd as a Model to all the *Romances* wrote since; the Marriage of *Theagenes* and *Chariclea*, has produced a very numerous Issue; even all the *Romances* now extant in the World.

In Imitation of the Archbishop *Turpinus*, who pass'd for Author of the *Romance* of the Feats of *Charlemain* and *Orlando*, a great Number of Histories of the like Kind were wrote in France, in the Time of *Philip the Fair*; the Authors whereof seem'd to improve on each other, contending who should go furthest in the *Merveilleux*.—These Books, being intended for the polite People, were wrote in the Court Language of that Age; which was call'd the *Romans*, *Romant*, or *Roman*; whence the Books themselves were call'd by those Names: And thus by Degrees *Romans*, &c. became the general Name of all Books of this Kind; whence at length our *Romance*. See *ROMANS*.

Others derive the Word from the Spanish *Romanfero*, I invent, as intimating *Romances* to be mere Fictions.—And hence it is that the antient Poets of *Provence*, who were the first great Dealers in *Romances*, are call'd *Troubadours*, q. d. Finders or Inventors. See *TROUBADOUR*.

The French, above all other Nations, have applied themselves to this kind of Writing; whether it be from the natural Taste and Genius of the People, or from the freedom, &c. wherewith they converse with the Women.—They begun chiefly with *Romances* of Chivalry; hence their *Amadis*, in 24 Volumes; *Palmerin de Oliva* of England, *King Arthur*, &c. whereof we have an agreeable Critique in *Don Quixot*. See *CHIVALRY*, &c.

The later are much more polite; the best of which are the *Astrea* of *D'Urfe*; the *Cyrus* and *Clelie* of *Madamoiselle de Scuderi*; the *Cassandra* and *Cleopatra* of *La Calprenede*; *Ariane*, *Francion*; and the Adventures of *Telemachus*, of the late Archbishop of *Cambray*, a Work never enough to be applauded.

The Germans, too, have their *Romances*; especially *Hercules* and *Herculiscus*; the *Syriaca Armena*, *Aramena*, and *Thufielda*, *Otbert*, &c.

The Italians have their *Eromena*, by *Biondi*; the Works of *Loredano*, *Marino*, &c.—The Spaniards, their *Diana*, and *Don Quixot*.—The English their *Arcadia*, &c. The *Argenis* of *Barclay* is rather a Satyr than a *Romance*. See *NOVEL*.

*ROMAN-Catholic Church*. See *PAPIST*, *RECUSANT*, &c.

*ROMANS*, or *ROMANT*, the polite Language formerly spoke at the Court of France; in contradistinction to the *Walloon* spoke by the common People. See *LANGUAGE*.

The Romans having subdued the Gauls, insinuated Part of their Language among them; a mixture then of half Latin, half Gaulish, constituted the *Romans*; whereof the modern French is only an Improvement. See *FRENCH*.

The vulgar Language was the *Walloon*, which was the original Gaulish. See *GAULISH*.

Hence, to *Enromance*, was to write in *Romans*, &c. See *ROMANCE*.

ROME-Stot, } See { PETER-Pence.  
ROME-Penny, }

*ROMPEE*, or *ROMPU*, in Heraldry, is applied to Arms, or other Ordinaries, that are represented broken; and to Chevrons whose upper Points are cut: As in the adjoining Figure.—He beareth a Chevron *rompee*, between three Mullets, Or, by the Name of Sault.



*RONDEL*, in Fortification, a round Tower, sometimes erected at the Foot of a Bastion. See *TOWER*, *BASTION*, &c.

*ROOD*, a Quantity of Land, equal to the fourth Part of an Acre; and containing 40 square Perches or Poles. See *ACRE*, *PERCH*, &c.

*ROOF*, in Architecture, the uppermost Part of a Building. See *BUILDING*.

The *Roof* contains the Timber-Work, and its Furniture of Slate or Tile, wherewith a House is cover'd, or that which serves it as a Cover.—Though Carpenters usually restrain *Roof* to the Timber-Work only. See *COVERING* and *RIDGE*.

The Form of the *Roof* is various; sometimes 'tis pointed, in which Case the most beautiful Proportion is to have its Profile an equilateral Triangle.

Sometimes



Sometimes *Square*, that is, the Angle of the Ridge, is a Right Angle; which, therefore, is a mean Proportional between the pointed and

*Flat-Roofs*, which is in the same Proportion as a triangular Pediment. See PEDIMENT.—This is chiefly practiced in Italy, and the hot Countries, where little Snow falls.

Sometimes the Roof is in the *Pinnacle Form*. See PINNACLE.

Sometimes it has a *double Ridge*.—Sometimes 'tis cut, or *multi-lated*, that is, consists of a *true* and a *false Roof*, which is laid over the former: This last is particularly call'd a *Mansard*, from its Inventor M. *Mansard*, a famous French Architect.

Sometimes 'tis in Form of a *Platform*; as in most of the Eastern Building. See PLATFORM.

Sometimes 'tis *truncated*; that is, instead of terminating in a Ridge or Angle, 'tis cut square off at a certain Height, and cover'd with a *Terrass*, and sometimes inclosed with *Ballustrade*. See TERRASS.

Sometimes 'tis in Manner of a *Dome*, that is, its Plan Square, and the Contour Circular. See DOME, CUPOLA, &c.

Sometimes it is *round*, that is, the Plan is Round or Oval, and the Profile a direct Descent.—Sometimes the Base being very large, 'tis cut off to diminish its Height, and cover'd with a *Terrass* of Lead, rais'd a little in the middle, with *Sky-Lights* from Space to Space, to give Light to some Corridor, or other intermediate Pieces, which without such an Expedient would be too dark. See HOUSE, &c.

*Roof-Trees*, or *Ruff-Trees*, are the Timbers in a Ship which go from the Half-Deck to the Fore Castle.

The Term is also used for the upper Timbers of any Building; whence in the Northern Counties, it is common to signify a whole Family, by saying, all under such a one's *Roof-Tree*.

ROOM, in Building.—See BUILDING, HOUSE, PARTITION, APARTMENT, DISTRIBUTION, CHAMBER, &c.

ROOMER, in the Sea Language, a Ship is said to be a *Roomer*, when she is larger than ordinary. See SHIP, VESSEL, &c.

ROOT, RADIX, in Botany, that Part of a Plant which immediately imbibes the Juices of the Earth, and transmits them to the other Parts, for their Nutrition. See NUTRITION, PLANT, VEGETABLE, &c.

The *Root* consists of woody Fibres, cover'd with a Bark, more or less thick.—It arises from a little Point in the Seed, call'd the *Radicle*. See RADICLE.

'Tis no small difficulty to conceive how the *Root* should always get downwards, and turn up the Stem perpendicularly; considering that in the sowing of Plants the *Radicle* must frequently happen to be upwards, and the Plumule downwards. See SEED, SEMINATION, PERPENDICULARITY, &c.

'Tis always found in the Ground in terrestrial Plants, except in a very few Cases: The Ivy and Cuscuta, being perhaps the only Plants where Part of the *Root* lies bare.

The *Root* in Plants has been observ'd to do the Office of the Stomach in Animals; that is, to make the first and principal Preparation of the nutritious Matter.—M. *Reaume* shews that the *Root* does the Office of all the Parts in the Belly of Animals destined for Nutrition; it being the *Root* that receives the Nourishment, that prepares it, digests it, alters and changes it into Sap, to be afterwards distributed to all the Parts. See SAP.

The small Colour, and even Taste, shew how considerable an Alteration the Juices undergo in the *Root*; so that the *Root* may be laid down as the Principle of Vegetation. See VEGETATION.

Plants growing at the Bottom of the Sea have this peculiar to them, that they have no *Roots*; at least the Parts which do the Office of *Roots* have nothing of the usual Figure thereof.—These Plants are usually fastened to some solid Body; adhering to it by a very smooth polish'd Lamina, which does not send forth any Fibre. Add to this, that the Body to which they adhere, being frequently a Rock or Flint, appears very unfit to feed them, in Case they had *Roots*. M. *Tournefort*, therefore, conjectures that they are fed by a Juice afforded them by the thick oily Mud at the Bottom of the Sea, which they receive by the Pores of the exterior Surface of the *Lamina*.

*Boerhaave* observes, that the *Root* may have any Situation at Pleasure, with respect to the Body of the Plant, nor needs to be either lowest or highest.—Accordingly in *Aloes*, *Coral*, *Mosses*, *Fungus's*, &c. the *Root* is frequently uppermost, and its Growth downwards. See CORAL, MOSS, FUNGUS, &c.

*Roots* are divided by Botanists into 1°. *Fibrous*, which send out only small Strings from the Bottom of the Plant, distinct from each other.

2°. More *thick and gross*, which have a Body Thick and Gross, either branched out into Subdivision or Arms; or else sending out Fibres from it all along.

These last are either *Carnous*, which again are either,

1. *Broad and Swelling*, or
2. *Long and Slender*, which are commonly harder and more woody.

The Broad and Swelling are,

1. *Bulbous*, which consist but of one Globe or Head, and send out Fibres from the Bottom, and are either,
  - { *Squamosae*, or Scaly, as *Lillies* or *Martagon*,
  - { *Coated*, which are involved in Skins or Coats, as *Cepa*, *Hyacinthus*, *Allium*, &c.
2. *Tuberous*, which are of a carnosous, solid, and continued Consistence, and these either,
  - 1°. *Simple*, with but one Globe or Head, as *Rapa*, *Crocus*, &c.
  - 2°. *Manifold*, as *Asphodelus*, *Peonia*, &c.

Long *Roots* are either,

- (1.) *Sarmentous*, i. e. twiggy, or branching, which shoot or creep out Transverse or in Breadth: Of these some are *Geniculatae*, knotty or jointy; as *Couch-Grass*, *Mints*, &c.
- (2.) *Cauliformes*, i. e. Stemmy or Stalky, which shoot down deep directly, though often sending out Fibres and Strings from the great Stem; which also itself is sometimes divided or branching.

*ROOTS*, in Medicine.—The principal *Roots* used in the Practice of Medicine, are, *Rhubarb*, *Rhaponticum*, *Sarsaparilla*, *Ipecacuanha*, *Jalap*, *Zedoary*, *Galangal*, *Cassumena*, *Gentian*, *Turmeric*, *Liquorice*, *Madder*, &c. See each described under its proper Article RHUBARB, RHAPONTIC, SARSAPARILLA, IPECACUANHA, &c.

*ROOT*, in Mathematicks, a Quantity which is multiplied by it self; or a Quantity consider'd as the Basis or Foundation of a higher Power. See QUANTITY, POWER, &c.

Thus if any Number, as 2, be multiplied by it self, the Product 4 is call'd the *Square*, or *second Power* of 2; and 2 it self, with regard to that Power, is call'd the *Root*; or particularly the *square Root* of 4. See SQUARE-ROOT.

Since, as Unity is to the *square Root*, so is the *Root* to the Square; the *Root* is a mean Proportional between Unity and the Square.—Thus 1 : 2 : 4.

If a square Number, as 4, be multiplied by its *Root* 2, the Product 8 is call'd the *Cube*, or third Power of 2; and with respect to this Cubic Number 8, the Number 2 is call'd *Root*; or particularly the *Cube-Root*. See CUBE-ROOT.

Since as Unity is to the *Root*, so is the *Root* to the Square; and as Unity is to the *Root*, so is the Square to the Cube; the *Root* will be to the Square, as the Square to the Cube, i. e. Unity, the *Root*, the Square, and the Cube, are in continual Proportion: Thus 1 : 2 : 4 : 8. And the *Cube-Root* is the first of the two mean Proportionals between Unity and the Cube.

To extract the *Root* out of a given Number, or Power, as 8, is the same thing as to find a Number, as 2, which being multiplied into it self a certain Number of Times, v. g. twice, produces the given Number, as 8.

To extract the Square Root, } See { EXTRACTION.  
To extract the Cube Root, }

A *Root*, whether Square or Cubic, or of any higher Power; if it consist of two Parts, is call'd a *Binomial Root*, or simply *Binomial*; as 24, or 20 + 4. See BINOMIAL.

If it consist of three, a *Trinomial*; as 245, or 240 + 5: Or 200 + 140 + 5.—If of more than three, a *Multinomial*; as 2456, or 2450 + 6, or 2400 + 56, or 2000 + 456, or 2000 + 400 + 50 + 6. See MULTINOMIAL.

*Root of an Equation*, in Algebra, is the Value of an unknown Quantity in an Equation. See EQUATION.

Thus, if the Equation be  $a^2 + b^2 = x^2$ , the *Root* of the Equation is the Square Root of  $a$ , and that of  $b$ ; express'd thus,  $\sqrt{a} + b$ .

*Real Root*.—If the Value of  $x$  be positive, i. e. if  $x$  be a positive Quantity; e. gr.  $x = r$ . the *Root* is call'd a *real* or *true Root*. See POSITIVE.

*False Root*.—If the Value of  $x$  be Negative, e. gr.  $x = -5$ . The *Root* is said to be *false*. See NEGATIVE.

*Imaginary Root*.—If the Value of  $x$  be the *Root* of a negative Quantity, e. gr.  $\sqrt{-5}$ ; 'tis said to be *imaginary*.

The great use of Algebra is to bring Problems to Equations; then to reduce those Equations, or to exhibit them in the most simple Terms. See REDUCTION.

What remains after this to the Solution of the Problems, is to extract the *Roots* of the Equations thus reduced, be they Lines or Numbers. See RESOLUTION.

Extraction of the *Roots* of Equations. See EXTRACTION.

*ROOTS*, RADICES, in Grammar, are the primitive Words of a Language, whence others are compounded or derived. See PRIMITIVE, COMPOUND, and DERIVATIVE.

Thus, the Latin *Fluo* is the *Root* of *fluxus*, *fluxio*, *flumen*, *flustrum*, *influxus*, *refluxus*, *fluxifer*, *fluxifolius*, *fluxivagus*, &c.—Thus also the Greek  $\rho\acute{\iota}\zeta\eta$  is the *Root* of  $\rho\acute{\iota}\zeta\eta\varsigma$ ,  $\alpha\rho\acute{\iota}\zeta\eta$ ,  $\iota\delta\rho\acute{\iota}\zeta\eta$ , &c.

And thus also, though in a less proper Sense, the Danish word is the *Root* of the English *Root*: The Latin *Radix* the *Root* of the



the French *Racine*, as *radix* is the Root of *Radix*; and perhaps the Root of *radix*.

The Greek and Hebrew Tongues are learnt by Roots.—Of Dictionaries, some are in Alphabetical Order, others are disposed by Roots; as *Scapula*, and the first Edition of the Dictionary of the French Academy: In the Edition 1718, it is thrown into the usual Alphabetical Order. See DICTIONARY.

ROPE, an Assemblage of several Twists or Strings of Hemp, twisted together by means of a Wheel: Of various uses, as in binding, staying, drawing, suspending, &c. See HEMP and CORDAGE.

When the Rope is made very thick, 'tis call'd a Cable, and when very small, a Cord. See CABLE and CORD.

The greatest Consumption of Ropes is in Navigation, for the tackling of Ships; where, though Ropes include the whole Cordage. See TACKLE and SHIP.

Yet there are several Ropes particularly so denominated: As, the entering Rope, hung at the Ladder to help People up.—The Top-Rope.—A Bolt-Rope; wherein the Sail is sowed.—Buoy-Rope, to which the Buoy of the Anchor hangs.—Guest-Rope, to tow the Long-Boat.—The Keel-Rope.—The Bucket-Rope.—Rudder-Rope, to save the Rudder if it shou'd chance to be beat off.—Preventer-Rope, to save the Yard in Case any Part of the Tyes shou'd be broke.—Breast-Rope, to lash the Panels to the Masts.—Guy-Rope, to keep the Foremast forwards, directly over the Hatch-way. And Boat-Rope, by which the Rope hangs, or is fastened a-stern of the Ship.

ROPE, CORD, or STRAP, in the Manage, is any of these tied round a Pillar to which the Horse is fastened when they begin to quicken and supple and teach him to flee from the Shambler, and not gallop fastly or incompactly. See PILLAR.

In those Manages where there is no Pillar, a Man stands in the Centre of the Ground, and holds the end of the Rope.

Ropes of two Pillars, are the Ropes or Reins of a Cavazon, used to a Horse that works between two Pillars. See PILLAR.

ROPE-YARN, is the Yarn of any Rope untwisted. See YARN.

It commonly consists of Cable-Ends, which are worn out; and are called *Junks of the Cables*.—It serves for many Purposes among the Sailors.

RORIFEROUS-Duct, q. d. Dew-dropping Pipe; a Name given the Thoracick Duct, from its slow Manner of conveying, and as it were, instilling, the Chyle into the common Stream of Blood. See THORACIC-Duct, &c.

ROS, Dew. See DEW.

Ros Vitrioli, among Chymists, is sometimes used for the first Phlegm distill'd from Vitriol in *Balneo Marie*. See VITRIOL.

ROSADE, a kind of Liquor, prepared of pounded Almonds and Milk, mix'd with clarified Sugar.

ROSARY, in the Romish Church, a Chaplet, consisting of five or fifteen Decads or Tens of Beads, to direct the Recitation of so many *Ave Maria's*, in Honour of the Virgin. See CHAPLET.

ROSARY, is also a particular Mass or Form of Devotion address'd to the Virgin, to which the Chaplet of that Name is accommodated. See VIRGIN.

Some attribute the Institution of the *Rosary* to St. Dominick; but F. d' Achery shews it was in use in the Year 1100; so that St. Dominick cou'd only make it more celebrated.—Others attribute it to Paulus Libycus, and others to St. Benedick; others to the Chartreux; others to venerable Bede; and others to Peter the Hermit.

Those who attribute it to St. Dominick, differ as to the particular Time of its Institution; some referring it to the Year 1208, when he preach'd against the *Albigenses*; others will have him to have set it on foot in the Course of his Missions in Spain, ere he pass'd into France.

Order of the ROSARY, or of our Lady of the ROSARY, is an Order of Knights, supposed by Schoonebeck, and the Jesuit Bonami, to have been instituted by St. Dominick; but by Mistake; for that Saint never instituted any Order under this Name; and these Authors apparently make a military Order of an Army of Croisces, who under the Command of the Count de Montfort, fought against the *Albigenses*. See CROISADE and ALBIGENSES.

The Abbot Justiniani, and M. Hermant, will have this Order to have been established by an Archbishop of Toledo, named Frederick, after St. Dominick's Death; and to have bore for a Badge, a black and white Cross, in the middle whereof was represented our Lady, holding her little Son in one Hand, and in the other a *Rosary*.—F. Mendo adds, that they were obliged to rehearse the *Rosary* on certain Days.

After all, F. Helyot doubts whether or no such an Order ever existed. See ORDER.

ROSE, ROSA, a medicinal Flower, produced by a Shrub of the same Name; which gives the Denomination to several Preparations in Pharmacy. See FLOWER.

The Kinds of *Roses* are various: Those used in Medicine are the Red and Damask *Roses*.—The Damask are a good and safe purgative, administered in infusion, or by way of Syrup.—The Red are astringent; and the Conserve thereof used with success against Distempers of the Breast and Lungs, and Disorders of the Eyes. See CONSERVE.

Sugar of *Roses*, is made of Red-*Rose* Leaves, dried in an Oven,

pulverized, and put into a proper Quantity of Sugar dissolved with a little Water in a Chafing-dish, over the Fire.

'Tis a Tradition among the Antients, that the God of Love made a present to *Hippocrates* the God of Silence, of a beautiful *Rose*, the first that had been known; to engage him not to discover any of the private Practices of his Mother *Venus*.—And hence it became a Custom to have a *Rose* planted in their Rooms of Mirth and Entertainment; that under the Assurance thereof they might be induced to lay aside all Constraint, and speak what they pleased.—Thus did the *Rose* become a Symbol of Silence; so that to be *sub rosa*, under the *Rose*, denotes as much as to be out of danger of having any Conversation divulged.

ROSE-WATER, a Water drawn by Distillation from Red or Damask-*Roses*. See WATER.

It is a good Cordial, and was formerly highly esteemed; but is since fallen from its Reputation, and is little used but in Dis-eases of the Eyes, and in Perfumes and Washes.

'Tis, however, in great esteem in the East, particularly in China and Persia, where the Trade thereof is very considerable. The *Rose* Leaves remaining at the Bottom of the Still, have the natural cathartic Quality; and are also kept for a Perfume.

Golden-ROSE, is a *Rose* which the Pope blesses at Mass on the first Sunday in Lent, while they sing *Latare Jerusalem*; and which, after Mass, he carries in Procession; and then sends it as a Present to some Sovereign Prince.

The Factions of the red and white ROSE, are famous in our English Histories.—They had their Rise in 1454, under Henry VI. between the Houses of York and Lancaster, and ended in Henry VII. who united the two Branches.—The House of Lancaster had for its Badge a white *Rose*; that of York a red one. See FACTION.

ROSE-Wood, *Lignum Rhodium*, or *Aspalathum*. See ASPALATHUM.

ROSE, in Architecture and Sculpture, an Ornament cut in resemblance of a *Rose*. See ORNAMENT.

It is chiefly used in Frizes, Corniches, Vaults of Churches; and particularly in the Middle of each Face of the Corinthian Abacus. See ABACUS.

And in the Spaces between the Modillions; under the Pla-fonds of Corniches. See MODILLION.

ROSE-Noble; an antient English Gold Coin, first struck in the Reign of Edward III. and then call'd the Penny of Gold; since call'd *Rose-Noble*, because stamp'd with a *Rose*. See MONEY.

It was Current at 6s. 8d. See NOBLE and COIN.

ROSEMARY, ROSMARINUS, a medicinal Plant, whose Flowers are of considerable use in the present Practice.

They are esteem'd the principal Aromatick of our Growth.—Dr. Quincy speaks of them as good in most nervous Complaints, especially such as arise from too great Moisture and Cold, as they are hot and drying.—In Epilepsies, Apoplexies, Palsies, &c. they are rarely omitted in Prescription, under one Form or other. See AROMATICK.

They abound with a subtle detergent Oil, which makes them deobstruent and opening, whence their use in uterine Obstructions, the Jaundice, &c.

They are the Basis of the celebrated Hungary Water; with a small Quantity of which, diluted in common Water, the Confectioners make Conserve of *Rosemary* Flowers, Essence of *Rosemary*, *Rosemary-Water*, &c. See HUNGARY-WATER.

ROSICRUCIANS. See ROSYCRUCIANS.

ROSIN, RESINA, in Pharmacy. See RESINA.

ROSIN, is particularly used for a resinous Matter, prepared from the Juice of the Pine-Tree; in ordinary use for the making of Wax, &c.

Mr. Bent in the *Phil. Transf.* gives us the Preparation of this coarse Drug, in the Southern Parts of France; thus.—The Bark being pared off the Pine, to make the Sap run down into a Hole made at Bottom to receive it; as the Juice runs it leaves a Cream or Crust a-top; which being temper'd with Water, is sold, by a Cheat, for white Bee's-Wax. See WAX.

When they have got a Quantity of the Juice they strain it through a Basket, and what runs through it is the common Turpentine. See TURPENTINE.

What stays behind, they mix with Water, and distilling it in an Alembic, the Matter that rises is the Oil of Turpentine; and the Calk that remains is the common Rosin.

ROSOLIS, popularly, *ROSA-folis*, *Sun-Dew*, an agreeable spirituous Liquor, chiefly taken after Meals, by way of Dram, to aid Digestion.

'Tis composed of burnt Brandy, Sugar, Cinnamon, and Milk-Water, and is sometimes perfumed with a little Musk.

It had its Name because antiently prepared wholly of the Juice of the Plant *Ros folis*; but that Plant is no longer any Ingredient therein.

The best is that of Turin.—The French have a particular Kind not called *Ros folis*, but *du Roy*; because used with good Effect by the late King Lewis XIV.—'Tis composed of Spanish Wine, wherein are infused Anis, Fennel, Aneth, Coriander, &c. for three Weeks.

ROSTING. See DRESSING, Food, &c.

ROSTRA, in Antiquity, a Part of the Roman Forum, wherein Orations, Pleadings, Funeral Harangues, &c. were deliver'd. See FORUM.



The *Rostrum* was a Kind of Chapel, taken out of the *Forum*, and furnished with a *Suggestum*, or Eminence, call'd also the *Roftra*, where the Orators spoke.

It was adorn'd, or, as *Livy* says, built, with the Beaks of Ships taken from the People of *Antium*, in a Naval Engagement; whence the Name. See *ROSTRUM*.

*ROSTRALIS Corona*, *ROSTRAL Crown*, in Antiquity. See *CROWN*.

*ROSTRALIS Columna*, *ROSTRAL Column*. See *COLUMN*.

*ROSTRI-FORMIS Processus*, in Anatomy, the same as *Coracoides*. See *CORACOIDES*.

*ROSTRUM*, in Chymistry, signifies the Nose, or Beak which conveys the Liquor distill'd, into its Receiver; in the common Alembicks. See *ALEMBICK*, *RECEIVER*, *DISTILLATION*, &c.

*ROSTRUM*, is also a crooked Scissars, which the Surgeons in some Cases make use of for the Dilatation of Wounds.

*ROSTRUM* literally denotes the Beak or Bill of a Bird. See *BILL*.

Hence the Word is also figuratively understood of the Beak, or Fore-part of the Head of a Ship. See *HEAD*, *SHIP*, &c. See also *ROSTRA*.

*ROSYCRUCIANS*, *ROSICRUCIANS*, or, *Brothers of the Rosy-Cross*, a Name assumed by a Sect or Cabal of hermetical Philosophers; who arose, or at least became first taken Notice of in *Germany*, in the Beginning of the last Century. See *HERMETICAL*.

They bound themselves together by a solemn Secret, which they swore inviolably to preserve; and obliged themselves at their admission into the Order, to a strict Observance of certain establish'd Rules.

They pretended to know all Sciences, and chiefly Medicine; whereof they published themselves the *Restorers*.—They pretended to be Masters of abundance of important Secrets; and among others, that of the Philosopher's Stone; all which they affirm'd to have received by Tradition from the antient *Egyptians*, *Chaldeans*, the *Magi*, and *Gymnosophists*. See *PHILOSOPHER'S-Stone*.

Their Chief was a *German* Gentleman, educated in a Monastery, where he learnt the Languages.—In 1378 he went to the Holy-Land, where falling Sick at *Damascus*, he consulted the *Arabs*, and other *Eastern* Philosophers, by whom he was supposed to be initiated into this wonderful Art.—At his return into *Germany*, he form'd a Society, to whom he communicated the Secrets he had brought with him out of the *East*, and died in 1484.

They have been distinguished by several Names, accommodated to the several Branches of their Doctrine.—Because they pretended to protract the Period of human Life, by means of certain *Nostrums*, and even to restore Youth; they were call'd *Immortales*.

As they pretended to know all things, they have been call'd *Illuminati*; and because they have made no appearance for several Years, but have kept altogether *incog.* they have been call'd the *Invisible Brothers*.

Their Society is frequently signified by the Letters *F. R. C.* which some among them interpret *Fratres rois coeli*, it being pretended that the Matter of the Philosopher's Stone is Dew concocted, exalted, &c.

Some, who are no Friends to Free-Masonry, make the present flourishing Society of Free-Masons a Branch of *Rosicrucians*; or rather the *Rosicrucians* themselves under a new Name, or Relation; viz. as Retainers to Building.—And 'tis certain, there are some Free-Masons who have all the Characters of *Rosicrucians*; but how the *Æra* and Original of Masonry, as traced by Mr. *Anderson*, and that of *Rosicrucianism*, here fix'd from *Nandens*, who has wrote expressly on the Subject, consist, we leave others to judge. See *MASONRY*.

*ROT*, a Disease, which in moist Years is incident to Sheep, in the same Ground, where in drier Years they are free from it; which, yet, arises, not only from the Moisture, but from a certain Principle of Putrefaction, both in the Air and the Grass. See *ROTTENNESS*.

*ROTA*, in Mechanicks. See *WHEEL*.

*ROTA Aristotelica*, *Aristotle's Wheel*, is a celebrated Problem in Mechanicks, founded on the Motion of a Wheel about its Axis; thus called, because first, that we know of, taken Notice of by *Aristotle*.

The Difficulty is this.—While a Circle makes a Revolution on its Centre, advancing at the same time in a Right Line along a Plane; it describes, on that Plane, a Right Line equal to its Circumference. Now if this Circle, which we may call the *deferent*, carry with it another smaller Circle concentric with it, and which has no Motion but what it receives from the deferent; which is the Case of the Nave of a Coach-Wheel carried along by the Wheel; this little Circle, or Nave, will describe a Line in the time of the Revolution, equal, not to its own Circumference, but to that of the Wheel: For that its Centre advances in a Right Line, as fast as that of the Wheel does; as being in reality the same therewith.

The Matter of Fact is certain.—But how it should be seems a Mystery.—'Tis obvious, that the Wheel advancing during the Revolution, must describe a Right Line equal to its Circumfe-

rence; but how should the Nave, which revolves like the Wheel, describe a Right Line so much greater than its Circumference?

The Solution *Aristotle* gives is no more than a good Explication of the Difficulty.

*Galileo*, who attempted it, has recourse to an Infinity of infinitely little Vacuities in the Right Line described by the two Circles; and imagines that the little Circle never applies its Circumference to these Vacuities; but in reality only applies it to a Line equal to its own Circumference; though it appears to have applied it to a much larger.

But 'tis evident this is all *gratis dictum*.—The Vacuities are imaginary; and why does not the great Circle apply its Circumference to them? Lastly, the Magnitude of these Vacuities must be augmented or diminished according to the different Proportion of the two Circles.

*F. Tacquet* will have it that the little Circle making its Rotation more slowly than the great one, does on that Account describe a Line longer than its Circumference; yet without applying any Point of its Circumference to more than one Point of its Base.—But this is no more allowable than the former.

The Attempts of so many great Men proving vain; *M. d'Ortous de Meyran*, a French Gentleman, had the good Fortune to hit on a Solution, which he sent to the Royal Academy of Sciences; where being examined by *Mess de Louville* and *Sauvemon*, appointed for that purpose, they made their Report that it was Satisfactory.—The Solution is to this effect.

The Wheel of a Coach is only acted on, or drawn in a Right Line: Its circular Motion, or Rotation, arises purely from the Resistance of the Ground whereon it is applied. Now this Resistance is equal to the Force wherewith the Wheel is drawn in the Right Line; inasmuch as it defeats that Direction: Of consequence the Causes of the two Motions, the one Right, the other Circular, are equal, and therefore their Effects, i. e. the Motions are equal. And hence, the Wheel describes a Right Line on the Ground, equal to its Circumference.

For the Nave of the Wheel, the Case is otherwise.—'Tis drawn in a Right Line by the same Force as the Wheel, but it only turns round because the Wheel turns, and can only turn with it, and at the same time therewith. Hence it follows that its Circular Velocity is less than that of the Wheel, in the Ratio of the two Circumferences; and therefore its circular Motion is less than its Rectilinear one.

Since then it necessarily describes a Right Line equal to that of the Wheel, it can only do it by sliding, or what they call the Motion of *Rafion*.—That is, a Part of the circular Nave cannot be applied to a Part of a Right Line greater than it self, but by sliding along that Part; and that more or less, as the Part of the Nave is less than that of the Circle. See *ROLLING* and *SLIDING*.

*ROTA*, is also used for a particular Court or Jurisdiction in *Rome*, established for taking Cognizance of Beneficiary Matters, &c. See *BENEFICE*, &c.

The *Rota* consists of twelve Doctors, chosen out of the four Nations of *Italy*, *France*, *Spain*, and *Germany*; three of them being *Romans*, one a *Florentine*, one a *Milaneze*, one of *Bologna*, one of *Ferrara*, one a *Venetian*, one a *Frenchman*, two *Spaniards*, and one a *German*; each having four Clerks or Notaries under him.

Their Office is to judge of all Beneficiary Causes, both in *Rome*, and the State of the Church, in Case of Appeal; and of all Civil Processes, of above 500 Crowns.

They are also called Chaplains of the Pope, as succeeding the antient Judges of the Sacred Palace, who held their Court in his Chapel.

The Name *Rota*, *Wheel*, some will have derived hence, that they officiate each in his Turn; others, because the most important Affairs of the Christian World turn upon them.—*Du Cange* derives it from *Rota Porphyretica*, because the Pavement of the Chamber where they formerly sat was of Porphyry; and fashioned like a Wheel.

*ROTATION*, *ROLLING*, in Mechanicks. See *ROLLING*, *ROTA*, &c.

*ROTATION*, in Geometry, the Circumvolution of a Surface round an immoveable Line, call'd the *Axis of Rotation*. See *AXIS*.

By such *Rotation* of Planes, Solids are form'd or generated. See *GENESIS*, *SOLID*, &c.

The Method of cubing Solids, generated by such *Rotation*, is well laid down by *M. de Moivre*, in his Specimens of the use of the Doctrine of Fluxions.—For the Fluxions of such Solids take the Product of the Fluxion of the Abscissa, multiplied by the circular Base; and suppose the Ratio of a Square to the Circle inscribed, be as  $\frac{1}{2}$ : The Equation expressing the Nature of

Property of any Circle, whose Diameter is  $d$ ; is  $yy = dx - xx$ . Therefore  $\frac{4dx - x^2}{2}$  is the Fluxion of a Portion of the Sphere, and consequently, the Portion it self  $4\frac{1}{2}xx - \frac{1}{2}x^3$ , and the circumscribed Cylinder is  $\frac{4dx - x^2}{2}$  therefore the Portion of the Sphere



Sphere is to the circumscribed Cylinder, as  $\frac{1}{2}d - \frac{1}{2}x$  to  $d - x$ .  
*Philosop. Transact.*

ROTATION, REVOLUTION, in Astronomy. See REVOLU-

TION.

Diurnal ROTATION. See DIURNAL Rotation and EARTH.

ROTATION, in Anatomy, the Action of the *Musculi Rotato-*

*rii*; or the Motion they give to the Parts they are fix'd to. See

ROTATOR.

There are two Muscles, the great and the little *Obliquus*, to perform the Rotation of the Eye.—The *Obturator Internus* and *Externus*, effect the Rotation of the Thighs. See EYE, &c.

ROTATOR, in Anatomy, a Name given the oblique Muscles of the Eye; call'd also *Circulares* and *Amatorii*. See OBLIQUE and EYE.

ROTHER-Beasts, a Word used in the old Statutes, and still in the Northern Parts of England, for horned Beasts, as Oxen, Cows, Steers, Heifers, &c.

Whence, *Rother-Soil*, in *Herefordshire*, is taken for the Dung or Soil of such Cattle. See MANURE.

ROTHER-Nails, are such as have a very full Head, and are used to fasten the Rudder Irons in Ships. See NAIL.

ROTONDO, ROTUNDO, in Architecture, a popular Term for any Building that is round both within and without-side; whether it be a Church, a Salon, a Vestible, or the like. See BUILDING, &c.

The most celebrated *Rotondo* of Antiquity is the Pantheon at Rome, dedicated to *Cybele*, and all the Gods, by *Agrippa*, Son-in-law of *Augustus*; but since consecrated by Pope *Boniface IV.* to the Virgin, and all the Saints, under the Title of *Sta. Maria della Rotonda*. See PANTHEON.

The Chapel of the *Escorial*, which is the Burying-Place of the Kings of Spain, is also a *Rotondo*; and in Imitation of that at Rome, is also call'd *Pantheon*. See ESCURIAL.

ROTTENNESS, PUTREDO, See PUTRIFACTION, &c.

ROTULA, in Anatomy. See PATELLA.

ROTULUS, a Roll. See ROLL.

ROTULUS *contrarientium*.—The Earl of Lancaster taking Part with the Barons against King Edward II. it was not thought fit, in respect of their Power, to call them Rebels or Traytors, but only *Contrarientis*: Accordingly, we have a Record of those Times call'd *Rotulus-Contrarientium*.

ROTULUS *Wintonia*, an exact Survey of all England, by Counties, Hundreds, and Tithings; made by King Alfred; not unlike that of *Domes-Day*. See DOMES-DAY.

It was thus call'd because antiently kept at Winchester, among other Records of the Kingdom.

ROTUNDUS, in Anatomy, a Name given to several Muscles, from the roundness of their Body. See MUSCLE.

Such are the *Rotundus Major*, call'd also *Teres Major*; and the *Rotundus Minor*, call'd also *Teres Minor*, and *Transversalis*; which see under their proper Articles.

ROUGE-Cross, q. d. Red Cross, } See } POURSUIVANTS.

ROUGE-Dragon, q. d. Red Dragon, }

ROUGH, ROUGHNESS, in Mechanicks. See FRICTION and RESISTENCE.

ROUGH-Taste. See TASTE.

ROUGH-Casting. See PLAISTERING.

ROUL, or ROLL, in the military Term.—Officers of equal Quality, who mount the same Guards, and take Their turns in relieving one another, are said to *Roul*. See GUARD, &c.

ROULADE, in Musick, a trilling or quavering. See QUAVERING.

ROUND, ROTUNDUS, in Geometry. See CIRCLE, GLOBE, SPHERE, &c.

ROUND, in Anatomy. See ROTUNDUS.

ROUND, in Musick.—The *Italians* call b *round*, what we call b flat, and the *French* b *Mol*; and b *Square*, what we call b sharp. See FLAT and SHARP, &c.

ROUND, is also a military Term, signifying a Walk or Turn which an Officer, attended with some Soldiers, takes in a Garrison or fortified Place, around the Ramparts, in the Night-time; to listen if any thing be stirring without the Works, and to see that the Centries are Watchful, and do their Duty, and all things in good Order.

In strict Garrison, the *Rounds* go every Quarter of an Hour, that the Rampart may be furnished.—The Centries are to Challenge at a Distance; and to Rest their Arms as the *Rounds* pass, and let no one come near them.

When the *Round* is near the *Corps de Garde*, the Centry calls aloud, *Who comes there?* And when the Answer is, *the Rounds*, he says, *stand*; then calls for the Corporal of the Guard, who draws his Sword, and calls also, *Who comes there?* And when it is answered, *the Rounds*, he that has the Word advances and delivers it to the Corporal, who receives it with his Sword pointed at the Giver's Breast. See WORD.

Among Masons, *Rounds* are the broken Pieces of Statues.

ROUND-House, in a Ship, is the uppermost Room or Cabin on the Stern of a Ship, where the Master lies. See SHIP and STERN.

ROUND-House is also a kind of Prison, for the Nightly-Watch to secure Persons in, 'till they can be carried before a Magistrate. See WATCH.

ROUND-Heads. See WHIG and TORY.

A ROUND, in the Academies, is a circular Piste or Tread. See PISTE.

To ROUND a Horse, is a general Term for all sorts of Manages upon a *Round*.—Hence, to round a Horse upon a Trot, Gallop, &c. is to make him carry his Shoulders and Haunches roundly or compactly, upon a larger or smaller Circle, without traversing or bearing to a Side.

ROUNDELAY, or ROUNDO, a kind of antient Poem; thus call'd, according to *Menage*, from its form; and because it still turns back again to the first Verse, and thus goes round.

The common *Roundelay* consists of thirteen Verses, eight whereof are in one Rhime; and five in another.—'Tis divided into Couplets; at the end of the second and third whereof, the beginning of the *Roundelay* is repeated; if possible, in an equivocal or punning Sense.

The *Roundelay* is a popular Poem among the French, but little known among us.—*Marot* and *Voiture* have succeeded the best in it.

*Rapin* observes, that if the *Roundelay* be not very exquisite, 'tis stark nought.—In all the antient *Roundelays*, *Menage* observes, the Verse preceding has a finish'd Sense; and yet joins agreeably with that of the Close; without depending necessarily thereon. This Rule well observ'd makes the *Roundelay* more ingenious; and is one of the Finesses of the Poem.

The Word is form'd from *Round* and *Lay*. See LAY.—The French call it *Rondeau*. The Spaniards *Glofes*.

ROUNDLET. See RUNLET.

ROUNDNESS, ROTUNDITY, in Physicks. See SPHERICITY.

ROUND-Heads. See WHIG and TORY.

A ROUND, in the Academies, is a circular Piste or Tread. See PISTE.

To ROUND a Horse, is a general Term for all sorts of Manages upon a *Round*.—Hence, to round a Horse upon a Trot, Gallop, &c. is to make him carry his Shoulders and Haunches roundly or compactly, upon a larger or smaller Circle, without traversing or bearing to a Side.

ROUNDELAY, or ROUNDO, a kind of antient Poem; thus call'd, according to *Menage*, from its form; and because it still turns back again to the first Verse, and thus goes round.

The common *Roundelay* consists of thirteen Verses, eight whereof are in one Rhime; and five in another.—'Tis divided into Couplets; at the end of the second and third whereof, the beginning of the *Roundelay* is repeated; if possible, in an equivocal or punning Sense.

The *Roundelay* is a popular Poem among the French, but little known among us.—*Marot* and *Voiture* have succeeded the best in it.

*Rapin* observes, that if the *Roundelay* be not very exquisite, 'tis stark nought.—In all the antient *Roundelays*, *Menage* observes, the Verse preceding has a finish'd Sense; and yet joins agreeably with that of the Close; without depending necessarily thereon. This Rule well observ'd makes the *Roundelay* more ingenious; and is one of the Finesses of the Poem.

The Word is form'd from *Round* and *Lay*. See LAY.—The French call it *Rondeau*. The Spaniards *Glofes*.

ROUNDLET. See RUNLET.

ROUNDNESS, ROTUNDITY, in Physicks. See SPHERICITY.

ROUNDO, or ROUNDELAY, in Musick, a kind of Burthen or Ritornello; where the beginning of each Couplet is repeated at the end thereof. See RITORNELLO.

ROUPIA, or ROUPIAS, or RUPEE, a Coin very current in the Territories of the Great Mogul, and several other Parts of the East-Indies. See COIN.

*Roupia's* are struck both of Gold and Silver; and both the one and the other have their Diminutions; as *Half-Roupias*, *Quarter-Roupias*, &c.

The Gold *Roupia* is worth 1 s. 6 d. Sterl. The value of the Silver *Roupia* is various, according to its Quality, and the Place where 'tis coin'd. A general Observation is, that the *Roupias* are always Current for more, at the Place where they are struck, than else-where; and the new *Roupias* for more than the old ones.—The reason of this last difference is, that the *Indians* being very fond of Silver, to save it, use, as soon as they have got a few *Roupias* together, to hide them under Ground. To prevent which Inconvenience, tending to drain the State of Current Monies, the Princes and Rajas strike new *Roupias* every Year, still augmenting the Value thereof without any augmentation of the Weight.

Besides this difference of new and old *Roupias*, the *Indians* make three other Classes.—The first call'd *Roupias Siceas*, which at Bengal are worth 2 s. 11 d. Sterl.—The second, *Roupias of Surat*, worth 2 s. 6 d. Sterl.—The third *Roupias of Madderas*, worth 2 s. 5 d. Sterl. All which is to be understood of the new *Roupias*.

As to the old ones, those of *Madderas* are only Current at 1 s. 11 d. Sterl. Those of *Surat* at 2 s. and the *Siceas* at 2 s. 4 d. Yet at other Places, the Order and Prices vary: At *Surat*, those struck there have the first Place; the *Siceas* the second; and those of *Madderas* the third. Along the Coast of *Coromandel*, the *Madderas* have the first Place, and the *Siceas* the second, &c.

ROUSE up a Hart, among Hunters. See HUNTING.

To ROUSE, among Falconers, is when a Hawk lints up and shakes himself. See HAWK and HAWKING.

To ROUSE a Hawser, or Cable, in the Sea Phrase, signifies to hale in Part of the Hawser or Cable, which lies slack in the Water. See CABLE, &c.

ROUT, a publick Road, Highway, or Course; especially that which military Forces take. See ROAD.

*Sanfon* and *Ogilby* have made Maps of the *Routs* and Post-Roads of France and England: Soldiers are prohibited going out of their *Routs*.—*Routs* are frequently cut in Parks, Forests, &c. both for Ornament and the Conveniencies of Hunting. See HUNTING.

Some use *Rout* for a Path cut a-cross a Wood; in opposition to *Way*, which is a great Road. See WAY.

ROUT, in Navigation. See COURSE.

ROUT is also used for the Defeat and Flight of an Army. See DEFEAT.

The Serjeants endeavour to rally the Soldiers in a *Rout*. See RALLY.

The Word is form'd from the Latin, *rupta*, or *ruta*; or the French, *roux*, an old Word for Horse; or rather from the old Celtic, *Rout*, Road; figuratively used to signify Example.—*Menage* has a learned Dissertation on the Word.

ROUT, in Law, is an Assembly or Combination of three, or more Persons, going forcibly to commit an unlawful Act; tho' they do not perform it. See ASSEMBLY.

If they go, ride, or move forwards, after their Meeting, 'tis a *Rout*, though they don't put their Purpose in Execution; if they do, 'tis a *Riot*. See RIOT.



A *Rout*, therefore, seems to be an unlawful Assembly; and a Riot the disorderly Fact committed thereby. See *RIOT*.

Two things, however, there are in common to *Rout*, *Riot*, and *unlawful Assembly*: The one, that there be at least three Persons together; the other, that, being together, they disturb the Peace, either by Words, shew of Arms, turbulent Gesture, or actual Violence. See *UNLAWFUL-Assembly*.

*ROUT of Wolves*, among Hunters, a Herd of these wild Beasts. See *HUNTING*.

*ROUTIER*, in Navigation. See *RUTIER*.

*ROWEL*, among Farriers, a kind of Issue, made by drawing a Skain of Silk, Thread, Hair, or the like, through the Nape of the Neck, or other Part of an Horse; answering to what in Chirurgery is call'd a *Seton*. See *SETON*.

The *ROWELLING of Horses* is a Method of Cure frequently had recourse to in inward Strains; especially about the Shoulders or Hips, as also for hard Swellings not easy to be resolv'd.

The Operation is thus.—A little slit being made through the Skin, about a handful below the Part aggrieved, big enough to put a Swan's Quill in; the Skin is rais'd from the Flesh, the end of the Quill put in, and the Skin blow'd from the Flesh upwards, and all over the Shoulder.—Then the Hole being stop'd with the Finger, the Place blown is beaten with a Hazel-stick, and the Wind spread with the Hand all over; then let go.

This done, Horse-hair, or red Sarsenet, half the thickness of the little Finger, is put in a *Rowelling Needle* seven or eight Inches long; the Needle is put into the Hole, and drawn through again six or seven Inches higher; then the Needle is drawn off, and the two ends of the *Rowel* tied together: Anointing it every Day, as well as before the putting it, with sweet Butter and Hog's Grease, and drawing it backwards and forwards in the Skin, to make the putried Matter discharge it self more plentifully.

Others, disliking these *Rowels*, as making too great a Sore and Scar, use the *French Rowel*, which is a round Piece of stiff Leather, with a Hole in the midst; laying it flat between the Flesh and Skin, the Hole of the *Rowel* just against that in the Skin; sowing it in with a Needle and Thread; drawn through the Hole and the Skin; cleaning it once in two or three Days, and anointing it fresh.

*ROWING*. See *OAR*, *BOAT*, &c.

*ROWING of Cloaths*, is the smoothing of them with a Roller, &c. See *ROLL*.

*ROYAL Fort*. See *FORT*.

*ROYAL Antler*, among Hunters, expresses the third Branch of the Horn of a Hart or Buck, that shoots out from the rear or main Horn above the Bayantler. See *ANTLER*, *HEAD*, *HUNTING*.

*ROYAL*, *REGAL*, something relating to a King. See *KING*.

In this Sense we say, the *Royal Family*, the *Royal Blood*, &c. See *BLOOD*, &c.

In *England*, the Prince and Princess of *Wales*, the King's Brother, &c. are address'd under the Title of *Royal Highness*. See *PRINCE* and *HIGHNESS*.

The Dutchess of *Savoy* is called *Madame Royal*.

The Word is form'd from the *Latin*, *Regalis*, of *Rex*, King. See *REGAL*.

*ROYAL Crown*, is that worn by Kings. See *CROWN*.

This they also call *Imperial Crown*, being clos'd a-top. See *IMPERIAL*.

The *English Crown* is clos'd by Semicircles of Gold meeting at the Monde or Globe, on which the Cross stands; and those Semicircles adorned with Crosses and Fleur-de-lises: The whole embellish'd with precious Stones.

A *Royal Abby* is an Abby founded by a King, or by a Prince who is succeeded by a King. See *ABBY*.

*ROYAL Army* is an Army marching with heavy Canon, capable of besieging a strong, well fortified City.—'Tis usual to hang up a Governor who has the assurance to hold out a petty Place against a *Royal Army*.

The *Royal Oak* is a fair spreading Tree at *Boscobel* in the Parish of *Donnington* in *Staffordshire*, the Boughs whereof were all cover'd with Ivy; in the thick of which King *Charles II.* sat in the Day time with Colonel *Careless*, and in the Night lodg'd in *Boscobel-House*: So that they are mistaken who speak of it as an old hollow Oak; it being then a gay flourishing Tree, surrounded with many more.—The poor remains hereof are now fenced in with a handsome Wall, with this Inscription over the Gate in Gold Letters.—*Felicissimam Arborem quam in Asylum potentissimi Regis Caroli II. Deus op. max. per quem Reges regnant, hic crescere voluit, &c.* Philosoph. Transact. N<sup>o</sup>. 310.

*ROYAL-Assent*, is that Assent which the King gives to a thing formerly done by others; as, the Election of a Bishop by Dean and Chapter; or a Bill pass'd in both Houses of Parliament. See *BISHOP*, &c.

The *Royal Assent* in Parliament being given, the Bill is endors'd with these Words, *Le Roy le veult*; that is, it pleases the King.—If he refuses it, thus; *Le Roy s'aviserà*, q. d. the King will advise upon it. See *BILL*, *PARLIAMENT*, &c.

*ROYAL Fishes*, are Whales and Sturgeons, and, some add, Porpoises too, which the King, by his Prerogative, is to have whenever cast on Shore, or wreck'd, in all Places of the Realm, unless granted to Subjects by express Words. See *FISHES*.

The King to have the Head and Body of the Whale to make Oil, &c. and the Queen the Tail to make Whalebone for her Garments. Stat. 1 *Edw. I.*

*ROYAL-Exchange*, the Burse or Meeting-place of the Merchants in *London*. See *EXCHANGE*.

It was first built in 1566, at the Charge of Sir *Thomas Gresham*; and in a solemn Manner, by Herald with sound of Trumpet, in Presence of Queen *Elizabeth*, proclaimed the *Royal Exchange*.—Till that time the Merchants met in *Lombard-street*.

'Twas built of Brick; yet then esteem'd the most splendid Burse in *Europe*.—An hundred Years after its Building, at the great Fire, it was burnt down; but soon rais'd again, in a still more magnificent Manner; the Expence thereof amounting to 50000 l.

One half of this Sum was disburs'd by the Chamber of *London*, the other by the Company of *Mercers*; who, to reimburse themselves, let to Hire 190 Shops above Stairs, at 20 l. each; which with other Shops, &c. on the Ground, yield a yearly Rent of above 4000 l. yet the Ground it stands on does not exceed  $\frac{1}{4}$  of an Acre: Whence 'tis observ'd to be much the richest Spot of Ground in the World.

'Tis built Quadrangular, with Walks a-round, wherein the Merchants of the respective Countries associate themselves. In the middle of the Area or Court, is a fine marble Statue of King *Charles II.* in the Habit of a *Roman Caesar*; erected by the Society of Merchant Adventurers; the Workmanship of *Grimm Gibbons*. Around are the Statues of the several Kings since the *Norman Conquest*, ranged.

*ROYAL Society*, is an Academy, or Body of Persons of eminent Learning; instituted by King *Charles II.* for the promoting of Natural Knowledge. See *ACADEMY*.

This illustrious Body had its original in an Assembly of ingenious Men, who before the Restauration met weekly in *Wadham College*, in *Oxford*; at the Lodgings of Dr. *Wilkins*.

Afterwards, from about the Year 1658, many of them living in *London*, held Meetings at *Gresham-Colledge*; till they were at length taken Notice of by the King, who was pleas'd to grant them an ample Charter, dated 22d of *April*, 1663; whereby they were erected into a Corporation, consisting of a President, Council, and Fellows, for promoting the Knowledge of Natural Things, and useful Experiments.

Their Manner of electing Fellows is by Balloting. Their Council are in Number 21, eleven of which are continued for the next Year, and ten more added to them, all chosen on St. *Andrew's Day*.

Each Member at his Admission subscribes an Engagement, that he will endeavour to promote the Good of the Society; from which he may be freed at any Time, by signifying to the President, that he desires to withdraw.

The Charges are 40 s. paid to the Treasurer at admission; and 13 s. per Quarter, so long as the Person continues a Member.

Their Design is to "make faithful Records of all the Works of Nature or Art, which come within their reach; so that the present as well as after Ages may be enabled to put a Mark on Errors which have been strengthened by long Prescription, to restore Truths that have been neglected; to push those already known to more various uses; to make the Way more passable to what remains unrevealed, &c."

To this purpose they have made a great Number of Experiments and Observations, in most of the Works of Nature; Eclipses, Comets, Meteors, Mines, Plants, Earthquakes, Inundations, Springs, Damps, Subterraneous Fires, Tides, Currents, the Magnet, &c.

Numbers of short Histories of Nature, Arts, Manufactures, useful Engines, Contrivances.

The Services they have been of to the Publick are very great.—They have improved Naval, Civil, and Military Architecture; advanced the Security and Perfection of Navigation; improved Agriculture; and put not only this Kingdom, but also *Ireland*, the Plantations, &c. upon Planting.

They have register'd Experiments, Histories, Relations, Observations, &c. reduced them into one common Stock; have from time to time published some of the most immediate Use, under the Title of *Philosophical Transactions*, &c. and laid the rest up in publick Registers, to be nakedly transmitted to Posterity, as a solid Ground-work for future Systems. See *TRANSACTIONS*.

They have a Library adapted to their Institution; towards which the late Earl Marshal contributed the *Norfolcian Library*; and a Museum, or Repository of natural and artificial Rarities, given them by *Daniel Colwall*, Esq.—Their Motto, *Nullus in Verba*.

*ROYAL Academy of Sciences*, &c. See *ACADEMY*, &c.

*ROYAL Parapet*, or *Parapet of the Rampart*, in Fortification, is a Bank about three Fathoms broad, and six Foot high, placed upon the Brink of the Rampart, towards the Country; to cover those who defend the Rampart. See *RAMPIRE* and *PARAPET*.

*ROYALTIES*, *REGALTIES*, the Rights of the King; otherwise call'd the *King's-Prerogative*, and the *Regalia*. See *PREROGATIVE* and *REGALIA*.

Of these, some the King may grant to common Persons;



others are inseparable from the Crown. See KING, CROWN, GRANT, &c.  
**RUBARB**, RHABBARUM, in Medicine. See RHUBARB.  
**RUBBING**. See FRICTION.  
**RUBIA Triflorum**, a Root or Drug popularly call'd *Madder*.  
 See **MADDER**.

**RUBIFYING**, in Chymistry, &c. the act of turning a thing Red by Force of Fire, &c. See RED. See also RUBY.

Red Arsenic is supposed to be no more than the common yellow Arsenick rubified by Fire, with the Addition of Nut or Olive-Oil. See ARSENIC.

The Word is form'd of the Latin, *rubens*, ruddy, and *fio*, I become.

**RUBIGALIA**, or **ROBIGALIA**, in Antiquity, a Feast celebrated by the Romans in Honour of the God *Rubigus*, or the Goddess *Rubigo*; and to engage those Deities to preserve the Corn from blighting. See FEAST.

The *Rubigalia* were instituted by *Numa* in the eleventh Year of his Reign; and were held on the 7th of the Calends of May, which is our 15th of April; being the Time when the blight or Mildew, call'd by the Latins *Rubigo*, uses to attack the Corn. See RUBIGO.

*Varro* fixes it to the Time when the Sun enters the 16th Degree of Taurus.—Indeed the true Time seems rather to have been on the 18th Day before the Equinox; viz. the 28th of April; and the true Reason, because then *Canicula*, or the little Dog, sets; which is esteem'd a malific Constellation.

Hence they sacrificed a Dog to *Rubigo*: *Ovid* says, the Entrails of a Dog, and those of a Sheep: *Columella*, only a sucking Puppy. *Festus* intimates, that the Victim must be red.

**RUBIGO**, a Disease incident to Corn, popularly call'd the *Smut*, and sometimes *Mildew*. See SMUT and MILDEW.

The *Rubigo* is a Species of *Blight*. See BLIGHT.

**RUBRICK**, the Rules and Directions given at the Beginning, and in the Course of the Liturgy; for the Order and Manner wherein the several Parts of the Office are to be perform'd. See LITURGY.

There are *General Rubricks*, and *special Rubricks*, a *Rubrick* for the Communion, &c.—In the *Romish* Missal and Breviary are *Rubricks* for Matins, for Lauds, for Translations, Beatifications, Commemorations, &c.

They are call'd *Rubricks* from the Latin, *ruber*, red; because formerly printed in Red-Ink, to distinguish them from the rest of the Office, which was in black; as they still are in the *Romish* Missal, &c.

The great *Rubrick* for the Celebration of *Easter*, prescribed by the *Nicene* Council, is to this Purpose.—*Easter-Day* to be the Sunday which falls upon, or next after, the first full Moon which immediately succeeds the Vernal Equinox. See EASTER.—*Dr Wallis* has a particular Discourse on the antient *Rubricks* for the Seat of *Easter*; in the *Philosoph. Transactions*.

**RUBRICK**, in the Canon Law, is a Title or Article in certain antient Law-Books; thus call'd, because wrote, as the Titles of the Chapters in our antient Bibles are, in red Letters. See TITLE.—You'll find such a Law under such a *Rubrick*.

**RUBY**, a red, sparkling Gem of the first Rank among precious Stones. See GEM and STONE.

There are but two Places in the East where the *Ruby* is found: The Kingdom of *Pegu*, and the Isle of *Ceylon*.

The Mine in *Pegu*, where 'tis found in greatest Plenty, is in the Mountain *Capelan*, 12 Days Journey from *Siren*, the Residence of that Prince.—The finest *Rubies* brought hence don't exceed three or four Carats; the King reserving all the larger to himself.

In *Ceylon*, the *Rubies* are found in a River which descends from the Mountains towards the middle of the Island: Some few are also found in the Ground.—The *Rubies* of *Ceylon* are usually brighter and more beautiful than those of *Pegu*; but they are rare; the King of *Ceylon* prohibiting his People to gather them, or Traffick with them.

There are *Rubies* also found in *Europe*, particularly *Bohemia* and *Hungary*; especially the former, wherein is a Mine of *Plints* of divers Sizes, which upon breaking, are sometimes found to contain *Rubies* as fine and hard as any of the *Eastern* ones.

*Salmafius* will have the *Ruby* to be the Hyacinth of the Antients. See HYACINTH.

The Greeks call it *ἀνυράτος*, q. d. Resisting of the Fire. The Antients out of their Credulity and Superstition have attributed many Virtues to the *Ruby*; as, that it expels Poisons, cures the Plague, abates Luxury and Incontinence, banishes Sorrow, &c. See GEM.

They usually only distinguish two Kinds of *Rubies*; the *Balasi* and *Spinelle*. Some Authors, however, make four Kinds; the *Ruby*, *Rubacelle*, *Balasi* and *Spinelle*.

'Tis the different Degree of Colour which makes their different Value and Beauty.—The *Balasi-Ruby* is of a Vermeil-Rose Colour; the *Spinelle* of a Flame Colour. 'Tis said the Inhabitants of *Pegu* have the Art of heightening the redness and brilliant of *Rubies*, by laying them in the Fire, and giving them a proper Degree of Heat.

The *Ruby* is form'd in a stony Substance or *Marcasite* of a Rose-Colour, call'd *Mother of Ruby*; it has not all its Colour and Lustre at once; but comes to it by Degrees.—At first it grows whitish, and as it approaches to Maturity, becomes red. Hence we have white *Rubies*; others, half white, half red; and others blue and red, call'd *Saphir-Rubies*.

When a *Ruby* exceeds twenty Carats, it may be call'd a *Car-*

*buncle*, the Name of an imaginary Stone, whereof the Antients and Moderns have given us so many Descriptions. See CAR-BUNCLE.—They have several manners of counterfeiting *Rubies*; and have carried the Imitation to that length, that the most able Lapidaries are sometimes over-seen.

*Furetiere* assures us, though the thing surpasses all belief, that there have been *Rubies* in France of 240 Carats.—*Tavernier* tells us, he saw one in the *Indies* of fifty Carats, which he had a Mind to have bought.—He adds, that the King of France has finer and larger *Rubies* than any of the Great *Mogul*.

The Value of *Rubies* from one Carat, or four Grains, to ten Carats, is given us in the *Dictionnaire de Commerce*, by a good Hand.

|                                | l.  | s. | d. |
|--------------------------------|-----|----|----|
| A Ruby of one Carat, is worth, | 1   | 15 | 0  |
| Of two C.                      | 9   | 00 | 0  |
| Of three C.                    | 22  | 10 | 0  |
| Of four C.                     | 33  | 15 | 0  |
| Of five C.                     | 45  | 00 | 0  |
| Of six C.                      | 67  | 10 | 0  |
| Of seven C.                    | 84  | 00 | 0  |
| Of eight C.                    | 106 | 00 | 0  |
| Of nine C.                     | 150 | 00 | 0  |
| Of ten C.                      | 216 | 00 | 0  |

**RUBY**, in Chymistry, is a Name given to several Preparations of natural Bodies, because of their red Colour; as, *Ruby of Arsenick*, &c. See RUBIFYING.

**RUBY**, in Heraldry, is the red Colour wherewith the Arms of Noblemen are blazon'd; being the same which in the Arms of others not Noble, is call'd *Gules*. See COLOUR, GULES, &c.

**RUCTATION**, BELCHING, a Ventosity arising from Indigestion, and discharging it self at the Mouth with a disagreeable Noise. See FLATULENCY.

There are Belches owing to Repletion, and others to Inanition, or Emptiness.

*Dr. Quincy* says, Hypochondriac and Hysterical People are particularly liable to this Disorder.—They are rather to be cured with proper Stomachicks, than Carminatives and hot Liquors.—*Burnet* recommends the *Iliac Pills* of *Rhasis* against *Ructation*.

**RUDENTURE**, in Architecture, the Figure of a Rope or Staff, sometimes plain sometimes carv'd, wherewith a third Part of the Flutings of Columns are frequently filled up. See FLUTING.

It is thus call'd from the Latin, *rudens*, Cable; whence some call it a *Cabling*; and the Columns whose Flutings are thus fill'd, *rudented*, or *cabled Columns*. See COLUMN, CABLING, &c.

There are also *Rudentures* in *Relievo*, laid on the naked of Pilasters not fluted; an Instance of which we have in the Church of *St. Sapienza* at *Rome*.

**RUDERATION**, in Building, a Term used by *Vitruvius* for the laying of a Pavement with Pebbles or little Stones. See PAVEMENT.

To perform the *Ruderation*, 'tis necessary the Ground be first well beaten, to make it firm, and prevent its cracking.—Then a Stratum of little Stones are laid, to be afterwards bound together with Mortar made of Lime and Sand, call'd by *Vitruvius*, *Statumen*.

If the Sand be new, its Proportion to the Lime may be as 3 to 1; if dug out of old Pavements or Walls, as 5 to 2. See MORTAR, &c.

**RUDERATION**, *Daviler* observes, is also used by *Vitruvius*, Lib. 7. Cap. 1. for the coarsest and most artless Kind of Masonry; where a Wall is, as it were, cobled up. See MASONRY.

**RUDDER**, in Navigation, a Piece of Timber turning on Hinges in the Stern of a Ship, and which opposing sometimes one Side to the Water, and sometimes another, turns or directs the Vessel this Way or that. See SHIP.

The *Rudder* of a Ship is a Piece of Timber hung on the Stern-Posts, by four or five Iron Hooks call'd *Pinsles*; serving, as it were, for the Bridle of a Ship; to turn her about at the Pleasure of the Steers-man. See STEERING.

The *Rudder* being perpendicular, and without-side the Ship, another Piece of Timber is fitted into it at Right Angles, which comes into the Ship; by which the *Rudder* is managed and directed.—This latter is properly call'd the *Helm*, though the two are sometimes confounded together. See HELM.

The Power of the *Rudder* is reducible to that of the Lever. See LEVER.

As to the Angle the *Rudder* should make with the Keel; the Author of a late Book on the Working of Ships, shews, that in order to stay or bear up the soonest possible, the Tiller of the *Rudder* ought to make an Angle of near 55° with the Keel. See SAILING.

A narrow *Rudder* is best for a Ship's sailing, provided she can feel it, that is, be guided and turned by it; for a broad *Rudder* will hold much Water when the *Helm* is put over to any Side: Yet if a Ship have a fat Quarter, so that the Water cannot come quick and strong to her *Rudder*, she will require a broad *Rudder*. The aftermost Part of the *Rudder* is call'd, the *Rake* of the *Rudder*.

**RUDDLE**, or **REDDLE**, a sort of red Chalk, found in divers Parts of England. See CHALK.

This some take for the *Lapis Hematites*. See HÆMATITES.

**RUDIARIUS**, in Antiquity, a Veteran Gladiator, who had got a Discharge from the Service. See GLADIATOR.

He was thus called, because, as a Mark of Dismission a Rod was put into his Hand call'd *Rudis*. See RUDIS.

The *Rudarii* were also call'd *Spectatores*. See SPECTATOR.



**RUDIMENTS, RUDIMENTA**, the first Principles or Grounds of any Art or Science; call'd also the *Elements* thereof. See **ELEMENTS**.

**RUDIS**, a knotty rough Stick, which the *Prætor* among the *Romans*, gave the Gladiators, as a Mark of their Freedom and Dismission. See **GLADIATOR**.

Hence the *Latin Phrase*, *Rude donare*, to make a Gladiator free, to discharge him from fighting any more.—They were hence called *Rudarii*. See **RUDIARI**.

**RUE, RUTA**, a medicinal Plant, much used in the present Practice.—*Schroder* commends it as an Alexipharmic, and Cephalic; says it resists Poisons and Malignities, and is therefore to be used in Fevers; and that it is good in all convulsive Cases.

It is replete with a fat viscous Juice, and by that means yields little to any Purpose in Distillation, unless where first digested in a spirituous Menstruum.—Hence its simple Water in the Shops, according to Dr. *Quincy*, is nothing worth. It ought to be raised with a spirituous Liquor, or used in Conserve; or, which is best of all, eat alone fresh gathered, with Bread and Butter. It is of Service in nervous Cases, particularly such as arise from the Womb, as it deterges the Glands, and by its Viscidity, bridges those inordinate Motions, which frequently begin there, and affect the whole Constitution. See **HYSTERIC, UTERINE, &c.**

**RUELLE**, a French Term, lately introduced into our Language.—*Ruelle* is a diminutive of *Rue*, Street; and signifies, literally, a little Street.

Its use among us, for an Alcove, or other genteel Apartment, where the Ladies receive Visits either in Bed or up.—The Poets go reading their Works from *Ruelle* to *Ruelle*, to bespeak the Approbation and Interest of the Ladies.

**RUFTER-HOOD**, among Falconers, a plain Leather-Hood, large and open behind, to be worn by an Hawk, when she is first drawn. See **HOOD, HAWK, HAWKING, &c.**

**RUINS**, a Term particularly used for magnificent Buildings fallen to decay by length of Time; and whereof there only remains a confused Heap of Materials.

Such are the *Ruins* of the Tower of *Babel*, or Tower of *Belus*, two Days Journey from *Bagdat*, in *Syria*, on the Banks of the *Euphrates*; which are now no more than a Heap of Bricks, cemented with Bitumen; and whereof we only perceive the Plan to have been Square.

Such, also, are the *Ruins* of a famous Temple or Palace near *Schiras* in *Persia*; which the Antiquaries will have to have been built by *Abassuerus*; and which the *Persians* now call *Tchelmimar*, or *Chelminar*, q. d. the forty Columns; because there are so many Columns remaining pretty entire, with the Traces of others; a great Quantity of *Basso Relievo's*, and unknown Characters, sufficient to shew the Magnificence of the Antique Architecture. See **CHELMINAR**.

**RULE, REGULA, or RULER**, a very simple Instrument, ordinarily of hard Wood, thin, narrow, and straight; serving to draw right Lines withal. See **LINE**.

The *Rule* is of principal use in all the mechanical Arts.—To prove whether or no it be just; draw a Line by it on a Paper; then turn the *Rule* about, the Right end to the Left; and apply the same Edge this way to the Line: If the Edge now agree exactly with the Line, the *Ruler* is true.

*Desmarests* has a fine Poem on the Amours of the *Rule* and *Compass*.—The *Stone-Cutters-Rule* is usually four Foot long; and divided into Feet and Inches.

The *Mason's-Rule* is 12 or 15 Foot long, and is applied under the Level, to regulate the Courses, to make the *Piedroits* equal, &c.

**RULE** is also used for certain Instruments which have other considerable Uses beside that of drawing Lines.—Such are the Carpenters *Joint-Rule*, *Everard's*, and *Coggeshal's Sliding-Rules*, &c.

**Carpenters-Joint-RULE**, is an Instrument usually of Box, 24 Inches long, and one and a half broad; each Inch being subdivided into eight Parts.—On the same Side with these Divisions, is usually added *Gunter's Line* of Numbers.

On the other Side are the Lines of *Timber* and *Board-Measure*; the first beginning at 82, and continued to 36, near the other End: The latter is numbered from 7 to 36, four Inches from the other End.

#### Use of the Carpenter's Joint-RULE.

The Application of the Inches in measuring Lengths, Breadths, &c. is obvious.—That of the *Gunter's Line*, see under **LINE** of NUMBERS.—The use of the other Side is all we need here meddle with.

1. *The Breadth of any Surface, as Board, Glass, &c. being given; to find how much in Length makes a Square Foot.*—Find the Number of Inches the Surface is broad, in the Line of Board Measure; and right against it is the Number of Inches required.

Thus if the Surface were 8 Inches broad, 18 Inches will be found to make a superficial Foot.

Or, more readily thus:—Apply the *Rule* to the Breadth of the Board or Glass; that End mark'd 36 being even with the Edge; the other Edge of the Surface will shew the Inches and Quarters of Inches which go to a square Foot.

2. *Use of the Table at the end of the Board Measure.*—If a Surface be one Inch broad, how many Inches long will make a superficial Foot? Look in the upper Row of Figures for 1 Inch, and under it in the second Row is 12 Inches, the answer to the Question.

3. *Use of the Line of Timber Measure.*—This resembles the former; for having learnt how much the Piece is Square, look for that Number on the Line of Timber-Measure: The Space

thence to the End of the *Rule* is the Length, which at that Breadth makes a Foot of Timber.—Thus, if the Piece be 9 Inches Square, the Length necessary to make a solid Foot of Timber, is 21 7/9 Inches.—If the Timber be small, and under 9 Inches Square, seek the Square in the upper Rank of the Table; and immediately under it is the Feet and Inches that make a solid Foot.—Thus, if it be 7 Inches Square, 2 Foot 11 Inches will be found to make a solid Foot.

If the Piece be not exactly Square, but broader at one End than another; the Method is to add the two together, and take half the Sum for the Side of the Square.—For round Timber, the Method is to girt it round with a String, and to allow the fourth Part for the Side of the Square.—But this Method is erroneous; for hereby you lose above 1/2 of the true Solidity. See **TIMBER-Measure**.

*Everard's Sliding-RULE*, } See { **SLIDING-Rule**.  
*Coggeshal's Sliding-RULE*, }

**RULE, REGULA**, is also a certain Maxim, Canon, or Precept, to be observed in any Art or Science. See **CANON, MAXIM, &c.**—Thus we say, the *Rules* of Grammar, of Logic, of Philosophy, &c. See **GRAMMAR, LOGIC, PHILOSOPHIZING, &c.**

The School Philosophers distinguish two Kinds of *Rules*; viz. *Theoretical*, which relate to the Understanding; being of use in the Discovery of Truth. See **UNDERSTANDING, CRITERION, and TRUTH**.—And *Practical*, which relate to the Will, and serve to direct it to what is good and right. See **GOOD and RECTITUDE**.

For the Management and Application of these two *Rules*, there are two distinct Arts; viz. *Logick*, and *Ethicks*. See **LOGICK** and **ETHICKS**.

The *Rules of Knowing, Regula sciendi*, are such as direct and assist the Mind, in perceiving, judging, and reasoning. See **PERCEPTION, JUDGEMENT, and REASONING**.

*Rules of Acting, Regula agendi*, are those whereby the Mind is guided in her Desires, Pursuits, &c. See **WILL**.

Authors are extremely divided about the regard to be had to the *Rules of Poetry* fix'd by the Antients *Aristotle*, *Horace*, *Longinus*, &c. and admitted by the modern Critics, as *Bossu*, &c. some contending that they be inviolably observ'd; others pleading for Liberty to set them aside on occasion.—*Rules*, 'tis complain'd, are Fetters; rank Enemies to Genius; and never religiously observ'd by any, but those who have nothing of themselves to depend on. *Voiture* frequently neglected all the *Rules* of Poetry; as a Master who scorn'd to be confined by them. See **POETRY**.

The Theatre has its particular *Rules*; the *Rule* of 24 Hours; the *Unities* of Action, Time, and Place, &c. See **UNITY**. See also **THEATRE**.

If it be true, says *Moliere*, that Plays conducted according to the *Rules*, don't please; but those which are not, do: The *Rules* must be nought.—For my self, when a thing hits and diverts me, I don't enquire if I have done amiss; nor whether *Aristotle's Rules* forbid me to laugh. See **LAW**.

**RULE**, in Arithmetick, is a certain Operation with Figures, to find Sums or Numbers unknown. See **ARITHMETICK, OPERATION, &c.**

Each *Rule* in Arithmetick has its particular Name, according to the use for which it is intended.—The four first, which serve as the Foundation of the whole Art, are call'd *Addition*, *Subtraction*, *Multiplication*, and *Division*; each whereof see under its proper Article.

From these arise several other *Rules*; as the *Rule of Three*, or of *Proportion*; call'd also, the *Golden Rule*; and distinguished into *direct*, and *inverse*, *simple*, and *compound*, *Rule of five Numbers*—*Rule of Fellowship*, *simple*, and *with Time*.—*Rule of Alligation*, *medial* and *alternate*.—*Rule of Exchange*.—*Rule of false Position*, *single* and *double*. See **FELLOWSHIP, ALLIGATION, EXCHANGE, and POSITION**.

**RULE of Three**, or of *Proportion*, commonly call'd the *Golden Rule*, is a *Rule* which teaches how to find a fourth proportional Number, to three others given. See **PROPORTION**.

As if 3 Degrees of the Equator contain 70 Leagues, how many do 360 Degrees, the Circumference of the Earth, contain?

The *Rule* is this.—Multiply the second Term 70, by the third 360; divide the Product 25200, by the first Term 3; the Quotient 8400 is the fourth Term required.

The use of this *Rule* is of vast extent, both in common Life, and the Sciences; but has no Place, except where the Proportion of the given Numbers is known.—Suppose, e. gr. a large Vessel full of Water to empty it self by a little Aperture; and suppose 3 Gallons to flow out in 2 Minutes; and it were required to know in what time 100 Gallons would be thus evacuated?—Here indeed are three Terms given, and a fourth required: But 'tis evident from Experience, that Water flows faster at first than afterwards, the Quantity of flowing Water is not proportional to the Time; and therefore the Question does not come under the *Rule of Three*.

The things which come under Commerce are proportionable to their Prices; Twice as much of any Commodity costing twice as much Money, &c. The Price, therefore, of any Quantity of a Commodity being given, the Price of any other Quantity of the same, or the Quantity of the Commodity answering to any other given Sum, is found by the *Rule of Three*.—E. gr. If 3 Pounds cost 17 s. what will 30 Pounds cost? Since, as 3 Pounds are to 30 Pounds, so is the Value of the former 17 s. to the Value of the latter. The Question stands thus:

$$\begin{array}{r} 3 \text{ lb} \text{ ————— } 30 \text{ lb} \text{ ————— } 17 \text{ s.} \\ 17 \end{array}$$

$$3) 510 (170 \text{ s.} \quad 8 \text{ lb. } 10 \text{ s.}$$



Again; if 3 Pounds be bought for 17s. how many will 170s. buy? Since as 17s. is to 170s. so are 3 Pounds to the Pounds required. The Number will be found thus:

$$\begin{array}{r} 17s. \text{---} 170s. \text{---} 3 \text{ lb.} \\ 17 \text{---} 510 \text{ (30 lb)} \\ 51 \\ \text{---} \\ 00 \end{array}$$

If the given Terms be heterogeneous, i.e. have broken Numbers among them, they don't bear the same Proportion to each other, which the things they express, bear.—They must therefore be reduced to homogeneous ones; or to the same Denomination as Pounds into Shillings, Shillings into Pence, &c. Hours into Minutes, &c. See REDUCTION.

E. gr. If 3 Pounds and 4 Ounces cost 2s. 4d. what will 2 Pounds cost? The Operation will be thus:

$$\begin{array}{r} 3 \text{ lb} \quad 4 \text{ oz} \quad \text{---} \quad 2 \text{ lb} \quad \text{---} \quad 2 \text{ s. } 4 \text{ d.} \\ 16 \quad \quad \quad 16 \quad \quad \quad 12 \\ \text{---} \quad \quad \quad \text{---} \quad \quad \quad \text{---} \\ 52 \quad \quad \quad 32 \quad \quad \quad 28 \\ \quad \quad \quad \text{---} \quad \quad \quad \text{---} \\ \quad \quad \quad 256 \quad \quad \quad 28 \\ \quad \quad \quad 64 \\ \text{---} \quad \quad \quad \text{---} \\ 52 \quad 896 \quad (17 \text{ d. } \frac{1}{3} \text{ of a Penny.}) \\ 52 \\ \text{---} \\ 376 \\ 364 \\ \text{---} \\ 12 \end{array}$$

In many Cases of Commerce and Accounts, we have more compendious Ways of working Questions that come under the Rule of Three, than by the Rule it self; which, by reason of their expediting Practice, are call'd *Practice*; and constitute a particular Rule of themselves. See PRACTICE.

RULE of Three inverse, is where the natural Order of the Terms is inverted.—As, if 100 Workmen build a House in 2 Years, in how long time will 200 Workmen build the same?

This is usually consider'd by the Writers of Arithmetick, and taught in the Schools, as a particular Rule: Being wrought by multiplying the first Term 100 by the second 2, and dividing the Product 200 by the third Term 200; the Quotient 1 is the Number required.

But there is no necessity for making a particular Rule for the Matter; this coming naturally enough under the former, by only ranging the Terms as the Nature of the Question requires.

Thus 'tis evident, that as the Number of Men 200, is to 100, so is the Space 2 Years, wherein 100 build the House, to the Space wherein 200 will build the same.—For the less Time, the more Hands are required. The Question then will stand thus:

$$200 \text{ M. --- } 100 \text{ M. --- } 2 \text{ Y.}$$

RULE of five Numbers, or Compound RULE of Three, is where two Rules of three are required to be wrought, ere the Number sought be found.—As it 300 l. in 2 Years yield 30 l. Interest, how much will 1000 l. yield in 10 Years?

Here the first thing to be done is to find by the Rule of Three, what Interest 1000 l. will give in 2 Years; and then by the same Rule what it will give in 10 Years.

This is consider'd by the Writers, &c. of Arithmetick, as a particular Rule, but without any Necessity; a double Operation solving it better, as in this Example:

$$\begin{array}{r} 300 \text{ l. --- } 1000 \text{ l. --- } 30 \text{ Int.} \\ 30 \\ \text{---} \\ 2 \text{ Y. } 3100 \text{ --- } 300100 \text{ (100 Int.)} \\ 12 \text{ --- } 100 \text{ l.} \\ 12 \end{array}$$

But in Questions of this Kind a single Rule of Three may do the Business: For 300 l. give the same Interest in two Years, which twice 300 give in one Year; and twelve times 1000 l. give the same Interest in one Year that 1000 gives in 12: Omitting therefore the Circumstances of Time, say, if twice 300 (that is, 600) give 36 l. Interest, (in one Year) what will 12 times 1000 (that is, 12000) give (in one Year)?

$$\begin{array}{r} 600 \text{ --- } 12000 \text{ --- } 36 \\ 36 \\ \text{---} \\ 72000 \\ 36000 \end{array}$$

$$6100 \quad 4320100 \quad (720 \text{ l. Int.})$$

RULE, in a monastic Sense, is a System of Laws or Constitutions, whereby Religious Houses are established and regulated; and which the Religious make a Vow to observe at their Entrance. See RELIGIOUS, MONASTERY, VOW, &c.

The monastic Rules are all to be approved of by the Pope, to make them valid.—The Rule of St. Benedict, is by some Authors call'd the Holy Rule. See BENEDICTIN.

Those of St. Bruno, and St. Francis, are of all others the most austere. See CARTHUSIAN and FRANCISCAN.

When a Religious cannot support the Austerities of his Rule, he sues for a Dispensation. See DISPENSATION.

RULE, in the Canon Law.—The Rule, *de veriffimili Notitia*, of probable Notice, renders all Provisions to a Benefice Vacant by Death, to be null; if it appear that from the Day of the Decease, to the Day of the Date of the Provisions, or to the Day when the Courier arrives from Rome, there has not been Time sufficient for regular Notice of the Person's Decease to be convey'd to the Pope. See PROVISION.

The Provisions are even null if it be proved the Courier set out ere the Person was deceas'd.—This Rule is strictly observ'd in France; in other Countries the Pope finds frequent Occasions to dispense with it.

Rule of twenty Days, *Regula viginti dierum*. By this Rule, if an Ecclesiastick resign his Benefice; to make the Resignation valid, the Resigner must survive its Admission in the Court of Rome twenty Days.—If he dye before the Expiration of the twenty Days, the Resignation is void; and the Benefice becomes Vacant by Death.

This Rule does not hold of the Provisions of ordinary Collators, nor of simple and pure Resignations into the Hands of the Ordinary; but only in Case of Provisions of the Pope, dispatch'd on Resignations in *Favorem*. See RESIGNATION.

This Rule antiently extended to such as resign'd in Health as well as Sickness.—Pope Boniface restrain'd it to the latter; whence it is commonly call'd, *Regula de Infirmis resignantibus*.

*Regula de publicandis*. By this Rule the Resignee of a Benefice, if he have a Provision from the Court of Rome, is obliged to publish the Resignation and take Possession within six Months; or if he have it from the ordinary Collator, within one Month. Otherwise, if the Resigner dye, the Resignation becomes null.

RUM, a Species of Brandy, or Spirit, drawn by Distillation, from Sugar Canes. See SUGAR, SPIRIT, DISTILLATION, &c.

Rum is very hot and inflammable; and is in the same use among the Natives of the Sugar Countries, as Brandy among us. See BRANDY.

The Word Rum is the Name it bears among the Barbarians.

RUMB, RUMB, or RHUMB, in Navigation. See RHUMB.

RUMB-Line, or *Loxodromia*. See RHUMB-Line.

RUMEN, the first Stomach of Animals which Chew the Cud; hence call'd *Ruminants*. See STOMACH and RUMINANT.

The Food is transmitted into the *Rumen* without any other Alteration in the Mouth, than being a little rowl'd and wrap'd up together. See FOOD.

The *Rumen* is of all others much the largest Stomach; as being to contain both the Drink, and the whole crude Mass of Aliment, which there lie and macerate together; to be thence remitted to the Mouth, to be chewed and comminuted, in order to their farther Digestion in the other Ventricks. See DIGESTION.

In the *Rumen*, or first Ventricle of Camels, are found divers Sacculi, which contain a considerable Quantity of Water: Which is an admirable Contrivance for the Necessities of that Animal, which living in dry Countries, and feeding on dry hard Food, wou'd be in danger of perishing, but for these reservoirs of Water. See DRINK, THIRST, &c.

RUMINANT, in natural History, an Animal which chews over again what it has eat before; popularly call'd *chewing the Cud*. See RUMINATION.

Joan. Con. Peyer has an express Treatise *de Ruminantibus & Ruminations*, where he shews, that there are some Animals which do really *ruminate*; such are Oxen, Sheep, Deer, Goats, Camels, Hares, and Squirrels: Whereas others only appear to *ruminate*; which he calls *Ruminantia spuria*; of which Number are Moles, Crickets, Bees, Beetles, Crabs, Mullers, and several other Fishes.

This latter Class, he adds, have their Stomachs composed of muscular Fibres, by means whereof the Food is ground up and down, much as in real *Ruminants*.

*Ruminants*, Mr. Ray observes, are all Quadrupedal, Hairy, and Viviparous; some with hollow and perpetual Horns, others with deciduous ones. See QUADRUPED, HAIR, HORN, &c.

The horned *Ruminants* have all four Stomachs, appropriated to the Office; viz. the *Koila Myyala* of Aristotle, the *Venter Magnus*, or what we call the *Paunch* or *Inward*, which receives the Meat slightly chewed, retains it a-while, and then delivers it back again into the Mouth, which is what we call the *Cud*, to be re-chewed.—2°. The *Kakéfalos*, or *Reticulum*, which we call the *Honey-Comb*, from its internal Coat being divided so into Cells, like *Honey-Combs*.—3°. The *Exivos*, which Mr. Ray thinks hath been wrong translated, *Omasus*; and which he chuses to call the *Echinus*: This being difficult to clear, our People throw it away, and call it the *Manifold*.—4°. The *Hiveron* of Aristotle, by Gaza call'd the *Abomasus*. See OMASUS, ABOMASUS, &c.

Again, all horned *Ruminant* Animals want the *Dentes Primores*, or broad Teeth in the upper Jaw; and have that kind of Fat, call'd *Suet*, *Sebum*, *Στις*, which is harder and firmer, and less acquiescent in them, than the *Adeps* of other Animals. See FAT, SERUM, ADIPS, &c.

RUMINATION, an Action peculiar to a Class of Animals call'd *Ruminants*; whereby they return the Food they have formerly swallow'd, to be chew'd over again, and render'd more fit for Chyle. See RUMINANT.

Peyer defines *Rumination* a natural Motion of the Stomach, Mouth, and other Parts; By means of which the Food



Food eaten, at first, hastily, is return'd back again to the Mouth; where 'tis re-chew'd and swallowed a second time; and that much to the Benefit of the Animal. See **FOOD**, **CHYLE**, **MASTICATION**, &c.

**Burnet**, in his *Theſaur. Med.* gives several Instances of Men that *ruminated*, from *Salmuthius*, *Rhodius*, &c.—**Dr. Stare** in the *Philos. Transact.* gives us a fresher Instance in one of our own Countrymen, living at *Bristol*. His account, as 'tis curious, and may let us see a little how it fares with *ruminating* Animals; we shall here add.

“ He begins to chew his Meat over again within a Quarter of an Hour after Meals, if he drink with it; if not, somewhat later. His chewing after a full Meal lasts about an Hour and a half: And if he go to Bed presently after Meals, he cannot sleep till the usual time of chewing be over. The Victuals, upon the return, taste somewhat more pleasantly than at first. Bread, Meat, Cheese, and Drink, return much of such Colours as they wou'd be of were they mix'd together in a Mortar. Liquids, as Spoon-Meat, return to his Mouth all one as dry and solid Food. The Victuals seem to him to lye heavy till they have pass'd the second chewing; after that it passes clean away. If he eat variety of things, that which passes down first comes up again first. If the *ruminating* Faculty chance to leave him, it signifies Sickness; and 'tis never well with him till it returns. He is about twenty Years of Age, and was always thus since he can remember. His Father does the like, sometimes; but in small Quantities.

**RUMMAGE**, in the Sea Language, signifies to clear a Ship's Hold, or remove Goods or Luggage from one Place to another. See **HOLD**.

The Word is probably derived from the *Saxon raum*, Room, or Space.

**RUN** of a Ship, so much of her Hull as is always under Water; growing thinner and lanker by Degrees, from the Floor-Timbers to the Stern-Posts. See **SHIP**.

This is also call'd her *Way astward on*.—A Ship is said to have a good Run, when it is long, and the Water passes cleverly to her Rudder, her Tuck not lying too low, which is of great Importance to her Sailing. If the Water do not come strongly to her Rudder, by reason of her being built too broad below, she cannot steer well; and a Ship that can't steer well, cannot keep a good Wind, nor will have any fresh Way through the Sea, but will still be falling to Leeward. See **RUDDER**, **STEERING**, &c.

And yet a Ship with a large and good Run, loses much Stowage, because made narrow below. See **HOLD**, **BURTHEN**, &c.

**RUNDLES**, or **ROUNDLES**, in Heraldry, the same as *Balls* or *Pellets*. See **BALL** and **PELLET**.

**RUNDLET**, or **ROUNDLET**, a small Vessel, containing an uncertain Quantity of any Liquor, from three to twenty Gallons. See **MEASURE**, &c.

**RUNIC**, a Term applied to the Language and Letters of the antient *Goths*, *Danes*, and other Northern Nations.

Some have been of Opinion that *Gulphilas*, or *Ulphilas*, a *Danish* Bishop about the Year 370 was the first Inventor of the *Runic Character*: But *Olaus Wormius* shews at large that *Ulphilas* could only be the first who taught them to Foreigners; for that the Characters themselves were older than he. See **CHARACTER**.

'Tis supposed they were called *Runic*, as being mysterious and scientific, like the *Egyptian Hieroglyphicks*.

The *Runic Language* is more frequently call'd *Sclavonic*. See **SCLAVONIC**. See also *Wormius de Literatura Runica*; and *Hick's Thesaurus* of the antient Northern Languages.

There are some *Runic Medals* in the Closets of the Curious; and some more Modern *Danish* and *English* Medals, the Inscriptions whereof are *Latin*, and the Character *Runic*. See **TALISMAN**.

**RUNNER**, in the Sea Language, a Rope with a Block or Pulley at one End, and a Hook at the other; for hoisting of Goods. See **ROPE**.

To *overhale the Runner*, is to pull down the hooked End, and hitch it into the Sling.

**RUNNET**, or **RENNET**, an acid Juice, found in the Stomachs of Calves that have fed on nothing but Milk, and are kill'd before the Digestion be perfected. See **MILK**.

'Tis this *Runnet* is chiefly used to curdle or turn Milk for Cheese. See **CURDLING**, **CHEESE**, &c.

Its proper Place is the *Abomasus*.—The like Matter is also said to be found in Goats and Hares. See **ABOMASUS**.

The longer the *Runnet* is kept, the better it is.—Though it readily coagulates Milk; yet if put into it when already coagulated, it dissolves it. See **COAGULATION** and **DISSOLUTION**.

If Salt be put in the Milk, ere the *Runnet* be applied, it prevents its Coagulation.—If Salt be put in afterwards, it hardens the Coagulum. See **SALT**.

*Aristotle* will have the *Runnet* to be the proper Substance of the Milk; but he is mistaken when he says 'tis found in all Animals which give Milk, especially all Ruminants. See **RUMINANT**.

**RUNNING** of Goods, a clandestine landing of Goods without paying the legal Customs or Duties for the same. See **SMUGLING**, **OWLER**, **DUTY**, **CUSTOM**, &c.

**RUPEE**, or **ROUPIA**. See **ROUPIA**.

**RUPTURE**, in Medicine, call'd also *Hernia*, and popularly *Burthen*; is when the Rim or thin Film or Caul, which holds up the Intestines, is broken or over-strained or stretch'd, so as the Guts fall down either into the Groin, Cod, or Flank. See **HERNIA**.

According as the *Rupture* happens in the *Abdomen*, *Inguen*, or *Scrotum*, it is call'd *Exomphalus*, *Hernia Inguinalis*, or *Hernia Scrotalis*. See **EXOMPHALUS**, &c.

**RURAL**, or **RUSTIC**, something that relates to the Country. See **RUSTIC**.

The Word is form'd of the *Latin Rus, Ruris*, Country. **RURAL Dean**, in the antient Church, was a Temporary Dean appointed by the Bishop or Archbishop, for some particular Ministry, without Canonical Institution. See **DEAN**.

The *Rural Dean* is the same with what in the Laws of Edward the Confessor, was call'd *Decanus Episcopi*, the Bishop's Dean. *Heylin* observes that each Diocese has in it one or more Archdeacons for dispatch of Ecclesiastical Business; and each Archdeaconry is subdivided into *Rural Deaneries*, fewer or more according to the extent thereof; the Deans whereof were also call'd *Archipresbyteri*, and *Decani Christianitatis*. See **ARCHIPRESBYTERI**, &c.

The *Rural Deans* seem to have been the same with what in other Parts were call'd *Chorespiscopi*. See **CHORESISPISCOPUS**, &c.

**RUST** of a Metal, the Flowers or Calx thereof; procur'd by corroding and dissolving its superficial Parts by some menstruous Fluid. See **METAL**, **CALX**, **FLOWER**, **MENSTRUUM**, &c.

Water is the great Instrument or Agent in producing *Rust* the Air apparently *rusts* Bodies, but 'tis only in Virtue of the Water it contains. See **AIR**.

Hence, in a dry Air, Metals remain a long time without contracting *Rust*; and hence Oils and other fatty Bodies secure Metals from *Rust*; Water being no Menstruum to Oil, &c. Air therefore not able to make its Way through it. See **WATER**, &c.

All Metals are liable to *Rust*; even Gold it self, though generally held incapable thereof, grows *Rusty* if exposed to the Fume of Sea-Salt. See **GOLD**.

The reason why it is so rarely found to *rust*, is that Sea-Salt, which is the only Salt that will prey upon it, is of a very fix'd Nature, and therefore little of its Effluvia or Exhalations are found floating in the Air. See **GOLD**, *Aqua REGIA*, **VOLATILISATION**, &c.

*Rust* is usually supposed a Corruption of the Metal, but without much Foundation: 'Tis the very Metal itself, only under another Form; and accordingly we find that *Rust* of Copper may be again turned into Copper.

The *Rust* of Copper, call'd *Ærugo*, makes what we call *Verdigrase*. See **VERDIGREASE**.

*Ceruss* is made of Lead converted into *Rust* by Vinager. See **CERUSS**.—Iron, in time, turns wholly into *Rust*, unless preserv'd from the Air by Paint or Varnish. See **IRON**, **PAINTING**, &c.

**RUSTIC Gods**, in Antiquity, *Dii Rustici*, were the Gods of the Country; or those who presid'd over Agriculture, &c. See **GOD**, &c.

*Varro* invokes the twelve *Dii Consentes*, as the principal among the *Rustic Gods*; viz. *Jupiter*, *Tellus*, the *Sun*, *Moon*, *Ceres*, *Bacchus*, *Rubigus*, *Flora*, *Minerva*, *Venus*, *Lympha*, and *God Luck*.—Besides these twelve Arch-*Rustic Gods*, there were an infinity of lesser ones. As *Pales*, *Vertumnus*, *Tutolina*, *Fulgor*, *Stercilius*, *Mellona*, *Jugatinus*, *Collinus*, *Vallonia*, *Terminus*, *Sylvanus*, and *Priapus*.—*Struvius* adds, the *Satyrs*, *Fauns*, *Sileni*, *Nymphs*, and even *Tritons*; and gives the Empire over all the *Rustic Gods* to the God *Pap*. See **SATYR**, **FAUN**, **SYLVAN**, **NYMPH**, **DRYADES**, **PANES**, &c.

**RUSTIC**, in Architecture, a Manner of building in Imitation of Nature, rather than according to the Rules of Art. See **BUILDING** and **ARCHITECTURE**.

**RUSTIC Work**, is where the Stones in the Face, &c. of a Building, instead of being smooth, are hatch'd or pick'd with the Point of a Hammer.

**RUSTIC-Quoins**, by *Vitruvius* call'd *Lapides Minentes*; See **RUSTIC-QUOIN**.

**RUSTIC Order**, is an Order with *Rustic Quoins*, *Rustic Work*, &c. See **ORDER**.—*Felicien* says, 'tis properly where the several Parts of the five Orders are not exactly observ'd; but this confounds *Rustic* with *Gothic*. See **GOTHIC**.

**RUT**, in Hunting, &c. a Term used for the Ventry, or Copulation of Deer.—For the Terms which obtain in respect of other Beasts of Game, with the Noise they make during the Act, see **HUNTING**.

The *Rutting-time* with the Hart begins about the middle of September, and holds two Months; the older they are, the better, and the more beloved by the Hinds; and the earlier do they go to Rut.—At this Time they will turn Head, and furiously make at any living Creature. 'Tis easy killing them now; their whole Business being to scent and pursue the Track of the Females; scarce feeding at all. The young Herd are forced to fly with great Precipitancy when the Hart comes in Sight of his Mate. If there be any other of Bulk, they will dispute it very hotly with their Horns.—As the Season expires, they withdraw and dig themselves Holes wherein to lye to assuage the strong Savour of their Lust: When become a little sweet, they return to their Pasture, and live in Herds. See **HART-HUNTING**.

The *Rutting* or *Tourning-time* of the Roe-buck begins in October, and only lasts 12 or 15 Days. This over, he casts his Horns. See **HEAD**.—After the Hind is fill'd, she keeps no more Company with the Male till she be deliver'd.—But the Doe always accompanies her Paramour till her time approaches, when she retires, for the safety of her young, which he would otherwise kill. See **ROE-BUCK HUNTING**.

**RYPTICKS**, in Medicine, detergent Remedies. See **DERGENT**.—The Word is form'd of the *Greek rypno*, to wipe clean.



**S**, A Consonant, and the Eighteenth Letter of the Alphabet. 'Tis accounted one of the four hissing Consonants; the other three being Z, J, and CH. 'Tis also held a Semi-vowel; as forming a kind of imperfect Sound without the Assistance of any Vowel. Some of the Ancients avoided all Use of the S very studiously; particularly Pindar, who scarce has it once in all his Verses. And hence also in Plautus, and some others of the Latin Poets, we find it cut abruptly off, as in *dignu', omnibu'*, etc. Others, on the contrary, affected the Use of it every where, inserting it where 'twas not wanted; as *Casmena* for *Camene*, *dulmose* for *dumose*, *caena* for *cena*, &c. Of all others, 'tis the nearest a-kin to the r; whence it was frequently changed, by reason of its disagreeable Sound, into r. Thus the *Valerii*, *Furii*, &c. were at first call'd *Valefii*, *Fufii*, &c. and what we now call *ara*, *arena*, *carmen*, *serie*, *lares*, &c. were anciently wrote *ala*, *asena*, *calmen*, *fesie*, *lases*. Add to this, that the Latin Nouns now terminated in or, as *arbor*, *labor*, &c. anciently ended in s, as *arbos*, *labos*, &c. In the Inflections, 'tis variously changed: Sometimes into rs, as *fios*, *floris*, sometimes into n, as *sanguis sanguinis*, sometimes into d, as *pes pedis*; sometimes into t, as *Nepos Nepotis*. On the contrary, in Verbs, 'tis frequently put for other Letters, for b, as in *jubeo jussi*; for c, as in *parco parsi*; for d, as in *ludo lusi*; for g, as in *spargo sparsi*, &c. The Latins frequently changed the Greek s into l, as *Arribas Annibal*; into d, as *μῆνερ medium*, &c. The double s was frequently changed into x, as *αισχα pix*; and sometimes even the single one, as *Αἶας Ajax*. The old and the new Orthography of the French, differ chiefly on the Use of the s; the latter omitting it in writing where 'tis not heard in the Pronunciation, and the former retaining it; thus the Followers of the one, particularly the Academy in their Dictionary, write *tempeste*, *huistre*, *fluste*; those of the other, *tempete*, *hustre*, *flute*, &c.

The S was a Numerical Letter among the Ancients, signifying Seven: according to the Verse,

*S. Vera septenos numeratos significabit.*

In Books of Navigation, &c. S. signifies South, S. E. South-East, S. W. South-West, S. S. E. South South-East, &c. See WIND. S. A. is frequently used in Medicinal Prescription as an Abbreviation of *Secundum Artem*, According to the Rules of Art. Sometimes it also stands for Socius, Fellow, Member, and sometimes for Societas, as R. S. S. *Regiæ Societatis Socius*, Fellow of the Royal Society.

SABÆANS, a Sect of Idolaters, much ancienter than Moses and the Jewish Law, call'd also Sabians, Sabaites, Zabeans, Tsabeans, &c. See SABAISM. The Sabæans were very numerous throughout the East. In later Times they have mixed something of Christianity with their Superstition. They set a great Value on the Baptism of St. John; whence they have been also denominated Christians of St. John. Some, indeed, doubt whether the Sabæans be the same with the Christians of St. John; but Father Angelo de St. Joseph, a Carmelite Missionary, and Maracci, in his Notes on the *Alcoran*, assert it expressly. Be this as it will, Mahomet, in his *Alcoran*, and the Arabian Authors since him, make frequent mention of them. Beidawius, in his Comment on the *Alcoran*, makes them a kind of Mean between the Christians and the Magicians, who are the Followers of the Magi, among the Persians. He adds, That they pretend to be of the Religion of Noah, and Keffeus: That they pretend to be in Possession of the Books of Seth and Enoch; though they own none of the Books of Scripture. Some charge them with worshipping the Stars, and others the Angels, or Demons. Maimonides attributes both to them; as is observed under the Article Sabaism.

Abu Joseph Ascheus, and Keffeus place the Sabæans about Charran, or Charres, and Ghosira in Mesopotamia; which Opinion is confirmed by this that their Books are in the Chaldean Tongue, tho' in a Character very different from the Chaldean. Hottinger sets aside the common Derivation of Sabæan from עֲבָא Militia, Host; and will not have it the Name of a Sect of Religion, but of a People in Arabia Felix, the Descendants of Saba, Grand-son of Cham. But the Criticks, to a Man, conspire against this Opinion.

SABAISM, a Kind of Idolatry very ancient; the first that ever entered into the World. Sabaism consisted in the Worship and Adoration of the Stars, as the Scriptures call עֲבָא שְׁמַיָּא Tseba Schamaini, or Saba Schamaini, Host or Militia of the Heavens; whence some of the Moderns have formed the Word Sabaism for the Worship of the heavenly Bodies, and Sabæans for the Worshipers. But as the Hebrew Word, whence these are form'd, is wrote with טזade, which some express in the modern Tongues by an s, some by a z, others by ts, and others by rz; hence arises a great many different Manners of writing the Word, among different Authors. Some writing it Sabæans, others Zabians, or Zabeans, or Zabeists, as Buxtorf; others Tsabians, and others Tsabeans. Maimonides makes frequent mention of this Idolatry in his *More Nebuikin*: 'twas very general, he observes, in the Time of Moses. The Retainers hereto taught, That God was the Spirit of the Sphere, that is the Soul of the World; Abraham, he adds, was brought up in the Doctrine of the Sabæans, who admitted no other Gods but the Stars, and who in their Books, many of which have been translated into Arabic, maintain expressly, That the fixed Stars and Planets, are inferior Gods, and the Sun and Moon the superior ones. Abraham at length, he tells us, opposing these Errors, first asserted the Existence of a Creator distinct from the Sun. The King of the Cutheans clapt him up in Prison; but he still persisting, that Prince, from an Apprehension of his disturbing the State by teaching a new Religion, confiscated his Goods, and banished him to the Extremities of the East. This Relation, he tells us, is found in a Book intitled, חֲכֻמַּת חֲכָמֵי הַמִּצְרַיִם, *The Religion of the Nabathæans*. And adds further, That the Sabæans, to the Adoration of the Stars, joined a great Respect for Agriculture; set a great Value on Cattle and Sheep; and taught, That it was unlawful to kill them. He even adds, That they worshipp'd Demons, under the Form of Goats, and eat the Blood of Animals, (tho' they judged it unclean,) merely because they imagined it was the Food of Demons. This is an Abridgment of what that Rabbini gives us of Sabaism; from whence, 'tis easy judging of what some People tell us, that Sabaism is a Mixture of Judaism, Christianity, Mahometanism, and Paganism. The Truth is, The Worship of the Stars was established long before not only Christianity, but even before the Law of Moses. Indeed some of the latter Sabæans have given into some Articles of almost all Religions. See SABÆANS.

SABATHIANS, a Sect of Hereticks thus called from Sabathius, their Leader, who lived under Dioclesian, was first a Jew, then converted, and made a Priest by Marcian; but afterwards left the Sect of Marcianites, on Account of the Celebration of Easter, which he would have on the Fourteenth Day of the Moon; whence he, and his Adherents were called Quartodecimans: Which see. The Sabathians are recorded by Ecclesiastical Historians, as having a great Abhorrence of the Left-hand; so as to make it a Point of Religion, not to receive any Thing therewith. This Custom, which is now become a Piece of Manners among us, was then esteemed so singular, that the Sabathians were thence denominated *Aristeri*, q. d. *Sinistri*; left-handed.

SABBATARIANS, a Sect of Anabaptists, in the XVIth Century; thus called, because they held the Jewish or Saturday-Sabbath; from a Persuasion that it was never abrogated in the New Testament by the Institution of any other. See ANABAPTIST.

SABBATH, the Seventh Day of the Week, held as a Feast among the Jews, in Memory of God's resting on the Seventh Day of the Creation. See WEEK. The Word is pure Hebrew, and signifies Cessation or Rest. Philo calls it, τὸ κοινὸν γέννητον, The World's Birth-day. 'Twas appointed from the Beginning by God himself, Gen. ii. 2, 3. and by him set apart for the Commemoration of the great Work of the Creation; and when it had fallen into Neglect after the Flood, was re-established by him, upon his settling the Jewish Polity after the Return out of Egypt. The Christians also apply it, by Extension, to the first Day of the Week, popularly called Sunday, or Lord's Day; as instituted by the Apostles to take Place of the Jewish Sabbath, and by us observed in Remembrance, not of the Creation, but of the Work of Redemption, being completed by our Saviour's Resurrection on that Day. The Jews had also their Sabatick-Year, which was every Seventh Year; Wherein they were obliged to set their Slaves at Liberty, and to let their Lands lie idle.

Those who dispute the Divine Appointment of a Christian Sabbath, yet allow the Moral Necessity thereof, as a wise Designation of Time for the recruiting of our Bodies, and at the same Time, keeping up a Sense of the great



Benefits we have received from God, and a spiritual Temper of Mind. By allowing Six Days to labour, the Poor hath Time to earn his Bread, and the Man of Business Time to dispatch his Affairs. Had more Time been allotted to Labour and Business, and none to Rest; our Bodies would have been too much fatigued and wasted, and our Minds too long engaged about worldly Matters, so as to have forgotten Divine Things! Greedy People, without such an Injunction, would scarce have favoured their own Bodies, much less their Servants, Slaves, Cattle, &c. The Creation therefore would have suffered, had it not been provided for by the Institution of a Sabbath. See SUNDAY.

SABBATH, is also used for a nocturnal Assembly. Witches are supposed to hold on Saturdays, where the Devil appears in Form of a Goat, around whom they make several Dances, and magick Ceremonies, amply described in their Books of *Demonomania*. To prepare themselves for this Meeting, they take certain soporific Drugs; after which they are fancied to fly up the Chimney, and to be spirited through the Air to the Sabbath on a Switch.

SABBATH-days journey, is fixed by the Criticks, to a Space of 729 English Paces and 3 Feet; or of 2000 Cubits, or 3648 Feet. See MEASURE.

SABELLIANS, a Sect of ancient Hereticks in the East, who reduced the Three Persons in the Trinity, to Three States or Relations; or rather reduced the whole Trinity to the One Person of the Father; making the Word and the Holy Spirit to be Virtues, Emanations, or Functions thereof. *Sabellius*, their Chief, first broached this Doctrine, in the Third Century, in a City of *Lybia*, called *Prolemais*. He taught, That he, who in Heaven is the Father of all Things, descended into the Virgin, became a Child, and was born of her as a Son; and that having accomplished the Mystery of our Salvation, he diffused himself on the Apostles, in Tongues of Fire; and was then denominated the Holy Ghost. *Epiphanius* tells us, That the God of the Sabellians, whom they called the Father, resembled the Sun, and was a mere *Substratum*; whereof the Son was the illuminative Virtue or Quality, and the Holy Spirit the warming Virtue. The Word, they taught, was darted, like a Divine Ray, to accomplish the Work of Redemption; and that, being re-ascended to Heaven, as the Ray returns to its Source, the Warmth of the Father was communicated, after a like Manner, to the Apostles. The Council of *Antioch*, held by the *Eusebians* in 345, tells us, That, at *Rome*, they were called *Patripassians*, who, in the East, were called *Sabellians*. See PATRIPASSIAN.



SABLE, in Heraldry, a black Colour, in the Arms of Gentlemen; In those of Nobility, it is called *Diamond*; and in the Coats of Sovereign Princes, *Saturn*. It is expressed in Engraving by Strokes drawn perpendicularly across each other, as in the adjoining Figure. The Name is borrowed from the little Animal called *Sable*, because of its black Colour.

SABRE, a Kind of Cutting-sword, or *Cimeterre*, having a very broad, heavy Blade; thick at the Back, and a little crooked towards the Point. See SWORD. The Turks are very expert in the Use of the Sabre, which is the Weapon they ordinarily wear by their Side, &c. With this, 'tis said, they'll cleave a Man quite down, at a single Stroke. The Word is formed from the German *Sabel*, of the *Sclavonic Sabla Curtelas*.

SAC, or *Sacha*, in Law, a royal Privilege which a Lord of a Manor claims to have in his Court, of holding Plea in Causes of Debate arising among his Tenants and Vassals, and of imposing and levying Fines and Amercements touching the same. *Rastal* and some others, define *Sac* to be a Forfeiture or Amercement itself, pay'd him who denies that which is proved against him, to be true, or affirms that to be true which is not so. The Word is Saxon, and literally signifies, Cause, Contest, &c.

SACÆA, in Antiquity, a Feast which the ancient *Babylonians*, and other *Oriental*s, held annually in Honour of the God *Anaitides*. The *Sacæa* were in the East what the *Saturnalia* were at *Rome*, viz. a Feast for the Slaves. One of the Ceremonies hereof, was to chuse a Prisoner condemned to Death, and allow him all the Pleasures and Gratifications he would wish, e'er he were carried to Execution. See SATURNALIA.

SACCADE, in the Manage, a violent Check the Cavalier gives his Horse, by drawing both the Reins very suddenly; used when the Horse bears too heavy on the Hand. The *Saccado* is a kind of Correction rarely to be used; for fear of spoiling the Horse's Mouth.

SACCHARUM. See SUGAR.

SACCOPHORI, a Sect of ancient Hereticks, thus called from the Greek, *sakkos* a Sack, and *phorō* I bear, be-

cause they clothed themselves continually in Sackcloth, and affected a world of Austerity and Penance. We know but little of their Tenets: In all Probability they were the same with the *Massilians*; Which see. The Emperor *Theodosius*, made a Law against the *Saccophori* and *Manichees*.

SACCO BENEDITTO, or *Sac-beni*, a Kind of linen Garment given to Persons condemned by the Inquisition, to be wore at their Execution. 'Tis in Form of a Scapulary, of a yellow Colour, with two Crosses on it; and painted over with Devils and Flames. The *Latins* call it *Habitello*, and the *Spaniards*, *Sacribenito*, and *Zamareta*. 'Twas likewise in Use for public Penitents in the primitive Church, and called also *Samarra*, *Sacbenito*, &c.

SACCULUS, a Diminutive of *Saccus*, a Bag; used in Anatomy, to express several Parts of the Body, bearing some Resemblance thereto; as *Sacculus Chyliferus*, or *Riferus*, a Passage which makes the beginning of the *Theoratic Duct*. See THORAX.

SACCULUS Cordis, the *Pericardium*. Which see.

SACCULUS Lacrymalis, a little membranous Bag, into which the *Puncta Lacrymalia* of the Eye open; and which is, itself, the Entrance of a Canal, by which the Liquor separated in the *Glandula Lacrymalis*, is discharged into the Cavity of the Nose. 'Tis the Ulceration of this *Sacculus*, that makes the *Fistula Lacrymalis*. See FISTULA.

SACCULI Adiposi, little Cells or Vesicles, in the *Membrana adiposa*, wherein the Fat of the Body is contained. See FAT.

SACCULUS Medicinalis, a topical Medicine, applied to some painful Part; consisting of Herbs or Drugs inclosed in a Linnen Bag.

SACCULI Medicinales, are also Bags of Ingredients, suspended in Liquors, in making Diet-drinks.

SACER, in Anatomy, a Muscle arising from the Hind-Part of the *Os Sacrum*, and running along under the *Longissimus Dorsi*. With its several Tendons, it lays hold on the Spine, and every Transverse Process of the Loins, and the lowest of the Back. It assists in erecting the Trunk. See MUSCLE.

SACER Ignis, } See { HERPES Exedens,  
SACER Morbus, } { EPILEPSY.

SACERDOTAL, something belonging to the Priesthood. See PRIEST. *Sacerdotal Benefices* are such as can't be legally held by any but Persons in Holy Orders: such are all Cures of Souls, Bishopricks, &c. The *sacerdotal* Ornaments, are those wherewith the Priests are clothed, when they officiate, &c. The Word is formed from the *Latin*, *Sacerdos* Priest, of *Sacer* Holy.

SACK OF WOOL, is a determinate Quantity, containing just 26 Stone; and every Stone is 14 Pounds, by 14 E. 3. Stat. 1. c. 2. But in *Scotland*, a Sack is 24 Stone, and each Stone contains 16 Pounds. A Sack of Cotton Wool, is a Quantity from an hundred and half to 400 Weight. See WOOL.

SACKS of Earth, used in Fortification, are large Bags full of Earth, made of coarse Cloth, the largest of about a Cubick-foot wide; and the lesser somewhat more than half a Foot. They are used on several Occasions; particularly for making Retrenchments in haste, to place on Parapets, or the Head of the Breaches, &c. or to repair them when beaten down. They are of good Use also, when the Ground is rocky, and affords not Earth to carry on the Approaches, because they can easily be brought on, and carried off; the same Bags, on Occasion, are used to carry Powder in, of which, they hold about Fifty Pounds a piece.

SACKBUT, a musical Instrument of the Wind Kind; being a kind of Trumpet, tho' different from the common Trumpet both in Form and Size. 'Tis very fit to play Bass, and is contrived so as to be drawn out or shorten'd according to the Gravity or Acuteness of the Tones. The *Italians* call it *Trombone*, the *Latins*, *Tuba Duellilis*. It takes a-funder into Four Pieces, or Branches; and hath frequently a Wreath in the middle; which is the same Tube, only twisted twice, or making two Circles in the middle of the Instrument; by which Means, it is brought down one fourth lower than its natural Tone. It has also two Pieces or Branches on the Inside, which don't appear, except when drawn out by means of an Iron Bar, and which, lengthen it to the Degree requisite to hit the Tone required. The *Sackbut* is usually Eight Foot long, without being drawn out, or without reckoning the Circles. When extended to its full Length, 'tis usually Fifteen Foot. The Wreath is Two Foot Nine Inches in Circumference. It serves as Bass in all Consorts of Wind Music.

There are *Sackbuts* of different Sizes, serving to execute different Parts; particularly a small one, called by the *Italians*, *Trombone piccolo*, and the *Germans*, *Cleime*.



*deposuite*, proper for a Counter-Tenor. The Part assigned it, is usually called *Trombone primo*, or I°. There is another larger, called *Trombone maggiore*, which may serve as a Tenor: Its Part is usually called *Trombone secondo*, or II°. or 2°. There is a third still bigger, called *Trombone grosso*; its Part is called *Trombone terzo*, or III°. or 3°. Lastly, there is another which exceeds all the rest, and which is much heard in the Music, especially in the Bass; its Part is called *Trombone quarto*, or IV°. or 4°. or simply *Trombone*. It has usually the Key of *Fa*, *ut fa* on the fourth Line; tho' frequently also on the fifth Line from the Top, by Reason of the Gravity or Depth of the Sounds.

**SACRAMENT**, in Theology, is defined, in the general, A Sign of a holy or sacred Thing. In which Sense, the Word includes both the Sacraments of the Law of Nature, as sound Morality, the Manner of offering the Bread and Wine practised by *Melchisedech*, &c. and those of the Law of *Moses*, as the *Circumcision*, the *Paschal Lamb*, *Purifications*, *Order of Priesthood*, &c. But with Regard to the Christian Church *Sacrament* is defined, A visible Sign of a spiritual Grace annexed to the Use thereof. There are Two Objects in a *Sacrament*; the one a material Sign, the Object of the Senses; the other the Thing signified, which is the Object of Faith. Thus it has pleased God to give a Body or Substance to spiritual Mysteries, that our Faith might have the Assistance of sensible Signs. The *Roman Catholics* own Seven *Sacraments*, viz. *Baptism*, *Confirmation*, the *Eucharist*, *Penance*, *Extreme Unction*, *Ordination* and *Marriage*. See each under its proper Article. The *Protestants* admit of only Two, viz. *Baptism* and the *Eucharist*.

The *Romanists*, however, call the *Eucharist*, by way of Eminence, *H. Sacrament*, the *Holy Sacrament*. Thus to expose the *H. Sacrament*, is to lay a consecrated Host on the Altar to be adored. The Procession of the *H. Sacrament*, that wherein 'tis carried about the Church, or the Town. See **PROCESSION**. The *Feast of the H. Sacrament*; the *Congregation of the Sacrament*, &c.

The Word is formed from the *Latin*, *Sacramentum*, which signified an *Oath*, particularly that which the Soldiers took to be true to their Commanders. The Words whereof, according to *Polybius*, were, *Obtemperaturus sum & facturus quicquid mandabitur ab Imperatoribus, juxta Vires*.

**SACRAMENT**, was also used in the *Roman Law*, for a Pledge or Gage of Money, which both the Plaintiff and Defendant, in any real Action, laid down in Court, to be forfeited by him who should lose the Cause.

**SACRAMENTARIANS**, a general Name given to all such as have published, or held erroneous Doctrines of the *Sacrament* of the Supper. The Term is chiefly applied by the *Roman Catholics*, by Way of Reproach, to the *Lutherans*, *Calvinists*, and other *Protestants*. --- *Sacramentarium*, was an ancient Church-Book, comprehending all the Prayers and Ceremonies practised at the Celebration of the *Sacraments*. Pope *Gelasius* was the first Author of the *Sacramentarium*. It was afterwards revised, corrected and abridged by St. *Gregory*. It was the same with what the *Greeks* now call *Euchology*; Which see.

**SACRED**, something *holy*, or, that is solemnly offered, and consecrated to God with Ceremonies, Benedictions, Unctions, &c. See **CONSECRATION**. Kings, Prelates, and Priests are held *sacred Persons*, Abbots are only *blest*. The Deaconhood, Sub-deaconhood, and Priesthood, are *sacred Orders*, and impress a *sacred*, indelible Character. The Custom of consecrating Kings with Holy Oil, is derived, according to *Guthingius*, from the *Hebrews*; among whom, he agrees with *Grotius*, it was never used but to Kings who had not an evident Right by Succession. He adds, That the Christian Emperors never used it before *Justin* the younger; from whom he takes it to have passed to the *Goths*, &c.

**SACRED**, is also applied to Things belonging to God and the Church: Church Lands, Ornaments, &c. are held *sacred*. --- The *Sacred College* is that of the Cardinals. See **CARDINAL**. *Sacred Majesty*, is applied to the Emperor and the King of *England*; yet *Louay* says 'tis *Blasphemy*.

The Ancients held a Place struck with a Thunder-bolt, as a *sacred Thing*. In the Civil-Law, a *Sacred Place* is that, where a Person deceased, has been interr'd.

**SACRIFICE**, an Offering made to God on an Altar, by Means of a regular Minister, as an Acknowledgement of his Power, and a Payment of Homage. *Sacrifices* differ from mere *Oblations*, in that in a *Sacrifice* there is a real Destruction or Change of the Thing offered; whereas an *Oblation* is only a simple Offering or Gift, without any such Change at all. See **OBLATION**. Divines divide *Sacrifices* into *Bloody*, such as those of the Old Law; and *Bloodless*, such as those of the New Law. They divide them again into *Imperatory*, which are those offered, to obtain some Favour of God, or to thank

him for some already received; and *Propitiatory*, which are those offered to obtain Forgiveness of Sins.

The *Phenicians* are usually held the first Authors of *Sacrifices*. *Porphyrus*, indeed, attributes the Invention to the *Egyptians*; who, he says, first offered the First Fruits of their Grounds, to the Gods; burning them upon an Altar of Turfe. At length they came to burn Perfumes, and at last sacrificed Animals; observing that they first eat some Herbs, or Fruits, regularly offered on the Altars. He adds, that *Sacrifices* were very frequent e'er *Sacrifices* of Beasts got footing. See **LIBATION**. *Ovid* observes, That the very Names *Victim* and *Hestia* import, that they were not slain, till such Time as Victories were obtained over Enemies. Indeed, while Men lived on Herbs and Pulse, 'tis no Wonder they abstained from *Sacrifices* of Beasts; since the Law of *Sacrifices* required, that they eat some Part thereof. In Effect, 'tis supposed to be this that first introduced Flesh as a Food, and made Man a carnivorous Animal. See **CARNIVOROUS**. The Truth is, in all Antiquity, both sacred and profane, *Sacrifices* were ordinarily nothing else but Holy Banquets.

The Scriptures furnish us with a somewhat different Account. *Noah* certainly sacrificed Animals at his coming out of the Ark, and 'tis even suggested, that *Abel* himself sacrificed the best and fattest of his Flocks: But *Grotius* shews, 'tis much more probable, he contented himself with making a mere *Oblation* of his Lambs, &c. to God without sacrificing them.

*Macrobius* tells us, That the *Egyptians*, long accustomed to bloodless *Sacrifices*, being at length obliged to admit the Worship of *Serapis* and *Saturn*, to whom *Victims* were to be sacrificed; would not allow their Temples to be built in the Cities. These *Victims*, however, or *bloody Sacrifices*, at length obtained, in Exclusion of almost all the rest. The most usual *Victims* among the Ancients, were Bulls, Oxen, Cows, Sheep and Lambs, in regard these were the most ordinary Food of Man.

The Manner of *Sacrificing* among the ancient *Hebrews*, is amply described in the Books of *Moses*. That in Use among the *Romans*, is as follows: In the Choice of the *Victims*, Care was taken it were without Blemish or Imperfection, his Tail not too small at the End; the Tongue not black, nor Ears cleft, and the Bulls such as had never been yoked. The *Victim* pitched upon, they gilt his Forehead and Horns, especially if a Bull, Heifer, or Cow. The Head they also adorned with a woollen *Infula*, whence hung two Rows of *Chaplets* with twisted Ribbons; and in the middle of the Body a kind of *Stole*, pretty large, hung down on both Sides: The less *Victims* were only adorned with Bundles of Flowers and Garlands, together with white Tufts or Garlands. The *Victims* thus made ready, were brought before the Altar; the lesser were not led in a String, but driven to the Place; the greater were conducted in an Halter; if they made any Struggle, or refused to go, the Resistance was taken for an ill Augury, and the *Sacrifice* set aside. The *Victim* thus brought before the Altar, was examined very circumspectly, to see if there were no Defect in it. Then the Priest, being clad in his *sacerdotal* Habit, and accompanied with the Sacrificers and other Attendants, and being washed and purified according to the Ceremonies prescribed, began the *Sacrifice*, with making a loud Confession of his Unworthiness, acknowledging himself guilty of divers Sins; for which he begged Pardon of the Gods, hoping they would be pleased to grant his Requests.

These Confessions were like those of the *Hebrews*: with this Difference, that the *Pagans* confess'd the Frailty of Mankind, and owned their Faults; the *Jews* confessed chiefly the Greatness of God, accompanying it with Hymns and musical Instruments. The Confession over, the Priest cry'd aloud, *Composse vos selves, and munda vos Sacrifice*; and presently an Usher, holding a Rod in his Hand, called *Commotaculum*, went through the Temple, and made all those withdraw, who were not instructed in the Mysteries of Religion, or such as were excommunicated. The Custom of the *Greeks*, from whom the *Romans* borrowed theirs, was, That the Priest coming to the Altar, should ask aloud *Tie resu? Who is here?* The People answered, *Πολλοί & αγαθοί*, Many good Persons: Then the Usher went through the Temple, crying, *Εξέλτε, ἐξέλτε, ὅσοι βέληται*; that is, Away with the Wicked. The *Romans* commonly used the Words, *Nocentes, Profani abscedite*. All those who were driven out of the Temples among the *Greeks*, were comprehended under these general Words, *βέληται, ἀμύνητοι, ἀκαθάρτοι*. The *Profane* withdrawn, they cry'd, *Favete linguis*, or *animis*, and *Pascite linguam*, to require Silence, and Attention during the *Sacrifice*. These Ceremonies ended, the chief Sacrificer being set down, and the rest of them standing, the Magistrates or private Persons, who offered *Sacrifice*, came before him, and presented him with the First Fruits and!



and *Victim*, and sometimes made a short Discourse, by Way of Complement; as we find *Homer* makes *Ulysses* do, when he presented the High Priest with *Iphigenia* to be sacrificed. As any Person came to present his Offering, he washed his Hands in a Place appointed in the Temple for that Purpose. Lastly, when the Offering was made, the Priest that officiated, perfumed the *Victims* with Incense, and sprinkled them with lustral Water; and having washed his Hands, and got up again to the Altar, he prayed to the God to whom he presented the *Sacrifice*, with a loud Voice, That he would accept of those Offerings, and be pleased with the *Victims* he sacrificed to him for the publick Good, and for such and such Things in particular. In the Close of the Offertory and Prayer, made by the Priest to the Gods, he came down the Steps of the Altar, and from the Hand of one of his Assistants, received the Sacred Paste, called *Mola salsa*, made of Barley or Wheat Flower, mixed with Salt and Water, which he threw upon the Head of the *Victim*, sprinkling a little Wine upon it, which was called *Immolatio*. *Servius* says, The Priest scattered little bits of this Paste upon the Head of the *Victim*, the Altar, where the sacred Fire burned, and the Knives, by Way of Consecration. He then took Wine in a Vessel called *Simpulum*, and having tasted it himself first, and made his Assistants do all the same, to shew that they partook of the *Sacrifice*, he poured it between the Horns of the *Victim*, pronouncing these Words of the Consecration, *Mactus hoc vino inferis esto*; Let this *Victim* be improved and honoured by this Wine. This done, he pulled off the Hairs from between the Horns, and threw them into the Fire; and commanded the Sacrificer, (who asked him, *Agon* Shall I strike?) To knock down the *Victim* with a Blow on the Head with an Hammer or Ax; upon which, another Assistant, named *Popa*, presently thrust a Knife into his Throat, whilst a third received the Blood, wherewith the Priest sprinkled the Altar.

When the *Victim* was slain, they flaid him, if it was not a Burnt Offering; (for then they burn'd Skin and all,) took the Flesh off the Head, and adorning it with Garlands and Flowers, fastened it to Pillars of the Temples, as well as the Skins, as Ensigns of Religion, carrying them about in Procession in publick Calamities; not but that the Priests oft wore the Skins, and others went to sleep upon them in the Temples of *Æsculapius* and *Faunus*, that they might receive favourable Responses in their Dreams, or be cured of their Maladies. They then opened the *Victim's* Entrails, and after circumspectly viewing them, to draw Presages therefrom, according to the Art of the *Aruspices*, they flowered them with Meal, and sprinkled them with Wine, and made a Present of them to the Gods, *reddebant exta Diis*, by throwing them into the Fire in small bits, boiled or parboiled; and hence the Entrails were called *Porrice*. The Entrails being burned, and the other Ceremonies finished, they believed the Gods to be satisfied; and that they could not fail to find their Vows accomplished, which they expressed by the Word *Litare*, *q. d.* All is finished, and well done; whereas *Non Litare*, on the contrary, intimated there was something wanting for the Perfection of the *Sacrifice*, and that the Gods were not appeased. The Priest afterwards dismissed the People with these Words, *I licet*. Hence it may be observed, that the *Sacrifices* consisted of four principal Parts, the first called *Libatio*, or the pouring a little Wine upon the *Victim*; the second *Immolatio*, when, after they had scattered the Crumbs of salted Paste thereon, they killed it; the third *Redditio*, when they offered the Entrails to the Gods; and the fourth *Litatio*, when the *Sacrifice* was perfected, and accomplished without any Fault.

**SACRILEGE**, the Crime of profaning sacred Things, or Things devoted to God, or alienating to Laymen, or common Purposes, what was given to Religious Persons, and pious Uses. Our Fore-fathers were very tender in this Case; and therefore, when the Order of the Knights Templars was dissolved, their Lands, &c. were all given to the Knights Hospitallers of *Jerusalem*, for this Reason, *Ne in pios usus eregata, contra donatorum voluntatem, in alios usus distraberentur*.

**SACRISTAN**, a Church Officer, otherwise called *Sexton*. See *SEXTON*.

**SACRISTY**, or *Sextry*, the Place where the Vessels and other Utensils, and the Ornaments of the Church, were anciently preserved, called also in ancient Authors, *Secretarium*. The like with what we call *Vestry*. See *VESTRY*.

**SACROLUMBARIS**, or *Sacrolumbus*, in Anatomy, a Muscle, that ariseth fleshy from the superior Part of the *Os Sacrum*, posterior Part of the *Pium* and from all the Spines and transverse Processes of the *Vertebrae* of the Loins. It gives a small Tendon to the posterior Part of each Rib near its Root, where a small Bundle of fleshy

Fibres arises and unites with each ascending Tendon to the third, fourth, fifth, and sixth *Vertebra* of the Neck. This with the *Serratus Pecticus inferior*, and *Triangularis*, help to contract the Ribs in Expiration. But they are but of small Force, and seem only to accelerate the Motion of the Ribs, which fall down chiefly by their own Gravity, and the Elasticity of the Ligaments, by which they are tied to the *Vertebrae*. See *MUSCLE*.

**SACRUM OS**, in Anatomy, is the lower Extremity of the *Spina Dorsi*, being that whereon we sit. See *OS SACRUM* and *SPINA*. 'Tis doubted whence this Name should arise: Some think 'tis because the Ancients offered it in Sacrifice to the Gods; others, because 'tis very large, and others, because it incloses the Natural Parts. Its Figure is triangular. 'Tis hollow within-side, and by that Means, contributes to the forming of the Cavity at the Bottom of the *Hypogastrium*, called the *Pelvis*. Its Fore-part is smooth, by which Means, the Parts it contains are secured from being wounded: Its Hind-part rough, that the Muscles may fasten the better to it. It has Three different *Articulations*. The first is with the last of the *Vertebrae* of the Loins, and is like that of the other *Vertebrae*. The second, with the *Os Coccygis*, by *Synchondrosis*: The third, with the Bones of the Hips. The *Os Sacrum* is usually divided into five Parts, which are ranked among the Number of *Vertebrae*. The highest is the greatest; the rest growing less as they go lower. These *Vertebrae* are easily separated in Children, by Reason the *Cartilages* which joyn them, are not yet ossified. But in Adults, they are so firm, that they only make one Bone. 'Tis in the *Os Sacrum*, that the Cavity which contains the Spinal Marrow, terminates. See *VERTEBRÆ*. — *Sacra Vena* is a Vein arising from the *Os Sacrum*, and terminating, usually in the *Iliac Vein*; sometimes in the Place where the two *Iliacs* meet with the ascending *Aorta*. — *Arteria Sacra*, is a Branch of the *Iliacus Internus*. See *VEIN*. &c.

**SADDLE**, in the Manage, a Kind of stuffed Seat, laid on the Back of a Horse for the Convenience of the Rider. The Origin of the *Saddle* is not well known. *Gorop. Becanus* attributes its Invention to the *Salii*, a People among the ancient *Franks*; and hence, says he, came the *Latin Sella, Saddle*. 'Tis certain, the ancient *Romans* were unacquainted with the Use either of *Saddle* or *Stirrups*: Whence *Galen* observes, in several Places, that the *Roman Cavalry*, in his Time, were subject to several Diseases of the Hips and Legs, for want of having their Feet sustained on Horse-back. And long before him, *Hippocrates* had observed, that the *Scythians*, who were much on Horse-back, were troubled with Defluxions in their Legs, because of their hanging down. The first Time we hear of *Saddles* among the *Romans*, was *Anno. 340*; when *Constantine*, endeavouring to deprive his Brother *Constantine* of the Empire, made Head against his Army, and entering the Squadron where he himself was, threw him off his *Saddle*, as we are informed by the Historian *Zonaras*. Before, they made Use of square Pannels; such as we see in the Statue of *Antoninus* in the Capitol. The Use of *Saddles* was first established in *England*, by a Law of *Henry VII.* whereby the Nobility were obliged to ride on *Saddles*. 'Tis but very lately that the *Irish* have taken to it.

There are various Kinds of *Saddles*; as the *running Saddle*, a very small one, with round Skirts. The *Burford Saddle*, which has the Seat and Skirts plain. The *Pad Saddle*, of which there are two Kinds, the one made with Burrs before the Seat, the other with Bolsters under the Thighs. The *French Pad-saddle*, the Burrs whercof, came all round the Seat. *Portmantua Saddle* furnished with a Cantle behind the Seat, to keep a Carriage off the Rider's Back. *War Saddle*, furnished with a Cantle, &c. Bolster both behind and before.

**SADDLE-gall'd**, is when a Horse's Back is hurt or fretted with the *Saddle*; 'tis cured by bathing the Part with Urine, or warm Wine. When the Sore is large, 'tis cured by *Aqua Secunda*, strewing over it the Powder of an old Rope or Flax, and consuming the Proud-flesh with *Vitriol* or *Colcothar*.

**SADUCEES**, a Sect among the ancient *Jews*, esteemed as Deists, or Free-Thinkers, rather than real *Jews*; tho' they assisted at all the Ceremonies of the Worship in the Temple. *St. Epiphanius* will have them to have taken their Rise from *Dositheus*, a *Samaritan* Sectary; and *Tertullian* is of the same Opinion. *St. Jerom*, and other Writers add, That the *Saducees* came near the *Samaritans* in many Things; particularly in this, that they allowed no Books of Scripture, but the five Books of *Moses*. The Jesuit *Sorvarius*, has also embraced this Opinion; as seeming to be supported by the Authority of *Josephus*. But all *Josephus* says, is, That they admitted all that was written, *i. e.* all the Books of Scripture; intimating by that, they disowned the unwritten Traditions of the *Pharisees*; and, in Effect, *St. Epiphanius* is forced to own, that



that the *Saducees* were *Jews*; inasmuch, as they assisted at the Worship and Sacrifices of the Temple at *Jerusalem*: Whereas the *Samaritans* sacrificed on *Mount Gerizaim*. See **SAMARITANS**.

Some Authors ascribe the Original of this Sect, to one *Sadoc*, a Disciple of *Antigonus Socheus*, who frequently inculcated it on his Scholars, That God is to be served for himself, and not out of View to any Reward to be received from him in the next World, as Slaves serve their Masters merely for Reconcience. *Sadoc*, add they, putting a false Interpretation on these Words of his Master, published, That there was no Reward to befall good Actions done in this World. And hence arose the Sect of *Saducees*, thus denominated from their Leader *Sadoc*. St. *Epiphanius*, and some modern Writers after him, take the *Saducees* to have been thus called from the Hebrew, *Sadic* Just, or *Sedec* Justice, in Regard of the great Justice they shewed in all their Actions.

'Tis observ'd, *Acts* xxiii. 8. that the *Saducees* say, There is no Resurrection, neither any Angel or Spirit; but that the *Pharisees* believe both the one and the other. These Words, *The one and the other*, seem to insinuate, That Angel and Spirit are one and the same Thing. But as the Apostles, observes *Oecumenius* on that Passage, don't always use the exactest Terms, one may understand by Spirit, all spiritual Substances; as if the *Saducees* had believed that God himself was a Body. This, however, is not *Oecumenius's* Opinion. He asks, Why the Scripture says, *The one and the other*, tho' it spoke of Three Things, *Resurrection*, *Angel*, and *Spirit*? And he answers, That 'tis either because *Angel* and *Spirit* are the same thing; or that *one and the other*, which is only properly understood of Two Things, is, perhaps, here spoke of Three: Exact Propriety of Words not being to be required in Books wrote by simple illiterate Fishermen. 'Tis true, in explaining what goes before, he observes, That the *Saducees*, being very ignorant, might possibly disbelieve the Existence of a God, and on that Account, might be represented as denying a Resurrection, &c. But he does not say, that by Spirit, they might mean all spiritual Substance. 'Tis probable, all meant by it, is the Immortality of the Soul; it being the Opinion of the *Saducees*, That there is nothing immortal in Man. 'Tis certain, they denied all Resurrection, and allowed of no Happiness but what is enjoyed in this Life; believing, that every Thing told of the other World, had been invented by the *Pharisees*. Hence, also, they denied a Divine Providence, and attributed all Things to Free-Will; in which, they opposed the Opinion of the *Pharisees*, who admitted a kind of Destiny or Fatality in all our Actions. See **PHARISEES**.

**SÆPHÆNA**, in Anatomy, a Vein, which arising over the *Maleolus internus*, up along the Leg, and the Inner Part of the Thigh, discharges itself near the Groin, into the *Cruval* Vein. 'Tis this Vein they usually open when they bleed in the Foot. It has its Name probably from *σαφνι*, *Manifestus*, as lying plain in Sight.

**SAFE-CONDUCT**, a Security given by the Prince under his Great Seal, to a Stranger for his quiet coming in and passing out of the Realm. The *Safe-Conduct* is granted to Enemies, the Passport to Friends. Judges sometimes give *Safe-Conducts* to Delinquents, or Prisoners, to enable them to act in their Affairs.

**SAFE-GUARD**, *Salva guardia*, a Protection given by the King to a Person fearing the Violence of some other Person, for seeking his Right by Course of Law.

**SAFE-GUARD**, at Sea, is a Rope which saves and secures any Thing: For Instance, that whereby Persons walk securely over the Bolt-sprit. The *Safe-guard of the Helm*, is a Rope which goes through the Helm, and is fastened to the Buttocks of the Ship. See **ROPE**.

**SAFE-PLEDGE**, in Law, a Security given for a Man's Appearance against a Day assigned.

**SAFFRON**, or *Saffran*, a Plant which produces a Flower of the same Name; whence, also, a Drug called *Saffron* or *Crocus* is gathered. See **CROCUS**. The Root which produces the *Saffron*, is a kind of Onion, covered with several bulbous Cartilages. Its Leaves are long, narrow, thick and soft to the Hand. Its Flower, which appears a long Time before the Leaves, is a faint Blue, tinged with a little Yellow at the Extreme towards the Stalk. From the Middle of the Flower arise three red-dish Filaments or Chives, which are properly the *Saffron*; the rest of the Flower being of no Use. As soon as the Flower is gathered, they separate the Chives, and lay them on Hurdles, or in large Sieves, or on a little Kiln for that Purpose, with a little Coal-fire underneath to dry them. When dry, the *Saffron* is in its Perfection, and fit for Use. 'Tis observed, that five Pounds of fresh Chives only make one Pound of dry *Saffron*. The good Qualities of *Saffron* are, That its Chives be long and broad, that

they be velveted over with a fine Red, of an agreeable Smell, free of yellow Threads, and very dry. The best *Saffron* in *Europe* is that of *England*. That brought from *Spain* is good for nothing; because of the Oil the *Spaniards* mix with it to keep it. 'Tis used both in Foods and Medicines, to cheer, fortify, and resolve. 'Tis also used by Illuminors, to make a golden yellow Colour. The Word is formed from the Arabic, *Zaphe-ran*, which signifies the same Thing.

**SAFFRON** is also a Name given to several Chymical Preparations, from the Resemblance of their Colour to that of *Saffron*, but more usually called *Croci*: Such is *Saffron of Venus*. See **COPPER**.

**SAFFRON of Mars**. See **CROCUS MARTIS**. *Saffron of Gold*. See **AURUM Fulminans**.

**SAGAPENUM**, or *Serapinum*, a Gum whose Smell comes very near that of the Pine, whence its Name. It flows by Incision, from the Trunk of a ferulaceous Plant growing in *Persia*. The best is in bright transparent Tears, of a strong Smell; and the whiter and freer of Dirt, the better. Sometimes 'tis found as white, both within and without Side, as Milk; tho' this is very rare. 'Tis esteemed operative and purgative, proper in the Epilepsy, Asthma and Palsy, and is also used externally to assuage Pains, and resolve Tumors.

**SAGATHEE**, in Commerce, a slight woollen Stuff, being a kind of Serge or Rateen; sometimes mixed with a little Silk. 'Tis manufactured chiefly at *Amiens*; tho' we have our Share in *England*. The Word is formed from the French *Sayette*, a Diminutive of *Saye*; which see. The French Name *Sayette*, is derived from that of the Thread used herein, which is chiefly prepared and spun in *Flanders*, about *Turcoing*, &c. and called *Fil de Sayette*.

**SAGE**, *Salvia*, a Medicinal Herb of an agreeable, aromatic Taste; esteemed an excellent Cephalic of the detergent Kind; and on that Score likewise used as a Vulnerary and Diuretic. There are several Kinds of *Sage*; those used and cultivated by us are the *Tea-Sage*; or *Sage of Virtue*, the *Red Sage*, and the *Wormwood Sage*. The first has the most agreeable Flower; and on that Score is cut when young and full of Sap, dried, and kept for Tea. The *Dutch* dry and prepare their *Sage* like other Teas, and carry it to the *Indies* as a very precious Thing. They there find a good Market for it; the *Chinese* preferring it to the best of their *Indian Teas*; and for every Pound of *Sage Tea*, giving, in Exchange, Four Pounds of theirs, which they sell again very dear in *Europe*. But the *Wormwood Sage* is esteemed of the most Efficacy in Medicine, and is that alone used in the Shops. It makes an excellent Gargarism, especially if sharpened with a little Acid. Its Decoction is very grateful and cooling, with the Addition of a little Lemon-juice. 'Tis both detergent and absorbent, and as such, finds Place in Diet-drinks, and medicated Ales, intended for Sweetners and Cleaners of the Blood. The School of *Salernum* recommend *Sage* as a Remedy in all Diseases. Hence the Verse,

*Cui moritur homo cui salvia crescit in horto?*

*Sage*, when viewed with a Microscope, appears covered all over with little Spiders, which are seen to walk, &c. about. It yields, by Distillation, a very agreeable, aromatic Oil, of some Use in the Shops.

**SAGITTA**, in Astronomy, the *Arrow*, a Constellation of the Northern Hemisphere. See **CONSTELLATION**. The Stars in the Constellation *Sagitta*, in *Tycho's* Catalogue, are Five, and as many in *Ptolemy's*. In Mr. *Flamsteed's* Catalogue they are Twenty Three; The Longitudes, Latitudes, &c. whereof are as follow.

*Stars in the Constellation SAGITTA.*

| Names and Situation of the Stars.       | Long. S. | Long. E. | Lat. N. | Mag.         |
|---|----------|----------|---------|--------------|
|   | 0        | 1        | 2       |              |
|   | 20       | 00       | 08      | 43 07 45 6   |
|   | 20       | 20       | 24      | 43 15 10 6   |
| Informes over Sagitta, and preceding it | 21       | 45       | 45      | 38 31 25 6   |
|   | 21       | 53       | 27      | 38 31 18 6   |
|   | 22       | 47       | 43      | 41 16 27 6   |
| 5                                       |          |          |         |              |
|   | 23       | 07       | 32      | 41 32 45 6   |
| Preced. Glyphis or Nib row. S.          | 24       | 07       | 59      | 41 34 28 6 5 |
| Preced. of three in the Shaft           | 25       | 35       | 50      | 40 49 26 6   |
|   | 25       | 29       | 42      | 37 27 09 5   |
|   | 26       | 45       | 16      | 38 49 52 4   |
| 10                                      |          |          |         |              |
| In the Extremity of the Nib             | 26       | 53       | 23      | 38 15 17 4   |
| In the middle of the Shaft              | 29       | 04       | 40      | 38 56 52 4 5 |
| Last of three in the Shaft              | 29       | 43       | 47      | 39 27 05 6   |
|   | 30       | 35       | 41      | 38 48 23 6   |
| 15                                      |          |          |         |              |
|   | 1        | 02       | 13      | 36 36 54 6   |



| Names and Situation of<br>the Stars.     | Longi-<br>tude. | Latitude. | Magn. |
|--|-----------------|-----------|-------|
| In the Point of the Arrow                | 1 34 53         | 36 39 43  | 6     |
| In the Triangle under North<br>the Point | 2 42 58         | 39 13 39  | 4     |
| Middle and Posterior                     | 2 28 06         | 37 14 03  | 6     |
| 20                                       | 3 00 24         | 35 35 06  | 6     |
| Preced. of 3 following the Point         | 3 33 10         | 36 35 02  | 6     |
| Middle                                   | 4 46 28         | 39 18 22  | 6     |
| Last                                     | 6 29 53         | 39 52 58  | 6     |
|  | 8 37 48         | 40 07 17  | 6     |

**SAGITTA**, in Botany, signifies the Upper Part of any small Twig, Cyon, or Gratt of a Tree.

**SAGITTA**, in Mathematicks, is the same as the versed Sine of any Arch, and is so called by some Writers, because it is like a Dart, or Arrow, standing on the Chord of the Arch. See **SINE**.

**SAGITTA**, in Geometry, a Term some Writers use for the *Abscisse* of a Curve. See **ABSCISSE**.

**SAGITTAL SUTURE**, in Anatomy, the second of the genuine *Sutures* of the *Cranium*. See **SUTURE**. It reaches the whole Length of the Head; and has its Name from the Latin *Sagitta*, as being straight, like an Arrow. 'Tis sometimes also called *Rhabdoides*.

**SAGITTARIUS**, in Astronomy, the *Archer*, one of the Signs of the Zodiac; the Ninth in Number. See **SIGN**.

The Stars in the Constellation *Sagittarius*, in Ptolemy's Catalogue are Thirty One; in Tycho's Sixteen; In the *Britannic* Catalogue Fifty. The Longitudes, Latitudes, Magnitudes, &c. whereof are as follow.

#### Stars in the Constellation SAGITTARIUS.

| Names and Situations of<br>the Stars. | Longi-<br>tude. | Latitude. | Magn. |
|---------------------------------------|-----------------|-----------|-------|
| Inform. preced. the Bow               | 22 55 01        | 4 22 42A  | 6     |
|                                       | 25 38 16        | 0 19 45A  | 6     |
|                                       | 25 43 17        | 0 47 41A  | 7     |
|                                       | 26 19 47        | 0 47 50A  | 6     |
| That in Point of the Arrow            | 26 55 47        | 6 55 51A  | 3     |
| More North in top of the Bow          | 28 54 10        | 2 22 54B  | 4     |
| Subseq.                               | 29 15 05        | 2 42 28B  | 6     |
| In handle of Bow agt. Hand            | 0 14 10         | 6 25 21A  | 3     |
| In the South part of the Bow          | 0 45 33         | 10 59 54A | 2 3   |
| 10                                    | 1 04 54         | 7 24 47A  | 7     |
|                                       | 1 37 40         | 2 48 39B  | 6     |
| South. in North part of Bow           | 1 59 55         | 2 04 01A  | 4     |
| Preced. the <i>Clara Humeri</i>       | 5 50 42         | 3 54 35A  | 4     |
|                                       | 7 19 56         | 2 39 12B  | 6     |
| 15                                    | 7 26 23         | 0 48 34B  | 7     |
|                                       | 7 45 55         | 1 01 30B  | 7     |
| 1st. of contig. Stars in the Eye      | 8 09 07         | 0 09 12B  | 5     |
|                                       | 8 15 09         | 1 32 03B  | 6     |
| Bright St. in preced. Should.         | 8 03 12         | 3 23 32A  | 3     |
| Subseq. of contig. in the Eye         | 8 22 14         | 0 12 33B  | 5     |
| 20                                    | 9 06 09         | 2 09 25B  | 6     |
| Preced. of three in the Head          | 9 08 52         | 1 42 12B  | 4     |
| That under the Arm-pit                | 9 17 22         | 7 07 55A  | 3     |
| Middle one in the Head                | 10 40 42        | 0 54 38B  | 4     |
| That und. preced. Shoul. bone         | 10 30 10        | 5 01 12A  | 4     |
| 25                                    | 11 56 44        | 1 28 59B  | 3 4   |
| Last of three in the Head             | 12 43 06        | 2 52 57A  | 5     |
| Between the Shoulders                 | 14 02 22        | 3 17 59B  | 6     |
| In North part of the South            | 15 08 20        | 4 15 43B  | 5     |
| Ephaptis of three Middle              | 15 06 17        | 3 48 43B  | 6     |
| Contiguous to that                    | 15 21 49        | 6 08 42B  | 6     |
| 30                                    | 15 00 19        | 2 26 17A  | 5     |
| North of 3 in the Ephaptis            | 15 02 43        | 2 21 05A  | 5     |
| In the hind Shoulder                  | 15 07 46        | 1 54 36A  | 6     |
| Contiguous to that                    | 15 39 04        | 0 12 20B  | 6     |
| A Third more North                    | 17 24 12        | 3 01 53A  | 6     |
| 35                                    | 17 31 15        | 3 13 01A  | 5     |
| In the Cubitus of fol. Arm            | 18 28 04        | 1 54 04A  | 6     |
| Those follo. the N. & Preced.         | 19 53 56        | 5 05 54B  | 6     |
| part of Ephapt. of 2 & Subseq.        | 20 20 29        | 5 11 26B  | 6 5   |
| 40                                    | 20 37 36        | 1 27 02B  | 6     |
| Preced. in South Ephaptis             | 22 06 02        | 1 54 03B  | 6     |
| Preced. in the Root of Tail           | 21 29 46        | 5 22 55A  | 5     |
| 4 middle ones in the South            | 21 35 15        | 6 16 34A  | 5     |
| Root of the Tail & North              | 22 13 16        | 5 24 44A  | 5     |
| 45                                    | 24 07 49        | 5 08 03B  | 6     |
| 2. & North in South Ephaptis          | 22 43 30        | 7 03 48A  | 5     |
| 2. in the Root of the Tail            | 25 27 19        | 6 54 32B  | 6     |
|                                       | 26 38 01        | 8 44 40B  | 6     |
| 50                                    | 26 29 27        | 7 31 45B  | 6     |

**SAGUM**, in Antiquity, a military Garment wore by the Greeks, Romans and Gauls, in Manner of a Cassock; covering the Thighs, and sustaining the Sword. 'Twas made of Wool, and square. They had one for the Winter, and another lighter for Summer.

**SAICK**, or *Saique*, a Turkish Vessel, very proper for the Carriage of Merchandizes. It has square Sails on the Middle-mast; without either Mizzen, Top-gallant, or Shrouds: Only a Main-mast, with a Main top-mast, both very high; with a Bolt-sprit, and a little Mizzen Mast. The Height of the Main mast makes the Saick be seen at a great Distance. Their Make renders it impossible for them to go with a Side-wind; but when they have the Wind behind them, nothing can out-go them. The generality of them carry no Guns.

**SAIGNER**, in Fortification, a French Term, signifying to bleed or drain. Hence to *saigner* a Moat, is to empty or draw out the Water by Conveyances under Ground, that it may be passed over the more easily, after laying Hurdles or Rushes on the Mud remaining.

**SAIL**, in Navigation, an Assemblage of several Breadths of Canvas, or Cloth of raw Hemp, sewed together by the Lifts, and edg'd around with a Cord; fastened to the Yards and Stays of a Vessel, to make it drive before the Wind which bears thereupon. There are two Kinds of Sails, the one square, generally used in high-bottom'd Vessels: This has various Names, according to the various Masts 'tis fastened to, as the *Main-sail*, the *Mizzen-sail*, the *Top-sail*, &c. The other are triangular, called *Smack-sails*, and by some *Latin-sails*, because chiefly used in Italy, and in flat-bottom'd Vessels; tho' they are also used on the Mizzen-Masts and Stays of other Vessels. They need but few Ropes, and little Wind; but are dangerous, and not to be used in foul Weather. There are ordinarily Ten Sails in large Vessels; which Number is increased at Bottom by the Addition of Bonners, and at the Sides by *Cape-sails*.

A Vessel is said to set *Sail*, to go with full *Sail*, to make all her *Sail*, that is, to open all her *Sails*. To be under *Sail*, that is, ready to set *Sail*, &c.

**SAILS**, are also the *Vanes* of Windmills, or the Arms or Flights, whereby the Wind has its Effect on Windmills. These are either *Horizontal* or *Perpendicular*. See **WINDMILL**.

**SAILS**, in Falconry, the Wings of an Hawk are so termed.

**SAILING**, in a general Sense, is used for the Art, or Act of Navigation; or of determining all the Cases of a Ship's Motion, by Means of *Sea-Charts*. See **NAVIGATION**. Of this there are Three Kinds, *Plain*, *Mercator's*, and *Circular*.

*Plain* SAILING, is that performed by Means of Rhumbs drawn on a plain Chart. See **PLAIN CHART**.

*Mercator's* SAILING, is that performed by Rhumbs drawn on a *Mercator's Chart*. See **MERCATOR'S CHART**.

*Circular* SAILING, is that performed by the Arch of a great Circle; which, of all others, where practicable, is the shortest. See **CIRCULAR**.

#### Doctrine of PLAIN and MERCATOR'S-SAILING.

Case I, The Longitude and Latitude of Two Places given; To find the Departure, or Miles of Longitude.

In *Plain Sailing*. 1°. If both Places be more Easterly than the first Meridian, subtract the less Longitude from the greater, the Remainder is the Difference of Meridians. If one of the Places be more Easterly, and the other more Westerly than the first Meridian, add the Longitude of the more Easterly to the Complement of the Longitude of the more Westerly to a whole Circle; the Sum is the Difference of Meridians. 2°. Divide the Difference of Meridians into so many Parts as there are Degrees in the Difference of Latitude: Or, if the Difference of Latitude be greater than that of the Meridians, into so many fewer. 3°. Reduce the Minutes of Longitude answering to one Part, into Miles of the several Parallels, in the former Case; or into Miles of the Parallel, which is an arithmetically mean Proportional between the Two, in the latter Case. 4°. The Aggregates of these Parts collected into one Sum, exhibit the Departure or Miles of Longitude.

E. gr. Suppose the Longitude of the one Place 35°. and that of the other 47°. the Difference of Meridians is 12°. Suppose the Latitude of the first 4°. and that of the latter 8°. the Difference will be 4°, consequently we have sailed from the 4th to the 8th Parallel. Therefore divide 12 by 4, and reduce the Quotient 3°. into Miles in the several Parallels 4, 5, 6, and 7. (See **DEGREE**) the several Quotients will be 43°. 71'. 41°. 68'. 43°. 65'. 43°. 59'. the Sum of which is 174 the Departure or Miles of Longitude required.



*In Mercator's Sailing.* The Reduction is much more commodiously performed in *Mercator's Charts*; wherein the Arch intercepted between the Two Meridians, is applied to an Arch of the Meridian intercepted between the Two Parallels; and the Distance it there measures, gives the *Departure*, or *Miles of Longitude* required. See *DEPARTURE* and *LONGITUDE*.

*Case II. The Longitude and Latitude of Two Places, to and from which, a Ship is to sail, being given; To find the Rhumb to be sailed on, and the Distance to be run.*

*In plain Sailing.* 1. Find the *Departure* by the last Case. 2. From the *Departure*, and Difference of Latitudes, find the loxodromic Angle or Rhumb-line; which is done by this Proportion: as the Difference of Latitude is to the *Departure*, so is the whole Sine to the Tangent of the Angle of the Rhumb-line. The Distance then, to be run on this Rhumb, is to the *Departure*, as the whole Sine to the Sine of the Angle of the Rhumb. See *RHUMB*.

*In Mercator's Sailing.* 1. Apply the Center of the Mariners Compass on the Place sailed from, on the *Mercator's Chart*, as *a*, (*Tab. Navigation Fig. 7.*) and so as that the North or South Line thereof be parallel to some of the Meridians. 2. Mark the Rhumb of the Compass, wherein the Place sailed to, as *b*, is placed. For this is the Rhumb to be sailed on. 3. The same Rhumb is likewise found by drawing a right Line from *a* to *b*; and with a Protractor, finding the Angle the Rhumb makes with any Meridian it cuts. 4. The Quantity or Distance *a b* is found by applying the Part *a I* to *I K*, *1 a* to *k l*, *2 b* to *l m*.

*Note,* the Rhumb and Distance may also be found after the same Manner on a plain Chart.

The same may likewise be found by *Loxodromic Tables*; thus, 1. Chuse a Rhumb at Pleasure, and under the same, in the Tables, find the Longitudes corresponding to the given Latitudes. The Difference whereof, if it coincide with the Difference of the given Longitudes, the Rhumb is well chosen; otherwise another must be pitched on, either more or less oblique, 'till the Tabular Difference agree with the given Difference. 2. The Rhumb thus found, the Distances answering to the given Latitudes, must be taken from the Tables, and the less subtracted from the greater; the Remainder is the Distance sought.

*Case III. The Rhumb and Distance sailed being given; To find the Longitude and Latitude of the Place arrived at.*

*In plain Sailing.* 1. From the *Data*, find the Difference of Latitude of the the Two Places: (by the Proportion delivered under the Article *RHUMB-line*.) This Difference added to the Latitude of the Place sailed from, or subtracted from the same, the Sum, or the Remainder, leaves the Latitude of the Place sailed to. 2. From the same, find the *Departure*; and thence the Latitudes of the Place sailed to (as directed under *RHUMB line*.)

*In Mercator's Sailing.* 1. Place the Mariners Compass on the *Chart*, with the Center over the Place *a*; and the Meridian, or North or South Line, parallel to the Meridian thereof. 2. From the Point *a*, draw a right Line, as *a b*, for the Ship's Course. Take the Distance by Parts, in Parts of the Meridian *I K*, *K L*, &c. and set it off upon the right Line *a b*; *E. gr.* from *a* to *c*; Then will *c* be the Place the Ship is arrived at; the Longitude and Latitude whereof are given by the *Chart*. See *CHART*.

*By the Loxodromic Tables.* 1. Under the given Rhumb, seek the Distance answering to the Latitude of the Place sailed from; and either add it to, or subtract it from the given Distance; as the Latitude of the Place sailed to is greater, or less than that sailed from. 2. Under the same Rhumb, ascend or descend further, till you meet with the Distance corrected. 3. The Latitude answering thereto in the first Column, is the Latitude of the Place sailed to. 4. From the second Column of the Table take the Longitude corresponding to the Latitudes of the Places sailed to and from. Their Difference is the Difference of Longitudes of the Places sailed to and from.

*Case IV. The Latitudes of the Places sailed to and from, together with the Rhumb sailed in, being given; To find the Distance and Difference of Latitudes.*

*In plain Sailing.* From the Difference of Latitude and the Rhumb given, find the Distance; and from the same *Data*, the *Departure*. See *RHUMB*. This converted in-

to Degrees of a great Circle (See *DEGREE*) exhibits the Difference of Longitudes sought.

*In Mercator's Sailing.* 1. Place the Compass on the *Chart*, as in the preceding Case. From the Place sailed from, *a*, draw the Rhumb-line, *a b*, sailed in; till it cut the Parallel of the given Latitude. 2. The Point of Intersection will be the Place arrived in. 3. Hence its Longitude is easily found; and the Distances. See *RHUMB*.

*By the Tables.* Take both the Longitudes and the Distances answering to the Latitude of the given Places, out of the Tables; then subtract both the Longitudes and the Distances from each other. The first Remainder is the Difference of Longitude, the latter the Distance of the Places.

*Case V. The Latitudes of the Places sailed from, and to, with the Distance given; To find the Rhumb and the Difference of Longitude.*

*In plain Sailing.* From the Difference of Latitude, and the Distance, find the Rhumb, and from the same *Data* find the *Departure*; which may be also determined from the Rhumb now found, and the Differences of Latitude, or from the Rhumb and the Distance run. Lastly, from the *Departure* find the Difference of Longitude. See *RHUMB*.

*In Mercator's Sailing.* On the Map draw the Parallel the Ship arrives at, *C D*. Reduce the Distance run into Parts proportional to the Degrees of the Map. The Distance reduced, being *a 2*; from *a* describe an Arch cutting the Parallel *C D* in *2*: Then will *2* be the Place in the Map; whose Longitude accordingly is easily found.

*By the Tables.* Subtract the given Latitudes from each other; and in the Tables seek the Rhumb; under which, the Distance run answers to the given Difference of Latitude. Subtract the Longitude under the Rhumb; answering to the Latitude of the Place sailed to; and that under the same Rhumb against the Latitude of the Term sailed to, from each other, the Remainder is the Difference of Longitude sought.

*Case VI. The Difference of Longitudes of the Places sailed to, and from, with the Latitude of one of the Places, and the Distance run, being given; To find the Rhumb, and the Latitude of the other.*

*In plain Sailing.* Convert the Difference of Longitudes into Miles of Longitude or the *Departure*; from the given *Departure* and Distance run, seek the Rhumb: And from the same, and the Rhumb, seek the Difference of Latitude; which, and the Latitude of one Place being had, the Latitude of the other readily follows. See *RHUMB*.

*In Mercator's Sailing.* Through the given Place *a* in the Map, draw a right Line *E F* parallel to the Meridian *I H*; and make *F L* equal to the Difference of Longitudes. From *F* draw *L M* parallel to *E F*, which will be the Meridian the Ship is arrived at. Then from *a*, with the Interval of the Distance run, *a c*, describe an Arch intersecting the Meridian *M L*; the Place sought will be in *c*. If then a Compass be placed on the Map, as before directed, the Rhumb-line will fall in with *a c*; and consequently the Rhumb will be known. Lastly, If through *c* be drawn *N O*, parallel to *A B*; *N A* will be the Latitude of the Place required.

*By the Tables.* Take a Rhumb at Pleasure, and under the same in the Tables, find the Longitude, and the Distance answering to the given Latitude. Add the given Distance to the Distance found in the Tables, if the Vessel sailed from the Equator; or subtract it therefrom, if it sailed towards the same. With the same Sum, or the Difference, enter the Tables; and the Longitudes found against it, subtract or add from that just found. If the Remainder be found the given Difference of Longitudes, the Rhumb is well taken. Otherwise, it must be changed for a more or less oblique one, till the same Operation being repeated, the Remainder be found the Difference of Longitudes; then the Latitude in the first Column, corresponding to the Distance, will be the Latitude of the other Place.

*Case VII. The Difference of Longitude, and the Latitude of one of the Places, being given, together with the Rhumb; To find the Distance run, and the Latitude of the other Place.*

*In plain Sailing.* Reduce the Difference of Longitude into Miles of Longitude, or *Departure*, as under the first Case. From the *Departure* and the Rhumb, find the Distance run. (See *RHUMB*) And from these, or from the Rhumb, and the Distance run, find the Difference



ference of Latitude. This done, as the Latitude of the one is already had, that of the other is so too.

*In Mercator's Sailing.* Place the Compass on the Chart as before; and by the given Rhumb, draw the Rhumb-line,  $a b$ . Draw a Meridian  $E F$  through the given Place  $a$ ; and with the Interval of the Difference of Longitude  $F L$ , draw another,  $L M$ , for that the Vessel is arrived at. Where this intersects the Rhumb-line, is the Place  $c$  that the Vessel is arrived at. Wherefore, if through  $c$  be drawn  $N O$  parallel to  $A B$ ;  $N A$  will be the Latitude of the Place. The Distance run  $a c$  is easily reduced into Miles by the Scale.

*By the Tables.* Under the given Rhumb, seek the Distance run, and the Difference of Longitude answering to the given Latitude. If the Vessel have sailed towards the Pole, the Difference of Longitude is to be added to the given Difference of Longitude; if towards the Equator, 'tis to be subtracted from the same. In the former Case, descend in the Table, and in the latter, ascend; 'till in the first, the Aggregate, in the latter, the Difference be seen in the Column of Longitude. The Latitude answering hereto in the first Column, is that sought. And from the Distance answering to this Latitude in the first Case, the Tabular Distance is to be subtracted; or in the latter Case, that Distance to be subtracted from the Tabular Distance. What remains, is the Distance run.

From the Solution of these Cases in *Sailing*, 'tis evident, some are more easily performed by the Charts than the Tables; and that the *Mercator's Charts* are preferable to the Plain ones; since in the latter, the Distance is not reduced by the Map, but by a particular Scale for that Purpose.

#### Doctrine of CIRCULAR SAILING.

- I. *The Latitude and Longitude of the Places sailed to and from, being given; to find the Angle M (Fig. 8.) which a Ship's Way MO proceeding in a Circular Course, includes, with the Meridian P. M. of the Place sailed from.*

Since in the Triangle  $P M N$ , we have  $P M$  and  $P N$ , the Complements of the given Latitudes  $H M$ , and  $I N$ , together with the Angle  $M P N$ , measured by the Arch  $H I$ , the Difference of the given Longitudes  $H$  and  $I$ ; the Angle  $P M N$  is found by *Spherical Trigonometry*. See TRIANGLE.

- II. *The Latitude H M, and the Longitude H, of the Place sailed from, M, with the Distance run, and the Latitude of the Place L S the Ship in a Circular Voyage arrives at, being given; to find the Longitude of the Place L, and the Angle P L M comprehended between the Ship's Way M L, and the Meridian P S.*

In the Triangle  $P M L$ , we have given  $P M$  the Complement of the Latitude  $H M$ , and  $P L$  the Complement of the Latitude  $L S$ . Wherefore, if the Ship's Way  $M L$  be turned into Degrees of the Equator; we shall find the Angle  $M P L$ , which is measured by the Difference of Longitudes  $H S$ ; and likewise the Angle  $P L M$  by *Spherical Trigonometry*. See SPHERICAL TRIANGLE.

After the like Manner may other Problems be solved; but as 'tis easier and better *Sailing* by Rhumbs, than by Circles, and as this latter Way is but very little in Use; we chuse to pass them over. See GLOBULAR SAILING.

*SAILING*, in a more confined Sense, is the Art of conducting a Vessel from Place to Place, by the working or handling of her *Sails* and *Rudder*; though what is done by Means of this latter, is more properly called *Steering*. See STEERING.

To bring *Sailing* to certain Rules, a late Author computes the Force of the Water, against the Ship's Rudder, Stem or Side; and that of the Wind against her *Sails*: in order to this, he considers all Fluid Bodies, as the Air or Water, &c. as being composed of little Particles, which, when they act upon, or move against any Surface, do all move parallel one to another, or strike against the Surface after the same Manner. He considers, 2. That the Motion of any Body, with regard to a Surface, on which it is to strike, must be either Perpendicular, Parallel, or Oblique. In the first Case, the Body strikes with all its Force, which will be greater or less, according as the Body moves swifter or slower. In the second Case, the Line of Motion  $a b$ , (*Tab. Navigation* Fig. 3.) will not affect the Surface at all, because it is no way opposed to it; nor can the moving Body strike upon it, or touch it. In the third, If the Line of Motion,  $A D$ , be oblique to the Surface  $D C$ , so that the Angle of Incidence be  $A D C$ , then the Motion of the Body in the Line  $A D$  may be resolved into Two Directions, *viz.* into  $A E$ , or  $D B$ , and into  $A B$ . But the Direction or Line

of Motion  $A E$  being parallel to the Surface  $D C$ , cannot affect it at all; so that the whole Motion of the Body  $A$  in that oblique Manner of striking on the Surface, will be expounded by the Perpendicular Line,  $A B$ . And if  $D A$  be made the Radius of a Circle, whose Center is at  $D$ ,  $B A$  will be the Line of the Angle of Incidence,  $A D C$ . Hence we deduce, That the Force of a Particle of Air or Water, as  $A$ , striking against the Surface  $D C$ , which may represent, either a Sail or the Rudder of a Ship, in the oblique Direction  $A D$ , will be to the Perpendicular Force there, as  $B A$  is to  $D A$ : that is, as the Line of the Angle of Incidence is to the Radius. And since what is thus true of one Particle, singly considered, will be true of all the Particles of any Fluid Body collectively, it will follow, That the Force of the Air or Water striking perpendicularly upon a Sail or Rudder, to the Force of the same, in any oblique Impingency, will be, as the Square of the Radius, to the Square of the Sine of the Angle of Incidence: and consequently, that all oblique Forces of the Wind against the Sails, or of the Water against the Rudder, will be to one another, as the Squares of the Lines of the Angles of Incidence. If the different Degrees of Velocities be considered, it will be found, that the Forces will then be as the Squares of the Velocities of the moving Air or Water; that is, That a Wind that blows thrice as strong, or moves thrice as swift as another, will have nine Times the Force upon the Sail. And it being also indifferent, whether you consider the Motion of a Solid in a Fluid, whose Particles are at rest; or of those Particles moving all parallel against a Solid that is at rest, the reciprocal Impressions being always the same: If a Solid be moved with different Velocities in the same Fluid Matter (as suppose Water) the different Resistances which it will receive from that Water, will be in the same Proportion, as the Squares of the Velocities of that Body.

Let  $H M$  (Fig. 4.) represent a Ship,  $C D$  the Position of the Sail, and  $A B$  the Course of the Wind blowing towards  $B$ . Draw  $B G$  perpendicular to the Sail, and  $G K$  perpendicular to the Line of the Keel produced  $H M K$ . By what is said above, the Sail  $C D$ , will be driven by the Wind  $A B$ , according to the Direction of the Line  $B G$ . So that if she could divide the Water every Way with the same Facility, as she doth with her Head, the Ship would go directly to the Point  $G$ , along the Line  $B G$ . And if  $H K$  represent her direct Course, she would have got forward the Length  $B K$ , and Sideways she would have gone the Quantity  $G K$ . But as her Length is much greater than her Breadth, so she will divide the Water, or make her Way in it with more Difficulty with her Side, than with her Head or Stern; on which Account, she will not run Sideways so far as  $K G$ , but fall short of it in Proportion to the said Difficulty of dividing the Water with her Side; that is, If the Resistance she finds in her passing thro' the Water Sideways, be to that of passing Lengthways, suppose, as ten to one, then will not the Ship get Sideways above a tenth Part of the Line  $G K$ . Wherefore if  $K G$  be found to  $G L$ , in the Ratio of the Resistance of the Side to that of the Stern, and the Line  $B L$ , be drawn; the Ship will go to the Point  $L$ , along the Line  $B L$ , in the same Time as it would have gone to  $G$ , if it could have divided the Water every Way equally. This Part,  $K L$ , is called the *Drift* or *Lee-way* of a Ship, and the Angle  $K B L$  is her Degrees of *Lee-way*; as the Angle  $A B K$ , expresses how near the Wind she lies. After this, he proceeds to demonstrate, That the best Position or Situation of a Ship, so as she may make the best *Lee-way*, but go to *Wind-ward* as much as is possible, is this: That, let the Sail have what Situation it will, the Ship be always in a Line bisecting the Complement of the Wind's Angle of Incidence upon the Sail; that is, Supposing the Sail in the Position  $B C$  (Fig. 4.) the Wind blowing from  $A$  to  $B$ , and consequently, the Angle of the Wind's Incidence on the Sail  $A B C$ , and its Complement  $C B E$ ; then must the Ship be put into the Position  $B K$ , or move in the Line  $B K$ , bisecting the Angle  $B G E$ . He shews farther, That the Angle which the Sail ought to make with the Wind, *i. e.* the Angle  $A B C$ , ought to be but 24 Degrees; that being the most advantageous Situation to go to *Wind-ward*, the most that is possible. And in order to bring this to bear in Practice, he directs to put Marks to the Sheets, Braces, and Bow-lines of the lower Sails, to know when they are in their best Situation; and then, even in the Night, when the Marks of a Brace or of a Sheet shall come to the Clear, one may be pretty well assured, that the Sail runs well. To this may be added, many curious Things from *Borelli de V. Percussionis*, concerning the different Direction given to a Vessel from the Rudder, when *Sailing* with a Wind, or floating without Sails in a Current; in



the former Case, the Head of the Ship always coming to the Rudder, and in the latter always flying off from it.

**SAILORS**, the elder Seamen, who are employed in managing the Sails, the Tackle, Steering, &c.

**SAINTS**, in the *Romish Church*, Holy Persons deceased; and since their Decease, Canonized by the Pope, after several Informations and Ceremonies. See *CANONIZATION*. One of the Points wherein the *Roman Catholics* and *Protestants* differ, is, That the former address, invoke, supplicate Saints, &c. to intercede for them; whereas the latter hold it sufficient to propose their good Examples. The Number of Saints, allowed as such, in the *Romish Church*, is prodigious. Father *Papebroch* reckons Seventeen or Eighteen Hundred to have died on the First of June, only. Indeed, the Croud of Saints wherewith their Martyrologies are stocked, is scandalous, even to the more sober of their own Communion. Father *Mabillon*, in an express Dissertation on the *Worship of unknown Saints*, observes, That Honours are given to Saints, who, perhaps, were not Christians; and whose Names were never known. Hence, being under a Necessity of giving them Names, they are therefore called *Baptized Saints*. He adds, That they every Day beseech Saints to intercede for them with God; when, 'tis much doubted, whether they themselves be in Heaven. Father *Papebroch* was a long Time employed in writing the Lives of the Saints. He ranged them each on the Day of the Year wherein they died. For the first Six Months he published Twenty Four Volumes in Folio; and since his Death, in 1714, his Successors have published Two more.

**SAKER**, is a Sort of Cannon; and is either extraordinary, ordinary, or least Size: *Saker Extraordinary*, is Four Inches Diameter at the Bore, 1800 Pound Weight, 10 Foot long; its Load 5 Pounds, Shot 3 Inches and Half Diameter, and something more than 7 Pound and a Quarter Weight; its Level Range is 163 Paces. *Saker Ordinary*, is a Size less, 3 Inches 3 Quarters Bore, 9 Foot long, 1500 Weight; its Charge, 4 Pounds of Powder; Bullets Diameter 3 Inches and a Half, Weight 6 Pounds, its Level Range 160 Paces. *Saker* of the least Size, is 3 Inches and a Half Diameter at the Bore, 1400 Pound Weight, 8 Foot long, its Load near 3 Pounds and a Half; Shot 4 Pounds 3 Quarters Weight, and 3 Inches and a Quarter Diameter. See *CANNON*.

**SAL**, in Chymistry, &c.

*SAL Armoniac*, or *Ammoniac*,  
*SAL Petre*, or *Nitri*,  
*SAL Prunella*,  
*SAL Tartari*,  
*SAL Polychrestum*,  
*SAL Gemma*,

See

**SALT**.  
*AMMONIAC*.  
*SALT-PETRE*.  
*PRUNELLE*.  
*TARTAR*.  
*POLYCHREST*.  
*GEMMA*.

**SAL Volatile Oleosum**, an Aromatic Volatile Salt, first prepared by *Sylvius de la Boe*, and found a very notable Medicine, chiefly as a Cephalic and Cordial. 'Tis made thus: To an Ounce of Volatile Salt of *Sal Armoniac*, distill'd with Salt of Tartar, and dulcified with Spirit of Wine, put a Dram and Half of some Aromatic Oil, or Essence, drawn from some generous Aromatic Vegetable, as Cinnamon, Cloves, Rosemary, Balm, &c. And when the Spirit and Oil are well stirred and incorporated together; draw off the Volatile Salt and Spirit in a Cucurbit. Some, instead of this, mix all the Ingredients together at first, viz. the *Sal Armoniac*, *Sal Tartari*, Spirit of Wine and Powder of Cinnamon or Cloves, &c. and distill off the Volatile Spirit and Salt at once; but the former Way is preferred. See *VOLATILE*.

**SALADE**, in War, a light Covering, or Armour for the Head, anciently wore by the light Horse; only differing from the Cask, in that it had no Crest, and was little more than a bare Pot. That of the Foot-men was called *Morion*. *Nicod* derives the Word from *Sila*, which had the same Signification among the *Latins*. Others from *Saladinus*; adding, That it was borrowed from the Orientals: others from the *Italian Celeta*, as if the Head were hid hereby. Others from the *Spanish Celata*, a little Cask, &c.

**SALADINE**, a Tax, imposed in *England* and *France*, in the Year 1188, to raise a Fund for the *Cruzade*, undertaken by *Richard I.* of *England*, and *Philip Augustus* of *France*, against *Saladin* Sultan of *Egypt*, then going to besiege *Jerusalem*. The *Saladine-Tax* was thus laid; That every Person who did not enter himself a *Croise*, was obliged to pay a Tenth of his yearly Revenue, and the Value of all his Moveables, excepting his wearing Apparel, Books, and Arms. The *Carthusians*, *Bernardines*, and some other Religions, were exempted from it.

**SALAMANDER's BLOOD**, a Term the Chymists give to Red Vapours, which in Distillation of Spirit of Nitre, towards the latter End do fill the Receiver with Red Clouds; they are the most fixed, and strongest Part of the Spirit; and nothing but Nitre yields a Red Vapour in Distillation.

**SALARY**, *Salarium*, in old Law Books, a Toll, or Duty paid for Salt. Also a Stipend, or Wages for any Service done.

**SALIENT**, in Fortification. There are Two Kinds of Angles; the one *Salient*, which are those that present their Point outwards: The other *Re-entrant*, which have their Points inward. Instances of both Kinds, we have in *Tenailles*, and Works in Form of Stars. See *ANGLE*. The Word is formed from the *French Saillant*, which signifies the same Thing; of *Sailler*, to project, advance outwards, and that, of the *Latin Salire*, to leap. See *ANGLE*.

**SALIENT**, in Heraldry, is applied to a Lyon, &c. when its Fore-legs are raised in a leaping Posture; standing so as that his right Fore-foot, is in the Dexter chief Point, and his hinder Left-Foot, in the Sinister base Point of the Escutcheon; by which it is distinguished from *Rampant*. See *RAMPANT*.

**SALIC LAW**, an ancient and fundamental Law of the Kingdom of *France*; supposed to have been made by *Pharamond*, or at least by *Clovis*. *Du Haillan*, after a critical Examination of the *Salic Law*, declares it to have been an Expedient of *Philip the Long*, in 1316, for the Exclusion of the Daughter of *Louis Hutin*, from inheriting the Crown. Father *Daniel*, on the other Hand, maintains, That 'tis quoted by Authors more ancient than *Philip the Long*; and that *Clovis* is the real Author of it. The Style, which is scarce intelligible, and which is in a *latinized Dialect*, is a Mark of its Antiquity. This Law has not particular Regard to the Kingdom of *France*. It only imports in the general, That in *Salic Land*, no Part of the Inheritance shall fall to any Female; but the whole to the Male Sex. So that 'tis a popular Error to suppose, That the *Salic Law* was established purely on Account of the Succession to the Crown: Since it extends to private Persons as much as those of the Royal Family. Part of it seems to have been borrowed by our *Henry I.* in compiling his Laws, *Cap. 89. Qui hoc fecerit secundum legem Salicam moriatur*. By *Salic Lands* or *Inheritances* was anciently expressed all Lands by whatever Tenure held, whether Noble or Base, from the Succession whereto, Women were excluded by the *Salic Law*; and admitted to inherit nothing but Moveables, and Purchases, whenever there were any Males. Indeed, *M. Fenelon* observes, That there were originally *Salic Lands*, distinguished from all others, and destined for the Military People of the Nation; and to these, 'tis supposed, the Law was originally intended to be confined. *M. Eccard*, a *Hanoverian*, is said to have recovered an ancient M. S. of this famous Law, containing a third Part thereof, much more amply than any yet known, with a very curious Chronology of the same Law, hitherto unknown.

Some, as *Postellus*, will have this Law called *Salic*, *q. d. Gallic*, because peculiar to the *Gauls*. *Cenat* takes the Reason to be, That the Law was only ordained for the Royal Salles or Palaces. *Claud. Seiffel* says, 'Twas thus called, because of the Salt and the Prudence it abounds withal. *Fer. Montanis* says, 'Twas because *Pharamond* was at first called *Salic*. Others, with the Abbot *Ussperg*, derive its Name from *Salogast* his Principal Minister. And others from the frequent Repetition of the Words *Si aliqua*, at the beginning of the Articles. *Genebrand* says, 'Tis called *Salic* for *Salomonic*, by Reason *Solomon* set the first Example of it. *Davison* derives it from the *German* Words, *Salts* and *Lik*, *q. d.* like to Salt. The most probable Opinion is, That the Word is derived from the ancient *Franks*, called *Sali*, *Salici*, and *Salingi*, from the River *Sala*, a River of ancient *Germany*: This is the Sentiment of *Rhenanus* and *Emilius*, who are followed by several others; among the rest, *Alenage*, *Pasquier*, *Borel*, and *Junker*. *Bouteroue* gives another plausible Origin of the Word: He says, it comes from the Word *Salich*, which, in the Old *Teutonic* Language, signified *Salutary*; and that the *French* in this Law imitated the Policy of the ancient *Romans*, who made *Salutary Laws*, which the Magistrates were to have before them when they administered Justice. This he proves from a curious Figure taken out of the *Notitia Imperii*, wherein the Book is represented covered with Gold, with this Inscription; *Leges Salutares*.

**SALII**, in Antiquity, Priests of *Mars*, whereof there were Twelve, instituted by *Numa*. They were painted with Particoloured Garments and high Bonnets, with a Steel Cuirasse, or Breast-plate on the Breast. They had their Name



*Salii* from *Saltare*, to dance; because, after assisting at Sacrifices, they went dancing about the Streets with *Ancyles* or Bucklers in the Left-Hand, and a Rod in the Right, striking musically on one another's Bucklers with their Rods, and singing Hymns in Honour of the Gods. There were Two Companies or Colleges of *Salii*: The ancient established by *Numa*, called *Palatini*; the latter by *Tullus Hostilius*, called *Collini*, and *Agonales*. *Servius*, indeed, tell us, That there were Two Kinds instituted by *Numa*, the *Collini* and *Quirinales*; and Two other Kinds by *Tullus*, the *Pavorii* and *Palatorii*. In Singing, they used a Song called *Saliare Carmen*; and after the Ceremony, were entertained with a Feast: Whence *Saliare Epule*, and *Saliare Dapes*, passed into a Proverb for good Eating. Their Chief, called *Præsul*, and *Magister Saliorum*, was one of their Number. 'Twas he led the Band, and begun the Dance; the rest imitating all his Steps and Motions. The whole Company was called *Collegium Saliorum*.

*Sex Pompeius* makes mention of *Salian Maids*, *Virgines Saliæ*, hired for the Purpose, and joyned with the *Salii*, wearing a Kind of Military Garb, called *Paludamentum*, with high round Bonnets like the *Salii*, and, like them, performing Sacrifice with the *Pontifices* in the Palaces of Kings. *M. Patin* takes it, there is a Figure of one of the *Salii* on a Medal of the *Seguinian* Family; who, besides the Buckler in one Hand, holds the *Caduceus* in the other. But his Look is very grave and sedate; and besides, the Buckler he holds, does not seem to be an *Ancyle*, as being quite round, and not indented any where. And again, why should a Priest of *Mars*, the God of War, be represented with a *Caduceus*, the Emblem of Peace? 'Tis probable therefore, this is no Figure of any *Salus*, as *Patin* imagines.

**SALIVA**, *Spittle*, a thin pellucid Humour, separated by the Glands about the Mouth and Fauces; and conveyed by proper *Salival Ducts* into the Mouth, for several Uses. See **SALIVAL DUCTS**. It consists of a great deal of Water or Phlegm, and a Volatile Salt; some add, a sulphurous Spirit. The *Saliva*, *Boerhaave* observes, is void both of Taste and Smell; does not harden by Heat; is more copious, fluid, sharp, penetrating, and detergent, as a Person has fasted longer; and is separated from the pure Arterial Blood. The Glands wherein the *Saliva* is separated from the Blood, are the *Parotides*; the *Maxillary Glands*; the *Sublinguales*, or those under the Tongue; the *Amygdalæ*, or Almonds of the Ears, and the *Palatina*, or Glands of the Palate: See each under its proper Article. The great Use of the *Saliva*, is in masticating and diluting the Food, and making the first Digestion thereof. The other Uses are to moisten the Tongue, to render its Motion more quick and easy; to lubricate the Throat and *Oesophagus*, in order to facilitate Deglutition, to prevent Thirst, and to assist in the Sensation of Tastes, by dissolving the Salts. Some imagine it to do the Office of a *Menstruum* to mix the oily and aqueous Parts of the Food more intimately, to dissolve the Saline Parts, and to procure a Fermentation in the Stomach. But *Dr. Drake* will not allow it fit for that Purpose. Were the *Saliva*, says he, acrimonious enough for this, 'twould be impossible but it must offend the Stomach; especially, considering the Quantities of it that many swallow, even upon an empty Stomach. See **DIGESTION**.

*M. Gassaldi*, who has a Medicinal Thesis on the Subject of the *Saliva*, observes, That it takes its Name from the *Salt* it contains; which Salt he will have to be partly a Volatile Acid, and partly Alcalious. He adds, That it contains some Oleaginous Parts, and a little Earth. By being compounded of so many different Kinds of Parts, it becomes a Dissolvent proper for all the different Kinds of Foods whereof we live. Its natural and laudable State, is to be a little more Viscid than common Water, and much less so than Milk. 'Tis preserved in this State by the Application of the Spirits, and of the Particles of Air which insinuate into it. According to all Appearance, the *Saliva* is derived from the Blood of the Arteries. Part of the Arterial Blood brought to the *Salival Glands*, serves to feed them; another Part is returned into the Veins, and continues the Circulation, and a third Part, which is the *Serum*, receiving a sub acid Quality from them, is converted into *Saliva*. Some Authors have imagined, that the Nervous Juice contributed to the Composition of the *Saliva*; the rather because larger and more numerous Twigs of Nerves are communicated to these Glands, than to most other Parts, which yet have a more exquisite Feeling than these. But *Dr. Nuck* has refuted this Opinion by several Experiments.

Too great an Excretion of *Saliva*, *Boerhaave* observes, disorders the first Digestion; and hence causes Thirst, Dryness, a black Bile, Consumption, Atrophy: On the contrary, if no *Saliva* be discharged into the Mouth, or less than ordinary, it spoils both the Manducation of the

Food, and its Taste, Swallowing, and Digestion; and withal, occasions Thirst.

**SALIVAL**, or *Salivary Ducts*, in Anatomy, certain little Canals lately discovered; whereby the *Saliva* falls into the Mouth. The *Lower Salival Duct* comes from the *Maxillary Glands*, situate under the lower Jaw, and terminated behind the *Dentes Incisores*. It was first described by our *Dr. Wharton*, in his Treatise of the Glands, in 1656. The *Upper Salival Duct* was discovered by *Nicolas Steno*, in 1660. It comes from the *Parotid Glands*; whence perforating the *Buccinator*, it terminates near the third Upper Grinder. *Cass Bartholine*, in 1682, discovered another *Salival Duct* coming from the Glands situate on the Side of the Tongue; tho' *Rivinus*, a Physician of *Leipsic*, had mentioned it before, in a Dissertation printed in 1679. *Arch Nuck*, Professor at *Leiden*, discovered a fourth *Salival Duct*, arising from a Gland situate in the Orbit of the Eye, between the *Musculus Obducator*, and the Upper Part of the *Os Jugale*. These Ducts are all double there being one of each Kind on either Side. But 'tis pretended, the Two last are only found in some Brutes and not in Man.

As the Demand of *Saliva* is greatest in Mastication, Deglutition, Talking, &c. so, *Dr. Drake* observes the Disposition of the *Salival Ducts*, to favour the Discharge on those Occasions, is very remarkable: Thus the Ducts of the *Parotides* pass close over the *Musculi Masseteres*, and thro' the *Buccinators*. The *Salival Ducts* of the *Maxillary Glands* pass close under the *Mylohyoides*, where the *sublingual* Glands are placed; by Means whereof, the Intumescence of the *Masseters*, in Chewing, accelerate the Spittle in the *Parotid Salival Ducts*; as the *Mylohyoides* does in the Action of Deglutition, in drawing the *Hyoides* upwards. The Agitation of the Cheeks and Lips, is sufficient to promote the Discharge from the Glands of the Lips, &c.

**SALIVATION**, in Medicine, a promoting of the Flux of *Saliva*, by Means of Medicines; chiefly *Mercury*. See **MERCURIALS**. The chief Use of *Salivation* is in Diseases adhering to the Glands, and the *Membrana Adiposa*; principally in the Cure of the Venereal Disease. 'Tis sometimes also used in Epidemic Diseases. The Body is prepared for *Salivation* by a copious and continued Use of attenuating, diluting, softening Decoctions; as of Scabious, Pellitory, China, Sarsaparilla, Sassafras, and Santal. *Salivation* is either *Partial* or *Universal*. By the first, only, the Humours of some Part of the Body are to be discharged; as in *Catarrhs*, *Tooth-ach*, &c. By the second, the whole Mass of Blood is to be purged. The first is raised by a slow continued Chewing of some tenacious Matter, as Mastich, Wax, Myrrh; especially if other sharp Things be mixed with them, as Pyrethrum or Bartram, Ginger, or Pepper. Or by drawing in sharp irritating Vapours, as those of Tobacco, Rosemary, Thyme, Marjoram, &c. The latter is effected by the Action of such Medicines as create some slight but constant Nausea; as *Stibium* not quite fixed, nor yet quite emetic; a little common Vitriol, &c. but chiefly such as dissolve all the Parts of the Mass of Blood, turn them into *Lympha*, and thus cause a *Pryalism*. Such is crude Quicksilver, Cinabar, a Solution of Quicksilver in *Aqua-fortis*, White and Red Precipitate, Turbith Minerale, sweet Sublimate of Mercury, &c.

**MERCURIAL SALIVATION**, is now a very usual Method of Cure; especially in Venereal Scrophulous, and Hypochondriac Cases. In Effect, it proves the surest Remedy yet discovered for the *Lues*; tho' the Discovery hereof, as that of most other Remedies, is owing to Chance. *Jac. Carpi*, a Physician of *Boulogne*, having read in *Avicenne* and *Mesue*, Two Arab Authors, that Mercury applied externally, was proper for the *Lepros*, and some Kinds of Pustules, particularly the *Scabies* or the Itch; had a Mind to try it in a Pocky Itch: A *Salivation* was hereupon unexpectedly raised, and the Patient was cured not only of his Itch, but of his Pox. The same Method he afterwards used for the Pox itself; and meeting with great Success therein, others were induced to follow him; and thus did it arrive at its present Height.

There are Two Manners of applying Mercury to raise a *Salivation*: The one *external*, by mixing it up with some Unguent, Plaster, or Perfume, and then rubbing it on the Joints, &c. The other *internal*, where 'tis taken at the Mouth. In each Case the Mercury insinuates itself into the Mass of Blood, and mixing with the Venereal Poison, the Two Bodies thus locked together, are drawn, with the Serosity, into the *Salival Glands*, where they are separated and discharged, as finding the Pores of the Glands proportioned to their Figures, and proper to receive them. But, for the Manner wherein the Mercury acts to raise the *Salivation*, see **MERCURIALS**. *Dr. Quincey*, will have the *internal* to be much the safer



and better Method. The Mineral Globules, he thinks, being intimately combined with Salts, in the Preparations given inwardly, will, by the Irritation thereof, be easily and fully thrown off by the Secretory Organs, 'till the Blood is quite discharged of its Load: Whereas, in Mercurial Frictions, 'tis possible, some of the heavy Particles may be left lodged in the Interstices of the Fibres, or Cells of the Bones. Add to this, that by computing the Proportion of Mercury in all the Doses necessary to promote a Spitting, internally; and the Weight of the same Mineral used when 'tis done by Unction; the Quantity used in the latter Case, far exceeds that in the former; consequently, the ill Effects apprehended from that dangerous Medicine, must be vastly more sensible in the one Case than the other. The external Application, therefore, is only to be allowed of, where either the Case will bear the Violence of such a Management, or outward Ulcers and Tumours, require a particular Cure by Liniments.

Indeed, a great French Physician, M. *Chicoyneau*, Chancellor of the University of *Montpellier*, has lately done some Discredit to the Practice of *Salivating* in any Manner; And that, in a little Treatise lately published, where he endeavours to prove, That the *Salivation* it self contributes nothing to the Cure, but is rather prejudicial thereto: That the Salutary Effects of the Mercury are independant of any Evacuation at all; and that it acts purely as a Specific. 'Tis without Reason, therefore, he urges, that Venereal Patients are put to the Torture of a *Salivation*, since the full Effect of the Medicine is had without carrying Matters to that Extremity. The *Salivation* is only an Accident to the Cure; which is effectually obtained by a Mercurial Unguent rubbed on the Joints in such Quantities, and at such Intervals, as not to raise any *Salivation*. He supports the whole by the Experience of Forty or Fifty Cures wrought in one Year, by the New Method. This Method, it seems, has been lately, too, tried in *England*, and with Success; as appears from a Translation of *Chicoyneau's* Piece just published with Notes.

**SALLET**, or *Salade*, a Dish of eatable Herbs ordinarily accompanying Roast-meat, composed chiefly of crude, fresh Herbs, seasoned with Salt, Oil, and Vinegar. Some add Mustard, hard Eggs, and Sugar; others, Pepper, and other Spices, with Orange-Peel, Saffron, &c. Some define *Sallet* more generally, A Composition of Plants and Roots, of several Kinds, to be eaten raw or green, blanch'd or candied, by themselves, or mixed with others; and even, occasionally, boiled, pickled, or otherwise prepared and disguised, to render them more grateful to the Palate. But this Definition includes *Pot-herbs*, &c. which the Generality of Authors deny to be any proper *Salleting*, though others stiffly maintain it. *Menage* derives the Word from the *Latin*, *Salare*, of *Sal*, Salt; others from *Salcedo*. *Du Cange* from *Salgama*; which is used in *Ausonia*, and *Columella* in the same Sense.

#### Composition of SALLETS.

The principal *Sallet-herbs*, and those which ordinarily make the Basis of our *English Sallets*, are Lettice, Sellery, Endive, Cresses, Radish, and Rape, &c. Along with which, by way of Furniture, or Additionals, are used Purslane, Spinage, Sorrel, Taragon, Burnet, Corn-Sallet, and Chervil. The different Tastes of Mankind will not allow any certain Mixture of these to be prescribed as most agreeable; but still, in mixing them, the Relish of the several Herbs is to be consider'd: Those, for Instance, which are most hot and biting; as Cresses, Mustard, Sellery, Taragon, Chervil, &c. with those that are more cool and insipid to the Taste; as Turnips, Rape, Spinage, Lettice, Corn-Sallet, Purslane, &c. by this Means the Herbs may be so judiciously mixed, that the too strong Taste of one Kind may not over power all the rest; and the insipid Kinds be discretely used to moderate and qualify the Heat and Pungency of the others, as the Season of the Year is more hot or cold; so as every *Sallet* may not only be agreeable to the Taste, but also Physic to the Body.

#### Culture of SALLETS.

The Gardeners call *Small-herbs*, in *Sallets*, those which should always be cut while in the Seed Leaf; as Cresses, Mustard, Radish, Turnip, Spinage, and Lettice; all which are raised from Seeds sown in Drills or Lines, from Mid-February to the End of March, under Glasses or Frames, and thence to the Middle of May, upon natural Beds, warmly exposed; and during the Summer Heats in more shady Places; and afterwards, in September, &c. as in March, &c. and lastly, in the Rigour of the Winter, in hot Beds. If they chance to be frozen in very frosty Weather, putting them in Spring-Water two

Hours, e'er they be used, recovers them. In gathering *Small-herbs*, the best Way is to pull them up by the Roots from the hot Beds. If the Roots be left, and a second Crop of *Salleting* sown on the same Bed, it will not prosper. In sowing second Crops, 'tis also to be observed, that Seeds of the same Kind be not sown in the same Place; but the Ground is to be eased by varying its Burthen, putting hot Seeds where cold ones grew before, &c. Another Rule is, that no Plant be placed in the same Spot where the same Kinds have been growing. — *Winter-Sallets* are greatly improved by blanch'd Sellery, which is a hot Herb, of a very rich Flavour; raised from Seed sown in March, and April, in a well exposed Place, and transplanted, six Weeks after its first Appearance, into Beds, where it remains till the Middle of June, and then planted in Trenches 8 or 10 Inches wide, and as many deep, first pruning off the Tops and Roots. As they grow large, they are earthed up within 4 or 5 Inches of the Top, which is repeated several times, till they be fit for Use. — *Endive* blanch'd is much used in *Winter Sallets*, though it have neither Taste nor Flavour; 'tis cultivated much after the same Manner as Sellery. — Of Lettice there are various Kinds, the best are the *Roman*, *Dutch brown*, *Imperial*, and *Silesia-Kinds*, all which cabbage well. They are all commonly sown with other Crops in March, for *Summer-Sallets*, and in August, to be transplanted, or September, to stand the Winter, either to be cut for *Winter-Sallets*, or to cabbage early next Spring for *Seeds*. See SEEDS. Indeed the *Roman* will scarce bear the Frost.

For the Additional, or Secondary *Sallet-herbs*: *Burnet* is a cool perennial Herb, whose tender Leaves, mixed with other Herbs in Winter, give the agreeable Flavour of a Cucumber: 'Tis propagated by Seed sown in March. *Corn-Sallet*, raised at the same Time, and in the same Manner, makes a good *Winter-Sallet* Furniture; *Purslane*, an insipid, yet cooling Herb, is admired by some in *Summer-Sallets*: 'Tis raised by Seeds sown in March in a warm Place. *Sorrel* is chiefly used in the Spring, when the young Leaves are very agreeable. 'Tis raised from Seeds sown in March, usually in Rows or Drills. *Spinage* is a necessary Ingredient in raw *Sallets*, to be cut in the Ear-leaf; but 'tis better for boiled *Sallets* in the Winter and Spring. 'Tis sown in March, April, and May; and again in August, in a Place well exposed to the Sun, that the Leaves may be large enough for boiling in the Winter. *Taragon*, of all others, should never be wanting; 'tis a Cordial Herb, though not the most agreeably tasted: Yet a few Leaves, or three or four of the tender Tops, give a *Sallet* a good Relish. 'Tis propagated from Slips, taken from the Root, and planted in March. — Note, in the Spring, *Dandelion* blanch'd, which is gather'd in almost every plough'd Field, makes an excellent *Sallet* mixed with other Herbs. Some likewise gather Violet Flowers, Cowslips, and Blossoms of Burrage, as part of the *Sallet* Furniture; others, *Fennel*, and *Parsley*. See POT-HERBS.

#### Preparation and Dressing of SALLETS.

The *Sellery* and *Endive*, have their hollow, green Stem, or Stalk, stripp'd of all its outside Leaves, and sliced in the blanch'd Part, cutting the Root into four Parts. The other ingredient Herbs being exquisitely culled and cleansed, of all faulty Leaves, &c. are wash'd rather by sprinkling, than lobbing them in Spring-water; laid to drain of all superfluous Moisture, then shook and squeezed together gently, in a coarse Cloth, to dispose them to receive the Seasonings, viz. the Salt, Vinegar, Oil, &c. The Oil not to be yellow, or high colour'd, but of a pale Olive Green, without either Taste or Smell. See OIL. The Vinegar perfectly clear, neither sour nor pall'd. See VINEGAR. The Salt to be the best ordinary Bay-Salt, clean, bright, and dry. Some indeed recommend the Essential Salts and Spirits of Vegetables, or those of the Alcalizate and Fix'd Kind, extracted from the Calcination of Balm, Rosemary, Wormwood, &c. and affirm, That, without eating the gross *Sallet-herbs* themselves, we might have healing, cooling, generous *Sallets*, wholly out of the *Salt-Seller*. See SALT. Note, In the Proportion of the Salt, Pepper, and Vinegar, Regard is to be had to the Season, Constitution, &c. the two first being best for cold, the second for hot Stomachs and Seasons. For a moderate *Oxalme*, or *Sallet-Vehicle*, to three Parts of Oil, put one of Vinegar, or Lemon, or Orange Juice, and in the Mixture, steep Slices of Horse-radish with a little Salt; occasionally, add a little *Guinea* Pepper, and Mustard, with the Yolks of two Eggs boiled, squeezed, and bruised into a Mash therein. Pour the Whole on the Herbs, stirring and mingling them till they be thoroughly imbibed.



*Salii* from *Saltare*, to dance; because, after assisting at Sacrifices, they went dancing about the Streets with *Ancyles* or Bucklers in the Left-Hand, and a Rod in the Right, striking musically on one another's Bucklers with their Rods, and singing Hymns in Honour of the Gods. There were Two Companies or Colleges of *Salii*: The ancient established by *Numa*, called *Palatini*; the latter by *Tullus Hostilius*, called *Collini*, and *Agonales*. *Servius*, indeed, tell us, That there were Two Kinds instituted by *Numa*, the *Collini* and *Quirinales*; and Two other Kinds by *Tullus*, the *Pavorii* and *Palatorii*. In Singing, they used a Song called *Saliare Carmen*; and after the Ceremony, were entertained with a Feast: Whence *Saliare Epule*, and *Saliare Dapes*, passed into a Proverb for good Eating. Their Chief, called *Præsul*, and *Magister Saliorum*, was one of their Number. 'Twas he led the Band, and begun the Dance; the rest imitating all his Steps and Motions. The whole Company was called *Collegium Saliorum*.

*Sex Pompeius* makes mention of *Salian Maids*, *Virgines Saliares*, hired for the Purpose, and joyned with the *Salii*, wearing a Kind of Military Garb, called *Paludamentum*, with high round Bonnets like the *Salii*, and, like them, performing Sacrifice with the *Pontifices* in the Palaces of Kings. *M. Patin* takes it, there is a Figure of one of the *Salii* on a Medal of the *Saguntian* Family; who, besides the Buckler in one Hand, holds the *Caduceus* in the other. But his Look is very grave and sedate; and besides, the Buckler he holds, does not seem to be an *Ancyle*, as being quite round, and not indented any where. And again, why should a Priest of *Mars*, the God of War, be represented with a *Caduceus*, the Emblem of Peace? 'Tis probable therefore, this is no Figure of any *Salinus*, as *Patin* imagines.

**SALIVA**, *Spittle*, a thin pellucid Humour, separated by the Glands about the Mouth and Fauces; and conveyed by proper *Salival Ducts* into the Mouth, for several Uses. See **SALIVAL DUCTS**. It consists of a great deal of Water or Phlegm, and a Volatile Salt; some add, a sulphurous Spirit. The *Saliva*, *Boerhaave* observes, is void both of Taste and Smell; does not harden by Heat; is more copious, fluid, sharp, penetrating, and detergent, as a Person has fasted longer; and is separated from the pure Arterial Blood. The Glands wherein the *Saliva* is separated from the Blood, are the *Parotides*; the *Maxillary Glands*; the *Sublinguales*, or those under the Tongue; the *Amygdalæ*, or Almonds of the Ears, and the *Palatinae*, or Glands of the Palate: See each under its proper Article. The great Use of the *Saliva*, is in masticating and diluting the Food, and making the first Digestion thereof. The other Uses are to moisten the Tongue, to render its Motion more quick and easy; to lubricate the Throat and *Oesophagus*, in order to facilitate Deglutition, to prevent Thirst, and to assist in the Sensation of Tastes, by dissolving the Salts. Some imagine it to do the Office of a *Menstruum* to mix the oily and aqueous Parts of the Food more intimately, to dissolve the Saline Parts, and to procure a Fermentation in the Stomach. But *Dr. Drake* will not allow it fit for that Purpose. Were the *Saliva*, says he, acrimonious enough for this, 'twould be impossible but it must offend the Stomach; especially, considering the Quantities of it that many swallow, even upon an empty Stomach. See **DIGESTION**.

*M. Gassaldi*, who has a Medicinal Thesis on the Subject of the *Saliva*, observes, That it takes its Name from the *Salt* it contains; which Salt he will have to be partly a Volatile Acid, and partly Alcalious. He adds, That it contains some Oleaginous Parts, and a little Earth. By being compounded of so many different Kinds of Parts, it becomes a Dissolvent proper for all the different Kinds of Foods whereof we live. Its natural and laudable State, is to be a little more Viscid than common Water, and much less so than Milk. 'Tis preserved in this State by the Application of the Spirits, and of the Particles of Air which insinuate into it. According to all Appearance, the *Saliva* is derived from the Blood of the Arteries. Part of the Arterial Blood brought to the *Salival Glands*, serves to feed them; another Part is returned into the Veins, and continues the Circulation, and a third Part, which is the *Serum*, receiving a sub acid Quality from them, is converted into *Saliva*. Some Authors have imagined, that the Nervous Juice contributed to the Composition of the *Saliva*; the rather because larger and more numerous Twigs of Nerves are communicated to these Glands, than to most other Parts, which yet have a more exquisite Feeling than these. But *Dr. Nuck* has refuted this Opinion by several Experiments.

Too great an Excretion of *Saliva*, *Boerhaave* observes, disorders the first Digestion; and hence causes Thirst, Dryness, a black Bile, Consumption, Atrophy: On the contrary, if no *Saliva* be discharged into the Mouth, or less than ordinary, it spoils both the Manducation of the

Food, and its Taste, Swallowing, and Digestion; and withal, occasions Thirst.

**SALIVAL**, or *Salivary Ducts*, in Anatomy, certain little Canals lately discovered; whereby the *Saliva* fall into the Mouth. The *Lower Salival Duct* comes from the *Maxillary Glands*, situate under the lower Jaw, and terminated behind the *Dentes Incisores*. It was first described by our *Dr. Wharton*, in his Treatise of the Glands, in 1656. The *Upper Salival Duct* was discovered by *Nicolas Steno*, in 1660. It comes from the *Parotid Glands*; whence perforating the *Buccinator*, it terminates near the third Upper Grinder. *Carl Bartholine*, in 1682, discovered another *Salival Duct* coming from the Glands situate on the Side of the Tongue; tho' *Rivinus*, a Physician of *Leipsic*, had mentioned it before, in a Dissertation printed in 1679. *Ant. Nuck*, Professor at *Leiden*, discovered a fourth *Salival Duct*, arising from a Gland situate in the Orbit of the Eye, between the *Musculus Obducator*, and the Upper Part of the *Os Jugale*. These Ducts are all double, there being one of each Kind on either Side. But 'tis pretended, the Two last are only found in some Brute and not in Man.

As the Demand of *Saliva* is greatest in Mastication, Deglutition, Talking, &c. so, *Dr. Drake* observes the Disposition of the *Salival Ducts*, to favour the Discharge on those Occasions, is very remarkable: Thus the Duct of the *Parotides* pass close over the *Musculi Masseteres* and thro' the *Buccinatores*. The *Salival Ducts* of the *Maxillary Glands* pass close under the *Mylohyoideus*, where the *sublingual Glands* are placed; by Means whereof, the Intumescence of the *Masseters*, in Chewing, accelerate the Spittle in the *Parotid Salival Ducts*; as the *Mylohyoideus* does in the Action of Deglutition, in drawing the *Hyoides* upwards. The Agitation of the Cheeks and Lips, is sufficient to promote the Discharge from the Glands of the Lips, &c.

**SALIVATION**, in Medicine, a promoting of the Flux of *Saliva*, by Means of Medicines; chiefly *Mercury*. See **MERCURIALS**. The chief Use of *Salivation* is in Diseases adhering to the Glands, and the *Membrana Adiposa*; principally in the Cure of the Venereal Disease. 'Tis sometimes also used in Epidemic Diseases. The Body is prepared for *Salivation* by a copious and continued Use of attenuating, diluting, softening Decoctions; as of Scabious, Pellitory, China, Sarsaparilla, Sassafras, and Santal. *Salivation* is either *Partial* or *Universal*. By the first, only, the Humours of some Part of the Body are to be discharged; as in *Catarrhs*, *Tooth-ach*, &c. By the second, the whole Mass of Blood is to be purged. The first is raised by a slow continued Chewing of some tenacious Matter, as Mastich, Wax, Myrrh; especially if other sharp Things be mixed with them, as Pyrethrum or Bartram, Ginger, or Pepper. Or by drawing in sharp irritating Vapours, as those of Tobacco, Rosemary, Thyme, Marjoram, &c. The latter is effected by the Action of such Medicines as create some slight but constant Nausea; as *Stribium* not quite fixed, nor yet quite emetic; a little common Vitriol, &c. but chiefly such as dissolve all the Parts of the Mass of Blood, turn them into *Lympha*, and thus cause a *Ptyalism*. Such is crude Quicksilver, Cinabar, a Solution of Quicksilver in *Aqua-fortis*, White and Red Precipitate, Turbith Minerale, sweet Sublimate of Mercury, &c.

**MERCURIAL SALIVATION**, is now a very usual Method of Cure; especially in Venereal Scrophulous, and Hypochondriac Cases. In Effect, it proves the surest Remedy yet discovered for the *Lues*; tho' the Discovery hereof, as that of most other Remedies, is owing to Chance. *Jac. Carpi*, a Physician of *Boulogne*, having read in *Avicenne* and *Mesue*, Two Arab Authors, that Mercury applied externally, was proper for the *Lepra*, and some Kinds of Pustules, particularly the *Scabies* or the Itch; had a Mind to try it in a Pocky Itch: A *Salivation* was hereupon unexpectedly raised, and the Patient was cured not only of his Itch, but of his Pox. The same Method he afterwards used for the Pox itself; and meeting with great Success therein, others were induced to follow him; and thus did it arrive at its present Height.

There are Two Manners of applying Mercury to raise a *Salivation*: The one *external*, by mixing it up with some Unguent, Plaister, or Perfume, and then rubbing it on the Joints, &c. The other *internal*, where 'tis taken at the Mouth. In each Case the Mercury insinuates itself into the Mass of Blood, and mixing with the Venereal Poison, the Two Bodies thus locked together, are drawn, with the Scrofula, into the *Salival Glands*, where they are separated and discharged, as finding the Pores of the Glands proportioned to their Figures, and proper to receive them. But, for the Manner wherein the Mercury acts to raise the *Salivation*, see **MERCURIALS**. *Dr. Quincy*, will have the *internal* to be much the safer and



and better Method. The Mineral Globules, he thinks, being intimately combined with Salts, in the Preparations given inwardly, will, by the Irritation thereof, be easily and fully thrown off by the Secretory Organs, 'till the Blood is quite discharged of its Load: Whereas, in Mercurial Frictions, 'tis possible, some of the heavy Particles may be left lodged in the Interstices of the Fibres, or Cells of the Bones. Add to this, that by computing the Proportion of Mercury in all the Doses necessary to promote a Spitting, internally; and the Weight of the same Mineral used when 'tis done by Unction; the Quantity used in the latter Case, far exceeds that in the former; consequently, the ill Effects apprehended from that dangerous Medicine, must be vastly more sensible in the one Case than the other. The external Application, therefore, is only to be allowed of, where either the Case will bear the Violence of such a Management, or outward Ulcers and Tumours, require a particular Cure by Liniments.

Indeed, a great French Physician, M. *Chicoyneau*, Chancellor of the University of *Montpellier*, has lately done some Discredit to the Practice of *Salivating* in any Manner; And that, in a little Treatise lately published, where he endeavours to prove, That the *Salivation* it self contributes nothing to the Cure, but is rather prejudicial thereto: That the Salutary Effects of the Mercury are independant of any Evacuation at all; and that it acts purely as a Specific. 'Tis without Reason, therefore, he urges, that Venereal Patients are put to the Torture of a *Salivation*, since the full Effect of the Medicine is had without carrying Matters to that Extremity. The *Salivation* is only an Accident to the Cure; which is effectually obtained by a Mercurial Unguent rubbed on the Joints in such Quantities, and at such Intervals, as not to raise any *Salivation*. He supports the whole by the Experience of Forty or Fifty Cures wrought in one Year, by the New Method. This Method, it seems, has been lately, too, tried in *England*, and with Success; as appears from a Translation of *Chicoyneau's* Piece just published with Notes.

**SALLET**, or *Salade*, a Dish of eatable Herbs ordinarily accompanying Roast-meat, composed chiefly of crude, fresh Herbs, seasoned with Salt, Oil, and Vinegar. Some add Mustard, hard Eggs, and Sugar; others, Pepper, and other Spices, with Orange-Peel, Saffron, &c. Some define *Sallet* more generally, A Composition of Plants and Roots, of several Kinds, to be eaten raw or green, blanch'd or candied, by themselves, or mixed with others; and even, occasionally, boiled, pickled, or otherwise prepared and disguised, to render them more grateful to the Palate. But this Definition includes *Pot-herbs*, &c. which the Generality of Authors deny to be any proper *Salleting*, though others stiffly maintain it. *Menage* derives the Word from the *Latin*, *Salare*, of *Sal*, Salt; others from *Salcedo*. *Du Cange* from *Salgama*; which is used in *Ausonius*, and *Columella* in the same Sense.

#### Composition of SALLETS.

The principal *Sallet-herbs*, and those which ordinarily make the Basis of our *English Sallets*, are Lettice, Sellery, Endive, Cresses, Radish, and Rape, &c. Along with which, by way of Furniture, or Additionals, are used Purslane, Spinage, Sorrel, Taragon, Burnet, Corn-Sallet, and Chervil. The different Tastes of Mankind will not allow any certain Mixture of these to be prescribed as most agreeable; but still, in mixing them, the Relish of the several Herbs is to be consider'd: Those, for Instance, which are most hot and biting; as Cresses, Mustard, Sellery, Taragon, Chervil, &c. with those that are more cool and insipid to the Taste; as Turnips, Rape, Spinage, Lettice, Corn-Sallet, Purslane, &c. by this Means the Herbs may be so judiciously mixed, that the too strong Taste of one Kind may not over power all the rest; and the insipid Kinds be discretely used to moderate and qualify the Heat and Pungency of the others, as the Season of the Year is more hot or cold; so as every *Sallet* may not only be agreeable to the Taste, but also Physic to the Body.

#### Culture of SALLETS.

The Gardeners call *Small-herbs*, in *Sallets*, those which should always be cut while in the Seed Leaf; as Cresses, Mustard, Radish, Turnip, Spinage, and Lettice; all which are raised from Seeds sown in Drills or Lines, from Mid-February to the End of March, under Glasses or Frames, and thence to the Middle of May, upon natural Beds, warmly exposed; and during the Summer Months in more shady Places; and afterwards, in September, &c. as in March, &c. and lastly, in the Rigour of the Winter, in hot Beds. If they chance to be frozen in very frosty Weather, putting them in Spring-Water two

Hours, e'er they be used, recovers them. In gathering *Small-herbs*, the best Way is to pull them up by the Roots from the hot Beds. If the Roots be left, and a second Crop of *Salleting* sown on the same Bed, it will not prosper. In sowing second Crops, 'tis also to be observed, that Seeds of the same Kind be not sown in the same Place; but the Ground is to be eased by varying its Burthen, putting hot Seeds where cold ones grew before, &c. Another Rule is, that no Plant be placed in the same Spot where the same Kinds have been growing. — *Winter-Sallets* are greatly improved by blanch'd Sellery, which is a hot Herb, of a very rich Flavour; raised from Seed sown in March, and April, in a well exposed Place, and transplanted, six Weeks after its first Appearance, into Beds, where it remains till the Middle of June, and then planted in Trenches 8 or 10 Inches wide, and as many deep, first pruning off the Tops and Roots. As they grow large, they are earthed up within 4 or 5 Inches of the Top, which is repeated several times, till they be fit for Use. — *Endive* blanch'd is much used in *Winter Sallets*, though it have neither Taste nor Flavour; 'tis cultivated much after the same Manner as Sellery. — Of Lettice there are various Kinds, the best are the *Roman*, *Dutch brown*, *Imperial*, and *Silesia-Kinds*, all which cabbage well. They are all commonly sown with other Crops in March, for *Summer-Sallets*, and in August, to be transplanted, or September, to stand the Winter, either to be cut for *Winter-Sallets*, or to cabbage early next Spring for Seeds. See SEEDS. Indeed the *Roman* will scarce bear the Frost.

For the Additional, or Secondary *Sallet-herbs*: *Burnet* is a cool perennial Herb, whose tender Leaves, mixed with other Herbs in Winter, give the agreeable Flavour of a Cucumber: 'Tis propagated by Seed sown in March. *Corn-Sallet*, raised at the same Time, and in the same Manner, makes a good *Winter-Sallet* Furniture; *Purslane*, an insipid, yet cooling Herb, is admired by some in *Summer-Sallets*: 'Tis raised by Seeds sown in March in a warm Place. *Sorrel* is chiefly used in the Spring, when the young Leaves are very agreeable. 'Tis raised from Seeds sown in March, usually in Rows or Drills. *Spinage* is a necessary Ingredient in raw *Sallets*, to be cut in the Ear-leaf; but 'tis better for boiled *Sallets* in the Winter and Spring. 'Tis sown in March, April, and May; and again in August, in a Place well exposed to the Sun, that the Leaves may be large enough for boiling in the Winter. *Taragon*, of all others, should never be wanting; 'tis a Cordial Herb, though not the most agreeably tasted: Yet a few Leaves, or three or four of the tender Tops, give a *Sallet* a good Relish. 'Tis propagated from Slips, taken from the Root, and planted in March. — Note, in the Spring, *Dandelion* blanch'd, which is gather'd in almost every plough'd Field, makes an excellent *Sallet* mixed with other Herbs. Some likewise gather Violet Flowers, Cowslips, and Blossoms of Burrage, as part of the *Sallet* Furniture; others, *Fennel*, and *Parsley*. See POT-HERBS.

#### Preparation and Dressing of SALLETS.

The *Sellery* and *Endive*, have their hollow, green Stem, or Stalk, stripp'd of all its outside Leaves, and sliced in the blanch'd Part, cutting the Root into four Parts. The other ingredient Herbs being exquisitely culled and cleansed, of all faulty Leaves, &c. are wash'd rather by sprinkling, than lobbing them in Spring-water; laid to drain of all superfluous Moisture, then shook and squeezed together gently, in a coarse Cloth, to dispose them to receive the Seasonings, viz. the Salt, Vinegar, Oil, &c. The Oil not to be yellow, or high colour'd, but of a pale Olive Green, without either Taste or Smell. See OIL. The Vinegar perfectly clear, neither sour nor pall'd. See VINEGAR. The Salt to be the best ordinary Bay-Salt, clean, bright, and dry. Some indeed recommend the Essential Salts and Spirits of Vegetables, or those of the Alcalizate and Fix'd Kind, extracted from the Calcination of Balm, Rosemary, Wormwood, &c. and affirm, That, without eating the gross *Sallet-herbs* themselves, we might have healing, cooling, generous *Sallets*, wholly out of the *Salt-Sellery*. See SALT. Note, In the Proportion of the Salt, Pepper, and Vinegar, Regard is to be had to the Season, Constitution, &c. the two first being best for cold, the second for hot Stomachs and Seasons. For a moderate *Oxalme*, or *Sallet-Vehicle*, to three Parts of Oil, put one of Vinegar, or Lemon, or Orange Juice, and in the Mixture, steep Slices of Horse-radish with a little Salt; occasionally, add a little *Guinea* Pepper, and Mustard, with the Yolks of two Eggs boiled, squeezed, and bruised into a Mash therein. Pour the Whole on the Herbs, stirring and mingling them till they be thoroughly imbibed.



**SALLY**, in Architecture, from the *French Sallie*, is what we more usually call *Projecture*. See **PROJECTURE**.

**SALLY**, in the Military Art, the issuing out of the Besieged from their Town or Fort, and falling upon the Besiegers to cut them off, nail their Cannon, hinder the Progress of their Approaches, destroy their Works, &c. To *Cut off a Sally*, is to get between those who made it and the Town.

**SALON**, or *Saloon*, in Architecture, a very lofty, spacious Hall, vaulted at Top, and sometimes comprehending two Stories, or Ranges, of Windows: As that at *Blenheim-House*. The *Salon* is a Grand Room in the Middle of a Building, or at the Head of a Gallery, &c. Its Faces, or Sides, are all to have a Symmetry with each other; and as it usually takes up the Height of two Stories, its Ceiling, *Daviler* observes, should be with a moderate Sweep. The *Salon* is a State Room. 'Tis much used in the Palaces in *Italy*; and from thence the Mode came to us. Embassadors, and other Great Visitors, are usually received in the *Salon*: 'Tis frequently built Square, sometimes Octagonal, as at *Marly*, and sometimes in other Forms.

**SALT**, *Sal*, in Chymistry, a simple, acid Substance which enters the Composition of all Bodies, and is held one of the Five *Principles*, or Elements thereof; only to be extracted by Fire. See **PRINCIPLE**. *Salt*, M. *Homburg* observes, is an Ingredient in all Animal, Vegetable, and Mineral Bodies, excepting perhaps some Metals, and Stones. In Vegetables and Mineral Bodies, that have undergone a Fermentation, the *Salt* rises first in the Alembic, then the Phlegm: If the Mixt have undergone a Fermentation, the *Salt* rises after the Phlegm.

**SALTS** are distinguished, with Regard to the Manner of extracting them, &c. into *Volatile*, *Fixed*, and *Essential*. *Volatile Salts*, are those light, subtle ones, which rise easily upon Distillation, or are even exhaled by the Nose, and rendered sensible to the Smell. See **VOLATILE SALT**. *Fixed Salts* are such as, being more Gross and Material, resist and sustain the Fire; and are not raised by it, but remain, after Calcination, or Distillation, in the Earthy Part, at the Bottom. For the Manner of Extracting them, &c. see **FIXED SALT**. *Essential Salts* are those drawn from Vegetables, without the Use of Fire, as by Crystallization, and other easy, natural Means. See **ESSENTIAL SALTS**. *Volatile Salts* become distinguishable to the Nose, Tongue, and Brain, by their Tenuity and Briskness; *Fixed Salts* by their Bitterness, and Heat in the Mouth. To these may be added an intermediate Kind of *Salt*, under the Title of *Mixed Salts*; which are those resulting from a Mixture of a *Volatile* with *Fixed Salt*.

**SALTS** are of different Kinds, according to the different Matters wherewith they are found mixed: Some are mix'd Bodies themselves, and their Mixture separable by Fire, and Lixivation; such are all *Essential Salts* of Plants, and all *Fossile Salts*, &c. but these are no proper Chymical Principles. There are others which we are sensible are mixed, and whose Mixture we know pretty nearly, though we are not yet able to decompose them: 'Tis these make the Chymical Principle *Salt*; for our Analyses will not render them more Simple, which is the Character of a Principle: And in this Sense *Salt* is defined, *A Matter dissolvable by Water, and unchangeable by Fire*; to which some add, *Of a pungent Taste*.

There are Three Kinds, or Classes, of *Salts*, which come under this Definition; Two whereof are *Volatile*, and the Third *Fixed*. The *Volatile* ones, are *Acid Salts*, and *Urinous Salts*; the *Fixed*, are those drawn by a Lixivium after Calcination, and called *Lixivious Salts*. Nature produces none of these *Salts* simple and unmixed, but we easily extract them by Art, from the Mixts wherein she has placed them. The Principal Natural *Salts* may be reduced to *Salt-petre*, *Sea-Salt*, and *Vitriol*. Each whereof has its different Kinds; of the various Combination whereof, with different Oily Matters, all the Natural *Salts*, we know of, are compounded. These *Salts* are found, by Chymical Analyses, to consist of Aqueous, Earthy, Oily, or Sulphurous, and Acid Particles. The Acid Matter is the *Pure Salt*, or the *Salt-Principle*, and is the Base of all the rest. This M. *Homburg* observes, is pretty uniform, and nearly the same in all *Salts*, before the particular Determination to form this or that *Salt*, by the particular Admixture of the Sulphur, &c. *Salt-petre*, *Sea-Salt*, &c. therefore are not Principles, but the *Acid Salts* distilled from them are, and the Water wherein these *Salts* swim, and the Earth, or *Fixed Salt*, remaining in the Retort after Distillation, are other Chymical Principles. See **PURROM**, and **EARTH**.

The Principle *Salt* is held a *Mean* between the *Active* and *Passive* Principles. The pure *Acid*, though accom-

panied with its sulphurous determining Matter, never becomes sensible but when lodged either in some earthy Matter, or artificially in some simple aqueous Matter. In the first Case, it appears under the Form of a crystallized *Salt*, as *Salt-petre*, &c. See **SALT**, &c. In the second Case, it appears in the Form of an Acid Spirit, which, according to the Determination of the Sulphur that accompanies it, is either Spirit of Nitre, or Spirit of *Common-Salt*, or Spirit of *Vitriol*; and what we have here observed of the three Simple, or *Fossile Salts*, may be applied to all other more Compound *Salts* of Plants, Animals, &c. with this Difference, That when, in Form of a *Concrete Salt*, these last always take a greater Quantity of earthy Matter, and when in Form of an Acid Spirit, a greater Quantity of aqueous Matter, than the Simple ones. Whence it follows, that the Acid Spirits of Compound *Salts* are always weaker, lighter, and less penetrating than those of *Fossile Salts*; and after Distillation leave a greater Quantity of earthy Matter behind them.

We don't know precisely what Figures the three *Salt-Principles*, *Acid*, *Urinal*, and *Lixivial*, must have. But to judge by their Effects, one would conclude, the *Acids* to be pointed, only the Points sheathed in some sulphurous Matter. The *Urinous Salts* to be Spunges, containing some of the *Acid*, and some of the fetid Oil of the Animal or Plant: And the *Lixivious Salts* to be Spunges, only containing the Remainder of the *Acid*, which the calcining Fire could not expel.

Acid Spirits may be conceived as pure, and without any Mixture; in which Case all *Acids* will be found of the same Nature: But if we consider them as Distillation gives them, we shall always find them accompanied with some sulphurous Matter, which we cannot separate from them, and which gives the Degree of Activity to the Acid Spirits. 'Tis this sulphurous Matter which characterizes them, and makes all the Difference we find between Acid Spirits. M. *Homburg* ranges all the Kinds of Acid Spirits under Three different Classes, according to the different sulphurous Matters which accompany them. The First Class is of those which contained Animal or Vegetable Sulphur; under which come all *Acids*, distilled from Plants, Fruits, Woods, &c. as also Spirit of Nitre. 'Tis easy to conceive, that the *Acids* of Plants may have retained a Part of the Oil of the Plant, which is their Sulphur; since in reducing these *Acids* into *Salts*, we always find a little Oil therein; which can be nothing else but that of the Plants themselves. And for *Salt-petre*, as this is always drawn from Earths moistened with the Excrements of Animals, or from old Walls, Plaster, &c. full of the sulphurous Matters of the Animals that lived within them, the Soot, &c. 'tis thence, doubtless, *Salt-petre* borrows its Sulphur. See **SALT-PETRE**. The Second Class is of those which contain a bituminous Sulphur: Under which come the *Acids* of *Vitriol*, *Common Sulphur*, and *Alum*. For these are all usually drawn from the same Mineral Stone, wherein the bituminous Matter, which makes one of the Principal Parts of *Common Sulphur*, predominates. See **SULPHUR**. The Third Class is of those which contain a more fixed mineral, sulphurous Matter; approaching nearer the Properties of Metaline Sulphur: Under which Class come the *Acids* drawn from several Kinds of *Sea Salts*, *Rock-Salts*, &c. For the *Rock Salt*, or *Salt-Gemme*, is always found in Places near Metallic Mines; and *Sea-Salt*, in all Appearance, is nothing but *Rock-Salt*, the Quarries whereof have been penetrated by the Sea-Water, which has extracted all the Saltiness therefrom. See **SEA-SALT**.

The sulphurous Matters of the First Class of *Acids* being very light, and taking up a deal of Place, must augment the Bulk of the Points of the *Acids* to which they are joined. And hence these *Acids* become disabled from penetrating very compact Bodies; but their Surface being increased from the same Cause, the Flame will have the greater Hold to drive them: And hence the *Acids* of this Class act more swiftly than any of the rest. The bituminous Sulphur is the least active of all the Sulphurs we know, as being laden with a great Quantity of earthy Matter, which serves it as a Matrix. Hence it unites more difficultly with Saline Matters than any of the other Sulphurs; so that a less Quantity of it may be conceived to adhere to the *Acids* of this, than of either of the other Classes. Accordingly we find, that the *Acids* of this Class, used alone, scarce dissolve any Metals; but mixed with the others, partake of their Sulphur, and thereby become enabled to dissolve all Metals. The Metallick-Sulphur is of all others the most fixed; that is, its Parts are the smallest, and most compact. See **FIXITY**. Hence the Points of this Class of *Acids* will not be much swelled by it, and of Consequence will be able to insinuate themselves into the most compact Bodies, or those whose Pores are the smallest. And for the same Reason they will not give much hold to the Flame that agitates them, and will therefore



therefore act with less Violence than those of the First Clafs of Salts. Acids joined to Fixed Salts, compose Mixed Salts. Thus Spirit of Nitre, with Salt of Tartar, make Salt-petre; and Spirit of Salt, with Salt of Tartar, make a true Common Salt; and Spirit of Vitriol, with Salt of Tartar, a true Vitriol. However, the two ingredients still remain; the one Fixed, the other Volatile: Acids joined with Urinous Salts, compose another Kind of Salts, called Sales Ammoniaci, which are always Volatile.

Lixivial and Urinous Salts, are called Alkalies; the first a Fixed Alkali, the second a Volatile Alkali. These Alkalies are usually esteemed Antagonists to the Acid Salts, because their Mixture always occasions a sudden Ebullition. But 'tis more probable this Ebullition is not the Effect of a Combat, but rather a proper Junction and Union of two Matters which had been naturally united together, and only separated by the Fire, and now re-place themselves in the same Parts whence the Flame had tore them off. Hence, the one are compared to Sheaths, and the other to Points fit to be sheathed therein. Now, the Precipitation wherewith the Points of the Acids enter the Pores of the Alkalies, tears asunder their Contexture, and reduces them into minute Parts invisible to the Eye; and thus is the Business of Dissolution accounted for. See DISSOLUTION.

Thus far will the mere Doctrine of Alkali and Acid go towards accounting for some of the great Phenomena of Nature. But the Theory is made vastly more complete and adequate, by Sir Isaac Newton's Principle of Attraction, for which we refer the Reader to the Articles ACID, MENSTRUUM, &c. where the Operation of Salts, or Acid Spirits, are perhaps more satisfactorily accounted for.

The Principal Chymical Salts of Use in Medicine are; Salt of Urine, of Lavender, of Viper, of Human Blood, of Wormwood, of Guaiac, of Quinquina, of Tobacco, of Rhubarb, of Rosemary, of Calabreum, of Sage, of Juniper, of Vitriol, of Amber, of Saturn, &c. most of which, with many others, are explained under the Articles of the respective Drugs, &c. whence they are drawn: To which the Reader may have recourse.

SALT, in the popular Use of the Word, is used for a Kind of Saline Crystallization; or a sharp, pungent, detergent and astringent Substance, used to Season Flesh, Fish, Butter, Hides, and other Things that are to be kept: As also to give a Relish to Meats, &c. This Salt we usually call Common-Salt; in Contra-distinction to the Chymical Salt. M. Guglielmini, in an express Dissertation de Salibus, lays it down as a Fundamental, that the first Principles of Common-Salt, Salt-petre, Vitriol, &c. have their Figures unalterably fixed at their first Creation, and are indivisible as to any created Force. That of Common-Salt, he maintains to be a little Cube; that of Salt of Vitriol, a Parallelepiped; that of Salt-petre a Prism, whose Base is an equilateral Triangle, &c. Common-Salt is of three Kinds, viz. Sea-Salt, Fossile, or Rock-Salt, and Salt drawn out of Salt Springs and Wells.

For Sea Salt, the greatest and best Part is made in France; little in England. Fossile, or Rock-Salts, are chiefly found in Poland, Hungary, and Catalonia. For Salt Fountains, they are considerable in Cheshire, Worcestershire, Hampshire, Northumberland, Franche Comte, Lorrain, Tirol, and some other Places.

The Use of Salt is so universal, and the Commerce thereof so very considerable in the Places where Nature has produced the different Salts, and so necessary for those which have not that Advantage; that a Detail of the Preparation, Commerce, &c. of the several Kinds, cannot fail of being acceptable.

#### Manner of Making SEA-SALT.

This Salt is made of Sea Water, thicken'd by frequent Evaporations, and at length Crystallized. Of Sea-Salt there are two Kinds: That which requires the Sun's Rays to give it its Consistence, called, from its brown Colour, Bay-Salt; And that which receives its Consistence from the Heat of a Fire, called White Salt. They use either this or that Manner of Preparation, according to the Disposition of the Coasts, where 'tis made. If the Coasts rise in Downs or Hills of Sand, the Salt is made by Fire, in Copper or Leaden Vessels. If the Coasts be flat, and low; especially, if the Bottom be a little Clayey, the Salt is Crystallized wholly by the Action of the Sun. We have nothing very considerable of either Kind in England. Some indeed we have of the latter, at Shields in Northumberland; and of the former in the Isle of May. France is the principal Place for these Salts; more being made there than in all Europe, perhaps in all the World beside; and 'tis hence that we are chiefly furnished therewith. We shall therefore deliver the Method of making it, as it is practised there. The chief Coasts for

Bay Salt are those of Bretagne, Saintonge, and the Pays d'Aunis. The chief Salt-Works, in the two latter Places, are Brouage, Maran, and the Isle of Rhe. Those in Bretagne are in the Bay of Borneuf, Guerand, and Croisil: For White-Salt is chiefly made on the Coasts of Normandy. In the Bay of Borneuf alone, are computed above Twenty Thousand considerable Salt-Works.

#### Manner of Making BAY-SALT.

Low Marshy Grounds, disposed by Nature for the Reception of the Sea-waters when the Tide swells, and provided with Banks and Sluices to retain the same, are called a Salt-marsh. These Salt-marshes, the Bottoms whereof they ram with a deal of Care, are divided into several square Pits or Basons; some greater, others less, separated by little Dikes 13 or 14 Inches broad: And into these Basons, when the Season is at hand, they let in the Sea-water. The Salt Season is from the Middle of May to the End of August; in which Time the Days being long, and the Sun's Rays strongest, the Salt is raised and crystallized better than in any other Season. E'er they let in the Water, they take Care the Basons be well cleared of what had been left in them during the Winter to keep them in Order. The Water is admitted to the Height of about six Inches, after having first let it rest, and warm two or three Days in huge Reservoirs, without the Works, that it may come in luke-warm. The Water admitted, the Sluices are shut, and the rest of the Work left to the Wind and the Sun.

The Surface of the Water being struck, and agitated by the direct Rays of the Luminary, thickens, at first, imperceptibly, and becomes, at length, cover'd over with a slight Crust, which hardening by the Continuance of the Heat, is wholly converted into Salt. The Water, in this Condition, is so hot, that the Hand can't be put into it without burning it. When the Salt has received its full Coction, they break it with a Pole, upon which it sinks to the Bottom, whence being dragg'd out again, they leave it sometimes in little Heaps, about the Edge of the Pit, to compleat the Drying; and at length in greater Heaps, containing several Thousand Muids, which they cover over with Straw, or Rushes, to secure them from the Rain.

Eight, Ten, or at most Fifteen Days, having thus perfected the Crystallization of the Salt, they open the Sluices, when the Tide is rising, for a fresh Stock of Water; and thus they continue alternately, taking in Water, and gathering the Salt, till the Season be over. Rainy Weather is very pernicious to the Work; for Rain Water, mixing in any Quantity with the Sea Water, renders it useless, so that new Water must be called in. The Salt is brown when taken out of the Pits, and is usually thus sold, without farther Preparation. Indeed in some Places they make it into White-Salt by refining. They refine it by boiling it in large flat Caldrons, which not only takes away its Acrimony, but is found to increase the Quantity.

#### Method of Making White SEA-SALT.

The White-Salt of Normandy is not made by refining the Bay-Salt, but has this Colour naturally when taken out of the Pits. To make it, they gather a muddy Sand on the Flats of the Shoar, which the rising Tide has covered and impregnated with its Waters for seven or eight Days. This Sand being removed into Pits for the Purpose, discharges itself by degrees of all its Water, which filtrates through some Straw wherewith the Bottom of the Pit is filled, and trickles into Vessels set on purpose to receive it. Of this Water it is that they make their Salt.

Their Furnaces are of Earth, and their Boilers of Lead: Each Furnace boils four Leads. When the Water wherewith they have filled the Leads begins to boil, they take off the Skim, which arises in abundance, and in Proportion as it diminishes, throw in fresh Water, which they continue to skim, as before. When it thickens, they keep it continually stirring, with a crooked Stick, or Ladle; and when the Grain is form'd, take it off the Fire to purify it.

The Purifying is performed by letting it stand in large Osier Baskets; where it drains itself of certain Humidities that remained. When dry, it is laid in Heaps, and thence carried into the Magazines. The Commerce of White-Salt brings an immense Profit to France, though more to the King than to the Makers and Sellers: The Duty is one Fourth Part of the Price the Salt is sold at. The English and Dutch, and (when they are at War with France) the Swedes and Danes, take off most of the Salts of the Compté Nantais; paying for it, communibus Annis, from 20 to 35 Livres the Load. That of Gu-



*rande* is preferred, by the *English* and *Irish*, to all the rest, as the best and whitest. Yet that of *Bornet*, though browner and heavier, is mostly used in *France*, as also throughout the *Baltic*; particularly in *Poland*, where, besides the ordinary Uses, it serves in tilling the Ground; being found to warm it, and to prevent little Vermin from gnawing the Grain.

The *English* and *Dutch* have oft strove hard, in Times of War, to do without the *French Salts*; and to that End, have endeavoured to take *Salts* from the *Spanish* and *Portuguese*; but there is a disagreeable Sharpness and Serosity natural to them, which renders them very unfit for the Salting of Flesh, Fish, &c. To remove this, they boil them with *Sea-Water*, and a little *French Salt*, which they procure by Means of Neutral Nations; which not only softens them, but increases their Quantity by one Third. But it should seem their Refining does not succeed to their Wish, by the Eagerness wherewith they return to the *Salts* of *Bretagne*, &c. as soon as any Treaty has opened the Commerce.

FOSSILE, or ROCK-SALT, call'd also SAL-GEMMÆ.

The *Fossile-Salt* is called *Sal-Gemmæ*, from a certain Brightness it has, which gives it some Resemblance to Gems. Indeed, it should have something of the Gem in its Nature; if there be nothing exaggerated in the Account Dr. Ed. Brown, (who went down into the *Salt-Mines* in *Hungary*) gives us thereof in his Travels. This *Salt* was intirely unknown to the Ancients. *Pliny*, however, gives us some curious Things about *Salts* in *Nat. Hist. Lib. 30.* which we should have transcribed hither, could we believe them as true as they are pretty. We shall here content ourselves with what well warranted Relations we could get of the *Salt-Mines* of *Wiliscie* in *Poland*; those in the *Upper Hungary*, and those in the Mountains of *Catalonia*, which make a very considerable Article of Commerce in those Three States; *Salt* being transported hence to the several Neighbouring Nations, who can't be conveniently supplied with *Sea-Salt*.

SALT-MINES of *Poland, Hungary, &c.*

The *Polish-Mines*, in the Village *Wiliscie*, five Leagues from *Cracow*, were first discovered in 1251. Their Depth and Capacity are surprizing. Within them is found a kind of subterraneous Republick, which has its Polity, Laws, Families, &c. and even publick Roads, and Carriages, Horses, &c. being kept here to draw the *Salt* to the Mouth of the Quarry, where 'tis taken up by Engines. These Horses, when once they are down never see the Light again; but the Men take frequent Occasions of breathing the Village Air. When a Traveller is arrived at the Bottom of this strange Abyss, where so many People are interr'd alive, and where so many are even born, and have never stirred out, he is surprized with a long Series of lofty Vaults, sustained by huge Pilasters cut with the Chissel, and which, being themselves *Rock-Salt*, appear, by the Light of Flambeaux which are incessantly burning, as so many Crystals, or precious Stones, of various Colours, casting a Lustre, which the Eye has much ado to bear.

The Rocks of *Salt* are hewn in Form of huge Cylinders; the Workmen using Hammers, Pinchers, and Chissels, much as in our Stone Quarries, to separate the several Banks of Stone. As soon as the massive Pieces are got out of the Quarry, they break them into Fragments fit to be thrown into the Mill, where they are ground, and reduced into a coarse Farina or Flower, which serves all the Uses of *Sea Salt*.

In the *Salt-Mines* of *Wiliscie*, there are two Kinds of *Sal Gemmæ*; the one harder and more transparent, and the Crystallization whereof appears more perfect than that of the other: This is the real *Sal-Gemmæ* of the Druggists and Dyers. It cuts like Crystal, and is frequently used for Toys, Chapelets, little Vessels, &c. the other is less compact, and only fit for Kitchen Uses. One of the chief Wonders of the Place is, that through these Mountains of *Salt*, and along the Middle of the Mine, there runs a Rivulet of fresh Water sufficient to supply the Inhabitants.

The *Salt-Mines* in the *Upper Hungary* are every whit as extraordinary. They are found in the Mountains, two Miles from *Eperies*, a City in the County of *Sarax*, on the River *Zarba*. The Depth is 180 Fathoms. The Mineral runs in huge Veins, so that Pieces are sometimes dug not less than an Hundred Thousand Weight; which however, are afterwards reduced into Square Pieces two Foot long, and a Foot thick, for the Conveniency of drawing them out of the Mine. When out, they are broke farther, and put to the Mill to be ground. The Colour of the Stone is a little brownish, and yet when ground, becomes as

white as if it had been refined. Some of the Stones are found as hard and transparent as Crystal, some White, Yellow, Blue, &c. fit for various Works, whereon they engrave as on precious Stones. The Mine is cold and moist, whence there arises some Difficulty in reducing the *Salt* into Powder. Of the Water drawn out of it and boiled, is made a blackish *Salt*, which fattens Cattle.

The *Salt Mines* of *Catalonia* are found in the Mountains of the Dutchy of *Cardonna*, and belong to the *Grandeas* of that Name. 'Tis the Opinion of the Country People, that the *Salt* grows again, and is re-produced after several Years, in the same Places whence it had been dug. But the Naturalists will scarce allow of such a Re-production. There is no Doubt, however, but it vegetates, or grows sometimes: M. *Tournefort*, and the Specimens he had of it in his Cabinet, make it plain. The *Salt* is of four Kinds, White, Bay, Red, and Brilliant. The First, is almost like our *Sea-Salt*; only that it is not granulated. The Second, of an Iron and Slate Colour, has most of the Qualities of the White. The Third, of a Conserve Rose Colour, only differing from the rest by the Mixture of some Bole, or Earth, which gives it this Colour. The Fourth is a *Brilliant-Salt*, yet transparent as Crystal, which is the proper *Sal Gemmæ* of the Druggists. Of this Kind there is some Blue, others Green, Orange, Red, &c. but they all become white by grinding. These four Kinds of *Salts* are found over each other in distinct Strata or Beds. The Commerce hereof is very considerable. The *English*, &c. when Commerce is prohibited with *France*, furnish themselves hence.

SAL-GEMMÆ is to be chosen in large, bright, transparent Pieces, easy to break, and dividing into little square Grains. It grows red-hot in the Fire, like Iron, but dissolves easily in Air: Yet the Druggists wash it, to give it the greater Lustre, but they take Care to wipe it dry again speedily.

SALT drawn from *Saline Fountains and Springs*.

Our Method in *England* is thus. Near the Springs, or Place of the Brine, is built a *Saltern*, or Boiling-house, with a Convenience for the Conveyance of the Brine within it. The *Saltern* is usually large enough to contain several huge flat Pans, or Boilers, each furnished with its Grate and Furnace. The Brine being in the Pan, the Fire is kindled; and after Two Hours Time, the Liquor begins to be ready to granulate, which is known by a thin Skin rising at the top; this they skim off into Brine Tubs, that the Brine that goes with it may not be lost: And whereas all Brines contain, or yield Sand, which is supposed to petrify in boiling; and upon boiling this Sand, if the Liquor be before hand strained, will arise; and the Pan boiling violently in the Middle, the Sand is cast towards the Corners, where it falls to the Bottom of the Pan, before the *Salt* precipitates; therefore, they rake it to one Corner of the Pan, with a broad Rake, and then take it out with Ladles, and put it into Wooden Vessels, open at one End, placed on Stands. The Sand being removed, that the *Salt* floating in the Liquor may precipitate, they shut up the Vent-holes, and Door, and let the Fire go out, and in Twelve Hours Time the *Salt* falls to the Bottom, and grows hard; a Liquor called the *Bittern*, remaining at Top, which being again boiled away, yields more *Salt*. To make the *Salt* precipitate more readily, after the Liquor is skimmed, &c. they frequently use some Beef-Suet, and Wine-Lees, of each a like Weight, melting and mixing them together; and putting an Ounce of this Mixture on the End of a Slice, turn it round in the Liquor till it be spent; then after two Hours, at most, open the Vent-holes and Door, quicken the Fire, and lade away the Liquor in a good measure, and so is the *Salt* found lying at the Bottom, fit to be removed. 'Tis now raked up to one Side, taken out and put into Cribs, or Sepels, like Hay-racks, with loose Ribs on each Side, so close to one another, that an Half-Crown will scarce go between: Here, after eight Hours draining, it is found an hard granulated *Salt*, and may be taken away; but yet continues dripping three Weeks, and afterwards, if not often moved, will become Rocky: The Liquor in the Pan, called *Bittern*, is to be all taken out, except a little to keep the Pan from burning; drained from the *Salt*, and cast away, or reserved for *Salt-Petre* Makers, and the Pan immediately filled with fresh Brine, for another Boiling. A Pan of Brine, of moderate Strength, in eight Hours Time will be compleatly made into *Salt*, with the Expence of about a Bushel and Half of Coals, which will make a Pan of *Salt* from two Bushels and Half to four Bushels of *Salt*, or more, according as the Liquor is in Strength. This *Salt* they sometimes mould into the Form of Sugar-Loaves, in which State it will keep dry without Fire, and



and that for a long Time. At Nantwich, they bake the Loaves twice, or thrice, in an Oven, and keep them in a Stove, or the Chimney-corner.

#### SALT from Brine raised by the Sun.

In some Parts of England, as at Limington, Port-sea, &c. they use Water raised by the Sun, and then boiled, which they find preferable to the natural Brines of Springs; those being always found either too weak, or too strong. To this End, they have several Ponds, or Cisterns, called *Sun-Ponds*, built with Mud, and well exposed to the Sun; with little Channels, to convey the Brine from them all to a large shallow Reservoir, called the *Common-Sun-Pan*, not exceeding seven or eight Inches in Height. Here the Liquor is left to mellow, from twelve to twenty-four Hours, or till the Liquor will bear an Hen's Egg new laid; and when it has attained a sufficient Strength, it is from thence derived by Channels into the Cisterns, where the Rain and Sun breed Red Worms, which cleanse and purify the Liquor, which ripens by Age, and is rendered fitter for boiling, which is perform'd after the same Manner as is already described.

#### Properties of SALT.

The great Property of Salt is, that it is incapable of Corruption, and that it even preserves Meats, &c. seasoned therewith, or steeped in Solutions thereof. It endures the Fire, and even comes out purified thereby, as being thereby freed of its Humidity. In very hot Fires it fuses, and is converted into corrosive Waters. It gives Fertility to Lands, and promotes the Fusion of all Metals; yet, we read of Princes, who, as a Mark of their Indignation, sowed Grounds with Salt to render them barren. *Plutarch* observes, That the *Egyptians* believed Salt to be the Spittle, or Foam, of the Giant *Typhon*, the great Enemy of their Gods: And hence, adds he, they held it in the greatest Horror — Salt is found to have two opposite Qualities: By its subtle, penetrating Acidity, it breaks and dissolves the hardest and most compact Minerals and Metals; and by a contrary Property coagulates Liquid Bodies, as Milk, Blood, &c. Some of its Spirits, mixed in a certain Proportion with Water, produce an excessive Heat, yet, when mixed in a less Quantity augment its Coldness, as *Salt-petre* in Snow, &c. Though all Salts dissolve by Moisture, yet Water only dissolves, &c. a certain Quantity. However, when impregnated with any Salt as much as it can bear, it will still dissolve a Quantity of another Salt, whose Particles are of different Figures, proper to insinuate into the remaining Vacuities of the Water: Thus, after *Common-Salt* will no longer dissolve in it, Alum will, and after Alum, *Salt-petre*, then *Sal-Armoniac*, &c.

BAY-SALT, } See the preceeding Article SALT.  
ROCK-SALT. }

|                                    |       |                    |
|------------------------------------|-------|--------------------|
| SALT of Steel,                     | } See | VITRIOL OF MARS.   |
| SALT of Glass,                     |       | GLASS.             |
| SALT of Saturn,                    |       | SASCHARUM SATURNI. |
| SALT of Tin,                       |       | TIN.               |
| SALT of Sulphur,                   |       | SULPHUR.           |
| SALT of Tartar,                    |       | TARTAR.            |
| VEGETABLE SALT, or Soluble Tartar, |       | TARTAR.            |

SALT-PETRE, called also *Nitre*, and by the Chymists *Dragon*, *Cerberus*, and *Salt of Hell*, a Kind of Salt either natural or fictitious; of very great Use both in Chymical Preparations, in the Composition of Gun-powder, and in Dying, in the Glass-Manufacture, and in the making of *Aqua Fortis* for the Dissolution of Metals. Its minute Parts, or Crystals, are in Form of Needles; though some will have them Triangular, as those of Alum are Triangular, and those of *Common Salt* Cubical. When perfect they are said to be fistulous, or hollow, like *Capula*.

Of Natural *Salt petre* there are two Kinds: The First formed by a natural Crystallization of saline sulphurous Juices distilling in Caverns, or along old Walls. This is what they call *Salt-petre of the Rocks*; the same with the *Apbrionite* of the Ancients.

The Second Kind of Natural *Salt-petre* is furnished by the Water of a dead Lake in the Territory of *Terrano* in *Egypt*, called the *Nitrian Waters*, exalted and collected by the Heat of the Sun, much after the Manner of our *Bay-Salt*. This is the *Natrum*, or *Anatrum* of the Ancients, which our Druggists call *Natron*; now little used but in the bleaching of Linens. See NATRUM.

*Artificial*, or *Factitious Salt-petre*, is also principally of two Kinds. The first, called, by some, *Mineral Salt-Petre*, is found in several Places in the Kingdom of *Pegu*, and

about *Agra*, in Villages anciently populous, but now Desert. 'Tis also found in some Places along the Banks of the *Volga*, that famous River, which after watering a good Part of *Muscovy*, empties itself into the *Caspian Sea*. The Natural *Salt-petre* is drawn from three different Kinds of Mineral Earths, Black, Yellow, and White. The best is that drawn from the Black, as being purest from *Corrosion-Salt*, and needing no purifying after it come to us; to fit it for making of Gun-powder; as the rest do. See GUN-POWDER.

The Method of Working it is thus: Two flat Pits are dug; one of which they fill up with the Mineral Earth, turning Water upon it for some Time, and then tread it with their Feet into the Consistence of Pap, letting it stand two Days for the Water to imbibe, and extract all the *Salt* therein. They then pass the Water into another Pit, where standing some Time, it shoots and crystallizes into *Salt-Petre*. This they boil once, or twice; as they would have it more or less white and pure, scumming it continually, and filling it out into Pots; holding 25 or 30 Pounds each, and exposing these to the Air in clear Nights; by which Means if there be any Impurity, it sinks to the Bottom: They then break the Pots, and dry the *Salt* in the Sun.

All the *Salt-petre* we now have, *M. Homberg* observes, is drawn either from Earths moistened, and manured with the Excrements of Animals, or from old Walls; and the Plaster of ruin'd Buildings; which have been filled with sulphurous Matters as well from the Animals which inhabited them, as the Soot penetrating them, and the Air incompassing them. See SALT. However, we usually make a Division of *Salt-petre* into *Natural* and *Factitious*.

The second Kind of *Artificial* or *Factitious Salt-petre*, is that prepared from Nitrous Matters collected in old Buildings, Dove-houses, the Middle of ancient Ruins, &c. by means of *Lixiviums*, or Lyes made of Wood Ashes, and sometimes of those of Herbs. Of this there are great Quantities made in *France*, particularly in the Arsenal at *Paris*, where there is a Corporation of *Salt-petre* Makers appointed for the Purpose. The *Salt-petre* gained thus, they refine, by boiling it three or four times, and passing it successively through several Lyes.

Some Naturalists pretend, that the Earths, which have already serv'd for *Salt petre*, may be re-animated, and made fit to serve again, by keeping covered for Twelve or Fourteen Years, and watering them with the Scum, &c. of the *Salt-petre*, and even with Brine.

Good common *Salt-Petre* should be well clean'd, white, dry, and as free of Salt as possible. The best refined *Salt-Petre*, is that whose Crystals are the longest, largest, and finest.

There are abundance of Chymical Preparations made with *Salt-petre*, as Spirit of *Nitre*. See NITRE: *Aqua Regalis*, *Aqua-fortis*, *Crystal-Mineral*, *Sal-polychrest*, Butter of *Nitre*, &c. each of which see under its proper Article.

The Philosophers generally allow the Air to be impregnated with a Volatile *Nitre*, or *Salt-petre*; which is thence communicated to Plaster, Mortar, &c. 'Tis probable it may derive it from Soot and Smoak; which are actually found to abound with Volatile Salt of a Nitrous Nature. Dew and Rain are supposed to fertilize the Ground principally by their bringing down this *Nitre*. See AIR.

*Salt petre* has a Property of rarifying, or expanding itself to a prodigious Degree. 'Tis hence Gun-powder derives its Force, whereof *Salt-petre* is the Principal Ingredient. 'Tis computed, that when inflamed, it takes up above Ten Thousand Times the Space it possessed before. See GUN-POWDER.



SALTIER, or *Salteer*, in Heraldry, an Ordinary in Form of a St. *Andrew's Cross*; anciently called *Cross of Burgundy*. See CROSS. Its ordinary Breadth, when alone, is one Third of the Escutcheon. 'Tis sometimes bore *alaise*, and sometimes in Number, placed in different Parts of the Field. Sometimes charged, countercharged with the Field, accompanied, engrailed, indented, quarterly-quartered, &c. The *Saltier* was anciently a Piece of the Knight's Harness; being fastened to the Saddle, and serving him for a Stirrup to mount upon; and 'twas hence it had its Name *Saltier* from the French *Sauter*, to leap. It was made of a Silk Cord, or of some other Kind of Cord, covered with some rich Stuff. Others will have it, that the original *Saltier* was a Kind of *Palisade*, serving to fence Parks, Woods, &c. where wild Beasts were inclosed. Tho' *Spelman* says, 'Twas an Instrument for the taking them, thus called, *Quod sit in usu in Salru*. Lastly, others assure us, That *Saltier* was anciently the Figure of an Engine, which being full of Pins, was used in the Scaling of the Walls



of a besieged Place. Pearl a *Saltier* Ruby, the Coat of Lord *Macclesfield*.

**SALTNESS**, the Quality of something impregnated with *Salt*. — The *Saltiness* of the Sea, Lakes, &c. is a Thing that has long perplexed the Philosophers to account for. Some take it to be the Effect of the dry, adust, and even saline Exhalations, which the Sun raises from the Earth, and the Winds, and Rains discharge into the Sea. And hence, say they, it is, that the Sea is found more *brackish* near the Surface, than towards the Bottom. Others contend, that the Sun being continually extracting the purest and subtlest Parts from the Water; the coarser Parts remaining, being exalted and concocted by this Heat, acquire by little and little, their Degree of *Saltiness*. Others, as Father *Bouhours*, will have it, That the Creator gave the Waters of the Ocean their *Saltiness* at the Beginning, not only to prevent their Corruption, but also to enable them to bear greater Burthens. *Bernier* seems to be nearer the Matter, when he ascribes the *Saltiness* of the Ocean, to the *Fossile* or *Mineral Salts* brought into it by the Rivers, and dissolved in the Water.

Dr. *Halley*, in an express Discourse of the *Saltiness* of the Ocean, in the *Philosophical Transactions*, observes, That all the Lakes in the World are *Salt*, some more, some less than the Ocean; which, in this Case, may be esteemed a great Lake it self. And that all the Vapours exhaled by the Sun from Lakes, are perfectly fresh; so that all the saline Particles brought in by the Rivers remain behind, while the fresh evaporate. Hence 'tis evident, their *Saltiness* must be continually augmented. Now if this be the true Reason of the *Saltiness* of Lakes, 'tis probable the *Saltiness* of the Ocean it self arises from the same Cause: Hence we are furnished with a Method of estimating the Age of the World, by observing the Increase of *Saltiness* in the Waters of Lakes; and computing in how long Time the Ocean might, at that Rate, arrive at its present *Saltiness*. See *LAKE*.

The Count *de Marsigli* observes, That in *Provence*, the Bottom of the Sea is wholly stony, and nothing but a Continuation of the Mountains of the *Cevennes*; being even found to consist of several *Strata*; among which, are *Salt* and *Pitcoal*: And hence he derives the *Saltiness* and *Bitterness* of the Sea-Water.

**SALTS**, or *Sauts*, in the Manage, the Leaps or Vaults of a Horse; from the *French Saut*, of the *Latin Saltus*, a Leap, Dance, &c. A *Step* and a *Salt* is a high Air, wherein the Horse rising, makes a *Curvet* between Two *Salts*, or *Cabrioles*; so as to mount before, and fling back with his hind Feet. Two *Steps* and a *Salt* is a Motion composed of Two *Curvets*, ending with a *Capriole*.

**SALTUARIUS**, in Antiquity, an Officer, Servant or Slave among the *Romans*, &c. who had the Care and Custody of a Country House, with Lands and Woods, and who was to look to the Fruit, the Fences, &c. In *Nehemiah*, cap. ii. v. 8. mention is made of an Officer of this Kind; *Custos Saltus Regis*, which *Saci* interprets, Keeper of the King's Forest; but he was more; having not only the keeping of a Forest, but of a House with a Forest. *Saltus* being here used as *Horti* for a House of Pleasure; because Gardens are the principal Part. — In the Laws of the *Lombards*, *Saltuarius* is an Officer who has the Guard of the Frontiers.

**SALTUM**, as, *Ordination per SALTUM*. See *ORDINATION*.

**SALTUS**, in Law-Books, a high Wood. See *Boscus*.

**SALTZ**, or *Sulz*, a Pickle made of Salt, dissolved by the Coldness or Moisture of a Cellar.

**SALVAGE-MONEY**, is a Recompence allowed by the Statute and Civil Law, to such Persons as have assisted in saving Merchandizes, Ships, &c. perishing in Wrecks, or by Pyrates or Enemies. This usually was a Tenth Part of the Value of the Things saved. See *WRECK*.

**SALVATELLA**, in Anatomy, a famous Branch of the Cephalic Vein, passing over the Metacarpus, between the Ring Finger, and the little Finger. Several Physicians, in Imitation of the *Arabs*, recommend Bleeding in the *SalvateLLa*, as proper in Tertian and Quartan Agues, and most Hypochondriac Diseases.

**SALVE**, among the *Romanists*, the first Word of a *Latin* Prayer, or Sequence addressed to the Virgin, and sung after Complines; as also upon the Point of executing a Criminal. *Durandus* says, 'Twas composed by *Peter* Bishop of *Compostella*. The Custom of Singing the *Salve Regina*, at the Close of the Office, was begun by Order of *St. Dominic*; and first, by the Congregation of *Dominicans* at *Bolegno*, about 1227. *Gregory IX.* first appointed it to be general. *S. Bernard* added the Conclusion, *O dulcis! O pia*, &c.

**SALVER**, a flat Dish, usually of Silver or other rich Metal, used to set Glasses on to serve Wines and other Liquors. The *French* call it *Sous-coupe*, under-cup. The *Italians* use to present a *Salver*, with several Kinds of Wines, with this Complement, *Si non e buono farlo*.

**SALUTATION**, the Action or Ceremony of Saluting, Greeting, or paying Respect, or Reverence to any one. There is a great Variety in the Forms of *Salutation*: We salute God by Adorations, Prayers, &c. Kings, by Genuflexion, &c. In *England*, &c. we salute one another by uncovering the Head, inclining the Body, &c. The Orientals by uncovering their Feet, laying their Hands on the Breast, &c. The Pope makes no Reverence to any Mortal but the Emperor of *Germany*, to whom he stoops a very little, when he admits him to kiss his Mouth. — In the Army, the Officers salute by certain orderly, studied Motions of the Pike, &c. 'Twas held by the Ancients, That the Statue of *Memnon*, one of the Horses of the Sun, in a Temple in *Egypt*, saluted that Luminary every Morning at his Rising. The Deceit consisted in this, That the Statue being hollow, when the Warmth of the Morning began to rarify the included Air, it was driven out thro' a narrow Duct in the Mouth: Thus making a gentle Murmur, which the Priests interpreted a Neighing.

At Sea, they salute by a Discharge of Cannon, which is greater or less, with Ball or without, according to the Degree of Respect they would shew. Ships always salute with an odd Number of Guns; Gallies with an even one. A Vessel under the Wind of another, is always obliged to salute first. To salute with Musquets, is to fire One, Two or Three Volleys; which is a Method of *Salutation* that sometimes precedes that of the Cannon; and is chiefly used on Occasion of Feasts. After the Cannon, they sometimes also salute with the Voice; which *Salutation* also occasionally obtains where they carry no Guns, or don't care to discharge any. Saluting with the Flag, is performed Two Ways; either by holding it close to the Staff, so as it can't flutter; or by striking it so as it can't be seen at all, which is the most respectful *Salutation*. Saluting with the Sails, is performed by hovering the Top-sails half Way of the Masts. Only those Vessels which carry no Guns, salute with the Sails. When there are several Ships of War together, the Commander alone salutes. Father *Fournier* has an express Treatise of *Sea-Salutes* and Signals. See *SIGNAL*.

The *Angelical Salutation*, is an Address which the *Romanists* make to the Virgin; containing the Form wherein the Angel saluted her, when he acquainted her with the Mystery of the Incarnation. See *AVE MARY*.

**SAMARITANS**, an ancient Sect among the *Jews*; still subsisting in some Parts of the *Levant*, under the same Name. Its Origin was in the Time of *Rehoboam*; under whose Reign, a Division was made of the People of *Israel* into Two distinct Kingdoms. One of these Kingdoms, called *Judah*, consisted of such as adher'd to *Rehoboam*, and the House of *David*; The other retain'd the ancient Name of *Israelites*, under the Command of *Jeroboam*. The Capital of their State was *Samaria*; and hence it was they were denominated *Samaritans*. *Salmanazar*, King of *Assyria*, having conquered *Samaria*, led the whole People Captive into the remotest Parts of his Empire; and filled their Place with Colonies of *Babylonians*, *Cutheans*, and other Idolaters. These finding themselves daily destroyed by wild Beasts, desired an *Israelitish* Priest to instruct them in the ancient Laws and Customs of the Land they inhabited. This was granted them; and they thenceforth ceased to be incommoded with any Beasts. However, with the Law of *Moses*, they still retained somewhat of their ancient Idolatry. The *Rabbins* say, They adored the Figure of a Dove on *Mount Gerizim*. See Father *Sonnet*. Be this as it will, 'tis certain, the modern *Samaritans* are far from all Idolatry. Some of the most learned among the *Jewish* Doctors own, That they observe the Law of *Moses* more rigidly than the *Jews* themselves. They have a Hebrew Copy of the *Pentateuch*, differing in some Respects from that of the *Jews*; and written in different Characters, commonly called *Samaritan Characters*; which *Origen*, *Jerom*, and other Fathers and Criticks, ancient and modern, take to be the primitive Characters of the ancient *Hebrews*; tho' others maintain the contrary. The Point of Preference, as to Purity, Antiquity, &c. of the Two *Pentateuch's*, is also disputed by the modern Criticks. See *PENTATEUCH*.

The *Samaritans* are now very few in Number; tho' 'tis not very long, since they pretended to have Priests descended directly from *Abraham*. They were chiefly found at *Gaza*, *Neapolis* (the ancient *Sichem*) *Damascus*, *Cairo*, &c. They had a Temple or Chapel on *Mount Gerizim*, where they performed their Sacrifices. *Joseph Scaliger*, being curious to know their Usages, wrote to the *Sama-*



*Samaritans of Egypt*, and to the High Priest of the whole Sect, who resided at *Neapolis*. They returned Two Answers to *Scaliger*, dated in the Year 998 of the *Hegira* of *Mahomet*. These Answers never came to the Hands of *Scaliger*. They are now in the French King's Library, and have been translated into Latin by Father *Morin*, Priest of the Oratory; and printed in the Collection of Letters of that Father in England, 1682, under the Title of *Antiquitates Ecclesie Orientalis*. M. *Simon* has inserted a French Translation in the first Edition, of *Ceremonies & Coutumes des Juifs*, by Way of Supplement to *Leon de Modena*. In the First of these Answers, wrote in the Name of the Assembly of *Israel* in *Egypt*, they declare, That they celebrate the Passover every Year, on the Fourteenth Day of the first Month, on Mount *Gerizim*; and that he who then did the Office of High Priest, was called *Elezar*, Son of *Phineas*, Son of *Aaron*. At present they have no High Priest. In the second Answer, which is in the Name of the High Priest *Elezar*, and the Synagogue of *Sichem*, they declare, That they keep the Sabbath in all the Rigor wherewith 'tis enjoined in the Book of *Exodus*; none among them stirring out of Doors, but to the Synagogue. They add, That on that Night they don't lie with their Wives; That they begin the Feast of the Passover, with the Sacrifice appointed for that Purpose in *Exodus*; That they sacrifice no where else but on Mount *Gerizim*; That they observe the Feasts of Harvest, the Expiation, the Tabernacles, &c. They add further, That they never defer Circumcision beyond the eighth Day; never marry their Nieces, as the *Jews* do; have but one Wife; and, in fine, do nothing but what is commanded in the Law: Whereas the *Jews* frequently abandon the Law to follow the Inventions of their Rabbins. At the Time when they wrote to *Scaliger*, they reckoned 122 High Priests; affirmed that the *Jews* had no High Priests of the Race of *Phineas*; and, That the *Jews* belyed them, in calling them *Cuthaeans*, whereas they are descended from the Tribe of *Joseph*, by *Ephraim*. The Truth is, The *Jews* impose abundance of Things on the *Samaritans*: They frequently confound them with the *Saducees*, as if they were infected with their Errors. Rabbi *Benjamin*, who lived in the XIIIth Century, confirms the best Part of what we have observed of the *Samaritans*. He observes, They had Priests of the Tribe of *Aaron*, and who never married with any but those of the same Tribe: That they sacrificed on Mount *Gerizim*, where they had an Altar of Stone raised by the *Israelites* after passing over *Jordan*. He adds, That they are of the Tribe of *Ephraim*; That they change their Habit to go to the Synagogue, and wash e'er they take it.

SAMARITAN Characters, or Letters. See LETTER.

SAMARITAN Pentateuch. See PENTATEUCH.

SAMARITAN Medals. In the Cabinets, we find some Medals, usually called *Samaritan Medals*. The Inscriptions and Legends of these are *Hebrew*; but the Character different from the *Hebrew* of our Bibles, which is the square *Hebrew* or *Chaldee*; and 'tis hence, viz. from the Character, not from being struck by the *Samaritans*, that they are denominated *Samaritan*. These Medals have been infinitely canvassed by the Criticks, both *Jewish* and *Christian*; particularly Rabbi *Alascher*, R. *Barrengra*, Rabbi *Azarias*, Rabbi *Moses*, Father *Kircher*, *Villalpandus*, *Wasserus*, *Conringius*, *Hottinger*, Father *Morin*, *Walton*, *Hardouin*, *Spanheim*, &c. The learned Jesuit *Soucier*, in an express Dissertation on the *Samaritan Medals*, rejects all *Hebrew Medals*, whose Inscriptions are in *Chaldee* Characters, as spurious; and allows of none to be genuine but the *Samaritan*. Of these there are Four Kinds. The first bear expressly the Name of *Simon*, and the Subject for which they were struck, viz. the Deliverance of *Jerusalem*. The Second Kind have not the Name *Simon*, but only the Deliverance of *Sion*, or *Jerusalem*. The Third Kind have neither *Simon*, nor the Deliverance of *Sion*; but only the Epochas, first Year, second Year, &c. The Fourth Class have neither any Inscriptions, nor any Thing whence one may judge of the Time when they were struck. The Three first Kinds were certainly struck after the Return from the *Babylonish* Captivity, and in the Time of *Simon Macabees*, after *Jerusalem* had been freed from the Yoke of the *Greeks*. But tho' struck after the Captivity, Father *Soucier* observes, their Character shews it self to be that of the ancient *Hebrew*, which was used before the Captivity, and the Use whereof was lost by the People, during their Sojourn in *Babylon* and *Chaldea*; but restored after their Return, on the same Footing as before. He adds, That the Inscriptions are pure *Hebrew*, such as it was spoke before the Captivity; That the Character, therefore, is the true ancient Character of the *Hebrew*: That it was the Custom to write each Language in its proper Character: That if they had departed from this

Rule, they had doubtless used the New Character they brought with them from *Babylon*: That there could be no other Reason but that of settling all Things on the same Foundation they were on before the Destruction of *Jerusalem*, that could have induced them to use this Character on their Coins. And, lastly, That these Medals were not struck by the *Samaritans*, but by the *Jews*, and in *Jerusalem*. He is very full on all these Points, and, to the Proofs drawn from Medals, adds Two others foreign thereto. The first drawn from the Resemblance of the Greek Letters, introduced by *Cadmus*, the *Phoenician*, with this *Hebrew* Character; which was the same with that of the *Phoenicians*, as the Language of those People was the same with that of the *Hebrews*. The second drawn from several various Readings in the Scriptures, which cannot be well accounted for otherwise, than by supposing, That the Books wrote before the Captivity, were in the same Character with these Medals, and which shew, that 'tis the Conformity which certain Letters have in that Character, that has deceived the Copists. From the whole, he concludes, That this Character of the Medals is the true ancient *Hebrew* Character; and, That to judge of the various Readings of the *Hebrew* Text, and the Differences of the ancient Greek and Latin Translations, either with themselves, or with the *Hebrew* Text, Recourse must be had to this Character.

SAMBUCUS, an ancient musical Instrument of the Wind Kind, and resembling a Kind of Flute; probably thus called because made of Elder, which the *Latins* call *Sambucus*. — *Sambucus* was also an ancient Engine of War, used by *Marcellus* in besieging the City of *Syracuse*. 'Twas so big, that *Plutarch*, in the Life of that General, observes, Two Ships were required to carry it.

SAMIAN EARTH, an Earth brought from the Isle of *Samos*, in the *Aegean* Sea. The best is called by *Dioscorides*, *Collyrium*, because used in the Medicines of that Name. 'Tis white, very light, soft, friable, well-tasted, and a little glutinous on the Tongue. There is another Kind, harder and fouler, called *Ater-Samius*, in Regard little shining Straws are frequently found in it; disposed like little Stars. Each Kind is esteemed very astringent, proper to dry, and draw Wounds.

There is also a *Samian Stone*, taken out of the Mines in the same Island. 'Tis white, and sticks to the Tongue when applied to it. 'Tis astringent and cooling, and is also used by the Goldsmiths to burnish their Gold, and give it a greater Lustre.

SAMOSATENI, or *Samosatenians*, a Sect of ancient *Antitrinitarians*, thus called from their Leader, *Paulus Samosatenus*, Bishop of *Antioch*, under the Emperors *Aurelian* and *Probus*. He renewed the Heresy of *Artemon*, and had several Sentiments in common with *Sabellius*, &c. tho' he differed from them in the Manner of explaining them. He owned, That the Father, Son, and Holy Ghost were but one God, but denied that the Son and Holy Spirit had any real Subistence. According to him, they only subsisted in the Father, as the Word of Man subsists in his Understanding. St. *Epiphanius* will have the *Samosatenians* to be real *Jews*, without any Thing more than the Name of *Christians*; adding, That they use the same Arguments against the Mystery of the Trinity that the *Jews* do; pleading against it, with them, on Pretence of maintaining the Unity of the Godhead, tho' they don't observe the Ceremonies of the Law. Their Chieftain was condemned by a Council held at *Antioch* whereat assisted above Seventy Bishops; and was deposed from his Bishoprick.

SAMPSÆI, or *Sampsæians*, ancient Sectaries, the same, according to St. *Epiphanius*, with the *ELCESAITES*, which see. The *Sampsæians* were not properly either *Jews*, *Christians*, or *Gentiles*. They took their Name from the *Hebrew* *Semes*, Sun; as if they adored the Sun. They acknowledged one only God; washed themselves often, and were attached, in almost every Thing, to the Religion of the *Jews*. Many among them abstained from eating of Flesh. *Scaliger*, after *Epiphanius*, will have the *Sampsæi* to be the same with the *Esseni*. In effect, the *Elcesaites*, *Sampsæians*, *Massilians*, and *Esseni*, appear to be no more than so many different Names for the same Thing; unless, perhaps, the first added something to the Opinions of the last. See *ESSENI*.

SAN BENITTO. See SACCO BENEDICTO.

SANCTIFICATION, the Action of Sanctifying, or making a Thing Holy, and separate to God. See SACRED. The reformed Divines define Sanctification an Act of God's Grace, whereby a Man is renewed inwardly, his Desires and Affections alienated from the World, and the Man put in a Course of dying to Sin, and living to Righteousness. The Sanctifying of the Sabbath, among the *Jews*, is of Divine Right. By Sanctifying the Sabbath,



bath, is meant, the spending it in Prayer, Praise, &c. not in worldly Concerns. The first Petition in the Lord's Prayer is, *Hallowed, or sanctified, be thy Name*: By which is meant, Let thy Name be ever accompanied with Blessing and Praise.

**SANCTION**, the Authority given to some judicial Act; or that, whereby it becomes legal and current. The Royal Assent gives the *Sanction* of Statutes, to all Bills in Parliament that have passed each House Thrice. See **PARLIAMENT**. The Word is form'd from the *Latin Sancere*, to establish.

**PRAGMATICAL SANCTION**. See **PRAGMATICAL**.

**SANCTI VITI CHOREA**. See **SANCTI VITI**.

**SANCTUARY**, among the *Jews*, the holiest and most retired Part of the Temple of *Jerusalem*; wherein was preserved the Ark of the Covenant; and into which No-body was allowed to enter but the High Priest, and that only once a Year, to intercede for the People. The *Sanctuary*, called also *Sanctum Sanctorum*, or Holy of Holies, is supposed to be a Type or Figure of Heaven and of *Jesus Christ* the true High Priest, who is ascended thither to make Intercession for us. Some will have it, That the whole Temple was called the *Sanctuary*; and that the *Sanctum Sanctorum*, where the Ark was kept, was only a little Chapel or Oratory therein. See **TEMPLE**.

*Weight of the SANCTUARY*, to examine a Thing by the Weight of the *Sanctuary*, is to examine it by a just and equal Scale; in Regard among the *Jews*, 'twas the Custom for the Priests to keep Weights of Stone, to serve as Standards for the regulating of all Weights by; tho' these did not differ from the royal or profane Weights. See **WEIGHT**, **SHEKLE**, &c.

**SANCTUARY**, in our ancient Customs, an *Asylum*, or place privileged by the Prince for the Safeguard of Mens Lives, who were guilty of Capital Crimes. See **ASYLUM**. Till *Henry the VIIIth*, all our Churches and Church-yards were *Sanctuaries*; and protected Traytors, Murderers, &c. if within Forty Days they acknowledged their Fault, and submitted themselves to Banishment; and during that Time, if any Lay-man expelled them, he was excommunicated; if a Clerk, he was made irregular: After Forty-Days no Man might relieve them. *St. John's of Beverly*, had an eminent *Sanctuary*, called by the Saxons, A Seat of Peace: So had *St. Martin's le Grand*, in *London*. *Rippon* had the like granted by *Whitlase*, King of the *Mercians*: So had *St. Buriens* in *Cornwal*, granted by King *Athelstan*, Anno 936; and *Westminster* the like, granted by *Edward the Confessor*. In *Scotland* they call the *Sanctuary*, *Girihole*, or *Grihbol*. The Saxons also called it *Frodnicretel*. See **ABJURATION**.

**SANCTUARY**, is also used in the *Romish Church* for the Chancel, or that Part of the Church wherein the Altar is placed, incircled with a Rail or Ballustrade. See **CHANCEL**.

**SANCTUM SANCTORUM**. See **SANCTUARY**.

**SAND**, a fine, hard gravelly Earth, of great Use in Building, and many other Arts and Manufactures, as in the making of Glais, in Plumbery, Foundery, &c. There are Three Kinds of Sands, distinguished by the Places whence they are drawn: viz. *Pit-Sand*, *River-Sand*, and *Sea-Sand*. See **EARTH**.

The Use of *Sand* in Building, is as an Ingredient in Mortar: See **MORTAR**. For this Use, *Pit-Sand* is of all others the best; and of *Pit-Sand*, the whitest is always the worst. Of *River-Sand*, that found in the Falls of Waters is best, because most purged. *Sea-Sand* is the worst. *Pit Sand*, as being fat and tough, is most used in Walls and Vaults. *River-Sand* serves for rough casting. All *Sand* is good in its Kind, if well squeezed and handled it crackles; and if being put on a white Cloth, it neither stains nor makes it foul. That *Sand* is naught, which, mixed with Water, makes it dirty and muddy, and which has been long in the Air; for such will retain much Earth and rotten Humour. Hence some Masons wash their *Sand* e'er they use it. The *Sand* of *Puzzuolo*, *De Lorme* observes, is the best in the World; especially for Maritime Building. See **Puzzuol**. Some distinguish a *Male Sand*, which is of a deeper Colour than another Sort in the same Bank or Bed, called *Female Sand*.

The *Sand* whereof Glais is made, is white and gritty, full of little sparkling Grains. See **GLASS**.

The *Sand* used by Founders, is Fossile. 'Tis properly a yellow fat Earth, whereof they make their Moulds, for the Casting of little Works; whence it is they say, *Casting in Sand*. See **FOUNDRY**. The Plumbers also use *Sand* to mould several of their Works, particularly large Sheets. To prepare the *Sand* for these Sheets, they wet it lightly, stir and work it with a Stick, then beat and plane it. See **PLUMBERY**.

**SAND**, in Agriculture, is one of the Three great Kinds of Soil; which are *Sand*, *Clay* and *Earth* or *Loam*. The Properties, &c. whereof see under the Article **SOIL**.

*M. de la Quintine* attributes all the Difference we find in Soils, to the different Quality of Sands mixed in them. *Soft Sands*, according to him, make a soft, gentle Earth. *Unctuous Sands*, a stiff Earth. *Coarse Sands* a rough untractable Earth, &c.

**SAND** is also applied to dry, crumbling Earths, which wanting any Firmness to bind them together, the Wind easily breaks into Dust, and carries them away. In this Sense it is that Travellers tell us, the Caravans in *Africa* are frequently lost, and buried under Clouds of *Sand* tore up by Whirl-winds; and sometimes heaped up in to Mountains. The Deserts of *Lybia* are mere *Sands*; and hence their Sterility.

### A TABLE of SANDS.

Sharp, or Rag *Sand*, composed of small Transparent Pebbles, naturally found upon the Mountains, not Calcinable.

|        |           |   |
|--------|-----------|---|
| Fine   | White.    | <i>Stitneham-Moor</i> , in the Road washed up very white Pebble. <i>Flamborough Head</i> , of which the Light-House there is cemented.  |
|        | Grey.     | <i>Calais Sand</i> , burns reddish, but falls not in Water.   |
|        | Reddish.  | <i>Seaton-Banks</i> , near <i>Hartlepool</i> , on the <i>Tee's Mouth</i> ; <i>Egcrick</i> in the Gravel-pit there, a Vein of exceeding fine <i>Sand</i> .<br>The <i>Pillow Sand</i> in the <i>Baltick</i> .<br>In a Spring at <i>Heslington</i> .<br><i>Acome</i> near <i>York</i> , drifted <i>Sand</i> .<br><i>Hutton-Moor</i> , washed, <i>Throp Fells</i> .<br><i>Ouze</i> at <i>York</i> .<br><i>Nid</i> at <i>Mountain</i> .<br>Dug up at <i>Ravcliff</i> near <i>Snath</i> .<br>Wharf at <i>Ickly</i> and <i>Denton</i> .<br><i>Air</i> at <i>Carleton</i> in <i>Craven</i> .<br><i>Eure</i> at <i>Craven</i> .<br><i>Ganton</i> .<br><i>Santon</i> in <i>Lincolnshire</i> .<br><i>Bromly-Common</i> .<br><i>Skipwith-Common</i> . |
| Coarse | Brown.    |   |
|        | Grieffly. |   |
|        | Brown.    |   |

Soft or smooth, with flat Particles

|   |   |
|---|---|
| From Lime-stone, with Mica of Glittering Particles, | At — in <i>Yorkshire</i> .<br>A Vein at <i>Ofwell</i> .<br>Beacon, in <i>Lincolnshire</i> . |
|---|---|

Of *Westmoreland*

|             |   |
|-------------|---|
| Silver-like | <i>Sea-Sand</i> , about the <i>Stilly Islands</i> .<br>In <i>Cleveland</i> , and about <i>Scarborough</i> .<br><i>Ouze Dust</i> , or <i>Sediment</i> at <i>Ravcliff</i> .<br>A Vein of <i>Mica</i> in <i>Heslington Gravel-pit</i> .<br><i>Mica Argentea</i> in <i>Red Sand Rock</i> , near <i>Rippon</i> , plentifully.<br><i>Mica Aurea</i> of <i>Cleveland</i> . |
| Gold-like   |   |

**SANDAL**, in Antiquity, a rich kind of Shoe or Wear for the Feet, made of Gold, Silk, or other precious Stuff, used by the *Roman* and *Greek Ladies*; consisting of a Sole, with a Hollow at one Extreme to embrace the Ankle. *Terence* speaks of this *Sandal*, *Utinam tibi committigari videam Sandalio caput*: I wish she would break your Head with her *Sandal*. *Apollo* was sometimes called *Sandalarius*, the Reason of which Appellation has given great Perplexity to the Critics; some derive it from a Street called *Sandalarius*, because chiefly inhabited by *Sandal-Makers*, wherein that God had a Temple: But others, with more Probability, derive the Name of the Street from that of the God, and take *Apollo* to have been thus called from his effeminate Dress, as if he wore Womens *Sandals*.

The Shoe anciently wore by the Pope, Bishops, Priests, &c. when they officiated, was also called *Sandal*; being such as was supposed to have been wore by *St. Bartholomew*. *Alcuin* observes, That there was some Difference between the *Sandals* of Bishops, Priests, and Deacons. Monks were not allowed to wear *Sandals*, except in Travelling, as is observed by *Du Cange*, *Salmasius*, &c.



*Sandals* is also a Shoe worn by several Congregations of reformed Monks. It consists of no more than a mere Leather Sole, fasten'd with Latches or Buckles, all the rest of the Foot being left bare: The Capuchins wear *Sandals*, the Recollets, Socks: The former are of Leather, the latter of Wood.

SANDARAC, in Natural History, &c. Some divide this *Sandaracca* into *Natural* and *Facitious*: The *Natural* is found in Gold, Silver, and Copper Mines, and is the same with the red Arsenic: The *Facitious* is only Ceruss exalted by the Fire, and burnt into a kind of Minium. Both the one and the other is a violent Poison.

See REALGAL, CERUSS, &c.  
SANDARACH or Sandarach, in Pharmacy, Red Ar-  
senic, called also Realgal and Red Orpiment; 'tis some-  
times also called Sandaracha Græcorum, in Opposition  
to the Gum.  
SANDARACH or Gum-Sandarach, called also San-

to the Gum. **SANDARACH**, or *Gum-Sandarach*, called also *Sandaracha Arabum*, is a white Gum oozing out of the Trunk, and thick Branches of the great Juniper-Tree, by Incisions made in the Heats of the Summer. The little or common Juniper yields very little *Sandarach*: Its Fruit yields Oils, Waters, Salts, Spirits and Extracts of some Repute in Medicine. The *Gum-Sandarach* is an Ingredient in Varnish. See **VARNISH**. 'Tis also reduced into an im- palpable Powder, and used to prevent Paper from imbi- bing Ink. The best is in fine white Tears, free of Dust: The *English, Swedes, &c.* drive a considerable Trade therewith. Some will have it, that the *Sandarach* of the Juniper is not the right, but only that of *Oxycedron*, which see.

**SAND-BAGS**, in Fortification, are Bags holding about a Cubic Foot of Earth or Sand: They are used for raising Parapets in haste, or to repair what is beaten down; they are also of Use when the Ground is Rocky, and affords not Earth to carry on their Approaches, because they can be easily brought on and off at Pleasure. There are a lesser Sort, which hold half what the former do, and which are placed upon the upper Talus of the Parapet, to cover those who are behind, and who Fire through the Embrasures, or Intervals, that are between them.

SANDEVER, the Drofs of Glass, or the Scum that arises from the Ashes of the Herb *Kali*, used in the Making of Glass. See GLASS.

**SANDIX**, a kind of Minium, or rather of red Masticot made of Cerufs calcined and rubified, called also a *Factitious Sandarach*. 'Tis of little Use in Painting, the real Minium or Vermilion, to which it is substituted, making a much better, brighter, and more durable Colour. See **MASTICOT**, and **VERMILION**.

**SAND-HEAT**, or *Sand-Bath*, in Chymistry, one of the Chymists Fires, consisting of hot Sand, wherein Herbs, Flowers, &c. are infused in a Cucurbit. See **BALNEUM ARENOSUM**. The *Sand-Heat* is esteemed gentle, digestive, and alterative.

**SANGUIFICATION**, in the Animal Oeconomy, the Action whereby Chyle is converted into Blood. *Sanguification* succeeds to *Chylification*. See **CHYLIFICATION**. Also see **BLOOD** and **CHYLE**.

**SANGUIFICATION** is thus effected. The Chyle having passed the Lacteals, of the several Kinds, is delivered into the Blood at the Subclavian; whence the two Humours pass together to the right Ventricle of the Heart, where being yet more intimately mixed, they circulate together through the whole Body; 'till, after several Circulations and Depurations at the several Colatures and Strainers of the Body, they become assimilated, or, as the Chymists call it, *cohabated*, so as only to make one uniform compound Mass, which appears to be nothing else but Chyle alter'd by the Artifice of Nature, and exalted into Blood. In Effect, it does not appear that any Thing extraneous is mixed with the circulating Liquor but Chyle, excepting what was before separated from it for particular Occasions; unless perhaps it should receive some Portion of Air in the Lungs, which is a Point long disputed, and yet scarce ascertained. Indeed, that there is a Quantity of Air mixed with the Blood and circulating with it, is granted; but whether this be any more than was at first contained in the Bodies whereof the Chyle was form'd, is much doubted: The principal Arguments for it, are, The Necessity of Respiration, and the florid Colour the Blood receives in the Lungs, and first shews itself in the Pulmonary Vein; but the first is satisfactorily accounted for another Way. See **RESPIRATION**. The latter is chiefly supported by this Experiment, That Blood drawn by Venisection, and suffered to coagulate, upon turning up the Bottom, which before was blackish, being now exposed to the Air, acquires a florid Colour, like that we observe in the Blood of the Pulmonary Vein. The Action of *Sanguification* is succeeded by that of *Nutrition*, See **NUTRITION**.

The Antients were in great Perplexity about the Seat of *Sanguification*, or the Place where, and the Instrument whereby it is effected: Whether in the Heart, or the Liver, or the Lungs: But, according to the Doctrine of the Moderns, the Heart, Liver, Vessels, &c. contribute no otherwise to the changing of the Chyle into Blood, than the Sun does to the changing of the Must into Wine. See HEART, LIVER, &c.

The Ancients accounted for *Sanguification* from a plastic Power. In the last Century, when Chymistry was introduced, *Sanguification*, and almost every thing else, was to be effected by a Ferment; and the Physicians of those Times, were very solicitous as to the particular *Officina* where this Ferment was prepared and kept. Some would have it the Liver, others the Spleen, &c. but the very Notion is now exploded.

Of *Sanguification* we may admit two Degrees; the first amounting to no more than a Confusion, or such an intimate Mixture of Parts, as suffices so to confound the different coloured Liquors, as that the Whiteness of the Chyle shall be lost or drowned in the Redness of the Blood, so as never more to appear in its own Shape and Colour. This we suppose may be effected by repeated Circulations alone: How many Circulations are necessary thereto, 'tis difficult to determine.

The Second Degree of *Sanguification*, is, when the Parts of the Chyle are so exalted or comminuted and subtilized, as to lose all Tendency to a coagulatory Separation, such as they have in Chyle and Milk. To these two Degrees may be added a third, wherein the Fibres and Filaments of the crude Blood are so broken and blended with the Serum, as not to be again seperable from them. This is a *Morbid Sanguification*, such as happens in Fevers, &c. attended with a bloody Sweat, Spots, &c.

All these Degrees of *Sanguification*, Dr. Drake makes no doubt are procured by reiterated Circulations, wherein, as well the Intestine, as the Progressive Motion, conspire to the mixing and comminuting of the adventitious Parts. Doubtless they have their stated Period, wherein they are in Perfection; though where precisely to fix it, we do not know.

**SANGUINE**, something abounding in Blood ; hence *Sanguine Temperament*, or Constitution, is that where Blood and Heat predominate. *Sanguine* Constitutions require a frequent Use of Phlebotomy. *Sanguine* People are usually observed to be brisk, bold, daring, and even presumptuous : Hence *Sanguine* Hopes, strong, assured, &c. Hopes.

**SANGUINE**, in Heraldry, the Colour usually called *Murvy*, being made of Lake, with a little *Spanish Brown*: It is represented in Engraving, by Hatches like *Purple*: It is mostly used in the Coats of Knights of the *Bath*; when it is borne by Nobles, it is called *Sardonix*, and in the Coats of Sovereign Princes they call it *Dragons-Tail*.

**SANGUINE-STONE**, *Lapis Sanguinalis*, or *Blood-Stone*, a kind of Jasper brought from *New-Spain*, of a dark brown Colour, marked with Spots of a Blood-red; the *Indians* cut it in Form of a Heart, and use it in *Hæmorrhagies*, immoderate *Menses*, and other Fluxes of Blood. The Patient applies it by grasping it in his Right Hand, having first dipt it in Water 'Tis sometimes also hung on the Part whence the Blood flows. See **JASPER**.

**SANGUIS**, in Medicine, &c. See **BLOOD**.

SANGUIS, in our ancient Customs, a Right, or Power, which the chief Lord of the Fee had to determine in Causes where Blood was shed. *De Murderia & Raptu, de Igne, de Sanguine, &c.* Monast. — *Sanguinem Emere* was an Obligation the Inhabitants of some Manors, as that of *Grendon*, were under, to buy and redeem their Villain Blood or Tenure, and make themselves Freemen.

**SANGUIS CAPRINUS**, or *Hircinus*, the Blood of the He Goat, either wild or tame, which is prepared, with great Precaution, to be used in Medicine, and supposed to have very extraordinary Qualities. The principal Precautions are these: The Goat is not to exceed four or five Years of Age; 'tis to be fed a considerable Time with Aromatic Herbs, and especially those of the Saxafrage Kind; to be drawn out of the Throat, or the Testicles, by cutting them; but neither what comes first, nor last to be used, the former being too full of Humidity, and the latter too thick; and that the Operation be only performed in *July*, and the Blood put into Earthen Vessels, and dried either in the Sun or the Shade, and, lastly, bottled up to be used occasionally.

Among other Specific Virtues attributed to Goats-blood, the two most considerable ones are, that it cures the



the Pleurisy without bleeding; and that it dissolves the Stone in the Bladder, by taking it in Vehicles proper for those Diseases. To be good, 'tis to be extremely hard and difficult to pulverize.

**SANGUIS-DRACONIS**, in Pharmacy. See **DRAGONS-BLOOD**.

**SANHEDRIN**, or *Synedrion*, among the Ancient Jews, the Supreme Council, or Court of Judicature of their Republic; wherein were dispatch'd all the great Affairs both of Religion, and Policy. Many of the Learned agree, That it was instituted by *Moses*, and consisted at first of Seventy Persons, all inspired of the Holy Ghost, who judg'd finally of all Causes and Affairs; and that it subsisted, without Intermiſſion, from *Moses* to *Esdraſ*. Others will have it, That the Council of Seventy Elders, established by *Moses*, *Numb. Cap. xi.* was Temporary, and did not hold after his Death; adding, That we find no Sign of any such perpetual and infallible Tribunal throughout the whole *Old Testament*. The Jews, however, contend strenuously for the Antiquity of their Great *Sanhedrin*; *M. Simon* backs and defends their Proofs, and *M. le Clerc* attacks them. Be the Origine and Establishment of the *Sanhedrin* how it will, 'tis certain it was subsisting in the Time of our Saviour; that it was held at *Jerusalem*; and that the Decision of all the most important Affairs belonged to it. The President of this Assembly was called *Nasi*: There were several inferior *Sanhedrins* in *Palestine*, all depending on the Great *Sanhedrin* at *Jerusalem*. The inferior *Sanhedrins* consisted each of Twenty-three Persons; and there was one in each City and Town. Some say, That to have a Right to hold a *Sanhedrin*, 'twas requisite there were One Hundred and Twenty Inhabitants in the Place. Where the Inhabitants came short of the Number of One Hundred and Twenty, they only establish'd Three Judges. Into the great as well as the inferior *Sanhedrins* were admitted Priests, Levites, and Laymen, of all the Tribes, provided they were of noble Extraction, Rich, Prudent, without any Blemish of Body, and expert in Magick; which last was esteemed a necessary Qualification, to enable them to obviate and destroy it: Very old People and Eunuchs were excluded. In each *Sanhedrin* there were two Scribes; the one to write down the Suffrages of those who condemned; the other to take down the Suffrages of those who acquitted.

*Selden* has a very Learned Work on the Subject of the *Jewish Sanhedrins*, de *Synedriis*, Printed at London in 1635, in three Volumes Quarto. The Word is derived from the Greek *Συνεδριον* a Council, Assembly, or Company of People sitting together, from *συν* con together, and *εδρα* Seat, of *εδρα*, I place.

**SANIES** in Medicine, a thin, serous Matter, issuing out of Wounds and Ulcers. *Galen* compares it to Whey. It differs from *Pus*, which is thicker and whiter: The Greeks call it *ιζωρ* crude Blood.

**SANTALUM**, *Santal*, *Sandal* or *Saunders*, a hard, heavy, odoriferous, medicinal Wood, brought from the *East-Indies*. There are of three different Colours, Citron, White, and Red. The Trees whence they are taken are all of the same Kind; and 'tis supposed their different Colours only arise from the Difference of Climates where they grow. 'Tis about the Height of the *European* Walnut-tree. Its Leaves resemble those of the *Lentisk*, its Flowers Blue, bordering on Black; its Fruit of the size of our Cherry, green at first, but blackening as it ripens, and of a faint Taste. The Citron *Santal* is esteemed the best. 'Tis brought from *China*, and *Siam*: Is yellow, heavy, and of a good Smell; 'tis used in Medicine, as also by the Perfumers. The *White-Santal* is less odoriferous; 'tis brought from the Isle of *Timor*. The *Red-Santal* has the least Smell of the Three: 'Tis brought from the Island *Tamassarin*, and the Coast of *Coromandel*. The *Santals* are all held to be a little Astringent, to strengthen the Heart and Brain, and to stop Vomiting; and are frequently used in Diet-drinks, and medicated Ales, against Scorbutick Complaints.

**SAP**, or *Sapp*; to *Sap* a Wall, &c. is to dig or open a Hole in the Ground at the Foot of a Wall, &c. to bring it down all at once for want of Support. To *Sap*, according to *Daviler*, is to undermine a Work with Hammers, Clubs, Pickaxes, Mattocks, &c. viz. A Bank, or Hillock, by propping it up, digging underneath it, and then burning the Props, or Stays; or a Rock, by digging a Mine underneath it. To demolish the thick, firm Walls of old Castles, &c. *Sapping* is much the readiest Way. See **SAPPING**.

**SAPHENA**, in Anatomy, a Vein which arising over the *Malleolus Internus*, up along the Leg, and the inner Part of the Thigh, discharges it self, near the Groin, into the Crural Vein. 'Tis the Vein they usually open when they bleed in the Foot. It has its Name, probably, from *σαφης* manifestus, as lying plain in Sight.

**SAPHETA**, in Architecture, is the Board over the Top of a Window, placed parallel and opposite to the Window-Board at the Bottom.

**SAPHIC**, in Poetry, a kind of Verse much used by the Greeks, and Latins; denominated from the Inventress *Sappho*. The *Saphic* Verse consists of Eleven Syllables, or Five Feet, whereof the First, Fourth, and Fifth, are Trochees, the Second a Spondee, and the Third a Dactyl, as in

*Integer Vita scelerisq; purus.*

Three Verses of this Kind, closed with an Adonick Verse, consisting of a Dactyl and Spondee, usually make a Strophe. Though we have some Chorus's in the Ancient Tragic Poets, containing a much greater Number of *Saphicks* successively. They generally run rough, unless they have a Cæsure after the Second Foot.

**SAPIENTAL**, an Epithet applied to certain Books of Scripture, calculated for our Instruction and Improvement in Prudence, or Moral Wisdom; thus called, in Contra-distinction to *Historical* and *Prophetical* Books. The *Sapiental* Books are *Proverbs*, *Canticles*, *Ecclesiastes*, *Ecclesiasticus* the *Psalms*, and *Job*; though some reckon this last among the *Historical* Books.

**SAPIENTIAE DENTES**, Teeth, thus called because they appear not till Persons are grown. See **TEETH**.

**SAPPHIRE**, or *Saphir*, a precious Stone of a beautiful Azure, or Sky-blue Colour. The *Saphir* is transparent, yet exceedingly hard, so as scarce to bear being Engraven. Different Colours constitute different Kinds thereof; the deepest Blues being esteemed *Males*, and the whitest *Females*. The *Saphirs* of *Pegu* are the most esteem'd. They are found in the same Mines with the Rubies. There are some also brought from the Kingdom of *Calecut*, *Cananor*, and *Ceylon*; from which last Place we should be furnished with abundance, if the King of the Island did not prohibit all Commerce thereof with Foreigners. The soft *Water-Saphirs* of *Bohemia* and *Silesia* are of some Account, though far inferior to the Oriental ones. Many People value the *Saphir* beyond the Ruby and give it the second Place among precious Stones, viz. that next the Diamond: Others give that Place to the Ruby. Some Authors affirm, That a *Saphir* being heated to a certain Degree, between two Crucibles luted together, loses all its Colour, and becomes perfectly White; so as to deceive even the Jewellers themselves, and make it pass for a Diamond.

The Chymists make several Preparations of *Saphir*; as a Salt, a Tincture, an Essence, a Water, an Oil, &c. and there are few Diseases but they pretend themselves able to cure by Remedies compos'd thereof. The Superstitious attribute still more strange Virtues to it; as, that it grows foul, and loses its Beauty, when wore by a Person that is lecherous, &c. The Rabbins hold, That *Moses's* Rod, and the Tables he received on Mount *Sinai*, were of *Saphir*. The Word is derived hence, that in the *Hebrew* the finest Things are all called *Saphirs*; whence, in Scripture, the Throne of God is said to resemble a *Saphir*.

Our Druggists sell two Kinds of *Saphirs* used in the Confection of Hyacinth: The one red, the other blackish. The last, by reason of the deep Tincture they give that Medicine, are very improperly used there: The former are little reddish Stones, of the Size of Pins-heads, very hard, and difficult to pulverize.

There is a particular Kind of *Saphir*, called, by the Latins, *Oculus Felis*, *Cats-Eye*, remarkable for a fine Diversity of Colours, as well as for its Hardness, which bears a Polish equal with that of the true *Saphir*.

**SAPHIR-RUBIES** are certain precious Stones, between blue and red, which, in effect, are nothing but Rubies, whose Colour is not yet perfectly form'd. See **RUBY**.

**SAPPING**, in War, a Working under Ground, to gain the Descent of a Ditch, Counterscarp, &c. and the Attacking of a Place. 'Tis performed by digging a deep Trench, descending by Steps from Top to Bottom, under a Corridor, carrying it as far as the Bottom of the Ditch, when that is dry, or the Surface of the Water when wet. When the Cover'd-way is well defended by Musketeers, the Besiegers make their Way down into it by *Sapping*. When they are got near the Foot of the Glacis, the Trench is carried on directly forwards; the Workmen covering themselves with Blinds, Wool packs, Sand-bags, and Mantelets upon Wheels. They also make Epaulements, or Traverses, on each Side to lodge a good Body of Men: The *Sap* is made five or six Fathoms from the Salient Angle of the Glacis, where the Men are only covered side-ways, wherefore they lay Planks overhead with Hurdles, and Earth above them. When they have forced the Enemy to quit the Covered-way, the Pioneers immediately make a Lodgment, and cover themselves



themselves as well as they can, from the Fire of the opposite Bastion.

**SARABAIT**, a Name anciently given to vagabond Monks. *St. Benedict* gives a frightful Idea of these *Sarabaites* in the First Chapter of his Rule. *Cassian* does not speak a whit more favourably of them in his Fourteenth Conference; nor *S. Jerom* in his Letter to *Eustochius*. *Cassian* calls them, *Renuitæ*, quia jugum regularis discipline renuunt. The Word *Sarabaitæ* is derived from the Hebrew סרעב *Sareb*, to be a Rebel.

**SARABAND**, a Musical Composition in Triple Time; being, in reality, no more than a Minuet, whose Motions are slow, and serious. *Saraband* is also a Dance to the same Measure, usually terminating when the Hand rises, whereby 'tis distinguished from the Courant, which Ends when the Hand that beats Time, falls. The *Saraband* is said to be derived originally from the *Sarazens*, as well as the *Chaconne*: It had its Name, according to some Authors, from a Comedian called *Sarabande*, who first danc'd it in *France*. Others derive it from the Spanish *Sarao* Ball: 'Tis usually danced to the Sound of the Guitarre, or Castanettes.

**SARCASM**, in Rhetorick, a keen, bitter Irony, whereby the Orator scoffs and insults his Adversary. Such was that of the *Jews* to our Saviour: *Thou who destroyest the Temple, and raisest it in three Days, save thy self*; &c. and again, *He saved others, himself he cannot save*. Or that of *Tamius* to a *Trojan* slain by him in *Virgil*.

*En agros, & quam bello, Trojane, petisti  
Hesperiam metere jacens. Hec præmia qui me  
Ferro ausi tentare ferunt: Sic Menia condunt.*

**SARCOCELE**, in Medicine, a fleshy Excrecence, very hard, yet indolent, rising up by little and little about the Testicle, or on the inner Membrane of the *Scrotum*. Sometimes indeed it is painful, in which Case there is Danger of its degenerating into a Cancer: It usually owes its Origine to some external Cause, as a Blow, a Bruise, or Contusion. Such Accidents occasion the nutritious Juices to stop, and to be collected in great Quantities in the relaxed or compressed Pores of those Parts, by which Means is form'd that kind of Flesh called *Sarcocele*. 'Tis a very troublesome and obstinate Disease, and is frequently incurable by any other Means than cutting off the Testicle. The Word is formed from the Greek σαρξ *Caro*, Flesh, and χόλιον *Tumor*.

**SARCOCOLLA**, a Gum oozing out of a thorny Tree, either with or without Incisions. Neither Authors nor Merchants are agreed as to the Place where it grows: Some say 'tis in *Persia*, others, in *Arabia Deserta*. It comes either in Grains, or in Tears of different Colours; sometimes White, sometimes Yellow, and sometimes Red, but all equally good, provided they be very dry. Their Taste is bitter, accompanied with somewhat of a disagreeable Sweetness. 'Tis esteemed warm and drying; very good to consolidate and heal Wounds, whence its Name, which is from the Greek, σαρξ *Flesh*, and κόλλα *Glue*. 'Tis sometimes also used in Collyria to stop Defluxions, and take off Specks on the Eye.

**SARCOLOGY**, in Anatomy, a Discourse on the Flesh, or the soft Parts of the Human Body. Anatomy is divided into Two principal Parts; Osteology and *Sarcology*. The first whereof treats of the Bones and Cartilages; the second of the Flesh and soft Parts. See *FLESH*.

**SARCOMA**, in Medicine, a fleshy Excrecence arising from the proper Nutriment of the Part where it grows, without any Defluxion, or Discharge of Humours from other Parts. If the Flesh be not repress'd and kept under, it frequently produces Pipes like Veins and Arteries, whereby it receives Nourishment, as we see in Wens. It yields a very fetid Sanies, and arises chiefly about the Fundament, the Neck of the Womb, Fractures of the Cranium, &c. The *Latins* call it *Fungus*.

**SARCOMPHALUM**, in Medicine, &c. a fleshy Excrecence of the Navel, from the Greek σαρξ *Flesh*, and φυμαλόν *Navel*.

**SARCOPHAGUS**, or *Sarcophagum*, in Antiquity, a Tomb-stone, wherein the Antients laid those they had not a mind to burn: The Word, derived from the Greek, literally signifies, one that eats Flesh; because at first, they used a Sort of Stones for the making of Tombs, which quickly consumed the Bodies: The Quarries from whence they dug them were in a City of *Troas*, named *Assum*: They had the Virtue to waste away a Body to nothing, save the Teeth, in Forty Days: This Stone resembled a Reddish Pumice Stone, and had a saltish Taste; they made Vessels of it to cure the Gout, into which they put their Feet, not suffering them to continue there too long.

**SARCOTICKS**, in Medicine, Remedies proper to fill up Wounds and Ulcers with new Flesh; the same

as *Incarnatives*. *Sarcoticks* should be deterfive and moderately hot. Such are *Sarcocolla*, *Dragon's-Blood*, *Incense*, &c. The Word is form'd from the Greek σαρξ *Flesh*.

**SARDOIN**, or *Sardonian-Stone*, a precious Stone of a Blood Colour, half transparent; the same with what we otherwise call a *Cornelian*. See *CORNELIAN*. The most beautiful *Sardoins*, are those brought from about *Babylon*: Those of *Sardinia*, whence they take their Name, are in the second Class. There are others, and those no contemptible ones, found near *St. Mauro* in *Albania*; and other, very small ones, about the *Rhine*, in *Bohemia*, *Silesia*, &c. To give them the greater Lustre, 'tis usual in setting them, to lay Silver-leaf underneath. The *Sardoin* is most used for Seals, as graving easily, yet taking a fine Polish. The Author of the Book falsely ascribed to *Albertus Magnus*, attributes several wonderful Virtues to this Stone. See *AGATE*.

**SARDONIAN LAUGHTER**. See *Risus Sardonius*.

**SARDONYX**, a precious Stone, partaking partly of the *Sardoin*, and partly of the *Agate* or *Onyx*. 'Tis reddish, bordering on White, like the Nail of the Hand. In some, the Red inclines to a Yellow. 'Tis brought from the *East Indies*, *Arabia*, and *Bohemia*. It was anciently much used for fine Vessels. See *AGATE* and *SARDON*.

**SARPLAR OF WOOL**, otherwise called a *Picket*, is half a *Sack*. See *SACK*. In *Scotland*, it is called *Serpliathe*.

**SARRASIN**, in Fortification, is a Kind of Portcullice; otherwise called an *Herse*, which is hung with a Cord over the Gate of a Town, or Fortress, and let fall in Case of a Surprise.

**SARSAPARILLA**, or *Salsaparilla*, a Medicinal Plant; growing in *New Spain*, *Peru*, and the *East Indies*. Its chief Use is in Decoctions and Potions in the Venereal Disease, being esteemed a great Observant and Sweetner; and, on that Score, sometimes used as a Tea. Its Root, which is the Part in Use, divides its self into a great Number of Filaments, Six or Seven Foot long; of the Thickness of a Quill. 'Tis Grey without Side, and White within, only mark'd with Two Red Streaks. Its Branches creep on the Earth, or along the Trunks of other Trees, &c. as the Ivy does. To be good, it must be very dry, its Filaments long, easy to cleave; and, in cleaving, must not yield any Dust: When boiled in Water, it must give it a Red Tincture. Some of the Modern Physicians doubt the Medicinal Virtue of this Root, as it does not discover much, either in Taste, Smell or Tincture. There is another Kind, the Filaments of whose Root are thicker, growing in the Island *Maregnan*, on the Coast of *Brazil*. This is not esteemed so good as the former. There is a third Kind brought from *Muscovy*, the Roots whereof are still bigger, but good for nothing but to burn.

**SARTORIUS**, in Anatomy, the *Taylor's Muscle*, a Muscle thus called, because serving to throw one Leg across the other. 'Tis also called *Popliteus*. See *POPLITEUS*.

**SASSAFRAS** or *Sassafras*, a Yellow odoriferous Wood, of a brisk aromatic Scent, somewhat resembling Fennel. 'Tis the Wood of a Tree growing in *Florida*, whereof there are whole Forests. The Natives call it *Pavama*, the *Spaniards* and *French* also, *Cinnamon-Wood*; because, at the Conquest of that Country, under *Ferdinand Soto*, in 1558, they imagined this to have been the true *Cinnamon* Tree. The Wood of *Sassafras*, chiefly its Bark, wherein its principal Virtue is supposed to reside, was formerly sold at an incredible Price, to be used with *Sarsaparilla* and *Esquilina*, in the Cure of the Venereal Disease. 'Tis very drying and hot, tho' not quite so much as the *Guaiacum*: It is somewhat come into Fashion in Families, as the common Tea, which the Shavings of it make agreeably enough; but the Scandal of being good in Venereal Cases, is a Detriment to it, and prevents a deal of Good being done by it: Indeed, with some, it doth not agree, especially at first, and in a Morning, as it affects the Head, like some Perfumes, and occasions Pains, Drowsiness and Vapours: But Use, and drinking it, in the Beginning, in the Afternoon, will, with most Constitutions, wear out these Inconveniencies. 'Tis esteemed in the Gout, Sciatica, and Green Sickness, Chuse that covered with a thick Bark, reddish, and rough, of a sharp Taste, and a strong aromatic Smell.

**SASSE**, in some of our Statutes, is a Kind of *Wear* with Flood-gates, commonly in Navigable Rivers for the damming and loosing the Stream of Water, as Occasion requires, for the better passing of Boats and Barges to and from. This, in the West of *England*, is called a *Lock*; in the River *Lee*, a *Turn-pike*, and in other Places a *Sluice*.



**SATELLIT Guard**, a Person attending on another, either for his Safety, or to be ready to execute his Pleasure. Among the *Eastern* Emperors, *Satellite* express'd the Dignity or Office of Captain of the Life-Guard. The Term was afterwards used for the Vassals of Lords, and afterwards for such as held Fees, called **SERGEANTIES**: Which see.

**SATELLITES**, in Astronomy, certain secondary Planets, moving round the other Planets, as the *Moon* does round the *Earth*; thus called, because always found attending them from Rising to Setting, and making the Tour of the Sun together with them. See **PLANET**.

The *Satellites* move round their primary Planets, as their Centres, by the same Laws as those primary ones do round their Centre, the Sun. For the Physical Cause of their Motions, see **GRAVITY**; see also **SYSTEM**.

The Words *Moon* and *Satellit*, are sometimes used indifferently; and thus we say, either *Jupiter's Moons*, or *Jupiter's Satellites*: But ordinarily we distinguish, restraining the Term *Moon* to the *Earth's Satellit*; and *Satellit* to the little *Moons* lately discovered about *Jupiter* and *Saturn*. See **MOON**.

The *Satellites* were unknown till our Time, as needing the Assistance of the Telescope to render them visible. We don't know of any *Satellites*, besides those just mentioned; nor is there any great Foundation to hope that more shall be discovered hereafter, as the longest, and the most exquisite Telescopes have already been applied.

**SATELLITES** of *Jupiter* are Four little secondary Planets, performing their Revolutions about *Jupiter*, as that Planet does round about the Sun. See **JUPITER**. *Simon Marius*, Mathematician of the Elector of *Brandenburg*, about the End of *November* in 1609, discerned Three little Stars moving round *Jupiter's* Body, and proceeding along with him; and in *January* 1610, found a Fourth. In *January* 1610, *Gallileo* observed the same in *Italy*; and the same Year published his Observations; from which time commenced the Observation of the *Circumjovial Satellites*. *Gallileo*, in Honour of his Patron, first called them *Astra Medicea*, *Medicean Stars*. *Marius*, the first Discoverer, called that next *Jupiter*, *Mercurius Jovialis*, *Jupiter's Mercury*. The second, *Venus Jovialis*, *Jupiter's Venus*; the third *Jupiter Jovialis*, and the fourth *Saturnus Jovialis*, *Jupiter's Saturn*.

Indeed, *Anthony Maria Schyrleus de Rheita*, a Capuchin of *Cologne*, imagined, That, besides the Four known *Satellites* of *Jupiter*, he had discovered Five more, the 29th of *December*, Anno 1642, and in Honour of *Urban VIII*, the Pope then reigning, denominated them *Sidera Urbainotaviana*. But upon *Nauda's* communicating the Observation to *Gassendus*, who had observed *Jupiter* on the same Day, he soon perceived that the Monk had mistaken Five fixed Stars, in the pouring out of the Water of *Aquarius*, mark'd in *Tycho's* Catalogue 24, 25, 26, 27 and 28, for *Satellites* of *Jupiter*: Whence 'tis no Wonder they should appear to the Discoverer to move a contrary Way to that of the rest, viz. from West to East. See *Epist. Gassend. ad Gab. Naud. de Novem Stellis. circa Jovem visis*.

#### Phænomena, Nature, Properties, &c. of Jupiter's SATELLITES.

1°. The *Satellites* of *Jupiter* all disappear in a clear Sky, when *Jupiter* interposes between them and the Sun; that is, are eclipsed by him.

Hence it follows, That they are destitute of Light, when the Sun's Rays, which are propagated in right Lines, are intercepted by *Jupiter*: And hence it follows, That they are opaque Bodies like our Moon, and are illumined by the Sun. And hence, since *Jupiter* does not illumine his *Satellites* when placed behind him; he himself, in that Side opposite to the Sun, is destitute of all Light.

2°. When the *Satellites* are interposed between *Jupiter* and the Sun, a round Macula or Spot is observed in *Jupiter's* Disk; which is sometimes found bigger even than the *Satellit* it self.

Hence, since the *Satellites* are opaque Bodies, and are illumined by the Sun, and must therefore project a Shadow, opposite to the Sun; the round Spots seen in *Jupiter*, are the Shadows of the *Satellites*. Hence also, since the Intersection of the Shadow is a Circle, the Shadow it self is Conical: And hence it follows, That the Figure of the *Satellites*, at least, as to Sense, is Spherical.

3°. If, when the *Earth* is between *Jupiter* and the Sun, any of the *Satellites* happen to be between the same, its Light disappears, and is lost in *Jupiter's* Light. Thus *M. Maraldi* tells us, That on the 26th of *March* 1707, thro' a Telescope of Thirty Four Foot, he observed the

Fourth of *Jupiter's* Moons passing over his Body, in Form of a dark Spot; but it had no sooner got off of the Disk, than it resumed its usual Brightness. A like Spot he observed on the 4th of *April*, from an Immersion of the third *Satellit*; but, on the 11th of *April*, upon watching an Immersion of the same *Satellit*, he found it appeared wholly, without leaving any Spot at all. The same Phænomenon was also observ'd at other Times by *M. Cassini*: And both *Cassini* and *Maraldi*, have frequently observed very surprizing Changes in the apparent Magnitudes of the *Satellites*, when there was nothing in their Distance, either from *Earth*, the Sun, or *Jupiter*, to occasion such Variations. E. gr. The fourth *Satellit*, which is frequently the least of all, sometimes appears the biggest: And the third, which is ordinarily the biggest, sometimes only appears equal, and sometimes less, than any of the rest.

Hence, since *Jupiter's Satellites* are illumined by the Sun, even when immersed in the Light of *Jupiter*, and yet, notwithstanding this, sometimes appear dark, and sometimes disappear; there must be some Changes in their Atmospheres, to prevent the equable Reflection of the Sun's Rays, from the several Parts of the Atmosphere. To the same Cause 'tis owing that their Shadows are sometimes seen bigger than themselves.

#### Periodical Times of the SATELLITES of Jupiter.

The Periods, or Revolutions of the *Satellites*, are found from their Conjunctions with *Jupiter*, after the same Manner as those of the primary Planets are found from their Oppositions to the Sun. See **PERIOD**, &c.

Note, By this Method *Cassini* determined the Periods of

|                    |       |          |         |         |
|--------------------|-------|----------|---------|---------|
| The First Satellit | 1 Day | 18 Hours | 28 Min. | 36 Sec. |
| Second Satellit    | 3     | 13       | 18      | 52      |
| Third Satellit     | 7     | 3        | 59      | 40      |
| Fourth Satellit    | 16    | 18       | 05      | 06      |

#### Distances of Jupiter's SATELLITES from Jupiter.

As in the primary Planets, with regard to the Sun, so in the *Satellites*, with regard to their Primaries, the Squares of the Periodical Times, are in a Triplicate Ratio of their Distances therefrom. To determine the Distance by Observation, they measure them with a Micrometer, in Semi-Diameters of *Jupiter*. These Distances, according to *Cassini*, are as follow.

|   |                           |
|---|---------------------------|
| The First Satellit distant from Jupiter's Center, | 5 and two 3ds. Semi-diam. |
| The Second Satellit                               | 9 Semi-diam.              |
| The Third Satellit                                | 14                        |
| The Fourth Satellit                               | 25 and one 3d.            |

Hence, as the Semi-diameter of *Jupiter* is equal to 27 8 11ths Semi-diameters of the *Earth*, the Distance of the first *Satellit* from the Centre of *Saturn* is 166 Semi-diameters of the *Earth*: That of the second 149 and a Half. That of the third 388; and that of the fourth 884.

Eclipses of Jupiter's SATELLITES. See **ECLIPSE**.

**SATELLITES** of *Saturn*, are Five little Stars revolving about *Saturn*. See **SATURN**. The first was discovered by *M. Huygens*, Anno 1655, March the 25th, by means of a Telescope Twelve Foot long. The other Four, at different Times, by *M. Cassini*, viz. Those Two next *Saturn*, in *March* 1684, by Help of *Campani's* Glasses, of One Hundred, and One Hundred and Thirty-six Foot long. The third in *December* 1672, by a Telescope of *Campani's*, of Thirty-five Foot; and the fifth (that of *Huygens* being the fourth) in *October* 1671, by a Telescope of Seventeen Foot.

Most, perhaps all, of the Phænomena observed of *Jupiter's Satellites*, are also found exhibited by those of *Saturn*: Thus, they are found sometimes bigger, and sometimes less: The fifth is sometimes, also, found eclipsed, &c. And hence, there is no doubt, but they are of the same Nature, &c. See **SATELLITES** of *Jupiter*.

The Periodical Times of the SATELLITES of Saturn, according to *M. Cassini*, are as follow.

#### That of the

|                 |       |          |         |            |
|-----------------|-------|----------|---------|------------|
| First Satellit  | 1 Day | 21 Hours | 18 Min. | 31 Seconds |
| Second Satellit | 2     | 17       | 41      | 27         |
| Third Satellit  | 4     | 13       | 47      | 16         |
| Fourth Satellit | 15    | 22       | 41      | 11         |
| Fifth Satellit  | 74    | 7        | 53      | 51         |



The Distances of Saturn's SATELLITES from his Centre, according to the same M. Cassini, are as follow.

|                 |          |                            |                                  |                              |
|-----------------|----------|----------------------------|----------------------------------|------------------------------|
| First Satellit  | 4 3 8ths | } Semi-diam. of Saturn, or | } { 1 1 4th<br>1 2 3ds<br>4<br>5 | } Diameter of Saturn's Ring. |
| Second Satellit | 5 3 5ths |                            |                                  |                              |
| Third Satellit  | 8        |                            |                                  |                              |
| Fourth Satellit | 18       |                            |                                  |                              |
| Fifth Satellit  | 54       |                            |                                  |                              |

The great Distance between the fourth and fifth Satellit, gave Occasion to Huygens to suspect that there might be some intermediate one; or else, that the fifth might have some other Satellit moving round it, as its Centre.

Dr. Halley, in the *Philosophical Transactions*, gives us a Correction of the Theory of the Motion of the fourth or *Huygenian Satellit*. Its true Period he makes 15 Days, 22 Hours, 41 Minutes, 6 Seconds. Its diurnal Motion,  $22^{\circ} 34' 38'' 18'''$ . Its Distance from the Centre of Saturn, 4 Diam. of the Ring; and its Orbit to be little or nothing distant from that of the Ring, intersecting the Orbit of Saturn under an Angle of  $23 \frac{1}{2}$  Degrees.

SATIR. See SATYR.

SATIRE. See SATYRA.

SATRAPA, or *Satrapes*, in Antiquity, the Governor of a Province among the ancient Persians. King Darius usually walked attended by his principal Lords, and *Satrapes*. *Q. Curtius*. The Kingdom was divided into *Satrapies*, or Jurisdictions of *Satrape*. The Word is originally Persian, signifying, strictly, *Admiral* or *Commander* of a Naval Army, but was afterwards used indifferently for all Governors of Provinces; in which Sense it was borrowed by the Greeks, who used *ουρπαρνος* in the same Signification. We also find the Word used in some ancient English Charters of King *Erkelred*, where the Lords, who sign next after the Dukes, take the Title of *Satrapes* of the King. *Du Cange* takes the Word here to signify *Ministers* of the King.

SATTIN, or *Satten*, a kind of Silken Stuff very smooth, and shining, the Warp whereof is very fine, and stands out; the Woof coarser, and hid underneath: Whence it is it receives that Gloss, which is its Beauty, and which gives it its Price. There are *Sattins* quite plain, others wrought; some flowered with Gold, or Silk, others striped, &c. All the Changes in the Fashions of *Sattins* are made by adding new Warps or Woofs.

The finest *Sattins* are those of Florence and Genoa; yet, the French will not allow those of Lyons any thing inferior thereto. — The *Sattins* of Bruges have their Warp of Silk, and their Woof of Thread. — *Indian Sattins*, or *Sattins* of China, are Silken Stuffs, much like those manufactured in Europe. Of these, some are plain, either white, or of other Colours, others worked, either with Gold, or Silk, flowered, damasked, striped, &c. They are mostly valued, because of their Cleaning, and Bleaching easily, without losing any thing of their Lustre. In other Respects they are inferior to those of Europe. *F. le Compté* observes, That the Chinese prepare their *Sattins* in Oil, to give them the greater Lustre; but this makes the Dust liable to hang to them. *Menage* derives the Word from the Latin *Seta*, as who should say, *Setinam*, or from the Hebrew *Sadin*, signifying the same thing; or from the old French *Sade* and *Sadinet*, handsome, gentle.

SATTINET, or SATTINADE, a very slight, thin Sattin, chiefly used by the Ladies for Summer Nightgowns, &c. and ordinarily striped. The Word is a Diminutive of *Satten*.

SATURANTIA, is sometimes used in the same Sense as *Absorbent*: Which see.

SATURDAY-STOP, a Space of Time, in which of old it was not lawful to take *Salmons*, in the North, viz. From Even song on Saturday, till Sun-rising on Monday.

SATURN, in Astronomy, one of the primary Planets, being the furthest from the Earth, and the Sun, and that whose Motion is the slowest: Thus characteriz'd. It shines but with a feeble Light, by reason of its Distance, on which Account, though the biggest of all the Planets, it appears the least. See PLANET.

The Period of Saturn, or the Space of Time where in he revolves round the Sun, which makes his Year, according to Kepler, is 29 Years, 174 Days, 4 Hours, 58 Minutes, 25 Seconds, and 30 Thirds, whence his Diurnal Motion must be 2 Minutes, 0 Seconds, 36 Thirds. Tho' *de la Hire* makes his Diurnal Motion 2 Minutes 1 Second. See REVOLUTION. The Inclination of his Plane to that of the Ecliptick, Kepler makes  $2^{\circ} 32'$ , *De la Hire*,  $2^{\circ} 33'$ . See INCLINATION. Its mean Distance from the Sun is 326925 Semi-diameters of the Earth; and from the Earth 210000 of the same: See

DISTANCE. Its smallest Diameter, according to Huygens, is 30 Seconds. The Proportion of its Diameter to that of the Earth, as 20 to 1; of its Surface to that of the Earth, as 400 to 1; of its Solidity to that of the Earth, as 1 to 8000. See DIAMETER. Dr. Halley observes, in the Preface to his Catalogue of the Southern Stars, That he has found Saturn to have a slower Motion than is assigned him in the Tables: This Irregularity, we may hope, is abundantly rectified in his own Tables now in the Press. 'Tis doubted whether or no Saturn, like the other Planets, revolves on his Axis: It does not appear from any Astronomical Observations that he does; and there is one Circumstance that should seem to argue the contrary, viz. That whereas the Earth, and other Planets, which we know do revolve on their Axes, have their Equatorial Diameter greater than their Polar, nothing like this is observed in Saturn. See EARTH.

The Distance of Saturn from the Sun being ten times greater than that of the Earth from the same, tis found, that the apparent Diameter of the Sun seen from him, will not exceed 3 Minutes, which is but little more than twice the Diameter of Venus. The Sun's Disk, therefore, to an Inhabitant of Saturn, will appear 100 times less than it does to us, and both its Light and Heat be diminished in the same Proportion. See SUN.

The Phases of Saturn are very various and extraordinary, and long perplexed the Astronomers, who could not divine the Meaning of such Irregularity: Thus *Hevelius* observed him to be sometimes Monospherical, sometimes Trispherical, Spherico-ansated, Elliptico-ansated, and Spherico-cuspidated. But Huygens plainly shews, That all these monstrous Appearances are owing to the Imperfection of the Telescopes that Author had used. Huygens, upon observing him very attentively with much better Glasses, reduced all his Phases to three Principal ones, viz. Round, Brachiated, and Ansated. See PHASES.

One Thing Saturn has peculiar to himself, viz. A Ring which surrounds his middle like an Arch, or like the Horizon of a Globe, without touching him any where; the Diameter thereof more than double that of the Planet which it surrounds; The former containing 45 Diameters of the Earth, the latter only 20. When raised enough to be out of the Shadow of the Body of Saturn, it reflects the Light of the Sun very strongly. The Thickness of the Ring, Dr. Keill observes, takes up one half of the Space between its outer or convex Surface, and the Surface of the Planet. This Ring is found to be an opaque, solid, but smooth, and even Body. 'Twas Galileo first discovered that the Figure of Saturn was not round; But 'twas Huygens first found that its Inequality was in Form of a Ring; the Discovery of which he published in 1659, in his *Systema Saturnianum*. 'Tis doubted whether or no the Ring revolves round the Planet: Its Use and Design are still a Mystery. For its Phenomena, &c. see RING.

Saturn performs his Course round the Sun, attended with five Satellites, or Secondary Planets; the Periods, Distances, &c. whereof, see under SATELLITES.

SATURN, in Chymistry, signifies Lead, in regard that Metal is supposed to lie immediately under the Influence of this Planet. See LEAD; Where the several Preparations thereof are described.

SATURN, in Heraldry, the Black Colour in the Coats of Arms of Sovereign Princes: answering to Diamond in the Coats of Noblemen; and Sable in those of Gentlemen. See SABLE.

SATURNALIA, in Antiquity, Feasts celebrated among the Romans, in Honour of the God Saturn: They held three Days, beginning on the 16th, others say, the 17th, and others the 18th Day of December. During the Solemnity the Slaves were reputed Masters; they were allowed to say any thing; and, in fine, were served at Table by the Masters themselves. Every thing run into Debauchery and Dissoluteness, and nothing was heard or seen in the City of Rome, but the Din, Rior, and Disorder, of a People wholly abandoned to Joy and Pleasure. M. Dacier observes, That the Saturnalia were not only celebrated in Honour of Saturn, but also to keep up the Remembrance of the Golden Age, when all the World was on a Level. 'Twas a Piece of Religion not to begin any War, or execute any Criminal during this Feast. The Saturnalia were not only held at Rome, but also in Greece; and were, in reality, much older than Rome it self. Some ascribe their Institution to the Pelasgi, who were cast upon the Island of Delos; others to Hercules, and others to Janus. *Goropius Becanus* makes Noah the Author of them. *Orig. lib. 4.* That Patriarch, he tells us, in the Ark, instituted a Feast to be held in the Tenth Month, in Memory of this, That in that Month, the Tops of the Mountains began to appear above the Water; and this he makes the Origine of the Saturnalia: But 'tis very



very probable the Year then begun in *Autumn*, and of consequence *December* could not be the Tenth Month. *Vossius* goes still higher, and will have it, that the *Saturn*, in Honour of whom this Feast was instituted, was *Adam*.

**SATURNINE**, a Term applied to Persons of dark, full, melancholic Complexions; as being supposed under the Predominancy of *Saturn*, or at whole Births *Saturn* was the Ascendant.

**SATURNINIANS**, or *Saturnilians*, a Sect of ancient *Gnosticks*, thus called from their Chief *Saturnil* or *Saturnin*, a Disciple of *Menander*, a famous *Gnostic*. *Saturnil* taught the same Errors with his Master, in *Syria*. See **MENANDRIANS**.

**SATYR**, in the Heathen Theology, a fabulous Demi-God, who with the *Fauns*, and *Sylvans*, presided over Groves, and Forests, under the Direction of *Pan*. The *Satyrs* were painted half Men, half Goats. The upper Part was Human, excepting for Horns on the Head: The lower Brutal, with the Tail and Legs of a Goat: The Whole cover'd with Hair. The Word is usually derived from *Sathin*, which, in the antient *Greek*, signified the virile Member; these Deities being supposed much addicted to Lasciviousness.

The Poets usually confound the *Satyrs*, *Sylvans*, *Fauns*, and *Panes*: See each under its proper Article. *Nannus* in his *Dionysiacs*, makes the *Satyrs* the Offspring of *Mercury*, and a Doric Nymph, call'd *Iphitime*, and gives us the Names of several, viz. *Peminius*, *Thyefus*, *Hypsicoborus*, *Oristas*, *Apens*, *Phlegraus*, *Lycon*, &c. *Memnon*, in his Book against the Tyrants of *Heraclea*, derives the *Satyrs* from *Bacchus*, and a *Naiad*, called *Nicea*.

**SATYRA**, or rather *Satira*, a Satyr: It is a Word that signifies all manner of Discourse, wherein any Person is reprehended. But a *Satyr* is commonly meant of a Poem, that wittily reproves Men's Vices: *Casaubon* makes a Distinction between the Satyrical Poetry of the *Greeks*, and the *Satyr* of the *Romans*, which was peculiar to themselves only, and this is justified by *Quintilian*, l. 1. c. 10. *Satira quidem tota nostra est*, for which Reason *Horace* call's it, *Græcis intactum Carmen*; a sort of Poetry unknown to the *Greeks*: See *Casaubon* on the Word. A *Satyr* ought to be lively, pleasant, moral, and full of Variety, wherein *Juvenal* and *Horace* excelled, though their *Satyrs* ought to be read with Caution.

**SATYRION**, a Root called by this Name, because of its fancied Promotion of Lust: *Dioscorides* distinguisheth this from the *Orchis*, but Mr. *Dale* ranks it under that Tribe. It passeth for a great Cordial and Restorer; but its Shape, resembling an Human *Penis*, seems to be the only Foundation for the Whimsy of making it a Provoker to Venerly, and to forward Conception.

**SAVAGES**, or *Salvages*, wild, barbarous People, without any fix'd Habitation, Religion, Law or Policy: A great Part of *America* is peopled with *Savages*. Many, some say most, of the *Savages* are *Anthropophagi*. The Word is form'd from the *Italian Salvagio*, of *Salveticus* or *Silvaticus*, which we find us'd in the barbarous *Latin* for *Silvestris*.

**SAUCISSON**, in Fortification, a kind of Faggot made of thick Branches of Trees, or of the Trunks of Shrubs bound together; the Use whereof is to cover the Men, and to serve as Epaulements. It differs from a *Fascine*, which is only made of the small Branches, and by its being bound at both Ends, and in the Middle. Anciently they made it 46 Foot long, and 15 Foot thick; since, 'tis usually 23 Foot long, and 12 thick; bound strongly together with three Bands furnish'd with Iron. The Word is *French*, and signifies literally, a big Sausage.

**SAVER-DE-FAULT**, in Law, to excuse a Fault; which is properly when a Man having made Default in Court, comes afterwards, and alledges good Cause why he did it; as Imprisonment at the Time, or the like.

**SAVIOUR**. Order of *St. Saviour*, is a religious Order founded by *St. Bridget*, about the Year 1344, thus called from an Opinion, that Christ himself, the *Saviour of the World*, prescribed the Rules and Constitutions thereof. They are also called, from their Foundress, *Bridgettines*. Their Origine was thus: *Wilphon* Prince of *Nevicia*, to whom *St. Bridget* had been married, being dead at *Arras*, in his Return from *Galicia*, the Widow thought of nothing but devoting herself to a religious Life, and accordingly, soon after, built the Monastery of *Western* in the Diocese of *Lincopen* in *Sweden*, where she entred herself. By the Constitutions of this Order, 'tis to be principally appointed for Women, who are to pay a particular Honour and Service to the Virgin. The Monks are only to afford them the Spiritual Assurances they may need, to administer them the Sacraments, &c. The Number of Nuns is fixed to Sixty in each Monastery,

and that of Monks to Thirteen, according to the Number of Apostles, whereof *St. Paul* makes the Thirteenth, Four of them were to be Deacons, to represent the Four Doctors of the Church, and Eight Converts; the whole Number making Seventy-two, the Number of the Disciples of our Saviour. Setting aside these Circumstances, and the Habit, this Order is under the Rule of *St. Augustine*. It was approved of by *Urban V.* and several succeeding Popes. In 1603, *Clement VIII.* made some Alterations in it, on account of the double Monasteries which then began to be built in *Flanders*, &c.

**SAVOR**. See **FAST**.

**SAUSAGE**, or *Saucidge*, a Term of some Significancy in Commerce. The *Sausage* is a popular Food prepared of some crude Meat, usually either Pork or Veal shred small, seasoned, and put up in a Skin, in manner of a Pudding. The most esteemed Confection of this Kind, is the *Bologna Sausage*, which is much thicker than the common one, and is made with most Success in some Cities in *Italy*, particularly *Bologna*, *Venice*, &c. whence great Quantities are exported to other Places. 'Tis made of raw Pork, well beaten in a Mortar, with a Quantity of Garlic, Pepper in the Grain, and other Spices. The *Italians* are furnish'd with a great Part of the Skins or Guts for their *Sausages* from *England*. The Quantities of that Commodity yearly exported, are greater than one would imagine. *Menage* derives the Word from *Salcicum*.

**SAUSAGE**, in War, a little long Linnen-Bag, in Form of a Gut, two Inches in Diameter, dipt in Pitch and Tar, and filled with Powder, having a slow Fusée fasten'd thereto, to serve as a Train to set Fire to Mines, Fougades, or Bomb-Chests, being made to reach into the Chamber of the Mine. Two of these *Sausages* are commonly applied to every Mine, to the End, that if one should fail, the other may take Effect. See **MINE**.

**SAUT**, in the Manage. See **SALTS**.

**SAW**, an Instrument serving to cleave, or divide into Pieces, divers solid Matters, as Wood, Stone, Marble, Ivory, &c. The *Saw* is one of the most useful Machines, in the Mechanic Arts, ever invented. The Fable, which is perhaps founded on some surer Tradition, attributes the Invention thereof to *Icarus*, who, vying with his Father *Dedalus*, enrich'd the rising Arts with several Discoveries. 'Tis added, he first contrived it on the Model of the Spine or Backbone of a flat Fish, such as the Soal. The *Saw* is made of Steel with Teeth, but those differently filed, and turned, according to the Use it is designed for. There are also Saws without Teeth, used in the sawing of Marbles and other Stones.

The best *Saws* are of Steel, ground bright and smooth; those of Iron are only Hammer-hardned: Hence, the first, besides their being stiffer, are likewise found smoother than the last. They are known to be well hammer'd by the stiff bending of the Blade; and well or evenly ground, by bending equally into a Bow. The Edge, wherein the Teeth are, is always thicker than the Back, in regard the Back is to follow the Edge. The Teeth are cut and sharpened by a Triangular File, first fixing the Blade of the *Saw* in a Whetting-block. When filed, the Teeth are to be set, that is, to be turned a-skew, or out of the right Line, to make the wider Kerf or Fissure, that the Back may follow the better: This is done by putting an Instrument, called a *Saw-verif*, between every other two Teeth, and giving it a little Wrench, which turns one of the Teeth a little towards you, and the other a little from you. The Teeth are always set ranker for coarse cheap Stuff, than for hard and fine, in regard the ranker the Tooth is set, the more Stuff is lost in the Kerf; and if the Stuff be hard, the greater the Labour of sawing it.

The Workmen who make the greatest Use of the *Saw*, are, The Sawyers, Carpenters, Joiners, Ebonists, Stone-Cutters, Carvers, Sculptors, &c. The Lapidaries too have their *Saw*, as well as the Workers in *Mosaick*, but these bear little Resemblance to the common *Saw*. See **LAPIDARY** and **MOsaICK** Work.

But of all Mechanicks, there are none have so many as the Joiners, nor so many different Kinds. The chief are as follow. The *Pit-Saw*, a large two-handed *Saw*, used to saw Timber in Pits. 'Tis set rank for coarse Stuff, so as to make a Kerf or Fissure of almost a Quarter of an Inch; but for finer Stuff, finer. The *Whip-Saw*, which is likewise two-handed, used to saw such large Pieces of Stuff as the *Hand-Saw* will not easily reach. The *Hand-Saw* is made for a single Man's Use. Of these are various Kinds; as, The *Bow*, or *Frame-Saw*, furnished with Cheeks; by the twisted Cord and Tongue in the Middle thereof, the upper Ends are occasionally drawn close together, and the lower set the further apart. The *Tenant-Saw*, which being very thin, has a Back to keep it from bending. The *Compass-Saw*, which



which is very small, and its Teeth, usually, not set; its Use is to cut a round, or any other Compass-Kerf: Hence, the Edge is made broad, and the Back thin, that it may have a Compass to turn in.

The Chirurgeons likewise use a *Saw*, to cut off Bones: 'Tis to be very small, and light, in order to be managed with the more Ease and Freedom. The Blade exceedingly fine, and the Teeth exquisitely sharpened, to make its Way more gently, and yet with more Expedition in Amputations of Legs, Arms, &c.

The *Saw* is also a Gardener's Instrument, used in the pruning of Trees, &c. 'Tis chiefly applied in the cutting of old, dry, and, consequently, hard Woods, whether Roots or Branches, which might spoil the Pruning-Knife; and big Branches, &c. which the Knife could not well take off at one Stroke. Except on these Occasions, *Quinteney* will have us always use the Knife.

**SAWING**, the Application of the *Saw*, in the dividing of Timber, &c. into Boards, &c. See **SAW**. There are Wind-mills, and Water-mills, which do the Office of *Sawing* Wood, with infinitely more Expedition and Ease than 'tis done by the Hand: They consist of several parallel Saws, which rise and fall perpendicularly, by means of one of the grand Principles of Motion. But a very few Hands are here needed, viz. only to push along the Timber, which are laid on Rollers, or suspended by Ropes, in Proportion as the *Sawing* advances. These are frequently found abroad, and were lately begun to be introduced in *England*; but the Parliament, in Consideration of this, that they would spoil the Sawyers Trade, and ruin great Numbers of Families, thought fit to prohibit them.

*M. Felibien*, in his Principles of Architecture, &c. mentions a Kind of long *Saws*, invented by one *Misson* Inspector of the Marble Quarries in the *Pyreneans*, by means whereof Stones are sawed even in the Rock itself whence they are taken. He adds, That some of them are twenty-three Foot long, but does not describe either their Form or Application: He only says, They are of Iron, without Teeth.

**SAXIFRAGE**, a Medicinal Plant thus called from its supposed Virtue in dissolving the Stone in the Bladder, from the *Latin Saxum*, & *Frango*, I break. Its Leaves are almost round, indented, rat and shining, like those of Ivy. In the Middle of the Leaves rise Stalks, about a Foot high, which, at their Extremities, bear little white Flowers, consisting of five Leaves, disposed in Form of a Rose. Its Seed, which is very small, is inclosed in the *Capsula* of a roundish Pod. Its Root divides itself into several Fibres, at the Bottom whereof are found little reddish Tubercles, like *Coriander* Seed. 'Tis these Grains are commonly called the Seed of the *Saxifrage*, and are used in Medicine. The best manner of using them is to take them infused in White-Wine, or in a Decoction in common Water. Some use the Decoction of the Root itself: 'Tis held a great Diuretick. *Dr. Quincy* observes, That its Lithontriptic Vertue is but little seen in Practice. He adds, That the Simple Water thereof, sold in the Shops, is good for nothing; the Virtue of the Plant, if it have any, consisting in something too gross to rise over the Helm. Some take it to derive its Name from its growing in the Clefts of Rocks, which it seems to pierce through.

**SAXON LANGUAGE**. See **ENGLISH**.

**SAY**, or *Saye*, in Commerce, a kind of Serge, or a very light, cross'd Stuff, all Wooll, much used abroad for Linings, and by the Religious for Shirts; and with us, by the Quakers, for Aprons, for which Purpose 'tis usually green. There are very considerable Manufactures hereof at *Salbury*, near *Colchester*; at *Ypres*, *Houdscoot*, &c. in *Flanders*, &c. Those made in *England*, are chiefly exported to *Portugal*, and *Leghorn*.

**SAYETTE**. See **SAGATHEE**.

**SCABELLUM**, in the ancient Architecture, a kind of Pedestal, usually square, sometimes polygonous, very high and slender, commonly terminating in a kind of Sheath or Scabbard, or profiled in manner of a Balluster. Its Use is to bear *Busts*, *Reliefs*, &c.

**SCABIES**, in Medicine. See **ITCH**.

**SCABIOUS**, a Medicinal Plant, very common in the Fields, and flowers in *July*. It has a great Character amongst many Dispensatory Writers, but seems to grow much out of use to what it has been: It passes for a very great Pectoral, and to do great Things in Asthma's and Pleurisia, and *Ernster* gives it the Pre-eminence in inward Abscesses. It hath a Place also amongst the *Alexipharmicks*. But hardly any thing is in better Esteem for the Itch, and other cutaneous Foulnesses; whence it has its Name, viz. from *Scabies*, Itch, and upon which Account it is often met with in Decoctions, and sometimes in a Syrup, among such as are called Sweetners. Some call it the *Widow's Flower*.

**SCAFFOLD**, a Timber-Work, raised in manner of an Amphitheatre to place Spectators upon for the commodious viewing of some Shew, or Ceremony. — The Word is also used for a little Stage, or Theatre, raised in some publick Place, to execute Criminals upon, either by beheading or breaking upon the Wheel. — Also for an Assemblage of Planks and Boards sustained by Treffels, or by Pieces of Wood fixed in the Wall, whereon Masons, Sculptors, Painters, &c. stand to work in high Places, Wells, Ceilings, &c. *Menage* derives the Word from the *German Schawhauszsch*, and *Guyet* derives it from the *Italian Catafalco*, which signifies the same thing. *Du Cange*, from *Ejchafandus*, a Word in the corrupt *Latin*, signifying a Tribunal or Pulpit. He adds, That it might come from *Cata*, a Wooden Machine used to carry Earth to fill up Ditches, and carry over the Soldiers to the Attack; whence the *Italians* formed their *Catafalco*, the old *French* their *Chafaut*, and the *English* their *Scaffold*.

**SCALA**, in Anatomy, the Canal or Cochlea of the Ear is divided by a *Septum* into two Canals called *Scale*; whereof the one, looking towards the Tympanum, is called the *Scala Tympani*; the other, having a Communication with the Vestibulum, is called the *Scala Vestibuli*. See **EAR**.

**SCALA**, in the Ancient Architecture, is what in the Modern we call a Stair-case. See **STAIR-CASE**.

**SCALADO**, or *Scalade*, an Assault made on a City, to be surprized, by mounting the Walls thereof with Scaling-Ladders. Cities are now no longer taken by *Scalade*, since the Walls have been flank'd.

**SCALE**, in Musick, a Series of Sounds rising or falling towards Acuteness or Gravity, from any given Pitch of Tune to the greatest Distance that is fit or practicable, through such intermediate Degrees as makes the Succession most agreeable and perfect, and in which we have all the harmonical Intervals most commodiously divided. This *Scale* is otherwise called an *Universal System*, as including all the particular Systems belonging to Musick. See **SYSTEM**.

#### Origin and Construction of the SCALE of Musick.

Every Concord or harmonical Interval, is resolvable into a certain Number of Degrees or Parts; the Octave, for Instance, into three greater Tones, two less Tones, and two Semi-Tones; the greater Sixth, into two greater Tones, one less Tones, and two Semi-Tones; the less Sixth, into two greater Tones, one less Tone, and two Semi-Tones; the Fifth, into two greater Tones, one less Tone, and one Semi-Tone; the Fourth, into one greater Tone, one less Tone, and one Semi-Tone; the greater Third, into one greater Tone, and one less Tone; and the less Third, into one greater Tone, and one less Tone. 'Tis true, there are Variety of other Intervals or Degrees, besides greater Tones, less Tones, and Semi-Tones, into which the Concords may be divided; but these three are preferred to all the rest, and these alone are in Use: For the Reason whereof, see **TONE**. Further, 'Tis not any Order, or Progression, of these Degrees, that will produce Melody: A Number, for Instance, of greater Tones will make no Musick, because no Number of them is equal to any Concord, and the same is true of the other Degrees: There is a Necessity, therefore, of mixing the Degrees to make Music, and the Mixture must be such, as that no Two of the same Kind be ever next each other. A natural and agreeable Order of these Degrees *Mr. Malcolm* gives us in the following Division of the Interval of an Octave; wherein, (as all the lesser Concords are contained in the greater) the Divisions of all the other simple Concords are contained. Under the Series are the Degrees between each Term, and the next. In the first Series, the Progression is by the less Third; in the latter, by the greater Third.

great 2<sup>d</sup> gr. 3<sup>d</sup> 4<sup>th</sup> 5<sup>th</sup> 6<sup>th</sup> 7<sup>th</sup> 8<sup>th</sup>

1 : 2 : 3 : 4 : 5 : 6 : 7 : 8

Key or great less Semi- great less great Semi-  
Fund. Tone. Tone. Tone. Tone. Tone. Tone. Tone.

#### Great Second.

1 : 2 : 3 : 4 : 5 : 6 : 7 : 8

Key or great Semi- less great Semi- great less  
Fund. Tone. Tone. Tone. Tone. Tone. Tone. Tone.

Now, the System of Octave, containing all the Original Concords; and the Compound Concords being only  
[ G ] the



the Sum of Octave and some less Concord; 'tis evident, That if we would have the Series of Degrees continued beyond Octave, they are to be continued in the same Order through a Second as through the First Octave, and so on through a Third and Fourth Octave, &c. and such a Series is what we call the *Scale of Musick*. Whereof there are two different Species; according as the less or greater 3d. or the less or greater 6th. are taken in; for both can never stand together in relation to the same Key or Fundamental, so as to make a harmonical Scale. But if, either of these Ways, we ascend from a Fundamental or given Sound, to an Octave, the Succession will be melodious; tho' the Two make two different Species of Melody. Indeed, every Note is Discord with regard to the next; but each of them is Concord to the Fundamental, except the 2d and 7th. In continuing the Series, there are two Ways of compounding the Names of the simple Interval with the Octave. Thus: A greater or lesser Tone or Semi-tone above an Octave, or two Octaves, &c. or to call them by the Number of Degrees from the Fundamental, as 9th, 10th, &c. In the two Scales above, the several Terms of the Scale are expressed by the proportionable Sections of a Line, represented by 1, the Key or Fundamental of the Series: If we would have the Series expressed in the whole Numbers; they will stand as follows; in each whereof, the greatest Number expresses the longest Chord, and the other Numbers the rest in Order: So that if any Number of Chords be in these Proportions of Length, they will express the true Degrees and Intervals of the Scale of Musick, as contained in an Octave concinnously divided in the Two different Species abovementioned.

540 : 480 : 432 : 405 : 360 : 324 : 288 : 270

great less semi great less great less  
Tone Tone Tone Tone Tone Tone Tone

216 : 192 : 180 : 162 : 144 : 135 : 120 : 108

great semi less great semi great less  
Tone Tone Tone Tone Tone Tone Tone

This Scale the Ancients called the *Diatonic Scale*, because proceeding by Tones and Semi-tones. See DIATONIC. The Moderns call it, simply, *The Scale*, as being the only one now in Use; and sometimes *The natural Scale*, because its Degrees and their Order are the most agreeable and concinnous, and preferable, by the Consent both of Sense and Reason, to all other Divisions ever instituted. Those others, are the *Chromatic* and *Enharmonic Scales*, which, with the *Diatonic*, made the Three Scales or Genera of Melody of the Ancients. See GENERA: See also ENHARMONIC and CHROMATIC.

#### Office and Use of the Scale of Musick.

The Design of the Scale of Musick, is, To shew how a Voice may rise and fall, less than any harmonical Interval, and thereby move from the one Extreme of any Interval to the other, in the most agreeable Succession of Sounds. The Scale therefore, is a System, exhibiting the whole Principles of Musick; which are either harmonical Intervals (commonly called *Concords*) or *Concinnous Intervals*; the first are the essential Principles, the others, subservient to them, to make the greater Variety. See CONCORD and INTERVALS. Accordingly, in the Scale, we have all the Concords, with their concinnous Degrees, so placed, as to make the most perfect Succession of Sounds from any given Fundamental or Key, which is supposed to be represented by 1. 'Tis not to be supposed, that the Voice is never to move up and down by any other more immediate Distances than those of the concinnous Degrees: For though that be the most usual Movement, yet to move by harmonical Distances, as Concords at once, is not excluded, but is even absolutely necessary. In effect, the Degrees were only invented for Variety sake, and that we might not always move up and down by harmonic Intervals, though those are the most perfect; the others deriving all their Agreeableness from their Subserviency to them. See DIATONIC. And that, besides the harmonical and concinnous Intervals, which are the immediate Principles of Musick, and are directly applied in Practice; there are other discord Relations, which happen unavoidably in Musick, in a kind of accidental and indirect Manner: For, in the Succession of the several Notes of the Scale, there are to be considered not only the Relations of those that succeed others immediately; but also of those betwixt which other Notes intervene. Now the immediate Succession may be conducted so, as to produce good Melody; and yet among the distant Notes there may be very gross Discords, that would not be allowed

in immediate Succession, much less in Consonance. Thus in the first Series, or Scale above-delivered, though the Progression be melodious, as the Terms refer to one common Fundamental, yet are there several Discords among the mutual Relations of the Terms; e. gr. from 4th to 7th is 32 : 45, and from the greater 2d to the greater 6th is 27 : 40, and from the greater 2d to 4th is 27 : 32, which are all Discords; and the same will happen in the second Series. See DISCORD.

From what we have observed here, and under the Article KEY, it appears, That the Scale supposes no determinate Pitch of Tune; but that being assign'd to any Key, it marks out the Tune of all the rest, with relation to it, shews what Notes can be naturally joyn'd to any Key, and thereby reaches the just and natural Limitations of Melody: And when the Song is arrived through several Keys, yet 'tis still the same natural Scale, only applied to different Fundamentals. If a Series of Sounds be fixed to the Relations of the Scale, 'twill be found exceedingly defective; but this Imperfection is not any Defect in the Scale, but follows accidentally from its being confined to this Condition, which is foreign to the Nature and Office of the Scale of Musick.

This is the Case in musical Instruments; and in this consists their great Deficiency. For, suppose a Series of Sounds, as those of an Organ or Harpsicord, fixed in the Order of this Scale, and the lowest taken at any Pitch of Tune; 'tis evident, 1<sup>o</sup>. that we can proceed from any Note, only by one particular Order of Degrees: Since from every Note of the Scale to its Octave, is contained a different Order of the Tones and Semi-tones. Hence, 2<sup>o</sup>. we cannot find any Interval required from any Note upwards or downwards; since the Intervals from every Note to every other, are also limited. And hence, 3<sup>o</sup>. a Song may be so contrived, that, beginning at a particular Note of the Instrument, all the Intervals, or other Notes, shall be found exactly on the Instrument or in the fixed Series; yet were the Song, though perfectly *Diatonic*, begun in any other Note, it would not proceed. In effect, 'tis demonstrable, there can be no such thing as a perfect Scale fixed on Instruments, i. e. no such Scale as from any Note upwards or downwards, shall contain any harmonical or concinnous Interval required. The only Remedy for this Defect of Instruments whose Notes are fixed, must be by inserting other Notes and Degrees betwixt those of the *Diatonic Series*. Hence some Authors speak of dividing the Octave into 16, 18, 20, 24, 26, 31, and other Number of Degrees; but 'tis easy to conceive, how hard it must be to perform on such an Instrument. The best on't is, we have a Remedy on easier Terms: For a Scale proceeding by Twelve Degrees, that is, Thirteen Notes, including the Extremes, to an Octave, makes our Instruments so perfect, that we have little Reason to complain. This, then, is the present Scale for Instruments, viz. Between the Extremes of every Tone of the natural Scale is put a Note, which divides it into two unequal Parts, called Semi-tones; whence the whole may be called the *Semitonic Scale*; as containing Twelve Semi-tones betwixt Thirteen Notes, within the Compass of an Octave. And to preserve the *Diatonic Series* distinct, these inserted Notes take either the Name of the natural Note next below, with the Mark # called a *Sharp*; or the Name of the natural Note next above, with this Mark b called a *Flat*. See FLAT and SHARP: See also SEMI-TONE.

For the Scale of Semi-tones  
For Guido's Scale, commonly called the *Gamm*  
For the Scale of the Ancients, commonly called the *Diagram* . . . . .

SEMITONIC SCALE.  
GAMUT.  
DIAGRAM.

SCALE, a Mathematical Instrument, consisting of one or more Lines drawn on Wood, Metal or other Matter, divided into equal or unequal Parts, of great Use in laying down Distances in Proportion; or in measuring Distances already laid down.

There are Scales of several Kinds, accommodated to the several Uses: The principal are the *Plain Scale*, the *Diagonal Scale*, *Gunter's Scale*, and the *Plotting Scale*.

*Plain Scale*, is made, by dividing a Line, as A B (Tab. Geometry Fig. ) into any Number of equal Parts, e. gr. 5 or 10, and then subdividing one of them, as a b, into 10 less Parts. This done, if one of the larger Divisions represent 10 of any Measure; e. g. 10 Miles, 10 Chains, 10 Poles, 10 Feet or 10 Inches; each of the lesser will represent One Mile, or One Chain, Pole, Foot or Inch. The Use of this Scale is very obvious, *exempl. gr.* To lay down a Distance by it of 32 Miles or 32 Poles, &c. I take in my Compasses the Interval of three of the larger Divisions, which contain 30, and two of the smaller,



smaller, for the two odd Ones: This Distance drawn on Paper, will contain 32 by the Scale. Again, Were I required to measure any Line by a given Scale: Taking the Length of the Line in my Compasses, I apply one Foot in one of the great Divisions of the Scale, so as the other may reach over among the lesser; then the Number of great and small Divisions intercepted between the Points, give the Number of Miles, &c. See the Use hereof further illustrated under the Article PLOTTING SCALE.

Diagonal Scale - - - - - } See { DIAGONAL.  
Gunter's Scale - - - - - } { GUNTER.  
Plotting Scale - - - - - } { PLOTTING SCALE.

SCALE, in Geography and Architecture, a Line divided into equal Parts, placed at the Bottom of a Map or Draught, to serve as a common Measure to all the Parts of the Building, or all the Distances and Places of the Map. In Maps of large Tracts, as Kingdoms and Provinces, &c. the Scale usually consists of Miles; whence it becomes denominated A Scale of Miles. In more particular Maps, as those of Manors, &c. the Scale is usually of Chains sub-divided into Poles or Links. The Scales used in Draughts of Buildings, usually consist of Modules, Feet, Inches, Palms, Fathoms or the like. To find the Distance between two Towns, &c. in a Map, the Interval is taken in the Compasses, and set off in the Scale, and the Number of Divisions it includes, gives the Distance. See MAP. To find the Height of a Story in a Design, the same Method is used. See DESIGN.

A Front Scale in Perspective, is a right Line in the Draught, parallel to the Horizontal Line; divided into equal Parts, representing Feet, Inches, &c. A Flying Scale is a right Line in the Draught, tending to the Point of View, and divided into unequal Parts, representing Feet, Inches, &c.

SCALENUM, or Scalenous Triangle, in Geometry, a Triangle, whose Sides and Angles are all unequal. See TRIANGLE. A Cylinder, whose Axis is inclined, is also said to be Scalenous. The Word is form'd from the Greek *σκαλινός*, which signifies the same Thing; and which *Hermol* translates *Scalarium*.

SCALENUS, in Anatomy, a Name given to three Pair of Muscles, from their Form; all of them serving to draw the Ribs upwards, in conjunction with the *Serratus superiores pectus*, &c.

SCALENUS *Primus* springs, Flethy, from the transverse Processes of the Second, Third and Fourth Vertebrae of the Neck, where descending laterally, it is inserted into the first Rib, which it helps to draw upwards.

SCALENUS *Secundus*, arises from the same Processes, as likewise from those of the Fifth Vertebra of the Neck; and is inserted into the Second Rib, and sometimes into the Third.

SCALENUS *Tertius*, arises from the same Processes with the former, and from those of the Sixth Vertebra of the Neck; and is inserted into the First Rib.

SCALPEL, in Chirurgery, a kind of Knife chiefly used in Dissections; but which may be occasionally used in many other Operations, as in Amputations, and to cut off the Flesh and Membranes that are between the Two Bones of an Arm or Leg, before the Limb be sawed off: There are two Kinds of *Scalpels*; the first cuts on both Sides, and is fixed in an Ebony or Ivory Handle, which being very flat and thin at the Extremity, serves to part the membranous and fibrous Parts in Anatomical Preparations. The other has a Back, that is, it only cuts on one Side; 'tis crooked, and very commodious for stripping the Flesh off the Bones in Embalming, making Skeletons, &c. *Scalpetus*, in his *Arsenal*, describes several other Kinds of *Scalpels*; as, A deceitful *Scalpel*, thus called, because it deceives the Patient by hiding its Blade. 'Twas much used by the Ancients, in opening and dilating of Sinews; but as 'tis apt to deceive the Chirurgeon himself, and is besides very slow, 'tis better using a Syringotomus: A *Scalpel*, sharp on both Sides for Setons. A little crooked *Scalpel* for separating the Coherence of the Eyelids. A sharp, double-cutting *Scalpel*, with a Bone-Handle, for the cutting off an *Aegilops*. *Scalpels* like *Scolopomachairions*, &c. even the *Scolopomachairion* itself is a kind of *Scalpel*. See SCOLOPOMACHAIRIONS.

SCALPER, *Scalprum*, or Scalping-Iron, a Surgeon's Instrument used to rasp, and scrape foul, carious Bones.

SCALPTOR ANI, in Anatomy. See LATISSIMUS DORSI.

SCAMILLI IMPARES, in the Ancient Architecture, a Term much contended about among the Criticks; though, in effect, it signify no more than certain Benches, Zocco's or Blocks, serving to raise the rest of the Members of an Order, Column, Statue or the like, and prevent their being lost to the Eye, which may chance to be placed below their Level; or below the Projecture of

some of the Ornaments thereof. These *Scamilli* are well represented by the Pedestals of Statues.

SCAMMONY, in Pharmacy, the inspissated Juice of the Root of a Plant of the same Name, growing in the *Levant*, particularly about *Aleppo* and *St. John de Acre*. The Juice flows from an Incision made in the Root; and is afterwards thickened by the Sun, as 'twas pretended, but in reality by the Fire. The Tree is much like an Ivy, its Leaves in Form of Hearts, its Flowers White, and it creeps on the Ground, or mounts on other Trees, Walls, &c. The good, genuine *Scammony* of *Aleppo*, is to be grey, tender, friable and resinous; the Taste bitter, and the Smell faintish and disagreeable. The *Scammony* of *Smyrna* and that of the *East Indies* are less valued. The first as being more heavy, hard and black; the latter, though light, friable, &c. is in reality only a Composition of common Rosin with some other violent Purgers. *Pomet* shews, that both Kinds are rather Poisons than Remedies. The true *Scammony* is one of the surest Purgatives; but, at the same time, one of the most violent we have: Hence 'tis seldom used without Correcting it by some Preparation. From the Juice is drawn a Rosin of more Virtue than the *Scammony* itself. They also make a Syrup of it, which is found a very gentle Purgative. *Scammony* now in Use, must be very different from that of the Ancients, at least in the Preparation; by reason the Ancients gave it in much greater Doses: Hence *Fallopious* conjectures, the modern *Scammony* to be adulterated with Spurge. Some give the Name of *American Scammony* to *Nitchoacam*. See MECHOACAM.

SCANDAL, in the Scripture Language, is any thing that may draw us aside, or sollicit us to Sin. In which Sense 'tis used indifferently with Offence, and Stumbling-block. *Scandal* is either Active or Passive. An active *Scandal* is a real Induction to Sin; a passive *Scandal* is the Impression an active *Scandal* makes on the Person induced to Sin. In the popular Language, *Scandal* is some Action or Opinion contrary to good Manners, or to the general Sense of a People. The Word is form'd from the *Latin*, *Scandalum*, which, according to *Papeas*, was originally used for a sudden, extemporary Quarrel, *que subito inter aliquos Scandit vel oritur*.

SCANDAL is also a disadvantageous Rumor or Report; or an Action whereby any one is affronted in publick. Hence Stone of *Scandal*, *Lapis Scandali*, or *Vineperi*; a Stone raised in the great Portal of the Capitol in Old Rome; wherein was Engraven the Figure of a Lion; upon which the Cessionary or Bankrupt being seated bare-brech'd, cried with a loud Voice, *Cedo bonis*, I surrender my Effects; when, squatting his Breech violently, three Times on the Stone, he was acquitted. 'Twas called the Stone of *Scandal*, because thence-forward the Cessionary became inteftable, and incapable of giving any Evidence. *Julius Caesar* introduced this Form of Surrender, after abrogating that Article of the Laws of the Twelve Tables, which allow'd the Creditors to dismember their Insolvent Debtors, and to take each his Member, or at least to make a Slave of him.

SCANDALUM MAGNATUM, in Law, a special Name, for a Scandal or Wrong done to any high Personage of the Land, as Prelates, Dukes, Earls, Barons, &c. as also of the Chancellor, Treasurer, Clerk of the Privy Seal, Steward of the House, Justice of the Bench, or other great Officers of the Realm, by false News or Messages, whereby Debates and Discords between them and the Commons, or any Scandal to their Persons, might arise; and hath given Name to a Writ granted to recover Damages thereupon.

SCANNING, in Poetry, the measuring of a Verse, to see the Number of Feet and Syllables it contains, and whether or no the Quantities, that is the long and short Syllables, be duly observed. The Term is chiefly used with regard to Greek and Latin Verses; the Quantities not being well settled and observed in the Verses of the Modern Languages. See QUANTITY. Hexameters are Scanned one Way, Jambic another, Saphics another. See HEXAMETER, &c. The Word is form'd from the *Latin*, *Scandere*, to climb.

SCANTLING, a Measure, Size, or Standard, whereby the Dimensions, &c. of Things are to be determined. The Word is form'd from the *French* *Echantillon*, a Pattern or Specimen. See STANDARD.

SCAPHISM, in Antiquity, a kind of Torture or Punishment formerly in Use among the *Persians*. It consisted in locking the Criminal close up in the Trunk of a Tree bored to the Dimensions of his Body, only with Five holes for his Head, Arms and Legs to come through. In this State he was exposed to the Sun, and the Parts thus appearing anointed with Honey and Milk, to invite the Wasps and Flies. They forced him to eat abundantly, till his Excrements, close pent up in the Wood, rotted his Body.



Body. Some Authors observe, that they ordinarily lived Forty Days in this Torment. The Invention is ascribed to *Parisian Queen of Persia*, and Mother of *Artaxerxes*, *Mnemon*, and the young *Cyrus*. 'Tis added, she first ordered it to be practised on the Person who brought the Tidings of the Death of *Cyrus*. The Word is form'd from the Greek *σκαφος*, of *σκαπε*, I hollow, or dig.

**SCAPHOIDES**, in Anatomy, a Bone, called also *Naviculare*, which see. The Word is formed of the Greek *σκαφος*, a Boat or Bark; of *σκαπε*, I hollow; because Boats were originally made of Trunks of Trees hollowed, as are still the Canoes of several Savages; and also, Form.

**SCAPULA**, in Anatomy, called also *Omxoplate* and *Blade*; a large and broad Bone, representing a scalenous Triangle, situate on each Side of the upper and back Part of the *Thorax*: The Substance of the *Scapula* is thin, but solid and firm; its Outside is somewhat Convex, and its Inside Concave; its upper Edge is called *Costa superior*, and its lower, *Costa inferior*; its broad End is called its Basis, which, with the two Edges, make the upper and lower Angles. They have each three Processes, of which the first runs all along the Middle of their Outside, and it is called their *Spine*: That End of the *Spine*, which receives the Extremity of the Clavicle, is called *Acromium*. The second Process is a little lower than the *Acromium*; it is short and sharp, like a *Crow's Bill*, therefore called *Coracoides*; these two Processes are tied to one another by a strong Ligament, which serves to keep the Head of the *Humerus* in the Cavity of the third Process, which is called *Cervix*. This Process is the Extremity of the *Scapula*, which is opposite to its Basis. It has a round Sinus, tipp'd about its Brim, with a Cartilage, which receives the Head of the *Humerus*. The Use of the *Scapula* is to receive the Extremitities of the Clavicle and *Humerus*, for the easier Motion of the Arm, and to give Rise to the Muscles, which move the Arm.

**SCAPULAR**, *Scapularis*, in Anatomy, an Epithet given to two Arteries, and as many Veins of the Body. The *Scapularis interna* & *externa*, or the inner and outer *Scapular* Arteries, arise out of the Subclavian, and are spread over the *Scapula*: The *Inner* and *Outer Scapular* Veins discharge themselves into the Axillary, or Vein of the Arm-pits.

**SCAPULARY**, Part of the Habit of several Orders of Religious, wore over the Gowns, as a Badge of peculiar Veneration for the Virgin. It consists of two narrow Breadths or Slips of Cloth, covering the Back and the Breasts, and hanging down to the Feet of the professed Religious, and to the Knees of the Lay-brothers, &c. The common Opinion of the Introduction of the *Scapular* is, That it was first given by the Virgin herself, in an Apparition she made to *B. Stock*, General of the *Carmelites*, in the Thirteenth Century: Which Account of its Origine is asserted, or at least supposed, in several Bulls of the Popes. *M. de Laury*, however, maintains, in an express Treatise on the Subject, That the Apparition was false, and the Sabbaten Bull, which approves of the *Scapulary*, a Counterfeit. In effect, the *Carmelites* themselves did not begin to wear the *Scapulary* till several Years after 'tis pretended the Virgin gave it to *B. Stock*. The Word is formed from *Scapula*, the Shoulder-Blade. There is also a Friery, or Fraternity of the *Scapulary*, consisting of Lay-Brothers, who profess a particular Devotion to the Virgin, and who, in Honour of her, wear a little *Scapulary*, in manner of a Bracelet, or otherwise, representing the great 'One. They are obliged to certain Prayers, and to observe certain Rules in their Manner of Life.

**SCAPUS**, in Architecture, the Fust or Shaft of a Column. See *FUST*.

**SCAPUS**; in Botany, the strait Stalk, or Stem of a Plant, standing upright like a Pillar, or Column.

**SCAR**. See *ESCHAR*.

**SCARIFICATION**, in Chirurgery, an Operation whereby several Incisions are made in the Skin, with an Instrument proper for that Purpose. See *SCARIFICATOR*. *Scarification* is chiefly practised in Cupping. See *CUPPING*. It acts by stimulating and evacuating. *Salmasius* will have us write *Scarificatio*, not *Scarificatio*, in regard the Word is derived from the Greek *σκαπε*. See his Notes on *Solinus*, where he thus corrects the reading of *Plin. Lib. XVII. F. Hardouin* lets the old Reading *Scarificatio* stand; though he owns the M.S.S. have it *Scarificatio*; but adds, That *Theod. Priscian* writes *Scarificatio*.

**SCARIFICATOR**, a Chirurgical Instrument used in *Scarification*; which see. The *Scarificator* is made in Form of a Box, wherein are fitted 10, 12, or 15 Lancets, all perfectly in the same Plane; which being, as it were, cock'd, by means of a Spring, are all discharged

at the same Time, by pulling a kind of Trigger, and driven equally within the Skin. Till of late, they used little sharp cutting Wheels instead of Lancets. The Use of the *Scarificator* is to evacuate the Blood, and other Humours, spread under the Skin, by making a great Number of Apertures, or Outlets, therein, which being thus all struck at once, gives much less Pain than when struck successively.

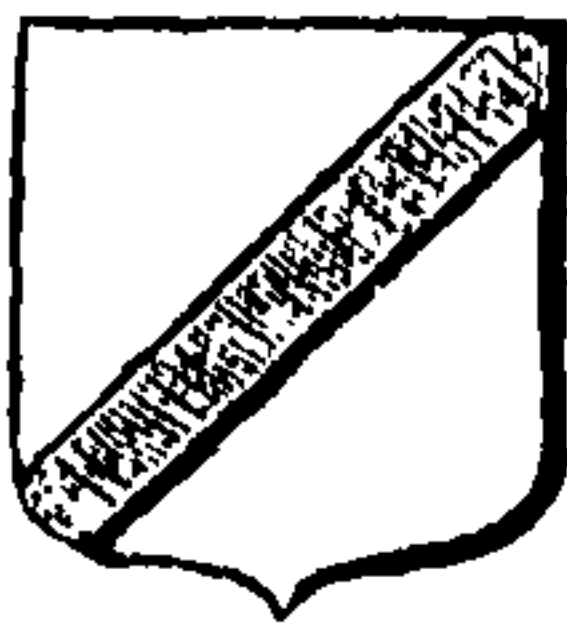
**SCARLET**, in Dying, one of the Seven Kinds of good Reds. There are two Kinds of *Scarlets*; the One given with *Scarlet Grain*, particularly called *Scarlet in Grain*, the other with *Cochineel*. See *RED*. See also *COCHINEEL*, &c.

**SCARLET-GRAIN**, a Matter used to dye a *Scarlet* Colour, usually taken for the Grain of a Plant. This imaginary Grain, called by the *Arabs*, *Kermes*, is found on a kind of Holm, growing in great Plenty in the uncultivated Parts of *Provence*, *Languedoc*, *Spain* and *Portugal*. That of *Languedoc*, passes for the best, being big, and of a very bright Red; that of *Spain* is the worst, being very thin, and of a blackish Red; 'tis to be gathered when ripe, and is only good while new, that is, within the Compass of the Year, after which Time a kind of Insect is found in it, that eats out the Heart thereof. *F. Plumier* has made some particular Discoveries on the Subject of *Scarlet-Grain*. The *Arabic* Term *Kermes*, which signifies little Worms, he observes, agrees perfectly to the Nature of this Drug; which is the Work of a Worm, and not the Grain or Seed of a Tree, as is generally supposed. The Shrub 'tis found on, is the *Hexaculeate Cocci Glandifera*; on the Leaves, and little Shoots whereof, are seen, in the Spring Time, a kind of little Vesicle, which is at first no bigger than a Grain of Millet, and is occasioned by the Puncture of an Insect, which deposits its Eggs therein. In Proportion as it grows, it becomes covered with a kind of Ash-coloured Down, which hides the red Colour underneath. And when 'tis arrived at Maturity, which those who gather them know very well, 'tis taken from the Tree, in Form of a little Gall. The Pod, or Skin, is very light and brittle, covered with a fine membranous Pellicle all around, except at the Place where it grows to the Leaf. A second Skin, under the first, is full of a kind of Dust, partly Red, and partly White. As soon as the Gall is gathered, the Juice or Pulp is expressed from it; 'tis washed in Vinegar to destroy the little Insect within, which, without such Precaution, would grow, feed on the Dust, and, at last, be hatch'd, and leave no more than an empty Shell.

The *Scarlet-Grain* is also of considerable Use in Medicine, where 'tis better known under its *Arabic* Name of *Kermes*. See *KERMES*. *Menage* derives the Word from the *German* *Scarlak*, or the *Flemish* *Scharlaken*: Whence the *English* have form'd the *Scarlet*, the *Italians* their *Scarlato*, and the *French* their *Escarlate*. Others derive it from the *Celtic* *Squarlera*. *Dalechampius* will have it called *Scarlatum*, by Corruption, for *Casculium*, a barbarous Word introduced into *Spain*; others fetch it from the *Arabic* *Txquer late*.

**SCARLETINA FEBRIS**; or *Scarlet-Fever*; the same as *Purple-Fever*. See *PURPLE* and *FEVER*.

**SCARP**, in Fortification, is the Foot of the Rampart-Wall, or the Sloping of the Wall from the Bottom of the Work to the Cordon on the Side of the Moat.



**SCARPE**, is a Term in Heraldry, probably derived from the *French* *Escarpe*, signifying the Scarf which Military Commanders wear for Ornament. It is borne something like a *Barroon Sinister*, but is broader, and is continued out to the Edges of the Field, whereas the *Barroon* is cut off at each End. He beareth Argent, a *Scarpe* Azure.

**SCAVAGE**, in our ancient Customs, called also *Schewage*, *Schewage*, and *Schearwing*, a kind of Toll or Custom, exacted by Mayors, Sheriffs, &c. of Merchant-Strangers, for Wares shewed or offered to Sale within their Liberties. This Custom is prohibited by *Stat. 19. Hen. VII.*

**SCAVANT**, or *Savant*, a Term purely *French*, signifying Learned; little used in our Language, except in the Phrase *Journal des Savants*, a Journal of the Works of the Learned, published Monthly at *Paris*, being the first Thing of that Kind, and that whereon all the rest are founded. See *JOURNAL*. *Menage* derives the Word from *Sapere*, to be Wise, and on that Footing will have it wrote *Savant*; others from *Scire*, to know, and for that Reason write it *Scavant*. The latter Etymology, and Orthography, are followed by the Academy; though all the ancient M.S.S. have it *Savant*, *Savoir*, &c.

SCAVENGERS.



**SCAVENGERS**, two Officers chose yearly in each Parish in London, and the Suburbs, whose Business it is to hire Persons called *Rakers*, and Carts to cleanse the Streets, and carry away the Dirt and Filth thereof. The Word is derived from the *Dutch Schaven*, to scrape or shave away. The Germans call them *Dreck-simons*, from one *Simon* a famed Scavenger of *Marpurg*. The Scavengers are much the same with what were anciently called *Street-wards*.

**SCENE**, in the ancient Drama, in its general Sense, was the Theatre whereon Dramatic Pieces, and other publick Shows, were represented. See **THEATRE**. In its proper Sense, the ancient Scene was the Decoration of the Theatre. In the Extremity of the Theatre, were three large Gates or Openings, wherein appeared several perspective Decorations, viz. A Palace for Tragedies, Houses and Streets for Comedies, and Forests for Pastorals. These Decorations were all versatile, i. e. either they turn'd on Pivots, as described by *Vitruvius*, or trusile, i. e. slid along Grooves, as those in our Theatres; and as this or that Side, or Representation, was turned towards the Spectators, the Scene was called a *Tragic*, a *Comic*, or a *Pastoral Scene*. See **STAGE**. *Vitruvius* observes, That the Scene was properly a large Face or Front of Building, adorned with Columns and Statues, among which were three large Apertures for perspective Representations. See several curious Remarks on the ancient Scene in *M. Perrault's* Notes on *Vitruvius*, lib. 5. cap. 6. According to *Rosinus*, the Scene, in its proper and original Sense, is a Series of Trees disposed against each other, so as to form a continued Arch, and Shade, *enau*, to defend those underneath it from the Injuries of the Weather: For in such Places it was, that, in ancient Times, e'er Theatres were built, they acted their Plays. Thus also *Cassiodorus* derives the Word *Scene*, from the close Shade of the Grove, where, in the Spring Time, the ancient Shepherds used to Sing and Play.

**SCENE** is also used for the Place thus represented, or that where the Action is conceived to have passed. See **ACTION**. One of the grand Laws of the Drama, is, To observe the Unity of the Scene, which we more usually call the *Unity of Place*. See **UNITY**. In Effect, to keep close to Nature and Probability, the Scene should never be shifted from Place to Place, in the Course of the Play. The Ancients were pretty severe in this Respect, particularly *Terence*: In some of his Plays, the Scene never shifts at all, but the Whole is transacted before the Door of an old Man's House, whither, with inimitable Art, he brings all his Actors, occasionally. The French too are very strict in this Respect: But the English plead for a Dispensation from the Rule, which they think confines them to too narrow Bounds, and precludes them from that Variety of Adventures and Intrigues, which our English Audiences will never be satisfied without. However, the more judicious and accurate of our Writers are very moderate in the Use of this Licence, and take Care not to deviate too far from Probability, by shifting the Scene, between the Acts, much farther than the Persons concerned may be supposed to have passed in the Interval. Hence they seldom carry the Scene out of the same Town: But others, who own no Subjection to the ancient Rules, take otherguise Liberties. With some of these 'tis nothing to skip at once from *Covent-Garden* to *Peru*. The great *Shakespeare* is exceedingly faulty in this Respect, in almost all his Plays.

**SCENE** is also a Part or Division, of a Dramatick Poem, determined by a new Actor's entering. Plays are divided into Acts, and Acts sub-divided into Scenes. See **ACT**. In most of our printed Plays, a new Scene is never expressed to begin, but when the Place is supposed to be changed by shifting, or drawing, the moveable Scene; but this must be esteemed as an Oversight. On our Stage, the Scene is, properly, the Persons present to, or concern'd in the Action on the Stage at such Time. Whenever, therefore, a new Actor appears, or an old one disappears, the Action is changed into other Hands, and therefore a new Scene then commences.

'Tis one of the Laws of the Stage, That the Scenes be well connected: that is, that one succeed another, in such Manner, as that the Scene is never quite empty till the End of the Act. The Ancients did not allow of above Three Persons on the Stage at the same Time, excepting in the *Chorus's*, where the Number was not limited. The Moderns have but little regard to this Restriction.

**SCENIC GAMES**, or *Representations*. *Ludi Scenici*, among the Ancients, were Entertainments exhibited on the Scene, or Theatres, including what we now call Plays, of all Kinds, with Dancing, and other Theatrical Performances. The Romans were 400 Years without any Scenic Games at all. *Livy* observes, That they were first instituted in the Year of Rome 392, under the Consulate of *C. Sulpitius* *Peticus*, and *C. Licinius* *Stolon*. But the Critics have observed a Trip here in *Livy*; the Consu-

late of those Persons falling in the Year 389, which, therefore, is held the *Era* of the Introduction of *Scenic Games*. For at the Beginning, some Actors were sent for out of *Hetruria*; who, without reciting any Thing, danced about to the Sound of Instruments; so that thus far was no more than a Ball, or rather what the French call a *Ballet*. At length they began to rehearse Verse: thus, by degrees, growing more and more perfect, they were at last represented with a Justness, and Magnificence, beyond any Thing the World ever saw. See **THEATRE**. The Fathers, in their Writings, cry out loudly against these Games.

**SCENOGRAPHY**, in Perspective, a Representation of a Body on a perspective Plane; or, a Description thereof in all its Dimensions; such as it appears to the Eye. See **PERSPECTIVE**. The *Ichneography* of a Building, &c. represents the Plan, or Ground work of the Building. See **ICHOGRAPHY**. The *Orthography*, the Front, or Upright, thereof. See **ORTHOGRAPHY**. And the *Scenography*, the whole Building, Front, Sides, the Height and all. The Word is formed from the Greek *σκηνη* Scene, and *γραφια* Description.

To exhibit the SCENOGRAPHY of any Body.

1<sup>o</sup>. Lay down the Basis, Ground-plot, or Plan of the Body, in the perspective *Ichneography*, according to the Method laid down under the Article **PERSPECTIVE**. 2<sup>o</sup>. Upon the several Points of the Plan raise the Perspective Heights: Thus will the *Scenography* of the Body be compleated; excepting that a proper Shade is to be added. The Method of raising the Heights is as follows.

On any Point given as C, (Tab. Perspect. Fig. 1.) to raise a Perspective Altitude, answerable to an Objective Altitude P Q. On the Terrestrial Line raise a Perpendicular P Q, equal to the given objective Altitude. From P and Q, to any Point, as T, draw right Lines P T and Q T. From the given Point C draw a right Line C K, parallel to the Terrestrial Line D E, meeting the right Line Q T in K. In the Point K, upon the Line K C, erect a Perpendicular I K. This I K is the *Scenographic* Altitude required. The Application of this general Method of drawing the *Scenography* of a Body, is not so obvious, in every Case, but that it may be necessary to illustrate it a little by a few Examples.

To exhibit the SCENOGRAPHY of a Cube, viewed by an Angle.

1<sup>o</sup>. As the Basis of a Cube viewed by an Angle, standing on a Geometrical Plane, is a Square viewed by an Angle; Draw a Square, viewed Angular wise, on the Perspective Table, or Plane. 2<sup>o</sup> Raise the Side H I (Fig. 2.) of the Square perpendicularly on each Point of the Terrestrial Line D E; and to any Point, as V, of the Horizontal Line H R, draw the right Line V I and V H. 3<sup>o</sup>. From the Angles d, b and c, draw c 1, d 2, &c. Parallel to the Terrestrial Line D E. 4<sup>o</sup>. From the Points 1 and 2, raise L 1, and M 2, perpendicular to the same. Lastly, Since H I is the Height to be raised in a, L 1 in c and b, and M 2 in d: In a raise the Line f a perpendicular to f a; in b and c, raise b g and c e perpendicular to b c 1; and Lastly, Raise d h, perpendicular to d 2: And make a f = H I, b g = c e = L 1, and h d = M 2: If then the Parts g h, e f be connected by right Lines, the *Scenography* will be compleat.

To exhibit the SCENOGRAPHY of a Hollow Quinquangular Prism.

1<sup>o</sup>. Since the Base of a hollow *Quinquangular Prism*, standing on a Geometrical Plane, is a Pentagon, with a Limb or Breadth of a certain Dimension; find the Appearance of this Pentagon on a Table, or Plane. See **PERSPECTIVE**. 2<sup>o</sup>. On any Point, as H, of the Terrestrial Line D E (Fig. 3.) raise a perpendicular H I, equal to the objective Altitude; and to any Point, as V, of the Horizontal Line H R, draw the Lines H V and I V. 3<sup>o</sup>. From the several Angles, a, b, d, c, c, of the Perspective *Ichneography*, both the Internal and External ones, draw right Lines, as b 2, d 3, &c. parallel to the Terrestrial Line; and from the Points 1, 2, 3, raise Perpendiculars to the same, as L 1, M 2 m 2, N 3 n 3. If these, then, be raised in the correspondent Points of the *Ichneography*, as in the preceding Article, the *Scenography* will be compleat.

To exhibit the SCENOGRAPHY of a Cylinder.

1<sup>o</sup>. Since the Base of a Cylinder, standing on a Geometrical Plane, is a Circle; seek the Appearance of a Circle. In the Points, a, b, d, f, h, g, c, c, (Fig. 4.) raise the



the apparent Altitudes, as, in the preceding Articles. If now, their upper Lines be connected by curve Lines, as in the Base, a, b, d, f, c, h, e, c, the *Scenography* of the Circle will be compleat.

'Tis evident that those Lines are to be omitted, both in the Plan and in the Elevation, which are not exposed to the Eye; though they are not to be disregarded, from the Beginning, as being necessary for the finding of other Lines. *E.g.* In the *Scenography* of the Cube, viewed Angle wise, the Lines b d and d c, (Fig. 2.) in the Base, and the d h in the Elevation, are hid from the Eye, and are therefore omitted in the Description. But since the Point h is not to be found unless the Point d be had in the *Ichthyography*; nor the Lines g h and d e be drawn without the Height d h; the Appearance of the Point d is as necessary to be determined in the Operation, as the Height h d.

To exhibit the SCENOGRAPHY of a Pyramid, standing on its Base.

Suppose, *e. gr.* it were required to delineate a Quadrangular Pyramid, viewed by an Angle: 1°. Since the Base of such Pyramid is a Square seen by an Angle, draw such a Square. 2°. To find the Vertex of the Pyramid, *i. e.* a Perpendicular let fall from the Vertex to the Base, draw Diagonals mutually intersecting each other in e (Fig. 5.) 3°. On any Point, as H, of the Terrestrial Line D E, raise the Altitude of the Pyramid H I; and drawing the right Lines H V, and I V to each Point of the Horizontal Line H R; produce the Diagonal a b, till it meet the Line V H in h. Lastly, From h draw h i parallel to H I. This being raised on the Point e, will give the Vertex of the Pyramid c d; consequently, the Lines d k, k a, and k b, will be determined at the same Time. — After the like Manner is the *Scenography* of a Cone delineated.

To exhibit the SCENOGRAPHY of a Truncated Pyramid.

Suppose the Truncated Pyramid Quadrangular; 1°. then, If from the several Angles of the upper Base be conceived Perpendiculars let fall to the lower Base, we shall have a Pentagon, with another inscribed therein, whose Sides are parallel to those of the former. This coincides with a Pentagon, furnished with a Rim or Breadth, &c. and may therefore be delineated in the same manner. — 2°. Raising the Altitude of the Truncated Pyramid (I H, Fig. 6.) determine the *Scenographic* Altitudes, to be raised in the Points a, b, c, d. If now the Points f, g, h, i, k, be connected by right Lines, and the Lines, l k, f m, g n, h o, be drawn, the *Scenography* will be compleat. — By drawing two concentric Circles in a Geometrical Plan, and doing every Thing else, as in this Problem, the *Scenography* of a Truncated Pyramid will be drawn.

To exhibit the SCENOGRAPHY of Walls, Columns, &c. or to raise them on the Pavement.

10. Suppose a Pavement A F H I (Fig. 7.) represented in a Plan, together with the Bases of the Columns, &c. if there be any. 2°. Upon the Terrestrial Line set off the Thickness of the Wall B A and 1, 3. 3°. Upon A and B, as also upon 3 and 1, raise Perpendiculars A D and B C, as also 3, 6, and 1, 7. 4°. Connect the Points D and 6 with the Principal Point V, by the right Lines D V and 6 V. 5°. Upon 1 and H raise Perpendiculars H G and E F. Thus will all the Walls be delineated. Now to raise the Pillars, &c. there needs nothing but, from their several Bases (whether Square, or Circular) projected on the Perspective Plan, to raise indefinite Perpendiculars; and on the Fundamental Line, where intersected by the Radius F a passing through the Base, raise the true Altitude A D: for D V, being drawn as before, the *Scenographical* Altitudes will be determined.

To exhibit the SCENOGRAPHY of a Door in a Building.

Suppose a Door required to be delineated in a Wall D E F A (Fig. 7.) 1°. Upon the Fundamental Line set off its Distance A N from the Angle A, together with the Breadths of the Posts N I and L M, and the Breadth of the Gate itself L I. 2°. To the Point of Distance K, from the several Points N, I, L, M, draw right Lines K N, K I, K L, K M, which will determine the Breadth of the Door l i, and the Breadths of the Posts g n and m l. 3°. From A to O, set off the Height of the Gate A O, and from A to P, the Height of the Posts A P. 4°. Joyn O and P with the Principal Point, by the

right Lines P V and O V. 5°. Then, from n, i, l, m, raise Perpendiculars, the Middle ones, whereof are cut by the right Line O V in o, and the Extremes, by the right Line V P in p. Thus will the Door be delineated, with its Posts. If the Door were to have been exhibited in the Wall E F G H, the Method were nearly the same. For, 1°. Upon the Terrestrial Line, set off the Distance of the Door R T. 2°. From R and T, draw right Lines to the Principal Point V, to have the Breadth of the perspective Plan. 3°. From r and t, raise indefinite Perpendiculars to F H. 4°. From A to O, set off the true Height A O. Lastly, From O, to the principal Point V, draw the right Line O V, intersecting E F in Z, and make r r, and t t equal to T Z. Thus is the Door r r, t t, drawn, and the Posts are easily added, as before.

To exhibit the SCENOGRAPHY of Windows in a Wall.

When you know how to represent Doors, you'll find no Difficulty in adding Windows; all that is here further required, being to set off the Height of the Window from the Bottom of the Ground. The Whole Operation is as follows. 1°. From 1 to 2, set off the Thickness of the Wall at the Window; from 3 to 4, its Distance from the Angle 3; and from 4 to 5 its Breadth. 2°. From 4 and 5, to the Point of Distance L, draw the right Lines E 5 and L 4, which will give the Perspective Breadth 10, 9, of the Window. 3°. From 10 and 9 raise Lines perpendicular to the Pavement; *i. e.* draw the parallel Lines 6, 3. 4°. From 3 to 11 set off the Distance of the Window from the Pavement 3, 11; and, from 11 to 12, its Height 11, 12. Lastly, From 11 and 12, to the principal Point V, draw Lines V 11 and V 12; which intersecting the Perpendiculars 10, 13, and 9, 14, in 13 and 14, as also in 15 and 16, will exhibit the Appearance of the Window.

From these Examples, which are all no more than Applications of the first grand general Rule, it will be easily perceived what Method to take to delineate any other Thing, and at any Height from the Pavement.

A Mechanical Method of exhibiting the *Scenography* of any Object; See under the Article DESIGNING.

SCENOPEGIA, a Feast among the Jews, more usually called, *The Feast of Tabernacles*, instituted after the People of Israel were in Possession of the Land of Canaan, in Memory of their having dwelt under Tents in the Wilderness. 'Twas held for 8 Days successively, commencing on the Fifteenth of September. The last Day was much the most solemn, both on Account of the Conflux of Persons, and of the extraordinary Tokens they gave of their Joy. 'Tis of this Eighth Day, St. John must be understood to speak, when he tells us, our Saviour was at the Feast of Tabernacles, on the last and great Day. When the Holy Scripture says absolutely, *the Feast*, 'tis to be usually understood of the *Scenopegia*. The Word is Greek, form'd of σκηνή Scene, Tabernacle, Tent; and μυροεις Figo, I fix.

SCEPTER, a Royal Staff, or Battoon, born, on solemn Occasions, by Kings, as a Badge of their Command and Authority. See REGALIA. The Scepter is an Ensign of Royalty of greater Antiquity than the Crown. The Greek Tragic, and other Poets, put Scepters in the Hands of the most ancient Kings they ever introduce. *Justin* observes, That the Scepter, in its Original, was a *Hasta* or *Spear*: He adds, That in the most remote Antiquity, Men adored the *Hasta*, or Scepters, as immortal Gods; and, that it was upon this Account, that even in his Time, they still furnished the Gods with Scepters. *Neptune's Scepter* is his Trident, See TRIDENT. *Tarquinius the Elder*, was the first who assumed the Scepter among the Romans. *Le Gendre* tells us, That in the first Race of the French Kings, the Scepter was a Golden Rod, almost always of the same Height with the King who bore it, and crooked at one End like a Crozier. Frequently, instead of a Scepter, they are seen on Medals with a Palm in their Hand. *Nicod* derives the Word from the Greek σκῆπτρον, which he says, originally signified a Javelin, which the ancient Kings usually bore as a Badge of their Authority, in regard that Instrument was, in very great Veneration among the Heathens. But, in Effect, σκῆπτρον does not properly signify a Javelin, but as a Staff, to rest upon, from σκῆπτρον, *Invitor*, I lean.

SCEPTER, *Scythium*. In Anatomy, one of the Six new Constellations of the Southern Hemisphere, consisting of 17 Stars; one of the 4th Magnitude, 8 of the 5th, and as many of the 6th.

SCEPTICISM, the Doctrine and Opinions of the Scepticks; called also *Pylloponian*, from the Name of its Author. See PYLLOPONIUM. The Ancient Scepticks con-

... and ... do ...



filled in doubting of every Thing, in affirming nothing at all, and in keeping the Judgment in Suspense on every Thing. *Sextus Empiricus* makes *Scepticism* to consist in a Faculty of opposing all Appearances, of making all, even contrary Things, equally probable, and of proceeding first to an *εἰρωνή*, Suspense of Mind; and then to an intire Undisturbedness or Tranquillity. Hence these great Maxims of theirs, *Οὐ μᾶλλον τίσιν ἐμὲν, This is no more than that. Πᾶσι λόγῳ λόγῳ, &c. Every Reason has some Reason against it; and Οὐδὲν ορίζω, I determine nothing.* The proper Character then of *Scepticism* is an *ἀκαταlepsία*, *Neutrality*; or such a Disposition of Mind as does not, upon any Occasion, incline to any thing more than the contrary thing. This Hesitancy of the *Scepticks* is well described by *Aristocles* in *Euseb. de prepar. Evan.* All Things are equally indifferent, uncertain and undeterminate; neither our Senses, nor our Opinions give us either Truth or Falsehood: Therefore, neither the one, nor the other are to be credited; but all Things to be left on a Level, without having any Opinion, Inclination or Motion of the Mind at all. 'Tis added, that the *Scepticks* carried this Suspense of theirs so far, as to deny, that any thing is either good or evil, just or unjust, true or false; or that any thing is this, more than that. See *SCEPTICKS*.

'Tis from this *Acatalepsia* of the *Scepticks*, that *Des Cartes* seems to have borrowed his great Principle of doubting of all Things; as is own'd by many of his Followers. It must be own'd, there is some Difference between the Doubting of the *Scepticks*, and that of the *Cartesians*. In Physical Matters, 'tis true, there does not seem a great deal of Difference; and *Des Cartes*, in that Respect, may, without much Injustice, be deem'd a *Sceptic*. But this may be said in his Favour, That the great *Socrates* was so far a *Sceptic* himself; physical and sensible Things, he held, were all dubious; and, at best, but probable. See *CARTESIANISM*.

The Origin of *Scepticism* is somewhat obscure; *Pyrrho*, who lived under *Alexander the Great*, and made the Tour of *India* in his Retinue, is usually reputed the Author; whence *Pyrrhonians* and *Scepticks* are ordinarily used indifferently. See *PYRRHONIAN*. It must be own'd, however, that the great Dogma of the *Scepticks* had been countenanced, and even cultivated before *Pyrrho* by *Democritus*, *Heraclitus*, &c. *Sextus Empiricus* says, expressly, That all that *Pyrrho* did, was to improve, illustrate and enforce the Dogma; and form the Retainers thereto into a Sect. *Democritus's* Philosophy was near akin to *Scepticism*; for that, upon his observing, that Honey seem'd sweet to some, and bitter to others, he concluded, that 'twas neither sweet nor bitter; and thereupon pronounced *μᾶλλον, non magis*, which is pure *Scepticism*. Yet the same *Sextus* adds, That *Democritus* was no *Sceptic*. Though *Plato* argue very strenuously against the *Acatalepsia* of the *Scepticks*; yet 'tis certain that Dogma received a great Part of its Encouragement from *Socrates's* School; and *Plato's* Academy. Nay, 'twas a great Controversy among the Ancients, whether *Plato* himself were a *Sceptic* or *Dogmatist*. Indeed *Plato's* decisive Way of speaking, in many cases, seems to leave no great room for such a Doubt; but 'tis certain, his Followers of the New Academy founded by *Arcebas*, gave much into this Way; and *Nihil Sciri*, was held by them, a Principle. *Sextus Empiricus* observes, That *Socrates* himself had a Tincture of *Scepticism*; some even make him the Author of it, from that customary Saying of his, *I know nothing but this, that I know nothing*. If this were the Origin of *Scepticism*, it must be own'd, it was mightily improved afterwards; 'er *Metrodoreus* said, *I know nothing, not even this, that I know nothing*. The same *Sextus* however adds, That *Plato*, introducing his Master in his *Gymnastic* Dialogues, disputing with the Sophists, makes him act the Part of a *Sceptic*. Some have even charged *Job* and *Solomon* with *Scepticism*; from their proposing a great Number of Questions, without deciding any of them. The Philosopher of *Kiel*, who has published a Dissertation on *Scepticism*, fetches its Origin still higher: He will have the Devil the Author thereof, who made our first Parents doubt of the Word of God himself; and drew them in, the first Profelytes to *Scepticism*.

**SCEPTICKS**, a Sect of Ancient Philosophers, founded by *Pyrrho*, whose distinguishing Tenet was, That all Things are uncertain and incomprehensible; Contraries equally true; that the Mind is never to assent to any thing; but to keep up an absolute Hesitancy or Indifference. See *SCEPTICISM*.

*Plato* refutes the great Principle of the *Scepticks* thus: When you say, that all Things are incomprehensible, do you comprehend or conceive that they are thus incomprehensible; or do you not? If you do, then something is comprehensible; if you don't, there is no Reason we should believe you, since you don't comprehend your own Assertion.

The Term *Sceptic*, in its Original Greek, *Σκεπτικός*, properly signifies *Considerative*, or, a Man who is ever weighing the Reasons on one Side and the other, without ever deciding between them. 'Tis form'd from the Verb *σκεπτομαι*, to consider, weigh, deliberate. *Laertius* adds, That the Followers of *Pyrrho*, had various Denominations; from their Master, they were called *Pyrrhonians*; from their Dogma *Aporetici*, that is Doubters, of *ἀπορείν*, to doubt. From their Suspension and Hesitation, *ἑσπεῖται*, of *ἐπείχεσθαι* to stay, to keep back; and from their never getting beyond the Search of Truth, *Ζηητικοί*.

**SCELOTYRBE**, from *σκελεῖν*, *Cris*, the Leg, and *τύβη*, *Tumultus*, Uproar, signifieth those Pains in the Legs, that generally attend Scorbutick Habits; whence it is also frequently used for the Scurvy itself, and applied to some Medicines contriv'd against such Disorders.

**SCHAR-PENNY**, *Scharn-Penny*; and sometimes *Schorn-Penny*. It appears from our old Books, that some customary Tenants were obliged to pen up their Cattle at Night in the Pound or Yard of their Lord, for the Benefit of their Dung or *Seam*, as is the *Saxon* Word. And if they did not do this, they were obliged to pay a small Compensation, which therefore was called by this Name of *Schar-Penny*.

**SCHEAT** or **SEAT**, in Astronomy, a fixed Star of the Second Magnitude in the Juncture of the Leg, with the Left Shoulder of *Pegasus*. Some call it *Seat Aphorū*; and some *Scheat Pegasi*. Its Longitude, according to *Mr. Flamsteed*, is 250° 2' 13" its Latitude 31° 8' 6" North.

**SCHEDULE**, or *Cedula*, a Scroll of Paper, or Parchment; annex'd or appended to a Will, Lease, Deed or other Instrument, containing an Inventory of Goods, or some other Matter, omitted in the Body of the Instrument. See *CECULA*.

**SCHEMATISM**. See *FIGURE*.

**SCHEME**, a Model, Draught, &c. or the Representation of any Geometrical or Astronomical Figure, or Problem by Lines sensible to the Eye: Or of the Celestial Bodies in their proper Places for any Moment. See *DIAGRAM*. The Word is form'd from the Greek *σχῆμα*.

**SCHERIF**. See *CHERIF*.

**SCHIRE MOTE**, was anciently a solemn Meeting of all the free Tenants and Knights in any County, to do Fealty to the King, and elect an Annual Sheriff. See *SHERIFF*.

**SCHIRRUS**, in Medicine, call'd also *Schirrume* and *Schirrrosis*, a hard, indolent Tumor, form'd gradually, in the soft, glandulous Parts of the Body; sometimes internal, and sometimes external. There are two Kinds of *Schirruses*; the one, only beginning, and frequently painful when press'd by the Fingers; the other, confirm'd and senseless. The *Schirrurus* arises from a thick, viscid, probably, gritty Matter, detained and indurated in the Pores and other minute Passages of the Parts affected. There are some *Schirruses* as hard as Stones; some are even painful in their confirm'd State, and partake of the Nature of a Cancer. The Word is form'd from the Greek *σκληρότης*, hardness.

**SCHISM**, a Term, which, in the general, signifies *Division*, or *Separation*; but chiefly used in speaking of Separations happening through Diversity of Opinions among People of the same Religion and Faith: Thus we say, The *Schism* of the Ten Tribes of *Israel*, from the Two Tribes of *Juda* and *Benjamin*. See *SAMARITANS*. The *Schism* of the *Persians*, from the *Turks* and other *Mahometans*. Among Ecclesiastical Authors, the Great *Schism* of the West, is that which happened in the Times of *Clement VII.* and *Urban VI.* which divided the Church for Forty or Fifty Years, and was at length ended by the Election of *Martin V.* at the Council of *Constance*. The *Romanists* number Thirty-four *Schisms* in their Church: They bestow the Name of the *English Schism* on the Reformation of Religion in that Kingdom; those of the Church of *England* again apply the Term *Schism* to the Separation of the *Nonconformists*, viz. the *Presbyterians* and *Anabaptists*, who are earnest for a further Reformation. Some call the Separation of the Protestants from the Church of *Rome*, a *Passive Schism*, because that Church cut them off from her Communion. The Word is form'd from the Greek *σχίσμα*, cleft, fissure.

**SCHOENOBATES**, a Name the Greeks gave to their Rope-dancers. The *Romans* call them, *Funambuli*. The *Schoenobates* were Slaves, whose Masters made Money of them, by entertaining the People with their Feats of Activity. *Mercurialis de Arte Gymnastica*, Lib. III. gives us five Figures of *Schoenobates*, Engraven after ancient Stones. The Word is form'd from the Greek *σχοινόν*, a Rope; and *βαίνω*, I walk.

**SCHOLASTIC**, something belonging to the Schools, or that is taught in the Schools. See *SCHOOL*.

The Title *Scholasticus*, was, long time a Title of Honour. At first it was, only given to such distinguished themselves by their Eloquence, in Declaring



ing, &c. After Nero, 'twas also apply'd to the *Advocati*, and among others, to *Socrates* and *Eusebius*, the Ecclesiastical Historians, who were Advocates at *Constantinople*. *Constant. Hiermenopolus* also bore it in the twelfth Century, with several others. Afterwards it became restrained to such as had the Government of the Ecclesiastical Schools, established under the first Race of *French Kings*, who instructed the Clerks of each Church, first in the Humanities, then in Theology and the Liturgy. These were also called *Primiciers Escolastres* and *Theologaux*. If the Church were situated in a City, the *Scholasticus* was called the *Chancellor*. *Genebrand* observes, That among the *Greeks*, *Scholasticus* was the Name of an Office or Dignity answering to our *Divine* or *Theologue*. Indeed, he adds, 'twas only properly applied to People of general Learning, and fine Parts, and who were well known to the World in that Character. This *St. Jerom* observes, That *Serapion* was surnamed *Scholasticus*, by reason of the Delicacy of his Wit. *Walafrid Strabo*, calls the Poet *Prudentius*, *Scholasticus*: *Fortunatus* was called *Scholasticissimus*.

**SCHOLASTIC**, or **SCHOOL Divinity**, is that Part of *Divinity* which clears and discusses Questions, by means of Reason, and Arguments: In which Sense, it stands, in good measure, opposed to positive *Divinity*, which is founded on the Authority of Fathers, Councils, &c. The *School Divinity*, like *Plato's School*, has had its three several Ages or Periods: The *Ancient*, the *Mean* and the *New*. The *Ancient* began under *Lanfrank*, Archbishop of *Canterbury*, or, more properly, under *Peter Lombard*, the Master of the Sentences; and held about 200 Years; ending under *Albertus Magnus*. 'Twas succeeded by the *Mean School Divinity*, which lasted about 100 Years, to the Time of *Thomas Aquinas*; during which Time, the *Peripatetic Philosophy* was raised to its utmost Reputation. The third Age began under *Durandus*, who set himself up against *Thomas*, the Chief of the *mean Age*. From him Peoples Wits began to be more and more subtile; and the *School* began to be wholly taken up in frivolous Questions. They disputed, with great Heat, about mere Formalities; and even raised Phantoms on purpose to combat withal. 'Tis now fallen into the last Contempt; and is scarce regarded any where, but in some of the Universities, where they are obliged by their Charters to teach it.

**SCHOLIAST**, a Commentator, particularly a Person who writes *Scholia*, that is, Notes, Glosses, &c. upon the *Ancient Greek Authors*. See **SCHOLIUM**.

**SCHOLIUM**, a Note, Annotation, or Remark occasionally made on some Passage, Proposition, &c. 'Tis much used in Geometry, and other Parts of Mathematics; where, after demonstrating a Proposition, 'tis frequent to point out where it might be done some other Way; give some Advice, or Precaution to prevent Mistakes; or add some particular Use or Application thereof. *Wolffius* has given us abundance of curious and useful Arts and Methods, a good part of the Modern Philosophy, the Description of Mathematical Instruments, &c. all by way of *Scholia*, to the respective Propositions in his *Elementa Matheseos*. The Word in the Original Greek, σχολιον, signifies the same Thing.

**SCHOOL**, a publick Place, wherein the Languages, Humanities or other Sciences are taught. Thus we say, a *Grammar School*, the *School of Medicine*, of *Natural Philosophy*, &c. The Word is also used for a whole Faculty, University, or Sect: as, *Plato's School*: The *School of Epicurus*, the *School of Paris*, &c. The *School of the Tiberiad* has been famous among the *Ancient Jews*; and 'tis to this we owe the *Massora* and *Massoretas*. See **MASSORETES**. The Word is form'd from the *Latin*, *Schola*, which *Du Cange* derives from *Schola*, which signifies *Discipline* and *Correction*; and adds, That it was anciently, in the general, used for all Places, where several Persons met, either to study, to converse, or do any other Matter. Accordingly, there were the *Schola Palatine*, being the several Posts wherein the Emperor's Guards were placed; the *Schola Scutiariorum*, *Schola Gentilium*, &c. At length the Term passed to Civil Magistrates; and accordingly in the Code, we meet with *Schola Chancery*, *Agentium*, &c. and even to Ecclesiasticks, as, *Schola Cantorum*, *Sacerdotum*, &c.

**SCHOOL**, in Painting, is a Term used to distinguish the different Manners of Places, and Persons: As, the *Roman School*, the *Venetian School*, the *Flemish School*, &c. *Raphael's School*, *Titian's School*, *da Vinci's School*, &c. meaning their Disciples, Pupils, &c. See **PAINTING**.

**SCHOOL of Athens**, in Painting, is a celebrated Piece of *Raphael*, now in the *Vatican*. It contains a great Number of Figures, representing Philosophers, Mathematicians, and other Persons, engaged in the Arts and the Sciences. Several Authors have wrote of this Painting, and given different Explications thereof. *Vasari* will have it to be, The Agreement of Philosophy, and Astronomy, with The-

ology. The Engraver, by the Inscription they add at the Bottom of the Print thereof, shew, That they take it for a Painting of *St. Paul* preaching at *Athens*. *Augustin of Venice*, takes the Philosopher who is writing, for a *St. Mark*; and he at his Knees, for the Angel *Gabriel*. *M. de Piles* rejects all these Explications of the School of *Athens*, and especially the last: His Opinion is, That 'tis nothing more than the mere Image or Representation of Philosophy, which *Raphael* here designs under all the Philosophers he has painted. In Behalf of the *Venetian Engravers* it may be said, that they do not pretend to explain the Painting, but have only copied such of the Figures as they thought proper to represent *St. Mark*, *St. Gabriel*, &c.

**SCHOOL PHILOSOPHY**, Theology, &c. See **SCHOLASTIC**.

**SCHOONBIAH**, a Sect among the *Mussulmans*. The distinguishing Tene of those of this Sect is, That the *Sunnites* are not a whit preferable to the *Schais* or *Rafakites*, i. e. the *Orthodox* to the *Heterodox*; but that both the one and the other are equally good *Mussulmans*. The *Schoonbiah*, therefore, should be properly the *Latitudinarians of Mussulmanism*. Yet are not they regarded by either Party, as much better than *Gentiles* or *Heathens*, as their Name imports. There are abundance among the *Mussulmans*, who give into this Sect, only secretly; *Mahometism*, like all other false Religions, being an avowed Enemy to Toleration.

**SCIATICA**, in Medicine, the Gout in the Hip. See **GOVT**.

**SCIENCE**, in Philosophy, a clear and certain Knowledge of any Thing, founded on self-evident Principles, or Demonstration. See **KNOWLEDGE**. In this Sense, *Doubling* is oppos'd to *Science*; and *Opinion* is the middle between the Two. See **OPINION**. The *Scepticks* profess to deny, that we have any such thing as *Science*; that is, any clear, certain Notices of any thing, capable of producing absolute Conviction. See **SCPTICISM**. The Word is form'd of the *Latin*, *Scire*, to know.

Divines suppose three Kinds of *Science* in God: The first, *Science* of mere Knowledge, whereby God knows himself, and all Things possible. The second, a *Science* of Vision, whereby he knows all Things he has resolved to do, or to permit, in the same Order wherein he has resolved to do, and to permit them. The third an intermediate *Science*, whereby he knows what Angels and Men will do, in certain Cases and certain Circumstances, if he resolve to bring them about. 'Tis greatly disputed among the *School Divines*, whether or no there be such an intermediate *Science* in God; the Reason why some call it in question is, because it does not consist well with their particular Schemes.

**SCIENCE**, is particularly used for a form'd System of any Branch of Knowledge; comprehending the Doctrine, Reason and Theory, of the Thing, without any immediate Application thereof to any Uses or Offices of Life; in which Sense, the Word is used in Opposition to *Art*. Indeed, the precise Notion of an *Art* and *Science*, and their just, adequate Distinction, are not yet well fixed. See the **PREFACE** to this Work.

As to the Number and Division of the *Sciences*, *Mr. Lock* fixes them thus: All that can fall within the Compass of human Understanding, is, First, Either the Nature of Things, their Relations, and their Manner of Operation: or, Secondly, That which Man himself ought to do as a voluntary and rational Agent, for the Attainment of any End, especially Happiness; or, Thirdly, the Ways and Means, whereby the Knowledge of both of these are attained and communicated: Whereupon, *Science*, may be properly divided into these Three Sorts. First, the Knowledge of Things, their Constitutions, Properties and Operations, whether material or immaterial: This, in a little more enlarged Sense of the Word, may be called *Common*, or *Natural Philosophy*. The End of this is bare speculative Truth, and whatsoever can afford the Mind of Man any such, falls under this Branch; whether it be God himself, Angels, Spirits, Bodies, or any of their Affections, as Number, Figure, &c. Secondly, *Newton*, the Skill of right applying our own Powers and Actions for the Attainment of Things good and useful. The most considerable under this Head, is *Ethicks*, which is the seeking out those Rules and Measures of Human Actions, which lead to Happiness, and the Means to practise them. The End of this is not bare Speculation; but Right, and a Conduct suitable thereto. Thirdly, *Enuimata*, or the Doctrine of Signs: The most usual being Words; it is aptly enough termed *Logick*: The Business whereof is to consider the Nature of Signs, which the Mind makes use of for the understanding of Things, or conveying its Knowledge to others. Things are represented to the Mind by Ideas; and Mens Ideas are communicated to one another by articulate Sounds or Words. The Consideration then of Ideas or Words, as the great Instruments of Know-



Knowledge, makes no despicable Part of their Contemplation, who wou'd take a View of Human Knowledge in the whole Extent of it. This seems the first, and most general, as well as natural Division of the Objects of our Understanding. For a Man can employ his Thoughts about nothing, but either the Contemplation of Things themselves for the Discovery of Truth; or about the Things in his own Power, which are his Actions, for the Attainment of his own Ends; or the Signs the Mind makes use of, both in the one and the other, and the right ordering of them, for its clearer Information. All which Three, viz. Things, as they are in themselves knowable; Actions, as they depend on us in order to Happiness, and the right use of Signs, in order to Knowledge, being *toto Cælo*, different, they seem to be the Three great Provinces of the Intellectual World, wholly separate and distinct one from another.

**SCIENTIFIC**, something relating to the pure, sublimed Sciences; or, that abounds in Science or Knowledge. A Work, a Method, &c. is said to be *Scientific*, when 'tis founded on the pure Reason of Things, &c. conducted wholly on Principles thereof. In which Sense, the Word stands opposed to *Narrative*, *Arbitrary*, *Opinionative*, &c.

**SCILLA**, or *Squill*, a Medicinal Plant, of the Onion-kind, but very large; chiefly brought from Spain: Used only in Infusion, and that generally in Vinegar, which it renders Emetic. There are two Kinds, *Male* and *Female*; the Male are whitish, and the Female reddish. Their Infusion, when boiled into the Consistence of a Syrup, with Honey, called *Oxymel Sylliticum* in the Shops, retains the same Properties. They wonderfully deterge and scour off the viscid Adhesions in the Bowels, and gently irritate the Stomach to Ejection. They are also, as all of the Onion Kind are, very Diuretick, and therefore in great Esteem, with some, in Dropsies: For if their Infusion be mixed with Cinnamon-Water, they will seldom vomit, but work downwards, and very forcibly, by Urine: In Asthmæ, and all Obstructions, or Infractions of the Lungs, which are to be removed by Detergives and Expectoration, there is scarce any thing more effectual. They are also esteemed *Alexipharmicks*, and upon that Account have a Place in the *Theriaca Andromachi*.

**SCIOGRAPHY**, the Profile, or Section of a Building, to shew the Inside thereof. See **SECTION** and **PROFILE**.

**SCIOGRAPHY**, in Astronomy, &c. is a Term some Authors use for the Art of finding the Hour of the Day or Night, by the Shadow of the Sun, Moon, Stars, &c. See **DIAL**.

**SCIOMANTIA**, or *Sciomancy*, a kind of Divination, otherwise called *Psychomancy*. *Sciomancy*, among the Ancients, was the Art of raising and calling up the Manes or Souls of deceased Persons, to instruct them in Things to come. The Witch who conjured up the Soul of Samuel, to foretel Saul the Event of the Battle he was about to give, did it by *Sciomancy*. The Word is form'd from the Greek, *σκία*, Shadow, used metaphorically for the Soul, and *μαντεία*, Divination. See **DIVINATION**.

**SCIOPTICK**, a Sphere or Globe of Wood, with a circular Hole or Perforation wherein a Lens is placed: 'Tis so fitted, that, like the Eye of an Animal, it may be turn'd round every Way; to be used in making Experiments of the darken'd Room. See **CAMERA OBSCURA**.

**SCIRE-FACIAS**, is a judicial Writ, most commonly to call a Man to shew Cause to the Court whence it issues, why Execution of a Judgment passed, should not be made out. This Writ is not granted, until a Year and a Day be elapsed after a Judgment given: *Scire-facias*, upon a Fine, lies not but within the same Time after the Fine levied, otherwise it is the same with the Writ of *Habere facias seisinam*.

**SLAVONIC**, the Language of the *Slavi*, an Ancient People of *Scythia Europea*; who, about the Year 518, quitting their native Country, ravaged Greece, and established the Kingdoms of Poland and Moravia, and at last settled in *Illyria*; which thence took the Name of *Slavonia*. But the Modern *Slavonia* is much narrower, being only a Province in Hungary. The *Slavonic* is held, after the *Arabic*, the most extensive Language in the World: 'Tis spoke from the *Adriatic* to the North Sea, and from the *Caspian* to Saxony, by a great Variety of People, all, the Descendants of the Ancient *Slavi*, viz. the *Poles*, *Muscovites*, *Bulgarians*, *Carinthians*, *Bohemians*, *Hungarians*, *Prussians*, *Swabians*, &c. each of whom, however, have their particular Dialect; only the *Slavonic* is the common Mother of their several Languages, viz. the *Polish*, *Russian*, *Hungarian*, &c. By a Latin Chronicle of the *Slavi*, composed by *Helmold*, a Priest of *Buda*, and *Arnoul* Abbot of *Lubeck*, and corrected by *M. Leibnitz*, it appears, That the *Slavi* anciently inhabited the Coasts of the *Baltic* Sea, and were divided

into *Eastern* and *Western*: In the latter whereof, were the *Russians*, *Poles*, *Bohemians*, &c. And in the former, the *Vandals*. *Dom. Maur. Orbinus Rauser*, Abbot of the Order of *Malta*, in an *Italian* History of the *Slavi*, intitled, *Il Regno de gli Slavi*, printed in 1601, will have them to be originally of *Finland* in *Scandinavia*. *Laur. Privero*, a *Dalmatian*, in an express Discourse on the Origin of the *Slavi*, maintains them to be originally of *Thracia*, and the same with the *Thracians*, the Posterity of *Thiras*, Seventh Son of *Japhet*. *Theod. Polycarpowitz*, in a *Greek*, *Latin* and *Slavonic* Dictionary, printed at *Moscow* in 1704, observes, That the Word *Slava*, whence *Slavonic* is form'd, signifies in their Language, *Glory*.

**SCLEROPHTHALMIA**, a kind of Ophthalmia, wherein the Eye is dry, hard, red and painful; and the Eyebrows likewise; so as not to be opened after Sleep, without great Pain, by reason of their excessive Dryness. See **OPHTHALMIA**.

**SCLEROTICA**, in Anatomy, &c. one of the common Membranes of the Eye, situate between the *Adnata* and the *Uvea*: 'Tis very firm and opaque behind; but transparent before. In Strictness, 'tis only the hind-part is call'd *Sclerotica*; the fore-part being properly called the *Cornea*; See **CORNEA**. The *Sclerotica* is a Segment of a larger Sphæroid than the *Cornea*. See **EYE**. The Word is form'd from the Greek *σκληρός*, hard.

**SCLEROTICKS**, Medicines, proper to *harden* and consolidate the Flesh, &c. of Parts they are applied to. Such are *Purslain*, *Jubarb* or *House-leek*, *Psyllium*, *Morel* or *Garden-night-shade*, &c.

**SCOLDING**: The Punishment allotted by our Laws for *Scolding* Women, is, To be set in a *Trebuchet*, commonly called a *Cucking-Stool* (probably from the *French Coquine*, *Queen*, and the *German Stuhl*, *Chair*) placed over some deep Water, into which they are to be let down, and plunged thrice, under Water, to cool their Heat and Choler.

**SCOLOPOMACHAIRION**, in Chirurgery, a Kind of Scalpel, thus called, by the *Greeks*, from its resembling a *Woodcock's Bill*. Its Use is to open, and dilate, narrow Wounds of the Breast, Abscesses, &c. *Aquapendente* recommends it for Tapping in Dropsies. 'Tis usually furnished with a little Button at the Point, that it may be used to open Wounds of the Breast, without Danger of wounding the Lungs.

**SCONCES** are small Forts, built for Defence of some Pass, River, or other Place: Sometimes they are made regular of four, five, or six Bastions; others of smaller Dimensions, fit for Passes, or Rivers, and likewise for the Field: Such are (1.) Triangles with half Bastions; which may be all of equal Sides, or they may be something unequal. However it be, divide the Sides of the Triangle into three equal Parts, one of these three Parts will set off the Capitals and the Gorges; and the Flanks, being at Right Angles with the Sides, make half of the Gorge. (2.) Square, with half Bastions; whose Sides may be betwixt 100 and 200 Feet, and let one Third of the Side set off the Capital and the Gorges, but the Flank (which raise at Right Angles to the Side) must be but one half of the Gorge or Capital, that is on the Sixth Part of the Side of the Square. (3.) Square with half Bastions and Long. (4.) Long Squares. (5.) Star Redoubt of four Points. (6.) Star Redoubt of five or six Points. (7.) Plain Redoubts, which are either small or great. The small are fit for Court of Guards in the Trenches, and may be a Square of 20 Feet to 30. The middle Sorts of Redoubts may have their Sides from 30 to 50 Feet; the great ones from 60 to 80 Feet Square. The Profiles (that is the Thickness and Height of the Breast-works) to be set on these several Works, and the Ditches, are alterable, and uncertain; for sometimes they are used in Approaches, and then the Wideness of the Breast-work, at the Bottom, may be 7 or 8 Feet, inward Height 6, and outward 5 Foot; the Ditch may be 8 or 10 Feet, and sometimes 12; and for the Slopes, to be wrought according to the Nature of the Earth, they may sometimes be made 14 or 20 Feet wide at the Bottom, and the Height of 7, 8, or 9 Feet, and to have 2 or 3 Ascents to raise to the Parapet; the Ditch may be 16 or 24 Feet wide, and 5 or 6 deep; and sometimes they may come near the smallest sort of Ramparts, and have a Breast-work Cannon Proof, with a Ditch of 50 or 60 Feet wide, and are thus made to set upon Passes or Rivers to endure. See **REDOUT**.

**SCOPER-HOLES** in a Ship, are Holes made through the Sides close to the Deck, to carry off the Water that comes from the Pump, or any other Way. These Holes in the Covert Deck, have round Leathers nailed over them, to keep the Sea Water from coming up into the Ship, which are called *Scoper-Leathers*; and the short Nails, with broad Heads, which fasten these Leathers down, are called *Scoper Nails*.



**SCORBUTUS**, *Scurvy*, in Medicine, a Disease very frequent in the Northern Countries, particularly in fenny, wet, humid Places, open to the North, &c. 'Tis accompanied with a great Variety of Symptoms attacking the several Parts of the Body all at once. Hence *Willis* says, 'tis not any particular Disease, but a Legion of Diseases. The most usual are Bleeding, Coughing, Vomiting, Difficulty of Breathing, Looseness, a Relaxation of the Parts, Swetting, a foetid Smell of the Gums, a falling of the Teeth, stinking Breath, reddish or yellow livid Spots, Pains of the Arms and Legs, Weariness, Faintings, Head-ach, &c. Some distinguish it into *Hot* and *Cold*; but there is little Foundation for such a Distinction, as the Cause is the same in all, viz. according to *Barbette* and *Decker*, a too thick Pituitous Lymph; whence various Symptoms in various Temperaments. *Charleton* observes, That it arises chiefly from sharp, saline Particles, taken in by Inspiration, from Salt and corrupted Meats eaten, from bad Waters drank, from Nastiness, deep Chagrins, &c. He adds, That 'tis contagious. Dr. *Quincy* will have it to consist in such a Constitution, wherein the Blood is unequally Fluid. And hence he observes, 'tis best remedied by Stimuli, Exercise, and such means as promote Sanguification: 'Tis now become so frequent, that there is scarce any Disease appears, but 'tis judged to partake of the *Scorbutus*. The Cure is very difficult; and when the Disease is rooted, next to impossible. It sometimes goes off in a Flux by Stool, sometimes by the Hemorrhoids, and sometimes by Urine; but more often degenerates into a Dropsy, Atrophy, Apoplexy, Epilepsy or Convulsions. A very exact Diet is held of more Effect than the best Medicines; without this, it becomes incurable. Bleeding does not avail; strong Purgatives are hurtful: So is Sugar, and all sugar'd Things, *Mercurius Dulcis* used internally, so as not to Salivate, but only raise a Sweating, is found excellent. *Doleus* undertakes to cure any *Scorbutus* in Twelve Days time, by the Use of this alone; only the Patient to drink nothing all that Time, but a proper Decoction, and to abstain from Acids, and Hog's Flesh. *Charleton* recommends a continued Use of Milk, particularly Milk Emulsions of Sweet Almonds, Decoctions of China, Broths and other Anti-acids and Analepticks. *Emmiller* makes the Basis of the Cure of the *Scorbutus* and Hypochondriacal Diseases the same, viz. copious Vomiting. Strong Catharticks, he observes, are prejudicial; but gentle ones good; for the Body is to be still kept open. He adds, That Vinegar is hurtful, and yet the Acid Juices of Fruits and Vegetables, wholesome. Accordingly the Use of Lemon Juice is much recommended by *Lifter*. Milk, and all milky Things, while the Stomach is yet able to digest, are excellent. So are Martials. *Emmiller*, instead of Mercurials, recommends Antimonials. Thus much in the general; for the particular Symptoms, particular Medicines adapted thereto, are to be used; only mixing Antiscorbuticks with them all.

The chief simple Antiscorbuticks are, Horse-radish, sowre Sorrel, Butter-bur, Scorzonera, Sow-thistle, Zedary, Polypody, Elecampane, Guaiacum, Sassafras, Mustard-Seed, Nasturtium Aquaticum, Trifolium Paludosum, Oranges, Lemons, Juniper-Berries, Cream of Tartar, Tartarum Vitriolum, &c.

**SCORE**, in Musick, *Partition*, or the Original Draught of the whole Composition, wherein the several Parts, viz. Treble, Second Treble, Bass, &c. are distinctly scored and marked. See **PARTITION**.

**SCORPIO**, in Astronomy, the Eighth Sign of the Zodiac. See **SIGN**.

The Stars in *Scorpio*, in *Ptolomy's* Catalogue are 20; in that of *Tycho* 10; in that of Mr. *Flamsteed* 49: The Longitude, Latitudes, Magnitudes, &c. whereof, are as follow;

*Stars in the Constellation SCORPIO.*

| Names and Situations of the Stars. | Signs. | Longitude | Latitude. | Magn. |
|------------------------------------|--------|-----------|-----------|-------|
| In the first South Foot            | M      | 26 48 50  | 5 26 33A  | 6     |
| Subseq. in the first Foot          |        | 27 18 08  | 4 54 13A  | 5     |
| Contiguous to this                 |        | 27 30 49  | 4 46 19A  | 7     |
| That preced. S. of Forehead        |        | 27 55 46  | 5 43 48A  | 6     |
| In third South Foot.               |        | 28 48 52  | 8 33 25A  | 4 3   |
| South of 3 in the Forehead         |        | 28 37 25  | 5 25 46A  | 3     |
| Middle of the Forehead             |        | 28 15 50  | 1 56 31A  | 3 2   |
| North of the Forehead              |        | 28 52 56  | 1 03 09B  | 2     |
| North 2 of the contig. ones        |        | 29 21 45  | 0 16 05B  | 5     |
| South 5 under N. St. Forehead      |        | 29 32 09  | 0 05 56B  | 5     |
| Preced. in the last S. Foot        | 2      | 28 01 13  | 8 04 40B  | 6     |
| Contig. thereto Northward          |        | 1 55 59   | 6 38 22A  | 6 5   |
| Most N. following Forehead         | M      | 28 19 54  | 12 29 24B | 6     |

*Names and Situations of the Stars.*

| Signs.                           | Longitude | Latitude. | Magn. |
|----------------------------------|-----------|-----------|-------|
| 29 23 11                         | 9 15 16B  | 6         |       |
| 29 09 23                         | 12 46 32B | 6         |       |
| 3 22 10                          | 7 02 25A  | 6 5       |       |
| 3 07 35                          | 2 37 10A  | 6         |       |
| 3 29 34                          | 3 59 04A  | 4         |       |
| In preced. Heel of Ophiuchus     | 3 14 42   | 1 36 03B  | 5     |
| Under the Sole of Ophi. Foot     | 4 07 17   | 1 42 45A  | 6     |
| In Ophiuchus's Leg               | 3 40 27   | 3 16 29B  | 5     |
| Scorpion's Heart                 | 3 26 04   | 4 31 26A  | 1     |
| That over the Heart              | 5 25 12   | 3 11 30A  | 5     |
| In the Calf of Ophiu. Fore-leg 2 | 4 21 27   | 5 14 41B  | 5     |
| In the fore Ankle of Ophiu.      | 5 19 53   | 0 28 40B  | 5     |
| That follow. the Heart to S.     | 7 07 56   | 6 04 23A  | 4     |
| Fore-knee of Ophiuchus           | 4 54 28   | 11 25 40B | 3     |
| Inform between Ophiu. Legs       | 6 59 26   | 4 28 18B  | 6     |
| In the 1st Ring of the Tail      | 9 12 54   | 3 05 10A  | 6     |
| More N. and posterior to this    | 11 03 32  | 11 39 47A | 3     |
| Posterior Knee of Ophiuchus      | 12 22 01  | 10 29 56A | 6     |
| In Toe of Ophiu. hind Foot       | 15 43 28  | 3 24 16A  | 5     |
| In back of Ophiu. second Foot    | 15 55 15  | 3 20 08A  | 6     |
| In Tibia of Ophiu. hind Leg      | 16 12 46  | 3 29 39A  | 6 7   |
| Bright Star of Ophiu. Foot       | 16 06 17  | 1 08 53A  | 6     |
| Preced. in Ophiuchus's Heel      | 16 34 52  | 2 04 47B  | 4     |
| Preced. of 2 in the Sting        | 17 00 23  | 1 42 28A  | 6 7   |
| Subsequent                       | 17 05 02  | 1 47 38A  | 3     |
| Subseq. in Ophiuchus's Heel      | 17 34 53  | 4 54 52A  | 6     |
| That foll. Ophiu. Foot, N.       | 17 43 57  | 0 59 54A  | 7     |
|                                  | 18 01 32  | 0 53 48A  | 5     |
|                                  | 19 41 16  | 13 57 14A | 3 4   |
|                                  | 20 15 12  | 13 44 16A | 2 3   |
|                                  | 19 09 46  | 0 38 18A  | 5     |
|                                  | 20 46 23  | 1 28 55B  | 6     |

**SCORPION**, an ancient, military Engine, used chiefly in the Defence of Walls, &c. called also *Scorpio*. *Marcellinus* describes the *Scorpio*, as consisting of two Beams bound together by Ropes. From the Middle of the Two, rose a Third Beam; so disposed, as to be pull'd up and let down at Pleasure; and on the Top of this, were fasten'd Iron Hooks, where was hung a Sling, either of Iron or Hemp. Under the Third Beam lay a Piece of Hair-cloth full of Chaff, tied with Cords. To use the Engine, a round Stone was put into the Sling, and Four Persons on each Side, loosening the Beams bound by the Ropes, drew back the erect Beam to the Hook: When, the Engineer standing on an Eminence, giving a Stroke with a Hammer on the Cord to which the Beam was fastened with its Hook, set it at liberty; so that hitting again the soft Hair-cloth, it struck out the Stone with a vast Force. It had its Name *Scorpio*, because when the long Beam or Tillar was erected, it had a sharp Top, in manner of a Sting. The more modern Times have given it the Name *Onagar*, Wild Ass, because that Animal, when hunted, flings back Stones.

**SCORIA**, the Recrement or Drofs of any Metal, remaining after melting, or refining the same. The *Scoria* of Iron, is the Scum taken from that Metal in Forges where 'tis melted. See **SCUM**. *Scoria* of Iron, is also the sulphurous Part of the Iron; which uniting with the sulphurous Part of the Charcoal, makes together, those porous Masses, resembling Sponges, frequently seen in the Smiths Forges.

**SCOT** or *Scorb*, from the *Saxon Seas*, a Part or Portion; is a certain Custom or common Tallage, according to *Rassal*, made to the Use of the Sheriff or his Bailiffs; but now signifies a customary Contribution laid upon all Subjects, according to their Ability; for whoever are assessed to any Contribution, are generally said to pay *Scot and Loe*.

**SCOTIA**, in Architecture, a Semicircular Cavity or Channel between the Torcs, in the Bases of Columns. See **BASH**. The *Scoria* has an Effect just opposite to that of the Quarter-round. Our Workmen frequently call it the *Casement*. The *Scoria* is a concave, dark Moulding; whence its Name, viz. from *Subrō*, Obscurity, Darknes. 'Tis also called *Trochilus*, partly from its Form. In the *Corinthian* Base, there are Two *Scorias*, the upper whereof is the smaller. According to *Palladi*, the *Cavetto* is a fourth Part of the *Scoria*. See **CAVETTO**.

**SCOTISTS**, a Sect of School Divines and Philosophers, thus called from their Founder, *J. Duns Scotus*, an Irish Cordelier; who maintained the immaculate Conception of the Virgin; or, that she was born without Original Sin; in Opposition to *Thomas Aquinas* and the *Thomists*. See **THOMIST**. As to Philosophy, the



things were, like the *Thomists*, *Peripateticks*; only distinguished by this, That in each Being, as many different Qualities as it had, so many different Formalities did they distinguish; all distinct from the Body itself; and making, as it were, so many different Entities: Only those Metaphysical, and, as it were, superadded to the Being. See *PERIPATETICKS*.

**SCOTOMY**, in Medicine, a Dizziness, or Swimming in the Head, wherein the Animal Spirits are so whirl'd about, that external Objects seem to turn round. See *VERTIGO*.

**SCRATCHES**, among Farriers, a Distemper incident to Horses, consisting of dry Scabs, Chops or Riffs, that breed between the Heel and the pastern Joint. There are various kinds of *Scratches*, distinguish'd by various Names, as *Crepances*, *Rats-Tails*, *Mules*, *Kibes*, *Pains*, &c. which are all so many Species of *Scratches*; Engender'd from some dry Humour falling on the Legs, or from the Fumes of his own Dung lying under his Heels, or near them; or for Want of rubbing his Heels, especially after a Journey, from over hard-riding, &c. It begins first, with dry Scabs in the pastern Joint, in several Forms. 'Tis known by the staring, dividing and curling of the Hair on the Spot.

**SCRATCH-WORK**, in Italian, *Sgraffiti*, was a Way of Painting in Fresco, by preparing a black Ground, on which was laid a white Plaster; which White being taken off with an Iron Bodkin, the Black appear'd through the Holes, and serv'd for Shadows: This kind of Work is lasting; but being very rough, is unpleasant to the Sight.

**SCREW**, *Cochlea*, in Mechanicks, one of the Five mechanical Powers: Chiefly used in pressing or squeezing Bodies close, though sometimes also in raising Weights. The Screw is a right Cylinder, as A B, (Tab. Mechanicks Fig. 11.) furrow'd Spiral-wise. 'Tis generated by the equable Motion of a right Line F G, around the Surface of a Cylinder; while, at the same Time, the Point I, descends equably from F towards G. If the furrow'd Surface be convex, the Screw is said to be *Male*; if concave, 'tis *Female*. Where Motion is to be generated, the *Male* and *Female* Screw are always joined; that is, whenever the Screw is to be used, as a simple Engine, or mechanical Power. When joyned with an Axis in *Peritrochio*, there is no Occasion for a *Female*; but in that Case, it becomes part of a compound Engine.

#### Doctrine of the SCREW.

1<sup>o</sup> If, as the Compass described by the Power in one Turn of the Screw, is to the Interval or Distance between any two immediate Threads or spiral Windings, as B I (measured according to the Length of the Screw) so is the Weight or Resistance to the Power; then the Power and the Resistance will be equivalent one to the other, and, consequently, the Power being a little increased, will move the Resistance.

For 'tis evident, that in one Turn of the Screw, the Weight is so much lifted up, or the Resistance so much removed, or the Thing to be press'd, is squeezed so much closer together, as is the Distance between two immediate Spirals; and in the same Time, the Power to be moved is so much, as is the Compass, describ'd by the said Power in one Turn of the Screw. Wherefore the Velocity of the Weight (or whatsoever answers thereto) will be to the Velocity of the Power, as is the said Distance between the Spirals to the Compass described by the Power, in one Revolution or turning round of the Screw: So that the gaining in Power, is here recompens'd by the Loss in Time.

2<sup>o</sup> As the Distance between two Threads, B I, is less; the Power required to overcome the said Resistance is less; therefore the finer the Thread, the easier the Motion.

3<sup>o</sup> If the *Male* Screw be turned in the *Female*, at rest, a less Power will be required to overcome the Resistance, as the Lever or Scytala, B D (Fig. 12) is the longer.

4<sup>o</sup> The Distance of the Power from the Centre of the Screw, C D; the Distance of two Threads I K, and the Power to be applied in K, being given, to determine the Resistance it will overcome: Or, the Resistance being given to find the Power necessary to overcome it;

Find the Periphery of a Circle described by the Radius C D: Then to the Distance between the two Threads, the Periphery just found, and the given Power: Or, to the Periphery found, the Distance of the two Threads and the given Resistance, find a Fourth proportional. This in the former Case, will be the Resistance that will be overcome by the given Power; and in the latter, the Power necessary to overcome the given Resistance.

E. gr. Suppose the Distance between the two Threads, I K, the Distance of the Power from the Centre of the Screw C D, 25, and the Power 30 Pounds; The Periphery of

the Circle to be described by the Power, will be found 157. Therefore, as 3, 157, 30, 1570, the Weight to which the Resistance is equal.

5<sup>o</sup> The Resistance to be overcome by a given Power, being given; to determine the Diameter of the Screw, the Distance of the two Threads I K, and the Length of the Scytala or Handle: The Distance of the Threads, and the Diameter of the Screw may be assumed at pleasure; if the *Male* be to be turned in the *Female* by a Handle. Then, as the given Power is to the Resistance it is to overcome, so is the Distance of the Threads to a fourth Number, which will be the Periphery to be described by the Handle C D, in a Turn of the Screw. The Semi-diameter of this Periphery, therefore being sought, we have the Length of the Handle C D. But if the *Female* Screw be to be turn'd about the *Male*, without any Handle; then the Periphery and Semi-diameter found, will be very nearly those of the Screw required.

E. gr. Suppose the Weight 6000, the Power 100, and the Distance of the Threads 2 Lines; for the Periphery to be passed over by the Power, say, As, 100, 6000: 2, 120; The Semi-diameter of which Periphery being; of 120 = 40 Lines will be the Length of the Handle, if any be used; otherwise the Side of the *Female* Screw must be 40 Lines.

**Endless SCREW**. If a Screw be so fitted as to turn a Wheel D F (Fig. 13) it is called an *Endless*, or *perpetual* Screw; in regard it may be turned for ever, without coming at any End. From the Scheme, 'tis evident enough; that while the Screw turns once round, the Wheel only advances the Distance of one Tooth.

#### Doctrine of the Endless SCREW.

1<sup>o</sup> If the Power applied to the Lever, or Handle of an *Endless* Screw A B, be to the Weight, in a Ratio compounded of the Periphery of the Axis of the Wheel E H, to the Periphery described by the Power, by turning the Handle; and of the Revolutions of the Wheel D F, to the Revolutions of the Screw C B; the Power will be equivalent to the Weight.

Hence, 1<sup>o</sup> as the Motion of the Wheel is exceedingly slow; a small Power may raise a vast Weight, by means of an *Endless* Screw: For this Reason, the great Use of the *Endless* Screw, is either where a great Weight is to be raised through a little Space; or, where a very slow, gentle Motion is required. On which Account 'tis very useful in Clocks and Watches.

2<sup>o</sup> The Number of Teeth; the Distance of the Power from the Centre of the Screw A B, the Radius of the Axis H F, and the Power, being given; To find the Weight it will raise;

Multiply the Distance of the Power from the Centre of the Screw A B, into the Number of Teeth: The Product is the Space of the Power pass'd through, in the Time the Weight passes through a Space equal to the Periphery of the Axis. Find a Fourth proportional to the Radius of the Axis; the Space of the Power now found, and the Power. This will be the Weight the Power is able to sustain. Thus, if A B = 3, the Radius of the Axis H F = 1; the Power 100 Pounds; Number of Teeth of the Wheel D F 48; the Weight will be found 14400; whence it appears, that the *Endless* Screw exceeds all others, in increasing the Force of Powers.

**Archimedes's SCREW**, or the *Spiral Pump*, a Machine for the Raising of Water, invented by *Archimedes*. Its Structure is as follows; A leaden Tube is wound round a Cylinder A B (Tab. Hydraulicks Fig. 1.) after the same Manner as the spiral Thread is drawn in the common Screw above described. This Cylinder is inclined to the Horizon, in an Angle of about 45 Degrees, and the Orifice of the Tube B immersed under Water. If then, the Screw be turned about by the Handle I, against the Water; the Water will rise up the Spiral, and at length be discharged in A.

This Machine, with a very little Force, is able to raise a great Quantity of Water: Whence 'tis found of good Use, in the emptying of Lakes, &c. If the Water be to be raised to any considerable Height, one Screw will not suffice; but the Water drawn up by one, is to be taken by another, and so successively.

**SCRIBE**, a principal Officer in the *Jewish* Law, whose Business was to write and interpret Scripture. We find no mention of *Scribes*, in the *Old Testament*, before *Esdra*s; whence some Learned Men have construed, That the Office was brought from *Chaldea*, and *Affria*, and first established by the *Jews* after their Return from the *Babylonish* Captivity. The *Scribes* were in great Credit and Esteem among the *Jews*, and had even the Precedency of the Priests, and Sacrificers: Indeed, there were three Kinds of *Scribes*, whereof those just mention'd, properly called *Scribes of the Law*, were the first, and most con-



considerable. The Decisions of these were received with the same Respect as the Law of God itself. The second Kind, properly called *Scribes of the People*, were a Kind of Magistrates, among the *Greeks*, as well as among the *Jews*. The third Kind were publick Notaries, or Secretaries of the Council: These were the least considerable.

**SCRIBE**, *Scriba*, was also an Officer, among the *Romans*, who wrote Decrees, or Acts, and gave out Dispatches. Every Magistrate had his *Scriba* or Secretary, so that there were *Scriba Edilitii*, *Prætorii*, *Questorii*, &c. They were not admitted to the Management of the principal Offices of the Republick, unless they relinquished their Profession. In the Time of the Emperors, they were also called *Notarii*, because they made use of Abbreviations, and short Notes in Writing. See **NOTARY**.

**SCRIBING**, in Joinery, &c. A Term used, when one Side of a Piece of Stuff being to be fitted to the Side of some other Piece, which last is not regular; to make the Two, then, join close together all the Way, they *Scribe* it, thus: That is, they lay the Piece of Stuff to be *Scribed* close to the other Piece they intend to *Scribe* to, and open their Compasses to the greatest Distance the two Pieces any where stand from each other; then, bearing one of the Legs against the Side to be *Scribed* to, with the other Point they draw a Line on the Stuff to be *Scribed*: Thus have they a Line on the irregular Piece parallel to the Edge of the regular One; and if the Stuff be wrought away exactly to the Line, when the two Pieces are put together, they will seem a Joint.

**SCRIPTUARY**, among the *Jews*. See **CARAITES**.

**SCRIPTURE**, or *Scriptures*. See **BIBLE**.

**SCROBICULUS CORDIS**, the same as **ANTICARDIUM**; which see.

**SCROPHULÆ**, in Medicine, Schirrhous Tumours, arising usually about the Neck, and sometimes on other glandulous Parts, called also *Strumæ*, and popularly the *King's Evil*, or simply, the *Evil*. See **EVIL**. The Word is *Latin*, formed by Diminution, from *Scrophæ*, Sow.

**SCROTUM**, or *Scrotum*, in Anatomy, the common *Capula* or Membrane, wherein the Testicles are contained; thus called from its resembling a Pouch or Purse of Leather, called by the Ancients *Scortea*. The *Scrotum* consists of two Membranes; the Exterior whereof is only a Production of the Cuticula or Cutis, which is here very thin, and without any Fat underneath it. The Inner, called *Dartos*, is only an Expansion of the *Panniculus Carnosus*, which, together with the Cutis, is drawn into the Figure of a Purse, externally. 'Tis divided longitudinally into two Parts, right and left, by a Line, called the *Seam* of the *Scrotum*; answering to which inwardly is a Membrane, called the *Septum*, which divides the Cavity into two Parts, being only a Production of the *Dartos*. 'Tis divisible into Lamellæ, and the Testicles are on each Side loosely connected to it by means of their outer proper Tunic. Its Use is to sustain them, prevent their Collision, as also their falling too low, and to promote the *Corrugation* of the *Scrotum*. See **TESTICLE**.

**SCROTUM CORDIS**, the same as **PERICARDIUM**; which see.

**SCROWLS**, in Architecture. See **VOLUTES**.

**SCRUPLE** in Chronology. The *Chaldeæ* *Scruple* is Part of an Hour; called, by the *Hebrews*, *Hélakim*. These *Scruples* are much used by the *Jews*, *Arabs*, and other Eastern People.

**SCRUPLES**, in Astronomy. *Scruples* eclipsed are that Part of the Moons Diameters which enters the Shadow, expressed in the same Measure wherein the apparent Diameter of the Moon is expressed. See **DIGIT**.

**SCRUPLES** of half Duration, are an Arch of the Moon's Orbit, which the Moon's Centre describes from the Beginning of the Eclipse to its Middle. See **ECLIPSE**.

**SCRUPLES** of Immersion, or Incidence, are an Arch of the Moon's Orbit, which her Centre describes from the Beginning of the Eclipse, to the Time when its Centre falls into the Shadow. See **IMMERSION**.

**SCRUPLES** of Emerision, are an Arch of the Moon's Orbit, which her Centre describes in the Time from the first Emerision of the Moon's Limb, to the End of the Eclipse. See **EMERISION**.

**SCRUPULUS**, *Scruple*; the least of the Weights used by the Ancients; and amongst the *Romans* was the Twenty-fourth Part of an Ounce. See **OUNCE**.

**SCRUPLE** is still a Weight among us, containing the Third Part of a Dram, or 20 Grains. See **GRAIN**. Among Goldsmiths, the *Scruple* is 24 Grains. See **WRIGHT**.

**SCRUTOIR**, *Scrutory*, from the French *Écritoire*, a kind of long Cabinet, with a Door or Lid opening downwards, for the Conveniency of Writing on, &c.

**SCRUTINY**, in Antiquity, an Examination, or Probation, performed in the last Week of *Lent*, with regard to the Catechumens who were to receive Baptism on *Easter Day*. The *Scrutiny* was practised with a great many Ceremonies. Exorcisms and Prayers were made over the Heads of the Catechumens. Palms were made them on the *Sunday*, with the Lord's Prayer, and the Creed; which they were afterwards made to rehearse. The Process was called *Scrutinium*, *Scrutiny*; because hereby the Hearts of the Catechumens were *scrutinized*, or searched, that the Priests might understand who were fit to be admitted to Baptism. This Custom was more in Use in the Church of *Rome* than any where else: Though it appears, by some Missals, to have been likewise used, though much later, in the *Gallican Church*. 'Tis supposed to have ceased about the Year 860.

**SCRUTINY** is also used, in the Canon Law, for a Ticket, or little Paper Biller, wherein, at Elections, the Electors write their Notes privately, so as it may not be known for whom they vote.

Among us, *Scrutiny* is chiefly used for a strict Perusal, and Examination of the several Votes hastily taken at an Election; in order to find out any Irregularities committed therein, by unqualified Voters, &c.

**SCULK**, (amongst Hunters) is a Company; as, A *Sculk* of Foxes.

**SCULPTURE**, the Art of Cutting, or Carving Wood, Stone, or other Matter, to form various Figures for Representations; as also of fashioning Wax, Earth, Plaster, &c. to serve as Models, or Moulds, for the Casting of Metal Figures. *Sculpture*, in its Latitude, includes both the Art of working in Creux, properly called *Engraving*, and of working in Relievo, which is what we strictly call *Sculpture*. See **ENGRAVING**.

The Antiquity of this Art is past Doubt; as the Sacred Writings, the most ancient and authentic Monuments we have of the earliest Ages, mention it in several Places: Witness *Laban's* Idols stolen away by *Rachel*, and the Golden Calf which the *Israelites* set up in the Desert, &c. But 'tis very difficult to fix the Original of the Art, and the first Artists, from prophane Authors; what we read thereof, being intermixed with Fables, after the Manner and Taste of those Ages: Some make a Porter of *Sicyon*, named *Dibutades*, the first Sculptor. Others say, The Art had its Origin in the Isle of *Samos*, where one *Heceus* and *Theodorus*, perform'd Works of this Kind, long before *Dibutades's* Time. 'Tis added, That *Demetrius*, Father of *Tarquin the Elder*, first brought it into Italy upon his retiring thither; and that by Means of *Encirpus* and *Entygramma*, Two excellent Workmen herein, who communicated it chiefly to the *Tuscans*; among whom it was afterwards cultivated with great Success. They add, That *Tarquin* sent for *Tauranus*, one of the most eminent among them, to *Rome*, to make a Statue of *Jupiter*, &c. of baked Earth; for the Frontispiece of the Temple of that Deity. About this Time, there were many Sculptors, both in *Greece* and *Italy*, who wrought altogether in Earth. Some of the most noted, are, *Calisthenes*, an *Attican*, who made himself and his House famous, by the great Number of Earthen Figures he adorned it withal. *Demophilus* and *Gorsanus*, two Painters, who enrich'd the Temple of *Ceres* with great Variety of Painting and Earthen Images. In effect, all the first Statues of the Heathen Deities, were either of Earth or Wood; and 'twas not so much any Frailty of the Matter, or Unfitness for the Purpose, as the Riches and Luxury of the People, that first induced them to make them of Marble, and other more precious Stones. Indeed, how rich soever the Matter were, whereon they wrought, yet they still used Earth, to form Models thereof. And to this Day, whether they be for cutting Marble Statues with the Chissel, or for casting them in Metal, they never undertake the one or the other, without first making a perfect Model thereof in Earth. Whence, doubtless, arose the Observation of *Praxiteles*, That the Art of Moulding Earthen Figures, was the natural Mother of that of making Marble and Metal Figures; which last never appeared in Perfection, till about 300 Years after the Building of *Rome*; though the First was at its Height long before.

*Phidias* of *Athens*, who came next, surpass'd all his Predecessors, both in Marble, in Ivory and Metals: And about the same Time, appeared several others, who carried *Sculpture* to the highest Perfection it ever arriv'd at; particularly *Policletes* at *Sicyon*; then *Myron*; *Lysippus*, who alone was allowed the Honour of casting *Alexander's* Image in Brass. *Praxiteles* and *Scopas*, who made those excellent Figures, now before the Pope's Palace at *Montecavallo*: *Brianis*, *Timotheus* and *Leochares*, who, with *Scopas*, wrought at the famous Tomb of *Mausolus* King of *Caria*; *Cessiodorus*, *Canachus*, *Dadalus*, *Buthius*, *Nyccratus*, *Euphanor*, *Theodorus*, &c.



erates, *Phryomachus*, *Stratoniceus*, *Antigonus*, who wrote on the Subject of his Art; the famous Authors of the *Laocoön*, viz. *Agasander*, *Polydore*, and *Athenodorus*, and infinite others, the Names of some whereof have passed to Posterity; those of others have perished with their Works: For though the Number of Statues in *Asia*, *Greece*, and *Italy*, were so immense, that in *Rome* alone, as we are informed, there were more than there were living Persons, yet we have but very few now left, at least very few of the finest. When *Marcus Scaurus* was *Edile*, his Office obliging him to provide what was requisite towards the Publick Rejoycings, he adorned the stately Theatre, which he erected, with 3000 Brazen Statues; and though *L. Mummius*, and *Lucullus*, brought away a great Number out of *Asia* and *Greece*, yet, there were still above 3000 remaining in *Rhodes*, as many at *Athens*, and more at *Delphi*: but what is most extraordinary, is the Bigness of the Figures, which those ancient Artists had the Courage to undertake. Amongst those *Lucullus* brought to *Rome*, there was one of *Apollo*, 30 Cubits high; the *Colossus* of *Rhodes*, made by *Cares* of *Lyndos*, the Disciple of *Lycippus*, far exceeded it; *Nero's* Statue, made by *Xenodorus*, after that of *Mercury*, was also of an extraordinary Size, being 110 Feet high: *Sculpture*, however, did not continue above 150 Years, after *Phidias's* Time, till it began insensibly to decline; not, but that there were still some fine Pieces of Workmanship both in *Greece* and *Italy*, though not performed with so good a Fancy, and such exquisite Beauty.

Besides that the *Greek* Statues are most esteemed for the Work; there is a special Difference between them, and those of the *Romans*: in that the greatest Part of the first are naked, like those who wrestle or perform some other bodily Exercise, wherein the Youth of those Times placed all their Glory; whereas, the others are clad or armed, and particularly have the *Toga* on, which was the greatest Mark of Honour amongst the *Romans*.

To perform any thing in the Way of *Sculpture*, they begin with making a Model of Earth, or Wax. For Earthen Models, they use but few Instruments: Their Hands and Fingers do almost the Whole. For Waxen Models, to a Pound of Wax they put half a Pound of Colophony; some add Turpentine, melting the Whole with Oil of Olive: Some add a little Vermillion, or other Matter, to give it a Colour. 'Tis wrought and molded with the Fingers, like Earthen Models.

#### SCULPTURE in Wood.

For *Sculpture* in Wood; which we properly call *Carving*, the first Thing required, is, to chuse a Wood proper for the particular Kind of Work. If it be any thing large, and require a deal of Strength and Solidity, the hardest and most durable Wood is to be chosen, as Oak or Chestnut. For smaller Works they use Pear-tree, and Service-tree; but as these Woods are very hard, for little delicate Works they use softer Woods, only close, and of a fine Grain: Such is the Linden-tree, which the Chissel is found to cut more easily, and cleanly, than any other Wood.

As to Statues, we find the Ancients have made them of almost all Kinds of Wood. At *Sicyon* was an Image of *Apollo* in Box; at *Ephesus*, that of *Diana* was in Cedar. As these two Kinds of Wood are very hard, and even held incorruptible, especially Cedar; *Pliny* observes, they were judged particularly expedient for Representations of the Deities. In a Temple, on Mount *Cyllenus*, dedicated to *Mercury*, was an Image of that God form'd of the Wood of the Lemon-Tree: Others there were of the Palm-Tree, Olive-Tree, Ebony, and even of the Vine.

For large Works, if it be only single Figures, 'tis better they consist of several Pieces, than of a single one, by reason of the Liableness of the latter to warp; for every large Piece may probably not be dried to the Heart, however it may appear without Side. Observe, that the Wood will not be fit for working, till after it have been cut at least ten Years.

#### SCULPTURE in Marble, and other Stones.

The first Thing they do, is out of a great Block of Marble to saw another of the Size required, which is performed with a smooth Steel Saw without Teeth, casting Water and Sand thereon, from Time to Time: Then they fashion it, by taking off what is superfluous with a Rubbed Point, and a heavy Mallet; after this, bringing it near the Measures required, they bring it still nearer with another finer Point. They now use a flat cutting

Instrument, having two Notches in its Edge, or three Teeth; then a Chissel to take off the Scratches the former has left. This last Instrument they use with a deal of Delicacy, giving thereby a Softness, and Tenderness to their Figure; till, at length, taking Rasps of different Degrees of Fineness, by degrees they bring their Work into a Condition for Polishing. To Polish, or make the Parts smooth and sleek, they use Pumice-Stone, and Smalt; then Tripoli, and when a still greater Lustre is required, a Skin and burnt Straw.

When any considerable Work is undertaken, as a Statue, Basso Relievo, or the like, they always make a Model, before-hand, of Clay; but as this shrinks in drying, and easily cracks and breaks, they only use it to make a Mould of Plaster, or Stucco; wherein they make a Figure of the same Matter, which serves them thenceforth for a Model, and by which they adjust all their Measures and Proportions. To proceed the more regularly, on the Head of the Model they place an immoveable Circle, divided into Degrees, with a moveable Ruler, or Index, fastened in the Centre of the Circle, and divided likewise into equal Parts. From the End of the Ruler hangs a Thread with a Plummer, which serves to take all the Points to be transferr'd thence to the Block of Marble, from whose Top hangs another Plummer like that of the Model. Indeed there are some excellent *Sculptors* who disapprove of this Method, urging, That the smallest Motion of the Model changes their Measures; for which Reason they rather choose to take all their Measures with the Compasses.

For the Casting of Statues, or Figures, of Metal; and the Moulding of Statues, &c. of Stucco, Plaster, &c. See STATUE.

SCUM, a light Excrement, arising from Liquors when briskly stirred, called Foam, or Froth: See FROTH. The Word is also used for the Impurities which a Liquor by boiling casts up to the Surface; and also, for those taken from off Metals when infused; called also Dross.

SCUM of Lead is a Kind of Smalt of various Colours; produced from the Smoak of Lead. See LEAD.

SCUM of Silver is what we commonly call Litharge of Silver. See LITHARGE.

SCUM of Nitre, } See { SALT-PETRE.  
SCUM of Salt, } See { SALT.

SCURVY, in Medicine, a Disease called by the Physicians *Scorbutus*. See SCORBUTUS.

M. *Poupart*, in the Memoirs of the French Academy, gives us a very accurate History of a particular Kind of Scurvy, very frequent in *Paris* in the Year 1699. The Symptoms, and Consequences, of this new Scurvy were very extraordinary; and soon determined M. *Poupart* to conclude it somewhat of that cruel Plague wherewith the *Athenians* were so long and so dreadfully harrassed; Yet was it a true Scurvy, and the Persons attacked with it had all the usual Scorbutic Symptoms.

SCUTAGE, in ancient Customs; All Tenants who held from the King by Military Service, were either bound to attend personally in Wars and Expeditions, or, for Default of such Service, to pay a *Scutage*, or Composition in Money, which was levied on every *Scutum Militare*, or Knights Fee, and the proportional Parts for the King's Use; and the Barons, and Knights, who then paid a *Scutage* to the King, had a Power to levy the same Tax on those Tenants who held from them in Military Service. The *Scutage* was at one, two, or three Marks for each Knight's Fee. See ESCUAGE.

SCUTCHEON: See ESCUTCHEON.

SCUTIFORME OS, in Anatomy, the chief Bone of the Knee, called also *Patella*, *Mola*, &c. See PATELLA.

SCUTIFORMIS CARTILAGO, in Anatomy, one of the *Cartilages* of the *Larynx*, the broadest, and biggest of them all: Thus called, because in Form of a Shield, or square Buckler, called by the *Greeks* *Supes*, whence 'tis also called by us *Thyroides*. 'Tis also called the *Anterior*, because situate in the fore Parts. 'Tis gibbous without Side, and hollow within: Sometimes double, chiefly in Women, in whom it does not advance so far forward as in Men. The People call it *Adam's Apple*, or, *Pomum Adami*. See POMUM, &c.

SCUTTLES in a Ship, are square Holes cut in the Deck, big enough to let in the Body of a Man; to let People down into any Room below, upon Occasion. They are generally before the Main-mast, before the Knight in the Fore-castle: In the Gun-Room to go down to the Stern-Sheets: In the Round-house to go down into the Captain's Cabin, when forced by the Enemy in a Fight aloft. There are also some smaller *Scuttles*, which have Gratings over them, and all of them have Covers



to them, that Men may not tumble in, in the Night. Also, those little Windows, and long Holes, which are cut out in Cabins to let in Light, are called *Scuttles*.

**SYCRE GEMOT**, in ancient Customs, a Court held twice every Year (as the Sheriffs Turn is at this Day) by the Bishop of the Diocese, and the *Earldorman* (in Shires committed to *Eldormen*) or Sheriff in those committed to Sheriffs, that were immediately under the King. In this Court both the Ecclesiastical and Temporal Laws were given in Charge to the County: At first it was held thrice every Year. *Edward* the Confessor, appointed it to be held twelve Times in the Year. See **CONSISTORY**.

**SCYTALA**, in Mechanics, a Term some Writers use for a Kind of Radius, or Spoke, standing out from the Axis of a Machine, as a Handle or Lever, to turn it round and work it by. See **AXIS** in *Peritrochio*.

**SCYTALA LACONICA**, in Antiquity, a Stratagem, or Invention, of the *Lacedaemonians*, for the secret writing of Letters to their Correspondents, that if they should chance to be intercepted, no Body might be able to read them. To this End they had two Wooden Rollers, or Cylinders, perfectly alike, and equal; one whereof was kept in the City, the other by the Person to whom the Letter was directed. For the Letter, a Skin of very thin Parchment was wrapped round the Roller, and thereon was the Matter wrote; which done, 'twas taken off, and sent away to the Party, who, upon putting it in the same manner upon his Roller, found the Lines and Words in the very same Disposition, as when they were first wrote: This Expedient they set a very high Value on, though, in Truth, artless, and gross enough: The Moderns have improved vastly on this Method of Writing. See **CYPHER**.

**SEA**, in Geography, is frequently used for that vast Tract of Water encompassing the whole Earth, more properly called *Ocean*. See **OCEAN**.

For the Cause of the Saltness of the Sea. See **SALTNESS**.

**SEA** is more properly used for a particular Part or Division of the *Ocean*, denominated from the Countries it washes, or other Circumstances: As, The *Irish Sea*, The *Mediterranean Sea*, The *Baltic Sea*, The *Red Sea*, &c.

Till the Time of the Emperor *Justinian*, the *Sea* was common, and open, to all Men: Whence it is, that the *Roman* Laws give an Action against a Person who shall prevent, or molest, another in the free Navigation, or Fishing therein. The Emperor *Leo*, in his 56 Novel, first allowed such as were in Possession of the Lands, the sole Privilege of Fishing before their respective Territories, exclusive of all others: He even gave a particular Commission to certain Persons, to divide the *Thracian Bosphorus* among them. From that Time the Sovereign Princes have been endeavouring to appropriate the *Sea*, and to withdraw it from the Public Use. The Republic of *Venice* pretends to be so far Mistress in her Gulf, that there is a formal Marriage, every Year, between that Signory and the *Adriatic*. In these last Ages, the *English* have particularly affected the Empire of the *Sea* in the Channel, and even that of all the *Seas* encompassing the Three Kingdoms of *England*, *Scotland*, and *Ireland*, and that as far as the Shores of the neighbouring States. In Consequence of which Pretension it is, that Children born on these *Seas* are declared natural *Englishmen*, as much as if born on *English* Ground. The Justice of this Pretension is strenuously argued between *Grotius* and *Selden*, in the *Mare Liberum*, and *Marum Clausum*.

|                |         |             |
|----------------|---------|-------------|
| SEA-Astrolabe, | } Sec { | ASTROLABE.  |
| SEA-Chart,     |         | CHART.      |
| SEA-Compass,   |         | COMPASS.    |
| SEA-Laves,     |         | OLERON.     |
| SEA-Quadrant,  |         | BACK-STAFF. |

**SEA-DRAGS**, among Mariners, are such Things as hang over the Ship at Sea, as the Boat, &c. when towed.

**SEA-WATER**. To make *Sea-water* sweet, or fresh, is a Thing long and much wanted, for the Advantage of Navigation and Commerce: A Method of doing which has been invented by Mr. *Hauton*, and the Secret published in the *Philosophical Transactions*. 'Tis perform'd by precipitating the Water with the Oil of *Tartar*, and then distilling it: The Oil of *Tartar* he can draw very cheap, and the Distillation he performs very compendiously, so as to gain 24 *French* Quarts of fresh Water in a Day; for the Cooling of which, instead of making the Worm pass through a Vessel of Water, as usual, he makes it pass through a Hole in the Ship into the Sea, and enter in again through another. To the Precipitation, and Distillation, he adds a third Operation, viz.

Filtration, to correct intirely the Malignity of the Water. The Filtration is performed by a peculiar Earth, mixed and stirred with the distilled Water, and at length suffered to settle to the Bottom. The Water thus managed, is found perfectly wholesome both to Man and Beast.

Dr. *Lifter* observes, That the *Sea-water* is made fresh by the Breath of Plants growing in it. This he found by putting a Quantity of *Sea-weed* in a Vessel of *Sea-water*; and fitting the Hole with a head Beek and Receptivity of fresh, sweet, potable Water: This he takes to be the most natural, safe, and speedy Way of having fresh Water from the Sea. See **WATER**.

Mr. *Boyle* relates, from some Experiments he procured to be made of the Gravity of *Sea-water*, in different Climates, that still, as you approach nearer the Equator, the *Sea-water* is heavier and heavier, as far as within 30 Degrees thereof, after which it continues much at one.

**SEA-YOKE**, when the Sea is so rough, that the Helm cannot be governed by the Hands, the Seamen make a Yoke to steer by; that is, they fix two Blocks to the End of the Helm, and reeving two small Ropes through them, which they call *Falls*, by having some Men at each Tackle, they govern the Helm by Direction: They have other Ways of making *Sea-Yokes*.

**SEAL**, *Sigillum*, a Punchion, or Piece of Metal, or other Matter, usually either round or oval; whereon is engraven the Arms, Device, &c. of some Prince, State, Community, Magistrate, or private Person, with a Legend or Inscription: The Impression whereof in Wax serves to make Acts, Instruments, &c. authentic.—The King's *Great-Seal* is that whereby all Patents, Commissions, Warrants, &c. coming from the King, are Sealed. The Keeping hereof is in the Hands of the Lord High-Chancellor, who is hence also denominated Lord Keeper. Indeed, there is some Difference between the Lord Chancellor and Lord Keeper; not in Office, but in the Manner of Creation, the latter being made by the Delivery of the *Great-Seal* to him by the King; but the former having likewise a Patent. See **CHANCELLOR**.—The King's *Privy-Seal* is a Seal usually first set to Grants that are to pass the *Great-Seal*. See **PRIVY-SEAL**.

The Use of *Seals* is very ancient. In *Daniel*, cap. xiv. we read that *Darius* set his Seal on the Temple of *Bel*: But *Seals* are still more ancient; for *Jezabel*, in *Kings*, cap. xxi. seals the Orders she sent for *Naboth's* Death with the King's Ring. In Effect, as the ancient *Seals* were all Engraven on the Collets, Stones, &c. of Rings, and as the Original Use of Rings, 'tis asserted, was only to be in a Readiness for the Sealing of Acts, Instruments, &c. *Seals* should be as ancient as Rings themselves. See **RING**. These Sealing Rings, called *Anuli Signatorii*, *Sigillarii*, *Cirographi* or *Cerographi*, 'tis said, in ancient Authors, were first invented by the *Lacedaemonians*, who, not content to shut their Chests, Armories, &c. with Keys, added *Seals* to them: And to this End, at first, made use of Worm-eaten Wood, the Impressions whereof they took on Wax, or soft Earth: But they at length found the Art of Engraving Figures, or Rings, the Impressions of which they took in the same Manner. This, however, must be granted, that even in *Moses's* Time, the Art was known of Engraving, not only on Metals, but also on precious Stones. See **ENGRAVING**. Indeed, it does not appear that the Ring had any other Use among the Primitive *Jews* besides Ornament: At length they were used to seal Instruments, Contracts, Diplomas, Letters &c. Instances whereof we have in the Third Book of *Kings* xxi. 8. *Hester* viii. 10. *Xenophon*. *Hellen*. lib. i. *Quint. Curt.* lib. vi. *Just.* lib. xliii. cap. iii. where we learn, the Keeping of the Emperor's Seal was become a particular Office. *Lucian* adds, That *Alexander* gave his to *Perdiccas*, thereby appointing him his Successor. *Pliny* observes, That in his Time there were no *Seals* used any where but in the *Roman* Empire. At *Rome*, he tells us, they were become of absolute Necessity, inasmuch, that a Testament was null without the Testator's Seal, and the *Seals* of Seven Witnesses: But it does not appear that the *Romans* had any such Things as publick *Seals*; nor that their Edicts, and Contracts, were sealed, nor even in the Times of the Emperors. In *France*, the Custom anciently was, instead of signing their Instruments, &c. only to seal them, as appears from an Infinity of ancient Charters, which are not signed at all: The Reason whereof was, That in those Days very few People were then able to write; no Body could read and write but Clerks. In *England*, the first sealed Charter we find extant, is that of *Edward* the Confessor, upon his Founding of *Westminster* Abbey: Yet, we read of *Seals* in the MS. History of King *Offa*. Before the Time of *Harold*, the Conqueror, the *English* did not seal with Wax, but only made a Golden Cross on the Parchment, and *Sanctum*



times an Impression on a Piece of Lead, which hung to the Grant with a Silken String, and was deemed an abundant Authorizing of the Grant itself, without either Signing or Witnesses. The Colour of the Wax wherewith the Kings Grants were sealed, was usually Green, to signify that the Act continued for ever fresh, and of Force. The usual Impression on all Laymens *Seals*, till the Year 1218, was a Man on Horse back, with a Sword in his Hand; afterwards, they began to Engrave their Coats of Arms on their *Seals*: Only the Archbishops, and Bishops, by a Decree of Cardinal *Otto*, who was Legate here in 1237, were to bear in their *Seals*, their Title, Office, Dignity, and even their proper Names. *Du Chesne* observes, that none below the Dignity of a Knight had any Right to a pendant *Seal*, called *Authentic*.

The Emperors long sealed all their Acts of Importance with a *Golden Seal*; and the *Golden Bull* of Charles IV, for the Election of an Emperor, takes its Name from the *Gold Seal* hanging to it, which is called *Bull*. See *BULL*. The Pope has two Kinds of *Seals*: The first used in Apostolical Briefs, and private Letters, &c. called, the *Fisberman's Ring*. This is a very large Ring, wherein is represented *St. Peter*, drawing his Nets full of Fishes. The other is used in Bulls, representing *St. Peter's Head* on the Right, that of *St. Paul* on the Left, with a Cross between the two: On the Reverse is sometimes the Pope's Name, and Arms: The Impressions of the first *Seal* are taken in red Wax, those of the second, in Lead.

*Theod. Hopkingk*, a German Lawyer, has furnished the World with a very learned and curious Work on the Subject of *Seals*: It consists of Sixteen Chapters, the 1<sup>st</sup>. whereof treats of the Name *Seal*, *Sigillum*. 2<sup>d</sup>. Of the Antiquity of the *Sealing-Rings*, mentioned in *Genesis*, their Inventors, the Reasons of bearing them, their Kinds, and Differences, Forms, Ornaments, Hieroglyphicks, Ends, Uses, Effects, and Abuses. 3<sup>o</sup>. Of *Bulls*, in the same Method, and under the same Circumstances. 4<sup>o</sup>. Of different Kinds of *Seals*, which he divides into public and private, proper and foreign, formed and informed, ordinary and extraordinary, known and unknown, true and false; and, lastly, ratificative, and confirmative, of Authority, Solemnity, Testimony, and Consent. 5<sup>o</sup>. Of such as have a Right to bear *Seals*. 6<sup>o</sup>. Of the Keeping of *Seals*. 7<sup>o</sup>. Of Things *Seals* are put to. 8<sup>o</sup>. Of the Images, Figures, Arms, &c. the Characters, Inscriptions, and of the Places where the *Seals* are to be set, and the Order to be observed therein. 9<sup>o</sup>. Of the Number and Multitude of *Seals*, and the Advantage they bring. 10. Of their Use, End, Effects, Force, &c. 11<sup>o</sup>. Of the Proof of the *Seals* in general and particular, publick and private. 12<sup>o</sup>. Of the Verifying of *Seals*. 13<sup>o</sup>. Of the Manner of Censuring and Attaching *Seals*. 14<sup>o</sup>. Of Subscriptions that have any Regard to *Seals*. 15<sup>o</sup>. Of other Particulars that have any Regard thereto; as the Signature of Emperors, Kings, Chancellors, Secretaries, and Notaries, all in the same Order and Method. The Book was Printed in 1642. at Nurembergh, in 4to, under the Title of *De Sigillorum Primo & Novo Jure, Tractatus Practicus*, &c. We have another Work of the like Kind, by *Heincujus*, in Folio, Printed at Francfort, and Leipsic, in 1709, under the Title, *De Veteribus Germanorum aliorumq; Nationum Sigillis, eorumq; usu & præstantia Syntagma Historicum*.

*Engraving of Seals.* See ENGRAVING.

L. Keeper of the *Great-Seal*,  
L. Keeper of the *Privy-Seal*,  
*Hermetical-Seal*, - - - - - } See { CHANCELLOR:  
PRIVY-SEAL.  
HERMETICAL.

SEAL is also used for the Wax or Lead, and the Impression affixed to the Thing sealed. The Manufacturers frequently apply'd to their Stuffs, &c. is of Lead. That of Knights enjoyn'd to be of hard Wax; that of Commissioners, of soft Wax. Some *Seals* are fixed on by way of Placard, others hung by Silken Strings. The *French* seal their Edicts in Green Wax, Arrets in Yellow Wax; Expeditions for *Dauphine* in Red Wax. The Letters of the *French* Academy are sealed in Blue Wax. See WAX.

SEALER, an Officer in Chancery, appointed by the Lord Chancellor, or Keeper of the Great-Seal, to seal the Writs and Instruments there made.

**SEALING**, in Architecture, the fixing a Piece of Wood or Iron in a Wall, with Plaster, Mortar, Cement, Lead, or other solid Bindings. For Staples, Hinges and Joints, Plaster is very proper.

SEAM of Corn; is a Measure of Eight Bushels: Of  
Gals, the Quantity of 120 Pounds, or 24 Stone, each  
Five pound Weight: Of Wood, an Horse-load.

SEARCHED. See SILVER.  
SEARCHED

SEARCHER, See ALNBOAR.

SEAR-CLOTH, or *Cere-cloth*, in Chirurgery, an external Remedy somewhat harder then an Unguent, yet softer than an Emplaster; though 'tis frequently used, both for the one and the other. The *Sear-cloth* is supposed to have Wax in its Composition, which distinguishes and even denominates it. In effect, when a Linament or Unguent has Wax in it, it does not differ from a *Sear-cloth*. *Sear-cloths* are a kind of Substitutes to Friction, for the raising a Salivation. They are usually compounded of resolute Drugs, as Saffron, Myrrh and Aloes, incorporated with Wax and Gums, as Galbanum, Gum Ammoniac, and Sagapenum. The whole temper'd with Wine. The Word *Sear-cloth* is supposed to be a Corruption of *Cere-cloth*, and to be derived originally from the Greek *κηρός*, Wax.

**SEASONING** of *Timber*. See **TIMBER**.

SEASONINGS, in the *West Indies*, a kind of aguish Distemper, which Foreigners are much subject to at their first coming.

SEASONS, in Cosinography, certain Portions or Quarters of the Year, distinguished by the Signs the Sun enters, or by the meridian Altitudes of the Sun; consequent on which, are different Temperatures of the Air, different Works in Tilling the Ground, &c. The Year is divided into Four *Seasons*, *Spring*, *Summer*, *Autumn*, and *Winter*. The Beginnings and Endings of each whereof, see under its proper Article. 'Tis to be observed, the Seasons anciently began differently from what they now do: Witness the old Verses,

*Dat Clemens Hyemem ; dat Petrus Ver Cathedratus ;  
Æstuat Urbanus ; Autumat Bartholomæus.*

The Word is form'd on the *French, Saison*, which *Menage* derives from the *Latin, Statio*, whence the *Italians* have form'd *Stagione*. *Nicod* derives it from *Satio, Tempus Sationis, Sowing Time*.

**SEAT, in Medicine.** See **ANUS** or **FUNDAMENT**.

SEBARAI, or *Sebaraen*, a Name the *Jews* gave to such of their Rabbins or Doctors, as lived and taught some time after the finishing of the *Thalmud*. The Word is derived from סבר, *Sabar*, I think, whence סבבא, *Sebara*, Opinion, Sentiment; and thence סבראי, *Sebari*, or *Sebaraen*, Opinionative. The Reason of this Appellation, say the Rabbins, is, That the *Thalmud* being finish'd, publish'd and receiv'd in all the Schools and Synagogues, these Doctors had nothing to do, but dispute for and against the *Thalmud* and its Decisions. Others say, 'twas because their Sentiments were not received as Laws, or Decisions; as those of the *Mischnic* and *Gemarie* Doctors were; but were held as mere Opinions. Others, as the Author of *Schalscheleth Hakkabala*, Chain of Tradition, tell us, That the Persecution, the *Jews* underwent in those Times, nor allowing them to teach quietly in their Academies, they only propos'd their Opinion on the Composition of the *Mischna*. The first and Chief of the *Sebarai*, was *R. Josi*, who began to teach in the Year 787 of the *Æra* of Contracts; which, according to *R. David Gantz*, falls on the Year of the World 4236; and who, according to *R. Abraham*, was 38 Years President of the *Jewish* Academy. This *Æra* of Contracts is the same with that of the *Seleucides*, the 787th Year whereof, falls on the Year of *Christ* 476, which of consequence, is the *Æra* of the Origin of the *Sebarai*; whose Reign did not hold long: *Buxtorf* says, not above 60 Years; but *R. Abraham* and others, not 50. The last of them was *R. Simona*. They were succeeded by the *Gaons* or *Geonim*.

SEBESTUM, or *Sebestens*, in Pharmacy, &c. a Fruit resembling a little Plum; which when ripe, is of a deep red Colour, bordering on Black; very sweet, and the Flesh, or Pulp, glutinous, or sticky. The *Syrians* make a kind of Glue or Birdlime, of the *Sebestum*, called *Glue of Alexandria*. The Fruit is esteem'd Pectoral; but is little used in Medicine. The Stone within it is Triangular. It brought its Name from *Arabia*, whence *Pliny* observes it came in his Time into *Italy*.

SEBUÆI, a Sect among the ancient *Samaritans*. St. *Epiphanius* accuses them of changing the Time express'd in the Law, for the Celebration of the great annual Feasts of the *Jews*. *Serrarius* conjectures, That they were thus call'd, from their celebrating the Feast of the Passover on the Seventh Month, called by the *Hebrews*, *Seba*, Seventh. *Doussius* rather takes them to have been denominat'd from *Sebaia*, the Leader of a Sect among the *Samaritans*; as the Followers of *Dositheus*, were denominat'd *Dositheæ*; which two Sects, some *Jewish* Doctors suppose, to have subsisted at the same Time. *Scaliger* derives the Name from the *Hebrew*, *Schua*, Week; as, who should say, *Hebdomadites*, because of their celebrating every Second Day of the Seven Weeks, between *Easter* and



and *Whisuntide*. Yet *Scaliger*, in his Answer to *Serrarius*, gives a different Explication. In effect, all that has hitherto been advanced on this Point, is mere Conjecture.

**SECANT**, in Geometry, a Line that cuts another, or divides it into Two Parts: Thus the Line *AM* (Tab. Geometry Fig. 12) is a *Secant* of the Circle *AED*, &c. as it cuts the Circle *B*. 'Tis demonstrated by Geometers; 1<sup>o</sup> That if several *Secants* *MA*, *MN*, *ME*, &c. be drawn from the same Point *M*, that passing through the Centre *MA*, is the greatest, and the rest are all so much the less, as they are more remote from the Centre. On the contrary, the Portions thereof without the Circle *MD*, *MO*, *MB*, are so much the greater, as they are further from the Centre. The least, is that of *MA*, which passes through the Centre. 2<sup>o</sup> That if Two *Secants* *MA* and *ME*, be drawn from the same Point *M*; the *Secant* *MA*, will be to *ME* as *MD* to *MB*. See **TANGENT**.

**SECANT**, in Trigonometry, a right Line, drawn from the Centre of a Circle, which cutting the Circumference, proceeds, till it meets with a Tangent, to the same Circle. Thus the Line *FC* (Tab. Trigonometry Fig. 1.) drawn from the Centre *C*, till it meet the Tangent *EF*, is call'd a *Secant*, and particularly the *Secant* of the Arch *AE*, to which *FE* is a Tangent. The *Secant* of the Arch *AH*, which is the Complement of the former Arch to a Quadrant, is call'd the *Co-Secant*, or *Secant* of the Complement.

The Sine of an Arch *AD*, being given; To find the *Secant* thereof *FC*, the Rule is, As the Co-sine *ADC* is to the Sine *AD*, so is the whole Sine *EC*, to the *Secant* *CF*.

To find the Logarithm of the *Secant* of any Arch: The Sine of the Complement of the Arch being given; multiply the whole Sine of the Logarithm by Two, and from the Product subtract the Logarithm of the Sine Complement, the Remainder is the Logarithm of the *Secant*. See **LOGARITHM**.

Line of SECANTS. See **SECTOR**.

**SECOND** in Anatomy. See **SECUNDI GENERIS**.

**SECOND** in Geometry, Astronomy, &c. the Sixtieth Part of a Prime or Minute; either in the Division of Circles, or in the Measure of Time. A Degree, or an Hour, are each divided into 60 Minutes, marked thus *'*: A Minute is subdivided into 60 Seconds, marked thus *"*; a Second into 60 Thirds, marked thus *"'*, &c. See **DEGREE**. We sometimes say a *Second Minute*, a *Third Minute*, &c. but more usually, simply *Second*, *Third*, &c. A Pendulum Three Feet Three Inches, and two Tenths of an Inch long, vibrates *Seconds*: According to Sir *Jonas Moor*'s Reduction of *Huygen*'s Three Feet Eight Lines and an Half of Paris Measure, to English Measure. See **PENDULUM**.

**SECOND** in Musick, one of the musical Intervals; being only the Distance between any Sound, and the next nearest Sound; whether higher or lower. See **INTERVAL**. As in the Compass of a Tone, there are reckoned Nine sensible, different Sounds, which form whose little Intervals, call'd *Commās*; one might, in strictness, say, there are Eight kinds of Seconds. But as these minute Intervals, though sensible, are not yet so far so, as to contribute much to the Harmony, they usually only distinguish four Sorts. The First called, *The diminish'd Second*, containing Four Commās, and is the Difference, for Instance of a natural *ut*, and an *ut* raised four Commās higher. The Second, call'd *Second Minor*, contains Five Commās, and is made either naturally, as from *mi* to *fa*, or from *si* to *ut*; or accidentally, by means of *b*, as from *ra* to *si*, *b flat*; or from *fa diesis* to *sol*; otherwise called a *Major Semitone*, or *imperfect Second*, or *Italian Semitone*. The Third is the *Major Second*, containing the Nine Commās, which compose the Tone. This the *Italians* call *Tono* or *perfect Second*. The Fourth is the *Second Redundant*, composed of a whole Tone and a minor Semitone.

**SECOND Terms**, in Algebra, those where the unknown Quantity has a Degree less than it has in the Term where 'tis rais'd to the highest. The Art of throwing these *Second Terms* out of an Equation; that is, of forming a new Equation, where they have no Place, is one of the most ingenious and useful Inventions in all Algebra. See **REDUCTION of Equations**.

**SECOND Captain**, is a reform'd Captain, who acts as Lieutenant of another, into whose Company he is Incorporated. See **CAPTAIN**.

**SECOND Cause**. See **CAUSE**; and **EFFICIENT**.

**SECOND Sight**, an odd Qualification, many of the Inhabitants of the Western Islands of *Scotland* are said to be possess'd of. We have the Thing so well attested, by so many credible Authors (the latest of whom is Mr. *Martin*, the Ingenious Author of the natural History of these

Islands, and a Member of the *Royal Society*) that, notwithstanding the Quaintness of the Thing, there is scarce Room to call it in Question. The *Second Sight*, is a Faculty of seeing Things to come, or Things doing at a great Distance, represented to the Imagination as if actually visible and present. Thus if a Man be dying, or about to die, his Image shall appear distinctly in its natural Shape, in a Shroud, and with other funeral Apparatus, to a *Second Sighted* Person, who, perhaps, never saw his Face before: Immediately after which, the Person so seen, certainly dies. This Quality of *Second Sightedness*, is not hereditary: The Person who has it, cannot exert it at pleasure; nor can he prevent it, or communicate it to another; but it comes on him involuntarily, and exercises itself on him arbitrarily. And often, especially in the younger *Second Seers*, to their great Trouble and Terror. There are a great Number of Circumstances attend these Visions, by Observation whereof, the particular Circumstances as to Time, Place, &c. of the Death of the Person, are learnt. The Method of judging of them, or interpreting them, grows into a kind of Art; which is very different in different Persons. *Second Sightedness*, is held a Discredit among them; so that none will counterfeit it; many conceal and dissemble it.

**SECONDARY Circles**, in reference to the Ecliptick, or Circles of Longitude of the Stars, are such, as passing through the Poles of the Ecliptick, are at right Angles to the Ecliptick (as the Meridian and Hour Circles are to the Equinoctial). By the Help of these, all Points in the Heavens are referred to the Ecliptick; that is, any Star, Planet or other Phænomenon, is understood to be in that Point of the Ecliptick, which is cut by the *Secondary Semicircle*, which passes through such Star or Phænomenon. And if two Stars are thus referr'd to the same Point of the Ecliptick, they are said to be in Conjunction; if in opposite Points, they are said to be in Opposition: If they are referred to two Points at a Quadrant's Distance, they are said to be in a Quartile Aspect; if the Points differ a sixth Part of the Ecliptick, they are said to be in a Sextile Aspect. And in general, all Circles which intersect one of the Six greater Circles of the Sphere at Right Angles, may be called *Secondary Circles*; as the Azimuth or Vertical Circles in respect of the Horizon, &c.

**SECONDARY Fever**, is that which arises after a Crisis, or the Discharge of some morbid Matter, as after the Declension of the Small Pox, or Measles; and such a Fever is frequently dangerous. See **FEVER**.

**SECONDARY Planets**, those moving round other Planets, as the Centres of their Motion, and along with them round the Sun. See **PLANET**.

*Saturn*, *Jupiter*, and the *Earth*, are each attended with *Secondary Planets*: *Jupiter* with four, and *Saturn* with five, called the *Satellites* of those two Planets. See **SATELLITES**. The *Earth* with one called the *Moon*. See **MOON**.

The Motion of the *Primary Planets*, is very simple and uniform, as being compounded only of a Projectile Motion, forward in a right Line, which is a Tangent to the Orbit, and a Gravitation towards the Sun at the Centre. Add, That being at such vast Distances from each other, the Effects of their mutual Gravitation towards one another are insensible: But the Matter is far otherwise, in respect of the *Secondary Planets*; for every one of these, though it chiefly gravitate towards its respective Primary One, as towards its Centre, yet at equal Distances from the Sun, is attracted towards him with equally accelerated Gravity, as the primary One is towards him, but at a greater Distance with less, at a nearer Distance with greater; from which double Tendency towards the Sun, and towards its own Primary Planet, the Motion of the *Satellites*, or *Secondary Planets*, comes to be mightily compounded, and affected, with many Inequalities: As for Instance, (1.) The *Satellite* shall be continually accelerated in its Motion, from the Time of its Quadrature with the Sun, to the next following Conjunction or Opposition; but contrary-wise from the Syzygies to the Quadratures, it shall be retarded, and therefore will not always move swifter in or near the Syzygies, and slower near the Quadratures. From whence will follow, (2.) That the Orbits of these *Secondary Planets*, will be of a Figure more Circular in the Quadratures than in the Syzygies, where the Swiftness of the Motion will make the Figure of the Orbit more Rectilinear, and therefore the *Satellite* will run farther from its Primary Planet at the Quadratures, than at the Syzygies, so that the Orbit will be a little elliptical, having the primary Planet for its Centre, and the longer Diameter will coincide with the Line of the Quadratures, and the shorter with that of the Syzygies. Which Irregularities will arise, if the Sun's Power of perturbing the Motion of the *Satellite* be excluded, and the Orbit be concentrick with that of the Primary



**Primary Planets.** For if the Orbit be eccentric, it may happen that the *Satellite* shall be farther off from the Primary One in the Syzygies, and so move slower than it does at the Quadratures: And when this is the Case, that the *Satellite's* Orbit is not a Circle concentrick to the Primary Orbit, but an Ellipsis, in one of whose Focuses the Primary Orbit is placed; then, the Motion of the *Satellite* will be so disturbed by the Sun, that as it runs into its Orbit, the Apes of the Orbit shall be moved sometimes in *Consequencia*; and sometimes in *Antecedentia* (whereas the Nodes and Apes of the primary Planets are at rest). (3.) When the Plane of the *Satellite's* Orbit is inclined to the Plane of the Primary Orbit, the Line of the Nodes of the Secondary Orbit will be moved in *Antecedentia*, with an Angular Motion, and an unequal Velocity, for it will recede most swiftly, when the Nodes are in Quadrature to the Sun; after which, it will move slower, and at the Time of the Nodes being in the Syzygies, will be perfectly at rest. (4.) The Inclination also of the Plane of the secondary Orbit, to the primary One, will be continually varying, and will be greatest, when the Nodes are in the Syzygies with the Sun, and less (*ceteris paribus*) when they are in the Quadratures; and from the Time of the Nodes being in the Syzygies, to the Quadratures, it will be always decreasing, and from the Time of their being in the Quadratures to the Syzygies, it will be always increasing, and all those Irregularities, whether in any eccentric or concentrick Orbit, will always be something greater, when the *Satellite* is in Conjunction with the Sun, than when he is in Opposition to him. See PLANET.

SECONDINE. See SECUNDINE.

**SECRETARY**, an Officer, who, by Order of his Master, writes Letters, Dispatches, and other Instruments, which he renders Authentic by his Signature. Of these there are several Kinds; as, *Secretary of the King*, or of *State*; *Secretary of the Lord Chancellor*; *Secretary of War*, &c. The King's Secretaries were anciently call'd the King's Clerks and Notaries. As for the Name of *Secretary*, it was at first applied to such as being always near the King's Person, received his Commands, and were call'd *Clerks of the Secret*; whence was afterwards form'd, the Word *Secretary*; *Regi a secretis*: And as the great Lords gave to their Clerks the Quality of Secretaries; those who attended the King, were call'd, by way of Distinction, *Secretaries of the Commands*; *Regi a Mandatis*. This continued till the Reign of our Henry VIII. 1659, when, at a Treaty of Peace between the French and Spaniards, the former observ'd, that the Spanish Ministers, who treated for Philip II. called themselves *Secretaries of State*. Upon which the French *Secretaries des Commandements*, out of Emulation, assumed the same Title; which thence passed into England.

**SECRETARIES of State**, Officers attending the King, for the Receipt and Dispatch of Letters, Grants, Petitions, and many of the most important Affairs of the Kingdom, both Foreign and Domestick.

Till the Reign of King Henry VIII. there was only one *Secretary of State*; but then Business increasing, that Prince appointed a Second *Secretary*; both of equal Power and Authority, and both stiled *Principal Secretaries of State*: Before Queen Elizabeth's Time, they did not sit at the Council-Board; but that Princess admitted them to the Places of Privy Counsellors; which Honour they have held ever since, and a Council is never, or at least very seldom, held without one of them. On the Union of England and Scotland, Queen Anne added a Third *Secretary*, on account of the great Increase of Business, which, as to Britain, is equally and distinctly managed by all the Three, although the latter is frequently stiled *Secretary of State for North Britain*: They have under their Management and Direction, the most considerable Affairs of the Nation, and are obliged to a constant Attendance on the King: They receive and dispatch whatever comes to their Hands, be it for the Crown, the Church, the Militia, Private Grants, Pardons, Dispensations, &c. as likewise Petitions to the Sovereign, which, when read, are returned to the Secretaries for Answer, all which they dispatch according to the King's Command and Direction. As to Foreign Affairs, they are divided into Two Provinces comprehending all the Kingdoms and Nations which have any Intercourse or Business with Great Britain; each *Secretary* receiving all Letters and Addresses from and making all Dispatches to the several Princes and States comprehended in his Province: Which Division still subsists, notwithstanding the Addition of a Third *Secretary*. Ireland and the Plantations are under the Direction of the Elder *Secretary*, who has the Southern Province. Of these Three Principal Secretaries, the Two for South Britain, have each Two Under-Secretaries, and one chief Clerk; and the other for North

Britain one Under-Secretary; and one chief Clerk, with an uncertain Number of other Clerks and Translators, all wholly depending of them.

The SECRETARIES of State have the Custody of that Seal, properly called the *Signet* (See SIGNET), and the Direction of the *Signet Office*; wherein are Four Clerks employ'd, who prepare such Things as are to pass the *Signet*, in order to the Privy or Great Seal. All Grants signed by the King are returned hither, which, transcribed, are carried to one of the Principal Secretaries of State, and seal'd, and then called *Signets*, which being directed to the Lord Privy Seal, are his Warrant. On the Secretaries of State, is likewise dependant another Office, call'd *The Paper Office*, wherein all Public Writings, Papers, Matters of State, &c. are preserved. See PAPER OFFICE. All the Under Secretaries and Clerks are in the Choice of the Secretary of State, without Reserve to any Person; the former of which receives Orders and Directions from them, for writing Dispatches, Foreign and Domestick, which they give to the Chief Clerk, who distributes them to the Under-Clerks.

**SECRETARY of an Embassy**, is a Person attending an Ambassador, for the writing of Dispatches relating to the Negotiation. There is a deal of Difference between the *Secretary of the Embassy*, and the Ambassador's *Secretary*; the last is a Domestick or Menial of the Ambassador; the first a Servant or Minister of the Prince. See EMBASSADOR.

**SECRETION**, in Medicine, the Act, whereby the several Juices, or Humours in the Animal Body, are separated from the Blood, by means of the Glands.

In the Bodies of Animals, we observe a great Number of Juices of different Natures, viz. the Blood, Lympha, Saliva, Stomach-liquor, intestinal Juices, Pancreatic Juice, the Bile, Urine, &c. Now, the Blood is the general Source of all; and from it they are all *Secerned* by particular Organs, called *Glands*. The Manner, wherein this *Secretion* is effected, has been greatly enquired into in these last Ages; though not with the greatest Success. The Ancient Physicians, indeed, contented themselves to assert certain particular Virtues or Faculties inherent in the several Viscera; whereby they were determined to separate one Liquor rather than another: without troubling themselves much about the Manner wherein it was done. But the Moderns, according to the Genius of their Philosophy, must have this Point clear'd, and the Modus of *Secretion* rendered intelligible. Hence, as the exceeding Smallness of these Organs prevented any regular Search, they have imagined various Manners of explaining them.

Some, full of the Effects they have observed from Fermentations, maintain, that there are *Ferments* in the several Parts; by Aid whereof, certain Kinds of Particles mix'd in the Blood, are separated therefrom; after the same Manner as we see in *Must*, or new Wine, from which, while fermenting, certain Parts are detach'd in form of Scum. But this Opinion has so many Inconveniencies to grapple withal, that 'tis almost universally abandoned. See FERMENT.

Others consider the Glands as kinds of Sieves, whose Holes having different Figures, will only let pass certain Particles or Molecules, whose Figures resemble those of the Holes: but the Falsity of this Hypothesis was soon found out; and it was thought sufficient to fix some Proportion between the Diameters of the Pores and of the Molecules that were to pass through them, to account why very subtle Parts should pass through the Glands, through which the Coarser could not pass. Yet this Opinion was not found perfectly satisfactory: For on this Supposition, the most subtle Parts of the Blood must pass in such Quantity through the largest Pores, that there would not be enough left to furnish the little ones with what they needed: And for the same Reason, those Parts whose Pores are biggest, ought to furnish Liquors much fuller of subtle Parts than those whose Pores are smaller, which yet is contrary to Experience. For the Serosity separated in the Kidneys, under the Name of *Urine*, consists of Parts much subtler and smaller than the Bile separated in the Liver: Why then don't this Serosity escape in the Liver? the Pores whereof must be much greater than those of the Kidneys. See BILE.

This Inconvenience, many Naturalists being aware of, has made them have recourse to *Imbibition* (if the Word may be allowed us for want of a better). They maintain, then, That besides the different Diameters of the Pores, 'tis required that the several Parts be already imbued or moisten'd with a Liquor like to that they are to filter. This Opinion is rather the Result of Reason than of Experiment, and the Maintainers hereof, well pleas'd they had something to satisfy their Reason withal, never troubled themselves whether it were true: Till M. Winslow fell in to it.



**Dr. Keil**, whose Theory prevails most in *England*, accounts for *Secretion*, from the different Diameters of the Vessels, the different Velocity of the Blood, the different Angles the Ducts make with the Arteries, and the different Attraction of the different Parts, under all these different Circumstances. His Theory, see at length, under the Article *ANIMAL SECRETION*. But even in this, there is something Arbitrary and Conjectural. Besides, the Reasoning is carried such a Length, that, in a Thing the Principles whereof are so obscure, the Parts or Organs so imperfectly known, and the whole Process carried on out of Sight, the Mind can scarce safely acquiesce in it.

**Monf. Winslow**, of the *Royal Academy of Sciences*, has taken a better Course for the Discovery of this important Action of *Secretion*. He does not take up with conjectural Principles, nor draw a plausible Scheme of Reasoning therefrom through the Dark; but applies himself to Experiment, and investigates, in Nature herself, and the Structure of the Parts, the Manner *Secretion* is perform'd in. From a strict Examination of the several Kinds of Glands, both in Men and other Animals, he finds, with some other Anatomists, that the Glands are only Pelotons or Plexus of Vessels: but the Vessels proper to the Gland, and which constitute the principal Part thereof, **M. Winslow** first discovered to be Tubes, furnished, on the Inside, with a kind of Down or Tuft, or rather a very fine, spongy Tissue, which fills the whole Cavity of those Vessels like a Pith or Marrow. This he finds in all Glands, of all Animals: In different Glands, 'tis found of different Colours, and this different Colour is even found in the different Glands of Fœtus's themselves.

The Gland, then, is, at least its main Part, a Compound of these downy or spongy Vessels, which, from their Office, we will call *Secretory Vessels* or *Ducts*, and which frequently do, almost of themselves, form what we call a *Gland* or *glandulous Body*: Tho' beside these Vessels, we usually remark Four other Kinds, viz. Arteries, Veins, Excretory Ducts and Nerves. The *Secretory Ducts* we distinguish from the *Excretory Ones*; in that the former, by the peculiar Texture of their Down, serve to separate a particular Liquor; and that the latter only serve to receive the Liquor thus *Secreted*, and to carry it to the Place 'tis destined for. For a more particular Account of the Structure and Organization of the Glands, See *GLANDS*.

For the Manner wherein the Glands act, in separating the several Liquors from the Body, **M. Winslow** lays it down thus: 'Tis a Thing well known by Physicians and Chymists, that a Piece of brown Paper, which is only an Assemblage of small Filaments drawn close to each other, having once imbibed Oil or Water, will never let any other Liquor pass through it, but of the same Kind with what 'tis impregnated withal. All others it stops. And the like is observed of a Wick of Cotton or other Matter, which having first imbibed its Fill of Oil or Water, and being then dipp'd at one End, in a Vessel full of Oil and Water together; the Wick that had imbibed the Oil, will only raise and distil Oil, and that with Water, only Water. Now, in the *Secretory Ducts* of the Glands, we find a Parallel Structure; an Assemblage or Tissue of fine Threads or Filaments bound close together, much as in brown Paper, or a Cotton-wick; only differently disposed. This Tissue, then, having once imbibed a certain Juice, will not let pass any of the Liquors which arrive at the Orifices of these Ducts, but that it had first imbibed. The Cause of this Phenomenon, is doubtless, to be refer'd to the great Principle of Attraction, which is found stronger between the Homogeneous than the Heterogeneous Parts of the same Fluid. But this is an Enquiry that belongs to another Place. See *ATTRACTION* and *REPULSION*.

As the Blood, now, is not a Homogeneous Liquor; but a Compound of an Infinity of different Parts or Molecules, some Oily, others Mucilaginous, Aqueous, Saline, Subtile, Gross, &c. in its Motion along the Arteries of the Gland, it becomes divided into all the little Ramifications thereof; by which Means its Velocity is exceedingly abated, and its Molecules obliged to go off one by one, through the narrow Passage of the Artery into the Vein, and of consequence to pass over the Orifices of the *Secretory Ducts* of the Glands, whose Down is already ringed with a Juice of a certain Nature. Such of the Molecules therefore, as are found of the same Nature with the Juice they meet withal at the Entrance of the *Secretory Duct*, join themselves to them, and enter the Ducts, driven on by others that follow them. Thus they pass, successively, through the whole Vessel, and at length go out of it into the Excretory Duct, while the rest, which are of a different Kind, run over the Orifice of the *Secretory Vessel*, without ever mixing with the Juice thereof, and thus arriving in the Vein, are carried back to the Heart.

All that remains, is, to explain how these Parts should have first imbibed the particular Juices necessary for their respective *Secretions*: Now, for Instance, the Bile should

come to be separated in the Liver, for the first Time, preferably to any other Liquor? To this **M. Winslow** answers, That having observ'd the Glands of the smallest Fœtus's to be colour'd, much as in Adults; it appears highly probable they had been imbued with the Juices they were to filtrate, at the first Formation of the Animal; or at the same time when the solid Parts of the Organ themselves were framed.

**SECT**, a collective Term, comprehending all such as follow the Doctrines or Opinions of some famous Divine or Philosopher, &c. The Sects of Philosophers among the Ancients, particularly in ancient Greece, were various; as, *Pyrrhonians*, *Platonists*, *Epicureans*, *Stoicks*, *Peripatericks*, *Academicks*, &c. See each under its proper Article. At present the Sects of Philosophy are chiefly reducible to Three, viz. the *Cartesians*, the *Peripatericks*, and the *Newtonians*. In Theology, the Sects are much more numerous; yet the Ancients had Legions now extant, as, *Manichees*, *Gnosticks*, *Montanists*, &c. The principal now on Foot, are the *Lutherans*, *Calvinists*, *Anabaptists*, *Arians*, *Socinians*, *Arminians*, &c. The Rise, Progress, and Fate, with the distinguishing Characters and Opinions of each; See under its respective Head.

**SECTA**, in Law. See *SUIT*.

**SECTIO**, or *Operatio Cesarea*. See *CÆSARIAN SECTION*.

**SECTION**, a Part of a Thing divided; or the Division itself: Such, particularly, are the Sub-divisions of Chapters, by others called *Articles*. The Mark of a Section is a  $\S$ . The Ancients disregarded the Dividing of their Books into Chapters and Sections; that was a Task left for future Editors, and Critics. The Word is form'd from the *Latin*, *seco*, I cut.

**SECTION of a Building**, is its Profile; or a Delineation of its Heights and Depths raised on the Plan; as if the Fabrick was cut afunder, to discover the Inside. See *PROFILE*.

**Horizontal SECTION**. See *ICHOGRAPHY*.

**SECTION**, in Geometry, a Side or Surface appearing of a Body, or Figure cut by another; or the Place wherein Lines, Planes, &c. cut each other. The common Section of two Planes is always a right Line, being the Line supposed to be drawn by the one Plane in its cutting or entering the other. See *PLANE*. If a Sphere be cut in any manner, the Plane of the Section will be a Circle, whose Centre is in the Diameter of the Sphere. See *SPHERE*. The Sections of the Cone are Four, viz. a Circle, Parabola, Hyperbole and Ellipsis. See each under its proper Article. See also *CONE*.

**Conic SECTIONS**. See *CONIC SECTION*.

**SECTIONES SEQUENTES**, in Conics, a Term, whose Import may be thus conceiv'd: Suppose Two Right Lines, as *A B*, *C D* (Tab. Conicks Fig. 5.) mutually intersecting one another in *E*, which Point *E*, is supposed to be the common Centre of the opposite Hyperbolic Sections, *F G*, *H I*, and whose common Asymptotes, the proposed Lines *A B*, *C D* also are. In this particular Case, the Sections *G F* and *H I*, are called *Sectiones Sequentes*, because they are placed following one another in the contiguous Angles of Two intersecting Right Lines: And if the determinate Diameter *H G*, of one of the *Sectiones Sequentes* (which is coincident with the supposed indeterminate Diameter of its opposite) be equal to the vertical Tangent *K L*, applied between the Asymptotes in the Point *G*, of the Diameter *G F*, then, *Apollonius* calls such Sections, *Conjugate Sections*.

**SECTOR**, in Geometry, a Part of a Circle comprehended between two Radii, and the Arch. Thus the mix'd Triangle *A C D* (Tab. Geometry Fig. 13.) comprehended between the Radii *A C* and *D* and the Arch *A D*, is a *Sector of the Circle*.

'Tis demonstrated by Geometricians, that the Sector of a Circle, as *A C D*, is equal to a Triangle, whose Base is the Arch *A D*, and its Altitude the Radius *A C*.

If from the common Centre of Two Concentric Circles, be drawn Two Radii, to the Periphery of the Outer, the Two Arches included between the Radii, will have the same Ratio to the Peripheries; and the Two Sectors, the same Ratio to the Areas of their Circles.

To find the Area of a Sector *D C E*; the Radius of the Circle *C D*, and the Area *D E* being given: To 100, 314 and the Radius *A C*, find a Fourth proportional Number; this will be the Semi-periphery. Then to 180°, the given Arch *D E*, and the Semi-periphery just found, find another fourth Proportional; this will give the Arch *A B* in the same Measure in which the Radius *A C* is given. Lastly, multiply the Arch *D E* into the Semi-radius, the Product is the Area of the Sector.

**SECTOR** is also a Mathematical Instrument, of great Use in finding the Proportion between Quantities of the same Kind, as between Lines and Lines, Surfaces and Surfaces, &c. whence the French call it the *Compass of Proportion*. The



The great Advantage of the *Sector* above the common Scales, &c. is, that 'tis made to fit all Radius's and Scales. For, by the Lines of Chords, Sines, &c. on the *Sector*, we have Lines of Chords, Sines, &c. to any Radius betwixt the Length and Breadth of the *Sector* when opened.

The *Sector* is founded on the Fourth Proposition of the 6th Book of *Euclid*; where 'tis demonstrated, That similar Triangles have their homologous Sides proportional: An Idea of its Foundation may be conceived thus; Let the Lines AB, AC (Fig. 14.) represent the Leg of the *Sector*, and AD, AE two equal Sections from the Centre. If now the Points CB and DE be connected, the Lines CB and DE will be Parallel; therefore the Triangles ADE, ACB Similar, and consequently the Sides AD, DE, AB and BC proportional: That is, as AD:DE:AB:BC; whence if AD be the Half, Third or Fourth Part of AB; DE will be a Half, Third or Fourth Part of CB, and the same holds of all the rest. If, therefore, AD be the Chord, Sine, or Tangent of any Number of Degrees to the Radius AB; DE will be the same to the Radius BC.

#### Description of the SECTOR.

The *Sector* consists of two equal Rules or Legs of Brass or other Matter, rivetted together; but so as to move easy on the Rivet. See its Figure, Tab. Geometry Fig. 15. On the Faces of the Instrument are placed several Lines; the principal are the Line of equal Parts, Line of Chords, Line of Sines, Line of Tangents, Line of Secants, and Line of Polygons.

The *Line of Equal Parts*, called also *Line of Lines*, marked L, is a Line divided into 100 equal Parts; and, where the Length of the Leg will allow it, each is subdivided into Halves, and Quarters. 'Tis found on each Leg, on the same Side; and the Divisions numbred 1, 2, 3, 4, &c. to 10, which is near the Extremity of each Leg. Note, in Practice, 1 is taken for 10, or 100, or 1000, or 10000, &c. as Occasion requires; in which Cases 2 is taken for 20 or 200, or 2000, &c. and so of the rest. The *Line of Chords*, marked C on each Leg, is divided after the usual Manner, and numbred 10, 20, 30, &c. to 60. See CHORD. The *Line of Sines*, denoted on each Leg by the Letter S, is a Line of Natural Sines, numbred 10, 20, 30, &c. to 90. See SINES. The *Line of Tangents*, denoted on each Leg by the Letter T, is a Line of natural Tangents, numbred 10, 20, 30, &c. to 45; besides which, is another little Line of Tangents on each Leg, commencing at 45° and extending to 75° denoted by the Letter z. See TANGENT. The *Line of Secants*, denoted on each Leg by the Letter S, is a Line of natural Secants, number'd 10, 20, 30, &c. to 75, and commencing, not from the Centre of the Instrument, but at Two Inches Distance therefrom. See SECANT. The *Line of Polygons*, denoted by the Letter P on each Leg, is number'd 4, 5, 6, &c. to 12, which falls 3 Inches short of the Centre of the Instrument. See POLYGON.

Beside these Lines, which are essential to the *Sector*; there are others placed near the outward Edges on both Faces, and parallel thereto, which are, in all respects, the same as in *Gunter's Scale*, and used after the same Manner. Such are the *Line of Artificial Sines* marked S; The *Line of Artificial Tangents*; A *Line of 12 Inches*, mark'd In; and *Gunter's Line of Numbers*, mark'd N. For the Uses of all which, See *Gunter's Scale*. There are sometimes, other Lines placed, to fill the vacant Spaces, as the Lines of Hours, Latitudes and Inclinations of Meridians, which are used the same as on the common Scales. See SCALE.

The Lines found by the *Sector* are of two Kinds, lateral and parallel. The First are such as are found by the Sides of the *Sector* as AB, AC. The latter, such as go across from one Leg to the other, as DE, CB. Note, the Order of the Lines in the newer *Sectors*, is different from what it is in the old ones; for the same Line is not now put at the same Distance from the Edge on both Legs; but the Line of Chords, e. gr. is innermost upon the one, and the Line of Tangents on the other. The Advantage hereof is, that when the Instrument is set to a Radius for the Chords, it serves also for the Sines and Tangents without turning it; for the Parallel betwixt 60 and 60 of the Chords, 90 and 90 of the Sines, and 45 and 45 of the Tangents, are all equal.

#### Use of the Line of Equal Parts on the SECTOR.

1° To Divide a given Line into any Number of equal Parts, e. gr. Seven: Take the given Line in your Compasses, and setting one Foot in a Division of the Line of equal Parts, that may easily be divided by 7, e. gr. 70; whose Seventh Part is 10: Open the *Sector* till the other Point fall exactly on 70 in the same Line, in the other Leg. In this Disposition, applying one Point of the Compasses to 10 in the same Line; shut them till the other fall in 10 in the same Line of the other Leg. This

Aperture will be the 7th Part of the given Line. Note, if the Line to be divided be too long to be applied to the Legs of the *Sector*, only divide one Half, or one Fourth by 7, and the Double, or Quadruple thereof will be the 7th Part of the whole.

2° To measure the Lines of the Perimeter of a Polygon, one of which contains a given Number of equal Parts: Take the given Line in your Compasses, and set it over, upon the Line of equal Parts, to the Number of Parts on each Side, expressing its Length. The *Sector* remaining thus, set off the Length of each of the other Lines parallel to the former; and the Numbers each of them falls on will express their Lengths.

3° A Right Line being given, and the Number of Parts it contains, e. gr. 120, to take from it a less Line, containing any Number of the same Parts, e. gr. 25: Taking the given Line in your Compasses, open the *Sector* till the two Feet fall on 120 on each Leg; then, the Distance from 25 to 25 gives the Line required.

4° To find a Third Proportional to Two given Lines, and a Fourth to Three. For the First, take the Length of the first given Line in your Compasses, and lay it off on the Line of equal Parts from the Centre, to find the Number where it terminates: Then open the *Sector*, till the Length of the Second Line be included in the Aperture of the Extreme of the first: The *Sector* remaining thus, lay off the Length of the Second Line on one of the Legs, from the Centre; and note the Number where it terminates; the Distance between that Number on the Two Legs, gives the Third Proportional. In the Second Case, take the Second Line in your Compasses, and opening the *Sector*, apply this Extent to the Ends of the First, laid off from the Centre on both Legs. The *Sector* thus open'd, lay off the Third Line from the Centre, and the Extent between the Number whereon it terminates on both Legs, is the Fourth Proportional.

5° To divide a Line in any given Proportion, e. gr. into Two Parts, which shall be to each other as 40 to 70: Add the Two Numbers together, their Sum is 110. Then, between your Compasses take the Line proposed, which suppose 165, and open the *Sector* till this Distance reach from 110, to 110 on both Legs. The *Sector* thus open'd, take the Extent from 40 to 40, as also from 70 to 70; the first will give 60, the last 105, which will be the Parts proposed, for 40:70:60:105.

6° To open the *Sector*, so as the Two Lines of equal Parts may make a Right Angle: Find Three Numbers that may express the Sides of a Right-angled Triangle, as 3, 4 and 5, or their Equimultiples, as 60, 80 and 100. Take, then, in your Compasses the Distance from the Centre to 100; and open the *Sector*, till, one Point set upon 80, the other fall upon 60 in the other Leg; then do the Two Lines of equal Parts, include a Right Angle.

7° To find a Right Line equal to the Circumference of a Circle: The Diameter of a Circle being to the Circumference, nearly as 50 to 157, take the Diameter in your Compasses, and set it over on the Legs of the *Sector*, from 50 to 50. The *Sector* thus open'd, take the Distance from 157 to 157 in your Compasses. This will be your Circumference required.

#### Use of the Line of Chords on the SECTOR.

1° To open the *Sector*, so as the two Lines of Chords may make an Angle of any Number of Degrees, e. gr. 40: Take the Distance from the Joint to 40, the Number of Degrees proposed, on the Line of Chords; open the *Sector*, till the Distance from 60 to 60, on each Leg, be equal to the foresaid Distance of 40; then does the Line of Chords make the Angle required.

2° The *Sector* being opened, to find the Degrees of its Aperture: Take the Extent from 60 to 60, and lay it off on the Line of Chords, from the Centre: The Number, whereon it terminates, shews the Degrees of its Opening — By applying Sights on the Line of Chords, the *Sector* may be used to take Angles, as a Surveying Instrument.

3° To make an Angle of any given Number of Degrees, with a given Line: On the given Line describe a Circular Arch, the Centre whereof is the Point whereon the Angle is to be made. Set off the Radius from 60 to 60; and the *Sector* remaining thus, take the Distance of the two Numbers on each Leg, expressing the proposed Degrees, and lay it from the Line upon the Arch described. Lastly, drawing a Line from the Centre, through the End of the Arch, it will make the Angle proposed.

4° To find the Degrees a given Angle contains: About the Vertex describe an Arch, and open the *Sector*, till the Distance from 60 to 60 on each Leg, be equal to the Radius of the Circle: Then taking the Chord of the Arch between the Compasses, and carrying it on the Legs of the *Sector*, see what equal Number, on each Leg, the



the Points of the Compasses fall on: This is the Quantity of Degrees, the given Angle contains.

5. To take an Arch, of any Quantity, from off the Circumference of a Circle. Open the Sector, till the Distance from 60 to 60 be equal to the Radius of the given Circle: Then take the Extent of the Chord, of the Number of Degrees, on each Leg of the Sector, and lay it off, on the Circumference of the given Circle. By this Use may any regular Polygon be inscribed in a given Circle, as well as by the Line of Polygons.

*Use of the Line of Polygons on the Sector.*

1°. To inscribe a regular Polygon, in a given Circle. Take the Semi-diameter of a given Circle, in the Compasses, and adjust it to the Number 6, on the Line of Polygons, on each Leg of the Sector: Then the Sector remaining thus opened, take the Distance of the two equal Numbers, expressing the Number of Sides the Polygons is to have. *E. gr.* The Distance from 5 to 5 for a Pentagon, from 7 to 7 for a Heptagon, &c. These Distances carried about the Circumference of the Circle, will divide it into so many equal Parts.

2°. To describe a regular Polygon, *e. gr.* a Pentagon on a given right Line: Take the Length of the Line in the Compasses, and apply it to the Extent of the Number 5, 5, on the Lines of Polygons. The Sector thus opened, upon the same Lines take the Extent, from 6 to 6, this will be the Semi-diameter of the Circle the Polygon is to be inscribed in. It, then, with this Distance, from the Ends of the given Line, you describe two Arches of a Circle, their Intersection will be the Center of the Circle.

3°. On a right Line, to describe an Isosceles Triangle: Having the Angles at the Base, double those at the Vertex: Open the Sector, till the Ends of the given Line fall on 10 and 10 on each Leg; Then take the Distance from 6 to 6. This will be the Length of the two equal Sides of the Triangle.

*Use of the Lines of Sines, Tangents, and Secants, on the Sector.*

By the several Lines disposed on the Sector, we have Scales to several Radius's; So that having a Length, or Radius given, not exceeding the Length of the Sector when opened; we find the Chord, Sine, &c. thereto. *E. gr.* Suppose the Chord, Sine, or Tangent, of 10 Degrees, to a Radius of 3 Inches, required: Make 3 Inches the Aperture, between 60 and 60, on the Lines of Chords of the two Legs; then will the same Extent reach from 45, to 45 on the Line of Tangents, and from 90 to 90 on the Line of Sines on the other Side; so that to whatever Radius the Line of Chords is set, to the same are all the other set. In this Disposition therefore, if the Aperture between 10 and 10, on the Lines of Chords, be taken with the Compasses, it will give the Chord of 10 Degrees. If the Aperture of 10 and 10 be in like manner taken on the Lines of Sines, it will be the Sine of 10 Degrees. Lastly, If the Aperture of 10 and 10 be in like manner taken on the Lines of Tangents, it gives the Tangent of 10 Degrees.

If the Chord, or Tangent, of 70 Degrees were required; for the Chord, the Aperture of half the Arch, *viz.* 35, must be taken as before; which Distance, repeated twice, gives the Chord of 70°. To find the Tangent of 70° to the same Radius, the small Line of Tangents must be used, the other only reaching to 45: Making therefore, 3 Inches the Aperture between 45 and 45 on the small Line; the Extent between 70 and 70 Degrees, on the same, will be the Tangent of 70°. to 3 Inches Radius.

To find the Secant of an Arch, make the given Radius the Aperture between 0 and 0 on the Line of Secants: Then will the Aperture of 10 and 10, or 70 and 70, on the said Lines, give the Tangent of 10° or 70°.

If the Converse of any of these Things were required; that is, if the Radius be required, to which a given Line, is the Sine, Tangent, or Secant, 'tis but making the given Line, if a Chord, the Aperture on the Line of Chords, between 10 and 10, and then the Sector will stand at the Radius required; that is, the Aperture between 60 and 60, on the said Line, is the Radius. If the given Line were a Sine, Tangent or Secant, 'tis but making it the Aperture of the given Number of Degrees, then will the Distance of 90 and 90 on the Sines, of 45 and 45 on the Tangents, of 0 and 0 on the Secants, be the Radius.

*Use of the Sector in Trigonometry.*

1°. The Base and Perpendicular of a rectangled Triangle being given, to find the Hypotenuse: Suppose the Base A C (Plate Trigon. Fig. 2.) 40 Miles, and the Perpendicular A B 30; open the Sector till the two Lines of Lines make a right Angle: Then for the Base, take 40 Parts on the Line of Lines on one Leg; and for the Perpendicular 30 on the same Line on the other Leg: Then the Extent from 40 on the one, to 30 on the other, taken in the Compasses, will be the Length of the Hypotenuse, which Line will be found 50 Miles.

2°. The Perpendicular A B of a right-angled Triangle A B C, being given 30, and the Angle B C A 37°, to find the Hypotenuse B C: Take the given Side A B, and set it over, on each Side, upon the Sine of the given Angle A C B; then the Parallel Distance of Radius, or of 90 50 on the Line of Sines, will be the Hypotenuse B C; which will measure

3°. The Hypotenuse and Base being given, to find the Perpendicular: Open the Sector, till the two Lines be at right Angles; then lay off the given Base on one of those Lines from the Centre: Take the Hypotenuse in your Compasses, and setting one Foot in the Point of the given Base, let the other fall on the Line of Lines, on the other Leg: The Distance from the Centre to the Point where the Compasses fall, will be the Length of the Perpendicular.

4°. The Hypotenuse being given, and the Angle A C B, to find the Perpendicular: Make the given Hypotenuse a Parallel Radius; *i. e.* make it the Extent from 90 to 90 on the Lines of Sines; then will the Parallel Sine of the Angle A C B be the Length of the Side A B.

5°. The Base and Perpendicular A B given, to find the Angle B C A: Lay off the Base A C on both Sides the Sector, from the Centre, and note its Extent: Then take the given Perpendicular, and to it open the Sector, in the Terms of the Base; the Parallel Radius will be the Tangent of B C A.

6°. In any right-angled Triangle, two Sides being given, with the included Angle, to find the third Side: Suppose the Side A C 20, the Side B C 30, and the included Angle A C B 110°; Open the Sector, till the two Lines of Lines make an Angle equal to the given Angle, *viz.* 110°. Lay off the given Sides of the Triangle from the Center of the Sector, on each of the Lines of Lines; the Extent between their Extremes is the Length of the Side A B sought, *viz.* 412.

7°. The Angles C A B and A C B given, and the Side C B, to find the Base A B: Take the given Side C B, and turn it into the Parallel Sine of its opposite Angle C A B; and the Parallel Sine of the Angle A C B will be the Length of the Base A B.

8°. The three Angles of a Triangle being given, to find the Proportion of the Sides: Take the lateral Sines of the several Angles, and measure them in the Line of Lines; the Numbers answering thereto, give the Proportion of the Sides.

9°. The three Sides being given, to find the Angle A C B: Lay the Sides A C, C B, along the Line of Sines, from the Centre, and set over the Side A B in their Terms: So is the Sector opened, in these Lines, to the Quantity of the Angle A C B.

10°. The Hypotenuse A C (Fig. 3.) of a right-angled Spherical A B C given, *e. gr.* 43°; and the Angle C A B 20°. to find the Side C B. The Rule is: As Radius is to the Sine of the given Hypotenuse 43°, so is the Sine of the given Angle 20° to the Sine of the Perpendicular C B. Take, then, 20° from the Centre, along the Line of Sines, in your Compasses, and set the Extent, from 90 to 90, on the two Legs, and the Parallel Sine of 43°, the given Hypotenuse, will, when measured from the Centre on the Line of Sines, give 13° 30' the Side required.

11°. The Perpendicular B C, and the Hypotenuse A C given, to find the Base A B: As the Sine Complement of the Perpendicular B C is to Radius, so is the Sine Complement of the Hypotenuse, to the Sine Complement of the Base — Therefore, make the Radius a Parallel Sine of the given Perpendicular, *e. gr.* 76° 30'; Then the Parallel Sine of the Complement of the Hypotenuse, *e. gr.* 47° measured along the Line of Sines, will be found 49° 25', the Complement of the Base required: Consequently the Base itself will be 40° 35'.

*Particular Uses of the Sector in Geometry, &c.*

1°. To make a regular Polygon, whose Area shall be of any given Magnitude: Let the Figure required be a Polygon, whose superficial Area is 125 Feet: Extract the Square Root of  $\frac{1}{2}$  of 125, it will be found 5. Make a Square, whose



whose Side is 5 Feet; and, by the Line of Polygons, as already directed, make the Isosceles Triangle  $CGD$  so, as that  $CG$  being the Semi-diameter of a Circle,  $CD$  may be the Side of a regular Pentagon inscribed therein, and let fall the Perpendicular  $GE$ . Then continuing the Lines  $EG$  and  $EC$ , make  $EF$  equal to the Side of the Square before made: And from the Point  $F$ , draw the right Line  $FH$  parallel to  $GC$ ; then a mean Proportional between  $GE$  and  $EF$  will be equal to half the Side of the Polygon sought, which doubled, will give the whole Side. The Side of the Pentagon thus had, the Pentagon itself may be described, as above directed.

2°. *A Circle being given, to find a Square equal thereto.* Divide the Diameter into 14 equal Parts, by the Line of Lines, as above directed: Then will 12.4 of those Parts found by the same Line, be the Side of the Square sought.

3°. *A Square being given, to find the Diameter of a Circle equal thereto.* Divide the Side of the Square into 11 equal Parts, by means of the Line of Lines; and continue that Side to 12.4 Parts; this will be the Diameter of the Circle required.

4°. *To find the Side of a Square equal to an Ellipsis, whose transverse and conjugate Diameters are given.* Find a mean Proportional between the transverse and conjugate Diameters; which, being divided into 14 equal Parts; 12.4 thereof, will be the Side of the Square required.

5°. *To describe an Ellipsis in any given Ratio of its Diameter; the Area whereof shall be equal to a given Square.* Suppose the Proportion of the transverse and conjugate Diameters be required, as 2 to 1; divide the Side of the given Square into 11 equal Parts: Then as 2 is to 1, so is 11  $\times$  14 = 154 to a 4th Number; the Square whereof is the conjugate Diameter sought. Then, as 1 to 2, so is the conjugate Diameter to the transverse. Now,

6°. *To describe an Ellipsis, by having the transverse and conjugate Diameters given.* Suppose  $AB$  and  $ED$  (Fig. 4.) to be the given Diameters; take  $AC$  in your Compasses, and to the Extent thereof open the Sector, till the Distance from 90 to 90, on the Lines of Sines, be equal thereto. Then may the Line  $AC$  be divided into a Line of Lines, by taking the parallel Extents of the Sine of each Degree, on the Legs of the Sector, in your Compasses, and laying them off from the Centre  $C$ . The Line thus divided into Sines, (in the Figure 'tis only done into every 10th Sine) from each raise Perpendiculars both Ways; then, find Points in those Perpendiculars through which the Ellipsis must pass, thus: Take the Extent of the Semi-conjugate Diameter  $CE$  between your Compasses, and open the Sector, till the Aperture of 90 and 90 on the Lines of Sines be equal thereto: Then take the parallel Sines of each Degree of the Line of Sines of the Sector, and lay them off on those Perpendiculars drawn through their Complements in the Line of Sines  $AC$ ; thus will you have two Points in each Perpendicular, through which the Ellipsis must pass. *E. gr.* The Sector still remaining the same, take the Distance from 80 to 80 on the Lines of Sines, in your Compasses, and setting one Foot in the Point 10, on the Line  $AC$ , with the other, make the Points  $a$  and  $b$  in the Perpendiculars passing through that Point: Then will  $a$  and  $b$  be the two Points in the Perpendicular, through which the Ellipsis must pass. All the other Points, found after the same Manner, being connected, will give the Semi-Ellipsis  $DAE$ ; and the other Half will be drawn after the same Manner.

#### Use of the Sector in Surveying.

*The Bearings of three Places, as A, B, C, (Fig. 5.) to each other; i. e. The Angles ABC, BCA and CAB, being given: And the Distance of each, from a Fourth standing among them: as, D, i. e. BD, DC, and AD being given: To find the Distances of the several Places A, B, C, from each other; i. e. The Lengths of the Sides AB, BC, AC.* Having drawn the Triangle  $EDG$  (Fig. 6) similar to  $ABC$ , divide the Side  $EG$  in  $H$ , so as that  $EH$  may be to  $HG$ , as  $AD$  to  $DC$ , after the Manner already directed: And, after the like Manner must  $EF$  be divided in  $I$ , so as  $EI$  may be to  $IF$ , as  $AD$  to  $DB$ . Then continuing the Sides  $EG$ ,  $EF$ , say, As  $EH - HG$  is to  $HG$ , so is  $EH + HG$  to  $GH$ , and as  $EI - IF$  is to  $IF$ , so let  $EI + IF$  be to  $FM$ ; which Proportions are easily wrought by your Line of Lines on the Sector. This done, bisect  $HK$  and  $IM$ , in the Points  $L$  and  $N$ ; and about the said Points as Centres, with the Distances  $LH$ , and  $IN$ , describe two Circles intersecting each other, in the Point  $O$ ; to which, from the Angles  $EDG$ , draw the right Line  $EO$ ,  $FO$ , and  $GO$ , which will have the same

Proportion to each other, as the Lines  $AD$ ,  $BD$ ,  $DC$ : Now, if the Lines  $EO$ ,  $FO$ , and  $GO$ , be equal to the given Lines  $AD$ ,  $BD$ ,  $DC$ , the Distances  $EF$ ,  $FG$ , and  $EG$ , will be the Distances of the Places required. But if  $EO$ ,  $FO$ ,  $GO$ , be less than  $AD$ ,  $BD$ ,  $DC$ , continue them, till  $PO$ ,  $OR$ , and  $OQ$  be equal to them: Then the Points  $P$ ,  $Q$ ,  $R$ , being joined, the Distances  $PR$ ,  $RQ$  and  $PQ$ , will be the Distances of the Places sought. Lastly, If the Lines  $EO$ ,  $FO$ ,  $GO$ , be greater than  $AD$ ,  $BD$ ,  $DC$ , cut off from them Lines equal to  $AD$ ,  $BD$ ,  $DC$ , and join the Points of Section by three right Lines; the Lengths of the said three right Lines will be the Distances of the three Places sought. Note, If  $EH$  be equal to  $HG$ , or  $EI$  to  $IF$ , the Centres  $L$  and  $N$ , will be infinitely distant from  $H$  and  $I$ ; that is, in the Points  $H$  and  $I$ , there must be Perpendiculars raised to the Sides  $EF$ ,  $EG$ , instead of Circles, till they intersect each other; but if  $EH$  be less than  $HG$ , the Centre  $L$  will fall on the other Side of the Base continued, and the same is to be understood of  $EI$ ,  $IF$ .

*Use of the Sector in the Projection of the Sphere, both Orthographic and Stereographic; See ORTHOGRAPHIC and STEREOGRAPHIC.*

SECULAR, something Temporal, in which Sense the Word is used in Opposition to *Ecclesiastical*. Thus we say, *Secular Power*, *Secular Arm*, &c.

SECULAR is also used for a Person who lives at liberty in the World, not shut up in a Monastery, nor bound by Vows, nor subjected to the particular Rules of any Religious Community: In which Sense the Word stands in Opposition to *Regular*. The *Romish* Clergy is divided into *Regular* and *Secular*. The *Regulars* pretend their State is much more perfect than that of the *Seculars*. *Secular* Priests may hold Abbies and Priories both simple and Conventual, though not regularly but only in *Commendam*. 'Tis a Maxim, in their Canon Law, *Secularia Secularibus*, and *Secular* Benefices are only to be given to *Secular* Persons; Regular to Regular. See REGULAR.

SECULARE CARMEN, *Secular Poem*; A Poem sung, or re-hearfed, at the *Secular Games*. Of this Kind we have a very fine Piece among the Works of *Horace*: 'Tis a Saphic Ode, which usually comes at the End of his Epodes. In some Editions, the Twenty-first Ode of the first Book, is called *Carmen Seculare*.

SECULAR GAMES, *Seculares Ludi*: In Antiquity, solemn Games, held among the *Romans*, once in an Age; or, in a Period, deemed the Extent of the longest Life of Man, called by the *Greeks* *αἰών*, and the *Latins*, *Seculum*. They lasted three Days, and as many Nights, during which, Sacrifices were performed, Theatrical Shews exhibited, with Combats, Games, &c. in the Circus. Their Origine, and Institution, is delivered at Length by *Val. Maximus*: The Occasion thereof was, to stop the Progress of a Plague. The first who had them celebrated at *Rome*, was *Valerius Publicola*, the first Consul created after the Expulsion of the Kings, in the Year of *Rome* 245. The Ceremonies to be observed therein were found in one of the Books of the *Sibyls*. At the Time of their Celebration, *Heralds* were sent to invite all the World to a Feast nobody had ever yet seen, nor was ever to see again.

Authors are not agreed of the Number of Years wherein these Games returned; partly, because the Quantity of an Age or *Seculum* among the Antients is not known; and partly on other Accounts: Some will have it, that they were held once every hundred Years, and that the *Seculum*, or Age, was our Century. This *Varro* and *Livy* seem to express in very plain Terms; yet others will have it, that *Seculum* comprehended 110 Years, and that the *Secular Games* only returned in that Period, that is, at the Beginning of every 111th Year; which Opinion is countenanced by *Horace*, in his *Secular Poem*, v. 21. Be this as it will, it is certain they sometimes did not stay for the 111th, nor even for the 100th Year, for the Celebration of these Games. *Augustus*, for Instance, held them in the Year of *Rome* 736; and *Caligula* again in the Year of *Rome* 814, and of *Christ* 38, viz. 64 Years after the former; and *Domitian*, again, in still less Time, viz. in the Year of *Christ* 87, at which *Tacitus* assisted in Quality of *Decemvir*, as he himself tells us, *Annal. Lib. xi. c. ii.* This was the Seventh Time that *Rome* had seen them from their first Institution. The Emperor *Severus* exhibited them the Eighth Time 110 Years after those of *Domitian*: *Zozimus* says, these were the last; but he is mistaken, for in the Year of *Rome* 1000, Fifty Years after those of *Severus*, the Emperor *Philip* had them celebrated with greater Magnificence than had ever been known. We find them represented on Medals.

The *Ludi Seculares* were also called *Ludi Tarentini*, from *Manius Valerius Tarentinus*, who gave Occasion



to their Institution: for having been warned, in a Dream, to dig in the Ground in a Place near the *Campus Martius*, called *Tarentum*, he there found an Altar inscribed to *Dis*, or *Pluto*, and *Proserpine*: Upon which, as had been foretold him in his Dream, three of his Children born Blind, recovered their Sight, and he, in Gratitude, performed Sacrifices, on the same Altar, for three Days and three Nights successively. Some say the Place itself was called *Tarentum*, because the Water of the *Tyber* *terram terreret*, eat into the Ground in this Place.

SECULAR YEAR. See JUBILEE.

SECULARIZATION, the Action of *Secularizing*, or of converting a regular Person, Place, or Benefice, into a Secular one: Almost all the Cathedral Churches were antiently Regular, *i. e.* the Canons were to be Religious, but they have been most of them *Secularized*: For the *Secularization* of a regular Church there is required the Authority of the Pope, that of the Prince, the Bishop of the Place, the Patron, and even the Consent of the People. In France all this must be confirmed by Parliament. Religious, that want to be released from their Vows, obtain Briefs of *Secularization* from the Pope.

SECUNDA AQUA, among Chymists, &c. is *Aqua Fortis*, which has been already used to dissolve some Metal, &c. See AQUA FORTIS.

SECUNDARY, an Officer who acts as *Second*, or next to the chief Officer: Such are the *Secundaries* of the Fine Office; the *Secundaries* of the Compters, who are next the Sheriffs of London in each of the two Compters: *Secundary* of the Office of the Privy Seal; two *Secundaries* of the Pipe; *Secundary* to the Remembrancers, which are two Officers in the *Exchequer*, &c.

SECUNDI GENERIS, in Anatomy, a Distinction among the Lacteal Vessels. There are two Kinds of Lacteals, *viz.* *Primary*, or those of the first Kind, *Primi Generis*; and *Secundi Generis*, *Secondary*, or of the second Kind. The First carry the Chyle from the Intestines into Glands, dispersed in great Numbers throughout the Mesentery. The Second carry it from these Glands, after its being diluted there with Lympha, into the common Receptacle. See LACTEALS.

SECUNDINE, in Medicine, the several Coats or Membranes wherein the *Fœtus* is wrap'd up, in the Mother's Womb, as the Chorion, Amnios, the Placenta, &c. thus call'd, because they come out in the second Place, *i. e.* after the Child, in Delivery. The Matrons or Midwives call the *Secundine*, The *After-birth*, as being esteem'd a second Burthen, whereof the Mother is freed. Others call it, The *Delivery*, because when this is out, the Woman is reckon'd to be perfectly deliver'd. See FŒTUS. The *Secundine* must never be left in the Matrix; 'tis a foreign Body, which wou'd destroy the Mother: 'Tis dangerous even to have a Piece of it left behind. *Hippocrates* observes, That Twins have always the same *Secundine*.

Dr. Grew, in his Anatomy of Plants, applies the Term *Secundine* to the Fourth and last Coat or Cover of Seeds; by reason this performs nearly the same Office in Plants, that the Membranes investing the *Fœtus* do in Animals. Indeed *Pliny*, *Columella*, *Apuleius*, &c. have used *Secundine* in the same Sense.

SECURITATE PACIS, a Writ, which lies for one who is threaten'd with Death, or Danger; against the Person who so threatens him. It is taken out of *Chancery*, directed to the Sheriff. See PACE.

SECUTOR, in Antiquity, a Kind of Gladiator among the Romans. The *Secutores* are those who fought against the *Retiarii*. They were armed with a Sword, and a Buckler, to keep off the Net, or Noose, of their Antagonist, and wore a Cask on the Head. Some confound the *Secutores* with the *Mirmillones*, because both had nearly the same Weapons. The Word is formed from the Verb *Sequi*, to follow; because the *Secutores* use to pursue the *Retiarii*. See RETIARIUS. *Secutor* was also a Name given to such Gladiators, as took the Place of those killed in the Combat; or, who fought the Conqueror. This Post was taken by Lot. In Ancient Inscriptions we also meet with *Secutor Tribuni*, *Secutor Ducis*, *Secutor Caesaris*, &c. who were Officers attending the Tribunes, and Generals; perhaps like our *Aids de Camp*.

SE-DEFENDENDO; a Plea for him who is charged with the Death of another, saying, He was forced to do what he did, in his own Defense, the other so assaulting him, that had he not done as he did, he must have been in Danger of his own Life. To have this Plea admitted, the Danger must appear inevitable. But though the Party justify its being done *Se-Defendendo*, yet he is driven to procure his Pardon of Course from the Lord Chancellor, and forfeits his Goods to the King.

SEDER OLAM, in Philology, a Hebrew Term, literally signifying, *Order of the World*; being the Title of two Books of Chronology in that Language.

They are both very short, though the one more so than the other; for which Reason the one is called *Seder Olam Rabba*, that is, the great *Seder Olam*; and the other, *Seder Olam Zuta*, *i. e.* little *Seder Olam*. The first commences at the Creation of the World, and comes down as low as the War of the Pseudo Messiah *Bar Cockbah*, under *Adrian*, 52 Years after the Destruction of the Temple of Jerusalem, and, of Consequence, to the 122d Year of Christ: 'Tis almost all taken from the Scripture, excepting the End. 'Tis the Work of R. *Jay*, Son of *Hbelpeta* of *Isippora*, who lived in the second Century, about the Year 130, and was Master of the famous R. *Juda Hakkadish*, the Compiler of the *Mishna*. The *Seder Olam Zuta* is an Abridgment of the former, brought down as far as *Mar Sura*, who lived 450 Years after the Destruction of the Temple, or 522 Years after Christ. *F. Merin*, continually bent upon diminishing the Antiquity of the Principal Books of the Jews, endeavours to prove it to have been wrote about the Year of Christ 1124, as indeed it is expressed at the Beginning; but R. *David Gantz* has overthrown this Opinion in his *Teshuvah David*, and shewn, that the Date, in the Beginning, is an Interpolation. The two Chronologies were first Printed at Mantua in 1514, Quarto; again, at Basil, by Froben, in 1580, Octavo: At Venice in 1545 Quarto: At Paris, with a Latin Version of *Genebrard*, in Twelves. They have been since Printed at Amsterdam, in 1711.

SEDIMENT, the Settlement, or Dregs, of any Thing; or that gross, heavy Part of a fluid Body, which, upon resting, sinks to the Bottom of the Vessel. Some Physicians pretend to discover much of the Nature of the Disease, from the Sediment of the Urine. The Word is formed from the Latin *Sedimentum*, which *Mathæus Sylvaticus* derives a *diuturna Sede*. Dr. Woodward maintains, That at the Deluge, the whole Terrestrial Globe was dissolved into one uniform Mass, and that the New World arising thence was perfectly Spherical, and without any Inequalities, consisting of several Strata, which the Earthy Sediment gradually produced, as it drained. See DELUGE.

SEDRA, the High-Priest of the Sect of *Ali*, among the Persians. The *Sedra* is appointed by the Emperor of Persia, who usually confers the Dignity on his nearest Relation. The Jurisdiction of the *Sedra* extends over all Effects destined for pious Purposes, over all Mosques, Hospitals, Colleges, Sepulchres, and Monasteries. He disposes of all Ecclesiastical Employments, and nominates all the Superiors of religious Houses. His Decisions, in Matters of Religion, are all received as so many infallible Oracles: He judges of all Criminal Matters, in his own House, without Appeal, and is, without Contradiction, the second Person in the Empire. He has not, however, any indelible Character, but frequently quits his Post for another purely Secular one: His Authority is balanced by that of the *Moudtehtelid*, or first Divine of the Empire.

SEED, a Matter prepared by Nature, for the Reproduction and Conservation of the Species, both in Men, Animals, and Plants: Some Naturalists add, That even Stones, Minerals, and Metals themselves have each their proper Seed in their Mines, and are produced and perpetuated thereby. See MINERAL, STONE, &c.

SEED, *Semen*, in the Animal Oeconomy, is a white, Liquid Matter, or Humour, the thickest of any in the Body, separated from the Blood in the Testicles, and reserved in proper Vessels, to be the Means of Generation. By Chymical Analysis it is found to consist almost entirely of Oil, and Volatile Salts, blended together by the Mediation of a little Phlegm. Its Activity Dr. Drake takes to be derived from the Salts, wherewith it abounds, far more than any other Animal Liquor. See HUMOUR.

The Parts concerned in the Preparation of the Seed are the *Spermatic Arteries*, which bring the Blood to be secreted into the Testicles; The Testicles, and *Parastata*, where the Secretion itself is chiefly effected; The *Vas Deferentia*, which convey the secreted Matter out of the Testicles; and the *Vesicula Seminales*, which receive and preserve it to be emitted in Coition. See each of these Parts described under its proper Article TESTICLE, &c.

The Blood received, in small Quantities, into the *Spermatic Arteries*, and there, by the particular Structures of the Parts, much diminished of its Velocity, is yet farther retarded about the *Corpus Pyramidalis*, or *Varicosum*, and its redder, and thicker Parts, carried off by Canals opening into the Veins. Thus rendered paler, and slower, it is received into the winding Recesses of the Testicles, where, almost stagnating, it assumes an Ash Colour, and is further prepared, thickened, &c. in the *Ductus Highmorianus*, whence, slowly driven into the *Epididymide*, or *Parastata*, it is further prepared and elaborated in the Folds and Complications thereof, and, at length, creeps slowly into the



the *Vasa Deferentia*, or *Ejaculatoria*, which consist, at first, of a thick, fungous Matter, very narrow, but growing sensibly wider, and then again narrower; in the winding Meanders whereof it is collected, its Motion abated, further elaborated, and constricted, and at last driven into the *Vesiculae Seminales*, in the various Cells and Meatus's whereof it is receiv'd, laid up, fix'd, thicken'd, whiten'd, and raised to its last Perfection: in which State it is called *Seed*.

It is observed, that no Humour in the Body is generated so slowly, meets with so many Means to retard it, or to elaborate, and concoct it, when at rest, as the *Seed*. Some imagine that, in its whole retarded Progress, besides what is apparent, there is something still added to it from the minute nervous Vesicles; and something taken away, by the various Lymphatics, and discharg'd thereby into the Venous Vesicles of the *Corpus Pyramidale*, and the little Veins of the *Vesiculae Seminales*, and thence into the Humours of the whole Body: *Boerhaave* takes both the one and the other to be very probable.

The *Seed*, or Humour, thus form'd in the Testicles, *Parastata*, *Vasa Deferentia*, and *Vesicula Seminales*, being, when new, diluted with a little warm Water, and view'd with a good Microscope, is seen to consist of innumerable, little, oblong, living, Eel-like Animalcula floating in the other Part of this Humour. This is always observ'd in the *Seed* of all Men, Quadrupedes, Birds, Fishes, amphibious Animals, and Insects. Upon comparing this with the Bulk, Figure, Place, Change, &c. of the Carina of the Chick described by *Malpighi*, and with the known Law of Nature observ'd in the Generation of Frogs; it appears highly probable, that the Animalcula of the Male *Seed*, contain the Rudiments, or Stamina, of the future Human Body; and the more so, since, whenever the Testicles, or this Humour is wanting, there is always Sterility on the Side of the Male. *M. Leewenhoek*, the first Discoverer of these Animalcula, and many after him, make no Scruple to call them true *Fœtus*'s, little *Men*; and some have even pretended to discover somewhat of the Human Figure therein. But *Verkeyen*, and others after him, deny the Existence of any such Animalcula, maintaining, That 'tis only the intestine Motion of the Parts of the *Seed* kept on Foot by the Warmth thereof, that exhibits this Appearance, which fanciful Persons have improv'd into frisking Animalcula; and urging, in Confirmation hereof, That no sooner is the Warmth gone, than all Appearance of Animals ceases: But this, notwithstanding the Doctrine of the *Animalcula in Semine*, is now generally received. See ANIMALCULA.

Some admit of four several Kinds of *Seed*: The *Seed* of the Testicles, that of the *Vesicula Seminales*, that of the Prostates, and that of the Glands of the Penis. The two first, which we have described as one and the same Humour, only in different Stages, those Authors take to be different, as not being able to find any strict Communication between the *Deferentia* and the *Vesiculae*; but that Communication is fully shewn, by *Dr. Drake*, so that nothing needs further, to shew the *Seeds* the same. The Liquor of the Prostates, and that of the Glands of the Penis are generally allow'd not to be any true *Seed*, no more than that emitted by Women: Nor is there any good Reason why either of them should be called so, as their Appearance is very different, and as other sufficient Uses are assign'd for them, viz. To line and lubricate the Parts, that the *Seed*, Urine, &c. may pass more freely, and without adhering. See PROSTATES.

The Seminal Liquor, however, such as emitted for Use, is a Mixture of several Liquors, pour'd at the same Time into the common Canal of the Urethra, either from the Glands that have secreted them, or the Reservoirs that have kept them. *M. Du Verney* observes, That in different Species, the Number and Structure of these Organs is different. In Man, the Principal are the *Vesiculae Seminales*, and the Prostates, besides what was discovered by *Mr. Coreper*, viz. A Number of new glandulous Bodies on each Side the Urethra, whose excretory Ducts open into the Urethra, towards the Root of the Yard. *M. du Verney* has found, that the same are likewise in most other Animals, and placed in the same Manner. 'Tis controverted, whether or no the Liquor filtrated hereby, be necessary to Generation. *M. du Verney* thinks it is, and his chief Reason is, That in Animals that have been castrated, these Glands, as well as all the other Sources of Generation, are found dried up, and decay'd. *M. Littré* opposes to this, that the *Vesiculae Seminales*, and Prostates, having little Cells, where their filtrated Liquor is deposited, 'tis easily conceiv'd that their Humours may wait some Time, for an Occasion of being emitted; but that these new Prostates, or Glands, of *Mr. Coreper*, having no such Reservoirs, their Liquor must ooze out into the

Cavity of the Urethra, in Proportion, as it is separated, and be destined for some continual, not a momentary, or occasional Use. He adds, That as the excretory Ducts of these Glands traverse the spongy Body of the Urethra, for two Inches e'er they penetrate into its Cavity, and that in the sole Moments when the Liquor should be discharg'd, to assist in Generation, that spongy Body is extremely dilated, and its Sides in a State of Compression, the Liquor must be then less disposed to a Discharge than ever. See ERECTION.

For the Fate of the *Seed* when lodged in the Uterus: See CONCEPTION, GENERATION, &c.

SEED in Botany, a Product of a Plant, whereby the Species is propagated. See PLANT. The *Seed* is frequently the Fruit of the Plant, as is the Case in most Herbs: See FRUIT. Sometimes it is only a Part inclosed in the Fruit, and that in Form, either of Grain, Pippin, Kernel, or Berry. See GRAIN, PIPPIN, &c.

The *Seed* is the natural Offspring of the Flower, and that for whole Production all the Parts of the Flower are intended; So that when this is once well form'd, these several Parts of the Flower dwindle, and disappear. See FLOWER.

'Tis produced from the Farina of the Apices, let fall on the Head of the Pistil, and thence forwarded to an Uterus, at the Bottom thereof, divided into several Cells; where, coming to receive the nutritious Juice of the Plant, it is first soften'd, then swell'd, increased both in Matter and Bulk, and at length comes to its State or Maturity. For more particular Account of the Manner of the Generation of the *Seed*, see GENERATION.

That the whole Plant is contained in the *Seed*, is an Opinion as old as *Empedocles*, and is still the prevailing Doctrine among the Generality of Naturalists. Experience, the Microscope, and the Modern Philosophy, give it great Countenance. In effect, by the Use of good Microscopes, we discover, in the *Seed*, several of the Parts of the future Tree, only in Miniature; particularly a little Root, called the *Radicle*, and the Stem called the *Plumule*. See RADICLE, and PLUMULE.

In *Malpighi*'s Life, we have a Debate between him and *Seignior Triumphetti*, Provost of the Garden at Rome, Whether the whole Plant be actually contained in the *Seed*: The Affirmative is maintained by *Malpighi*, with cogent Arguments; among which this is one, That in a Kidney Bean e'er sown, the Eye, assisted with a Microscope, easily discovers Leaves, a Bud, and even the Knots, or Implantations of the Leaves on the Stem. The Stem itself is very conspicuous, and plainly consists of Woody Fibres, and Series's of little Utricles. And whereas *Seignior Triumphetti* had objected, That by Poverty, Transplantation, &c. several Plants degenerate into others, particularly Wheat into Tares, and Tares again into Wheat: In Answer to this, which is one of the strongest Objections against that Opinion, *Malpighi* replies, That he is not fully satisfied as to the Truth of the Objection, for that both himself, and his Friends, making the Experiment, no Metamorphosis of the Wheat succeeded: But granting the Metamorphosis, 'tis the Soil, or the Air, or the Culture, is in the Fault. Now, from a morbid, and monstrous Condition of Nature, there is no inferring her genuine and permanent State. See DEGENERATION.

To the same Effect, *Mr. Leewenhoek*, after a nice Observation of an Orange Kernel he had made to germinate in his Pocket, &c. concludes, "Thus we see how small a Particle, no bigger than a coarse Sand, is increas'd, &c." A plain Demonstration, that the Plant, and all that belongs to it, was actually in the *Seed*, viz. The Body, Root, &c. *Mr. Derham* adds, That of all the *Seeds* he has viewed, except the Maple, the Plant appears the plainest to the naked Eye in the Nux Vomica.

The Fecundity of Plants, in the Production of *Seeds*, is very surprizing. *M. Dodart*, in the Memoirs of the French Academy of Sciences, computes, That an Elm, living 100 Years, ordinarily produces of it self 33000000 Grains; and adds, That had its Crown, or Head, been cut off, it would have put forth as many Branches, within half an Inch of the Place where it was cut, as it had before; and that at whatever Height it were cut off, the Effect would have been still the same. Hence he concludes, That the whole Trunk, from the Ground to the Rise of the Branches, is full of the Principles, or little Embryo's of Branches, which, it is true, cannot all appear at once, but which being conceiv'd, as separated by Circular Rims, half an Inch high, compose so many Sets of Branches, each whereof is ready to appear, and will really appear if the Head be lopp'd off just over it. Now these invisible Branches exist as really as those which appear. For whence else should they come? The Trunk.



Trunk cannot produce them, as being it self no more than a Packet of Fibres, destitute of all Action: Nor can the Sap, which, like the Blood, is fit to nourish the Parts, but not to form any new ones. The Branches thereof existed before the Tree was lopped, and if they had appeared, would have bore an equal Number of Grains as those which did. These Grains, therefore, they must already contain in little. On this Footing, the Tree may be said actually to contain in itself 15840000000 *Seeds*, wherewith to multiply itself as many times: But what shall we say, if each *Seed*, or Grain of a Tree, contain in itself another Tree, containing the same Number of *Seeds*? And, if we can never come either at a *Seed* which does not contain Trees, nor at a Tree which does not contain *Seed*? By this Means we shall have an increasing Geometrical Progression, the first Term whereof is 1. the second 15840000000, the third, the Square of 15840000000; the fourth, its Cube, &c. to Infinity.

Several Species of Plants have been always supposed to be destitute of *Seed*, in regard, no Observation, no Microscope, no Anatomy, discovered any Thing like them: Such are the *Capillaries*, the several Kinds of *Fuci*, Sea plants, Mosses, &c. But the happy Industry of the present Age has discover'd the *Seeds* of some of them; and has left us out of all Doubt, that the rest are not without the same. The *Seeds* of Fern, and the Capillary-Plants, were first discovered by *Cæsius*; and since, more fully and critically by M. *W. Cole*. The *Seeds* of some Sea-Plants, were discover'd by the Count de *Marfigli*, and those of others, by M. *Reaumur*, the first mentioned in the History of the *French Academy*, for the Year 1712, and the latter for the Year 1711. The *Seeds* of some Kind of *Fuci* have been discovered by Mr. *Samuel Doody*; those of Coralloid Shrubs, by Dr. *Tanc. Robinson*, as also, those of several Fungi, particularly Truffles, and *Crepitus Lupi's*, or Puff-balls; and those of some other by Dr. *Lister*. See MUSHROOM. Under which Article, a new Theory of a Propagation of these apparently Seedless Plants is laid down.

SEEDS, in Gardening, and Agriculture. Mr. *Bradley* observes, That the *Seeds* of Plants, though exceedingly good, will degenerate from the Mother-Plant, if they be sown on the same Ground, whence they were gathered: so that there is a great Necessity for a yearly Change for Seeds of Forest Trees; as Acorns, Mast, &c. If the Place be too cold to sow them when gathered in *August*, they may be kept barrell'd or potted up, in moist Sand or Earth, *stratum super stratum*, during the Winter, at the End of which they are found sprouted, and if gently sown, will be as forward as if sown in *Autumn*, besides their missing the Vermin to which the Winter Seed is much exposed. The Seed not to be chosen from the most fruitful Trees, so much as from the most solid and fair; nor covet the largest Acorns, but the most weighty, clean, and bright. Porous, insipid, mild Sorts of *Seeds*, to be sown as soon as ripe. Hot, bitter Seeds to be kept a Year before sown. The Shape and Weight of *Seeds*, direct how they are to be set. Most of them, when they fall, lie on one Side, with the small End towards the Earth, which shews that Posture to be best to set any Stone or Nut in: If they be heavy, sow them the deeper. Acorns, Peaches, &c. to be sown 2 or 3 Inches deep. See SEMINARY and SEMINATION.

**SEEDS**, in Pharmacy, &c. The *Seeds* used in Medicine, &c. especially those imported from the *Indies*, *Levant*, &c. are severally described under their respective Articles, which see. Among those cultivated at Home, the Principal are the *Four hot*, and the *Four cold Seeds*, as they are called. The first are those of Anis, Fennel, Cummin, and Caraway; the latter, those of Gourd, Pumpkin, Melon, and Cucumber. The Use of the four cold *Seeds* is for the making of Emulsions, cool, refreshing Drinks, Pastes for the Hands, and Oils used by the Ladies for the Complexion.

SEED of Pearls, - - - - } See { PEARL.  
SEMEN *Sanctum*, or *Santonicum*, } WORMSEED.

**SEEDLINGS**, are such Roots of Gilliflowers, as come from Seed sown; also the young tender Shoots of any Plants, that are newly sowed.

SEEING, the Act of perceiving Objects by the Organ of *Sight*; or the Sense we have of external Objects, by means of the Eye. See *SIGHT*.

For the Apparatus, or Disposition of the Parts necessary to Seeing; See EVIL.

For the Manner wherein Seeing is perform'd, and the  
Laws thereof; See VISION.

Our best Anatomists differ greatly as to the Cause why we don't see double with the Eyes. *Galen*, and others after him, ascribe it to a Coalition or Decussation of the

Optic Nerve behind the *Os Sphencide's*. But whether they decussate or coalesce, or only barely touch one another, is not so well agreed. The *Barthelins* and *Vesalius*, say expressly, they are united by a perfect Confusion of their Substance: Dr. *Gibson* allows them to be united by the closest Conjunction, but not Confusion of their Fibres. *Des Cartes* and others, account for the Effect another Way, v. z. by supposing that the *Fibrille* constituting the medullary Part of those Nerves, being spread in the Retina of each Eye, have each of them corresponding Parts in the Brain; so that when any of those *Fibrille* are struck by any Part of an Image, the corresponding Parts of the Brain are affected thereby. Somewhat like which is the Opinion of Dr. *Briggs*; who takes the Optic Nerves of each Eye to consist of homologous Fibres, having their Rise in the *Thalamus nervorum Opticorum*, and thence continued to both the *Retina* which are composed of them: And farther, that those *Fibrille* have the same Parallelism, Tension, &c. on both Eyes: Consequently, when an Image is painted on the same corresponding, sympathizing Parts of each *Retina*, the same Effects are produced, the same Notice carried to the *Thalamus*, and so imparted to the Soul. Hence that double Vision ensuing upon an Interruption of the Parallelism of the Eyes, as when one Eye is depressed by the Finger, or their Symphony interrupted by Disease. But Dr. *Briggs* maintains, that 'tis but in few Subjects, there is any Decussation; in none, any Conjunction more than mere Contact.

Whence it is that we see Objects erect, when, as 'tis certain, the Images thereof are painted invertedly on the Retina, is another Difficulty in the Theory of Seeing. *Des Cartes* accounts for it hence; That the Notice the Soul takes of the Object, does not depend on any Image, nor of any Action coming from the Object, but merely from the Situation of the minute Parts of the Brain; whence the Nerves arise. *E.gr.* the Situation of a Capillament of the Optic Nerve, corresponds to a certain Part of the Brain; which occasions the Soul to see all those Places lying in a right Line therewith. But Mr. *Molyneux* gives us another Account: The Eye, he observes, is only the Organ, or Instrument: 'Tis the Soul that sees. To enquire, then, how the Soul perceives the Object erect by an inverted Image, is to enquire into the Soul's Faculties. Again, imagine that the Eye receives an Impulse on its lower Part, by a Ray from the upper Part of an Object; must not the visive Faculty be hereby directed to consider this Stroke as coming from the Top rather than the Bottom of the Object, and consequently, be determined to conclude it the Representation of the Top?

**SEELING.** A Horse is said to *Seel*, when upon his Eye-brows, there grows about the Breadth of a Farthing of white Hairs, mixed with those of his natural Colour; which is a Mark of Old Age: An Horse never *Seels* till he is Fourteen Years old, and always before he is Sixteen at farthest: The light Sorrel and Black, sooner *Seel* than any other. Horse-Jockeys usually pull out those Hairs with Pincers; but if there be so many, that it cannot be done, without making the Horse look bald and ugly, then they colour their Eye brows, that they may not appear old.

old.

SEGMENT of a Circle, in Geometry, a Part of a Circle comprehended between an Arch and the Chord thereof. Thus the Portion AFBA (Tab. Geometry Fig. 23) comprehended between the Arch AFB, and the Chord AB, is a *Segment* of the Circle ABED, &c. a *Segment* of so many Degrees. The Term *Segment* is also applied by Extension, to Ellipses and other Curvilinear Figures. As 'tis evident every *Segment* of a Circle must either be greater or less than a Semi-circle; the greater Part of the Circle cut off by a Chord, *i. e.* the Part greater than a Semi-circle, is call'd the *greater Segment*, as ADEB; and the lesser part, the Part less than a Semi-circle, the *lesser Segment*, as AFB, &c. The Angle which the Chord AB, makes with a Tangent LB, is called the *Angle of a Segment*. Some, indeed, call the Two mixt Angles comprehended between the Two Extremes of the Chord, made with the Arch, *Angles of the Segment*.

*The Height of a Segment Pa, and half its Base or Chord Ba, being given, to find the Area of the Segment:* Find the Diameter of the Circle. (See DIAMETER) On this describe a Circle, and draw the Base of the Segment A a B; draw R, A C, B C; and find the Number of Degrees of the Arch A F B. From the Diameter halve, and its *Ratio* to the Periphery, find the Periphery itself; and from the *Ratio* of the Periphery to the Arch ADB, and the Periphery itself, find the Length of the Arch ADB. This done, find the Area of the Sector AFBCA. See SECTOR. And that of the Triangle A B. See TRIANGLE. Lastly, subtract the Triangle from the Sector, the Remainder is the Area of the Segment.

If the Area of the greater Segment  $ADEB$  were required, the Triangle  $ACB$  must be added to the Sector  $ADEB$ .



**A D E. B. C. SEGMENT of a Sphere**, is a part of a Sphere terminated by a Portion of its Surface, and a Plane which cuts it off; passing somewhere out of the Centre: This is more properly called a *Section of a Sphere*. See **SECTION**. The Base of such a Segment, is evident, is always a Circle whose Centre is in the Centre of the Sphere. See **SPHERE**.

The Solid Content is found, by multiplying the Surface of the whole Sphere by the Altitude of the Segment, and then dividing the Product by the Diameter of the Sphere, and to the Quotient adding the Area of the Base of the Segment; or, if it be less than a Hemisphere, thus: Take the Altitude of the Segment from the Radius of the Sphere, and by the Difference multiply the Area of the Base of the Segment; and subtract this Product, from that which will arise by multiplying the Semi-Axis of the Sphere into the convex Surface of the Segment; then divide the Remainder by 3, and the Quotient is the Solidity sought. This latter Method supposes the Axis of the Sphere to be given; if not, it may be found thus: Let the Altitude of the Segment be called  $a$ , and its Semi-diameter  $s$ , then will  $a : s :: s : \frac{as}{a}$ ; add  $\frac{as}{a}$  to  $a$ , and that shall give the Axis sought.

**Lines of SEGMENTS**. On Gunter's Sector there are usually Two Lines, called *Lines of Segments*; they are numbered with 5, 6, 7, 8, 9, 10, and lie between the *Lines of Sines*, and those of *Superficies*. They represent the Diameter of a Circle, so-divided into 100 Parts, as that a Right Line drawn through those Parts, and normal to the Diameter, shall cut the Circle into Two Segments, of which the greater shall have that Proportion to the whole Circle, as the Parts cut are to 100. See **SECTOR**.

**SEGMENT-LEAVES**; thus Botanists call those Leaves, that are cut and divided into many Shreds or Slices, as Fennel, &c.

**SEGMOIDAL VALVES**, in Anatomy, are little Valves of the Pulmonary Artery; thus call'd from their resembling Segments of Circles; but more usually *Semilunar Valves*. See **SEMILUNAR**.

**SEGREIANT**, is the Herald's Word for Griffins, when drawn in a leaping, or salient Posture.

**SEJANT**, is a Term used in Heraldry, when a Lion, or other Beast, is drawn in an Escutcheon, sitting like a Cat, with his Fore-feet streight.

**SEIGNOURAGE**, a Right or Due belonging to a Seigneur, or Lord. The Term is particularly used for a Duty belonging to the Prince for the Coining of Money, called also *Coinage*; in the baser Latin, *Monetarium*. This Duty is not always the same; but changes according to the Pleasure of the Prince, and the Occasions of State. 'Tis in some measure for the Discharge of this Duty that Alloy was invented; that is, the Mixture of other Metals with Gold and Silver.

Under our ancient Kings, for every Pound of Gold brought in the Malt to be Coined, the King's Duty was Five Shillings; one Shilling, and sometimes Eighteen Pence whereof went to the Master of the Mint. Under Edward the Third, the *Seignourage* of every Pound Weight of Silver, was Eighteen-penny Weight, which was then equivalent to a Shilling. Under Henry V. the King's *Seignourage* for every Pound of Silver was Fifteen-pence. At present, the King claims no *Seignourage* at all, but the Subject has his Money coined at the public Expence: Nor has the King any Advantage therefrom, but what he has by the Alloy. In France, under Philip Augustus, the *Seignourage* was one Third of the Profit made by the Coining. St. Louis fix'd it at one Fifteenth Part of the Value of the Money Coined. King John at Three Livres the Mark of Gold. Charles VII. by reason of the distressed State of the Finances, rais'd it to Three Fourths of the Value. Louis XIII. fix'd it at Six Livres the Mark or Eight Ounces of Gold, and Ten Sols, the Mark of Silver. Louis the XIV. took away the Right of *Seignourage* in 1679, tho' 'twas re-established in 1689 on the Foot of Seven Livres, Ten Sols the Mark of Gold, and Twelve Sols, Six Deniers the Mark of Silver.

It must be observed, that for the levying of this Duty of *Seignourage*, the just Value of the Money is augmented by the Value of the Duty.

**SEISIN**, in Law, from the French *Seisin*, signifies Possession; so *primer Seisin* is the first Possession. *Seisin*, according to the common Law, is Two-fold; *Seisin in Fact*, and *Seisin in Law*. *Seisin in Fact*, is, when a Corporal Possession is taken. *Seisin in Law*, is, when something is done, which the Law accounteth a *Seisin*; as an Inrollment; and this in Law, is as much as a Right to Lands and Tenements, tho' the Owner be by Wrong Disseised of them; and he, who hath had an Hour's Possession quietly taken, hath *Seisin de Droit*, & *de Claim*, whereof, no Man may disseise him by his own Force or Subtlety, and it is called by Coke, *Seisin in Law*, or actual *Seisin*.

The Civilians call the one *Civilium Possessionem*, the other *Naturalem*. See **POSSESSION**.

**SEIZE or SEASE**, in the Sea Language, is to make fast or bind; particularly to fasten Two Ropes together, with Rope-Yarn. The *Seizing* of a Boat is a Rope tied to a Ring, or little Chain in the Fore-ship of the Boat, by which means it is fastened to the Side of the Ship.

**SEIZING**, (in Falconry) is when an Hawk grips her Prey, or any thing, fast within her Claws.

**SEIZURE**, in Commerce, an Arrest made of some Merchandize, Moveable, or other Matter, either in consequence of some Law, or of some express Order of the King. Contraband Goods, those fraudulently Entered, or landed without Entering at all, or landed at wrong Places, are subject to *Seizure*. See **CONTRABAND**. In *Seizures*, among us, one half goes to the Seizor or Informer, and the other Half to the King. In France, Half the painted Linnens, &c. *Seiz'd*, used to be burnt; and the other Half sent Abroad: But in 1715, by an Arret of Council, it was appointed the Whole should be burnt.

**SELENITES**, in Natural History, *Moon-Stone*, said to be a Stone still found in China; which has this remarkable Property, That it increases and decreases, as the Moon waxes and wains. There are some of these *Selenites* preserved in the Palace of Peking, valued at an incredible Rate. *Martinus*. The Word is form'd from the Greek *Σελήνη* Moon. Some give the same Appellation to *Muscovy-Talc*, from an Opinion, that its Brightness increases and diminishes with the Moon.

**SELENOGRAPHY**, a Branch of Cosmography, which describes the Moon and all the Parts and Appearances thereof; as Geography does those of the Earth: from *Σελήνη* Moon, and *γραφία*, Description. Since the Invention of the Telescope, *Selenography* is vastly improved. We have now distinct Names for most of the Regions, Seas, Lakes, Mountains, &c. visible in the Moon's Body. *Hewelius*, a celebrated Astronomer and Bourgue-maister of Dantzick, who published the first *Selenography*, named the several Places of the Moon from those of the Earth: *Ricciolus*, from the Names of the celebrated Astronomers and Philosophers. Thus what the one calls *Mons Periphyrites*, the other calls *Aristarchus*. What the one calls *Etna*, *Sinai*, *Athos*, *Apernius*, &c. the other calls *Copernicus*, *Possidonius*, *Tychö*, *Gassendus*, &c. See **MOON**. At the Royal Observatory at Paris, they continue to make *Selenographic Maps*: M. Cassini has publish'd a Work call'd *Instructions Seleniques*.

**SELEUCIANS**, a Sect of ancient Hereticks, call'd also *Hermians*. *Seleucus* and *Hermias* joining Forces, and dogmatizing together, taught, That God was Corporeal; that the Elementary Matter was Coeternal with him; and that the Human Soul was form'd by the Angels, of Fire and Air: They denied that *Jesus Christ* sat at the Right Hand of God; asserting, That he had quitted that Right, and had removed his Throne into the Sun. See **PHILASTRIUS**, S. AUGUSTIN, &c.

**SELEUCIDES**, in Chronology. The *Aera of the Seleucides*, or the *Syro-Macedonian Aera*, is a Computation of Time, commencing from the Establishment of the *Seleucides*, a Race of Greek Kings, who Reign'd as Successors of Alexander the Great in Syria; as the *Ptolomy's* did in Egypt. This *Aera* we find express'd in the Book of *Maccabees*, and on a great Number of Greek Medals struck by the Cities of Syria, &c. The Rabbins and *Jerem* call it, The *Aera of Contracts*, because being then subject to the Kings of Syria, they were obliged to follow their Method of computing in all Contracts. The *Arabs* call it *Tberick Dilkarnam*, *Aera of two Horns*, which some say signifies the *Aera of Alexander the Great*; by reason that Prince bore Two Rams Horns on Medals, in Imitation of *Jupiter Ammon*, whose Son he would needs be. But others understand it much better of the Two Kingdoms of Syria and Egypt, which were now cloven or divided; and of one single Empire parted into two Monarchies. The grand Point, is to know the Year wherein the Separation was made; or, which is the same Thing, when *Seleucus*, one of Alexander's Captains, and the first of the *Seleucides*, establish'd his Throne in Syria. Without detailing the various Sentiments of various Authors, it may suffice to observe, That, according to the best Accounts, the first Year of this *Aera* falls in the Year 311 before Christ, which was 12 Years after Alexander's Death. See **EPOCHÆ**.

**SELLA**, in Anatomy, *Sella Equina*, *Sella Turcica*, and *Sella Sphenoides*; A Name given the Four Apophyses of the *Os Sphenoides*, and *Os Cuneiforme* in the Brain, in regard of their forming a Resemblance of a Saddle, which the Latins call *Sella*. See **BRAIN**. They are sometimes also called by the Greek Name *Clinoides*. Herein are contained the pituitary Glands, and in some Beasts, the *Rete Mirabile*. See **SPHENOIDES**.



**SELL**, in Building, is of Two kinds; viz. *Ground-Sell*, which is the lowest Piece of Timber in a Timber Building, and that whereon the whole Superstructure is raised; and *Window-Sell*, called also *Window-Soil*, the bottom Piece in a Window-Frame. See **WINDOW**.

**SEMBIANS**, a Set of ancient Hereticks, denominated from their Leader, *Sembius* or *Sembianus*, who condemn'd all Use of Wine, as Evil of itself; persuaded his Followers, that the Vine was a Production of Satan and the Earth; denied the Resurrection of the Dead, and rejected most of the Books of the *Old Testament*. *Jovet*.

**SEMBRADOR**, an Engine, invented by *Don Jos. de Lucatello*, for the evenly Sowing of Seeds; described in the *Philosophical Transactions*, under the Title of the *Spanish Sembrador*. The Perfection of Agriculture is allowed to consist in setting the Plants in proportionable Spaces, and giving sufficient Depth to the Roots, that they may spread, and receive their necessary Nourishment: yet is very little Care taken in the Practice of this important Part of Husbandry; but all sorts of Grains sown by Hands, cast at Random; by which means Four Parts in Five of the Seed are lost. To remedy this Inconvenience, the *Sembrador* or *Sower*, is invented, which being fastened to the Plough, the whole Business of Plowing, Sowing and Harrowing is done at once, the Seeds-man's Trouble saved, and the Grain spread at equal Distances, and equally deep at the bottom of the Furrow. An Experiment hereof was made before the Emperor *Leopold* in the Fields of *Luxemburg* in *Austria*, where the Land usually yields four or five fold; but the Crop from the Ground sowed by this Instrument, was Sixty fold, as appears by a Certificate of the Emperor's Officer, appointed to see the Experiment: Sign'd *Vienna*, August 1. 1663. A Figure of the *Sembrador*, we have in the *Transactions*, by the Earl of *Castlemain*.

**SEMEIOSIS**, in Medicine. See **DIAGNOSIS**.

**SEMEIOTICA**, that Part of Medicine, which considers the Signs or Indications of Health and Diseases; and enables the Physician to judge what is, was, or will be the State, Degree, Order and Effect of Health or Sickness. See **SIGN** and **INDICATION**; see also **MEDICINE**. The Word is form'd from the Greek *Σμεῖωτις*, of *Σμεῖω*, Sign.

**SEMENTINÆ FERIÆ**, in Antiquity, Feasts held annually among the *Romans*, to obtain of the Gods a plentiful Harvest. They were held in the Temple of *Terra*, or the Earth; where solemn Sacrifices were offered to *Terra* and *Ceres*. The Time of the Celebration was about Seed-Time, usually in the Month of *January*; for *Macrobius* observes, they were moveable Feasts. They had their Name from *Semen*, Seed.

**SEMETs**, in Botany; Dr. *Grew* uses the Word for the Apices of the Attire of Plants. See **APICES**.

**SEMI**, a Word borrow'd from the *Latin*, signifying *Half*; but only used in Composition with other Words, as in the following Examples. The *French*, instead of *Semi*, frequently use *Demi*.

In Music, *Semi* has three several Usages: First, when added to a Note, it expresses a Diminution of Half its Value, as *Semi-breve*, &c. which See. Secondly, when added to the Name of an Interval, it expresses a Diminution, not of Half, but of a minor Half-tone, or four Commas in the whole Compass. Thirdly, it sometimes signifies an Imperfection. Thus *Semicircolo* or *Circolo-mezzo*, signifies an imperfect Circle, which is the Mark of imperfect Time, that is, of double Time; whereas, the Circle, being a Character of Perfection, marks triple Time.

**SEMI-ARIANS**, a Branch of the Ancient *Arians*; consisting of such as, in Appearance, condemned the Errors of that Heresiarch, but yet acquiesced in the Principles thereof; only palliating and hiding them under softer, and more moderate Terms. 'Tis true, they separated from the *Arian* Faction; but yet could never be brought to acknowledge, that the Son was *Homousios*, that is, consubstantial, or of the same Substance with the Father. They would only allow him to be *Homoiousios*, that is, of a Substance like the Father. Though, as to Expression, they only differ'd from the Orthodox by a single Letter; yet were they, in Effect, in the Error of the *Arians*; as they placed the Son in the Rank of Creatures. It did not avail the teaching, that there was no other Creature of the same Class with him; since by denying him consubstantial with God, they effectually precluded him from being truly God. Yet some, even among the Orthodox, use the Word *Homousios*, in speaking of the Son; applying such an Idea to it, as, it seems, is consistent with Orthodoxy. See **ARIANA**.

**SEMI-BREVE**, in Music, a Note, or Measure of Time, comprehending the Space of Two Minims, or Four Crotchets, or Half a *Breve*. The *Semi-breve* is accounted one Measure of Time; or the Integer, in Fractions

and Multiples whereof the Time of the other Notes is expressed. Thus the Minim is express'd by  $\frac{1}{2}$ ; a Crotchet by  $\frac{1}{4}$ , &c. i. e. by  $\frac{1}{2}$  of a Measure or *Semi-breve*. A *Breve* by 2; a *Long* by 4, that is, by 4 Measures or *Semi-breves*. The Character of the *Semi-breve* is O.

**SEMI-CIRCLE**, in Geometry, a Figure comprehended between the Diameter of a Circle, and Half the Circumference. See **CIRCLE**. Two *Semi-Circles* can only cut each other in one Point.

*Semi-Circle*, is also an Instrument in Surveying, call'd also *Graphometer*. It consists of a *Semi-circular* Limb, as F I G (Tab. Surveying Fig. 16.) divided into 180 Degrees and sometimes subdivided, Diagonally or otherwise, into Minutes. This Limb is subtended by a Diameter E G, at the Extremities whereof are Erected two Sights. In the Centre of the *Semi-circle*, or the Middle of the Diameter, is fix'd a Box and Needle. On the same Centre is fitted an Aliade or moveable Index, carrying two other Sights, as H I. The whole is mounted on a Staff with a Ball and Socket.

In Effect, the *Semi-circle* is nothing else but Half a *Theodolite*; with this only Difference, that whereas the Limb of the *Theodolite*, being an intire Circle, takes in all the 360° successively; in the *Semi-circle*, the Degrees only going from 1 to 180, 'tis usual to have the remaining 180°, or those from 180° to 360°, graduated in another Line on the Limb, within the former.

To take an Angle with a SEMI-CIRCLE.

Place the Instrument in such Manner, as that the Radius C G may hang over one Leg of the Angle, to be measur'd, and the Centre C over the Vertex of the same. The first is done by looking through the Sights F and G at the Extremities of the Diameter, to a Mark fixed up in one Extremity of the Leg: The latter is had by letting fall a Plumbet from the Centre of the Instrument. This done, turn the moveable Index H I on its Centre towards the other Leg of the *Semi-circle*, till through the Sights fixed on it, you see a Mark in the Extremity of the Leg. Then, the Degree which the Index cuts on the Limb, is the Quantity of the Angle.

For further Uses of the *Semi-circle*, they are the same with those of the *Theodolite*. See **THEODOLITE**.

**SEMI-CUPIUM**, a Half-Bath, wherein the Patient is only up to the Navel. See **BATH**.

**SEMI-DIAMETER**, a Right Line drawn from the Centre of a Circle or Sphere, to its Circumference; the same with what we otherwise call *Radius*. See **RADIUS**. The Distances, Diameters, &c. of the Heavenly Bodies, are usually estimated by Astronomers in *Semi-diameters* of our Earth. See **EARTH**; See also **SUN**, **PLANET**, &c.

To find the Semi-diameters of the Primary Planets in Semi-diameters of the Earth.

Since the Sun's true *Semi-diameter* is 152 *Semi-diameters* of the Earth; and we have the Ratio of the Diameters of the Primary Planets to that of the Sun (See **DIAMETER**); their *Semi-diameters* are easily found by the Rule of Three: Thus, the *Semi-diameter* of *Saturn* will be found  $20\frac{2}{3}$ ; that of his Ring  $45\frac{2}{3}$ ; that of *Jupiter*  $27\frac{1}{3}$ ; that of *Mars*  $7\frac{2}{3}$ ; that of *Venus*  $2\frac{2}{3}$ ; and that of *Mercury*  $\frac{1}{2}$ . See **PLANET**.

**SEMI-COLON**, in Grammar, one of the Points or Stops, used to distinguish the several Members of Sentences from each other. See **SENTENCE** and **POINT**. The Mark or Character of the *Semi-colon* is (;) It has its Name, as having a somewhat less Effect than a Colon, or as demanding a shorter Pause. The Use of the *Semi-colon*, the Grammarians generally say, is, To mark a Sense less compleat than the Colon, and more compleat than the Comma; but this only conveys a very obscure Idea. In effect, the precise Use of the *Semi-colon*, or what it is distinguished from the Colon, is a Thing very little known in the World. Our best Authors seem to use them promiscuously. See **COLON**.

Mr. *Ward*, we believe, is the first (and he in the present Year 1724) who ever settled the precise Use of the *Semi-colon*. His Observation is, That the *Semi-colon* is properly used to distinguish the conjunct Members of Sentences: Now, by a conjunct Member of a Sentence, he means, such a one as contains at least two simple Members. See **SENTENCE**. Whenever, then, a Sentence can be divided into several Members of the same Degree; which are again divisible into other simple Members, the former are to be separated by a *Semi-colon*. For an Instance: It Fortune bear a great Sway over him, who has nicely stated and concerted every Circumstance of an Affair; we must not commit every Thing, without Reserve to Fortune, lest she have too great a hold of us. Again, Si quantum in agro specisque desertis audacia possit, tantum in Foro aequi



*judicis impudentia valeret; non minus in causa, cederet*  
*Amicus Ciceroni. Sexti Tibullii impudentia quam cum in vi*  
*facienda cessit audacia.* An Instance in a more complex  
 Sentence we have in Cicero. *Res familiaris primum bene*  
*parta sit, nullaque turpi quaestu; omni quam plurimis,*  
*modo dignis, se utilem prebeat; deinde augetur ratione,*  
*diligentia, parsimonia; Nec libidini potius luxurieque,*  
*diligentia, parsimonia; Nec libidini potius luxurieque,*  
*diligentia, parsimonia; Nec libidini potius luxurieque,*  
 But though the  
 proper Use of the *Semi-colon*, be to distinguish conjunct  
 Members; 'tis not necessary that all the Members divided  
 hereby, be conjunct. For upon dividing a Sentence into  
 great and equal Parts, if one of them be conjunct; all those  
 other Parts of the same Degree are to be distinguished by  
 a *Semi-colon*. Thus: Whoever is overtaken with Poverty;  
 the same will find, that Coldness, Contempt, Injuries, &c.  
 are not far behind. Or thus: *Nihil est tam molle, tam*  
*reuerent, tam aut fragile, aut flexibile; quam voluntas*  
*propterea.* Sometimes also it happens, that Members that  
 are opposite to each other; but relate to the same Verb,  
 are separated by a *Semi-colon*: Thus Cicero. *Ex hac parte*  
*pauca, illinc petulantia; hinc fides, illinc fraudatio; sunt*  
*pietas, illinc scelus, &c.* Hither likewise may be referred  
 such Sentences, where the whole going before, the Parts  
 follow: as, The Parts of *Rhetorick* are Four; Invention,  
 Disposition, Elocution and Pronunciation.

**SEMI-DIAPASON**, in Music, a defective Octave; or an  
 Octave diminished, of a minor *Semi-tone*, or four Com-  
 mas. See **DIAPASON**.

**SEMI-DIAPANTE**, in Music, a defective Fifth, call'd  
 usually by the *Italians*, *Falsa quinta*, and by us a *false*  
*Fifth*. See **FIFTH**.

**SEMI-DIATHESSARON**, in Music, a defective Fourth,  
 call'd, properly, a *false Fourth*. See **FOURTH**.

**SEMI-DOUBLE**, in the *Romish Breviary*, a Term used for  
 such Offices and Feasts as are celebrated with less Solemn-  
 ity than the *double ones*; but yet with more than the  
 single ones. The *Semi-double Office* has double Vespers,  
 and Nine Lessons at *Mattins*; but the Anthems are not re-  
 doubled. 'Tis perform'd on *Sundays*, in the Octaves, and  
 in Feasts mark'd for *Semi-double* in the Calendar.

**SEMI-LUNAR VALVES**, in Anatomy, are little *Valves* or  
 Membranes of a *Semilunar Figure*, placed in the Orifice of  
 the Pulmonary Artery, to prevent the Relapse of the Blood  
 into the Heart at the time of its Dilatation. See **VALVE**.

**SEMI-ORDINATES**, in Geometry, the Halves of the  
*Ordinates* or *Applicates*. See **ORDINATE**.

**SEMI-PARABOLA**, in Geometry, a Curve defined by the  
 Equation  $ax^m = y^n$ ; as  $ax^2 = y^3$ ,  $ax^3 = y^4$ . See  
**PARABOLA**.

In *Semi-parabolas*  $y^m = v^n$ ; as  $ax^m = y^n$ ;  $ax^m = y^n$ ;  $ax^m = y^n$   
 or the Powers of the *Semi-ordinates*, are as the Powers of  
 the *Abscissas* one Degree lower; E. gr. in Cubical *Semi-*  
*parabolas*, the Cubes of the *Ordinates*  $y^3$  and  $v^3$  are as the  
 Squares of the *Abscissas*  $x^2$  and  $z^2$ .

**SEMI-PELAGIANS**, a Name anciently, and even at this  
 Day, given to such as retain some Tincture of *Pelagianism*.  
 See **PELAGIANS**. S. *Prosper*, in a Letter to St. *Augustin*,  
 calls them *Reliquias Pelagii*.

Many learned Men, principally among the *Gauls*, who cou'd  
 not come into St. *Augustin's* Doctrine of Grace, &c. were  
 accused of *Semi-pelagianism*: They were also call'd *Priests*  
*of Marseilles*; in regard their Errors had their first Rise  
 in that City. *Cassian*, who had been a Deacon of *Con-*  
*stantinople*, and was afterwards a Priest at *Marseilles*, was  
 the Chief of these *Semi-pelagians*. S. *Prosper*, who was  
 Co-temporary with him, and who attack'd him very vigo-  
 rously, tells us, That *Cassian* endeavouring to keep I know  
 not what Medium between the *Pelagians* and the Ortho-  
 dox, did not agree either with the one or the other.  
 The *Semi-pelagians*, with the Orthodox, allowed of Orig-  
 inal Sin; but denied, that Man's free Agency could be so  
 wounded by this Sin, that he could not of himself do  
 something which might induce God to afford his Grace  
 to one more than another. They taught, That the Grace  
 which saves Men, was not given them from the mere  
 Will of God, but according to his eternal Prescience, where-  
 by he foresaw who they were that would believe in him.  
 They own'd, that the Vocation or Call to the Gospel, was  
 gratuitous; but added, at the same Time, That it was  
 common to all, inasmuch as God desired all should be  
 saved. As to Election, they held, that it depended on  
 our Perseverance; God only chusing such to Eternal Life,  
 as should persevere in the Faith.

**SEMI-PROOF**, an imperfect Proof. The Depositions of  
 a single Evidence only make a *Semi-proof*. See **WITNESS**.  
 The Testament of a Person deceased, is deemed a *Semi-*  
*proof*. In France, in enormous Cases, the *Semi-proof* fre-  
 quently determines them to try the Torture.

**SEMI-QUARTILE**, is an Aspect of the Planets, when  
 distant from each other 45 Degrees, or one Sign and an  
 Half.

**SEMI-QUAVER**, in Music. See **QUAVER**.

**SEMI-QUINTILE**; is an Aspect of the Planets, when at  
 the Distance of 36 Degrees from one another. See **ASPECT**.

**SEMI-SEXTILE**, or *Semi-sixth*; or S. S. an Aspect of two  
 Planets, wherein they are distant from each other, one  
 Twelfth Part of a Circle, or 30 Degrees. See **ASPECT**.  
 The *Semi-sixth* was added to the ancient Aspects by  
 Kepler; and, as he says, from Meteorological Observations.

**SEMI-SPINATUS**, in Anatomy. See **TRANSVERSATIS**  
**DORSI**.

**SEMI-TONE**, in Music; one of the Degrees, or con-  
 tinuous Intervals; of *Concords*: See **DEGREE**. There  
 are three Degrees, or lesser Intervals, by which a Sound  
 can move upwards and downwards successively from one  
 Extreme of any Concord to the other, and yet produce  
 true Melody; and, by means whereof, several Voices, and  
 Instruments are capable of the necessary Variety in passing  
 from Concord to Concord. These Degrees, are the  
 greater and lesser Tone, and the *Semi-tone*. The Ratio  
 of the First is 8 : 9; that of the Second 9 : 10. See  
**TONE**. The Ratio of the *Semi-tone* is 15 : 16. which  
 Interval is called a *Semi-tone*; not that 'tis geometrically  
 the Half of either of the Tones, for 'tis greater; but  
 because it comes somewhat near it. 'Tis also call'd the  
*Natural Semi-tone*, and the *Greater Semi-tone*, because  
 greater than the Part it leaves behind, or its Comple-  
 ment to a *Tone*, which is 15 : 16 in the *Less Tone*, and  
 128 : 135 in the *Lesser*. The *Semi-tone* is the Differ-  
 ence of the greater Third and Fourth, or of a Fifth,  
 and lesser Sixth.

Every *Tone* of the Diatonic Scale is divided into a  
*Greater* and *Less*, or a *Natural* and *Artificial Semi-tone*.  
 Mr. *Malcolm* observes, 'Twas very natural to think of a  
 Division of each *Tone*, where 15 : 16 should be one  
 Part in each Division, in regard this being an unavoida-  
 ble and necessary Part of the Natural Scale, wou'd read-  
 ily occur as a fit Degree, and the more, as 'tis not far  
 from an exact *Half Tone*. In effect, the *Semi-tones* are so  
 near equal, that, in Practice, at least, on most Instruments;  
 they are accounted equal, so that no Distinction is made  
 into *Greater* or *Less*. These *Semi-tones* are called *Ficti-*  
*tious Notes*, and, with respect to the Natural ones, are ex-  
 press'd by Characters called *Flats* and *Sharps*: See **FLAT**  
 and **SHARP**. Their Use is to Remedy the Defects of  
 Instruments, which having their Sounds fixed, cannot be  
 always made to answer to the Diatonic Scale: See **SCALE**.  
 By means of these we have a new Kind of Scale, called  
 the *Semi-tonic Scale*.

**SEMI-TONIC SCALE**, or the Scale of *Semi-tones*; A Scale  
 or System of Music, consisting of 12 Degrees, or 13 Notes,  
 in the *Octave*; being an Improvement on the Natural or  
 Diatonic Scale, by inserting between each two Notes  
 thereof, another Note, which divides the Interval or *Tone*  
 into two unequal Parts, called *Semi-tones*. See **SEMI-**  
**TONE**. The Use of this Scale is for Instruments that  
 have fixed Sounds, as the Organ, Harpsichord, &c.  
 which are exceedingly defective on the Foot of the  
*Natural*, or *Diatonic*, Scale. For the Degrees of the  
 Scale being unequal, from every Note to its *Octave* there  
 is a different Order of Degrees; so that from any Note  
 we cannot find any Interval in a Series of fix'd Sounds:  
 Which yet is necessary, that all the Notes of a Piece of  
 Music carried through several Keys, may be found in their  
 just Tune, or that the same Song may be begun indiffe-  
 rently at any Note, as may be necessary for accommodat-  
 ing some Instruments to others, or to the Human Voice,  
 when they are to accompany each other in Unison.

The *Diatonic Scale*, beginning at the lowest Note, be-  
 ing first settled on an Instrument, and the Notes thereof  
 distinguished by their Names *a . b . c . d . e . f . g*;  
 the inserted Notes, or *Semi-tones*, are called *Fictitious*  
*Notes*, and take the Name or Letter below with a #  
 as *c #* called *c Sharp*; signifying, that it is a *Semi-tone*  
 higher than the Sound of *c* in the natural Series, or  
 this Mark ♭ (called a *Flat*) with the Name of the  
 Note above, signifying it to be a *Semi-tone* lower. Now  
 ♯ and ♯ being the two *Semi-tones* the greater *Tone* is di-  
 vided into; and ♯ and ♯, the *Semi-tones* the less *Tone*  
 is divided into; the whole *Octave* will stand as in the  
 following Scheme, where the Ratios of each Term to  
 the next, are wrote Fraction wise between them below.

#### Scale of SEMI-TONES.

*c . c # . d . d # . e . f . f # . g . g # . a . b . b # . c c*  
 $\frac{1}{2} \quad \frac{1}{3} \quad \frac{1}{4} \quad \frac{1}{5} \quad \frac{1}{6} \quad \frac{1}{7} \quad \frac{1}{8} \quad \frac{1}{9} \quad \frac{1}{10} \quad \frac{1}{11} \quad \frac{1}{12}$

For the Names of the Intervals in this Scale it may be  
 considered, that as the Notes added to the natural Scale  
 are not design'd to alter the Species of Melody; but  
 leave it still *Diatonic*, and only correct some Defects  
 arising from something foreign to the Office of the Scale  
 or



of Music, viz. the fixing and limiting the Sounds: We see the Reason why the Names of the Natural Scale are continued, only making a Distinction of each into a Greater and Less. Thus an Interval of one Semi-tone is called a Lesser Second; of two Semi-tones, a Greater Second; of three Semi-tones, a Less Third; of four, a Greater Third, &c.

A second Kind of *Semitonic Scale* we have from another Division of the Octave into Semi-tones; which is performed by taking an Harmonical Mean between the Extremes of the Greater and Less Tone of the Natural Scale, which divides it into two Semi-tones nearly equal: Thus the Greater Tone 8 : 9 is divided into 16 : 17, and 17 : 18; where 17 is an Arithmetical Division, the Numbers representing the Lengths of Chords; but if they represent the Vibrations, the Lengths of the Chords are reciprocal, viz. As 1 : 16 : 17, which puts the Greater Semi-tone  $\frac{16}{17}$ , next the lower Part of the Tone, and the Lesser  $\frac{17}{18}$  next the Upper, which is the Property of the Harmonical Division. After the same Manner the Lesser Tone 9 : 10 is divided into the two Semi-tones 18 : 19 and 19 : 20, and the whole Octave stands thus:

c . c # . d . d # . e . f . f # . g . g # . a . b . b # . c  
 $\frac{16}{17}$   $\frac{17}{18}$   $\frac{18}{19}$   $\frac{19}{20}$   $\frac{20}{21}$   $\frac{21}{22}$   $\frac{22}{23}$   $\frac{23}{24}$   $\frac{24}{25}$   $\frac{25}{26}$   $\frac{26}{27}$   $\frac{27}{28}$   $\frac{28}{29}$   $\frac{29}{30}$

This Scale, Mr. Salmon tells us, in the *Philosoph. Transact.* he made an Experiment of, before the Royal Society, on Chords, exactly in these Proportions, which yielded a perfect Consort with other Instruments, touch'd by the best Hands. Mr. Malcolm adds, That having calculated the Ratios thereof, for his own Satisfaction, he found more of them false than in the preceding Scale; but their Errors were considerably less, which made Amends.

SEMINAL, in Medicine, &c. *Spermatic*, or something belonging to the Semen or Seed. See SEED.

SEMINALIS CAPSULA, or Seed-Bag, is the Husk, that contains the Seed of any Plant.

SEMINALES Vesiculæ. See VESICULÆ Seminales.

SEMINAL Leaves: Much the greatest Part of all Seeds, sown in the Earth, come up, or shoot forth at first with little, plain, soft, and undivided Leaves; which, because they are usually very different from the Leaves of the succeeding Plant in Magnitude, Figure, Surface, and Position, are called *Seminal Leaves*: As the little embrionated Plant, which lies in Miniature in every Seed, is called the *Plantula Seminalis*. See PLANT and LEAF.

SEMINARY, a Place appointed for the Instruction of young Persons, destined for the Sacred Ministry, in the Duties, Ceremonies, and Offices thereof; first instituted, as *Thomas* tells us, by St. *Augustin*. Of these *Seminaries* there are many abroad, furnish'd with Halls for the Assemblies of the Exercitants, and little Chambers, or Cells, where each Person retires, studies, and prays apart: Such is the *Seminary* of St. *Sulpitius* at Paris. The Council of *Trent* decrees, That Children exceeding 12 Years of Age, be taken, brought up, and instructed in common, to qualify them for the Ecclesiastical State; and that there be a *Seminary* of such belonging to each Cathedral, under the Direction of the Bishop. In France, the Establishment of *Seminaries* is somewhat different from the Decree of the Council. None are taken in but young People ready to study Theology, and be ordained: So that the *Seminaries* are a Kind of Houses of Probation, where the Vocation of Clerks is examined, and they prepared to receive Orders. For the Subsistence of these *Seminaries*, there are several Unions of Benefices, or else the Clergy of the Diocese are obliged to contribute to maintain them. Pope *Pius IV.* having established a *Seminary* at Rome, in Consequence of the Decree of the Council of *Trent*; by Advice of the Cardinals, it was given to the Jesuits, who have made good Use thereof—Among the Canons of S. *Augustine*, *Seminary* is used for a Kind of College, or School, where Pensionaries are kept, and instructed in the Classical and other Learning.

The Houses of the Society de *propaganda Fide*, established for the preparing of Ecclesiasticks for Missions among Infidels and Hereticks, are also called *Seminaries*: The Principal whereof is that at Rome, called, The *Apostolical College*, *Apostolical Seminary*, *Pastoral Seminary*, *Seminary of the Propaganda*, &c.

SEMINATION, in Natural History, &c. the Act of sowing or shedding Seed; particularly, that of Vegetables. See SOWN.

As soon as the Seed is ripe, Dr. *Grew* observes, Nature takes several Methods for its being duly Sown:

Not only by the Opening of the Uterus, but in the Make of the Seed itself. Thus, the Seeds of many Plants, which affect a peculiar Soil or Seat, as *Arum*, Poppy, &c. are heavy and small enough, without farther Care, to fall directly down to the Ground. Others, that are large, and light enough to be exposed to the Wind, are often furnished with one or more Hooks to stay them from straying too far from their proper Place: Thus, the Seeds of *Avena* have a single Hook; those of *Agrimony* and *Goose-grass*, many; both the former loving a warm Bank, and the last a Hedge for its Support. On the contrary, many Seeds are furnished with Wings, or Feathers; partly with the Help of the Wind to carry them, when ripe, off the Plant, as those of *Ash*, &c. and partly, to enable them to make their Flight more or less abroad, that they may not, by falling together, come up too thick; and, that if one should miss a good Soil or Bed, another may hit. So the Kernels of *Pines* have Wings, though short ones, where, by they don't fly in the Air, but only flutter on the Ground. But those of *Typha*, *Dandelion*, and most of the pappous Kind, have numerous long Feathers, by which they are wafted every Way. Others are sown by being laid in springy elastic Cases, which, when they crack and burst, dart their Seed at convenient Distances: Thus, *Wood-Sorrel* having a running Root, Nature sees fit to sow the Seed at some Distance, the doing of which is effected by a white, sturdy, tendinous Cover, which beginning to dry, bursts open on one Side in an Instant, and is violently turn'd Inside outwards. The Seed of *Harts-tongue*, and codded *Arsmart*, is flung, or shot away, by means of a Spring, wound, or girt round the Seed-case. When the Spring is become stark and tense enough, it suddenly breaks the Case into two Halves, like little Cups, and so flings the Seed.

Other notable Means of *Semination* are observed by other Authors: A Quantity of Fern-Seed, Mr. *Ray* tells us, laid in a Lump, on a Paper, the *Seminal Vesiculæ* are heard to crackle, burst, and, by a Microscope, the Seeds are seen to be projected to a considerable Distance from each other. Dr. *Sloane* observes, That the *Gentianaella flore Cærulea*, or Spirit Leaf, requiring wet Weather to be sown in, as soon as the least Drop of Rain touches the End of the Seed-Vessels, with a smart Noise, and a sudden Leap, it opens itself, and, with a Spring, scatters its Seed. The Plants of the *Cardamine*-Family, throw their Cods open, and dart out their Seed upon a slight Touch of the Hand. Nay, Mr. *Ray* adds, That the Pods of the *Cardamine Impatiens* not only burst upon the slightest Touch, but even by an Approach of the Hand to touch them, without any real Contact.—

Other Plants sow their Seeds by inviting Birds, by their agreeable Taste and Smell, to feed of them, swallow them, and carry them about; thereby also fertilizing them, by passing through their Bodies. In such Manner are Nutmegs, and Mistletoe, sown and propagated. See NUTMEG and MISSELTAE.

SEMITA LUMINOSA, is a Name given to a Kind of Lucid Tract in the Heavens, which, a little before the Vernal Equinox, may be seen about Six a Clock at Night, extending from the Western Edge of the Horizon, up towards the Pleiades. The Phenomenon hath been taken Notice of by *Cassini* and *Fatio*, who both evince, That this Light comes diffused from both Sides of the Sun: Its Brightness is much the same with that of the *Via Lactea*, or the Tail of a Comet: It is seen plainest with us about the Beginning of *October*, or the latter End of *February*. *Fatio* conjectures, That the Bodies, or rather the Congeries or Aggregate of those Bodies, which occasion a Light, doth conform to the Sun like a Lens, and takes it to have ever been the same; but, *Cassini* thinks it arises from a vast Number of small Planets, which encompass the Sun, and give this Light by Reflexion, esteeming it also not to have existed long before he observed it.

SENA, or Senna, in Medicine, a purgative Leaf, much used in Compositions of that Kind: The Shrub which bears it, is cultivated in several Parts of the *Levant*, and grows five or six Foot high. It puts forth woody Branches, furnished with Leaves on one Side: Its Flowers are yellow, and yield a Fruit in Manner of a greenish flat Pod, containing several Lodges or Cells of Seeds, resembling Grape-stones. These Pods some Physicians prefer to the Leaves themselves. There is also a Kind of *Sena* cultivated about *Florence*, but 'tis inferior to that of the *Levant*, as is owned by the *Italians* themselves. Father *Plumier* mentions a Third Kind growing in the *Antilles* Islands. M. *Lemery* distinguishes three Kinds of *Sena* of the *Levant*. The first brought from *Seyda*, called *Sena of Appalto*, that is *Custom Sena*, by reason of the Custom paid the Grand Seignior, for the Privilege of



of exporting it. The second comes from *Tripoli*: The third is called *Sena of Mocha*. The best of these Kinds is the first, which *Pomet* directs us to chuse, in narrow Leaves, of a moderate Size, shaped like the End of a Pike, of a pale green Colour, a penetrating Smell, soft to the Touch, &c. The *Sena of Tripoli* holds the second Rank in Goodness. Its Difference from that of *Seyda*, consists in its Colour, which is green; its Smell which is very weak; and in a certain Harshness, or Roughness, which it discovers upon the Touch. Besides these three Kinds of *Sena*, and their Pods; the Druggists sell the Dust found at the Bottom of the Bales; which is a very poor Commodity; and yet much better than what they call the *Small Sena*, which comes with it in the Bales, by way of Package, and which many hold to be a Plant of no Virtue, put in by Chance, or, at best, to increase the Weight.

The best *Sena*, ordinarily found in our Shops, Dr. *Quincy* observes, is that which is sharpest leaved, and which smells freshest. The Brightness of its Colour, and Quickness of its Flavour, are the Indications of its Goodness; for when it has lost its Scent, and grows dusky, it is good for little: This Drug, at first taking, is apt to nauseate the Stomach; and therefore, if a little Cinnamon, or a Dram or two of its distilled Water, be added, it passeth thro' with less Sickness. This is exactly conformable to the Sentiments of *Ludovicus*, who says, That the purgative Quality of this Herb resides in its mucilaginous or gummy Juice; which, the more it is divided, gripes the less in its Operation. *Rulandus* imagined a Sudorifick Quality to be in it; and accordingly order'd it in some Compositions of that Intention. This is so ancient in Medicine, that *Schroder* says, *Serapion* first prescribed it.

SENATE, an Assembly or Council of *Senators*; that is, of the principal Inhabitants of a State, who have a Share in the Government. See SENATOR. As, the Senate of Rome, of Carthage, &c. among the Ancients; the Senate of Venice, of Genoa, &c. among the Moderns. The Senate of Ancient Rome, was, of all others, the most celebrated, during the Splendor of the Republic. The Roman Senate exercis'd no contentious Jurisdiction. It appointed Judges, either out of the Senate, or among the Knights; but never stoop'd to judge any Procceses, in a Body. The Senate concerted Matters of War; appointed who should command the Armies; sent Governors into the Provinces; took Order, and disposed of the Revenues of the Empire. Yet did not the whole Sovereign Power reside in the Senate. It cou'd not elect Magistrates, make Laws, nor decide of War and Peace: But in all these Cases they were to consult the People. Under the Emperors, when the Senate became dispoil'd of most of its other Offices; they began to judge Causes. For Causes of less Consequence they appointed particular Judges; the rest, principally Criminal Causes, they reserv'd for their own Cognizance, to be judg'd by them in a Body, and that frequently in the Emperor's Presence. This was to keep their Heads from State Affairs. Nero further committed to the Senate, the Judgment of all Appeals: But this did not hold long; nor do we find any Footsteps thereof any where but in the 62d Novel. The Senate assembled on certain stated Days, viz. ordinarily on the Calends, Nones and Ides of each Month. Their extraordinary Meetings were on any other Days; when the Consul, Dictator, or Tribune, thought fit to call them. Their Place of Meeting, was either the Temple of Concord, at the Gate of Capua, or in the Temple of Bellona: The Consul presided at the Senate. Till Augustus's Time, the Senate was always open'd with a Sacrifice. But that Prince, in Lieu thereof, appointed, That each Senator, e'er he took his Place, shou'd offer Wine and Incense on the Altar of the God, in whose Temple they were met; and take an Oath, That he would give his Vote according to his Conscience.

*Halicarnassensis*, and other Authors, mention it as a great Defect in the Authority of the Roman Senate, That they had none under their Command, to execute their Orders. Hence the least Tribune had it in his Power to obstruct their Decrees; and hence it is, that when they gave their Orders to the Consuls, and Prætors, they did it with a kind of Submission, *Si eis ita videtur*; If they think fit.

SENATOR, a Member of a Senate. There were Two Orders, or Degrees, among the Roman Nobility; that of the Senators, and that of the Knights: After the Two, came the People. The first hundred Senators were appointed by *Romulus*, called *Patres*. Upon the Union with the Sabines, *Romulus*, or, as others say, *Tullius*, added a second Hundred, called *Patres majorum Gentium*, to distinguish them from a third Hundred added by the elder *Tarquin*, and called *Patres minorum Gentium*. The

Number of *Senators* was not fix'd. In the Time of *Gracchus* they were 600; during the Civil Wars, they were reduced to 300. *Julius Cæsar* augmented that Number to 800 or 900; and *Augustus* brought them back again to 600. The Choice of *Senators* belong'd at first to the Kings, then to the Consuls, then to the Censors; who, in their Census or Survey, every five Years, appointed new *Senators* in lieu of those dead or degraded: At length it fell to the Emperors. Though, for a long Time, none were rais'd to the Dignity of *Senators*, but those most conspicuous for their Prudence, &c. yet some Regard was afterwards had to their Estate, lest the Dignity should become debas'd by Poverty. To hold the Dignity, a yearly Revenue of 800 Thousand Sesterces was required, which amounts to nearly 6000 Pounds of our Money. Half as much was required for the Knights. The *Senators* who sunk below this Revenue, were discarded, and expunged out of the List by the Censor. The *Senators*; were ordinarily chose from among the Knights, or among such as had bore the Principal Magistratures. At first the Magistrates were taken wholly from among the *Senators*; whence *Tacitus* calls the Senate, The Seminary of all Dignities: But after the People had been admitted to Magistratures; *Senators* were taken from among such as had discharged those Offices, though, before, Plebeians. The *Senators* carried their Children with them to the Senate, to inform them betimes of Affairs of State: Their Children, however, had not Admittance till 17 Years of Age.

Some make a Distinction among the *Senators*. Besides the *Senators* who were allow'd to speak, and were ask'd their Sentiments, there were others, who, without speaking, or being ever asked their Opinion, were only to follow the Opinion of those they thought the most reasonable, and were hence called *Pedarii*. *A. Gellius* gives us another Notion of the *Pedarii*, and says, Those were thus called, who having never bore the Office of Curule Magistrate, were obliged to go to the Senate on foot.

The *Senators* alone were allowed to wear the Habit call'd *Laticlavium*: (which See) Had a Right to sit, and be carried in Curule Chairs; to assist at Plays, and Shews, in the Orchestra; at Feasts of the Gods, &c. All which Privileges were reserv'd to such as *Augustus*, (in the Reform he made of the too numerous Senate of *Julius Cæsar*) set aside. They had the Names *Senators*, q. d. old Men, given them in Imitation of the Greeks, who called their Senate *γερουσία*. So when the Athenians assembled the People to consult about the Affairs of the Public; the Officers summoned none but such as were Fifty Years Old. The Egyptians and Persians followed the same Example, after the Hebrews. The Lacedæmonians, and Carthaginians received none but such as were Sixty Years of Age.

SENATUS CONSULTUM, a Vote or Resolution of the Roman Senate, pronounced on some Question, or some Point of Law propos'd to it. The *Senatus consulta* made a Part of the Roman Law, when pass'd. They were deposited in the Temple of Ceres, under the Custody of the *Ædiles*, and at last carried, by the Censor, to the Temple of Liberty, and put up in an Armory call'd *Tabularia*. See LAW.

SENECHAL, a Name anciently us'd for a Steward; form'd from the Saxon *Sein*, House or Place, and *Schal*, Governor. Thus the Seneschal of a Baron is his Steward or Bailiff, who holds his Courts, and manages his Demesne Lands: Sub-Seneschal, his Under-Steward. High Seneschal of England, is the High-Steward of England: High Seneschal del Hotel du Roi, the Steward of the King's Household. The Ancients us'd the Term *Seneschallus* indifferently with that of *Dapifer*, whence we are sure it signifies Steward. See STEWARD.

SENSATION, the Action of perceiving external Objects, by Means of the Organs of Sense. See SENSE.

To conceive the Manner wherein Sensation is effected: Observe by the way, That all the Organs consist of little Threads, or Nerves; which have their Origine in the Middle of the Brain, are diffus'd thence throughout all the Members which have any Sense, and terminate in the exterior Parts of the Body: That when we are in Health, and awake, one End of these Nerves cannot be agitated, or shaken, without shaking the other; by reason they are always a little stretch'd, as is the Case of a stretch'd Cord, one Part of which cannot be stirr'd without a like Motion of all the rest. Observe, again, That these Nerves may be agitated two ways; either by the End out of the Brain, or that in the Brain. If they be agitated from without, by the Action of Objects, and their Agitation be not communicated as far as the Brain; as frequently happens in



Sleep, when the Nerves are in a State of Relaxation; the Soul does not then receive any new *Sensation*. But if the Nerves happen to be agitated in the Brain, by the Course of the Animal Spirits, or any other Cause; the Soul perceives something, though the Parts of those Nerves, that are out of the Brain, diffused through the several Parts of the Body, remain at perfect Rest: as likewise is frequently the Case in Sleep. Lastly, observe, by the way, that Experience tells us, we may sometimes feel Pain in Parts of the Body that have been entirely cut off; by reason the Fibres in the Brain corresponding to them, being agitated in the same Manner as if they were really hurt; the Soul feels a real Pain in those imaginary Parts. All these Things shew evidently, that the Soul resides immediately in that Part of the Brain wherein the Nerves of all the Organs of Sense terminate: we mean, 'tis there it perceives all the Changes that happen with regard to the Objects that cause them, or that have been used to cause them; and, that it only perceives what passes out of this Part, by the Mediation of the Fibres terminating in it. See NERVE, FIBRE, &c.

These Things premised, 'twill not be difficult to explain how *Sensation* is perform'd; the Manner whereof may be conceiv'd from what follows. When the Point of a Needle, for Instance, is pressed against the Hand, that Point stirs and separates the Fibres of the Flesh; which Fibres are extended from that Place to the Brain, and when we are awake, are in such a Degree of Tension as that they cannot be stirr'd without shaking those of the Brain. If then, the Motion of the Fibres of the Hand be gentle, that of the Fibres of the Brain will be so too; and if the first be violent enough to break any thing in the Hand, the last will be stronger and more violent in Proportion. In like Manner, if the Hand be held to the Fire; the little Particles of the Wood it throws off in great Numbers, and with a great deal of Violence, striking against these Fibres, and communicating a Part of their Agitation thereto; if the Action be moderate, that of the Extremities of the Fibres of the Brain corresponding to those of the Hand, will be moderate likewise: If it be violent enough to separate any of the Parts of the Hand, as it happens in Burning; the Motion of the Fibres in the Brain will be proportionably more violent. This is what befalls the Body, when Objects strike upon it. We are now to consider how the Mind is affected.

The Mind, we have observ'd, resides principally, if we may be allow'd to say so, in that Part of the Brain where all the Fibres of the Nerves terminate. It attends here, as its Sensory, or Office, to look to the Preservation of all the Parts of the Body; and, of consequence, must be here advertized of all the Changes that happen, and must be able to distinguish between those agreeable to the Constitution of the Body, and those hurtful thereto. Any other, absolute Knowledge, without a Relation to the Body, were useless. Thus, though all the Changes in our Fibres, do, in Reality, consist in Motions, which ordinarily only differ as to more and less; 'tis necessary the Soul should look on them as Changes essentially different; for though in themselves they differ but very little, yet, with regard to Preservation of the Body, they are to be look'd on as essentially different.

The Motion, for Instance, which causes Pain, frequently differs exceedingly little from that which occasions Titillation: 'Tis not necessary there should be an Essential Difference between those two Motions, but 'tis necessary there be an Essential Difference between the Pain and the Tickling those two Motions occasion in the Soul; for the Agitation of the Fibres, which accompanies the Titillation, informs the Soul of the good State of the Body, that it is able to resist the Impression of the Objects, and that it need not apprehend its being hurt: But the Motion, which occasions Pain, being somewhat more violent, is capable of breaking some of the Fibres of the Body; wherefore 'tis necessary the Soul be advertized hereof by some disagreeable *Sensation*, that it may provide against it. Thus, though all the Motions which pass in the Body only differ in themselves, as to more or less, yet, when considered, with regard to the Preservation of Life, they may be said to be essentially different: For this Reason it is, that the Soul does not perceive the Shakes, or Motions themselves, which Objects excite in the Fibres of the Flesh: It would be useless to perceive them; and she would never be able, thence, to learn whether the Objects were capable of doing Hurt or Good. But she perceives herself affected with *Sensations*, which differ essentially, and which shewing precisely the Qualities of the Objects, as they regard the Body, make her perceive, distinctly, whether or no those Objects are capable of hurting it.

In Effect, from a strict Examination of the several Senses, it appears, that sensible Objects act no otherwise upon the Body, for the producing of *Sensation*, than by exciting a Change in the extreme Surface of the Fibres of the Nerves. The Quality of which Change depends on the Figure, Bulk, Hardness, and Motion of the Object; so that according to all Appearances, the most different Objects, which should agree in these Four Circumstances, would produce the same *Sensation*. From the various Texture of the Object; the Diversity of the Nerve affected; the different Fabric of the Organ of Sense; the different Place in the *Medulla* of the Brain, where the Nerve arises; and the different Degree of Motion, wherewith the Action of the Object is applied, arise various *Sensations*, and Ideas, in the Mind: none of which represent any thing in the Action of the Object, or in the Passion of the Organ. And yet the same Action of the same Object, on the same Organ, always produce the same *Sensation* or Idea: And the same Ideas necessarily follow the same Disposition of the same sensible Organ, in the same manner as if the Idea perceiv'd, were the natural and necessary Effect of the Action on the Organ. See IDEA.

SENSE, a Faculty of the Soul, whereby it perceives external Objects, by means of some Action or Impression made on certain Parts of the Body, called *Organs of Sense*, and propagated by them to the *Sensory*.

Some use the Word *Sense* in a greater Latitude; and define it a Faculty whereby the Soul perceives Ideas or Images of Objects, either convey'd to it from without, by the Impression of Objects themselves, or excited within by some Effort of the Soul on the *Sensory* it self: Under this Notion, *Sense* becomes distinguishable into two Kinds, *External* and *Internal*; corresponding to the two several Manners wherein the Images of the Objects perceiv'd, either are occasion'd, and presented to the Mind, viz. immediately from without, or from within; that is, either by what we commonly call the *Five External Senses*, *Hearing*, *Seeing*, &c. or by the Internal ones, *Imagination*, *Memory*, and *Attention*; to which some add *Hunger* and *Thirst*. But as these *Internal Senses* are not ordinarily consider'd in the Notion of *Senses*, nor implied under the Word *Sense*; but are thus only denominated from Analogy; we shall wave them to be further consider'd, under their respective Articles IMAGINATION, MEMORY, &c.

*External Senses*, or, simply, *The Senses*, in their general Signification, are the Means whereby the Soul apprehends, or takes Cognizance of External Objects; the Means, we mean, both on the Part of the Mind, and of the Body. The Means, on the Part of the Mind, are always the same; it being one and the same Faculty, whereby we See, Hear, &c. The Means, on the Part of the Body, are different; as different as are the Objects we are concern'd to perceive: For the Being, and Well-being of the Animal, being the End, Nature had in View in giving him any Perception of external Bodies; by this, the Measure and Manner of that Perception is regulated; and we have so many Ways of perceiving, and of perceiving so many Things, as the Relation we bear to external Bodies renders necessary for the Preservation, &c. of our Being. Hence those several Organs of *Sense*, call'd *Eye*, *Ear*, *Nose*, *Palate*, and the universal one *Cum*; each of which is so disposed as to give it some Representation and Report to the Mind, of the State of external Things, the Nearness, Convenience, Hurtfulness, and other Habitudes; and each of them a different one, according to the Degree, and Immediateness, &c. of the Danger, or Conveniency. And hence the several Exercises of those Organs, *Hearing*, *Seeing*, *Smelling*, *Tasting*, and *Feeling*.

For the general Manner wherein our *Senses* act; or, more properly, the Manner wherein we become *Sensible*; that is, perceive external Objects; See SENSATION.

For the particular *Senses*, or, more properly, the particular Manners, wherein we become *sensible*, by the particular Organs of *Sense*; See HEARING, SEEING, SMELLING, &c.

For the several Organs of *Sense*, ministering to the several Manners of *Sensation*; See EYE, EAR, NOSE, &c.

Pliny observes, That of all the *Senses*, Feeling and Tasting are what Man has in the greatest Perfection: As to Seeing he is excelled by the Eagle, &c. as to Smelling, by the Vulture, &c. and as to Hearing, by the Mole, even when hid under Ground. *Nat. Hist. Lib. 10.* The *Senses* have been sometimes found greatly sharpened and improved by Diseases. Mr. Boyle mentions a Gentleman, who, during a Distemper he had in his Eyes, had his Organs of Sight brought to be so tender, that when he waked in the Night, he could, for a while, plainly see and distinguish Colours, and other Objects; and the same Author gives an Instance of another Person, who, after getting half-suddled with Claret, if he waked in the



the Night, could see, for some Time, to read a moderate Print. In the *Philosoph. Transf.* N<sup>o</sup>. 312. we have an Account of *Dan. Frazer*, who continued Deaf and Dumb, from his Birth to the 17th Year of his Age; when, upon recovering from a Fever, he perceived an uneasy Motion in his Brain, after which he began to hear, and, by degrees, to speak. *Grimaldi* affirms, That some Women of *Megara* were able, by their Eyes alone, to distinguish between Eggs lay'd by black Hens, and those by white ones, *Grimald. de Lum. & Col.*

**SENSES.** A late excellent Author, gives us a more Just, Extensive, and Philosophical Notion of *Sense*. On his Principle, *Sense* is defined, A Power of Perception; or, A power of receiving Ideas; If what is absolutely Passive may be properly called a Power. On some Occasions, instead of Power, he chuses to call it, A Determination of the Mind, to receive Ideas. See **IDEA**. The Ideas thus perceived, or raised in the Mind, he calls *Sensations*.

**SENSE**, he considers, either as *Natural*, or *Moral*: and the Natural, either as *External*, or *Internal*; though the Distribution is chiefly founded on the common Ways of conceiving; for, in Reality, they appear to be all *Natural*, and necessary: Some Reasons, however, for the Distinction, will be shewn under the several Articles thereof.

**External SENSES**, are Powers of perceiving Ideas, upon the Presence of external Objects. On such Occasions, we find the Mind is merely Passive, and has not Power directly to prevent the Perception, or Idea, or to vary it at its Reception; as long as the Body is continued in a State fit to be acted upon by the external Object. When two Perceptions are entirely different from each other, or agree in nothing but the general Idea of Sensation; the Power of receiving those different Perceptions, are called *different Senses*. Thus *Seeing* and *Hearing* denote the different Powers of receiving the Ideas of Colours, and Sounds. And though Colours, as well as Sounds, have vast Differences amongst themselves; yet is there a greater Agreement among the most opposite Colours, than between any Colour and a Sound: And hence all Colours are deemed Perceptions of the same *Sense*. All the several *Senses* seem to have their distinct Organs, except *Feeling*, which is, in some Degree, diffused over the whole Body.

**Internal SENSES**, are Powers, or Determinations of the Mind, to be pleased with certain Forms, and Ideas, which occur to our Observation, in Objects perceived by the external *Senses*. Of these there are two different Species, distinguish'd by the different Objects of Pleasure, viz. Pleasurable or Beautiful Forms of natural Things, and Pleasurable or Beautiful Actions, or Characters of rational Agents: Whence the Internal *Senses* become divisible into *Natural* and *Moral*; though what we call the *Internal Natural Sense*, our Author calls simply, and by way of Eminence, *the Internal Sense*.

In reflecting on our external *Senses*, we plainly see, that our Perceptions of Pleasure, or Pain, do not depend directly on our Will. Objects do not please us according as we incline they should: The Presence of some Objects necessarily please us, and the Presence of others as necessarily displeases us; nor can we, by our Will, any otherwise procure Pleasure, or avoid Pain, than by procuring the former Kind of Objects, and avoiding the latter. By the very Frame of our Nature, the one is made the Occasion of Delight, and the other of Disaffection. In Effect, our sensitive Perceptions are pleasant, and painful, immediately, and without any Knowledge of the Cause of this Pleasure and Pain, or of the Manner how they excite it, or are Occasions of it, or without seeing to what further Advantage, or Detriment, the Use of such Objects might tend. Nor would the most accurate Knowledge of these Things vary either the Pleasure, or the Pain, of the Perception; however it might give a rational Pleasure distinct from the sensible; or might raise a distinct Joy, from Prospect of further Advantage in the Object, or Aversion, from Apprehension of Evil. There is scarce any Object, which our Minds are employed about, but is constituted the necessary Occasion of some Pleasure or Pain. Thus we shall find our selves pleased with a regular Form, a Piece of Architecture, or Painting, a Composition of Notes, a Theorem, an Action, an Affection, a Character; and we are conscious that this Pleasure naturally arises from the Contemplation of the Idea then present to the Mind, with all its Circumstances, though some of those Ideas have nothing of what we call sensible Perception in them; And in those which have, the Pleasure arises from some Uniformity, Order, Arrangement, Imitation, and not from the simple Ideas of Colour, or Sound, or Mode of Extension separately consider'd.

It seems hence to follow, that when Instruction, Education, or Prejudice, of any Kind, raise any Desire or

Aversion toward an Object; this Desire, or Aversion, is founded on an Opinion of some Perfection, or Deficiency, in those Qualities, for Perception whereof we have the proper *Senses*. Thus, if Beauty be desired by one who has not the *Sense* of Sight; the Desire must be raised by some apprehended Regularity of Figure, Sweetness of Voice, Smoothness, Softness, or some other Quality perceivable by the other *Senses*; without relation to the Ideas of Colour.

The only Pleasure of *Sense*, which our Philosophers seem to consider, is that which accompanies the simple Ideas of *Sensation*; but there are vastly greater Pleasures in those complex Ideas of Objects, which obtain the Names of *Beautiful* and *Harmonious*. The Power, then, whereby we receive Ideas of Beauty, and Harmony, has all the Characters of a *Sense*. 'Tis no Matter, whether we call these Ideas of Beauty, and Harmony, Perceptions of the external *Senses* of Seeing, and Hearing, or not; we should rather chuse to call these Ideas an *internal Sense*, were it only for the Convenience of distinguishing them from other *Sensations* of Seeing and Hearing, which Men may have without Perception of Beauty and Harmony. See **PLEASURE**, **BEAUTY**, and **HARMONY**.

**Moral SENSE**, is a Determination of the Mind, to be pleas'd with the Contemplation of those Affections, Actions, or Characters of rational Agents, which we call *Virtuous*.

This Moral *Sense* of Beauty, in Actions, and Affections, may appear strange at first View: Some of our Moralists themselves are offended at it in my Lord *Shaftesbury*, as being accustomed to deduce every Approbation, or Aversion, from rational Views of Interest. Our Gentlemen of good Taste can tell us of a great many *Senses*, Tastes, and Relishes, for Beauty, Harmony, Imitation in Painting and Poetry; and may we not find, too, in Mankind, a Relish for a Beauty in Characters, in Manners? The Truth is, Human Nature does not seem to have been left quite indifferent in the Affairs of Virtue, to form to it self Observations concerning the Advantage or Disadvantage of Actions, and accordingly to regulate its Conduct. The Weakness of our Reason, and the Avocations arising from the Infirmary and Necessities of our Nature, are so great, that very few of Mankind could shew some Actions to be, in the whole, advantageous, and their Contraries pernicious. The Author of Nature has much better furnished us for a Virtuous Conduct than our Moralists seem to imagine; by almost as quick and powerful Instructions, as we have for the Preservation of our Bodies: He has made Virtue a lovely Form, to excite our Pursuit of it, and has given us strong Affections, to be the Springs of each virtuous Action. See **VIRTUE**.

SENSIBLE Horizon } See { HORIZON.  
SENSIBLE Point } POINT.

**SENSITIVE** or **SENSIBLE Soul**, the Soul of Brutes, or that which Man is supposed to have in common with Brutes. See **SOUL**. 'Tis thus call'd, as intimating its utmost Faculty, to be that of *Sensation*; or, perhaps, because it is supposed to be material, and to come under our *Senses*. My Lord *Bacon* asserts, That the *Sensible* or *Brute Soul*, is plainly no more than a Corporeal Substance, attenuated by Heat, and thus render'd Invisible; or a kind of Aura or Vapour partly of an aerial, and partly a fiery Nature; endued with the Softness of Air, to be fit to receive Impressions, and with the Vigor of Fire, to communicate its Action; sed partly with oily Matters, and partly with aqueous ones; inclosed in the Body, and in the more perfect Animals; principally in the Head, moving along the Nerves; and restored and repaired by the Spirituous Blood of the Arteries. *Bac. de Augment. Scient. Lib. IV.*

**SENSITIVE-PLANTS**, a Species of *Plants*, call'd by the Ancients *Æschynomemonous*, and by us *Sensitive*, *Living* or *Mimic Plants*, as giving some Tokens of *Sense*. These are such whose Frame and Constitution is so nice and tender, that at the Touch, or least Pressure of one's Hand, they will contract their Leaves and Flowers, as if *sensible* of the Contact. Botanick Writers mention many Kinds hereof; some of which contract with the Hand or a Stick; others with Heat, others with Cold. The Truth is, many, if not most, Vegetables expand their Flowers, Down, &c. in warm, Sun-shiny Weather, and again close them towards Evening or in Rain, &c. especially at the beginning of Flowering, whilst the Seed is yet young and tender: As is very evident in the Down of *Dandelion*, &c. and in the Flower of the *Pimpernel*, the opening and shutting whereof are the Country-man's Weather-wiser; whereby, *Gerard* says, he foretells what Weather shall follow



follow next Day; for if the Flowers be close shut up, it betokens Rain and foul Weather; if they be spread abroad, fair Weather. *Ger. Herb. Lib. 2.*

**SENSORY**, or *Sensorium Commune*, the Seat of the *Common Sense*; or that Part where the sensible Soul is supposed more immediately to reside. The *Sensory* is allow'd to be that Part of the Brain wherein the Nerves from all the Organs of Sense, terminate. This is generally allowed to be about the Beginning of the *Medulla Oblongata*: *Des Cartes* will have it in the *Conarion*, or Pineal Gland. See **CONARION**. Sir *Isaac Newton* describes the *Sensory* of Animals as the Place to which the sensible Species of Things are carry'd through the Nerves and Brain; that they may be there perceiv'd by their immediate Presence to the Soul. The Organs of Sense, the same great Author observes, are not for enabling the Soul to perceive the Species of Things, in its *Sensory*; but only for conveying them thither. See **SENSE**. The Universe, he makes the *Sensory* of the Godhead. See **GOD**.

**SENTENCE**, in Law, a Judgment pass'd in Court, by the Judge, upon some Process either Civil or Criminal. *Sentences* are either Definitive, Interlocutory, Contradictory, &c. of Absolution, Excommunication, &c. Superior Judges either confirm or annul those of Inferior ones. See **APPEAL**. — *Three conformable Sentences*, *Tres Sententiae Conformes*: In the *Romish Ecclesiastical Law*, 'tis allowed to Appeal Three Times; so that there must be Three conformable *Sentences* e'er the *Sentences* of the Judges can take effect. The first Degree of Jurisdiction is the Bishop's Official: From him an Appeal lies to the Metropolitan; and from the Metropolitan to the Primate, or immediately to the Pope. If the Appeal come from the Metropolitan to the Pope, the Pope is obliged to delegate Judges in *Partibus*; and then if the Three *Sentences* pass'd in these Three Stages be conformable, there is no further Appeal: but if one of them annul another, new Judges are to be required of the Pope for a Fourth *Sentence*; and thus they sometimes proceed to a Sixth, or Seventh *Sentence*. Such a Number of Jurisdictions, is found infinitely prejudicial to the Public, and vexatious to private Persons.

**SENTENCE**, in Grammar, &c. a Period; or a Set of Words comprehending some perfect Sense, or Sentiment of the Mind. Every *Sentence* comprehends at least Three Words. The Business of Pointing, is to distinguish the several Parts and Members of *Sentences*; so as to render the Sense thereof the clearest, aptest and fullest possible. See **PUNCTUATION**.

In every *Sentence* there are two Parts necessarily required; a Noun for the Subject, and a definite Verb: Whatever is found more than these Two, affects one of them, either immediately, or by the Intervention of some other, whereby the first is affected. Again, every *Sentence* is either Simple or Conjunct. A *Simple Sentence* is that consisting of one single Subject, and one finite Verb: A *Conjunct Sentence* contains several Subjects and finite Verbs; either expressly or implicitly. A *Simple Sentence* needs no Point or Distinction; only a Period to close it: as, *A good Man loves Virtue for itself*. In a *Simple Sentence*, the several Adjuncts affect either the Subject or the Verb in a different Manner. Thus the Word *good*, expresses the Quality of the Subject, *Virtue* the Object of the Action, and, *for itself*, the End thereof. Now none of these Adjuncts can be separated from the rest of the *Sentence*: For if one be, why should not all the rest? And if all be, the *Sentence* will be minced into almost as many Parts as there are Words. But if several Adjuncts be attributed in the same manner either to the Subject or the Verb; the *Sentence* becomes *Conjunct*, and is to be divided into Parts.

In every *Conjunct Sentence*, as many Subjects, or as many finite Verbs as there are, either expressly, or implied, so many Distinctions may there be. Thus, *My Hopes, Fears, Joys, Pains, all center in you*: And thus, *Cicero, Catalina abiit, excessit, evasit, erupit*. The Reason of which Pointing is obvious; for as many Subjects or finite Verbs as there are in a *Sentence*, so many Members does it really contain. Whenever, therefore, there occur more Nouns than Verbs, or contrarywise; they are to be conceived as equal. Since, as every Subject requires its Verb; so every Verb requires its Subject, wherewith it may agree: Excepting, perhaps, in some figurative Dictions.

Indeed, there are some other Kinds of *Sentences* which may be rank'd amongst the *Conjunct Kind*, particularly the absolute *Ablative*, as 'tis call'd: Thus, *Physicians, the Disease once discovered, think the Cure half wrought*: Where the Words *Disease once discovered*, are equivalent to, *when the Cause of the Disease is discovered*. So also in Nouns added by Apposition; as, *The Scots, a hardy People, endured it all*; so also in Vocative Cases, and Interjections; as, *This, my Friend, you must allow me*: And, *What, for Heaven's Sake! would he be at?*

The Case is much the same, when several Adjuncts affect either the Subject of the *Sentence*, in the Verb, in

the same Manner; or at least something, whereby one of them is affected: as, *A good, wise, learned Man*, is an *Ornament to the Commonwealth*: Where the several Adjunctives denoting so many Qualities of the Subject, are to be separated from one another. Again, when I say, *Your Voice, Countenance, Gesture terrified him*: The several Nominative Cases denote so many Modes of the Verb, which are likewise to be distinguished from each other. The Case is the same in Adverbs; as, *He behaved himself modestly, prudently, virtuously*. In the first Example, the Adjuncts immediately affect the Subject; in the third, the Verb, in the following one, another Adjunct: as, *I saw a Man laden with Age, Sickness, Wounds*. Now, as many such Adjuncts as there are, so many several Members does the *Sentence* contain; which are to be distinguished from each other, as much as several Subjects, or finite Verbs. And that this is the Case in all *Conjunct Sentences*, appears hence; that all these Adjuncts, whether they be Verbs or Nouns, &c. will admit of a *Conjunction Copulative*, whereby they may be joyn'd together. But where-ever there is a *Copulative*, or Room for it, there a new Member of a *Sentence* begins. For the other Partitions, &c. of *Sentences*; See **COLON**, **SEMICOLON**, **PERIOD**.

**SENTENCE**, is also used in Poetry, &c. for a short, pithy Remark or Reflection, containing some Sentiment of use in the Conduct of Life. As, *Discite Justitiam monti, & non temere divos*; or, *A teneris assuescere milium est*, &c. *Sentences*, Father *Boschi* observes, render Poems useful; And, besides, add, I know not what Lustre and Spirit, which pleases. But there is no Virtue which is not accompanied with some dangerous Vice. Too many *Sentences* give a Poem too Philosophical an Air; and sink it into a kind of Gravity, that is less fit for the Majesty of a Poem, than the Study of a learned Man, and the Quaintness of a Dogmatist. Such Thoughts not only contain, but inspire, a certain calm Wisdom, which is directly opposite to the Passions: It cools them, both in the Hearers and in the Speaker. Lastly, the Affectation of speaking in *Sentences*, leads a Person to trifling and impertinent Ones; Instances whereof we have, in Abundance, in *Seneca's Tragedies*. *Petronius* recommends it to Authors, to disguise their *Sentences*, that they mayn't stand glaring above the Thread or Ground of the Discourse. See **ELLIPSIS**.

**SENTIMENTS**, in Poetry, and particularly Tragedy, are the Thoughts which the Poet makes his Persons express; whether they relate to Matters of Opinion, Passions, Business or the like. The *Manners* form the Tragic Action, and the *Sentiments* explain it; discovering its Causes, Motives, &c. The *Sentiments* are to the *Manners*, what those are to the *Fable*. See **MANNERS**. In the *Sentiments*, Regard is to be had to Nature and Probability; a Madman, for Instance, must speak as a Madman; a Lover as a Lover; a Hero as a Hero. The *Sentiments*, in great measure, are to sustain the Character. See **CHARACTER**, **DICTION**, &c.

**SENTINEL**, or **SETRY**, in War, a Soldier taken out of a *Corps de Gard* of Foot, and placed in some Post to watch any Approach of the Enemy, to prevent Surprises; and to stop such as would pass without Orders, or without discovering who they are. *Sentinel Perire*, is a *Sentinel* plac'd at some very advanced and dangerous Post, whence 'tis odds he never returns. The *Sentinel's* Word is, *Who is there? Qui va la? Stand, Demeure la*. The Word is Modern: 'Tis not long since they said, *To be on the Scout*, in the same Sense as we now say, *To stand Sentry*, &c. *Menage* derives the Word a *Sentinel*, from perceiving.

**SEPARATION**, in Navigation, the same with what we more usually call *Departure*. See **DEPARTURE**.

**SEPARATION of Man and Wife**. See **MULLER**.

**SEPARATISTS**, a Religious Sect in *England*, denominated from their setting up a separate Church, in Opposition to that Established by Law. At present, *Separatists*, is rather the Name of a Collection of Sects, than of any particular one; but nearer their Original, there was that Agreement among them, that one Name served them all. Their Division into *Presbyterians*, *Anabaptists*, *Independents*, &c. is a Modern Thing. *Hornius* tells us, that *Eccel.* they are such as under *Edward VI.* *Elizabeth* and *James I.* refused to conform to the Church of *England*: And who were first call'd *Puritans*, then *Separatists* and *Nonconformists*. The first Leader of the *Separatists*, was *Bolton*; who, upon quitting the Party he had form'd, was succeeded by *Robert Brown*, from whom the *Separatists* were call'd *Brownists*, a Name they long retain'd: that *Brown* himself deserted the Sect, and, in Imitation of *Bolton*, abjured his Errors. He was succeeded by *Barrett*, who was hang'd at the Instigation of the Bishops. The Fourth Chief was *Johnson*, who set up a Church at *Amsterdam*; which afterwards divided into several Sects, at the Head of one whereof was *Johnson's Brother*, who he



communicated him, and was reciprocally Excommunicated by him. Soon afterwards, a Fifth, named *Smith*, erected a like Church at *Leyden*, but it dwindled away after his Death: And *Separatism* was brought very low, when *Robinson* appeared, and rais'd its Head. He soften'd the Dogma's of *Brown*, and set on foot a good Understanding among them; but was not able to unite the whole Sect. Part of them still adhered to the rigid Opinions of their old Master *Brown*, and part of them followed *Robinson*. The first retained the Old Name of *Separatists*, the latter assumed that of *Semi-Separatists*, and at length degenerated into *Independants*, which is the Name whereby they are now usually call'd, both in New and Old England.

See INDEPENDANTS.

*Hernius* mentions another Class of *Separatists*, call'd *Sesqui-Separatists*, that is, *Separatists* and an Half. Some will have these to be a distinct Sect; others, the same with the *Semi-Separatists*: For 'tis added, that the *Semi-Separatists*, under pretence of taking a Medium between the *Brownists* and the Church of *England*, went further even than the *Brownists* themselves, and under the Name of *Separatists* degenerated into *Separatists and a Half*.

SEPIÆ OS, Skuttlefish Bone: This is white and Spongy, and seems almost to be calcined by the Sun. It is rough and absterfive, and chiefly used in Medicine as a Dentrifice.

SEPTA, in Antiquity, were Inclosures, or Rails, made of Boards; through which they went in, to give their Votes, in the Assemblies of the *Romans*.

SEPTEMBER, the Ninth Month of the Year, reckoning from *January*; and the Seventh, from the *Vernal Equinox*; whence its Name, viz. from *Septimus*, Seventh. The *Roman* Senate would have given this Month the Name of *Tiberius*; but that Emperor oppos'd it. The Emperor *Domitian* gave it his own Name *Germanicus*; the Senate under *Antoninus Pius* gave it that of *Antoninus*. *Commodus* gave it his Surname *Herculeus*; and the Emperor *Tacitus*, his own Name, *Tacitus*; but these Appellations have all gone into Disuse.

SEPTEMVIR, in Antiquity. See EPULO. The *German*s sometimes use the Word *Septemvirate*, for the Seven Electors of the Empire. See ELECTOR.

SEPTENTRIO, in Astronomy, a Northern Constellation, more usually call'd *Ursa minor*, or the little Bear, and by the People, *Charles's Wain*. See URSA MINOR. The Word is form'd from the Latin, *Septem*, as consisting of Seven Stars, and *Triones* the *Bullocks*, which, in the Ancient Constellation, were yoked to the Chariot.

SEPTENTRIO, in Cosmography, the same with *North*; thus call'd from the ancient Constellation *Septentrio*, one of whose Stars, is the *Pole Star*. See NORTH, POLE-STAR, &c. Hence also *Septentrional*, something belonging to the *North*; as *Septentrional Signs*; *Septentrional Parallels*, &c. those on the Northern Side of the Equator.

SEPTIER or SETIER, a *French* Measure, differing according to the Species of the Things measured. For Liquors, the *Septier* is the same Thing with the *Chopine* or *Half-pint*. See CHOPINE. For dry Measure, the *Septier* is very different, in different Places and different Commodities; as not being any Vessel of Measure, but only an Estimation of several other Measures. At *Paris*, the *Septier* of Wheat consists of Two Mines, the Mine of Two Minots, and the Minot of Three Bushels. See BUSHEL. Twelve *Septiers* make the *Mine*. See MINE. The *Septier* of Oats is double that of Wheat. See MEASURE.

SEPTIZON, in the Ancient Architecture, a Term almost appropriated to a famous Mausoleum, of the Family of the *Antonins*; which *Aur. Victor* tells us, was built in the Tenth Region of the City of *Rome*: being a very large insulated Building, with Seven Stages or Stories of Columns. The Plan was square; and the Upper Stories of Columns, falling back much, render'd the Pile of a Pyramidal Form; terminated a-top, with the Statue of the Emperor *Septimus Severus*, who built it. It had its Name *Septizon*, *Septizonium*, from *Septem* and *Zona*, q. d. Seven Zones or Girdles, by reason of its being girt with Seven Rows of Columns. Historians make mention of another *Septizon*, more Ancient than that of *Severus*, built near the *Therma* of *Antoninus*.

SEPTUAGESIMA, the First Sunday in Lent, or the Fourth Sunday before *Quadragesima*; as *Quinquagesima* is the next before *Quadragesima*, then *Sexagesima*, and *Septuagesima*: Being all Days appropriated by the Church to Acts of Penance and Mortification, by Way of Preparation for the Devotion of the *Lent* ensuing. The Laws of King *Canutus* ordained a Vacation from Judicature, from *Septuagesima* to *Quindena Pasche*. See QUINQUAGESIMA. From *Septuagesima* to the Octaves after *Easter*, Marriage is forbidden by the Canon-Law. It takes its Name from its being about 70 Days before *Easter*. Pope *Telephorus* first made it a Feast Day, and appointed Lent to commence from it. See LENT.

SEPTUAGINT, LXX, or the *Seventy*, a Term famous among Divines and Criticks, for a Version of the *Old Testament*, out of *Hebrew* into *Greek*, perform'd by Seventy-two *Jewish* Interpreters, in Obedience to an Order of *Ptolomy Philadelphus*. The Ancients, till *Jerom's* Time, universally believed, that the *Seventy* were Inspired Persons, not mere Translators; grounding their Belief on a fabulous History of this Version, given by *Aristæus*: Who tells us, That the High-Priest *Eleazer*, chose Six Doctors out of each Tribe for this Office, which made the Number of Seventy Two; and that these being shut up, each in his several Cell, each translated the whole; and without seeing what any of the rest had done, they were all found to agree, to a Letter. The Word is form'd from the *Latin*, *Septuaginta*, Seventy.

The *Chronology of the Seventy*, is an Account of the Years of the World, very different from what is found in the *Hebrew* Text, and the *Vulgate*; making the World 1466 Years older than 'tis found in these latter. The Criticks are much divided, as to the Point of Preference. *Baronius* prefers the Account of the *Seventy*: And *J. Vossius* makes an Apology for it. The Two latest and most strenuous Advocates, are Father *Pezron*, a *Bernardine*, and Father *le Quien*, a *Dominican*, the first of which defends the *Chronology of the Septuagint*, and the latter that of the *Hebrew* Text.

SEPTUM, in Anatomy, a Term literally signifying an Inclosure or Partition; applied to several Parts of the Body, which serve to separate one Part from another. The *Septum Lucidum*, is a Partition separating the Two upper Ventricles of the Brain; thus call'd, as being Transparent. See BRAIN.

*Septum Medium*, or *Cordis*, is a Separation between the Two Ventricles of the Heart. 'Tis about a Finger thick, fleshy, and of the same Substance with the Heart itself; consisting of muscular Fibres, which assist it in its Motions. Some have imagined it to be perforated with a great Number of Holes; but mistakenly. See HEART. *Septum Transversum*, is the Separation of the Two Bellies, or Venters, call'd also *Diaphragm*. See DIAPHRAGMA. *Septum Narium*. See NOSE. *Septum Bulbi*, divides the Bulb of the Urethra lengthwise. See URETHRA. *Septum Gallinaginis*. See CAPUT GALLINAGINIS. *Septum Clitoridis*, a membranous Partition running all along between the Two *Corpora Cavernosa*, from the Glans to its Divarication at the *Os pubis*. See CLITORIS. *Septum Auris*. See EAR. *Septum Testium*. See TESTICLE.

SEPULCHER, a Tomb, or Funeral Monument; or a Place destined for the Interment of the Deceas'd. The Term is chiefly used with regard to the Burying-Places of the Ancients: Those of the Moderns we usually call *Tombs*. See TOMB. Besides, the usual *Sepulchers* for the Interment, either of the whole Body, or of the Ashes of the Body burnt; the Ancients had a peculiar Kind, call'd *Cenotaphium*; being an empty *Sepulcher*, made in Honour of some Person, who, perhaps, had no Burial at all; from a Superstitious Opinion, That the Souls of those who wanted Burial, wandered an Hundred Years, e'er they were admitted to pass into the *Elysian* Fields. See BURIAL, FUNERAL, &c. The Pyramids are built to serve as *Sepulchers* for the Kings of *Egypt*. See PYRAMID. And the *Obelisks* had generally the same Intention. See OBELISK. *Sepulchers* were held Sacred and Inviolable; and the Care taken thereof, deem'd a Religious Duty, grounded on the Fear of God, and the Belief of the Soul's Immortality. Those who search'd or violated them, were odious to all Nations, and severely punished. The *Egyptians* call'd their *Sepulchers*, *Eternal Houses*, in Contradistinction to their Houses and Palaces, which they call'd *Inns*; by reason of the short Sojourn we have in the one, in Comparison of the long Stay in the other. The *Eastern* Pilgrimages are all made with Design to visit the *Holy Sepulcher*, that is, the Tomb of *Jesus Christ*. No Body enters here but bare-footed, and with a World of Ceremonies. The *Turks* exact 24 Crowns of each Pilgrim, whom Devotion carries to the *Holy Sepulcher*.

St. SEPULCHER, or the *Holy Sepulcher*, an Order of Regular Canons, anciently instituted in *Jerusalem*, in Honour of the *Holy Sepulcher*. They ascribe their Institution to *Godfrey of Boulogne*; who, they say, upon his taking *Jerusalem* in the Year 1099, placed Canons in the Patriarchal Church of the *Holy Sepulcher*, which, indeed, is true; but then they were not Regulars. In effect, 'twas *Arnoul*, who, of Archdeacon of the Church of *Jerusalem*, got himself elected Patriarch thereof; that in 1114, first obliged his Canons to live in Community, and to follow the Rule of St. *Augustin*. From the *Holy Land*, Numbers of these Canons were brought into *Europe*, particularly into *France* by *Louis the Younger*; into *England* by King *Henry*; into *Poland* by *Jaxa*, a *Polish* Gentleman; into *Flanders* by the Counts thereof. But the Order was afterwards suppress'd by *Innocent VIII*, and its Effects



added to that of our Lady of *Berthelem*, which itself, ceasing, they were bestowed in 1484, on that of the Knights of *St. John of Jerusalem*. But the Suppression did not take Place in *Poland*, nor in several Provinces of *Germany*, where they still subsist: Their General is in *Poland*. Their Habit, Father *Helyot* observes, was different in different Places.

**ST. SEPULCHER**, or the *Holy Sepulcher*, is also the Name of a Military Order, Establish'd in *Palestine*. Most Writers who mention this Order, carry its Institution as far back as the Time of the Apostle *St. James*, Bishop of *Jerusalem*; or at least to that of *Constantine*; pretending that *Godfrey of Boulogne*, and *Baldwin*, were only the Restorers thereof: But this Antiquity is Chimerical. 'Tis not even certain, that 'twas founded so early as *Godfrey of Boulogne*, or his Successor *Baldwin*; though *Favyn* and *de Belloy*, attribute it to this latter. 'Tis certain, there was nothing but Canons in the Church of *St. Sepulchers*, till the Year 1114; and 'tis more than probable, the Knights were only instituted upon the Ruins of the Canons 400 Years after, and that by Pope *Alexander VI.* in order to excite Rich and Noble Persons to visit the Holy Places, by giving them the Title of *Knights of the Holy Sepulcher*, and to this End, instituting an Order under that Name, whereof he took the Quality of Master for himself and his Successors. *Leo X.* and *Clement VII.* granted to the Guardian of the Religious of *St. Francis*, in the *Holy Land*, the Power of making these Knights; which Power, first granted *Vive voce*, was afterwards confirm'd by Bull of *Pius IV.* In 1558, the Knights of this Order in *Flanders*, chose *Philip II.* King of *Spain*, their Master; and afterwards his Son: But the Grand Master of the Order of *Malta* prevail'd on him to resign; and when afterwards the Duke of *Nevers* assumed the same Quality in *France*, the same Grand Master, by his Interest and Credit, procured a like Renunciation of him, and a Confirmation of the Union of this Order to that of *Malta*. See *MALTA*.

**SEPULCHRAL**, something belonging to *Sepulchers* or Tombs. See *SEPULCHER*. *Sepulchral* Inscriptions are the surest Monuments we have of Antiquity. See *INSCRIPTION*. *Sepulchral Lamps*, are those said to have been found burning in the Tombs of several Martyrs and others. See *LAMP*. *Sepulchral Column*, is a Column erected on a Tomb, with an Inscription on its Shaft. See *COLUMN*.

**SEPULCHRAL**, is also the Appellation of a Sect. — *Sepulchral Hereticks*, were thus call'd, from their principal Error, which was, That by the Word *Hell*, whither the Scripture tells us *Jesus Christ* descended after his Death, they understood his *Sepulcher*. They maintained, That *Jesus Christ* only descended into *Hell* according to the Flesh; that this *Hell* was nothing else but the Grave where he was laid, and wherein his Soul could not rest. See *PRATEOLUS*.

**SEQUEL**, **SEQUELA**, in Logic, a Consequence drawn from some preceding Proposition: As if I say, *The Human Soul is immaterial; and therefore Immortal*: The last Member of the Sentence is a *Sequel* from the first.

**SEQUENCE**, in Gaming, a Series or Set of Cards following in the same Suit or Colour. A *Sequence* of Four Cards, of Five, &c. At *Piquet*, these are call'd *Fourths*, *Fifths*, &c. *Quarts*, *Quints*, &c.

**SEQUESTRATION**, in Common-Law, is the separating of a Thing in Controversy, from the Possession of both Parties, till the Right be determined by Course of Law. This is of Two Sorts; *Voluntary*, or *Necessary*: *Voluntary*, is that which is done by Consent of each Party. *Necessary*, is that, which the Judge doth by his Authority, whether the Parties will or not. *Sequestration*, in the Civil Law, is the Act of the Ordinary, disposing of the Goods and Chattles of one Deceased, whose Estate no Man will meddle with. A Widow is particularly said to *Sequester*, when she disclaims having any thing to do with the Estate of her deceased Husband.

Among the *Romanists*, in Questions of Marriage, where the Wife complains of Impotency in the Husband; she is *Sequester'd* into a Convent, or the Hands of Matrons, till the Process be determined.

**SEQUESTRATION** is also used, for the gathering the Fruits of a Benefice void, to the Use of the next Incumbent. In the Time of the Civil Wars, *Sequestration* was used for a Seizing of the Estates of Delinquents, for the Use of the Commonwealth.

**SEQUIN**, or **CECHIN**, a Gold Coin struck at *Venice*, and in several Parts of the Grand Seignior's States, particularly *Cairo*; which last are call'd *Turkish Sequins*, or *Cherifs*. At *Constantinople*, the Ducats struck in several Parts of *Germany*, are call'd *Hungarian Sequins*.

The Value of these *Sequins* is different; those of *Venice* exceeding those of *Turkey* and *Germany*, by one Fifteenth. In the *East-Indies* the Difference is still more

sensible: The *Venerian Sequin* being current for Four Roupies, and Six Pessas, or 9 s. 4 d. Sterling, and the *Turkish Sequin*, only for four Roupies, or 9 s. See *DUCAT*. *Ablancourt* derives the Word from *Ciziquin* or *Cizicenne*, as supposing the *Sequin* first struck at *Cizicum*. *Alenage*, from the *Italian Zecchino*, of *Zecca*, a Town belonging to *Venice*. See *COINS*.

**SERAGLIO**, among the *Levantes*, the Palace of a Prince or Lord. At *Constantinople* they say, The *Seraglio* of the Ambassador of *England*, of *France*, &c. The Word is originally *Persian*, where it has the same Signification. The *Seraglio* is used by way of Excellence for the Palace of the Grand Seignior at *Constantinople*, where he keeps his Court, and where his Concubines are lodg'd, and where the Youth are train'd up for the chief Posts of the Empire. 'Tis a little Triangle about Two Miles round, wholly within the City, at the End of the Promontory *Chrysoceras*, now call'd the *Seraglio Point*. The Buildings run back to the Top of the Hill, from whence are Gardens that reach to the Edge of the Sea. The outward Appearance, *du Lair* tells us, is not beautiful; in regard the Architecture is irregular, being canton'd out into separate Edifices and Apartments, in manner of Pavillions and Domes. No Stranger has ever yet been admitted to the inmost Parts of the *Seraglio*. The old *Seraglio* is the Place where the Emperor's old Mistresses are kept. *Balfac* observes, That the *Seraglio* at *Constantinople*, is only a Copy of that which *Solomon* anciently built at *Jerusalem*.

**SERAPH**, in the Hierarchy of Angels, a Spirit of the first, or highest Rank. The *Seraphs*, or rather *Seraphims*, make that Class of Angels, supposed to be the most inflamed with Divine Love, by their nearer and more immediate Attendance on the Throne; and communicate the Heat to the inferior and remoter Orders: Hence their Name, which is form'd from the *Hebrew* Root, שרף, to burn, inflame. See *HIERARCHY*.

**SERAPHICK**, something belonging to the *Seraphim*. See *SERAPH*. Mr. *Boyle* has a Treatise of *Seraphic Love*, i. e. of the Love of God. *St. Francis*, the Founder of the *Cordeliers* and *Franciscans*, is call'd the *Seraphic Father*, in Memory of a Vision he saw on Mount *Alverna*, after a Fast of Forty Days, accompanied with many other Severities; when, falling into an Extasy, he saw a *Seraph* glide rapidly from Heaven upon him; which impress'd on him certain Stigmata or Marks, representing the Wounds which the Nails and the Spear made in our Saviour's Body, at his Crucifixion. In the Schools, *St. Bonaventure* is call'd *The Seraphic Doctor*, from his abundant Zeal and Fervour.

**SERENADE**, a kind of Concert given in the Night-Time by a Gallant, at his Mistress's Door, or under her Window. Sometimes it consists wholly of Instrumental Music; sometimes Voices are added; and the Pieces compos'd or play'd on these Occasions, are also call'd *Serenades*. We don't know whence the Word should derive, unless from the *French*, *Serein*, the Dew falling in the Night-Time.

**SERENA GUTTA**, in Medicine, a Disease, the same as *Amaurosis*. See *AMAUROSIS*.

**SERENE**, a Quality or Title of Honour given to certain Princes, and chief Magistrates of Republicks. The King of *England* is stil'd, *The most Serene*. The Term is also applied to the Doge of *Venice*. The Pope, and the Sacred College writing to the Emperor, to Kings, or the Doge, give no other Title but that of *Most Serene*. The *Venetians* set the Title of *Serenity* above that of *Highness*. In 1646, *Wicquefort* observes, there was a Clashing between the Courts of *France* and *Vienna*; because the Emperor refused the King of *France* any other Title than that of *Serene*. Bishops anciently, were address'd under the Title of *Serene*. The Kings of *France* of the First and Second Race, speaking of themselves; use no other Quality, but *Notre Serenite*. The Emperor gives no other Title to the King of *England*, nor even to any other King, excepting the King of *France*. The King of *Poland*, and other Kings, give it to the Electors. The Emperor, writing to the Electors or other Princes of the Empire, only uses the Term *Dilection*; but in treating with them, uses *Electoral Sereneness* or *Serenity* to the Electors; and *Ducal Sereneness* to the other Princes.

**SERGE**, in Commerce, a Woollen cross'd Stuff, manufactured on a Loom with four Treddles, after the Manner of Rateens, and other cross'd Stuffs. The Goodness of *Serges* is known by the Crossing, as that of Cloths by the Spinning.

Of *Serges* there are various Kinds, denominated either from the different Qualities thereof, or from the Places where they are wrought. The most considerable is the *London Serge*, now highly valued Abroad, particularly in *France*, where the Manufacture is carried on with good Success, under the Title of *Serge Facon de Londres*.



## Manufacture of London SERGES.

For Wooll, the longest is chosen for the Warp; and the shortest for the Woof. For either Kind is used, 'tis first scour'd, by putting it in a Copper of Liquor, somewhat more than luke-warm, composed of three Quarters of fair Water, and one of Urine. After having stay'd long enough therein to dissolve, and take off the Grease, &c. 'tis stirred briskly about with a Wooden Peel; taken out of the Liquor; drain'd, and wash'd in a running Water; dried in the Shade; beaten with Sticks on a Wooden Rack, to drive out the coarser Dust and Filth; and then picked clean with the Hands. Thus far prepared, 'tis greased with Oil of Olives, and the longest Part, destined for the Warp, combed with large Combs, heated in a little Furnace for the Purpose. To clear off the Oil again, the Wooll is put in a Liquor composed of hot Water, with Soap melted therein: Whence being taken out, wrung, and dried, 'tis spun on the Wheel. As to the shorter Wooll, intended for the Woof, 'tis only carded on the Knee, with small fine Cards, then spun on the Wheel, without being scour'd of its Oil. Note, The Thread for the Warp is always to be spun much finer, and better twisted, than that of the Woof.

The Wooll, both for the Warp, and the Woof, being spun, and the Thread divided into Skains; that of the Woof is put on Spools (unless it have been spun upon them) fit for the Cavity or Eye of the Shuttle; and that for the Warp wound on a Kind of Wooden Bobins, to fit it for Warping. When warp'd, 'tis stiffen'd with a Kind of Size, whereof, that made of the Shreds of Parchment is held the best; and when dry, is put on the Loom.

When mounted on the Loom; the Workman raising and falling the Threads (which are pass'd through a Reed) by means of four Steps placed underneath the Loom, which he makes to act transversely, equally, and alternately, one after another, with his Feet, in Proportion as the Threads are raised and lowered, throws the Shuttle across from one Side to the other; and each Time that the Shuttle is thrown, and the Thread of the Woof cross'd between those of the Warp, strikes it with the Frame to which the Reed is fastened through whose Teeth the Threads of the Warp pass; and this Stroke he repeats twice, or thrice, or even more, till he judges the Crossing of the Serge sufficiently close: Thus he proceeds, till the Warp is all filled with Woof.

The Serge now taken off the Loom is carried to the Fuller, who fulls, or scours it, in the Trough of his Mill, with a Kind of fat Earth, for the Purpose, first purged of all Stones and Filth. After three or four Hours scouring, the Fuller's Earth is washed out in fair Water, brought, by little and little, into the Trough, out of which it is taken when all the Earth is cleared: Then, with a Kind of Iron Pinchers, or Pliers, they pull off all the Knots, Ends, Straws, &c. sticking out on the Surface, on either Side: Then return it into the Fulling Trough, where 'tis work'd with Water somewhat more than luke-warm, with Soap dissolved therein; for near two Hours. 'Tis then wash'd out, till such Time as the Water becomes quite clear, and there be no Signs of Soap left: Then 'tis taken out of the Trough, the Knots, &c. pull'd off, and then put on the Tenter to dry, taking Care, as fast as it dries, to stretch it out both in Length and Breadth, till it be brought to its just Dimensions. When well dried, 'tis taken off the Tenter, Died, Shorn, and Pressed. See DYING, PRESSING, and SHEERING.

SERGEANT, a Term in our Law, applied to sundry Offices. As a *Sergeant at Law*, or of the Coif, is the greatest Degree taken in that Profession; as that of a Doctor is in the Civil Law. As they are the most Learned and Experienced, there is one Court appropriated to plead in by themselves, which is the *Common-Pleas*, where the Common Law of England is most strictly observ'd; but they are not prohibited pleading in other Courts, where the Judges (who must first be *Sergeants*) call them *Brothers*. They are called by the King's Mandate, or Writ, directed to them; commanding them, under a great Penalty, to take upon them that Degree, by a Day assign'd. Out of these, one is made the King's *Sergeant* (more may be) to plead for him in all Causes, especially Treason.

The *Sergeants* were anciently called *Servientes ad Legem*, and *Servientes Narratores*: Mr. Selden adds, That they were also called *Doctores Legis*; though others are of Opinion, that the Judges are, more properly, the *Doctores Legis*, and the *Sergeants*, Bachelors of Law. *Speelman* observes, That however a *Sergeant* may be richer than all the Doctors of the Commons, yet a Doctor is superior in Degree to a *Sergeant*; for the very Name

of a Doctor is *Magisterial*, but that of a *Sergeant Ministerial*. Hence the Doctors are seated and cover'd when they plead; but the *Sergeants* stand uncovered at the Bar, excepting for their Coif.

SERGEANT at Arms, is an Officer appointed to attend the Person of a King, *An. 7. H. 8. c. 3.* To Arrest Traitors, &c. and Persons of Quality offending, and to attend the Lord High-Steward, when he sits in Judgment on any Traitor. There are now Eight at Court, at 100 l. per Ann. Salary each: They are called the King's *Sergeants at Arms*, to distinguish them from others: They are created with great Ceremony; the Person kneeling before the King, his Majesty lays the Mace on his Right Shoulder, and says, *Rise up, Sergeant at Arms, and Esquire, for ever.* They have, besides, a Patent for the Office, which they hold for Life. They have their Attendance in the Presence-Chamber, where the Band of Gentlemen Pensioners wait, and receiving the King at the Door, carry the Maces before him to the Chapel-Door, whilst the Band of Pensioners stand foremost, and make a Lane for the King, as they also do when the King goes to the House of Lords. There are likewise Four others created in the same Manner; One, who attends the Lord Chancellor; a Second, the Lord Treasurer; a Third, the Speaker of the House of Commons, and a Fourth, attending the City of London. They have a considerable Share of the Fees of Honour, and travelling Charges allowed them, when in waiting, viz. Five Shillings per Day, when the Court is within Ten Miles of London, and Ten Shillings when Twenty Miles off London: They are in the Lord Chamberlain's Gift.

SERGEANT, in War, an inferior Officer of Foot, in each Company, arm'd with a Hallbard, and appointed to see Discipline kept, to form Ranks, and Files, &c.

SERGEANTY, a Service antiently due to the King for the Tenure or Holding of Lands; and which could not be due to any other Lord. 'Tis divided into *Grand* and *Petty Sergeanty*. *Grand Sergeanty*, is where one holds Land of the King by Service, which he ought to do in his own Person; as to bear the King's Banner, Spear, &c. *Petty Sergeanty* is where a Man holds Land of the King, to yield him yearly some small Thing toward his Wars; as a Sword, Dagger, Bow, Spurs, &c.

Coke, on *Littleton*, tells us, That Sir Richard Rockeford held Lands at Seaton, by *Sergeanty*; to be *Pantrarius Regis*, i. e. The King's Fore-footman, when he went into Gascoign, till he had worn out a Pair of Shoes of the Price of Four-Pence. By the Statute, 12 Car. II. all Tenures of any Honours, Manors, Lands, &c. are turn'd into Free and Common Soccage; but the Honorary Services of *Grand Sergeanty* are thereby continued.

SERIES, a continued Rank or Succession of Things, in the same Order, and which have some Relation or Connection with each other. — Medals are formed into *Series*, both with Regard to the Metal, and to the Subject. The different Metals of Medals, form three different *Series*, in the Cabinets of the Curious; we mean, as to the Order, and Arrangement, of the several Medals. The Gold *Series*, for Instance, of Imperials, amounts to about 1000 or 1200; that of Silver may amount to 3000; and that of Copper, in all the three Sizes, Great, Mean, and Little, to 6 or 7000. Of these, the *Series* of Middle Copper is the most compleat and easily found, as it may be brought down to the Fall of the Empire in the West, and the Time of the *Paleogi* in the East. As to the Antique, the *Series* of Medals are usually formed from the Side called the *Head*. In the First Class, is disposed the *Series* of Kings; in the Second, that of Greek and Latin Cities; in the Third, the Roman Consular Families; in the Fourth, the Imperial; in the Fifth, the Deities: To which may be added a Sixth *Series*, consisting of Medals of illustrious Persons. There are also *Series* of Modern Medals; That of the Popes only commences from Martin V. in 1430. From that Time we have a *Series* of Papal Medals, tolerably compleat, to the Number of 5 or 600. One might likewise have a *Series* of Emperors from Charlemain; provided one took in the current Coins: But, in Strictness, we commonly commence with Frederick II. in 1463. The *Series* of the Kings of France is the most numerous and most considerable of all the Modern Kings.

SERIES, in Algebra, a Rank or Progression of Quantities, increasing or decreasing in some constant Ratio; which, in its Progress, approaching still nearer and nearer some sought Value, is called a *Converging Series*, and if infinitely continued, becomes equal to that Quantity; whence its usual Appellation of *Infinite Series*: Thus  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \frac{1}{128} + \frac{1}{256} + \frac{1}{512} + \frac{1}{1024} + \frac{1}{2048} + \frac{1}{4096} + \frac{1}{8192} + \frac{1}{16384} + \frac{1}{32768} + \frac{1}{65536} + \frac{1}{131072} + \frac{1}{262144} + \frac{1}{524288} + \frac{1}{1048576} + \frac{1}{2097152} + \frac{1}{4194304} + \frac{1}{8388608} + \frac{1}{16777216} + \frac{1}{33554432} + \frac{1}{67108864} + \frac{1}{134217728} + \frac{1}{268435456} + \frac{1}{536870912} + \frac{1}{1073741824} + \frac{1}{2147483648} + \frac{1}{4294967296} + \frac{1}{8589934592} + \frac{1}{17179869184} + \frac{1}{34359738368} + \frac{1}{68719476736} + \frac{1}{137438953472} + \frac{1}{274877906944} + \frac{1}{549755813888} + \frac{1}{1099511627776} + \frac{1}{2199023255552} + \frac{1}{4398046511104} + \frac{1}{8796093022208} + \frac{1}{17592186044416} + \frac{1}{35184372088832} + \frac{1}{70368744177664} + \frac{1}{140737488355328} + \frac{1}{281474976710656} + \frac{1}{562949953421312} + \frac{1}{1125899906842624} + \frac{1}{2251799813685248} + \frac{1}{4503599627370496} + \frac{1}{9007199254740992} + \frac{1}{18014398509481984} + \frac{1}{36028797018963968} + \frac{1}{72057594037927936} + \frac{1}{144115188075855872} + \frac{1}{288230376151711744} + \frac{1}{576460752303423488} + \frac{1}{1152921504606846976} + \frac{1}{2305843009213693952} + \frac{1}{4611686018427387904} + \frac{1}{9223372036854775808} + \frac{1}{18446744073709551616} + \frac{1}{36893488147419103232} + \frac{1}{73786976294838206464} + \frac{1}{147573952589676412928} + \frac{1}{295147905179352825856} + \frac{1}{590295810358705651712} + \frac{1}{1180591620717411303424} + \frac{1}{2361183241434822606848} + \frac{1}{4722366482869645213696} + \frac{1}{9444732965739290427392} + \frac{1}{18889465931478580854784} + \frac{1}{37778931862957161709568} + \frac{1}{75557863725914323419136} + \frac{1}{151115727451828646838272} + \frac{1}{302231454903657293676544} + \frac{1}{604462909807314587353088} + \frac{1}{1208925819614629174706176} + \frac{1}{2417851639229258349412352} + \frac{1}{4835703278458516698824704} + \frac{1}{9671406556917033397649408} + \frac{1}{19342813113834066795298816} + \frac{1}{38685626227668133590597632} + \frac{1}{77371252455336267181195264} + \frac{1}{154742504910672534362390528} + \frac{1}{309485009821345068724781056} + \frac{1}{618970019642690137449562112} + \frac{1}{1237940039285380274899124224} + \frac{1}{2475880078570760549798248448} + \frac{1}{4951760157141521099596496896} + \frac{1}{9903520314283042199192993792} + \frac{1}{19807040628566084398385987584} + \frac{1}{39614081257132168796771975168} + \frac{1}{79228162514264337593543950336} + \frac{1}{158456325028528675187087900672} + \frac{1}{316912650057057350374175801344} + \frac{1}{633825300114114700748351602688} + \frac{1}{1267650600228229401496703205376} + \frac{1}{2535301200456458802993406410752} + \frac{1}{5070602400912917605986812821504} + \frac{1}{10141204801825835211973625643008} + \frac{1}{20282409603651670423947251286016} + \frac{1}{40564819207303340847894502572032} + \frac{1}{81129638414606681695789005144064} + \frac{1}{162259276829213363391578010288128} + \frac{1}{324518553658426726783156020576256} + \frac{1}{649037107316853453566312041152512} + \frac{1}{1298074214633706907132624082305024} + \frac{1}{2596148429267413814265248164610048} + \frac{1}{5192296858534827628530496329220096} + \frac{1}{10384593717069655257060992658440192} + \frac{1}{20769187434139310514121985316880384} + \frac{1}{41538374868278621028243970633760768} + \frac{1}{83076749736557242056487941267521536} + \frac{1}{166153499473114484112975882535043072} + \frac{1}{332306998946228968225951765070086144} + \frac{1}{664613997892457936451903530140172288} + \frac{1}{1329227995784915872903807060280344576} + \frac{1}{2658455991569831745807614120560689152} + \frac{1}{5316911983139663491615228241121378304} + \frac{1}{10633823966279326983230456482242756608} + \frac{1}{21267647932558653966460912964485513216} + \frac{1}{42535295865117307932921825928971026432} + \frac{1}{85070591730234615865843651857942052864} + \frac{1}{170141183460469231731687303715884105728} + \frac{1}{340282366920938463463374607431768211456} + \frac{1}{680564733841876926926749214863536422912} + \frac{1}{1361129467683753853853498429727072845824} + \frac{1}{2722258935367507707706996859454145691648} + \frac{1}{5444517870735015415413993718908291383296} + \frac{1}{10889035741470030830827987437816582766592} + \frac{1}{21778071482940061661655974875633165533184} + \frac{1}{43556142965880123323311949751266331066368} + \frac{1}{87112285931760246646623899502532662132736} + \frac{1}{174224571863520493293247799005065324265472} + \frac{1}{348449143727040986586495598010130648530944} + \frac{1}{696898287454081973172991196020261297061888} + \frac{1}{1393796574908163946345982392040522594123776} + \frac{1}{2787593149816327892691964784081045188247552} + \frac{1}{5575186299632655785383929568162090376495104} + \frac{1}{11150372599265311570767859136324180752990208} + \frac{1}{22300745198530623141535718272648361505980416} + \frac{1}{44601490397061246283071436545296723011960832} + \frac{1}{89202980794122492566142873090593446023921664} + \frac{1}{178405961588244985132285746181186892047843328} + \frac{1}{356811923176489970264571492362373784095686656} + \frac{1}{713623846352979940529142984724747568191373312} + \frac{1}{1427247692705959881058285969449495136382746624} + \frac{1}{2854495385411919762116571938898990272765493248} + \frac{1}{5708990770823839524233143877797980545530986496} + \frac{1}{11417981541647679048466287755595961091061972992} + \frac{1}{22835963083295358096932575511191922182123945984} + \frac{1}{45671926166590716193865151022383844364247891968} + \frac{1}{91343852333181432387730302044767688728495783936} + \frac{1}{182687704666362864775460604089535377456991567872} + \frac{1}{365375409332725729550921208179070754913983135744} + \frac{1}{730750818665451459101842416358141509827966271488} + \frac{1}{1461501637330902918203684832716283019655932542976} + \frac{1}{2923003274661805836407369665432566039311865085952} + \frac{1}{5846006549323611672814739330865132078623730171904} + \frac{1}{11692013098647223345629478661730264157247460343808} + \frac{1}{23384026197294446691258957323460528314494920687616} + \frac{1}{46768052394588893382517914646921056628989841375232} + \frac{1}{93536104789177786765035829293842113257979682750464} + \frac{1}{187072209578355573530071658587684226515959365500928} + \frac{1}{374144419156711147060143317175368453031918731001856} + \frac{1}{748288838313422294120286634350736906063837462003712} + \frac{1}{1496577676626844588240573268701473812127674924007424} + \frac{1}{2993155353253689176481146537402947624255349848014848} + \frac{1}{5986310706507378352962293074805895248510699696029696} + \frac{1}{11972621413014756705924586149611790497021399392059392} + \frac{1}{23945242826029513411849172299223580994042798784118784} + \frac{1}{47890485652059026823698344598447161988085597568237568} + \frac{1}{95780971304118053647396689196894323976171195136475136} + \frac{1}{191561942608236107294793378393788647952342390272950272} + \frac{1}{383123885216472214589586756787577295904684780545900544} + \frac{1}{766247770432944429179173513575154591809369561091801088} + \frac{1}{1532495540865888858358347027150309183618739122183602176} + \frac{1}{3064991081731777716716694054300618367237478244367204352} + \frac{1}{6129982163463555433433388108601236734474956488734408704} + \frac{1}{12259964326927110866866776217202473468949912977468817408} + \frac{1}{24519928653854221733733552434404946937899825954937634816} + \frac{1}{49039857307708443467467104868809893875799651909875269632} + \frac{1}{98079714615416886934934209737619787751599303819750539264} + \frac{1}{196159429230833773869868419475239575503198607639501078528} + \frac{1}{392318858461667547739736838950479151006397215279002157056} + \frac{1}{784637716923335095479473677900958302012794430558004314112} + \frac{1}{1569275433846670190958947355801916604025588861116008628224} + \frac{1}{3138550867693340381917894711603833208051177722232017256448} + \frac{1}{6277101735386680763835789423207666416102355444464034512896} + \frac{1}{12554203470773361527671578846415332832204710888928069025792} + \frac{1}{25108406941546723055343157692830665664409421777856138051584} + \frac{1}{50216813883093446110686315385661331328818843555712276103168} + \frac{1}{100433627766186892221372630771322662657637687111424552206336} + \frac{1}{200867255532373784442745261542645325315275374222849104412672} + \frac{1}{401734511064747568885490523085290650630550748445698208825344} + \frac{1}{803469022129495137770981046170581301261101496891396417650688} + \frac{1}{1606938044258990275541962092341162602522202993782792835301376} + \frac{1}{3213876088517980551083924184682325205044405987565585670602752} + \frac{1}{6427752177035961102167848369364650410088811975131171341205504} + \frac{1}{12855504354071922204335696738729300820177623950262342682411008} + \frac{1}{25711008708143844408671393477458601640355247900524685364822016} + \frac{1}{51422017416287688817342786954917203280710495801049370729644032} + \frac{1}{102844034832575377634685573909834406561420991602098741459288064} + \frac{1}{205688069665150755269371147819668813122841983204197482918576128} + \frac{1}{411376139330301510538742295639337626245683966408394965837152256} + \frac{1}{822752278660603021077484591278675252491367932816789931674304512} + \frac{1}{1645504557321206042154969182557350504982735865633579863348609024} + \frac{1}{3291009114642412084309938365114701009965471731267159726697218048} + \frac{1}{6582018229284824168619876730229402019930943462534319453394436096} + \frac{1}{13164036458569648337239753460458804039861886925068638906788872192} + \frac{1}{26328072917139296674479506920917608079723773850137277813577744384} + \frac{1}{52656145834278593348959013841835216159447547700274555627155488768} + \frac{1}{105312291668557186697918027683670432318895095400549111254310977536} + \frac{1}{210624583337114373395836055367340864637790190801098222508621955072} + \frac{1}{421249166674228746791672110734681729275580381602196445017243910144} + \frac{1}{842498333348457493583344221469363458551160763204392890034487820288} + \frac{1}{1684996666696914987166688442938726917102321526408785780068975640576} + \frac{1}{3369993333393829974333376885877453834204643052817571560137951281152} + \frac{1}{6739986666787659948666753771754907668409286105635143120275902562304} + \frac{1}{13479973333575319897333507543509815336818572211270286240551805124608} + \frac{1}{26959946667150639794667015087019630673637144422540572481103610249$



The Doctrine and Use of *Infinite Series*, one of the greatest Improvements of the present Age, we owe to *Nic. Mercator* of *Holstein*; who, however, first took it from *Dr. Wallis's* *Arithmetick of Infinites*. It takes Place principally in the Quadrature of Curves: Where, as we frequently fall upon Quantities, which cannot be expressed by any precise definite Numbers, such as is the Ratio of the Diameter of a Circle to the Circumference, we are glad to express them by a *Series*, which, infinitely continued, is the Value of the Quantity requir'd: An Idea of the Nature, Use, &c. of *Infinite Series*, may be conceived from what follows.

Though Arithmetic furnish us with very adequate and intelligible Expressions for all rational Numbers, yet it is very defective as to irrational Ones; which are infinitely more numerous than the other; there being, for Instance, an Infinity of them between 1 and 2. Were it now required to find a Mean, proportional between 1 and 2; in rational Numbers, which alone are clearly intelligible, (the Root of 2 being certainly a very obscure Idea) we could still approach nearer and nearer to the just Value of the Quantity required, but without ever arriving at it: Thus, if for the mean Proportional between 1 and 2, or the Root of 2, we first put 1, 'tis evident we have not put enough; if we add  $\frac{1}{2}$  we put too much, for the Square of  $1 + \frac{1}{2}$  is greater than 2. If then we take away  $\frac{1}{8}$ , we shall find we have taken away too much, and if we return  $\frac{1}{16}$ , the Whole will be too great: Thus may we proceed, without ever coming at the just Quantity sought. These Numbers thus found, and those found after the same Manner to Infinity, being disposed in their natural Order, make what we call an *Infinite Series*.

Sometimes the *Series* do not proceed by alternate Additions and Subtractions, but by simple Additions, or an Infinity of Subtractions; according to the Position of the first Term. In all these *Infinite Series*, 'tis visible, that as all the Terms are only equal to a finite Magnitude, they must be still decreasing; and 'tis even convenient that they be so, as much as possible, that one may take only a certain Number of the first Terms for the Magnitude sought, and neglect all the rest.

But 'tis not irrational Numbers only, that are expressed in rational Ones, by *Infinite Series*. Rational Numbers themselves may be expressed in the same Manner: 1, for Instance, being equal to the *Series*  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \frac{1}{128} + \frac{1}{256} + \frac{1}{512} + \frac{1}{1024} + \frac{1}{2048} + \frac{1}{4096} + \frac{1}{8192} + \frac{1}{16384} + \frac{1}{32768} + \frac{1}{65536} + \frac{1}{131072} + \frac{1}{262144} + \frac{1}{524288} + \frac{1}{1048576} + \frac{1}{2097152} + \frac{1}{4194304} + \frac{1}{8388608} + \frac{1}{16777216} + \frac{1}{33554432} + \frac{1}{67108864} + \frac{1}{134217728} + \frac{1}{268435456} + \frac{1}{536870912} + \frac{1}{1073741824} + \frac{1}{2147483648} + \frac{1}{4294967296} + \frac{1}{8589934592} + \frac{1}{17179869184} + \frac{1}{34359738368} + \frac{1}{68719476736} + \frac{1}{137438953472} + \frac{1}{274877906944} + \frac{1}{549755813888} + \frac{1}{1099511627776} + \frac{1}{2199023255552} + \frac{1}{4398046511104} + \frac{1}{8796093022208} + \frac{1}{17592186044416} + \frac{1}{35184372088832} + \frac{1}{70368744177664} + \frac{1}{140737488355328} + \frac{1}{281474976710656} + \frac{1}{562949953421312} + \frac{1}{1125899906842624} + \frac{1}{2251799813685248} + \frac{1}{4503599627370496} + \frac{1}{9007199254740992} + \frac{1}{18014398509481984} + \frac{1}{36028797018963968} + \frac{1}{72057594037927936} + \frac{1}{144115188075855872} + \frac{1}{288230376151711744} + \frac{1}{576460752303423488} + \frac{1}{1152921504606846976} + \frac{1}{2305843009213693952} + \frac{1}{4611686018427387904} + \frac{1}{9223372036854775808} + \frac{1}{18446744073709551616} + \frac{1}{36893488147419103232} + \frac{1}{73786976294838206464} + \frac{1}{147573952589676412928} + \frac{1}{295147905179352825856} + \frac{1}{590295810358705651712} + \frac{1}{1180591620717411303424} + \frac{1}{2361183241434822606848} + \frac{1}{4722366482869645213696} + \frac{1}{9444732965739290427392} + \frac{1}{18889465931478580854784} + \frac{1}{37778931862957161709568} + \frac{1}{75557863725914323419136} + \frac{1}{151115727451828646838272} + \frac{1}{302231454903657293676544} + \frac{1}{604462909807314587353088} + \frac{1}{1208925819614629174706176} + \frac{1}{2417851639229258349412352} + \frac{1}{4835703278458516698824704} + \frac{1}{9671406556917033397649408} + \frac{1}{19342813113834066795298816} + \frac{1}{38685626227668133590597632} + \frac{1}{77371252455336267181195264} + \frac{1}{154742504910672534362390528} + \frac{1}{309485009821345068724781056} + \frac{1}{618970019642690137449562112} + \frac{1}{1237940039285380274899124224} + \frac{1}{2475880078570760549798248448} + \frac{1}{4951760157141521099596496896} + \frac{1}{9903520314283042199192993792} + \frac{1}{19807040628566084398385987584} + \frac{1}{39614081257132168796771975168} + \frac{1}{79228162514264337593543950336} + \frac{1}{158456325028528675187087900672} + \frac{1}{316912650057057350374175801344} + \frac{1}{633825300114114700748351602688} + \frac{1}{1267650600228229401496703205376} + \frac{1}{2535301200456458802993406410752} + \frac{1}{5070602400912917605986812821504} + \frac{1}{10141204801825835211973625643008} + \frac{1}{20282409603651670423947251286016} + \frac{1}{40564819207303340847894502572032} + \frac{1}{81129638414606681695789005144064} + \frac{1}{162259276829213363391578010288128} + \frac{1}{324518553658426726783156020576256} + \frac{1}{649037107316853453566312041152512} + \frac{1}{1298074214633706907132624082305024} + \frac{1}{2596148429267413814265248164610048} + \frac{1}{5192296858534827628530496329220096} + \frac{1}{10384593717069655257060992658440192} + \frac{1}{20769187434139310514121985316880384} + \frac{1}{41538374868278621028243970633760768} + \frac{1}{83076749736557242056487941267521536} + \frac{1}{166153499473114484112975882535043072} + \frac{1}{332306998946228968225951765070086144} + \frac{1}{664613997892457936451903530140172288} + \frac{1}{1329227995784915872903807060280344576} + \frac{1}{2658455991569831745807614120560689152} + \frac{1}{5316911983139663491615228241121378304} + \frac{1}{10633823966279326983230456482242756608} + \frac{1}{21267647932558653966460912964485513216} + \frac{1}{42535295865117307932921825928971026432} + \frac{1}{85070591730234615865843651857942052864} + \frac{1}{170141183460469231731687303715884105728} + \frac{1}{340282366920938463463374607431768211456} + \frac{1}{680564733841876926926749214863536422912} + \frac{1}{1361129467683753853853498429727072845824} + \frac{1}{2722258935367507707706996859454145691648} + \frac{1}{5444517870735015415413993718908291383296} + \frac{1}{10889035741470030830827987437816582766592} + \frac{1}{21778071482940061661655974875633165533184} + \frac{1}{43556142965880123323311949751266331066368} + \frac{1}{87112285931760246646623899502532662132736} + \frac{1}{174224571863520493293247799005065324265472} + \frac{1}{348449143727040986586495598010130648530944} + \frac{1}{696898287454081973172991196020261297061888} + \frac{1}{1393796574908163946345982392040522594123776} + \frac{1}{2787593149816327892691964784081045188247552} + \frac{1}{5575186299632655785383929568162090376495104} + \frac{1}{11150372599265311570767859136324180752990208} + \frac{1}{22300745198530623141535718272648361505980416} + \frac{1}{44601490397061246283071436545296723011960832} + \frac{1}{89202980794122492566142873090593446023921664} + \frac{1}{178405961588244985132285746181186892047843328} + \frac{1}{356811923176489970264571492362373784095686656} + \frac{1}{713623846352979940529142984724747568191373312} + \frac{1}{1427247692705959881058285969449495136382746624} + \frac{1}{2854495385411919762116571938898990272765493248} + \frac{1}{5708990770823839524233143877797980545530986496} + \frac{1}{11417981541647679048466287755595961091061972992} + \frac{1}{22835963083295358096932575511191922182123945984} + \frac{1}{45671926166590716193865151022383844364247891968} + \frac{1}{91343852333181432387730302044767688728495783936} + \frac{1}{182687704666362864775460604089535377456991567872} + \frac{1}{365375409332725729550921208179070754913983135744} + \frac{1}{730750818665451459101842416358141509827966271488} + \frac{1}{1461501637330902918203684832716283019655932542976} + \frac{1}{2923003274661805836407369665432566039311865085952} + \frac{1}{5846006549323611672814739330865132078623730171904} + \frac{1}{11692013098647223345629478661730264157247460343808} + \frac{1}{23384026197294446691258957323460528314494920687616} + \frac{1}{46768052394588893382517914646921056628989841375232} + \frac{1}{93536104789177786765035829293842113257979682750464} + \frac{1}{187072209578355573530071658587684226515959365500928} + \frac{1}{374144419156711147060143317175368453031918731001856} + \frac{1}{748288838313422294120286634350736906063837462003712} + \frac{1}{1496577676626844588240573268701473812127674924007424} + \frac{1}{2993155353253689176481146537402947624255349848014848} + \frac{1}{5986310706507378352962293074805895248510699696029696} + \frac{1}{11972621413014756705924586149611790497021399392059392} + \frac{1}{23945242826029513411849172299223580994042798784118784} + \frac{1}{47890485652059026823698344598447161988085597568237568} + \frac{1}{95780971304118053647396689196894323976171195136475136} + \frac{1}{191561942608236107294793378393788647952342390272950272} + \frac{1}{383123885216472214589586756787577295904684780545900544} + \frac{1}{766247770432944429179173513575154591809369561091801088} + \frac{1}{1532495540865888858358347027150309183618739122183602176} + \frac{1}{3064991081731777716716694054300618367237478244367204352} + \frac{1}{6129982163463555433433388108601236734474956488734408704} + \frac{1}{12259964326927110866866776217202473468949912977468817408} + \frac{1}{24519928653854221733733552434404946937899825954937634816} + \frac{1}{49039857307708443467467104868809893875799651909875269632} + \frac{1}{98079714615416886934934209737619787751599303819750539264} + \frac{1}{196159429230833773869868419475239575503198607639501078528} + \frac{1}{392318858461667547739736838950479151006397215279002157056} + \frac{1}{784637716923335095479473677900958302012794430558004314112} + \frac{1}{1569275433846670190958947355801916604025588861116008628224} + \frac{1}{3138550867693340381917894711603833208051177722232017256448} + \frac{1}{6277101735386680763835789423207666416102355444464034512896} + \frac{1}{12554203470773361527671578846415332832204710888928069025792} + \frac{1}{25108406941546723055343157692830665664409421777856138051584} + \frac{1}{50216813883093446110686315385661331328818843555712276103168} + \frac{1}{100433627766186892221372630771322662657637687111424552206336} + \frac{1}{200867255532373784442745261542645325315275374222849104412672} + \frac{1}{401734511064747568885490523085290650630550748445698208825344} + \frac{1}{803469022129495137770981046170581301261101496891396417650688} + \frac{1}{1606938044258990275541962092341162602522202993782792835301376} + \frac{1}{3213876088517980551083924184682325205044405987565585670602752} + \frac{1}{6427752177035961102167848369364650410088811975131171341205504} + \frac{1}{12855504354071922204335696738729300820177623950262342682411008} + \frac{1}{25711008708143844408671393477458601640355247900524685364822016} + \frac{1}{51422017416287688817342786954917203280710495801049370729644032} + \frac{1}{102844034832575377634685573909834406561420991602098741459288064} + \frac{1}{205688069665150755269371147819668813122841983204197482918576128} + \frac{1}{411376139330301510538742295639337626245683966408394965837152256} + \frac{1}{822752278660603021077484591278675252491367932816789931674304512} + \frac{1}{1645504557321206042154969182557350504982735865633579863348609024} + \frac{1}{3291009114642412084309938365114701009965471731267159726697218048} + \frac{1}{6582018229284824168619876730229402019930943462534319453394436096} + \frac{1}{13164036458569648337239753460458804039861886925068638906788872192} + \frac{1}{26328072917139296674479506920917608079723773850137277813577744384} + \frac{1}{52656145834278593348959013841835216159447547700274555627155488768} + \frac{1}{105312291668557186697918027683670432318895095400549111254310977536} + \frac{1}{210624583337114373395836055367340864637790190801098222508621955072} + \frac{1}{421249166674228746791672110734681729275580381602196445017243910144} + \frac{1}{842498333348457493583344221469363458551160763204392890034487820288} + \frac{1}{1684996666696914987166688442938726917102321526408785780068975640576} + \frac{1}{3369993333393829974333376885877453834204643052817571560137951281152} + \frac{1}{6739986666787659948666753771754907668409286105635143120275902562304} + \frac{1}{13479973333575319897333507543509815336818572211270286240551805124608} + \frac{1}{26959946667150639794667015087019630673637144422540572481103610249216} + \frac{1}{53919893334301279589334030174039261347274288845081144962207220498432} + \frac{1}{107839786668602559178668060348078522694548577690162289924414440996864} + \frac{1}{215679573337205118357336120696157045389097155380324579848828881993728} + \frac{1}{431359146674410236714672241392314090778194310760649159697657763987456} + \frac{1}{862718293348820473429344482784628181556388621521298319395315527974912} + \frac{1}{1725436586697640946858688965569256363112777243042596638790631055949824} + \frac{1}{3450873173395281893717377931138512726225554486085193277581262111899648} + \frac{1}{6901746346790563787434755862277025452451108972170386555162524223799296} + \frac{1}{13803492693581127574869511724554050904902217944340773110325048447598592} + \frac{1}{27606985387162255149739023449108101809804435888681546220650096895197184} + \frac{1}{55213970774324510299478046898216203619608871777363092441300193790394368} + \frac{1}{110427941548649020598956093796432407239217743554726184882600387580788736} + \frac{1}{220855883097298041197912187592864814478435487109452369765200775161577472} + \frac{1}{441711766194596082395824375185729628956870974218904739530401550323154944} + \frac{1}{883423532389192164791648750371459257913741948437809479060803100646309888} + \frac{1}{1766847064778384329583297500742918515827483896875618958121606201292619776} + \frac{1}{3533694129556768659166595001485837031654967793751237916243212402585239552} + \frac{1}{7067388259113537318333190002971674063309935587502475832486424805170479104} + \frac{1}{14134776518227074636666380005943348126619871175004951664972849610340958208} + \frac{1}{28269553036454149273332760011886696253239742350009903329945699220681916416} + \frac{1}{56539106072908298546665520023773392506479484700019806659891398441363832832} + \frac{1}{113078212145816597093331040047546785012958969400039613319782796882727665664} + \frac{1}{226156424291633194186662080095093570025917938800079226639565593765455331328} + \frac{1}{452312848583266388373324160190187140051835877600158453279131187530910662656} + \frac{1}{904625697166532776746648320380374280103671755200316906558262375061821325312} + \frac{1}{1809251394333065553493296640760748560207343510400633813116524750123642650624} + \frac{1}{3618502788666131106986593281521497120414687020801267626233049500247285301248} + \frac{1}{7237005577332262213973186563042994240829374041602535252466099000494570602496} + \frac{1}{$



infinite — 1. If then, 2dly, that Term in the Quotient continually decrease; the Series will give a Quotient as near the Truth as possible. *E. gr.* If  $b=1$ ,  $c=1$  and  $a=2$ ; these Values substituted in the general Series, or the Division performed as in the general Example; we shall find  $\frac{1}{2} = \frac{1}{2+1} = \frac{1}{2} - \frac{1}{4} + \frac{1}{8} - \frac{1}{16} + \frac{1}{32}$

$-\frac{1}{64} + \frac{1}{128}$ , &c. Suppose then, the Series to be broke off in the Fourth Term; there will be a Deficiency: but 'twill be less than  $\frac{1}{16}$ . If it be broke off in the Sixth, there will be a Deficiency, but that less than  $\frac{1}{64}$ . The further therefore the Series is continued, the nearer it approaches to Truth, but never arrives at it.

After the like Manner we find  $\frac{1}{3} = \frac{1}{3+1} = \frac{1}{3} - \frac{1}{9} + \frac{1}{27} - \frac{1}{81} + \frac{1}{243}$

$-\frac{1}{729} + \frac{1}{2187}$ , &c. In infinit.  $\frac{1}{4} = \frac{1}{4+1} = \frac{1}{4} - \frac{1}{16} + \frac{1}{64} - \frac{1}{256} + \frac{1}{1024}$

$-\frac{1}{4096} + \frac{1}{16384}$ , &c. In Infinitum  $\frac{1}{5} = \frac{1}{5+1} = \frac{1}{5} - \frac{1}{25} + \frac{1}{125} - \frac{1}{625} + \frac{1}{3125}$

$-\frac{1}{15625} + \frac{1}{78125}$ , &c. in Infinitum. This is a constant Law, whereby all Fractions, whose Numerator is Unity, may be expressed by infinite Series: Those Series being all Geometrical Progressions, decreasing in such Manner as that the Numerator is always Unity; and the Denominator of the first Term, which is also the Exponent of the Ratio, differs by Unity from the Denominator of the Fraction to be resolved.

If the Terms of the Quotient be continually increasing, the Series recedes so much the farther from the Quotient as it is continued longer; nor does it ever become equal to the Quotient, unless it be terminated; and the last Remainder be added under its Sign. *E. gr.* Suppose

$\frac{1}{1+2}$ ; the Quotient will be found  $1-2+4-8+16-64+128$ , &c. One Term, 1 exceeds  $\frac{1}{3}$  by an Excess of  $\frac{2}{3}$ ; Two Terms come short by  $\frac{4}{3}$ . Three Terms exceed by  $\frac{8}{3}$ ; Four fall short by  $\frac{16}{3}$ , &c. If the Series be

supposed to terminate in  $-8$ ; then will  $\frac{1}{1+2} = 1-2+4-8+16-64+128$ . But  $1-2+4-8 = -5 = \frac{1}{3}$ . Therefore,

$\frac{1}{1+2} = \frac{1}{3} - \frac{1}{3} = \frac{1}{3}$ . Suppose the General Series to terminate in  $-c^3$ ; then will  $\frac{1}{1+c} = 1-c+c^2-c^3+\frac{c^3}{1+c} = \frac{1+c-c^2+c^2+c^3-c^3-c^4+c^4}{1+c} = \frac{1}{1+c}$

$\frac{1}{1+c} = \frac{1}{1+c} - \frac{1}{1+c} = \frac{1}{1+c}$ . Suppose the General Series to terminate in  $-c^3$ ; then will  $\frac{1}{1+c} = 1-c+c^2-c^3+\frac{c^3}{1+c} = \frac{1+c-c^2+c^2+c^3-c^3-c^4+c^4}{1+c} = \frac{1}{1+c}$

$\frac{1}{1+c} = \frac{1}{1+c} - \frac{1}{1+c} = \frac{1}{1+c}$ . Suppose the General Series to terminate in  $-c^3$ ; then will  $\frac{1}{1+c} = 1-c+c^2-c^3+\frac{c^3}{1+c} = \frac{1+c-c^2+c^2+c^3-c^3-c^4+c^4}{1+c} = \frac{1}{1+c}$

To find an Infinite Series by extracting of Roots — — — — — See { QUADRATURE of the CIRCLE.  
To find an Infinite Series by presupposed Series — — — — — See {  
To extract the Roots of an Infinite Series — — — — — See { EXTRACTION of Roots.

SERMOLOGIES, in Church History, Books of Sermons, or Homilies of Popes and other Persons of Eminence and Sanctity, read at the Feasts of the Confessors, the Purification, All Saints, and on every Day from Christmas to the Octave of the Epiphany. See HOMILY.

SERMONES, the Title Horace gives his Satyrs. The Critics are divided about the Reason of the Name. The Opinion of Father Bossu seems well grounded. A mere Observation of Feet, and Measure, such as we find in Terence, Plautus, and in Horace's Satyrs, he thinks, is not sufficient to constitute Verse; to determine the Work to be Poetical; or to distinguish it from Prose: unless it have some further Air, or Character of Poetry; somewhat of the Fable, or the Sublime. See POETRY. Hence it is, that Horace calls his Satyrs, *Prose, Sermones*. His Odes have quite another Air, and are therefore called, *Poems, Carmina*. See POEM, PROSE, and VERSIFICATION.

SERMONIUM, in Old Records, a kind of Interlude or Historical Play, which the Inferior Orders of Clergy, assisted by Boys, &c. used to act in the Body of the Church, suitable to the Solemnity of some Festival or high Procession Day. This is supposed to have been the Origin of the Modern Drama. See COMEDY.

SERON OF ALMONDS, is the Quantity of Two Hundred Weight; of Anise-seeds from 3 to 400; of Castile Soap, from 200 and a Half, to 300 and 3 Quarters.

SEROSITY, in Medicine, an aqueous Liquor, mixed with the Blood and other Humours. Degori defines it, a sharp, bilious Juice, approaching nearly the Nature of Blood; but which, being extravasated, does not coagulate like the Blood. See SNUUM. Disorders of the Spleen are attended with Serosities. The Kidneys help to purge off Serosities.

SERPENS, in Astronomy, a Constellation in the Northern Hemisphere, called *Serpens Ophiuchi*.

The Stars in the Constellation *Serpens*, in Ptolemy's Catalogue are 17; in Tycho's 19; in the *Britannic Catalogue* 59. The Longitudes, Latitudes, Magnitudes, &c. whereof are as follow:

### Stars in the Constellation SERPENS OPHIUCHI.

| Names and Situations of the Stars.                          | Longi-<br>tude | Latitude. | Magn. |
|---|----------------|-----------|-------|
|   | ° ' "          | ° ' "     |       |
|   | 7 38 45        | 16 00 52  | 7     |
|   | 8 42 07        | 16 21 30  | 7     |
|   | 10 33 31       | 22 10 00  | 6 7   |
| Inform. preceding the Neck and Head of the Serpent          | 12 04 08       | 17 50 23  | 6     |
| 5   | 12 30 00       | 19 27 06  | 6     |
|   | 13 17 04       | 18 32 06  | 6     |
|   | 10 01 04       | 29 59 11  | 7     |
|   | 14 26 37       | 17 01 48  | 7     |
|   | 9 57 20        | 32 58 55  | 6     |
| 10  | 14 45 18       | 20 07 02  | 6     |
|   | 16 49 57       | 17 27 54  | 6     |
| First of Three under the Jaw That in first Bend of the Neck | 11 29 35       | 34 01 52  | 7     |
| Preced. in 2d Bend of Neck                                  | 14 00 35       | 28 54 23  | 3     |
|   | 17 35 13       | 18 17 38  | 6     |
|   | 11 53 15       | 35 48 44  | 6     |
| 15  |                |           |       |
|   | 14 36 42       | 28 31 00  | 7     |
| Middle under the Jaw  | 13 00 57       | 33 24 38  | 6 7   |
| Third and Subsequent  | 12 40 02       | 34 23 28  | 6     |
| 1st from the Root of the Neck                               | 13 57 54       | 34 36 12  | 6     |
| 20  | 15 12 31       | 31 34 09  | 6     |
| Preced. in the □ of the Head, or in Extrem. of the Cheek    | 12 51 05       | 38 08 21  | 5     |
| Preced. of 2 bef. the 2d Bend                               | 13 23 17       | 36 59 54  | 6     |
| The lucid one of the Neck                                   | 18 42 50       | 21 45 03  | 6     |
| Poster. in the 2d Bend                                      | 17 43 22       | 25 31 56  | 2     |
| 25  | 20 19 46       | 17 39 25  | 6     |
| That follow. the Lucida, to N. by Tycho reckon. the 16 Oph. | 14 36 34       | 36 02 33  | 6     |
| S. of □ in Root of the Neck                                 | 18 04 56       | 26 34 53  | 4     |
|   | 15 37 03       | 34 21 30  | 3     |
| A small one under that                                      | 21 31 46       | 15 51 00  | 6     |
| 30  | 16 21 06       | 33 09 36  | 6     |
| Behind 2d Bend bef. Oph. Hand                               | 21 37 08       | 16 16 11  | 4     |
| Subseq. before the 2d Bend                                  | 20 27 05       | 21 47 38  | 6     |
| In Mouth, in mid. of □ Head                                 | 15 26 47       | 37 08 50  | 4     |
| Subseq. behind the 2d Bend                                  | 21 57 13       | 16 41 49  | 6     |
| That fol. the Lucida to the S.                              | 19 59 22       | 24 02 05  | 3     |
| 35  |                |           |       |
| North against the Nostrils in the □ of the Head             | 15 11 21       | 40 01 39  | 4 5   |
|   | 18 16 18       | 32 41 18  | 6     |
| In Temples, 1 subseq. of □ That without the Head to N.      | 19 58 18       | 28 15 34  | 7     |
| 40  | 18 23 04       | 35 19 32  | 3     |
|   | 17 48 23       | 42 28 52  | 4     |
|   | 23 12 27       | 30 15 16  | 6     |
|   | 23 45 58       | 28 58 33  | 7     |
|   | 21 23 30       | 37 15 08  | 4     |
|   | 22 29 59       | 37 03 33  | 6     |
| That follo. preced. Oph. Hand                               | 29 25 54       | 22 16 02  | 5     |
| 45  |                |           |       |
|   | 28 11 31       | 28 07 57  | 6     |
| 1st of 3, beh. Oph. hind Thigh                              | 11 07 23       | 9 44 45   | 6     |
| These 3 Tycho ranks am. Ophi.                               | 15 57 39       | 10 18 11  | 4     |
| South of 2 following this                                   | 16 12 46       | 10 08 59  | 6     |
| 50  | 20 13 23       | 7 59 05   | 4     |
| North of these  | 21 07 05       | 10 32 52  | 5     |
| In last Bend, behind Oph. Hand                              | 25 47 32       | 19 47 52  | 3     |
| Last but one of the Tail                                    | 1 31 03        | 20 31 56  | 3     |
| Of Three small ones } North following that                  | 3 06 51        | 23 29 53  | 6     |
| 55  | 3 38 38        | 21 17 24  | 6     |
| Middle and subsequent                                       | 4 19 15        | 22 14 04  | 6     |
| In Extremity of the Tail                                    | 11 31 28       | 29 19 27  | 6     |
| Small one adjacent to this                                  | 11 26 30       | 26 54 41  | 3     |
|   | 11 31 48       | 25 13 45  | 6     |

SERPENT, a Musical Instrument, serving as a Basse to the Cornet, or small Shawm, to sustain a Chorus of Singers in a large Vessel. It has its Name *Serpent*, from its Figure; as consisting of several Folds or Wreaths, serving to take off its Length, which would otherwise be Six or Seven Feet. 'Tis usually covered with Leather; and consists of Three Parts; a Mouth-piece, a Neck, and a Tail. It has Six Holes, by means whereof, they give it the Compass of Two Octaves.

SERPENTARIUS, in Astronomy, a Constellation of the Northern Hemisphere, called also *Ophiuchus*, and anciently *Æsculapius*. See CONSTELLATION.

The Stars in the Constellation *Serpentarius* in Ptolemy's Catalogue are 29; in Tycho's 25; in the *Britannic Catalogue* 69. The Longitudes, Latitudes, Magnitudes, &c. whereof, are as follow.



## Stars in the Constellation SERPENTARIUS, or OPHIUCHUS.

| Names and Situation of the Stars. | Signs | Longitude |    |    | Latitudes |    |      | Mag. |
|-----------------------------------|-------|-----------|----|----|-----------|----|------|------|
|                                   |       | °         | '  | "  | °         | '  | "    |      |
| North in preced. the Hand         | ♈     | 27        | 58 | 15 | 17        | 17 | 15 B | 3    |
| South and subsequent              |       | 29        | 10 | 45 | 16        | 28 | 20 B | 3 4  |
| North in the preced. Knee         | ♈     | 0         | 58 | 20 | 13        | 00 | 18 B | 5    |
| South in the preced. Leg          |       | 3         | 14 | 18 | 1         | 36 | 09 B | 5    |
| Under the Soal of preced. Foot    |       | 4         | 07 | 58 | 1         | 42 | 35 A | 6    |
| 5                                 | ♈     | 28        | 53 | 05 | 26        | 22 | 14 B | 6    |
| Middle in the preced. Leg.        | ♈     | 3         | 40 | 25 | 3         | 16 | 32 B | 4    |
| North of these                    |       | 4         | 21 | 26 | 5         | 14 | 41 B | 4    |
| In preceding Heel                 |       | 5         | 19 | 53 | 0         | 28 | 40 B | 5    |
| In the Cubitus of preced. Arm     |       | 1         | 15 | 38 | 23        | 35 | 38 B | 4    |
| 10                                | ♈     | 1         | 03 | 21 | 27        | 08 | 34 B | 6    |
|                                   | ♈     | 29        | 53 | 43 | 33        | 00 | 52 B | 5    |
|                                   | ♈     | 3         | 23 | 19 | 19        | 34 | 17 B | 6    |
| South in preceding Knee           |       | 4         | 53 | 55 | 11        | 25 | 27 B | 3    |
| Informis between the Legs         |       | 6         | 58 | 10 | 4         | 28 | 25 B | 5 6  |
| 15                                |       | 3         | 30 | 28 | 26        | 10 | 57 B | 5 6  |
|                                   |       | 4         | 17 | 45 | 23        | 12 | 34 B | 6    |
|                                   |       | 5         | 20 | 03 | 23        | 11 | 30 B | 6    |
|                                   |       | 4         | 12 | 41 | 30        | 41 | 18 B | 6    |
|                                   |       | 5         | 38 | 12 | 24        | 17 | 04 B | 6    |
| 20                                |       | 5         | 18 | 15 | 27        | 27 | 47 B | 5 6  |
|                                   |       | 8         | 03 | 05 | 11        | 38 | 00 B | 5 6  |
|                                   |       | 5         | 41 | 28 | 29        | 30 | 33 B | 5    |
|                                   |       | 6         | 54 | 17 | 23        | 35 | 16 B | 6    |
|                                   |       | 8         | 42 | 16 | 16        | 22 | 01 B | 6    |
| 25                                |       | 6         | 17 | 51 | 32        | 32 | 16 B | 4    |
| Preced. of 2 in fore Shoulder     |       | 7         | 30 | 12 | 31        | 52 | 20 B | 4    |
| Subsequent                        |       | 10        | 09 | 14 | 18        | 28 | 18 B | 6    |
|                                   |       | 8         | 12 | 21 | 36        | 42 | 00 B | 6    |
|                                   |       | 8         | 38 | 08 | 36        | 15 | 20 B | 6    |
| 30                                |       | 8         | 42 | 45 | 36        | 13 | 35 B | 6    |
| Against the hind Knee             |       | 13        | 39 | 28 | 7         | 14 | 12 B | 3    |
|                                   |       | 15        | 28 | 32 | 3         | 56 | 17 A | 6    |
| In the Toes of the hind Foot      |       | 15        | 43 | 28 | 3         | 24 | 16 A | 6 5  |
|                                   |       | 15        | 55 | 15 | 3         | 20 | 08 A | 6 7  |
| 35                                |       | 16        | 12 | 46 | 3         | 29 | 39 A | 6 7  |
| In the Back of the hind Foot      |       | 16        | 06 | 17 | 1         | 08 | 55 A | 6    |
|                                   |       | 11        | 48 | 47 | 37        | 18 | 55 B | 3    |
| In the Tibia of the hind Leg      |       | 16        | 34 | 52 | 2         | 04 | 47 B | 4    |
|                                   |       | 17        | 00 | 23 | 1         | 42 | 28 A | 6 7  |
| 40                                |       | 17        | 05 | 02 | 1         | 47 | 38 A | 4 3  |
| Bright one in Soal of the Foot    |       | 17        | 34 | 53 | 4         | 54 | 52 A | 4 5  |
|                                   |       | 17        | 43 | 57 | 0         | 59 | 54 A | 7    |
|                                   |       | 18        | 31 | 16 | 6         | 34 | 12 A | 6    |
| Preced. in Heel of hind Foot      |       | 18        | 01 | 32 | 0         | 53 | 48 A | 4 5  |
| 45                                |       | 16        | 15 | 52 | 27        | 20 | 39 B | 5    |
| In the Middle of the Back         |       | 19        | 00 | 57 | 0         | 31 | 20 A | 7    |
| Poster. in the Heel               |       | 19        | 09 | 46 | 0         | 38 | 18 A | 6    |
|                                   |       | 17        | 53 | 59 | 36        | 28 | 22 B | 7    |
| Preced. of 2 follow. the Foot     |       | 20        | 46 | 23 | 1         | 28 | 55 B | 6    |
| 50                                |       | 18        | 05 | 32 | 35        | 53 | 16 B | 2    |
| In Ophiuchus's Head               |       | 18        | 06 | 51 | 36        | 27 | 27 B | 7    |
|                                   |       | 20        | 02 | 33 | 15        | 15 | 23 B | 4    |
| In the Cubitus of hind Arm        |       | 21        | 48 | 44 | 1         | 44 | 45 B | 5    |
| Last of those that fol. the Foot  |       | 21        | 00 | 44 | 27        | 58 | 00 B | 3    |
| N. of 2 in Posterior Shoulder     |       | 21        | 22 | 46 | 26        | 01 | 24 B | 7    |
| 55                                |       | 22        | 18 | 32 | 26        | 09 | 20 B | 3    |
| South in the hind Shoulder        |       | 24        | 31 | 30 | 1         | 24 | 08 A | 5    |
|                                   |       | 25        | 25 | 16 | 13        | 42 | 45 B | 4    |
| South in the hind Hand            |       | 25        | 46 | 01 | 5         | 28 | 51 B | 7    |
| 60                                |       | 25        | 44 | 33 | 27        | 51 | 03 B | 4 5  |
| Of Three Inform. { North          |       | 25        | 51 | 19 | 26        | 24 | 31 B | 4    |
| behind the Poste- { Middle        |       | 26        | 09 | 17 | 24        | 47 | 07 B | 4    |
| rior Shoulder { South             |       | 26        | 27 | 33 | 15        | 18 | 06 B | 5    |
| North in the Poster. Hand         |       | 27        | 09 | 16 | 26        | 03 | 54 B | 4    |
| That follo. middle Inform.        |       | 27        | 47 | 41 | 32        | 11 | 53 B | 6    |
| 65                                |       | 27        | 49 | 43 | 33        | 01 | 25 B | 4    |
| North of those fol. the Head      |       | 28        | 21 | 39 | 27        | 26 | 14 B | 6    |
| South and bright. of those        |       | 1         | 29 | 49 | 26        | 44 | 36 B | 6    |
| After 4. Informes { Preced.       |       |           |    |    |           |    |      |      |
| follow. the Should. { Subseq. w   |       |           |    |    |           |    |      |      |

SERPENTARY, a Medicinal Plant, called by the Ancients *Pistochia*, and *Dracunculus*, and now by the People, *Snake Root*, and *Dragons Wort*. The Ancients were only acquainted with Two Kinds of this Plant; the *Great* and the *Small*: But since the Discovery of *America*, the Botanists have added several others; as, The *Serpentary*, or *Snake Root*, of *Virginia*, that of *Canada*, and that of *Brazil*. They are all supposed to be Alexipharmicks, or Counter Poisons; and as such are Ingredients in Treacle. The *Great Serpentry*, called by the Ancients *Dracuncu-*

*lus Major*, has its Stem very straight, smooth, and mark'd with red Spots, like the Skin of a Serpent; whence, probably, as much as from its Virtues, it is, that it take its Name. Its Root is big, round and white, covered with a thin Skin. The smaller *Serpentary* has its Stalk much like that of the larger, only its Leaves are like those of ivy; whereas those of the larger are folded in one another, after the Manner of Bastard Rhubarb. Its Root is round and bulbous. The *Serpentary* of *Virginia*, called also *Viperia*, *Dittany*, *Snake Root*, and *Contrayerva* of *Virginia*, has its Leaves green and large, almost in Figure of a Heart; its Fruit round, and its Root, which is of a very strong Aromatick Smell, has, at Bottom, an infinite Number of long small Filaments, representing a Kind of Beard. 'Twas first brought into *Europe* from *Virginia* by the *English*, where 'tis esteemed a sovereign Antidote against the Bite of the Rattle Snake. We are told by Travellers, That this *Serpentary* does not only cure the Bite of the Rattle Snake, but that that Animal flies the Smell thereof: For which Reason the *Indian*, and other Travellers, always carry it with them on the End of a Staff, to present towards the Snake, when, by Chance, they meet it.

SERPENTINE VERSES, are such as begin and end with the same Word; as,

*Ambo florentes et atibus, Arcades Ambo.*

SERPENTINE, in Chymistry, a *Worm*, or Pipe of Copper, or Pewter, twisted into a Spiral, and ascending from the Bottom of the Alembick to the Capital, and serving as a Refrigeratory in the Distillation of Brandy and other Liquors. See REFRIGERATORY.

SERPENTINE MARBLE, or *Stone*, a Kind of Marble called by the Ancients *Ophites*, from the *Greek* *Ophi*, *Serpent*, as being speckled like a Serpent's Skin. The Ground is blackish, but covered with green and yellowish Stains, Streaks, &c. exceeding hard, precious and antique. The Scarceness of the *Serpentine* makes, that 'tis only used by Way of Incrustation. The largest Pieces we know of, are some Tables in the Compartments of the Attic of the Pantheon; and Two Columns in the Church St. Laurence in *Lucina* at *Rome*. There is also a soft Kind of *Serpentine* brought from *Germany*, used to make Vessels of, but not in Building.

SERPIGO, in Medicine, a kind of Herpes, popularly call'd a *Tetter* or *Ring-worm*. It consists of a Number of very small Pustules, rising close to each other, sometimes in a circular Form, with great Pain and Itching. It never comes to Digestion, and is not cur'd without Difficulty. For after it appears to have been quite extinguish'd, it frequently breaks forth again at certain Seasons of the Year. The common People use to anoint it with Ink: But where the Disease is fix'd, some Universals should be first applied. See LICHEN.

SERRATUS, in Anatomy, a Name given to several Muscles, from their Resemblance in Shape, to a *Saw*. Such are the

SERRATUS *Anticus Minor*, which ariseth thin and fleshy from the Second, Third, Fourth, and Fifth superior Ribs, and ascending obliquely, is inserted fleshy into the *Processus Coracoideus* of the *Scapula*, which it draws forward. It also helps in Respiration.

SERRATUS *Anticus Major*, comes from the whole Basis of the *Scapula*, and is inserted into the seven true Ribs, and first of the false Ribs, by so many distinct Portions, representing the Teeth of a Saw.

SERRATUS *Posticus Superior*, ariseth by a broad and thin Tendon, from the Two inferior Spines of the *Vertebrae* of the Neck, and the Three superior of the Back, and growing fleshy, is inserted into the Second, Third, and Fourth Ribs, by so many distinct Indentations. These Two help to draw the Ribs upwards, and bring them to Right Angles with the *Vertebrae*; and, consequently, make the Cavity of the *Thorax* wider and shorter.

SERRATUS *Posticus Inferior*, arises by a broad and thin Tendon, from the Three inferior Spines of the *Vertebrae* of the Back, and from the two Superior of the Loins; its Fibres, ascending obliquely, grow fleshy, and are inserted by four Indentations, into the Four last Ribs.

SERVANT, a Term of Relation, signifying a Person who owes and pays a limited Obedience for a certain Time, to another, in Quality of Master. See SLAVE. The *Roman* besides their *Slaves*, whom they also call'd *Servi*; had another kind of *Servants*, whom they call'd *Nexi* & *Adasti*, who were such as being in Debt, were delivered up to their Creditors by the Praetor, to work out their Debt; after which they were again at Liberty. The Pope, out of his wonderful Humility, calls himself in his Bulls, *The servant of the Servants of God*. *Servus Servorum Dei*. The first who used the Appellation, as *Dionysius* tells us, were Pope



Pope *Damasus* and *Gregory the Great*; which last is said to have used it to check, by his Modesty, the Arrogance of *John*, Patriarch of *Constantinople*, who took the Title of *Oecumenical*. *Du Cange* adds, That the Title *Servant* has been taken by some Bishops, some Kings, and some Monk.

SERVITIUM, in Law. See SERVICE.

SERVETISTS, the Disciples or Followers of *Michael Servet*, the Ringleader of the *Antitrinitarians* of these last Ages. In Reality, however, *Servet* had not any Disciples; as being burnt, together with his Books, at *Geneva*, in 1553; But the Name *Servetists* is given to the Modern *Antitrinitarians*, because they have follow'd his Foot-steps. *Sextus Senensis* calls the *Anabaptists*, *Servetists*, and seems to use the Two Terms Indifferently. The Truth is, in many Things, the ancient *Anabaptists* of *Switzerland*, &c. chimed in with *Servet*. As the Books that he wrote against the Trinity, are very rare, his real Sentiments are but little known. *M. Simon*, who had a Copy of the first Edition, lays them down at length in his Critical History. Tho' *Servet* uses many of the same Arguments against the Trinity, as the *Arians*, yet he professes himself very far from their Sentiments. He also opposes the *Socinians* in some Things; and declares his Dissent from the Opinions of *Paulus Samosatensis*, though *Sandius* mistakenly charges him with having the same Sentiments. In effect, he does not seem to have had any fix'd regular System of Religion, at least not in the first Edition of his Book against the Trinity, publish'd in 1531, under the Title of *De Trinitatis Erroribus, Libri Septem, per Michaelenz Servetum, alias Reves, ab Arragonia Hispanum*. The Year following he publish'd his Dialogues on the Mystery of the Trinity. In the Preface to which last Work, he declares himself dissatisfied therewith. 'Twas on this Account he undertook another on the same Subject, of much greater Extent; which did not appear till the Year 1553, a little before his Death. Those of *Geneva* having seiz'd the Copies of this Edition, had it burnt; nor were there above Two or Three that escaped; one of which was kept at *Basil*, where the Book was printed, but is now in the Library at *Dublin*. It was lately put to the Press, secretly, in *England*; but being discovered, the Impression was seiz'd, and destroy'd.

SERVICE, SERVITUM, in Law, a Duty which the Tenant, by reason of his Fee, owes to the Lord. See FEE. It is sometimes also call'd *Servage*. Our ancient Law-Books make divers Divisions of *Service*, viz. into *Personal*, *Real* and *Mixt*; *Military*, and *Base*; *Intrinsic* and *Extrinsic*, &c. But since the Statute 12 Car. II. whereby all Tenures are turn'd into free and common Soccage; much of that Learning is set aside: Yet may it not be amiss to mention how the several Kinds of *Service* are described in our ancient Law-Books.

*Personal SERVICE*, is that to be perform'd by the Person; such is that due from a Slave to his Master.

*Mixt SERVICE*, is that due from the Person, by reason of the Thing, as an *Ufu-fruit*, &c. Our ancient Law-Books tell us of Lands held of the King, by the Tenant's letting a Part before the King on *New-Years-Day*; others, by furnishing the King with Whores whenever he travelled that Way; others, by bringing the King a Mefs of Pottage at his Coronation Feast, &c.

*Real SERVICE*, is either *Urbane* or *Rustic*; which two Kinds differ, not in the Place, but the Thing. The first is that due from a Building or House, in whatever Place situate, whether City or Country, as the keeping a Drain, a Vista or the like. *Rustic Services*, are those due for Grounds where there is no Building; such is the Right of Passage through Ways, &c. There are also *Natural Services*: For Instance, if a Man can't gather the Produce of his Lands without passing through his Neighbour's Grounds, the Neighbour is obliged to allow a Passage, as a *Natural Service*. By the *Lex Scribonia*, a *Servitude* can't be acquir'd by Custom and Prescription.

Military SERVICE } See { KNIGHTS SERVICE.  
Base SERVICE } VILLENAGE.

*Forinsec*, or *Extrinsic*, or *Regal SERVICE*, was a *Service* which did not belong to the chief Lord, but to the King. 'Twas call'd *Forinsec* and *Extrinsic*, because done *foris*, out of Doors; and *extra Servitium*. We read several Grants in the *Monasticon*, of all Liberties, with the Appurtenances, *Salvo forensi Servitio*.

*Intrinsic SERVICE*, that due to the Chief Lord from his Vassals.

*Frank SERVICE*, a *Service* done by the Feudatory Tenants, who were call'd *Liberi homines*, and distinct from Vassals: As likewise was their *Service*; for they were not bound to any of those *Services*, as to Plough the Lord's Lands, &c. But only to find a Man and Horse to attend the Lord into the Army or Court. This was sometimes call'd *Liberum Servitium Armorum*.

SERVITES, an Order of Religious, denominated from a peculiar Attachment to the Service of the Virgin. The Order was founded by Seven *Florentine* Merchants, who, about the Year 1233, began to live in Community on Mount *Senar*, Two Leagues from *Florence*. In 1239, they received from the Bishop, the Rule of St. *Augustine*; with a Black Habit, in lieu of a Grey one which they had wore before. In 1251 *Bonfilio*, one of the Seven, of simple Prior of Mount *Senar*, was named General. The Order was approved of by the Council of the *Lateran*, notwithstanding the Decree it had pass'd to prevent the Multiplication of Religious Orders. And it was again approved by Cardinal *Raynerius*, Legat of Pope *Innocent IV*; who put it under the Protection of the Holy See. The succeeding Popes have granted it a great many Favours, particularly *Alexander IV*. and *Innocent VIII*. It has had some Reform. At present it has Twenty-seven Provinces. 'Tis become famous in *Italy*, by the History of the Council of *Trent*, of *Fra. Paolo*, a *Venetian*, who was a Religious *Servite*. *M. Hermant*, gives this Order the Name of the *Annunciate*, doubtless from this Mistake, that in some Cities of *Italy*, they are call'd *Religious of the Annunciate*, because in those Cities, their Church is dedicated under that Name. *F. Archan Giani*, derives the Name *Servites*, *Servants* of the Holy Virgin, from hence; That when they appeared for the first Time in the Black Habit given them by the Bishop, the Sucking Children cried out; *See the Servants of the Virgin*. — There are also Nuns of this Order.

SERVITOR, in our Universities, a Scholar who attends or waits on another for his Maintenance there.

SERVITORS of Bills; are such Servants or Messengers, of the Marshal of the *King's-Bench*, as were sent Abroad with Bills or Writs, to Summon Men to that Court. They are now commonly called *Tip-staves*.

SERVITUDE, the Condition of a Servant, or Slave. See SERVICE. Under the Declension of the *Roman* Empire; a new kind of *Servitude*, was introduced, different from that of the ancient *Romans*: It consisted in leaving the Lands of subjugated Nations to the first Owners, upon Condition of certain Rents, and servile Offices, to be paid in Acknowledgement. Hence the Names of *Servi censiti*, *ascriptitii* & *addicti Glebe*: Some whereof were taxable at the reasonable Discretion of the Lord; others at a certain Rate agreed on; and others were mainmortable, who, having no legitimate Children, could not make a Will to above the Value of Five-Pence, the Lord being Heir of all the rest: Others were prohibited marrying, or going to live out of the Lordship. Most of which Services still subsist in one Province or other of *France*; though all abolish'd in *England*. Such was the Original of our Tenures, &c. See TENURE.

SERUM, a thin, transparent, watry Liquor, somewhat saltish, which makes a considerable Part in the Mass of Blood. The Blood consists of Two Kinds or Parts; the *Cruor*, or red Part; and the *Serum*, or wheyish, limpid Part. See BLOOD. Mr. *Boyle*, and some others, have taken the *Serum* to be more ponderous than the *Cruor*; but Dr. *Jurin*, in the *Philosophical Transactions*, from repeated Experiments, assures us of the contrary. See CRUOR. The *Serum* is, in Reality, the same with the *Lympha*: 'Tis carried by the Arteries throughout the several Parts of the Body; whence it returns partly in the Veins, and partly in the Lymphatick Vessels. See LYMPHA. The Use of the *Serum* is to nourish the Parts of the Body; and to render the Chyle and Blood more Fluid. See NUTRITION. Urine and Sweat, are nothing but *Serum* drained of their Nutritious Parts, by repeated Circulations, and Secreted from the Blood in the Glands of the Kidneys and Skin. The Redundancy, and other Vices in the *Serum*, are the Cause of various Diseases. See DISEASE.

SESAMOIDEA OSSA, in Anatomy, several very small Bones, placed between the Joints of the Fingers, to fortify them; and prevent Dislocations. See FINGER. They have their Name from their Resemblance to a Grain of *Sesamum*, from *Sesamum*, and *Ido*, firm.

SESQUI, a *Latin* Particle, signifying a Whole and a Half; which, joined with *Altera*, *Tercia*, *Quarta*, &c. is much used in the *Italian* Music, to express a Kind of *Ratio's*; particularly, several Species of Triples. The *Ratio* express'd by *Sesqui*, is the Second *Ratio* of Inequality, called also *Super-particular Ratio*; and is, when the greater Term contains the Less, once, and some certain Part, over: As 3 : 2; where the First Term contains the Second once, and Unity over; which is a Quota Part of Two. Now, if this Part remaining, be just Half the less Term, the *Ratio* is called *Sesqui-altera*: If the remaining Part be a Third Part of the lesser Term, as 4 : 3, the *Ratio* is called *Sesqui-tertia*, or *Sesqui-terza*. If a Fourth Part, as 5 : 4, the *Ratio* is called *Sesqui-quarta*; and thus to Infinity, still adding to *Sesqui* the ordinal Number of the smaller Term. In

English.



*English*, we may say *Sesqui-alteral*, *Sesqui-third*, *Sesqui-fourth*, &c.

As to the Kinds of Triples expressed by the Particle *Sesqui*, they are these: The *Greater Perfect Sesqui-alteral*, which is a Triple, where the Breve is three Measures, or Minims, and that without having any Point. The *Greater Imperfect Sesqui-alteral*, which is where the Breve, when pointed, contains three Measures, and without any Point, two. The *Less Perfect Sesqui-alteral*, which is where the Semi-breve contains three Measures, and that without any Point. The *Less Imperfect Sesqui-alteral*, a Triple, mark'd C  $\frac{1}{2}$ , where the Semi-breve, with a Point, contains three Measures, and two without. According to *Bontempi*, one may likewise call the Triples  $\frac{6}{4}$  and  $\frac{1}{2}$ , *Sesqui-alteral*.

The *Sesqui-octave*, is a Kind of Triple, mark'd C  $\frac{8}{3}$ , called by the *Italians* *Nonupla di Crome*, where there are 9 Quavers in every Measure or Bar, in Lieu of 8. The *Double Sesqui-quarta* is a Kind of Triple mark'd C  $\frac{9}{2}$ , called by the *Italians* *Nonupla di Semi-minime*, where there are 9 Crotchets in each Measure, instead of 4.

*SESQUI-alteral*, in Geometry, and Arithmetic, is a Ratio between two Lines, two Numbers, &c. where one of them contains the other once, with the Addition of an Half. Thus 6 and 9 are in a *Sesqui-alteral* Ratio, since 9 contains 6 once, and 3, which is Half of 6, over: And 20 and 30 are in the same; as 9 contains 20, and half of 20 or 10. See RATIO.

*SESQUI-duplicate Ratio*, is, when of two Terms, the greater contains the less twice, with half another over: As 15 and 6; 50 and 20. See RATIO.

|                        |              |                |
|------------------------|--------------|----------------|
| <i>SESQUI-alteral,</i> | } In Music } | <i>SESQUI.</i> |
| <i>SESQUI-octave,</i>  |              |                |
| <i>SESQUI-quarta,</i>  |              |                |
| <i>SESQUI-tertian,</i> |              |                |

*SESQUIDITONUS*, in Music, a Concord resulting from the Sounds of two Strings, whose Vibrations, in equal Times, are to each other in the Ratio of 5 to 6. See DITONUS.

*SESQUIQUADRATE*, is an Aspect, or Position, of the Planets, when at the Distance of four Signs and an Half; or 135 Degrees from each other.

*SESQUIQUINTILE*, is an Aspect of the Planets, when 108 Degrees distant from each other.

*SESSION*, in the Schools, each Sitting, or Assembly, of a Council. In quoting Councils, we say, In such a *Session*, such a Canon, &c. *Session of Parliament*; is the Session, or Space, from its Meeting to its Prorogation, or Dissolution. See PROROGATION.

*SESSIONS*, a Sitting of Justices in Court, upon Commissions; as the *Sessions of Oyer and Terminer*; *Quarter-Sessions*, called *General Sessions*, or *Open Sessions*, opposite whereto are *Especial*, otherwise called *Privy-Sessions*, which are procured upon some special Occasion, for the more speedy Dispatch of Justice. See QUARTER-SESSIONS. *Petit Sessions*, or *Statute Sessions*, are kept by the High-Constable of every Hundred, for the placing of Servants.

*SESTERCE*, *Sestertius*, a Silver Coin, in Use among the Ancient Romans, called also *Nummus*, and sometimes *Nummus Sestertius*. The *Sesterce* was the Fourth Part of the *Denarius*, and contained Two As's, and an Half; estimated in *English* Money, at One Penny Half-penny Farthing. The *Sesterce* was at first mark'd with L L S, the two L's signifying two *Libre*, and the S Half. But the *Librarii*, afterwards, converting the two L's into an H, expressed the *Sesterce* by H S. The Word *Sestertius* was used by way of Abbreviation for *Semisestertius*, which signifies Two, and a Half of a Third; or, literally, only Half a Third: For in expressing Half of a Third, 'twas understood, that there were Two before. Some Authors make two Kinds of *Sesterces*; the *Less*, called *Sestertius*, in the Masculine Gender; and the *Great* one, called *Sestertium* in the Neuter. The First, that we have already described: The Latter containing a Thousand of the other, or 7 l. 16 s. 3 d. of our Money. Others will have any such Distinction of great and little *Sesterces*, unknown to the Romans. *Sestertius*, say they, was an Adjective, and signified As *Sestertius* or two As's and a Half: And when used plurally, as in *Quadragesima Sestertium*, or *Sestertia*, 'twas only by Way of Abbreviation, and there was always understood *Millia*, Thousands: This last is the more probable Opinion. To be qualified for a Roman Knight, an Estate of Four Hundred Thousand *Sesterces* was required; and, for a Senator, Eight Hundred Thousand. Authors mention a Copper *Sesterce*, worth about  $\frac{1}{4}$  of a Penny *English*.

*SESTERTIUM*, *Sestertius*, was also used in Antiquity, for a Thing containing Two Wholes and a Half of a Thing: As As was taken for any Whole, or Integer. See A S.

*SESTUPLE SEXTUPLE*, in Music, a Kind of mix'd Triple-time. M. *Brossart* thinks, 'tis improperly thus called, and ought rather to be called *Binary-Triple*. We only find three Kinds of it in Authors; but one may add two others; the First, the *Sestuple* of the *Sextuple*, or Triple, of 6 for 1, or Six-one. The Second, the *Sestuple* of Minims, or Triple of 6 for 2, or Six-two. The Third, the Triple of Semi-minim, or Triple of 6 for 4, or Six-four. The Fourth, the *Sextuple* of the Croma, or Triple of 6 for 8, or Six-eight. The Fifth, the *Sextuple* of Semi-croma, or Triple of 6 for 16, or Six-sixteen. See TRIPLE.

*SETHIANS*, or *SETHINIANS*, a Branch of the Antient Gnosticks; thus called, because of their pretending to fetch their Origin from *Seth*, the Son of *Adam*, whom they called *Jesus*, and *Christ*; from an Opinion, that *Seth* and *Jesus* were the same Person, who came down from Heaven two several Times. As they had the same Philosophy with the other Gnosticks, they had numerous other Fables in their System. See GNOSTICKS. They pretended to have several Books of the Antient Patriarchs; particularly, Seven of their great Master *Seth*, and one of *Abraham*, full of manifest Falsities; which yet they call *Apocalypse*, or *Revelation*. The Book called the *Little Genesis*, anciently very common in the Churches of the East, was borrow'd from them. From this Book they learn'd the Name of *Seth's* Wife, who, they say, was called *Horeah*. Some imagine, they borrowed a great many of their Fictions from the *Hellenist Jeres*.

*SETON*, *Setaceum*, in Chirurgery, &c. a Kind of topical Remedy, used, like a Cautery, or an Issue, to divert Defluxions from the Eyes; by making a Wound in the Skin of the Hind Part of the Neck, which is kept suppurating, by Means of a little Skain of Silk, or Cotton, passed through it. 'Tis also applied to such as are apt to fall into Epileptic Fits: 'Tis of more Efficacy than a common Issue, but is prescribed with much the same Intention. See ISSUE. The Operation is frequently practised on Horses, &c. and called, by the Farriers, *Rowelling*: See ROWEL. *Setons* evacuate with a gentle Pain; shake the nervous Kind; evacuate *Serum*, and give Vent to Repletions.

*SETTER*, among Farmers. To *Setter*, is to cut the Dew-Lap of an Ox or Cow, and into the Wound to put Helleboraster, whereby an Issue is made, for all Humours to vent themselves. See ISSUE, and SETON.

*SETTING*, in Astronomy, the Occultation of a Star or Planet; or its sinking below the Horizon. Astronomers make three different Kinds of *Setting* of the Stars: Cosmical, Acronical, and Heliacal. The First, when the Star sets with the Sun: See COSMICAL. The Second, when it sets at the Time the Sun rises: See ACRONICAL. The Third, when it is immerged, and hid, in the Sun's Rays: See HELIACAL.

To find the Times of the *Setting* of the Sun and Stars; See GLOBE.

*SETTING*, in Sea Language. To *set the Ship by the Compass*, is to observe how the Land bears on any Point of the Compass; or, on what Point of the Compass the Sun is: Also, when two Ships sail in Sight of one another, to mark on what Point the Chased bears, is termed, *Setting the Chase by the Compass*.

*SEVENTH*, in Music, an Interval, called by the *Greeks* *Heptachordon*; whereof there are four Kinds: The First, The defective *Seventh*, consisting of three Tones, and 3 greater Semi-tones. The Second, called by *Lin*, and the *Italians*, *Semi-ditono condiantente*, or *Semio Minore*; is composed Diatonically of seven Degrees, and six Intervals, four whereof are Tones, and the rest greater Semi-tones, as from *do* to *ut*; and Chromatically of ten Semi-tones, six whereof are greater, and four less: It takes its Form from the Ratio *Quadrupartius Quintus*, as 9 to 5. The Third, called by the *Italians*, *Il Ditono con Diapentes*, or *Settimo Maggiore*, is composed Diatonically, like the former, of seven Degrees, and six Intervals, six whereof are full Tones, and a single one a greater Semi-tone; so that only one major Semi-tone is wanting of the Octave: As from *ut* to *si*, and Chromatically of twelve Semi-tones, six whereof are greater, and five less. It takes its Form, or Origin, from the Ratio of 15 to 8. The Fourth, is the redundant *Seventh*, composed of five Tones, a greater Semi-tone, and a lesser; as from *si* to *la*: So that it only wants a Comma of an Octave; that is, so much as it wants to render its second Semi-tone greater. Hence many confound it with the Octave itself; maintaining, with good Reason, That only the three first *Sevenths* can be of any Use.

*SEVERAL-TAIL*, in Law, is that whereby Land is given, and *Entailed severally* to two. If gr. Land is given to two Men and their Wives, and the Heirs of their Bodies begotten. The Donces, here, have joint Estate for their two Lives yet they have several



rance; for the Issue of the one shall have his Moiety, and that of the other, the other.

**SEVERANCE**, in Law, the *Singling*, or *Severing*, two or more that joyn, or are joyn'd, in the same Writ. As if two join in a Writ, *De Libertate Probantia*, and the one be afterwards Non-suited; here, *Severance* is permitted, so, as notwithstanding the Non-suit of the one, the other may severally proceed. There is also *Severance of the Tenants* in an Affize; when one, two, or more Disseisins appear upon the Writ, and not the other. And *Severance in Debt*, where two Executors are named Plaintiffs, and the one refuses to prosecute. *Severance of Coiz*; *Severance of Summons*; *Severance in Attaints*, &c.

**SEVERIANS**. There were Two Sects of Hereticks thus call'd: The First, who are as old as the beginning of the Third Century, were a Branch of impure Gnosticks; thus call'd from their Chief, *Severus*. The Second, were a Sect of *Acephali* or *Eutychians*. Their Leader, *Severus*, was preferred to the See of *Antioch* in 513, where he did his utmost to set aside the Council of *Chalcedon*. See **MONOTHELITES**. *Hoffman* calls these last *Severites*.

**SEWER**, in the Household, an Officer who comes in before the Meat of a King or Nobleman, to place and range it on the Table. The Word is form'd from the French, *Escuyer*, Esquire, Gentleman or Usher.

**SEWERS**, in Building, are Shores or Conduits, or Conveyances for the Suillage and Filth of a House. Sir *Henry Wotton* advises, that Art imitate Nature in these Ignoble Conveyances, and separate them from Sight, (where there wants a running Water) into the most remote, lowest and thickest part of the Foundation, with secret Vents passing up through the Walls, to the wide Air, like Tunnels; which all the *Italian* Architects commend for the Discharge of noisom Vapours, though elsewhere little practised.

**SEX**, something in the Body, which distinguishes *Male* from *Female*. See **MALE** and **FEMALE**. The Number of Persons, of the two Sexes, are exceedingly well balanc'd; so that every Man may have his Wife, and every Woman her Husband. See **MARRIAGE**. Hermaphrodites have both the Sexes in one. See **HERMAPHRODITE**. 'Tis expressly forbid by the Law of *Moses*, to disguise the Sex.

**SEXAGENARY**; something relating to the Number Sixty: Particularly, a Person arrived at the Age of Sixty Years. Some Casuists dispense with *Sexagenaries* for not Fasting. The *Papian* Law prohibits *Sexagenaries* from Marriage; because, at that Age, the Blood and Humours are frozen. The Word is formed from the *Latin*, *Sexagenarius*.

**SEXAGENARY TABLES**, are Tables of proportional Parts, shewing the Product of Two *Sexagenaries*, or *Sexagenas*, that are to be multiplied; or the Quotient of Two, to be divided.

**SEXAGESIMA**, the Second Sunday before *Lent*, or the next to *Shrove-Sunday*: So called, as being about the Sixtieth Day before *Easter*. *Sexagesima* is that which follows *Septuagesima*, and preceding *Quinquagesima*. See **SEPTUAGESIMA**.

**SEXAGESIMAL**, or *Sexagenary Arithmetic*, a Method of Computation, proceeding by Sixties: As in the Division of a Degree into 60 Minutes; of the Minute, into 60 Seconds; of the Second, into 60 Thirds, &c.

**SEXAGESIMALS**, are Fractions, whose Denominators proceed in a *Sexageuple Ratio*; that is, the First Minute =  $\frac{1}{60}$ , a Second =  $\frac{1}{3600}$ , a Third,  $\frac{1}{216000}$ . See **DEGREE**. Antiently there were no other than *Sexagesimals*, used in Astronomical Operations, and they are still retained in many Cases; though Decimal Arithmetick begins to grow in Use now in Astronomical Calculations. In these Fractions, (which some call Astronomicals) the Denominator is usually omitted, and the Numerator only written down; thus, 4°, 59', 32", 50"', 16''', is to be read, 4 Degrees, 59 Minutes, 32 Seconds of a Degree, or 60th Part of a Minute, 50 Thirds, 16 Fourths, &c. See **FRACTIONS**.

**SEXTANS**: The *Romans* divided their As, which was a Pound of Brass, into 12 Ounces: The Ounce was called *Uncia*, from *Unum*; and two Ounces *Sextans*, being the sixth Part of the Pound. *Sextans* was also a Measure, which contained two Ounces of Liquor: Thus, *Sextantos*, *Callisto*, *duos infunde Falerni*.

**SEXTANT**, in Mathematicks, is the Sixth Part of a Circle; or an Arch, comprehending 60 Degrees. *Sextant* is particularly used for an Astronomical Instrument, made like a Quadrant; excepting, that its Limb only comprehends 60 Degrees: The Use and Application of the *Sextant*, is the same with that of the Quadrant. See **QUADRANT**. In the Observatories of *Greenwich*, and *Pekin*, are very large and extraordinary *Sextants*. See **OBSERVATORY**.

**SEXTARIUS**, an ancient *Roman* Measure. See **MEASURE**.

**SEXTILE**, is the Position, or Aspect, of the Planets, when at 60 Degrees distant; or at the Distance of two Signs from one another. It is marked thus (\*).

**SEXTON**, A Church Officer, thus call'd by Corruption of *Sacristan*, *Sagerison*, and *Sagistan*. His Office is to take Care of the Vessels, Vestments, &c. belonging to the Church; and to serve and assist the Minister, Church-Wardens, &c. at Church: He is usually chose by the Parson only. The Office of *Sexton* of the Pope's Chapel is particularly affixed to the Order of the Hermits of Saint *Augustin*: He is generally a Bishop, though sometimes the Pope only gives a Bishoprick, *in partibus*, to him he confers the Post on. He takes the Title of *Presect of the Pope's Sacristy*; has the keeping of the Vessels of Gold and Silver, the Relicks, &c. When the Pope says Mass, the *Sexton* always tastes the Bread and Wine first. If it be in Private he says Mass; his Holiness, of two Wafers gives him one to eat; and if in Publick, the Cardinal, who assists the Pope in Quality of Deacon, of three Wafers, gives him two to eat. When the Pope dies, he administers to him the Sacraments of Extreme Unction, &c. and enters the Conclave, in Quality of first Conclavist.

**SEXTRY**. See **SACRISTY**.

**SEXTUS**, *Sixth*, in the Canon Law, is a Collection of Decretals, made by Pope *Boniface* the VIIIth; usually thus called from the Title, which is *Liber Sextus*; as if it were a Sixth Book added to the Five Books of Decretals, collected by *Gregory IX*. The *Sextus* is a Collection of Papal Constitutions, published after the Collection of *Gregory IX*, containing those of the same *Gregory*, *Innocent* the IVth, *Alexander* the IVth, *Urban* the IVth, *Clement* the IVth, *Gregory X*, *Nicholas III*, and *Boniface VIII*, by whose Order the Compilation was made. The Persons employ'd in making of it were *Will. de Mandegot*, Archbishop of *Ambrun*; and *Berenger* Bishop of *Beziers*, and *Richard* of *Vienne*.

**SGRAFIT**, in Painting, a Term derived either from the *Italian* *Sgraffiata*, Scratch-work, or the Greek *γραψω*; signifying a Method of Painting in Black and White only, not in Fresco, yet such as will bear the Weather. *Sgraffit* is both the Design, and the Painting, all in one: 'Tis chiefly used, to embellish the Fronts of Palaces, and other magnificent Buildings. See **SCRATCH-WORK**.

**SHACK**, in our Customs, a Liberty of Winter-Pasturage. In the Counties of *Norfolk*, and *Suffolk*, the Lord of the Manor has *Shack*, i. e. A Liberty of feeding his Sheep at Pleasure upon his Tenant's Lands, during the Six Winter Months. In *Norfolk*, *Shack* also extends to the Common for Hogs, in all Mens Grounds, from the End of Harvest, till Seed-time: Whence, to go *a-Shack*, is to feed at large.

**SHADOW**, SHADE, a Plan where the Light is weakened by the Interposition of some opaque Body before the Luminary. The *Shadow* of Yew, Cypress, and Wall-nut-tree, are held dangerous to Men: The *Shadow* of Ash is deadly to Serpents; for which Reason Serpents are never found under its Shade. The Doctrine of *Shadows* makes a considerable Article in Opticks, and Geography, and is the Foundation of Dialling.

**SHADOW**, in Opticks, is a Privation of Light, by the Interposition of an opaque Body. But as nothing is seen but by Light; a mere *Shadow* is invisible. When therefore we say, We see a *Shadow*; 'tis partly, that we see Bodies placed in the *Shadow*, and illuminated by Light, reflected from collateral Bodies; and partly, that we see the Confines of the Light. See **LIGHT**.

If the opaque Body, that projects the *Shadow*, be perpendicular to the Horizon, and the Place 'tis projected on, be Horizontal; the *Shadow* is called a *Right Shadow*: Such are the *Shadows* of Men, Trees, Buildings, Mountains, &c. If the opaque Body be placed parallel to the Horizon, the *Shadow* is called a *Versed Shadow*; as the Arms of a Man stretched out, &c.

*Laws of the Projection of SHADOWS from Opaque Bodies.*

1°. Every opaque Body projects a *Shadow* in the same Direction with its Rays; that is, towards the Part opposite to the Light. Hence, as either the Luminary, or the Body changes Place, the *Shadow* likewise changes.

2°. Every opaque Body projects as many *Shadows*, as there are Luminaries to enlighten it.

3°. As the Light of the Luminary is more intense, the *Shadow* is the deeper. Hence the Intensity of the *Shadow* is measured by the Degrees of Light that Space is deprived of.

4°. If a luminous Sphere be equal to an opaque one it illuminates; the *Shadow* this latter projects, will be a Cylinder; and, of Consequence, will be propagated still equal to itself, to whatever Distance the Luminary is capable of acting: So that, if it be cut in any Place, the Plane of the Section will be a Circle equal to a great Circle of the opaque Sphere.

5°. If the Luminous Sphere be greater than the opaque one; the *Shadow* will be conical. If therefore the *Sha-*



down be cut by a Plane parallel to the Base, the Plane of the Section will be a Circle, and that so much the less, as it is a greater Distance from the Base.

6°. If the Luminous Sphere be less than the opaque one, the *Shadow* will be a truncated Cone: Consequently, it grows still wider and wider; and therefore, if cut by a Plane parallel to the Section, that Plane will be a Circle so much the greater as 'tis further from the Base.

7°. To find the Length of the *Shadow*, or the Axis of the Shady Cone, projected by a less opaque Sphere, illuminated by a larger; the Diameters of the Two, as  $CD$ , and  $IN$ ; Tab. Opticks, Fig. 12. and the Distances between their Centers  $GM$  being given.

Draw  $IM$  parallel to  $CH$ ; then will  $IM = CF$ ; and therefore  $FG$  will be the Difference of the Semi-Diameters  $GC$  and  $IM$ . Consequently, as  $FG$ , the Difference of the Semi-Diameters is to  $GM$ , the Distance of the Centers; so is  $CF$ , the Semi-Diameter of the opaque Sphere, to  $MH$ , the Distance of the Vertex of the shady Cone, from the Centre of the opaque Sphere. If then, the Ratio of  $PM$  to  $MH$  be very small; so that  $MH$  and  $PH$  do not differ very notably,  $MH$  may be taken for the Axis of the *Shadowy* Cone: Otherwise the Part  $PM$  must be subtracted from it; which to find, seek the Arch  $LK$ : For, this subtracted from a Quadrant, leaves the Arch  $LQ$ ; which is the Measure of the Angle  $IMP$ . Since then, in the Triangle  $MIP$ , which is rectangular at  $P$ ; besides the Angle  $IMQ$ , we have the Side  $IM$ ; the Side  $MP$  is easily found by plain Trigonometry.

*E. gr.* If the Semi-Diameter of the Earth  $MI = 1$ ; the Semi-Diameter of the Sun, according to *Ricciolus*, will be  $= 33$ ; and therefore  $GF = 32$ ; and of Consequence  $MH = 228\frac{1}{2}$ : Since then,  $MP$  is found by Calculation to bear a very small Ratio to  $MH$ ;  $PH$  is found to be  $288\frac{1}{2}$  Semi-Diameters of the Earth.

Hence, as the Ratio of the Distance of the opaque Body, from the Luminous Body  $GM$ ; to the Length of the *Shadow*  $MH$ , is constant; if the Distance be diminished, the Length of the *Shadow* must be diminished likewise. Consequently, the *Shadow* continually decreases as the opaque Body approaches the Luminary.

8°. To find the Length of the *Shadow* projected by an opaque Body,  $TS$ , Fig. 13, the Altitude of the Luminary; *E. gr.* of the Sun above the Horizon, viz. the Angle  $SVT$ , and that of the Body being given. Since, in the Rectangle Triangle  $STV$ , we have given the Angle  $V$ , and the Side  $TS$ ; the Length of the *Shadow*  $TV$  is had Trigonometry. See TRIANGLE.

Thus, Suppose the Altitude of the Sun  $37^\circ 40'$ , and the Altitude of a Tower 187 Feet;  $TV$  will be found 241 $\frac{1}{2}$  Feet.

9°. The Length of the *Shadow*  $TV$ , and the Height of the opaque Body  $TS$ , being given; to find the Altitude of the Sun above the Horizon.

Since, in the Rectangle Triangle  $STV$ , the Sides  $TV$  and  $TS$ , are given; the Angle  $V$  is found thus: As the Length of the *Shadow*  $TV$ , is to the Altitude of the opaque Body  $TS$ , so is the whole Sine to the Tangent of the Sun's Altitude above the Horizon. Thus, if  $TS$  be 30 Foot, and  $TV$  45';  $TVS$  will be found  $33^\circ 41'$ .

10°. If the Altitude of the Luminary, *E. gr.* The Sun above the Horizon  $TVS$ , be  $45^\circ$ , the Length of the *Shadow*  $TV$  is equal to the Height of the opaque Body.

11°. The Lengths of the *Shadows*  $TZ$  and  $TV$  of the same opaque Body  $TS$ , in different Altitudes of the Luminary, are as the Co-tangents of those Altitudes.

Hence, as the Co-tangent of a greater Angle is less than that of a less Angle; as the Luminary rises higher, the *Shadow* decreases: Whence it is, that the Meridian *Shadows* are longer in Winter than in Summer.

12°. To measure the Altitude of any Object, *E. gr.* A Tower  $AB$ , (Fig. 14.) by means of its *Shadow* projected on a Horizontal Plane.

At the Extremity of the *Shadow* of the Tower  $C$ , fix a Stick, and measure the Length of the *Shadow*  $AC$ ; Fix another Stick in the Ground of a known Altitude  $DE$ , and measure the Length of the *Shadow* thereof  $EF$ . Then, as  $EF$  is to  $AC$ ; so is  $DE$  to  $AB$ . If, therefore,  $AC$  be 45 Yards, and  $ED$  5 Yards;  $AB$  will be 327 Yards.

13°. The *Shadows* of equal opaque Bodies have their Length proportionable to their Distances from the same Luminaries equally high. Hence, as the Opaque approaches to the Luminary; or the Luminary to the Opaque Body, the Length of the *Shadow* is increased; and as either of them recedes, is diminished. Hence, from the different Lengths of *Shadows* of the same opaque Bodies at the same Height of the Sun, Moon, Jupiter, Venus, &c. we may gather their different Distances from the Earth; tho' not accurately enough for Astronomical Purposes. See DISTANCES.

14°. The *Right Shadow* is to the Height of the opaque Body, as the Co-sine of the Luminary, to the Sine.

15°. The Altitude of the Luminary being the same in both Cases, the opaque Body  $AC$ , (Fig. 15.) will be to the *versed Shadow*  $AD$ , as the *right Shadow*  $EB$ , to its opaque Body  $DB$ .

Hence, 1°. The opaque Body is to its *versed Shadow*, as the Co-sine of the Altitude of the Luminary to its Sine; Consequently, the *versed*  $AD$  is to its opaque Body  $AC$ , as the Sine of the Altitude of the Luminary to its Co-sine.

2°. If  $DB = AC$ ; then will  $DB$  be a mean Proportional between  $EB$ , and  $AD$ ; that is, the Length of the opaque Body is a mean Proportional between its *right Shadow* and *versed Shadow*, under the same Altitude of the Luminary.

3°. When the Angle  $C$  is  $45^\circ$ ; the Sine, and Co-sine are equal; and therefore the *versed Shadow* equal to the Length of the opaque Body.

15°. A *right Sine* is to a *versed Sine* of the same opaque Body, under the same Altitude of the Luminary, in a Duplicate Ratio of the Co-sine, to the Sine of the Altitude of the Luminary.

*Right* and *versed Shadows*, are of considerable Use in Measuring; as by their Means we can commodiously enough measure Altitudes, both accessible and inaccessible, and that too when the Body does not project any *Shadow*. The *right Shadows*, we use when the *Shadow* does not exceed the Altitude; and the *versed Shadows*, when the *Shadow* is greater than the Altitude. On this Footing, is made an Instrument call'd the *Quadrat* or *Line of Shadows*, by means whereof the Ratios of the *right* and *versed Shadow* of any Object, at any Altitude, are determined. This Instrument is usually added on the Face of the Quadrant, its Description and Use, see under the Article QUADRANT.

**SHADOW**, in Geography. The Inhabitants of the Globe are divided, with Respect to their *Shadows*, into *Ascii*, *Amphiscii*, *Heteroscii*, and *Periscii*. The first are such as at a certain Season of the Year have no *Shadows* at all, while the Sun is in the Meridian. See ASCII. The second are such, whose Meridian *Shadow*, at one Season of the Year looks to the North, and at another to the South. See AMPHISCII. The third are such, whose *Shadows* constantly tend either to the North or South. See HETEROSCII. The last are those, whose *Shadows*, in one and the same Day, successively tend to all the Points. See PERISCI.

**SHADOW**, in Painting, an Imitation of a real *Shadow*, effected by gradually heightening, and darkening the Colours of such Figures as by their Dispositions cannot receive any direct Rays from the Luminary, supposed to enlighten the Piece. The Management of the *Shadows* and Lights, makes what the Painters call the *Clair obscure*: The Laws whereof see under the Article CLAIR-OBSCURE.

**SHADOW**, in Perspective. The Appearance of an opaque Body, and a luminous one, whose Rays diverge, (*E. gr.* as Candle, Lamp, &c.) being given; To find the just Appearance of the *Shadow* according to the Laws of Perspective: The Method is this. From the Luminous Body, which is here considered as a Point, let fall a Perpendicular to the Perspective Plane or Table; *i. e.* Find the Appearance of a Point upon which a Perpendicular drawn from the Middle of the Luminary, falls on the Perspective Plane; and from the several Angles, or rais'd Points of the Body let fall perpendicular to the Plane. These Points whereon these Perpendiculars fall, connect by right Lines, with the Point upon which the Perpendicular let fall from the Luminary, falls. And continue the Lines to the Side opposite to the Luminary. Lastly, thro' the rais'd Points, draw Lines thro' the Centre of the Luminary, intersecting the former; the Points of Intersection are the Terms or Bounds of the *Shadow*.

*E. gr.* Suppose it required to project the Appearance of the *Shadow* of a Prism,  $ABCFED$  (Tab. Perspective Fig. 8.) Scenographically delineated: Since  $AD$ ,  $BE$ , and  $CF$ , are perpendicular to the Plane, and  $LM$  is likewise perpendicular to the same; (for the Luminary is given, if its Altitude  $LM$  be given) Draw the right Lines  $GM$  and  $HM$ , thro' the Points  $D$  and  $E$ . Thro' the rais'd Points  $A$  and  $B$ , draw the right Line  $GL$  and  $HL$ , intersecting the former on  $G$  and  $H$ . Since the *Shadow* of the right Line  $AD$  terminates in  $G$ ; and the *Shadow* of the right Line  $BE$  in  $H$ ; and the *Shadows* of all the other right Lines conceived in the given Prism are comprehended within these Terms;  $GDEM$  will be the Appearance of the *Shadow* projected by the Prism.

**SHAFT**, in Building: the *Shaft of a Column*, is the Body thereof; thus call'd from its Straightness: but by Architects more frequently the *Fust*. See FUST. *Shaft*, is also used for the Spire of a Church Steeple. See SPIRE. And for the Tunnel of a Chimney. See CHIMNEY.

**SHAFT of a Mine**, is the hollow Entrance into a Mine, which is sunk or dug to come at the Ore. In the Tin-Mines, after this is sunk about a Fathom, they leave a little, long square Place, which is called a *Shamble*.

**SHAGREEN**. See CHAGREEN.

**SHALLOP** or **SLOOP**, is a small light Vessel, with only a small Main-mast, and Fore-mast, and Lug-Sails, so hale up, and



and let down, on Occasion: They are commonly good Sailors; and are often used as Tenders upon a Man of War.

**SHAMADE.** See **CHAMADE.**

**SHAMOY, or SHAMMY.** See **CHAMOIS.**

**SHANKER,** in Medicine, a malignant Ulcer, which gnaws and eats the Flesh; usually occasioned by some Venereal Disorder. See **CARCINOMA.**

**SHARP,** in Music, a kind of artificial Note or Character, (thus form'd #) which being prefix'd to a Note, shews that it is to be sung or play'd a Semi-tone, or half a Note higher than the natural Note would have been without. When the Semi-tone takes the Name of the natural Note next above it, 'tis mark'd with a Character call'd a *Flat*. See **FLAT.** 'Tis indifferent, in the Main, which of the Two be used, tho' there are sometimes particular Reasons for the one rather than the other. See **SEMITONE.** The Use of *Flats* and *Sharps*, is by way of Remedy to the Deficiencies of the fixed Scales of Instruments. See **SCALE.**

**SHARPING CORN,** is a customary Present of Corn, which at every *Christmas*, the Farmers, in some Parts of England, make to their Smith, for sharpening their Plough-Irons, Harrow tines, &c.

**SHEADING,** is a Riding, Tything, or Division in the *Ile of Man*; the whole Island being divided into Six *Sheadings*, in every one of which, is a Coroner or chief Constable.

**SHEATHING of a Ship** is the casing that Part of her Hull, which is to be under Water, with something to keep the Worms from eating into her Planks. It is usually done with laying Tar and Hair mix'd together all over the old Plank, and then nailing on thin new Boards: But this hinders a Ship's sailing, and therefore of late some have been sheathed with mill'd Lead, which is much smoother, and consequently better for sailing, and also more cheap and durable than the other Way. It was first Invented by Sir *Philip Howard*, and Major *Watson*.

**SHEERING,** in the Woollen Manufactures, the *Sheerman's Craft* or Office; or the cutting off, with large *Sheers*, the too long and superfluous Nap, or Shag found on the Surface of Worsted Stuffs, Fustians, Cottons, &c. in order to make them more smooth and even. Stuffs are *Shorn* more or fewer Times, according to their Quality and Fineness. See **CLOTH.**

Some use the Phrase *Sheering of Hats*, for the passing of Hats made of Wooll, over the Flame of a clear Fire made of Straw, or Spray, to take off the long Hairs. Others call this *Flaming* and others *Sindging*. Other Hats, as Castors, Semi castors, &c. are *Shorn*, by rubbing them over with Pumice-stone. See **HAT.**

**SHEERING,** is also the Sea Term for the Motion of a Ship, when she is not steer'd steadily; in which case she is said to *Sheer* or go *Sheering*. When she lies at Anchor, near Port, &c. by reason of the swift running of a Tide Gate, &c. she is said to be in danger of *Sheering home her Anchor*, or *Sheering a shore*.—*Sheer-hooks*, are large Iron Hooks, used when a Ship designs to Board another.—*Sheer-shanks*, is a kind of Knot, by which they tie up and shorten a Runner when it is too long.

**SHEKEL,** an ancient Hebrew Coin, equal to Four *Attick Drachmas*, or Four *Roman Denarii*; amounting to 2 s. 6 d. Sterling. In the Bible, the *Shekel* is sometimes also render'd *Solidus*, and sometimes *Stater*. The Jewish Doctors are in great doubt of the Weight of the *Shekel*, and 'tis only by Conjecture, and by the Weight of the Modern *Shekel*, that the Ancient one is judg'd equal to Four *Attick Drachmas*. See **BUDEUS.** Father *Souciet*, has described several of these *Shekels*, in his Dissertation on the Hebrew Medals. By the Way he observes, that the Third and Fourth Parts of a *Shekel*, described by *Waserus de Ant. Num. Heb.* are Counterfeits of that Author.

The Hebrew *Shekel*, according to F. *Morsenne*, weighs 268 Grains, and is composed of 20 Oboli, each Obolus weighing 16 Grains of Wheat. This, he says, is the just Weight, as he found by Weighing one in the French King's Cabinet. He adds, that such as come short of this Weight, have been filed or clip'd. Bishop *Cumberland* tells us, he has weigh'd several, and always found them near the Weight of a Roman Half-ounce. Some are of Opinion, that the Hebrews had two Kinds of *Shekels*. The Common, or Prophane *Shekel*, call'd *Didrachma*; and the *Shekel of the Sanctuary*, which last they will have double the former. By this Expedient they think we may get clear of some Difficulties occurring in Scripture, where Things are mentioned as of Incredible Weight; particularly that Passage where 'tis said, That every Time *Ab-salom* cut off his Hair, the Weight whereof used to incommode him; he cut off the Weight of 200 *Shekels*. But *Villalpandus* will not hear of it; nor does Bishop *Cumberland*, M. *Morin*, &c. take the Opinion to have any Foundation. The Profane *Shekel*, or *Shekel of Four Drachmas*; they agree, was the same with the Sacred *Shekel*; and 'twas only

so call'd, because the Standard thereof was kept in the Sanctuary; by the Priests. 'Tis pretended by others, that the Jews had a Gold *Shekel* of the same Weight with the Silver one. The *Shekel* is supposed to have been first struck in the Desert, at the Rate of 100 to the *Attick Mina*, weighing 160 Grains of Wheat, and currant for 10 Geratis or Oboli. But afterwards they were struck of double that Weight. Some will have the *Shekel* the oldest Piece of Money in the World, as being in Use in *Abraham's* Time; but this was not Coin'd, or Stamp'd; nor had any other Value besides its Intrinsic Worth. See **MONEY.** *Xenophon* mentions *Shekels*; as current in *Arabia*: *Du Cange* says the same of *England* and *Germany*. The Word is form'd from a Hebrew Word, signifying to Weigh.

**SHELF,** is what the Miners (especially in Tin Mines) call the *Fast-Country*; by which they mean, an imaginary Surface of the Earth, which, at the Concussion of Waters at the Deluge, was never moved; and to the *Shelf*, they think, all the Loads or Mineral Veins at first lay even, and parallel; tho' after the Flood, some were elevated, some depressed. And by *Shelf* now, they mean that hard Surface or Coat of the Earth which lies under the Mould, usually about a Foot deep; for they suppose, that since the Flood, the Earth hath gotten a new Coat of Vegetable Earth, or such as is made by the Corruption of Vegetables and Animals. See **DELUGE** and **STRATA.**

**SHELL,** in Natural History, a hard Crust, serving to cover and inclose a kind of Animals, hence call'd *Tessaceous*.

Naturalists have been generally mistaken in the Manner of the Formation of *Shells*. The Animal and its *Shell* have been always supposed to arise from the same Egg. But M. *Reaumur* has shewn the Supposition to be false. He has found, by sure Experiments, that the *Shells* of Garden Snails are form'd of a Matter which perspires from their Bodies, and hardens and condenses in the Air. 'Tis certain, that all Animals perspire, and are encompass'd with a kind of Cloud or Atmosphere, which exhales from them, and, in all Probability, assumes pretty nearly their external Figure. Snails have nothing peculiar in this respect; unless that the Atmosphere of their Perspiration, condenses and hardens about them, and forms a visible Cover, whereof the Body is the Mould or Model; whereas that of other Animals is evaporated and lost in Air. This Difference arises from the different Substance perspired; That coming from Snails, is viscous and stony. This is no Supposition; but a Matter of Fact, which M. *Reaumur* has well proved by Experiments.

On this Principle, tho' the *Shell* serve the Animal as an universal Bone, yet it does not grow like a Bone, nor like any of the other Parts, by Vegetation; that is, by a Juice circulating within itself; but by an external Addition of Parts laid one over another; as is commonly supposed of Stones. But, to consider the Thing more particularly: It is to be remembered, that the Snail's Head is always at the Aperture of the *Shell*, and its Tail in the Tip or Point of the *Shell*; and that its Body is naturally turn'd into a Spiral Form; the different Folds whereof are in different Planes. This supposed: Take the Snail just hatch'd; As the Matter it perspires petrifies around it, there must be first form'd a little Cover, proportion'd to the Bigness of its Body; And as its Body is yet too little to make a Fold of a Spiral, at least a whole Fold; this Cover will only be the Centre, or, at most, the first Beginning of a little Circle of a Spiral. But the Animal grows: If, then, it ceas'd to perspire, 'tis evident, all that is added to its Body, would remain naked; but as it continues to perspire, it makes itself a Cover in proportion as it needs it. Thus is an intire Fold of a Spiral found; and thus is a Second and a Third; and still every new Fold is bigger than the last, in regard the Animal grows in Thickness, at the same Time as it grows in Length. When the Animal ceases to grow, yet it does not cease to perspire; Accordingly, the *Shell* continues to grow thicker, though not longer.

**SHELLS** make a considerable Article in the Cabinets of the Curious: The finest and rarest are these that follow; viz. The *Papal Crown*, which takes its Name from its Form, and which is all streak'd with Red on a White Ground. The *Feather, Pluma*, whose Whiteness, with its Carnation Stains, have an admirable Effect. The *Hebraica*, which, on a Ground as white as Snow, has Spots as black as Jet, much resembling Hebrew Characters. The *Chinese Snail*, which has a Green and Black Embroidery, on a dark Brown Ground. The *Cloth of Gold*, remarkable for an admirable Texture of Yellow, Brown and Black. The *Cloth of Silver*, which does not come behind that of Gold in Beauty. The *Leopard*, which is all speckled. The *Tyger*, whose Spots exceed those of the *Leopard*. The *Hart's-horn*, which has black Stains on a white Ground. The *Purse*, thus call'd from its Figure; it is embroider'd with Three or Four Colours. The *Dial*: The *Caterpillar*, both denominated from their Forms. The *Nerites*, *White Nautilus*, *Lepasia*, *Apperays*, *Tuba*, *Galca*, &c.



In *Aldrovand*, *Gesner* and *Fabius Columna*, we have all that the Ancients have said on the Subject of *Shells*. In 1692, Dr. *Lister* publish'd a Natural History of *Shells*, in Folio, full of Cuts, representing the various Kinds of *Shells*. Under the first Class, he ranges the Terrestrial or Land *Shells*; In the Second, the Fresh-water *Shells*, both those call'd *Turbinata*, and those *Bivalvia*. In the Third he disposes all the Sea *Shells*, the *Bivalvia* and *Multivalvia*; and in the Fourth, he divides, into several Classes, the Sea *Shells*, call'd *Turbinata*.

SHELLS are frequently found under the Ground, in Places far remote from the Sea, in Mines, and even in the Tops of Mountains: but how they should come there, is a Thing the Naturalists are greatly divided about. The most usual and easy Opinion is, That those Parts have been formerly Sea, or at least have been over-flown thereby; and many even go as high as the grand Deluge. See DELUGE. But others take these to be the natural Places of their Birth or Formation; some of them being found no other than raw Clay; others of the same Texture with the Rock whereto they grow; and others of as absolute a *Shelly* Substance, as any in the Sea. In effect, these may be only so many different Gradations of Nature, which can as well produce *Shells* in Mines, as in the Sea; there being no want of Saline or Earthy Particles for the Purpose: nor is there any great Difference between some Sorts of *Spars*, and Sea *Shells*. See SPAR.

Dr. *Lister* judges, that *Shells* found in Stone-Quarries, were never any Part of an Animal; and gives this Reason for it; That Quarries of different Stone, yield quite different Species of *Shells*; different not only from one another, but from any Thing in Nature besides, which either Sea or Land does yield. See FOSSILE.

SHELL-FISH, a collective Name for all Fishes naturally inclosed in *Shells*. See TESTACEOUS. *Bonetus* observes, That *Shell Animals* have no Diversity of Sex; that they lay no Eggs, as having no Blood; and that if they have any thing that appears analogous to Eggs, 'tis rather something that serves for Nutrition, than for Generation.

SHERIF, or *Sherife*, or *Shire-reeve*, an Officer in each County of *England*, whose Business is to see to the Execution of the King's Orders, and all Writs directed to him out of the King's Courts; To impanel Juries; to bring Causes and Criminals to Tryal; to take Care of the Dispatch of Affairs both Civil and Criminal; to collect the Revenues, Imposts, Fines, Confiscations, &c. arising in his County, for which he accounts to the Exchequer; and to attend and assist the itinerant Judges. The *Sherif* is, as it were, the Soul of the Policy of the County; and the Preserver of the Peace thereof. His Office only lasts one Year. The *Sherif* was anciently chose by the People in the County Court, as Knights now are for Parliament; but he is now nominated by the King. In order to which, the itinerant Judges every Year nominate Six Persons for each County; whereof, the Lord Chancellor, Treasurer, Privy Council, &c. assembled in the Exchequer Chamber, make Choice of Three; out of which Number, the King chuses One. Only the County of *Middlesex* has Two *Sherifs*; chose, as anciently, by the Citizens of *London*: And *Durham*, *Westmoreland*, and *Cumberland*, none.

The *Sherif*, besides his Ministerial Office, of executing Processes and Precepts of the Courts, and making Returns of the same; has a judicial Office, whereby he holds Two several Kinds of Courts; the one called the *Sherif's Turn*, held in divers Places of the County, to enquire of all Offences against Common Law not prohibited by any Statute. The other called the *County Court*, wherein he hears and determines all Civil Causes of the County, under Forty Shillings. See COURT, and TURN.

The Word is formed from the *Saxon*, *Scire-Gerefa*, Prefect of a Town or County; or rather from *Scyrian*, to divide; the *Sherif* being denominated from the first Division of the Kingdom into Counties. In *Latin* he is called *Vice-comes*.

SHIELD, an ancient Weapon of Defence, made in Manner of a light Buckler, and bore on the Arm to fend off Lances, Darts, &c. The Form of the *Shield* is represented by the Escutcheon in Coats of Arms. See BUCKLER.

SHIELD, in Heraldry, the Escutcheon or Field whercon the Bearings of an Armory are placed. See ESCUTCHEON.

SHILLING, an *English* Silver Coin, equal to Twelve Pence, or the 20th Part of a Pound: See POUND and PENNY. 'Tis observ'd, there were no *Shillings* or Twelve-penny-Pieces coin'd in *England* till the Year 1504; and these, *Stow* calls *Groats*, though *Fabian* mentions them under the Name of *Shillings*, 34 *Hen.* VIII. The *Dutch*, *Flemish*, and *Germans* have likewise their *Shilling*; call'd *Schellin*, *Schilling*, *Schelling*, *Scalin*, &c. But these not being of the same Weight or Fineness with the *English Shilling*, are not Current on the same Foot. The *English Shilling* is worth about Fifteen *French Sols*; those of *Holland* and *Germany* about Seven Sols and a Half, or Six Deniers. Those of

*Flanders* about Six. The *Dutch Shillings* are also call'd *Sols de Gros*, because equal to 12 Gros. The *Danes* have Copper *Shillings*, worth about  $\frac{1}{4}$  of a Farthing. *Frederus* derives the Word from a Corruption of *Siliqua*, proving the Derivation by several Texts of Law, and among others by the XXI. Law, *De Annis legatis*. See COIN.

SHINGLES, in Building, small Pieces of Wood, or quarter'd oaken Boards, saw'd to a certain Scantling; or more usually cleft to about an Inch thick at one End, and made like Wedges, Four or Five Inches broad, and Eight, or Nine Inches long. They are used in Covering, especially Churches and Steeples, instead of Tiles, or Slates. This Covering is dear; yet where Tiles, &c. are very scarce, and a light Cover required, is preferable to Thatch. If made of good Oak, and cleft, not sawed, and well season'd, they make a sure, light, and durable Covering. The Building is first to be cover'd all over with Boards, and the *Shingles* nail'd thereon. See COVERING.

SHINGLES, in Medicine, a kind of Herpes, call'd also the *Milliary Herpes*. It consists of innumerable little Pustules breaking out in various Parts of the Body, viz. the Neck, Breast, Loins, Thighs, &c. The Place affected is somewhat Inflamed, and the Patient a little Feverish. White Pustules arise and suppurate, and are succeeded by little round Scabs resembling Millet Seeds. It is to be attack'd with Discutients; and the higher Pustules cut off with Scissars, and a Cerate of Oil and Wax to be applied. *Wiseman* observes, the *Shingles* come near the Nature of a Psoa, and are therefore to be cured with Mercurial Catharticks.

SHIP, a general Name for all great Vessels with Sails, fit for Navigation on the Sea; excepting Gallies, which go with Oars and Smack-Sails. See GALLEY. The *Sieur Aubin*, defines a Ship, A Timber-building, consisting of various Parts and Pieces, nail'd and pinn'd together with Iron and Wood, in such Form as to be fit to float, and to be conducted by Wind and Sails, from Sea to Sea.

For the most convenient Form of SHIPS; or that wherein they shall meet with the least Resistance from the Water; See VESSEL.

The Invention of *Ships* is very Ancient, and, at the same time, very uncertain. The Mythologists attribute it to *Dedalus*; and pretend, that the Wings he invented to save himself withal from the Labyrinth of *Crete*, were nothing but Sails, which he first gave to Vessels, and wherewith he eluded the Vigilance and Pursuit of *Minos*. Others gave the Honour to *Janus*; on the Credit of some ancient Greek and *Latin* Coins, on one Side whereof, is represented his double Face, and on the Reverse a *Ship*. Lastly, others, and those who go on the best Grounds, look on *Noah* as the First *Ship-builder*. See ARK; See also NAVIGATION.

SHIPS are usually divided into Three Classes, *Ships* of War, Merchant *Ships*, and an intermediate Kind, half War, half Merchant; being such, as, tho' built for Merchandise, yet take Commissions for War. *Ships* of War are again divided into several Orders, call'd *Rates*. See RATE. Merchant *Ships* are estimated by their Burthen, that is, by the Number of Tuns they bear, each Tun reckon'd at Two thousand Pounds Weight. The Estimate is made by Gauging the Bottom of the Keel, which is the proper Place of Loading. See BURTHEN.

The most celebrated *Ships* of Antiquity are, that of *Protony Philopator*, which was 280 Cubits long, 38 broad and 48 high. It carried 400 Rowers, 400 Sailors, and 3000 Soldiers. That he made to Sail on the *Nile*, we are told, was Half a Stadium long. Yet these were nothing in Comparison with *Hiero's Ship*, built under the Direction of *Archimedes*; on the Structure whereof, *Moscibon*, as we are told by *Snellius*, wrote a whole Volume. There was Wood enough employ'd in it to make Fifty Gallies. It had all the Variety of Apartments of a Palace; Banqueting Rooms, Galleries, Gardens, Fish-ponds, Equerries, Mills, Baths, a Temple of *Venus*, &c. It was compass'd with an Iron Rampart, Eight Tours, with Walls and Bastions, furnish'd with Machines of War; particularly one, which threw a Stone of 300 Pounds, or a Dart of 12 Cubits, the Space of Half a Mile; with many other Particulars related by *Athenus*. Among Modern *Ships*, one of the most considerable is a First Rate *Ship* of War, built at *Woolwich* in 1701. The Dimensions whereof, whence those of other *Rates* may be deduced, are as follow: The Length 210 Foot; Number of Guns 110; Number of Men 1250; Number of Tuns 2300; Draught of Water 22 Foot; the Main-sail in Length 54 Yards, Depth 19; Main-mast in Length 39 Foot; Diameter 38 Inches; Weight of the Anchor 82 Hundred Quarter 14 Pound; Cable in Length 200 Yards; Diameter of the Cable 22 Inches. The Expence of building a common First Rate *Ship*, with Guns, Tackling and Rigging, is computed at 60000 *l.* Sterling. See NAVY, FLEET, CHARTER-PARTY, POLICY of Assurance, &c.

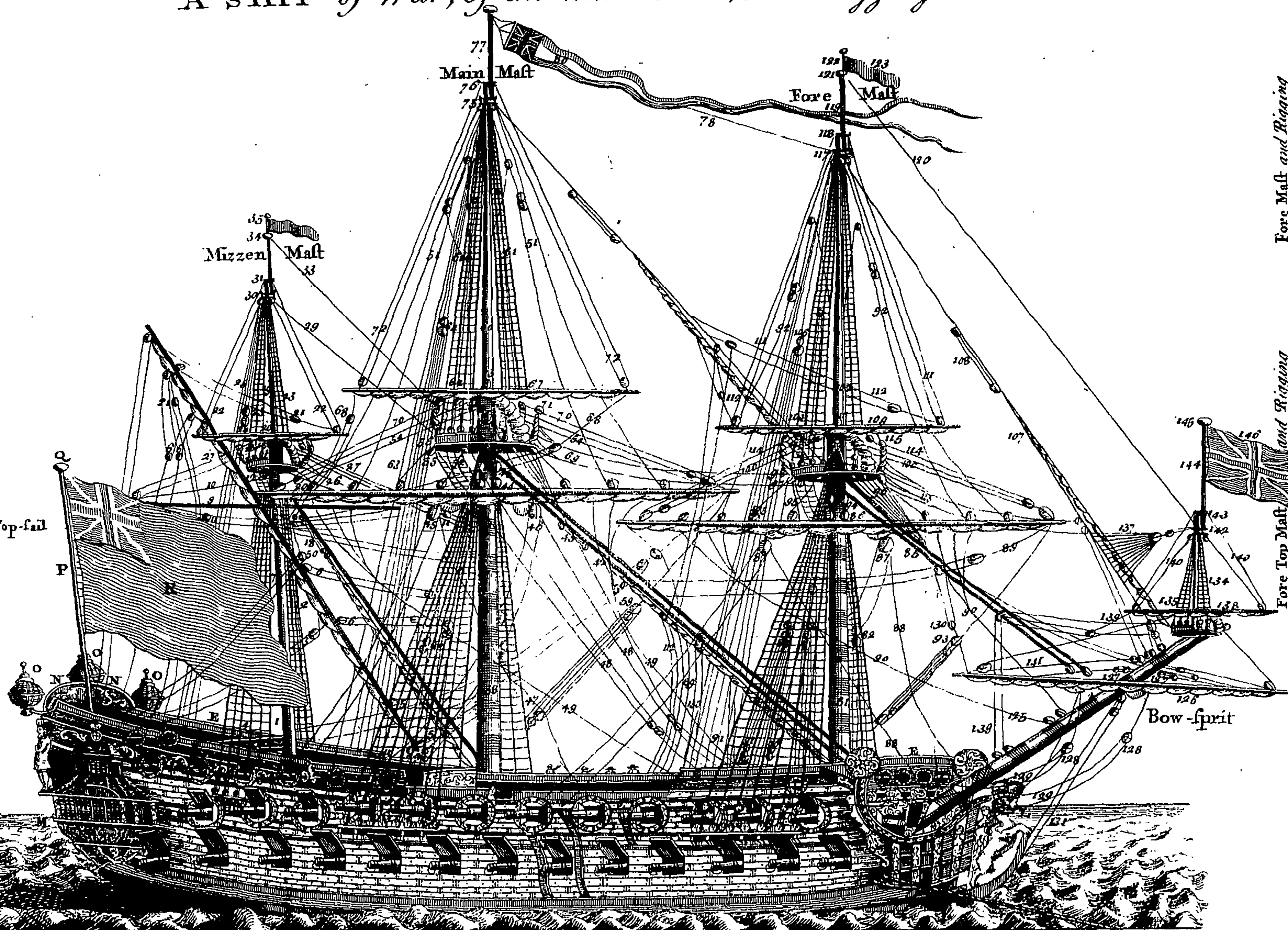
To give the Reader an Idea of the several Parts and Members of a Ship, both Internal and External, with their respective Denominations in the Sea Language (the Principal wherof



# A SHIP of War, of the third Rate, With Rigging &c. at Anchor.

## Parts, Members &c. of a SHIP.

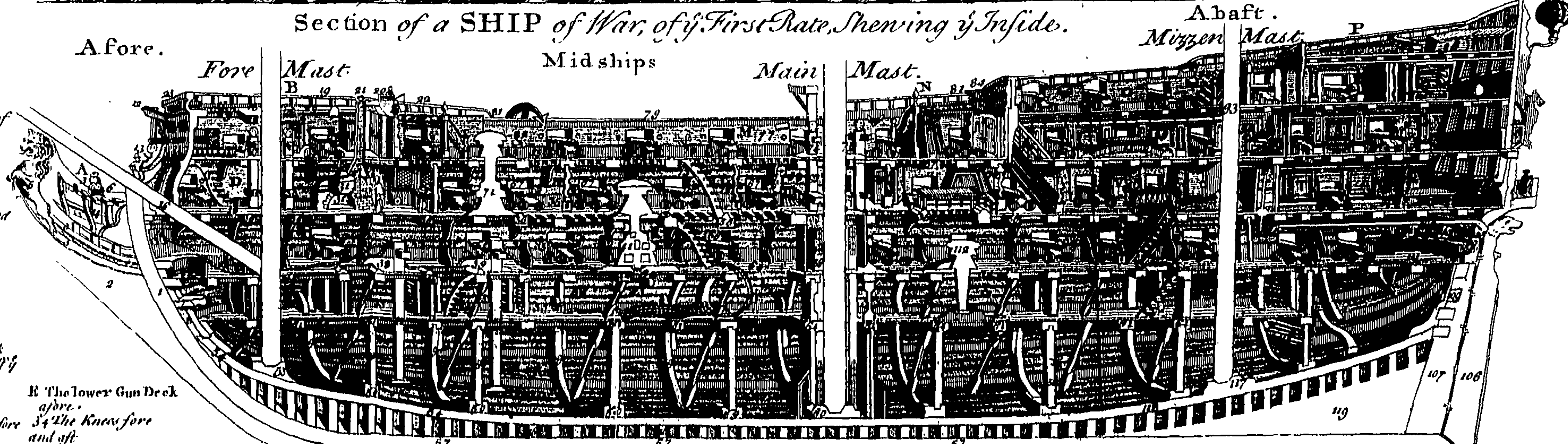
- |  |   |
|--|---|
| <p><b>Mizzen Mast and Rigging</b></p> <ol style="list-style-type: none"> <li>1 Mizzen Mast</li> <li>2 Yard &amp; Sail</li> <li>3 Mast</li> <li>4 Shrouds &amp; Stays</li> <li>5 Down-lines</li> <li>6 Braces</li> <li>7 Top</li> <li>8 Fore-halliards</li> <li>9 Gaff-jack Lard</li> <li>10 Luffs</li> <li>11 Braces</li> <li>12 Pullock Shrouds</li> <li>13 Mizzen-top</li> <li>14 Top Armour</li> <li>15 The Cappel</li> <li>16 Gaff-foot</li> <li>17 Stay &amp; Sail</li> <li>18 Halliards</li> </ol> | <p><b>Main Mast and Rigging</b></p> <ol style="list-style-type: none"> <li>38 Main Mast</li> <li>39 Runners &amp; Tackles</li> <li>40 Tackle</li> <li>41 Shrouds &amp; Stays</li> <li>42 Stay &amp; Sail</li> <li>43 Stay-fail halliards</li> <li>44 Yard &amp; Sail</li> <li>45 Top</li> <li>46 Sheets</li> <li>47 Tacks</li> <li>48 Buntlines</li> <li>49 Buntlines</li> <li>50 Braces</li> <li>51 Tacklines</li> <li>52 Pullock Shrouds</li> <li>53 Gaff-foot</li> <li>54 Luffs</li> <li>55 Top</li> <li>56 Top armour</li> <li>57 Top rope</li> <li>58 Cap</li> <li>59 Manyard tackles</li> </ol> |
|--|---|



## Parts, Members &c. of a SHIP.

- |   |   |
|---|---|
| <p><b>Fore Mast and Rigging</b></p> <ol style="list-style-type: none"> <li>81 Fore-mast</li> <li>82 Runners &amp; Tackles</li> <li>83 Tackle</li> <li>84 Shrouds &amp; Stays</li> <li>85 Stay</li> <li>86 Yard &amp; Sail</li> <li>87 Sheets</li> <li>88 Tacks</li> <li>89 Braces</li> <li>90 Buntline</li> <li>91 Buntlines</li> <li>92 Leadlines</li> <li>93 Yard Tackle</li> <li>94 Tacks</li> <li>95 Pullock Shrouds</li> <li>96 Gaff-foot</li> <li>97 Top</li> <li>98 Top Armour</li> <li>99 Top Rope</li> <li>100 Luffs</li> <li>101 Cap</li> </ol> | <p><b>Sprit Sail Top Mast &amp; Rigging</b></p> <ol style="list-style-type: none"> <li>134 Top-mast</li> <li>135 Shrouds</li> <li>136 Halliards</li> <li>137 Cross-line</li> <li>138 Yard &amp; Sail</li> <li>139 Buntline</li> <li>140 Luffs</li> <li>141 Sheets</li> <li>142 Cross-ropes</li> <li>143 Cap</li> <li>144 Tack-hat</li> <li>145 Tack</li> <li>146 Juck</li> <li>147 Boff Downer Bock</li> <li>148 Cable</li> </ol> |
|---|---|

## Section of a SHIP of War, of the First Rate, Shewing the Inside.



## Parts, Members &c. Within the

- A. The Head, containing
- 1 The Main Stem
- 2 The Knee of the Head, or Culwater
- 3 The Lower and Upper Cheek
- 4 The Trill Board
- 5 The Figure
- 6 The Gratings
- 7 The Brackets
- 8 The false Stem
- 9 The Breast hooks
- 10 The Halse-hole out of which runs the Cable
- 11 The Bulk head afore
- 12 The Cut Head
- 13 The Cut Hook
- 14 Necessary Seat
- 15 The Manger within Board
- 16 The Bowsprit
- B. Upon the Fore-Castle
- 17 The Gratings
- 18 The Partments of the Fore-mast
- 19 The Gunwale
- 20 The Deck
- 21 The Funnel for Smoke
- 22 The Gangway going off the Fore-castle
- 23 The Fore-castle Guns
- C. In the Fore-castle
- 24 The door of Bulk head afore
- 25 The Officers Cabins
- 26 The Store Room
- 27 The Carlines
- D. Middle Gun Deck afore
- 28 The Fore-Top Mast
- 29 The Oven and Furnace of Copper
- 30 The Captains Cook Room
- 31 The Ladder or way up into the Fore-castle

- R. The Lower Gun Deck afore
- 32 The Knee fore and aft
- 33 The Sprinkling of fire
- 34 The door of Bulk head afore
- 35 The Officers Cabins
- 36 The Store Room
- 37 The Carlines
- 38 The Fore-Top Mast
- 39 The Oven and Furnace of Copper
- 40 The Captains Cook Room
- 41 The Ladder or way up into the Fore-castle

- 42 The Hatch way to the Gun Deck
- 43 The Fore-castle
- 44 The Orlop
- 45 The Gunners
- 46 The Store Room
- 47 The Carlines
- 48 The Fore-Top Mast
- 49 The Oven and Furnace of Copper
- 50 The Captains Cook Room
- 51 The Ladder or way up into the Fore-castle

- 52 The Hatch way to the Gun Deck
- 53 The Fore-castle
- 54 The Orlop
- 55 The Gunners
- 56 The Store Room
- 57 The Carlines
- 58 The Fore-Top Mast
- 59 The Oven and Furnace of Copper
- 60 The Captains Cook Room
- 61 The Ladder or way up into the Fore-castle

- 62 The Hatch way to the Gun Deck
- 63 The Fore-castle
- 64 The Orlop
- 65 The Gunners
- 66 The Store Room
- 67 The Carlines
- 68 The Fore-Top Mast
- 69 The Oven and Furnace of Copper
- 70 The Captains Cook Room
- 71 The Ladder or way up into the Fore-castle

- 72 The Hatch way to the Gun Deck
- 73 The Fore-castle
- 74 The Orlop
- 75 The Gunners
- 76 The Store Room
- 77 The Carlines
- 78 The Fore-Top Mast
- 79 The Oven and Furnace of Copper
- 80 The Captains Cook Room
- 81 The Ladder or way up into the Fore-castle

- 82 The Hatch way to the Gun Deck
- 83 The Fore-castle
- 84 The Orlop
- 85 The Gunners
- 86 The Store Room
- 87 The Carlines
- 88 The Fore-Top Mast
- 89 The Oven and Furnace of Copper
- 90 The Captains Cook Room
- 91 The Ladder or way up into the Fore-castle

- 92 The Hatch way to the Gun Deck
- 93 The Fore-castle
- 94 The Orlop
- 95 The Gunners
- 96 The Store Room
- 97 The Carlines
- 98 The Fore-Top Mast
- 99 The Oven and Furnace of Copper
- 100 The Captains Cook Room
- 101 The Ladder or way up into the Fore-castle

- 102 The Hatch way to the Gun Deck
- 103 The Fore-castle
- 104 The Orlop
- 105 The Gunners
- 106 The Store Room
- 107 The Carlines
- 108 The Fore-Top Mast
- 109 The Oven and Furnace of Copper
- 110 The Captains Cook Room
- 111 The Ladder or way up into the Fore-castle

- 112 The Hatch way to the Gun Deck
- 113 The Fore-castle
- 114 The Orlop
- 115 The Gunners
- 116 The Store Room
- 117 The Carlines
- 118 The Fore-Top Mast
- 119 The Oven and Furnace of Copper
- 120 The Captains Cook Room
- 121 The Ladder or way up into the Fore-castle

- 122 The Hatch way to the Gun Deck
- 123 The Fore-castle
- 124 The Orlop
- 125 The Gunners
- 126 The Store Room
- 127 The Carlines
- 128 The Fore-Top Mast
- 129 The Oven and Furnace of Copper
- 130 The Captains Cook Room
- 131 The Ladder or way up into the Fore-castle

- 132 The Hatch way to the Gun Deck
- 133 The Fore-castle
- 134 The Orlop
- 135 The Gunners
- 136 The Store Room
- 137 The Carlines
- 138 The Fore-Top Mast
- 139 The Oven and Furnace of Copper
- 140 The Captains Cook Room
- 141 The Ladder or way up into the Fore-castle

## Parts, Members &c. Within the

- 103 The Whistle commanding the Tiller
- 104 The After Stair Case down to the Lower Gun Deck
- V. Several Officers Cabins
- A light of Main Mast in which Place commonly the Soldiers make their Guard from the Entering Port
- W. The Gun Room
- 105 The Tiller commanding the Rudder
- 106 The Rudder
- 107 The Stern Post
- 108 The Tiller Transom
- 109 The several Whistles etc
- 110 The Gun Room Port or Stern Mast
- 111 Broad Room Scuttle down out of the Gun Room
- 112 The main Cabin
- 113 The Pall of the Captain or Stopper of Iron
- 114 The Partners
- X. The Broad Room
- 115 The Bulk Head of the Broad Room
- Y. The Stewards Room
- Where all Provisions are weighed and Stowed out
- Z. The Coek Pit, where are Subdivisions for the Purser and Surgeons & others
- E. The Platform or Orlop where Provisions are made in time of Service for the main Mast
- 116 The Hold about the main Mast
- 117 Step of Mizzen Mast
- T. The Ward Room
- 118 The Keelson or false Keel
- 119 Dead Wood or Rudder
- 120 The lower Gun Deck
- 121 The lower Gun Deck
- 122 The lower Gun Deck
- 123 The lower Gun Deck
- 124 The lower Gun Deck
- 125 The lower Gun Deck
- 126 The lower Gun Deck
- 127 The lower Gun Deck
- 128 The lower Gun Deck
- 129 The lower Gun Deck
- 130 The lower Gun Deck
- 131 The lower Gun Deck
- 132 The lower Gun Deck
- 133 The lower Gun Deck
- 134 The lower Gun Deck
- 135 The lower Gun Deck
- 136 The lower Gun Deck
- 137 The lower Gun Deck
- 138 The lower Gun Deck
- 139 The lower Gun Deck
- 140 The lower Gun Deck
- 141 The lower Gun Deck
- 142 The lower Gun Deck
- 143 The lower Gun Deck
- 144 The lower Gun Deck
- 145 The lower Gun Deck
- 146 The lower Gun Deck
- 147 The lower Gun Deck
- 148 The lower Gun Deck
- 149 The lower Gun Deck
- 150 The lower Gun Deck
- 151 The lower Gun Deck
- 152 The lower Gun Deck
- 153 The lower Gun Deck
- 154 The lower Gun Deck
- 155 The lower Gun Deck
- 156 The lower Gun Deck
- 157 The lower Gun Deck
- 158 The lower Gun Deck
- 159 The lower Gun Deck
- 160 The lower Gun Deck
- 161 The lower Gun Deck
- 162 The lower Gun Deck
- 163 The lower Gun Deck
- 164 The lower Gun Deck
- 165 The lower Gun Deck
- 166 The lower Gun Deck
- 167 The lower Gun Deck
- 168 The lower Gun Deck
- 169 The lower Gun Deck
- 170 The lower Gun Deck
- 171 The lower Gun Deck
- 172 The lower Gun Deck
- 173 The lower Gun Deck
- 174 The lower Gun Deck
- 175 The lower Gun Deck
- 176 The lower Gun Deck
- 177 The lower Gun Deck
- 178 The lower Gun Deck
- 179 The lower Gun Deck
- 180 The lower Gun Deck
- 181 The lower Gun Deck
- 182 The lower Gun Deck
- 183 The lower Gun Deck
- 184 The lower Gun Deck
- 185 The lower Gun Deck
- 186 The lower Gun Deck
- 187 The lower Gun Deck
- 188 The lower Gun Deck
- 189 The lower Gun Deck
- 190 The lower Gun Deck
- 191 The lower Gun Deck
- 192 The lower Gun Deck
- 193 The lower Gun Deck
- 194 The lower Gun Deck
- 195 The lower Gun Deck
- 196 The lower Gun Deck
- 197 The lower Gun Deck
- 198 The lower Gun Deck
- 199 The lower Gun Deck
- 200 The lower Gun Deck



are explained in the respective Places of this *Dictionary*; we here give him Two Draughts; the one, a Section of the Body of a First Rate, to shew its Construction, the Disposition of its Inside, &c. The other, the same Ship with the Sails, Rigging, &c.

**SHIPPER**, or *Scipper*, a Dutch Term, signifying the Master of a Ship. We also use the Word for any common

**SHIP-MONEY**, an Imposition anciently charged upon the Ports, Towns, Cities, Boroughs, and Counties of the Realm, by Writs commonly called *Ship-writs*, under the Great Seal of England. This Imposition was revived by King Charles the First, in the Years 1635 and 1636, for the providing and furnishing certain Ships for the King's Service. But by Stat. 17 Car. I. it was declared to be contrary to the Laws and Statutes of the Realm, Claim of Right, Liberty of the Subject, &c.

**SHIPWRACK**. See *WRECK*.

**SHIRE**, (from the Saxon *Scir*, or *Scyre*, to divide) is a Part or Portion of the Land, call'd also *County*. See *COUNTY*. King Alfred first divided the Land into *Sarrapias*, which we now call *Shires*, and those into *Centurias*, which we now call *Hundreds*; see *HUNDRED*: And those again into *Decanias*, which we call *Tythings*: See *TYTHING*. The ancient Latin Word for *Shire*, was *Scyra*: The Assizes of the *Shire*, or Assembly of the People of a County, was call'd, by the Saxons, *Scirgemot*.

**SHOAL**, in the Sea Phrase, is the same as *Shallow*, and is used for Flats in the Water: They say, It is good *Shoaling*, when a Ship sailing towards Shore, they find by her Sounding, it grows shallower and shallower by degrees, and not too suddenly; for then the Ship goes in Safety. It is also used for a Company of Fish.

**SHOALD**, is the Miner's Term in the Tin Mines, for such Fragments of Ore, which by Rains, Currents of Water, &c. are torn off from the Load or Veins of Ore. They are wash'd down from the Mountains, and by finding of them, they guess where to look for a Load of Ore. Sometimes it is called *Squad*, and *Squod*.

**SHOARS**, Props, or Counterforts, set up to support any Thing of Weight, which leans on one Side. See *BUTTRESS*.

**SHOE**, a Covering of Leather for the Foot: Its Structure, though the Object of a particular Art, is too popular to need explaining: (See *CORD-WAINER*). Its History is more obscure. *Bened. Baudoin*, a Shoe-maker, has an express Treatise of the *Antient Shoes*; *De Solea Veterum*: Where the Origine, Matter, Form, &c. thereof, are particularly inquired into.

*Baudoin* maintains, that God, in giving *Adam* Skins of Beasts to cloath him, did not leave him to go bare-footed; but gave him *Shoes* of the same Matter. That after raw Skins, Men came to make their *Shoes* of Rushes, Broom, Paper, Line, Silk, Wood, Iron, Silver, Gold; so different has their Matter been; nor was their Form more stable, with regard either to the Shape, Colour, or Ornaments. They have been square, high, low, long, and quite even, cut, carved, &c. *Pliny*, Lib. 7. c. 56. tells us, That one *Tibus* of *Bæotia* was the first who used *Shoes*. *M. Nilant*, in his Remarks on *Baudoin*, observes, That he quotes *Xenophon* to little Purpose, to shew, that even in his Time they still wore *Shoes* of raw Skins. *Xenophon* relates, That the Ten Thousand Greeks, who had follow'd the young *Cyrus*, wanting *Shoes*, in their Retreat, were forced to cover their Feet with raw Skins, which occasioned them great Inconveniencies. He will not even allow, that the *Shoes* of the Country People, call'd *Carbatine*, and *Peronæ*, were of crude Skin, without any Preparation. The Patricians among the Romans, wore an Ivory Crescent on their *Shoes*. *Heliogabalus* had his *Shoes* covered over with a very white Linnen; in Conformity to the Priests of the Sun, for whom he professed a very high Veneration. This kind of *Shoe* was called *Udo*, or *Odo*. *Caligula* wore *Shoes* enrich'd with precious Stones. The *Indians*, like the *Egyptians*, wore *Shoes* made of the Bark of the Papyrus. The *Turks* put off their *Shoes*, and leave them at the Doors of the *Mosques*.

**SHOOTING**,

SHOOTING of Bombs,  
SHOOTING by the Air,

See { GUNNERY and PRO-  
JECILE.  
BOMB.  
WIND-GUN.

**SHOP-LIFTER**, a Person, who cheapening Wares, on Pretence of Buying, takes the Opportunity of stealing them.

**SHORE**, or *Common-Sewer*, a Corruption of *Sewer*. See *SEWERS* and *CLOACA*.

**SHORT ACCENT**, in *Grammar*, a Mark which shews, that the Time of pronouncing, ought to be short; It is wrote thus ( ' ). See *ACCENT*.

**SHORT-SAILS**, in a Man of War, are the same with the *Fighting Sails*; being the *Fore-sail*, *Main sail*, and

*Foretop-sail*, which are all that are used in Fight, lest the rest should be fired, and spoiled; besides the Trouble of managing them when a Ship gives Chase to another. If the Chase have a Mind to fight, they say, The Chase *strips into her Short-Sails*, i. e. puts out her Colours in the Poop, her Flag at the Main-top, and her Streamers, or Pendants, at the Yard's Arms; Furls her *Sprit-sail*, Pecks her Mizzen, and flings her Main-Yard.

**SHORT-SIGHTEDNESS**, a Fault in the Conformation of the Eye, wherein the Crystallin, &c. being too Convex, the Rays reflected from distant Objects are refracted too much, and made to converge too fast, so as to unite e'er they reach the *Retina*; by which Means the Vision is render'd dim and confus'd. See *MYOPIA*.

The ordinary Remedy, for *Short-sightedness*, is a Concave Lens, held before the Eye; which making the Rays diverge, or at least, diminishing much of their Convergency, makes Amends for the too great Convexity of the Crystallin. See *LENS*.

Dr. *Hook* suggests another Remedy. Finding, that many *Short-sighted* Persons are but little helped by Concaves; he recommends a Convex Glass, placed between the Image and the Eye; by Means whereof the Object may be made to appear at any Distance from the Eye, and consequently, all Objects may be thereby made to appear at any required Distance from the Eye; so that the *Short sighted* Eye shall contemplate the Picture of the Object, in the same Manner, as if the Object it self were in the Place. 'Tis true, the Image will appear inverted; but we have Expedients to remedy this too: For, in Reading, there needs nothing but to hold the Book upside down. To write, the best will be for the Person to learn to read upside down. For distant Objects, the Doctor asserts, from his own Experience, that, with a little Practice in contemplating inverted Objects, one gets as good an Idea of them, as if seen in their natural Posture.

**SHOT**, for Ordnance, are of several Sorts; as *Round-shot*, or Bullets fitted to the Bore of the Piece. *Cross-bar-shot*, Round-shot, with a long Spike of Iron cast in it, as if it went through the Middle of it. *Trundle-shot*, being only a Bolt of Iron, 16 or 18 Inches long, sharp-pointed at both Ends, and about an Hand's-breadth from each End, having a round broad Bowl of Lead cast upon it, according to the Bore of the Piece. *Langrel-shot*, which runs loose with a Shackle, to be shortened, when put into the Piece, and when it flies out it spreads it self; at each End of the Bar, it hath half a Bullet, either of Lead or Iron. *Chain-shot*, is two Bullets, with a Chain betwixt them; some being contrived round, yet so, that they will spread in flying their full Length and Breadth. *Cafe-shot*, is any thing of small Bullets, Nails, old Iron, and the like, to put into the Cafe, to shoot out of Ordnance.

**SHOT**, for Fowling. The Method of Casting it is as follows. The Lead being melted, stirr'd, and skimm'd, a Quantity of powder'd yellow Orpiment is strew'd in it; as much as will lie on a Shilling, to 12 or 15 Pounds of Lead. The Whole being well stirr'd, the Orpiment will flame. To judge whether there be Orpiment enough in, a little of the Lead is dropped into a Glass of Water, and if the Drops prove round, and without Tails, there is Orpiment enough, and the Degree of Heat is as it should be. This done, a Copper Plate, Hollow in the Middle, and Three Inches in Diameter, bored through, with 30 or 40 small Holes, according to the Size of the Shot, is placed on an Iron Frame, over a Tub of Water, four Inches above the Water: The Hollow Part is to be very thin. On this Plate are laid burning Coals, to keep the melted Lead in Fusion. The Lead is now poured gently, with a Ladle, in the Middle of the Plate, and it will make its Way through the Holes in the Bottom of the Plate into the Water, in round Drops. Great Care is taken to keep the Lead on the Plate in its proper Degree of Heat: If too cold, it will stop the Holes; and if too hot, the Drops will crack and fly. The *Shot*, thus made, are dried over a gentle Fire, always stirring them that they do not melt: This done, the greater are separated from the smaller, by passing them through Sieves for that Purpose.

**SHOT-FLAGON**, a *Flagon* somewhat bigger than ordinary; which in some Counties, particularly *Derbyshire*, it is the Custom for the Host to serve his Guests in, after they have drank above a Shilling.

**SHOULDER**, among Farriers. *Shoulder-pitch*, is a Disease in a Horse, when the Pitch or Point of the Shoulder is displaced; which makes the Horse halt downright. — *Shoulder splinting*, or *Shoulder turn*, is a Hurt which befalls a Horse by some dangerous Slip, by which the *Shoulder* is parted from the Breast.

**SHOULDER-BLADE**, a Bone of the *Shoulder*, of a Triangular Figure, covering the Hind-part of the Ribs; call'd by the Anatomists *Scapula* and *Omo-plata*. See *SCAPULA*.

**SHOULDER-BONE**. See *HUMERUS*.



**SHOULDERING**, in Fortification, is a Retrenchment, opposed to the Enemies; or a Work cast up for a Defence on one Side: whether made of Heaps of Earth cast up, or of Gabions, and Fascines. A *Shouldering* also is a Square Orillon, sometimes made in the Bastions, on the Flank near the *Shoulder*, to cover the Cannon of a Casement. It is also taken for a Demi-Bastion, or Work, consisting of one Face, and one Flank, which ends in a Point, at the Head of an Horn-work, or Crown-work: Neither is it to be understood only of a small Flank added to the Sides of the Horn-work to defend them, when they are too long; but also of the Redents which are raised on a straight Line.

**SHOULDERING-PIECE**, in Building. See **BRACKET**.

**SHOULDER-WRENCH** is a Strain in the *Shoulder*.

**SHOWER**, a Cloud resolved into Rain, and discharged on a certain Tract of Ground. See **RAIN**.

In Natural History we meet with abundance of Instances of extraordinary and præternatural *Showrs*: As, *Showrs of Blood*, mention'd by *Gassendus*, and others; A *Brimstone Shower*, mentioned by *Wormius*; *Showrs of Frogs*, mention'd by *Pliny*, and even *Dr. Plot*; A *Showr of Millet-Seed*, in *Silesia*, mentioned in the *Ephem. German. An. 3<sup>o</sup>*. *Showrs of Ashes*, frequent in the *Archipelago*. A *Showr of Wheat*, in *Wiltshire*. A *Showr of Whirlings*, mention'd in the *Philos. Transact.* The natural Reasons of many whereof may be seen under the Article **RAIN**.

**SHRINE**, a Case to hold the Relicks of some Saint: See **RELICKS**. The Word is formed from the *Latin Scri-nium*, a *Desk* or *Cabinet*.


**SHROVE-TIDE**, the Time immediately before *Lent*; thus call'd by our Ancestors, because employed in *Shriving*, that is, in confessing their Sins to the Priest; in order to a more devout keeping the ensuing *Lent* Fast.—*Shrove Tuesday* is the Day next before the first of *Lent*.

**SHROWDING** of *Trees*, the cutting or lopping off the Top-Branches thereof; which is only practised to *Trees* that are not fit for Timber, but designed for Fuel, or some other present Use. Such *Trees* the Husbandmen find much preferable to *Copse*; as they need no Fence to secure them, because standing in no Danger of the Browzings and Rubbings of Cattle, which too, have the Benefit of Grazing under them.—For the Time of *Shrowding*, 'tis not to be practised till the *Trees* have stood three or four Years; either at the Beginning of the Spring, or the End of the Fall. The harder sort not to be lopped above once in ten or twelve Years, and that at any Time in the Winter. The pithy and softer Woods are best *shrowded* in the Spring. The Stumps left, should always be cut aslope, and smooth, in order to cast the Water off; and prevent its sinking in, and rotting the Tree.

**SHROWDS**, are great Ropes in a Ship, which come from either Sides of all Masts: They are fastened below by Chains to the Ship's Sides, and aloft, over the Head of the Mast; their Pendants, Fore-tackle, and Swiflers, being first put under them. They are also sewed there, to prevent their galling the Mast. The Top-mast *Shrowds* are fastened to the Puttocks, by Plates of Iron, and by Dead-Mens-Eyes, and Lanniers also, as the others are: The Terms are, *Ease the Shrowds*; that is, Slacken them: *Set taut the Shrowds*; that is, Set them faster: The Bolt-Sprit hath no *Shrowds*.

**SHRUB**, a little low Tree, or Dwarf; or a Woody Plant, of a Size less than a Tree; which, besides its principal Stem, and Branches, frequently, from the same Root, puts forth several other considerable Sets or Stems; Such are *Privet*, *Phillyrea*, &c. Shrubs and Trees put forth in *Autumn*, a kind of Buttons, or Gems, in the Axes of the Leaves: These Buttons are as so many little Eggs, which coming to expand by the Warmth of the following Spring, open into Leaves, and Flowers. By this, together with the Height, some distinguish *Shrubs* from *under Shrubs*; which are low Bushes, that do not put forth any of these Buttons; as *Rosemary*, *Thyme*, &c.

**SHUTTLE**, in the Manufactures, a kind of Instrument used by the Weavers, which, with a Thread it contains either of Wooll, Silk, Line, or other Matter, serves to form the Woof of their Stuffs, Linnens, Ribbands, &c. by throwing the Shuttle alternately from Left to Right, and from Right to Left, a-cross; between the Threads of the Warp, which are stretched out lengthwise on the Loom. In the Middle of the Shuttle is a Kind of Cavity, called the *Eye* or *Chamber* of the Shuttle, wherein is inclosed the Spool, which is a Part of the Thread destined for the Woof; and is wound on a little Tube of Paper, Rush, or other Matter.

The Ribband-Weaver's Shuttle is very different from that of most other Weavers, though it serve for the same Purpose: 'Tis of Box, six or seven Inches long, one broad, and as much deep: Shod with Iron at both Ends, which terminate in Points, and are a little crooked, the one towards the Right, and the other towards the Left, representing the Figure of an  horizontally placed.

**SI**, in Music, a Seventh Note, added within this Sixty Years, by one *le Maire*, to the Six ancient Notes; invented by *Guido Aretin*, *ut, re, mi, fa, sol, la, si*; by Means whereof, the Embarrass of the ancient Gamut is avoided. So busy a Thing is Jealousy, that, for a matter of Thirty Years, that *le Maire* kept preaching to the Musicians of his Time, in Behalf of the new Note; not a Man would allow it: But he was no sooner dead, than all the World came in to it. See **NOTE**.

**SIBYLS**, **SIBYLLÆ**, in Antiquity, Virgin Prophetesses, or Maids supposed to be divinely inspired; and who, in the Height of their Enthusiasm, gave Oracles, and foretold Things to come. See **PROPHECY**. The Word is supposed formed of an Assemblage of the Two Greek Words, *Σειν*, to agitate, and *Βύλα*, full, by Reason of the excessive Fury they were agitated withal, when they delivered their Oracles. Authors do not agree about the Number of the *Sibyls*. *Capella* reckons but Two, viz. *Europhile* of *Troy*, called *Sibylla Phrygia*, and *Sinaiachia* of *Eritbræa*, called, *Sibylla Eritbræa*. *Solinus* mentions Three, viz. *Cumea*, *Delphica*, and *Eritbræa*. *Ælian* makes their Number Four; and *Varro* increases it to Ten, denominating them from the Places of their Birth; the *Persian*, *Lybian*, *Delphic*, Two *Cumeans*, *Eritbræan*, *Samian*, *Helleston* or *Trojan*, *Phrygian*, and *Tiburin*. Of these, the most celebrated are, the *Eritbræan*, *Delphic*, and *Cumean Sibyls*. See **ORACLE**.

The *Sibylline-Oracles*, were held in great Veneration by the more credulous among the Antients; but were much suspected by many of the more knowing. The Books wherein they were written, were kept by the *Romans* with infinite Care, and nothing of Moment undertaken without consulting them. *Tarquin* first committed them to the Custody of Two Patrician Priests, instituted for that Purpose.

**SICILIAN**, in Music, &c. a Kind of gay sprightly Air, or Dance; somewhat of the Nature of an *English Jig*: usu-

ally marked with the Characters  $\frac{6}{8}$  or  $\frac{12}{8}$ .

|                    |         |                   |
|--------------------|---------|-------------------|
| SICKNESS,          | } See { | DISEASE.          |
| Green-SICKNESS,    |         | CHLOROSIS.        |
| Sweating-SICKNESS, |         | SUDOR ANGLICANUS. |
| Falling-SICKNESS,  |         | EPILEPSY.         |

**SICUT ALIAS**, a Writ sent out in the Second Place, where the first was not executed. It is thus called from its Beginning, which is in this Form: *Georgius D. G. &c. Vicecomiti Heref. Salutem. Præcipimus tibi (Sicut Alias) præcipimus quod non omittas, &c.*

**SIDE**, *Latus*, in Geometry. The Side of a Figure, is a Line making Part of the Periphery of any Superficial Figure. See **FIGURE**. In Triangles, the Sides are also called *Legs*. In a Rectangle Triangle, the Two Sides, including the right Angle, are called *Catheti*; and the Third the *Hypotenuse*. See **CATHETUS** and **HYPOTHENUSE**.

**SIDE** of a Polygonal Number, is the Number of the Terms of the Arithmetical Progression, that are summed up. See **POLYGONAL NUMBER**.

**SIDE** of a Power, is what we otherwise call the *Root*, or *Radix*. See **ROOT**.

|                  |         |                    |
|------------------|---------|--------------------|
| Right SIDE,      | } See { | LATUS RECTUM.      |
| Transverse SIDE, |         | LATUS TRANSVERSUM. |

**SIDE-LAYS**, is a Term made Use of by Huntsmen, when Dogs are set in the Way, to be let slip at a Deer, as he passes by.

**SIDERATION**, in Chirurgery, a Mortification of some Part of the Body; called also *Sphacelus* and *Necrosis*; which see.

**SIDERATION**, the blasting or blighting of Trees, Plants, &c. by Eastern Winds, excessive Heat, Draught, or the like. See **BLIGHT**.

**SIDERATION**, is also used for a being suddenly benumb'd, and deprived of the Use of one's Limbs, Senses, &c. which the People call being *Plane-struck*.

**SIDIERAL YEAR**. See **YEAR**.

**SIDERITES**, a Name some Authors gives the Loadstone. See **MAGNET**.

**SIDES** of *Hornworks*, &c. in Fortification, are the Ramparts and Breast-works, which inclose them on the Right and Left from the Gorge to the Head.

**SIDES-MEN**, properly called *Synods-Men*, or *Quest-Men*, Persons, who in larger Parishes are appointed to assist the Church-Wardens, in enquiring into the Manners of inordinate Livers, and in presenting Offenders at Visitations.

**SIEGE**, in War, the Incampment of an Army around a Place, with Design to take it, either in the Way of Distress and Famine; or by making Lines all around it, to prevent any Relief from without; or by main Force, as by digging Trenches, and making formal Attacks. The most celebrated



celebrated Sieges of Antiquity, are those of *Troy, Tyre, Alexandria, Numantium, &c.* Those of the Moderns are that of *Offend, Candia, Graves, &c.* The Word is *French*, and signifies, literally, *Seat*.

**SIERRA**, a *Spanish* Term signifying *Mountain*; applied to Mountains, and Mountainous Countries.

**SIEVE**, or *Search*, an Instrument serving to separate the Fine from the Coarse Parts of Powders, Liquors, &c. or to cleanse the Pulse from Dust, light Grains, &c. 'Tis made of a Rim of Wood; the Circle, or Space whereof is filled with a Tissue of Silk, Tiffany, Hair, Line, Wire, or even thin Slices of Wood. The Sieves which have large Holes, are usually called *Riddles*; such is the *Coal* or *Lime Sieve, Garden Sieve, &c.* When Drugs, apt to evaporate, are to be passed thro' the Sieve, 'tis usual to have it covered with a Lid.

**SIEUR**, a Kind of Title of Honour, or Quality among the *French*; chiefly used among the Lawyers, and in publick Acts and other Writings of that Kind: As I plead for the *Sieur Marquis, &c.* The Title *Sieur* is properly given by a Superior to an Inferior, in his Letters, and other particular Writings: As, Tell the *Sieur* such a one, that he proceed, &c. In this Sense, Authors sometimes use it, by Way of Modesty, in speaking of themselves. Thus, at the Heads of Books, we see, *Traduction du Sieur d'Abbeville, Oeuvres du Sieur d'Espresaux, &c.*

**SIEUR**, is also a Term expressing *Seignoury* or Lordship: As *Ecuyer* or *Sieur* of such a Place.

**SIGHT**, the Exercise, or Action of the Sense of Seeing. See **SEEING**.

Our *Sight*, the noblest and most useful of all our Senses, *Father Mallebranch* shews, deceives us in abundance of Instances; Nay, almost in all: Particularly with Regard to the Magnitude, and Extent of Things; their Figures, Motions, &c. Our Eyes do not shew us any Thing less than a Mite: Half a Mite is nothing, if we believe their Report. A Mite is only a Mathematical Point, with Regard thereto; and we cannot divide it without annihilating it. In effect, our *Sight* does not represent Extension, such as it is in it self; but only the Relation and Proportion it has to our Body. Hence, as Half a Mite has no Relation to our Bodies, and that it cannot either preserve or destroy, our *Sight* hides it intirely. Were our Eyes made like Microscopes, or were we our selves as small as Mites, we should judge very differently of the Magnitude of Bodies. It may be added, That our own Eyes are really no other than a kind of natural Spectacles; that their Humours do the same Office as the Lens's in Spectacles; and that, according to the Figure of the Crytallin, and its Distance from the Retina, Objects are seen very differently; inasmuch, as we are not sure, that there are any Two Persons in the World, who see them equally big. 'Tis even very rare, that the same Person sees the same Object equally big with both Eyes; as both Eyes are very seldom perfectly alike: on the contrary, we generally see Things bigger with the left than the right Eye; Of which we have some very good Observations in the Journal of the Learned at *Rome*, for the Year 1669. See **VISION**.

Short-SIGHT, } See { MYOPIA,  
Second SIGHT, } SECOND Sight.  
Point of SIGHT, } VIEW.

**SIGHTS**, in Mathematicks, are Two thin Pieces of Brass nailed perpendicularly on the Two Extremes of an Alidade or Index of a Theodolite, Circumferentor, or other like Instrument: Each whereof has an Aperture or Slit up the Middle, thro' which the usual Rays pass to the Eye, and distant Objects are seen. Their Use is for the just Direction of the Index to the Line of the Object. See **TELESCOPE**, **CIRCUMFERENTOR**, **ALIDADE**, &c.

Plain SIGHT, } See { SIGHTS.  
Telescopic-SIGHTS, } TELESCOPIC SIGHTS.

Mr. *Flamsteed* and Dr. *Hook*, absolutely explode the Use of *Plain Sights* in Astronomical Observations. The Errors in *Tycho's* Latitudes of the Stars, Mr. *Flamsteed* ascribes wholly to his using *Plain Sights*; and suspects, that *Hewelius* using the same Kind of *Sights*, will fall into the like Errors. *Hewelius*, on the contrary, in a Paper in the *Philosophical Transactions*, vindicates the Use of *Plain Sights*, and prefers them to *Telescopic* ones. The main Objection he makes to the latter, is, That no Observation can be safely taken with them, without first examining and rectifying them: In which Examination, many and gross Mistakes are liable to be committed. To which he adds, That in Sextants, Octants, Azimuth Quadrants, &c. he does not see how such Examination can be made, at all times, without much Loss of Time.

**SIGILLARIA**, a solemn Feast held among the ancient Romans; thus called from a Custom which obtained therein,

of sending little Presents from one to another; consisting of Seals, little Gravings, Sculptures, &c. The *Sigillaria* followed immediately after the *Saturnalia*, and held Four Days; which, with the Three Days of the *Saturnalia*, made a Solemnity of Seven Days. The Institution of the *Sigillaria* is referred, by some, to *Hercules*; who, upon his Return from *Spain*, after killing *Geryon*, led his Flocks into *Italy*, where he built a Bridge over the *Tiber*, at a Place, where was since the *Pons Sublicus* in *Rome*. Others ascribe it to the *Pelagian*; who conceiving, that by the Words *Head* and *phi*, the Oracle did not require living Men to be sacrificed to it, but Statues, or Figures of Men by the First, and Lights by the Second; began to offer Torches to *Saturn*, and human Figures to *Pluto*.

**SIGILLATA TERRA**, a Kind of Earth or Clay, dug in the Isle of *Lemnos*, thence also called *Lemnian Earth*; of considerable Use in Painting, and Medicine. 'Tis of different Colours, but most commonly Red; heavy, soft, and friable; held very astringent, and, as such, used in Haemorrhages; as also against the Plague and Poisons. *Pliny* attributes several other Virtues, which Experience does not justify; nor is it in that Esteem it anciently was; yet is still an Ingredient in Treacle. 'Twas anciently found in a Mountain, in the Neighbourhood of the City *Hephestia*; where *Diana's* Priests went at certain Times, with great Ceremony, to dig it up. After a little Preparation, they made it up into Troches, and seal'd them with *Diana's* Seal; whence the Appellation of *Sigillata, Seal'd*. 'Tis now brought from *Constantinople* in little Cakes orbicular, on one Side flat, on the other sealed. See **TERRA**.

**SIGILLUM**, a Seal or Signet. See **SEAL** and **SIGNET**.

**SIGN**, a sensible Mark or Character, denoting something abstr, or invisible. See **CHARACTER** and **MARK**. Anciently, the Monks, in all Religious Houses, were not allowed to speak; nor to express their Minds otherwise than by Signs, which they learned in their Novitiate. *C. Rhodiginus* and *Porta* have wrote of the ancient Signs and Cyphers used in Speaking and Writing.

**SIGN**, in Medicine, some Appearance in the Body, distinguishable by the Senses: Whence, by just Reasoning, is inferred the Presence, Nature, State, Event, of Health, a Disease, or Death. Those which denote the present Condition of a Body, whether sick or well, dying or the like, are called *Diagnostic Signs*. See **DIAGNOSTIC**. Those which foretel the future State thereof, are called *Prognostic Signs*. See **PROGNOSTIC**. That Sign which is proper to the Disease, and inseparable from it, as arising from the Nature thereof, is called a *Pathogenomic Sign*. See **PATHOGENOMIC**. As all these are Effects produced by the Cause of the Disease, the Disease it self, and its Symptoms; they usually note the present Condition of the Matter which first produced the Disease, and even of that produced by the Disease: On which Footing, the Signs are all reducible to these Three Classes, viz. Signs of the Crudity and Digestion of the Disease; of its Event, whether in Health, a Disease or Death; and of its Secretion and Excretion: Which last Signs are called *Critical* ones. See **CRUDITY**, **DIGESTION**, &c. each under its proper Article. See also **HEALTH** and **DISEASE**.

**SIGN**, in Astronomy, a Twelfth Part of the Ecliptic, or Zodiac; or a Portion containing Thirty Degrees thereof. The Zodiac was divided by the Antients into Twelve Segments, called *Signs*; commencing from the Point of Intersection of the Ecliptic and Equinoctial: Which Signs they denominated from the Twelve Constellations, which, in *Hipparchus's* Time, possessed those Segments; But the Constellations have since so changed their Places, by the Precession of the Equinox, that *Aries* is now got out of the Sign called *Aries*, into *Taurus*, *Taurus* into *Gemini*, &c.

The Names of the Twelve Signs, and their Order, are as follow; *Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, Pisces*: Each of which, with the Stars thereof, see under its proper Article.

The Signs are distinguished with Regard to the Season of the Year when the Sun is in them, into *Vernal, Estival, Autumnal*, and *Brumal*. The *Vernal*, or *Spring-Signs*, are *Aries, Taurus, Gemini*: The *Estival*, or *Summer-Signs*, *Cancer, Leo, and Virgo*: The *Autumnal-Signs*, *Libra, Scorpio, and Sagittarius*; and the *Brumal*, or *Winter Signs*, *Capricornus, Aquarius, Pisces*. The *Vernal* and *Summer Signs*, are also called *Northern Signs*, and the *Autumnal* and *Brumal Signs*, *Southern Signs*.

For the Motion of the Signs. See **PRECESSION** of the *Equinox*.

**SIGN** Manual, the setting one's Hand and Seal to a Writing. See **SIGNATURE**. Among the Saxons, before the Invention of Seals, a + was a common Sign or Signum, prefixed to the Names of most subscribing Witnesses in Charters and other Deeds, as + *Signum Roberti Episcopi. Lond. &c.*

**SIGNAL**, a certain Sign agreed upon for the conveying of Intelligence whither the Voice cannot reach. Signals are given for the beginning of a Battle, or an Attack: Some-

times



times with Drums and Trumpets. At Sea, Signals are given by Canon or Musket Shot, by Lights, Sails, Flags, &c.

SIGNALS have been in Use in all Ages. The Ancients who had no regular Couriers or Posts, made Use thereof to convey Intelligence of what pass'd at a great Distance. For which Purpose they placed Sentinels on the Heights, from Space to Space; some Mention whereof, we find made by Homer himself. *Iliad* *Q. v. 553; Ec. Odyss. E. v. 261.* Those People thus disposed; lighted Fires, or Flambeaux in the Night-time. In the *Agamemnon* of *OEschilus*, that Prince at his Departure for Troy, promises *Clytemnestra*, that the very Day the City should be taken, he would apprize her of his Victory by Fires lighted Express. He keeps his Word, and Tidings are brought the Princess, that Troy is taken, and that *Agamemnon's* Signals are seen. *Frontinus* observes, they were in Use among the *Arabs*; and *Bonaventura Vulcanius*, in his *Scholia* on *Aristotle's* Book *de Mundo*, adds, That while the *Moors* were Masters of the greatest Part of *Spain*, they built on the Tops of the Mountains, an Infinity of Turrets, or Watch-houses, call'd in the *Arabic*, *Atalayas*, a Word the *Spaniards* still retain; whence, by Fires, they could immediately alarm the whole Kingdom. Indeed the Custom was much more Ancient than the *Moors* in *Spain*. *Q. Curtius* observes, 'twas very frequent among the *Asiaticks*, in the Time of *Alexander*. *Livy* and *Cæsar* both mention it as used among the *Romans*. *Polydore Virgil* shews it of great Antiquity in *England*; and *Boethius* adds, that in several Places in *England*, there are the Remains of huge Poles that have served for this Purpose. See BEACON.

SIGNALS at Sea, are Signs made at Sea, by the Admiral or Commander in Chief of a Squadron of Ships, either in the Day or by Night, either for Sailing or Fighting, or for the better Security of the Merchant Ships, under the Convoy of Men of War: These Signals are very Numerous and very Important; all appointed and determined by Order of the Lord High Admiral, or Lords of the Admiralty.

#### SIGNALS by Day.

When the Commander in Chief would have them prepare for Sailing, he first looses his Fore-top-sail, and then the whole Fleet are to do the same. When he would have them Unmoor, he looses his Main-top sail, and fires a Gun, which in the Royal Navy is to be answered by every Flag-ship. When he would have them Weigh, he looses his Fore-top-sail, and fires a Gun, and sometimes haws home his Sheets: The Gun is to be answered by every Flag-ship, and every Ship to get to Sail as soon as it can. If with the Leeward-side, the Stern-most Ship is to weigh first. When he would have the Weather-most, and Head-most Ships to Tack first, he hoists the Union-Flag at the Fore-top-mast-head, and fires a Gun, which each Flag-ship answers; but if he would have the Stern-most, and Leeward-most Ships to Tack first, he hoists the Union Flag at the Mizzen-top-mast-head, and fires a Gun; and when he would have all the whole Fleet Tack, he hoists an Union, both on the Fore, and Mizzen-top-mast-heads, and fires a Gun. When in bad Weather, he would have them Wear, and bring to the other Tack, he hoists a Pendant on the Ensign-staff, and fires a Gun: And then the Leeward-most and Stern-most Ships are to Wear first, and bring on the other Tack, and lie by, or go on with an easy Sail, till he comes a-head: Every Flag is to answer with the same Signal. If they are lying by, or Sailing by a Wind, and the Admiral would have them bear up and Sail before the Wind, he hoists his Ensign, and fires a Gun, which the Flags are to answer: And then the Leeward-most Ships are to bear up first, and to give Room for the Weather-most to Wear, and sail before the Wind with an easy Sail, till the Admiral comes a-head. But if it should happen when the Admiral hath Occasion to Wear and Sail before the Wind, that both Jack and Ensign be abroad, he will haul down the Jack, before he fires the Gun to Wear, and keeps it down, till the Fleet is before the Wind. When they are sailing before the Wind, and he would have them bring to, with the Star-board Tacks Aboard, he hoists a Red Flag at the Flag-staff, on the Mizzen-top-mast-head, and fires a Gun. But if they are to bring to, with the Lar-board Tack, he hoists a Blue Flag at the same Place, and fires a Gun, and every Ship to answer the Gun. When any Ship discovers Land, he is to hoist his Jack and Ensign, and keep it abroad, till the Admiral or Commander in Chief answer him, by hoisting his; on Sight of which, he is to haul down his Ensign. If any discovers Danger, he is to Tack and bear up from it, and to aw Jack abroad from the Main-top-mast Cross-trees, and fire two Guns; but if he should strike or stick fast, then, besides the same Signal with his Jack, he is to keep firing, till he sees all the Fleet observe him, and endeavour to avoid the Danger. When any sees a Ship or Ships more than the Fleet, he is to put abroad his Ensign, and there keep it, till the Admiral's is out, and then to lower it, as often as he sees Ships, and stand in with them, that so the Admiral may know which Way they are,

and how many; but if he be at such a Distance, that the Ensign can't well be discovered, he is then to lay his Head towards the Ship or Ships so descry'd, and to brail up his low Sails, and continue hoisting, and lowering his Top-sails, and making a Weft with his Top-gallant Sails, till he is perceived by the Admiral. When the Admiral would have the Vice-Admiral, or he that commands in the Second Post of the Fleet, to send out Ships to Chase, he hoists a Flag, striped White and Red, on the Flag-staff, at the Fore-top-mast-head, and fires a Gun. But if he would have the Rear-Admiral do so, he then hoists the same Signal on the Flag-staff, at the Mizzen-top-mast-head, and fires a Gun. When the Admiral would have any Ship to Chase to Windward, he makes a Signal for speaking with the Captain, and he hoists a Red Flag in the Mizzen-shrouds, and fires a Gun: But if to Chase to Leeward, a Blue Flag; and the same Signal is made by the Flag, in whose Division that Ship is. When he would have them give over Chase, he hoists a White Flag on his Flag-staff at the Fore-top-mast-head, and fires a Gun: Which Signal is to be made also, by that Flag-ship, which is nearest the Ship that gives Chase, till the chasing Ship sees the Signal. In case of springing a Leak, or any other Disaster, that disables their Ship from keeping Company, they are to haul up their Courtes, and fire two Guns. When any Ship would speak with the Admiral, he must spread an *English* Ensign, from the Head of his Main, or Fore, Top-mast, downwards on the Shrouds, lowering his Main, or Fore, Top sail, and firing Guns, till the Admiral observe him; and if any Ship perceive this, and judgeth the Admiral doth not, that Ship must make the same Signal, and make the best of his Way to acquaint the Admiral therewith, who will answer by firing one Gun. When the Admiral would have the Fleet to prepare to Anchor, he hoists an Ensign, striped Red, Blue and White on the Ensign-staff, and fires a Gun, and every Flag-ship makes the same Signal. If he would have the Fleet Moor, he hoists his Mizzen-top-sail, with the Clew-lines hawled up, and fires a Gun. If he would have the Fleet cut or slip, he looseth both his Top-sails, and fires two Guns; and then the Leeward Ships are to cut or slip first, to give Room to the Weathermost to come to Sail. So if he would have any particular Ship to cut or slip, and to Chase to Windward, he makes the Signal for speaking with that Ship, hoists a Red Flag in the Mizzen-shrouds, and fires a Gun: But if the Ship is to Chase to Leeward, he hoists a Blue Flag as before. If he would have the Fleet exercise their Small Arms, he hoists a Red Flag on the Ensign-staff, and fires a Gun; but if the great Guns, then he puts up a Pendant over the Red Flag.

#### SIGNALS by Night;

To be observed at an Anchor, weighing Anchor, and Sailing, are as follow. When the Admiral would have the Fleet to Unmoor, and ride short, he hangs out three Lights, one over another in the Main-top-mast Shrouds, over the constant Light in the Main-top, and fires two Guns, which are to be answered by Flag-Ships; and each private Ship hangs out a Light in the Mizzen Shrouds. Note, That all Guns, fired for Signals in the Night, must be fired on the same Side, that they may make no Alteration in the Sound. When he would have them Weigh, he hangs a Light in the Main-top-mast Shrouds, and fires a Gun, which is to be answered by all the Flags, and every private Ship must hang out a Light in his Mizzen-Shroud. When he would have them Tack, he hoists two Flags on the Ensign-Staff, one over another, above the constant Light in his Poop, and fires a Gun, which is to be answered by all the Flags; and every private Ship is to hang out a Light extraordinary, which is not to be taken in, till the Admiral takes in his. After the Signal is made, the Leeward-most, and Stern-most Ships must Tack as fast as they can, and the Stern-most Flag-ship, after he is about on the other Tack, is to lead the Fleet, and him they are to follow, to avoid running through one another in the Dark. When he is upon a Wind, and would have the Fleet Veer, and bring to on the other Tack, he hoists up one Light at the Mizzen-peek, and fires three Guns, which is to be answer'd by the Flag-ships, and every private Ship must answer, with one Light at the Mizzen-peek. The Stern-most, and Leeward-most Ships, are to bear up so soon as the Signal is made. When he would have them, in blowing Weather, to lie a Try, Short, or a Hull, or with the Head-sails brac'd to the Mast, he will form Lights of equal Height, and fire five Guns, which are to be answer'd by the Flag-ships, and then every private Ship must show four Lights: And after this, if he would have them to make Still, he then fires ten Guns, which are to be answered by all the Flags, and then the Head-most, and Weathermost Ships, are to make sail first. When the Fleet is sailing large, or before the Wind, and the Admiral would have them bring to, and lie by with their Star-board Tack



Tacks aboard, he puts out four Lights in the Fore-Shrouds, and fires six Guns; but, if with the Lar-board Tacks aboard, he fires eight Guns, which are to be answered by the Flag-ships; and every private Ship must shew four Lights. The Wind-most Ships must bring to first. Whenever the Admiral alters his Course, he fires one Gun, (without altering his Lights) which is to be answered by all the Flag-ships. If any Ship hath Occasion to lie short, or by, after the Fleet hath made Sail, he is to fire one Gun, and shew three Lights in his Mizzen-shrouds. When any one first discovers Land, or Danger, he is to shew as many Lights as he can, to fire one Gun, and to tack, or bear away, from it: And, if any one happen to spring a Leak, or any be disabled from keeping Company with the Fleet, he hangs out two Lights of equal Height, and fires Guns till he is relieved by some Ship of the Fleet. If any one discovers a Fleet, he is to fire Guns, make false Fires, put one Light out on the Main-top, three on the Poop, to steer after them, and to continue firing of Guns, unless the Admiral call him off, by steering another Course, and fire two or three Guns; for then he must follow the Admiral. When the Admiral Anchors, he fires two Guns, a small Space of Time one from the other, which are to be answered by the Flag-Ships; and every private Ship must shew two Lights. When the Admiral would have the Fleet to moor, he puts a Light on each Top-mast-head, and fires a Gun, which is to be answered by the Flag-ships, and every private Ship is to shew one Light. If he would have them lower their Yards and Top-masts, he hoists one Light upon his Ensign-staff, and fires one Gun; which is to be answered by the Flag-ships; and every private Ship must shew one Light. And when he would have them hoist their Yards and Top-masts, he puts out two Lights, one under the other, in the Mizzen-top-mast Shrouds, and fires one Gun; which is to be answered by the Flag-ships; and each private Ship must shew one Light in the Mizzen-shrouds. If any strange Ship be discovered coming into the Fleet, the next Ship is to endeavour to speak with her, and bring her to an Anchor, and not suffer her to pass through the Fleet. And if any one discovers a Fleet, and it blow so hard that he cannot come to give the Admiral Notice timely, he is to hang out a great Number of Lights, and to continue firing Gun after Gun, till the Admiral answers him with one. When the Admiral would have the Fleet to Cut or Slip, he hangs out four Lights, one at each Main-yard-arm, and at each Fore-yard-arm, and fires two Guns, which are to be answered by the Flag-ships, and every private Ship is to shew one Light.

#### *SIGNALS used, when a Fleet sails in a Fog.*

If the Admiral would have them Weigh, he fires ten Guns; which every Flag-ship is to Answer. To make them Tack, he fires four Guns, which are to be answered by the Flag-ships; and then the Leeward-most, and Stern-most Ships must tack first, and after they are about, to go with the same Sail they tacked with, and not to lie by, expecting the Admiral to come a-head: And this is to avoid the Danger of running thro' one another in thick Weather.

When the Admiral brings to, and lies with his Head-fails to the Mast; if with the Star-board Tack aboard, he fires six Guns; but if with the Lar-board Tack, he fires eight Guns, which the Flag-ships are to answer. And after this, if he makes Sail, he fires ten Guns, which the Flag-ships must answer, and then the Head-most, and Weather-most Ships are to make Sail first. If it grow thick and foggy Weather, the Admiral will continue sailing, with the same Sail set, that he had before it grew foggy, and will fire a Gun every Hour, which the Flag-ships must answer, and the private Ships must answer, by firing of Muskets, beating of Drums, and ringing of Bells. But if he be forced to make either more or less Sail than he had, when the Fog began, he will fire a Gun every half Hour, that the Fleet may discern, whether they come up with the Admiral, or fall a-stern of him; and the Flags, and private Ships are to answer as before. If any one discovers Danger, which he can avoid, by Tacking and Standing from it, he is to make the Signal for Tacking in a Fog; but if he should chance to strike and stick fast; he is to fire Gun after Gun, till he thinks the rest have avoided the Danger. When the Admiral would have the Fleet to Anchor, he fires two Guns, which the Flags are to answer; and after he hath been Half an Hour at an Anchor, he will fire two Guns more, to be answered by the Flags, as before; that all the Fleet may know it.

#### *SIGNALS for calling Officers on Board the Admiral.*

When the Admiral puts aboard an Union Flag in the Mizzen-shrouds, and fires a Gun, all the Captains are to come aboard him: And if, with the same Signal, there be also a West made with the Ensign, then the Lieutenant

of each Ship is to come on board. If an Ensign be put aboard in the same Place, all the Masters of the Ships of War are to come on board the Admiral. If a Standard on the Flag-staff be hoisted at the Mizzen-top-mast-head, and a Gun fired, then all the Flag-Officers are to come aboard the Admiral. If the *English* Flags only; then a Standard in the Mizzen-shrouds; and fire a Gun: If the Flags, and Land General Officers; then the Admiral puts aboard a Standard at Mizzen-top-mast-head, and a Pendant at Mizzen-peek, and fires a Gun. If a Red Flag be hoisted in the Mizzen-shrouds, and a Gun fired; then the Captains of his own Squadron are to come aboard the Admiral; and if, with the same Signal, there be also a West with the Ensign, the Lieutenant of each Ship must come aboard. If he hoists a White Flag, as before, then the Vice-Admiral, or he that commands in the Second Post, and all the Captains of his Squadron, are to go on board the Admiral: If a Blue Flag, &c. then the Rear-Admiral, and the Captains of his Squadron, must come on board; and if a West, as before, the Lieutenants. When a Standard is hoisted on the Ensign-staff, and a Gun fired, the Vice and Rear Admirals must come on board the Admiral's Ship. When the Admiral would speak with Captains of his own Division, he will hoist a Pendant on the Mizzen-peek, and fire a Gun; and if with the Lieutenants; a West is made with the Ensign, and the same Signal: For whenever he would speak with the Lieutenants of any particular Ship, he makes the Signal for the Captain, and a West also with the Ensign. When the Admiral would have all the Tenders in the Fleet come under his Stern, and speak with him; he hoists a Flag, Yellow and White, at the Mizzen-peek, and fires a Gun. But if he would speak with any particular Ship's Tender, he makes a Signal for speaking with the Captain she tends upon, and a West with the Jack. If all the Pinnaces and Barges are to come on Board, manned and armed, the Signal is a Pendant on the Flag-staff, hoisted on the Fore-top-mast-head, and a Gun fired; and if he would have them chase any Ship, Vessel, or Boat, in View, he hoists the Pendant, and fires two Guns. The Signal for the Long-boats to come on board him, manned and armed, is the Pendant hoisted on the Flag-staff, and the Mizzen-top-mast-head, and a Gun fired; and if he would have them chase any Ship, Vessel, or Boat, in open View, without coming on board him, he hoists the Pendant, as aforesaid, and fires two Guns. When the Admiral would have all the Boats in the Fleet come on board him, manned and armed, he hoists a Pendant on the Flag-staff, both on the Fore-top-mast, and Mizzen-top-mast-head, and fires one Gun; but if he would have them chase, he hoists his Pendants, as before, and fires two Guns. When the Admiral would speak with the Victualler, or his Agent, he puts an *English* Ensign in the Mizzen top-mast-shrouds; and when with him that hath the Charge of the Gunner's Stores, he will spread an Ensign at his Main-top-sail-yard-arm.

#### *SIGNALS for managing a Sea-Fight.*

When the Admiral would have the Fleet form a Line of Battle, one Ship a-head of another; he hoists an Union Flag at the Mizzen-peek, and fires a Gun; and every Flag-Ship does the like. But when they are to form a Line of Battle, one a-breast of another, he hoists a Pendant with the Union-Flag, &c. When he would have the Admiral of the White, or he that commands in the second Post, to Tack, and endeavour to gain the Wind of the Enemy, he spreads a White Flag under the Flag at the Main-top-mast-head, and fires a Gun; and when he would have the Vice-Admiral of the Blue do so, he doth the same with the Blue Flag. If he would have the Vice-Admiral of the Red do so, he spreads a Red Flag from the Cap, on the Fore-top-mast-head, downward on the Back-stay: If the Vice-Admiral of the Blue, he spreads a Blue Flag, &c. and fires a Gun. If he would have the Rear Admiral of the Red do so, he hoists a Red-Flag at the Flag-staff, at the Mizzen-top-mast-head; if the Rear Admiral of the White, a White Flag; if the Rear-Admiral of the Blue, a Blue Flag, and under it a Pendant of the same Colour, with a Gun. If he be to Leeward of the Fleet, or any Part of it, and he would have them bear down into his Wake or Grain, he hoists a Blue Flag at the Mizzen-peek, and fires a Gun. If he would be to Leeward of the Enemy and his Fleet, or any Part of it be to Leeward of him; in order to bring these Ships into the Line, he bears down with a Blue Flag at the Mizzen-peek, under the Union Flag (which is the Signal for Battle) and fires a Gun; and then those Ships, that are to Leeward of him, must endeavour to get into his Wake or Grain, according to their Station in the Line of Battle. When the Fleet is sailing before the Wind, and he would have him, who commands in the Second Post, and the Ship of the Star-board Quarter, to clap by the Wind, and come to the Star-board Tack, he hoists a Red Flag on the Mizzen-top-mast-head: But a Blue one, if he would have Ships of the Lar-



board Quarter, come to the Lar-board Tack, with a Gun. If the Van are to tack first, he spreads the Union Flag at the Flag-staff, on the Fore-top-mast-head, and fires a Gun, if the Red Flag be not Abroad; but if it be, then he lowers the Fore-top Sails a little; and the Union Flag is spread from the Cap of the Fore-top-mast downwards; and every Flag-ship doth the same. If the Rear be to Tack first, he hoists the Union Flag on the Flag-staff, at the Mizzen-top-mast-head, and fires a Gun; which all the Flag-ships are to answer. If all the Flag-ships are to come into his Wake or Grain, he hoists a Red Flag at his Mizzen-peak, and fires a Gun; and all the Flag-ships must do the same. If he would have him that commands in the Second Post of his Squadron to make more Sail (though he himself shorten Sail) he hoists a White Flag on the Ensign-staff. But if he that Commands in the Third Post be to do so, he hoists a Blue Flag, and fires a Gun, and all the Flag-ships must make the same Signal. Whenever he hoists a Red Flag on the Flag-staff at the Fore-top-mast-head, and fires a Gun; every Ship in the Fleet must use their utmost Endeavour to engage the Enemy, in the Order prescribed them. When he hoists a White Flag at his Mizzen-peak, and fires a Gun; then all the small Frigates of his Squadron, that are not of the Line of Battle, are to come under the Stern. If the Fleet be sailing by a Wind in the Line of Battle; and the Admiral would have them brace their Head-sails to the Mast, he hoists up a Yellow Flag, on the Flag-staff, at the Mizzen-top-mast-head, and fires a Gun; which the Flag-ships are to answer: and then the Ships in the Rear must Brace first. After this, if he would have them fall their Head Sails, and stand on, he hoists a Yellow Flag on the Flag-staff of the Fore-top-mast-head, and fires a Gun, which the Flag-ships must answer, and then the Ships in the Van, must fall first, and stand on. If when this Signal is made, the Red Flag at the Fore-top-mast-head be abroad, he spreads the Yellow Flag under the Red. If the Fleets being near one another, the Admiral would have all the Ships to tack together, the sooner to lie in a Posture to engage the Enemy; he hoists an Union Flag on the Flag-staves at the Fore and Mizzen-top-mast-heads, and fires a Gun; and all the Flag-ships are to do the same. The Fleet being in a Line of Battle, if he would have the Ship that leads the Van, hoist, lower, set, or hawl up any of his Sails, he spreads a Yellow Flag, under that at his Main-top-mast-head, and fires a Gun, which Signal the Flag-ships are to answer; and then the Admiral will hoist, lower, set, or hawl up the Sail, which he would have the Ship, that leads the Van, do; which is to be answered by the Flag-ships of the Fleet. When the Enemies run, and he would have the whole Fleet follow them, he makes all the Sail he can after them himself, takes down the Signal for the Line of Battle, and fires two Guns out of his Fore-chase, which the Flag-ships answer, and then every Ship is to endeavour to come up with, and Board the Enemy. When he would have the Chase given over, he hoists a White Flag at the Fore-top-mast-head, and fires a Gun. If he would have the Red Squadron draw into a Line of Battle, one a-breast of another, he puts abroad a Flag, striped Red and White, on the Flag-staff at the Main, top-mast head, with a Pendant under it; and fires a Gun: If the White or Second Squadron is to do so, the Flag is striped Red, White and Blue: If the Blue or Third Squadron is to do so, the Flag is a Genoese Ensign and Pendant: But if they are to draw into a Line of Battle, one a-head of another, the same Signals are made without a Pendant. If they are to draw into the Line of Battle one a-Stern of another, with a large Wind, and he would have the Leaders go with the Star-board Tacks, a-board by the Wind; he hoists a Red and White Flag at the Mizzen-peak, and fires a Gun: But if they should go with the Larboard-tacks Aboard, by the Wind, he hoists a Genoese Flag at the same Place; which Signals, like others, must be answered by the Flag-ships.

**SIGNATURE**, *Signing*, a Subscription or putting of one's Name at the Bottom of an Act or Deed, in one's own Hand Writing. Anciently, when very few People could write, they dispented with the Use of Signatures; and contented themselves with the Party's Seal: See SEAL.—*Signature of the Court of Rome*, is a Supplication answered by the Pope, whereby he grants a Favour, Dispensation, or Collation, to a Benefice, by putting the *Fiat* at the Bottom thereof, in his own Hand; or the *Concessum est* wrote in his Presence. The *Signature*, at the Bottom of the Supplication, gives the Name to the whole Instrument. The *Signature* contains the Clauses, Derogations, and Dispensations, wherewith the Pope grants the Favour, or the Benefice; with a Commission for the Execution thereof, either in *Forma dignum*, or in gracious Form. A *Signature* of the Pope's own Hand, whereby he answers, *Fiat ut petitur*, is preferred to another, answered by the Prefect, in his Presence, in these Words, *Concessum uti petitur in presentia D. N. Papae*. Sometimes, in *Signatures* with the *Fiat*, the Pope adds, *Proprie Motu*; which Clause gives them still further Force. See PROVISION. There are three Kinds of *Signa-*

*tures*; one in *Forma Gratiiosa*, dispatch'd on an Attestation of the Ordinary; another in *Forma dignum Antiqua*, dispatch'd for Canonicates; the third in *Forma dignum Novissima*, which is a Kind of Second Signature, or Executorial Letter granted, where upon the Ordinary's failing to execute the first within Thirty Days, the nearest other Ordinary is enjoyn'd to execute it.

**SIGNATURE**, in Printing, a Mark at the Bottom of each Sheet, to facilitate the Gathering and Binding of the Book; and to shew the Order, and Number, of the Quires and Sheets. The *Signatures* consist of the Capital Letters of the Alphabet; and change in every Quire. If there be more Quires than Letters in the Alphabet; to the Capital Letter, they add a small one of the same sort, i. e. a little *a* after a great *A*, &c. which they repeat, as often as is necessary.

**SIGNATURE** is also used by some Naturalists for the Resemblance a Vegetable or Mineral bears to any Part of the Human Body.

**SIGNET**, one of the King's *Seals*, used in sealing his private Letters, and in signing all Grants, which pass as Majesty's Hand by Bill. The *Signet* is always in the Custody of the King's Secretaries: On whom attend Four Clerks of the *Signet-Office*. See SECRETARY.

**SIGNIFICAVIT**, is a Writ which issues out of Chancery, upon a Certificate given by the Ordinary, of a Man that stands obstinately Excommunicate for the Space of Forty Days, for the laying him up in Prison, without Bail, or Mainprize, till he submit himself to the Authority of the Church.

**SIGNIFICATION**, the Sense of a Sign, Word, Phrase, Emblem, &c. or the Thing meant or denoted by the Sign, Word, Figure, &c. We are perfectly at a loss as to the *Signification* of the Hieroglyphic Characters of the Antients.

**SIGNIFICATION**, in Law, is the Notification of an Act, &c. made to the opposite Party, by a Copy, &c. thereof, given and attested by a proper Officer. Some *Significations* are to be made to the Person himself; or, at least, at his House: For others, 'tis enough they be made to the Party's Attorney, or Agent.

**SILENCIARCY**, *Silenciarius*, an Officer among the ancient Roman Slaves. The *Silenciary*, according to some Authors, was a Slave placed over the rest, to prevent any Noise and Din, and keep them silent. *Seneca*, in his *Epistles*, mentioning the great Care taken to keep the Slaves mute, has given Occasion to *Lipsius*, *Popma*, and some others, to suppose, That the *Silenciary* was established in his Time: But others, as *Pignorius*, think no such Conclusion can be drawn from *Seneca's* Words; nor any Thing, but that they were, even then, very severe in preventing any Noise among the Slaves. As to the Name and Office of the *Silenciary*, 'twas not established till about the Time of *Salvian*; who is the first Author that mentions it. — There were also *Silenciaris* established in the Emperor's Court; called *Quartis Ministri*, and *Silenciaris Palatii*; and honoured with the Title of *Clarissimi*, *Spectabiles*, *Devotissimi*, and in Greek, *Θαυμασιώτατοι*, &c. Most admirable. There was a great Number of them; but only Thirty ordinarily officiated; who were divided into Three Bands, each whereof had its *Decurio*. The Council of *Chalcedon*, call the Body of *Silenciaris*, *Schola devotissimorum Silenciariorum*.

**SILENI**, in Antiquity, Heathen Demi-Gods; the same with the *Satyrs*, which were called *Sileni* when they came to be advanced in Age. Yet was there one principal *Sileni*, elder than any of the rest. *Diod. Siculus* says, He was the Master, or Tutor of *Bacchus*, whom he disciplined nobly, and followed him to the Wars. He quotes an ancient Poet named *Thymetas*, who relates, That the *Sileni* assisted *Bacchus* in the War he waged against the *Titans*; adding, That the first *Silenus* reigned in an Island made by the River *Ymnos* in *Lybia*. He is represented, as having a long Tail hanging behind; which is likewise an Attribute of all his Posterity. The Poets always mount him on an Ass. *Nomus* makes *Silenus* a Son of *Tellus*; and gives him Three Children; *Astreus*, *Maron*, and *Ieneus*. *Servius*, on *Virgil's* Eclogue, makes *Silenus* the Son of *Mercury*; others, the Son of *Pan*, and a Nymph: Others will have him born of the Drops of the Blood of *Caelus*, Father of *Saturn*.

*Bochart*, in his *Canaan*, will have *Silenus* to take his Name from *סילן*, *Silo*, or *סיל*, and *סילן*, *Silan*, the Name of the *Messiah*. He adds, That whatever is attributed to this imaginary God, is all taken from what the Prophets have foretold of the *Jesus Christ*: Thus, whereas 'tis said, The *Messiah* shall be the Instructor of the People; *Silenus* is made Preceptor of *Bacchus*. Because 'tis said, That our Saviour shall bind his Ass to the Vine, and his Colt to the young Vine; *Silenus* is made to ride an Ass. Because our Saviour washed his Garments in Blood, as those who trod the Wine-press; *Silenus* was made to preside over those who press'd the Vintage. Because 'tis added, his Eyes were red by Reason of Wine: *Silenus* was made always fuddled. *Bochart* advances all this with



deal of Distrust, as he has Reason ; it having no Warrant : He adds, That the Devil invented the Fable of *Silenus*, to turn the Mysteries of our Religion into Ridicule. But it must be a very ignorant Devil, to take *Rubent illi oculi ex vino, & dentes ejus ex lacte albescent*, in the Sense he has done ; as if the Words signified any Thing more, in the Propriety of the Hebrew Tongue, than, His Eyes are redder than Wine ; His Teeth whiter than Milk. We may add, That no Body, before *Bochart*, neither Christian nor Idolater, ever saw any Thing of *Jesus Christ* in the Fable of *Silenus*.

**SILQUA**, in Botany, is the Seed-Vessel, Husk, Pod, or Shell of Plants, of the leguminous Kind. Whence *Siliquous Seeds*, &c.

**SILK**, a very soft, fine, bright, delicate Thread ; the Work of an Insect, called the *Silk-Worm*. The Antients were but little acquainted with the Use and Manufacture of *Silk*. They took it for the Work of a Kind of Spider, or Beetle, who spun it out of its Entrails, and wound it with its Feet about the little Branches of Trees. This Insect they called *Ser*, from *Seres*, a People in *Scythia*, who kept it ; whence, the *Silk* it self they called *Sericum*. But the *Ser* has very little Affinity with our *Silk-Worm*, *Bombyx* : The former living Five Years ; but the latter dying annually, envelop'd in a yellowish Cover, or Ball ; which, wound out into little Threads, makes what we call *Silk*. 'Twas in the Isle of *Cos*, that the Art of manufacturing *Silk*, was first invented ; and *Pamphila*, Daughter of *Plaris*, the Inventor. The Discovery was not long unknown to the *Romans*. *Silk* was brought them from *Seres*, where the *Worm* was a Native. But so far were they from profiting by the Discovery, that they could not be induced to believe so fine a Thread should be the Work of a Worm ; and thereupon formed a Thousand Chymical Conjectures of their own.

This Temper rendered *Silk* a very scarce Commodity among them for many Ages : 'Twas even sold Weight for Weight against Gold ; insomuch, that *Vopiscus* tells us, The Emperor *Aurelian*, refused the Empress, his Spouse, a Suit of *Silk*, which she solicited of him with much Earnestness ; merely for its Dearness. At length, Two Monks, coming from the *Indies* to *Constantinople*, in 555 ; brought with them great Quantities of *Silk Worms*, with Instructions for the hatching of their Eggs, rearing and feeding the Worms, drawing out the *Silk*, spinning and working it. Upon this, Manufactures were set up at *Athens*, *Thebes*, and *Corinth*.

About the Year 1130, *Roger King of Sicily*, established a *Silk Manufactory* at *Palermo*, and another in *Calabria* ; managed by Workmen, who were Part of the Plunder brought from *Athens*, *Corinth*, &c. whereof that Prince made a Conquest in his Expedition to the Holy Land. By Degrees, *Meseray* adds, the rest of *Italy* and *Spain* learned from the *Sicilians*, and *Calabrians*, the Management of the *Silk Worms* ; and the working of the *Silk* : And at length the *French*, by Right of Neighbourhood, a little before the Reign of *Francis I.* began to imitate them. The great Advantage the New Manufacture turned to, made our King *James I.* very earnest for its being introduced into *England*. Accordingly, it was recommended several Times from the Throne, and in the most earnest Terms, to plant Mulberry-Trees, &c. for the Propagation of *Silk Worms* ; but, unhappily, without Effect : Tho' from the various Experiments we meet withal in the *Philosophical Transactions*, and other Places, it appears, That the *Silk Worm* thrives and works as well, in all Respects, in *England*, as in any Part of *Europe*.

The *Silk-worm* is an Insect, not more remarkable for the precious Matter it furnishes for divers Stuffs ; than for the many Forms it assumes, before and after its being envelop'd in the rich Cod or Ball it weaves it self. From a Grain, or Seed, which is its first State, it becomes a pretty big *Worm*, of a whitish Colour, bordering on a yellow. When a *Worm*, it shuts its self up in its Cod, and assumes the Form of a kind of greenish Bean, without any Signs of Life or Motion. At length it awakes to become a Butter-Fly ; after making it self a Passage out of its *Silken* Sepulcher. And, at last, dying indeed, it prepares it self, by a Grain, or Seed it casts, for a New Life ; which the Warmth of the Summer Weather assists it in resuming.

As soon as the *Silk-Worm* is arrived at the Size and Strength necessary for the beginning his Cod ; he makes his Web : For 'tis thus they call that slight Tissue, which makes the Beginning, and Ground of this admirable Work. This is his first Day's Employment. On the Second, he forms his Cod, and covers himself almost over with *Silk*. The Third Day, he is quite hid ; and the following Days, employs himself in thickening and strengthening his Cod : Always working from one single End, which he never breaks thro' his own Fault ; and which is so fine, and so long, that those who have examined it attentively, think they speak within Compass, when they affirm, that each Cod contains *Silk* enough to reach the Length of Six English Miles. In

Ten Days time, the Cod is in its Perfection ; and is now to be taken down from the Branches of the Mulberry Tree, where the *Worms* have hung it. But this Point requires a deal of Attention ; for there are some *Worms* more lazy than others ; and 'tis very dangerous waiting till they make themselves a Passage, which usually happens about the Fifteenth Day of the Month.

The first, finest and strongest Cods or Balls, are kept for the Grain ; the rest are carefully wound : or, if 'tis desired to keep them all, or if there be more than can be well wound at once ; they lay them for some Time in an Oven moderately hot, or else expose them, for several Days successively, to the greatest Heats of the Sun, in order to kill the Bean or Maggot ; which, without this Precaution, would not fail to open it self a Way to go and use those New Wings abroad, it has acquired within. Ordinarily, they only wind the more perfect Cods. Those that are double, or too weak, or too coarse, are laid aside ; not as altogether useless, but that, being improper for winding, they are reserved to be drawn out into Skains. The Cods are of different Colours ; the most common are Yellow, Orange-Colour, Isabella, and Flesh-Colour.

There are some also of a Sea-green ; others of a Sulphur Colour, and others White : But there is no Necessity for separating the Colours and Shades to wind them apart ; as all the Colours are to be lost in the future Scouring and Preparing of the *Silk*.

To wind the *Silk* from off the Cods, Two Machines are necessary ; the one a Furnace, with its Copper ; the other a Reel, or Frame, to draw the *Silk*. The Winder, then, seated near the Furnace, throws into the Copper of Water over the Furnace (first heated and boiled to a certain Degree which Custom alone can teach) a Handful or Two of Cods, which have been first well purged of all their loose furry Substance. He then stirs the whole very briskly about with Birchen Rods, bound and cut like Brushes ; and when the Heat, and Agitation have detach'd the Ends of the *Silks* of the Pods, which are apt to catch on the Rods, he draws them forth ; and joining Ten or Twelve, or even Fourteen of them together, he forms them into Threads, according to the Bigness required to the Works they are destined for : Eight Ends sufficing for Ribbons ; and Velvets, &c. requiring no less than Fourteen. The Ends thus joyned into Two or Three Threads, are first passed into the Holes of Three Iron Rods, in the Fore-part of the Reel, then upon the Bobbins, or Pullies, and at last are drawn out to the Reel it self, and there fastened, each to an End of an Arm or Branch of the Reel. Thus disposed, the Workman, giving Motion to the Reel, by turning the Handle ; guides his Threads ; substitutes new ones, when any of them break, or any of the Cods are wound out ; strengthens them where necessary, by adding others ; and takes away the Cods wound out, or that, having been pierced, are full of Water. In this Manner, Two Workmen will spin and reel Three Pounds of *Silk* in a Day ; which is an otherguise Dispatch than is made by the Spinning Wheel, or Distaff. Indeed, all *Silks* cannot be spun, and reeled after this Manner : Either, by Reason the Cods have been perforated by the *Silk-Worms* themselves, or because they are double, or too weak to bear the Water ; or because they are coarse, &c. Of all these together, they make a particular Kind of *Silk* called *Fleuret* : Which being carded, or even spun on the Distaff, or the Wheel in the Condition it comes from the Cod, makes a tolerable *Silk*.

As to the Cods, after opening them with Scissars, and taking out the Beans (which are of some Use for the feeding of Fowl) they are steeped Three or Four Days in Troughs, the Water whereof is changed every Day to prevent their stinking. When they are well softened by this Scouring and cleared of that gummy Matter ; the *Worm* had lined the Inside withal, and which renders it impenetrable to the Water, and even to Air it self ; they boil them Half an Hour in a Lie of Ashes, very clear and well strained : and after washing them out in the River, and drying them in the Sun, they card and spin them on the Wheel, &c. and thus make another Kind of *Fleuret*, somewhat inferior to the former.

The several Preparations which *Silks* undergo, to fit them to be used in the Manufacture of *Silken Stuffs*, are the *Spinning*, *Reeling*, *Milling*, and *Dying*. The Two first we have already spoke of, as they are concerned in drawing the *Silk* from off the Cods. As to the Spinning and Reeling of *Raw Silks*, already off the Cods, such as they are brought hither from *Italy*, the *Levant*, &c. the first is chiefly performed on the *Spinning-wheel* ; and the latter, either on *Hand Reels*, or on Reels mounted on Machines, which serve to reel several Skains at the same Time. As to the *Milling*, they use a Mill composed of several Pieces, which may Mill Two or Three Hundred Bobbins at once, and make them into as many Skains. See *SPINNING*, *REELING*, *MILLING*, and *DYING*, each under its proper Article.



**Raw SILK**, is that taken from the Cod, without Fire, and wound without boiling; such is most, if not all, that is brought into *England* from the *Levant*. In the *French Silk-works*, the greatest Part of this *Silk* passes for little better than a Kind of very fine *Fleuret*; yet, when spun, it makes a bright Thread, and serves for the Manufacture of Stuffs of moderate Value, and Lustre: But the *Raw Silks* of the *Levant*, whence most of ours come, are exceeding fine and beautiful. This Difference arises hence, That in *France* the best Cods are spun and wound in boiling Water, and only the Refuse made into *Raw Silk*: Whereas, in the *Levant*, there is no such thing as Spinning or Winding in the Fire; but the *Silks* are all sent in Balls or Masses, as they are drawn from off the Cods: So that they are only distinguished by their Quality of Fine, Middling, and Coarse.

**Boil'd SILK**, is that boiled in Water, to facilitate the Spinning and Winding. This is the finest of all the *Silks* manufactured in *France*, and is seldom used, but in the richest Stuffs, as *Velvets*, *Taffeta's*, *Damasks*, *Brocades*, &c. There is also another Kind of *Boiled Silk*, which is prepared by boiling, to be milled; and which cannot receive that Preparation, without being first passed through boiling Water. By the Laws of *France*, 'tis prohibited to mix Raw with *Boil'd Silk*; both as such a Practice spoils the Dyeing, and as the raw *Silk* corrupts and cuts the boiled.

**Thrown or Twisted SILKS** are such, as, beside their Spinning and Winding, have had their Milling or *Throwing*. This they have in a different Degree, as they are passed oftener, or seldomer, over the Mill. Properly, however, *Thrown Silks*, are those wherein the Threads are pretty thick *thrown*, and are twisted several times.—*Slack Silks* are such as are not twisted, but are prepared, and died, for Tapestry, and other Works, with the Needle. See **THROWSTER**.

**Eastern SILK**: That particularly thus called, is not the Work of the *Silk-Worms*, but comes from a Plant that produces it, in Pods, much like those of the *Cotton-Tree*. The Matter this Pod contains is extremely white, fine, and moderately bright: It spins easily, and is made into a Kind of *Silk*, that enters the Manufacture of several *Indian* and *Chinese* Stuffs.

**SPIDER-SILK**. Within a few Years the Secret has been found in *France*, of procuring and preparing *Silk* of the Webs of *Spiders*; and using it in several Manufactures. This Discovery is owing to M. *Bon*, in 1710. who published a Dissertation on the Subject; whence what follows is extracted. See **SPIDER-WEB**.

*Spiders* are usually distinguished, either with regard to their Colour; as, into Black, Brown, Yellow, White, &c. or, with regard to the Number, or Arrangement, of their Eyes; some having 6, others 8, others 10. But with regard to the *Silk-Spider*, M. *Bon* reduces them all to two Kinds, those with long Legs, and those with short; which last, are those which furnish the *Raw Silk*.

The *Silk-Spider* make a *Silk*, every whit as beautiful, strong, and shining, as the *Silk-worm*: It spins it out of the *Anus*, around which are Five Papillæ, or small Nipples, and behind these, two others; all musculous, and furnished with Sphincters. These Nipples serve, as so many wire-drawing-Irons, to form and mould a Liquor, which, when dried in the Air, after being drawn through them, is to be the *Silk*. Each of these Nipples, M. *Reaumur* observes, consists of a Number of lesser and insensible ones; which one may be convinced of, by pressing a *Spider's* Belly between the Fingers, to oblige the Liquor to flow into the Nipples; for by this Means, applying the Finger against the *Anus*, several distinct Threads will be drawn out through the several Perforations of the Nipples. The Threads are too fine to be told with any Certainty; but M. *Reaumur* reckons, each larger Nipple may send forth six or seven. Hence we see, how the *Spiders* make their Threads bigger, or smaller: For as, before they begin to spin, they always apply more or fewer of these six Nipples, against the Body whence the Web is begun; or as they apply each more or less strongly, so as more or fewer of the insensible Nipples come to take; the Thread thus spun, will be a Compound of more or fewer of the single Threads. Indeed, as the Threads come from the *Anus*, all joined together, they appear to be single; but M. *Bon* has distinguished one of the single ones to consist of 15 or 20 distinct Threads.

The Threads are of two Kinds: The First is weak, and only serves for that kind of Web wherewith they catch Flies. The Second is much stronger, and serves to wrap up their Eggs in; which, by this means, are sheltered from the Cold, as well as from Insects, which might otherways gnaw and spoil them. These Threads they wind very loosely round the Eggs, resembling the Cods or Bags of *Silk-Worms*, that have been prepared and loosened for the Distaff. The *Spider-Bags* are of a Grey Colour when new; but turn blackish when long exposed to the Air: Indeed, one might find other *Spider-bags* of other Colours, and which would afford a better *Silk*, but their Scarcity would render

the Experiment difficult; for which Reason we confine ourselves to the Bags of the commonest *Spiders*, which are the short-legg'd Kind. These always find out some Place secure from the Wind and Rain, to make their Bags; as, hollow Trees, the Corners of Windows, or Vaults, or under the Eaves of Houses. By collecting a Quantity of these Bags, a new *Silk* is made, inferior in nothing to the common *Silk*. It takes all Kinds of Dyes, and may be made into all Kinds of Stuffs. M. *Bon* had Stockings, and Gloves, made of it, which he presented to the Academy; and others to the Royal Society.

For the Manner of preparing the Bags to get the *Silk*, 'tis thus: After having gather'd 12 or 13 Ounces of these Bags, M. *Bon* had them well beaten for some Time, with the Hand, and a Stick, to get out all the Dust: He then washed them, in luke-warm Water, till they left the Water very clean: After this, he laid them to steep, in a large Vessel, with Soap and Salt-petre, and Gum Arabic. The Whole was left to boil over a gentle Fire, for three Hours. The Bags were next wash'd, in warm Water, to get out the Soap; and, after all, laid to dry some Days, to fit them for Carding; which was perform'd by the common *Silk-Carders*, but with Cards much finer than ordinary. By this Means, he had a *Silk*, of a very particular Ash-colour, which was easily spun, and the Thread spun from it, both stronger and finer, than that of common *Silk*; which shews, that all sorts of Work may be made of it: Nor is there any Reason to fear, but it will stand any Trials of the Loom, after having pass'd that of the *Stocking-Weavers*.

The only Difficulty, now, is in procuring a sufficient Quantity of *Spider's* Bags to make any considerable Work of it: Which M. *Bon* observes, would be no Difficulty at all, had we but the Art of Breeding them as they do *Silk-Worms*. For they multiply much more; every *Spider* laying 6 or 700 Eggs, whereas the *Silk-Worms* don't lay above 100; yet are these last, so tender, &c. that one Half die without making any Bags, or are hinder'd by some little Accident, from making their Bags: Whereas the *Spiders* hatch of themselves, without any Care, in the Months of *August* and *September*, in Fifteen or Sixteen Days after they are laid; the Old *Spiders* that lay them, dying soon after. The young Ones thus bred, live Ten or Twelve Months without eating, and continue in their Bags without growing, till the hot Weather putting their viscid Juices in Motion, forces them to come forth, spin, and run about to seek Food. Were a Way, therefore, found of breeding young *Spiders* in Rooms, they would, doubtless, furnish a much greater quantity of Bags than *Silk-Worms* do. For of Seven or Eight hundred young *Spiders*, which M. *Bon* kept, scarce one died in a Year; whereas of One hundred *Silk-Worms*, not Forty lived to make their Bags. M. *Bon* having order'd all the short-legg'd *Spiders* that could be found in the Months of *August* and *September*, to be brought to him, shut them up in Paper Coffins, and Pots; covering the Pots with Papers, which he pricked full of Pin-holes, as well as the Coffins, to give them Air. He fed them with Flies, and found sometime afterwards the greatest part of them had made their Bags. The same Excellent Person found that *Spiders* Bags, with regard to their Weight, afford much more *Silk* than those of the *Silk-Worms*. As a Proof hereof, he observes, That Thirteen Ounces yield near Four Ounces of clear *Silk*, Two Ounces whereof, will make a Pair of Stockings; whereas Stockings of common *Silk* weigh Seven or Eight Ounces: Nor is there any Venom in the *Silk*, or even in the *Spider*, as many have imagined. M. *Bon* has been bit by them several times, without any manner of harm; and as for the *Silk*, 'tis used with very good Success, to stop Bleeding and cure Wounds, the natural Gluten thereof acting as a kind of Balsom. It likewise yields, by Distillation, several Specific Medicines, particularly great Quantities of Spirit, and Volatile Salt, which being prepared after the same Manner as that drawn from the Bags of *Silk-Worms*, in making the *English Drops*, so famous over all *Europe*; may serve to make other Drops of greater Efficacy, which M. *Bon* calls *Drops of Montpellier*, to be used in all sleepy Diseases.

M. *Reaumur* being appointed by the *Royal Academy*, to make a further Enquiry into this New *Silk-work*, has rais'd several Objections and Difficulties against it; which are found in the Memoirs of the *Academy* for the Year 1710. The Sum of what he has urged, amounts to this: The Natural Fierceness of the *Spiders*, renders them unfit to be bred and kept together, Four or Five thousand being distributed into Cells, 50 in some, 100 or 200 in others; the big Ones kill'd and eat the less, so that in short time, there were scarce left one or two in each Cell: And to this Inclination of mutually caring one another, M. *Reaumur* ascribes the Scarcity of *Spiders*, considering the vast Number of Eggs they lay. But this is not all: He even affirms, That the *Spider's* Bag is inferior to that of the *Silk-worm*, both in Lustre and Strength; and that it produces less Matter to be manufactured. The Thread of the *Spider's* Web only bears a Weight of Two Grains without breaking; that of



the Bag bears 36. The latter, therefore, in all Probability, is Eighteen Times thicker than the former; yet is it weaker than that of the *Silk-worm*, which bears a Weight of Two Drams and a Half. So that Five Threads of the Spider's Bag must be put together to equal one Thread of the *Silk-worm's* Bag. Now, 'tis impossible these should be applied so juttly over one another, as not to leave little vacant Spaces between them, whence the Light will not be reflected; And of Consequence, a Thread thus compounded, must fall short of the Lustre of a solid Thread. Add to this, that the Spider's Thread cannot be wound off, as that of the *Silk-worm* may; but must, of necessity, be Carded; by which means being torn in Pieces, its Evenness, which contributes much to its Lustre, is destroy'd. In effect, this want of Lustre was taken Notice of by M. de la Hire, when the Stockings were presented to the *Academy*. Again, Spiders furnish much less *Silk*, than the Worms. The largest Bags of these latter, weigh Four Grains; the smaller Three Grains; so that 2304 Worms, produce a Pound of *Silk*. The Spider's Bags don't weigh above one Grain: Yet, when cleared of their Dust and Filth, lose Two thirds of their Weight. The Work of 12 Spiders, therefore, only equal that of one *Silk Worm*; and a Pound of *Silk* will require at least 27648 Spiders. But, as the Bags are wholly the Work of the Females, who spin them to deposit their Eggs in; there must be kept 55296 Spiders, to yield a Pound of *Silk*. Yet will this only hold of the best Spiders; those large ones ordinarily seen in Gardens, &c. scarce yielding a Twelfth Part of the *Silk* of the others. 280 of these, he shews, would not do more than one *Silk-Worm*; and 663552 of them would scarce yield a Pound.

#### Commerce of SILKS.

**French SILKS.** 'Tis only in the most Southern Provinces of France, that *Silk* is cultivated, Mulberry Trees planted, and Worms bred. The principal, are those of *Languedoc*, *Dauphine*, *Provence*, *Avignon*, *Savoy* and *Lyons*. This last Place, indeed, furnishes very few *Silks* of its own Growth; but is the great Staple whence the Merchants of *Paris* and the other Cities are to fetch them: at least, they are obliged to have them pass through *Lyons*, if they bring them from elsewhere, either by Land or Sea. There are computed to enter *Lyons*, *Communibus Annis*, 6000 Bales; the Bale valued at 160 Pound Weight: Of which 6000 Bales, there are 1400 from the *Levant*, 1600 from *Sicily*, 1500 from *Italy*, 300 from *Spain*, and 1200 from *Languedoc*, *Provence* and *Dauphine*. At the Time when the Manufactures of *Lyons* were in their Prosperity, there were reckoned 18000 Looms employ'd in the *Silk* Manufacture; but they are so fallen, that even in 1698, there were not reckon'd 4000. The Decay is not less notable at *Tours*. They had formerly 700 Mills for winding and preparing the *Silks*; 8000 Looms to weave them, and 40000 Persons employ'd in the Preparation and Manufacturing thereof; which are now reduced to 70 Mills, 1200 Looms, and 4000 Persons.

**Sicilian SILKS.** The Commerce of the *Silks* of *Sicily*, is very considerable; and the *Florentines*, *Genoese* and *Lucese*, are the People who chiefly make it. Great Quantities are Yearly brought thence, especially from *Messina*; part whereof they use in their own Manufactures, and sell the rest to their Neighbours, the *French*, &c. with Profit. The *Italians* have this Advantage, especially the *Genoese*, over other People, That having large Establishments in the Island, they are reputed as Natives, and pay no Duty for the Export. Part of the *Sicilian Silks* are Raw; the rest Spun and Mill'd; of which last Kind, those of *St. Lucia* and *Messina*, are the most valued. The raw, unwrought *Silks* are always sold for ready Money; the others, sometimes, in Exchange for other Goods.

**Italian SILKS.** The *Silks* brought from *Italy* are partly Wrought, and partly Raw, and Un-wrought. *Milan*, *Parma*, *Lucca* and *Modena*, furnish none but the latter Kind; *Genoa* most of the former; *Bologna* affords both Kinds.

**Spanish SILKS.** are all Raw, and are Spun, Mill'd, &c. in *England*, according to the several Works they are to be used in.

**SILKS of the Levant**, are all Raw. One Advantage we have in the Commerce of the *Levant*, in *Silks*, wanting in those of *Sicily*, is, That the latter are confined to a particular Season of the Year; whereas the former are bought at all Times. They are brought from *Aleppo*, *Tripoli*, *Scyda*, from the Isle of *Cyprus*, *Candia*, &c. but the principal Place of Commerce, especially for the *Silks* of *Persia*, is *Smyrna*. The *Silks* are brought hither in Caravans, from the Month of *January* to *September*. The Caravans in *January*, are laden with the finest *Silks*; those of *February* and *March* bring indifferent ones; the rest, the coarsest. They all come from the several Provinces of *Persia*, chiefly those of *Quilan* and *Schirwan*, and the City of *Schamackia*, situate near the Edge of the *Caspian Sea*; from which three Places, a *Dutch*

Author assures us, there don't come less than 30000 Bales of *Silk* in a Year. *Ardebil* or *Ardebil*, another City of *Persia*, not far distant from these *Silk* Countries, is the Place where the *Silks* are laid up, and whence the Caravans set out for *Smyrna*, *Aleppo*, and *Constantinople*; and 'tis this City, with *Schamackia*, that have always been esteem'd the Centre of the *Silk* Trade; which has been several Times attempted to be removed from *Smyrna* and the *Mediterranean*, in favour of *Archangel* and the *White Sea*, by carrying them across *Muscovy*, by the *Volga* and *Dwina*, two Rivers that traverse the principal Provinces of that vast Empire. This new Course of the *Persian Silks* into *Europe*, was first propos'd by *Paolo Centurio*, a *Genoese*, to *Czar Basil*, under the Pontificate of *Leo X.* The *French* had the same Design in 1626. The Duke of *Holstein*, in 1633, sent Embassadors to the Court of *Persia* purely with the same View: And in 1668, the *Czar Alexis Michael* attempted the thing himself; but was disappointed by the Rebellion of the *Cossacks*; and the surprize of *Astracan*. In 1688, the Commerce of *Persian Silks* had like to have been removed from *Smyrna* by an Earthquake; which almost overturn'd the whole City: And, doubtless, the Removal had been effected, but for the vigorous Means used by the *Turks* to prevent it. *Smyrna*, however, still remains in her ancient Possession; and the several Nations of *Europe* continue every Year to send their Fleets, to fetch away the *Silks*; and Matters are like to remain so, unless the Conquests made by the late *Czar*, along the *Caspian Sea*, enable his Successors, as 'tis certain he himself had such a Thing in View, to put this great Design in Execution.

**Chinese, Japanese and Indian SILKS.** Several Provinces of *China* are so fertile in Mulberry-trees, and their Climate so agreeable to the Nature of *Silk-Worms*, that the Quantity of *Silk* here produced is incredible: The single Province of *Tchekiam* might supply all *China*, and even a great Part of *Europe*, with this Commodity. The *Silks* of this Province are the most esteem'd, though those of *Nanquin* and *Canton* be excellent. The *Silk* Trade is the Principal in *China*, and that which employs the most Hands. But the *European* Merchants, who meddle in it, especially in Work'd *Silks*, are to be careful of the Spinning, &c. the Waste being usually very great, as the *French East-India Company* lately found to their Cost. — *Japan* would not afford fewer *Silks* than *China*; but that the *Japanese*, a barbarous and distrustful People, have interdicted all Commerce with Strangers, especially *Europeans*; excepting with the *Dutch*; who are said to be admitted on certain Terms, related by *Tavernier*, but which we must own we can't credit, so much Horror they raise. Accordingly, the *Dutch* have endeavour'd to vindicate themselves by the Pens of several famous Writers. — The *Silks* of the States of the Great Mogul, are brought almost wholly from *Kasem-bazar*, a Mediterranean Place, whence they are convey'd by a Canal of Fifteen Leagues into the *Ganges*, by which, they are forwarded Fifteen Leagues further, to the Mouth of the famous River of *Indostan*. The *Silk* of *Kasem-bazar* is Yellowish; as are also those of *Persia* and *Sicily*; there being none, that we know of, naturally White, but that of *Palestine*. The *Indians*, however, whiten it with a Lye made of the Ashes of a Tree, call'd *Adam's Fig-tree*; but as the Tree is pretty scarce, the *Europeans* are forced to take the greatest Part of their *Silks* in the native Yellow. *Kasem-bazar* alone, is computed to furnish every Year Twenty-two thousand Bales of *Silk*, each Bale weighing 100 Pounds. The *Dutch* buy it almost all up; not to bring into *Europe*, no more than they do that of *Japan*; but to exchange it for other rich Merchandizes; particularly Bars of Silver, &c.

**SILLON**, in Fortification, is an Elevation of Earth made in the Middle of the Moat, to fortify it, when too broad: It is otherwise called *Envelope*, which is the more common Name. See *ENVELOPE*.

**SILVER**, a white Metal, holding the second Place among Metals; being of all others, after Gold, the finest, purest, most ductile, and most precious. See *METAL*.

There are *Silver* Mines in all the Four Quarters of the World. *Europe* has its Share; nor is our own Island quite destitute thereof, tho' it has none of much Value.

The Mines of *Peru*, and some other Parts of *America*, are much the richest, and most abundant. They appear almost inexhaustible: Particularly those of *Potosi*, which continue to be dug with equal Advantage as when first discovered; with this only Difference, That the Veins which were then almost in the Surface of that famous Mountain, are now sunk to prodigious Depths, the Workmen going in to them by a painful Descent of Four or Five Hundred Steps. Many Millions of *Indians* have perished in them; and prodigious Numbers continue to be destroyed yearly.

The Ores, or Mineral Stones they dig, are not all of the same Quality, Consistence, or Colour; some are white, or ash-coloured, spotted with red, or blue; and called *Plata blanca*. Others are black, and called *Plomo-romero*. These last are the richest and the easiest wrought. No *Mercury* being



being here needed; nor any Thing, but to put them in the Fire; Where the Lead evaporating, leaves the *Silver* pure. The *Indians*, who, till the Arrival of the *Spaniards*, knew nothing of the Use of *Mercury*, melted none but of this Kind of Mineral. The *Rosicler*, is another black Mineral distinguished by whetting and rubbing it against Iron, which turns it red. 'Tis very rich, and the Metal it yields, of the best Sort. The *Loroche* burns like Talc, and looks as if silvered; tho' it does not yield much. The *Paco* is a yellow red, very soft, and found almost broke in Pieces; 'tis not rich. The *Cobrizzo* is green, and half friable. Tho' the *Silver* be visible, yet 'tis exceedingly difficultly drawn from it, by Reason of the Copper wherewith 'tis intermixed. Lastly, the *Aramnear*, which is only found in *Potosi*, and that only in the Mine of *Cotamito*, consists of Threads of pure *Silver*, interwove like a *Silver* Galoon, that has been burnt to get out the Silk.

The *Silver-Veins*, of what Quality soever, are usually richer in the Middle than towards the Extremes. But the richest Places are those where the Veins intersect. 'Tis reckoned a great Addition to the Richness of a Mine to be near a River, for the Advantage of Mills to grind Oar. At *Lipes* and *Potosi*, for Instance, the *Caxon* of Oar must yield Ten Marks to defray Expences; whereas, at *Tanava*, there need not above Five.

The most usual Way of separating the *Silver* from the Oar, is by what they call *Pignes*. See *PIGNES*. Sometimes, however, they use nothing but Fire frequently repeated; or *Aqua Fortis*.

What renders the Working of the Mines exceedingly dangerous, is the Exhalations arising from them; which are even felt on the Out-side; and make an Impression on Animals grazing in the Neighbourhood; but in the In-side, stupify the Miners, none of whom can bear so poisonous an Air above a Day together. Sometimes 'tis so fatal, that it kills on the Spot; and obliges them to stop up the Veins again, whence it exhales. The Mines of *Potosi*, are much the least subject to them; and yet, without the Herb *Paraguay*, the Infusion whereof is taken by the Miners, as we do that of Tea, those Mines must be soon abandoned. Tho' the Mines of *Potosi* and *Lipes*, still keep up their Reputation, yet are there several discovered within these few Years, that exceed them much in Richness: Such are the Mines of *Oruro*, Eighty Leagues from *Arica*, and those of *Ollachea*, near *Cusco*, opened in 1712. 'Tis remarkable, that most of the Mines in *America* are found in cold and barren Places.

The Method of separating *Silver* from the Ore, in *Europe*, is the same as that of Gold: That is, by Means of *Quick-Silver*; with this Difference, that for *Silver*, to every Fifty Hundred Weight of Ore, is added One Hundred Weight of Rock-Salt, or some other natural Salt. That curious Operation may be seen at length under the Article *GOLD*.

To separate the *Silver* from the *Mercury*, wherewith 'tis amalgamated; they have a Furnace open a-top; and the Aperture covered with a kind of Capital made of Earth, of a Cylindrical Form; that may be clapp'd on, or taken off at Pleasure. The Mats of *Silver*, and *Quick-silver*, being laid in the Furnace, the Capital applied, and the Fire lighted underneath; by this Means, the *Quick-silver* rais'd by the Action of the Fire, in Form of Vapour, is caught in the Capital, and taken thence, to be used in the Second Operation.

The Standard of fine *Silver* is 12 Penny-weights, each consisting of 24 Grains. When 'tis below this, it must be raised to it by Refining; which is usually performed by means of Lead. In order to this, a Coppel is fill'd with a Mixture of Brick-ashes, and Ashes of a Bullock's and other Bones. 'Tis set on the Fire, and heated red hot; in which State the *Silver* and Lead are put in together, in the Proportion of a Pound of Lead to Eight Ounces of *Silver*, and even somewhat more Lead, if the *Silver* be very coarse. As these Two Metals melt together, the Copper, before mixed with the *Silver*, dissipates in Smoke, or goes away with the Scum; and so does the Lead it self; leaving the *Silver* alone in the Coppel, in its proper Degree of Fineness. In this Method of Refining, wherein 6 or 7000 Pounds may be refined at once; the Metal is drawn out of the Coppel Two ways; the one by plunging in it, while still liquid, a thick Bar of Iron, round which, the *Silver* sticks in Form of a Shell, or Crust; repeating this again and again: The other, is by letting the Coppel stand till 'tis cold; in the Bottom whereof, the *Silver* fixes in Form of a Cake.

Besides the Refining of *Silver* with Lead, there is another Manner of doing it with *Salt-Petre*; the Manner whereof, see described under the Article *REFINING*.

But both the one and the other are tedious and troublesome; when performed on large Quantities. This occasioned M. *Hombert* to endeavour to shorten the Operation; which he effected with good Success. His Method is; To calcine the *Silver* with Half its Weight of common Sulphur; and after melting the whole together, to cast a Quan-

tity of Steel Filings upon it, at several Times: Upon this, the Sulphur quits the *Silver*, and joins it self to the Iron, and both are converted into Scoria, which swim on the *Silver*; and the Metal it self is found pure at the Bottom of the Crucible.

The Essay of *Silver* is also made by the Coppel, in the same Manner as the refining by Lead. If the *Silver*, after this Essay, preserve its Weight, 'tis Standard; if it lose, the Grains, or even Penny-weights of its Diminution, are accounted. See *ESSAY*: See also *STANDARD*.

*SILVER-Wire*, is *Silver* drawn thro' the Holes of a Wire-drawing-Iron, and by this Means reduced to the Fineness of a Thread or Hair. The Manner of drawing it, see under the Article *GOLD-WIRE*.

*SILVER-Leaf*, is that the Gold-beaters have reduced into fine, thin Leaves, to be used by Gilders, &c. See *GOLD-LEAF*.

*Shell-SILVER*, is made of the Shreads of *Silver* Leaves, or of the Leaves themselves: Used in Painting and *Silvering* certain Works. *Shell-Silver* is prepared after the same Manner as *Shell-Gold*. See *GOLD*.

*SILVER*, in Chymistry, is called *Luna*, Moon; and several Preparations are made from it: Particularly, a *Tincture of Silver*, by dissolving thin *Silver* Plates, or *Silver* Shot in Spirit of Nitre; and pouring the Dissolution in another Vessel full of Salt-water. By this Means, the *Silver* is immediately precipitated in a very white Powder, which they wash several Times in Spring-Water. This Powder they put in a Matras; and pour rectified Spirit of Wine, and Volatile Salt of Urine upon it. The whole is left to digest in a moderate Heat for Fifteen Days; during which, the Spirit of Wine assumes a beautiful Sky-blue Colour, and becomes an Ingredient in several Medicines. This is also called *Potable Silver*, or *Argentum Potabile*. *Silver* is likewise converted into Crystals, by means of the same Spirit of Nitre; and 'tis this is called *Vitriol of Silver*. The *Lapis Infernalis* is nothing but *Silver* dissolved in *Aqua Fortis*, and left to crystallize.

*Quick-SILVER*. See *MERCURY*.

*SILVERING*, the Covering of any Work with *Silver*. Leaf. 'Tis usual to *Silver* Metals, Wood, Paper, &c. Which is performed either by Fire, by Oil, or by Gue. Metal-Gilders *silver* by the Fire: Painter-Gilders, all the other Ways. See *GILDING*.

*SILVESTRI*, a red Grain used to Dye in Scarlet. The Tree that produces it, is peculiar to the Province of *Guatemala* in *New Spain*. 'Tis not unlike the Tree that produces the *Cochineel*, only in this, that the Fruit containing the Grain *Silvestris*, is somewhat longer than that of the *Cochineel*-Tree: When the Fruit of the former is ripe, it opens of it self, and casts out its Seed upon a gentle shaking; and the *Indians* gather it in Earthen Plates set under the Tree for the Purpose. Eight or Ten of these Fruits do not yield above an Ounce of Seed; whereas Four of the *Cochineel* Fruits, yield an Ounce of Insects. The two Drugs are much like one another, as to the Eye, but prove very different; the Tincture of *Cochineel* being infinitely more beautiful than that of *Silvestris*: See *COCHINEEL*.

*SIMA*, in Architecture, a Term used by *Wolffius*, and some other Writers, for what we otherwise call *Cymatium* or *Simatium*. See *CYMATIUM*.

*SIMATIUM* or *SIMAISE*, in Architecture: See *CYMATIUM*. *Simatium* and *Cymatium*, are generally confounded together; yet, in effect, they ought to be distinguished: the latter being the Genus, and the former the Species. *Simatium* of *Sima*, camous, according to *Fellicius*, is the last and uppermost Member of grand Corniches, called particularly the great *Doucine* or *Gula recta*; and by the *Greeks*, *Epitrites*. In the Antique Buildings, the *Simatium*, a-top of the Doric Corniche, is generally in Form of a Cavetto, or Semi-Scotia; as we see particularly in the Theatre of *Marcellus*: 'This, some modern Architects have imitated; but in the *Ionic* Order, the *Simatium* is always a *Doucine*. The *Simatium*, or *Doucine*, then, is distinguished from the other Kinds of *Cymatia*, by its being camous.

*SIMELIUM*, a Term purely *Latin*, signifying a little Table, with Ranges of little Cavities therein, for the disposing of Medals in Chronological Order. The Word is but ill wrote: It should rather be *Cymelium*, as being formed of the *Greek* *Κυμάλιον*, Curiosities, or a Cabinet of precious Things. We more usually say, A Cabinet of Medals, than a *Simelium*.

*SIMILAR*, in Arithmetic and Geometry. Those Things are said to be *Similar*, or *alike*, which cannot be distinguished but by their Com-presence; that is, either by immediately applying the one to the other, or some other Third to them both. There is nothing, therefore, found in one of the *Similar* Things, but is equally found in the other; that is, if you note all the Things in A, which may be discerned and conceiv'd, without assuming any other; and, in like Manner, note all the Things in B, which may be



be thus conceived : and A be *Similar* to B; all Things in A will be the same with those in B.

Since a Quantity cannot be understood, otherwise, than by assuming some other Quantity to refer it to; *Similar* Things, notwithstanding their Similitude, may differ in Quantity: And since, in *Similar* Things, there is nothing wherein they differ, beside the Quantity; Quantity itself is the Internal Difference of *Similar* Things. See SIMILITUDE.

*SIMILAR Parts*, as A a, have the same Ratio to their Wholes B b; and if the Wholes have the same Ratio to the Parts, the Parts are *Similar*. *Similar Parts* A a, are to each other as their Wholes B b. See PART.

*SIMILAR Rectangles*, are those which have their Sides about the equal Angles, proportional. See RECTANGLE.

Hence 1°. All Squares must be *Similar Rectangles*. See SQUARE. — 2°. All *Similar Rectangles* are, to each other, as the Square of their homologous Sides.

*SIMILAR Triangles*, are such as have all their three Angles respectively equal to each other. See TRIANGLE.

Hence 1°. All *Similar Triangles* have their Sides about the equal Angles, proportional. — 2°. All *Similar Triangles* are, to each other, as the Squares of their homologous Sides.

*SIMILAR Polygons* are those, whose Angles are equal, and their Sides proportional.

And the like of other *similar* rectilinear Figures. See POLYGON, and RECTILINEAL Figure.

Hence, all *Similar Polygons* are, to each other, as the Squares of the homologous Sides.

*SIMILAR Arches*, are such as are *Similar*, or equal Parts of their respective Circumferences.

*SIMILAR Segments* of Circles, are such as contain equal Angles. See SEGMENT.

*SIMILAR Conic-Sections*, are those whose Diameters make Angles equal to those of their Ordinates; i. e. those which are equilateral and equiangular.

*SIMILAR Plain Numbers*, are those which may be ranged into *Similar Rect-angles*; i. e. into Rectangles, whose Sides are proportional: As 6 multiplied by 2, and 12 by 4; the Product of one whereof is 12, and the other 48, are *Similar Numbers*.

*SIMILAR Solid Numbers*, are those whose little Cubes may be so ranged as to make *Similar* and Rectangular Parallepipeds.

In all *SIMILAR Figures*, the homologous Angles are equal; and the homologous Sides proportional. All regular Figures, and *Similar* irregular ones, are in a duplicate Ratio of their homologous Sides. Circles, and *Similar Figures*, inscribed in them, are, to each other, as the Squares of the Diameter. See FIGURE.

*SIMILAR Angles*, are also equal Angles. In solid Angles, when the Planes, under which they are contained, are equal both in Number and Magnitude, and are disposed in the same Order; they are *Similar*, and consequently equal. See ANGLE.

In *SIMILAR Triangles*, and *Parallelograms*, the Altitudes are proportional to the homologous Sides; and the Bases are cut proportionably by those Sides. See TRIANGLE, &c.

*SIMILAR Disease*, a Disease of some simple, solid Part of the Body; as of a Fibre, with regard to its Tension or Flaccidity; of a Membrane; a nervous Canal, &c. See DISEASE.

*SIMILAR Parts*, in Anatomy, those Parts of the Body which, at first Sight, appear to consist of like Parts, or Parts of the same Nature: Of these we usually reckon Ten, viz. The Bones, Cartilages, Ligaments, Membranes, Fibres, Nerves, Arteries, Veins, Flesh, and Skin: Each of which see under its proper Article. Dr. Greve, in his Anatomy of Plants, observes, that these have, likewise, their *Similar*, and Organical Parts. See PARTS.

*SIMILE*, or *SIMILITUDE*, in Rhetoric, &c. a Comparison of two Things, which, though different in other Respects, yet agree in some one: As, He shall be like a Tree planted by the Water-side, &c. The Difference between a *Simile*, and a *Comparison*, consists in this; That the *Simile* properly belongs to what we call the *Quality* of the Thing, and the *Comparison* to the *Quantity*. See COMPARISON.

*SIMILITUDE*, in Arithmetic, Geometry, &c. the Relation of two Things *similar* to each other; or which are only distinguishable by Com-presence. See SIMILE. The Notion of *Similitude*, which now makes some Figure in Geometry, &c. is owing to M. Leibnitz: 'Twill be rendered easy by the following Instance. Suppose two Watches perfectly alike; the one belonging to *Caius*, the other to *Gracchus*. If, now, *Caius* pull out his Watch in Presence of *Gracchus*; the latter will be surprized, and fancy it his own; but he will perceive it different from his own, upon pulling out his own: that is, *Gracchus* distinguishes *Caius's* Watch from his own, by their Com-presence; or, by applying the one immediately to the other.

*Euclid*, and after him most other Authors, demonstrated all Things from the sole Principle of Congruity: *Wolgius*, in lieu hereof, substitutes that of *Similitude*; which, he tells us, was communicated to him by M. *Leibnitz*, and which he finds of very notable Use in Geometry, as serving to demonstrate many Things directly, which are only demonstrable from the Principle of Congruity, by an Ambages.

*SIMONICAL* is applied to a Person guilty of *Simony*; or of purchasing a Benefice, or other sacred Matter, with Money. See SIMONY. A *Simoniacal* Person convict, is infamous, and incapable of holding any Benefice.

*SIMONIANS*, a Sect of ancient Hereticks, the first that ever disturb'd Christianity; if they might be said to do so, who were little more than mere Philosophers, and made Profession of Magic. *Simon Magus*, so often mentioned in the Acts, was their Leader, and died under the Emperor Nero; St. Peter still surviving: So that *Clemens Alexandrinus* is mistaken, when he makes *Simon* posterior to *Marcion*. St. *Epiphanius* says expressly, That the first Heresy was set on foot by *Simon the Magician*, born in a little City of *Samarina*, who pretended to be the great Virtue and Power of God, sent from Heaven to Earth. Among the *Samaritans* he made himself pass for God the Father, and among the *Jews*, for the Son. He patch'd up a Kind of medly System, out of the Philosophy of *Plato*; the religious Fables of the Heathens, and Christianity: Particularly, from the *Platonists* he borrow'd abundance of Things relating to the Worship of Angels, which he perverted to Uses of Magic; pretending, there was no Salvation, but by the Invocation of Angels, who were, as it were, the Mediators between God and Man: To which superstitious Worship of Angels it is that St. *Paul* seems to refer in his Epistle to the *Colossians*. The *Gnosticks*, whereof the same *Simon* was the Father, adopted the same Practice of worshipping Angels, and even improved on it. See Gnosticks.

*SIMONY*, the Crime of trading with sacred Things, particularly of purchasing a Benefice with Money. By the *English* Canons, Anno 1229, *Simony* is not only committed by an Agreement for Money in Hand, or to be paid yearly; but for any other Profit or Emolument; any Reward, Gift, or Benefit, directly or indirectly; or by Reason of any Promise, Grant, Bond, &c. and this, either in Acceptance of a Living, or in an Exchange or Resignation. The Penalty, by our Laws, is, That the corrupt Patron shall forfeit the next Presentation to the King, and two Years Value of the Living; and the corrupt Incumbent, be for ever disabled to hold the Living.

*SIMONY* is committed by the Buying or Selling the Sacrament, Baptism, Ordination, Absolution, as well as of the Nomination and Collation to Benefices, a Place in a Monastery, or the like. Some have pretended it to be sufficient, that the Ordination were gratuitous; and that for the rest, the Revenues might be bought and sold as a Temporal Thing: But the Canons of several Councils have condemned this subtle Distinction; since the Revenues are attach'd to an Ecclesiastical Office purely Spiritual. The *Casuits* distinguish three Kinds of *Simony*. *Mental Simony*, is that which flicks in the mere Will, and Inclination, without ever breaking forth into Act: As when a Present is made to a Collator, without taking any Notice that we expect a Benefice from him. This Kind of *Simony* is only punishable *in foro Conscientie*. *Conventional Simony* is where there is an express Act, and a formal Bargain, though it never come to an Execution. *Real Simony*, is where the Convention is executed on both Sides, which last is the most criminal of them all. The Penalty of *Simony* is Deposition in a Clerk, and Excommunication in a Layman. 'Tis a Maxim among the *Romish* Canonists That there is no *Simony* in the Court of *Rome*; in Regard, the Pope acts there as an absolute Sovereign. They also say, That Resignations, *in favorem*, are not to be admitted but by the Pope, as favouring a little of *Simony*. On these Occasions, however, they swear, That there has been no Deceit, Collusion, or *Simony*, or other illegal Covenant. *Peter Damianus* distinguishes three Kinds of *Simony*; that of Money, that of the Tongue, and that of Services. *Simony of Money*, or *per munus a manu*, is where Money is really paid down for a Benefice: He adds, That 'tis likewise committed, by expending Money to live at Court to obtain a Benefice. *Simony of the Tongue*, or *per munus a lingua*, consists in flattering the Collator, or making one's self agreeable by Complaisance and Commendation. *Simony of Services*, or *per munus ab obsequio*, consists in the doing them good Offices to obtain a Benefice. The Word is borrow'd from *Simon Magus*, who is mention'd in the Acts of the Apostles, as offering to buy the Power of working Miracles with Money.

It was agreed, by all the Justices, *Trim. O. 7. Jac. Primi*, That if the Patron presented any Person to a Benefice with Cure,



Cure, for Money, that such Presentation, &c. is void, though the Presentee were not privy to it; and the Statute gives Presentation to the King; but this is now repealed.

**SIMPLARY**, *Simplaris*, in Antiquity, a Roman Soldier, who had only single Pay; thus call'd, in Opposition to the *Duplaries*, or such as had double Pay.

**SIMPLE**, something not mixed or compounded; in which Sense it stands in Opposition to *Compound*. The Elements are *Simple Bodies*; from the Composition whereof all mix'd Bodies result. In Geometry we say, the most *Simple Demonstrations* are the best: The *Simplest Machines* are the most esteemed. In Pharmacy there are *Simple Remedies* and Compounds. In Grammar we have *Simple Verbs*, or Primitives; and Compounds, which have some Particle added to them. In Juris-prudence we have a *Simple Donation*, in opposition to a mutual or reciprocal one. A *Simple Sale*, in Opposition to that made with a Reservation of the Faculty of Redemption. *Simple Homage*, in Opposition to Liege Homage.

**SIMPLE**, in Music, is chiefly used in Opposition to *Double*; sometimes to a *Compound* of several Parts, or Figures of different Values, &c. *Simple Cadence*, is that where the Notes are all equal through all the Parts. *Simple Concorde* are those, wherein we hear at least two Notes in Consonance; as a Third, and a Fifth; and, of consequence, at least three Parts: Which is either done immediately, and called the *Harmonical Triad*; or in a more remote Manner; that is, when the Sounds, that are not in the Base, are one or two Octaves higher. This Distance has no ill Effect in the Third; but in the Fifth it has; and, generally speaking, the nearer, or more immediate the Concorde are, the better. We also say, *C Simple*, in Opposition to *c Accented*. — *Simple Counter-point*, is a Harmonical Composition, wherein Note is set against Note; in Opposition to a figurative Counter-point. *Simple Fugue*, or *Simple Imitation*, is, when one Part imitates the Singing of another for some Measures. *Simple Interval*: See *INTERVAL*. *Simple Triple*: See *TRIPLE*.

**SIMPLE Equation**, in Algebra, is an Equation where the unknown Quantity is only of one Dimension. *E. gr.* if  $x = (a + b) : 2$ . See *EQUATION*.

**SIMPLE**, in Botany, is a general Name given to all Herbs, and Plants; as having each its particular Virtue, whereby it becomes a *Simple Remedy*. The *Simples* brought from the *Levant*, and the *East-Indies*, were not known among us till about the Year 1200.

**SIMPLEFYING**, in Ecclesiastical Matters, is the taking away of a Cure of Souls from a Benefice, and dispensing the Beneficiary from Residence. Several Benefices, which have been *Simplified*, now require Residence; and, an Infinity of others, which required Residence, have been *Simplified*. Some use the Word in a more extensive Signification, *viz.* for the shortning a Relation, &c. or retrenching every Thing not precisely necessary: When the Matter of Fact shall be *Simplified*, and stripp'd of its vain Circumstances, the Court will see, &c.

**SIMPLE QUANTITIES**, are such as have but one Sign, as  $2a$ , and  $-2b$ ; whereas  $a+b$ , and  $+d-c+b$ , are compound *Quantities*. These are only used in Algebraical Calculations.

**SIMPLUDIARIA**, in Antiquity, a kind of funeral Honours paid to the Deceas'd. Some will have the *Simpludiaria* to be Funerals, at which Games were exhibited: Such is the Sentiment of *Paulus Diaconus*. *Festus* says, They were those, in the Games whereof nothing were seen but Dancers and Leapers, called, according to *Scaliger*, *Corviores*; but who, according to *M. Dacier*, were only a kind of Dancers, who run along the Masts and Yards of Vessels or Boats, call'd *Corbes*. In other respects, those Two Authors agree as to the kind of Funeral, *viz.* That it was opposite to those call'd *Indistinctive*; wherein, besides the Dancers and Leapers, observ'd in the *Simpludiaria*, there were *Defultores*, or People who vaulted on Horses; or, perhaps, Horse-races, wherein the Cavaliers leap'd from Horse to Horse at speed. The Word is form'd from the *Latin*, *Simplex* and *Ludus*, *Simpludaria* or *Simpliludaria*, Simple Games.

**SIN**, a Breach, or Transgression of some divine Law or Command. *Plato* defines *Sin* to be something devoid, both of Number and Measure; by way of Contradiction to Virtue, which he makes to consist in musical Numbers, &c. Hence *Suarez* observes, That an Action becomes *Sinful*, by its wanting a due Commensuration; for as every thing measured refers to some Rule, from which if it deviate, it becomes incommensurate; and as the Rule of Man's Will is the Law of God: So, &c. *Suarez* adds, That all evil Actions are prohibited by some divine Law; and that this is required to the Perfection of the divine Providence. *Simplius*, and, after him, the Schoolmen assert, That Evil is not any positive Thing, contrary to Good; but a mere Defect and Accident. See *EVIL*.

**SINS** are distinguish'd into *Original* and *Actual*. The *Romish* Casuists again distinguish *Actual Sins* into *Mortal*, which are such as make us lose the Grace of God; and *Venial*, which alone are pardon'd, as being only *Sins* of Infirmity, not of Malice. The Divines are not yet agreed, what the *Sin* against the Holy Ghost is. See *ORIGINAL SIN*.

**SINAPISM**, in Pharmacy, &c. an external Medicine, in form of a Cataplasim; compos'd chiefly of Mustard-seed, pulveriz'd, and mix'd up with the Pulp or Flesh of Figs, or with Briony, Garlic, Onion, Nasturtium, Euphorbium, Ranunculi or the like. The *Sinapism* excites a Redness, Heat, itching Tumour, and sometimes a Blister on the Place 'tis applied to. 'Twas anciently in great Requite; and still continues in Use for inveterate Diseases of the Head; long, continued Defluxions, &c. The Word is form'd from the *Latin*, *Sinapis*, Mustard-Seed.

**SINCIPUT**, is the Fore-part of the Head, reaching from the Fore-head to the Coronal Suture. See *CRANIUM*.

**SINDON**, in Chirurgery, a little round Piece of Linnen or Lint, used in dressing a Wound after trepanning. The first thing done after the Operation of Trepanning, is to pour a few Drops of white Balm on the Dura Mater: then a Spoonful of Mel-Rosatum, being warm'd with a little Balm, Two *Sindons* are dipt in it, the one of linnen Cloth, the other of Lint: The first of them is immediately applied upon the Dura-Mater; and, being greater than the Hole in the Skull, its Circumference is thrust all round between the Cranium and the Membrane: Then the second *Sindon* is applied, and the Hole quite stopp'd with Lint. The next Morning, when the Apparel is taken off, the Brain is never left bare; but as soon as the former *Sindons* are removed, new ones are clapp'd in their Room.

**SINE**, or right *Sine*, in Trigonometry, a right Line drawn from one Extremity of an Arch, perpendicularly upon the Radius drawn from the other Extremity: or, the *Sine* is half the Chord of twice the Arch; thus the Line *AD* (Tab. *Trigonom.* Fig. 6.) which is half the Chord *AB*, of double the Arch *AEB*, is the right *Sine*; or, simply, the *Sine* of the Arch *AE*.

The *Whole SINE*, *Sinus totus*, is the *Sine* of the Quadrant *HE*, that is, the whole *Sine* is the same with the Radius *HC*.

The *Versed SINE*, is a Part *ED* of the *Whole Sine* or Radius, intercepted between the right *Sine AD*, and the Arch *AE*.

1° The right *Sine AD*, being perpendicular to the Radius *EC*; all *Sines* drawn to the same Radius, are parallel to each other. 2° Since the Arch *AE* is the Measure of the Angle *ACE*, and *AI* the Measure of the contiguous Angle *ACI*; and the Quadrant *HE* the Measure of the right Angle; *AD* is also the right *Sine*, and *ED* the versed *Sine* of the Angles *ACE* and *ACI*; and the *Whole Sine* is the *Sine* of the right Angle. 3° Two Angles contiguous, as *ACE* and *ACI*, have the same *Sine*. 4° The *Sines* of obtuse Angles are the same with those of their Complements to Two right Angles. 5° All *Sines* of Similar Arches have the same *Ratio* to their Radii.

The *SINE-Complement* or *Co-Sine*, is the *Sine* of an Arch *AE*, which is the Complement of another Arch *AE*, to a Quadrant. Thus the *Sine* of the Arch *AH*, is call'd the *Sine-Complement* of the Arch *AE*.

In estimating the Quantity of *Sines*, &c. we assume Radius for Unity; and determine the Quantity of the *Sines*, Tangents and Secants in Fractions thereof. From *Ptolemy's* *Almagest*, we learn, That the Ancients divided the Radius into 60 Parts, which they call'd Degrees, and thence determined the Chords in Minutes, Seconds and Thirds; that is, in Sexagesimal Fractions of the Radius, which they likewise used in the Resolution of Triangles. The *Sines*, or Half-Chords, for ought appears, were first used by the *Saraceni*. *Regiomontanus*, at first, with the Ancients, divided the Radius into 60 Degrees; and determined the *Sines* of the several Degrees in Decimal Fractions thereof. But he afterwards found 'twould be more commodious to assume Radius for 1; and thus introduced the present Method into Trigonometry. In the common Tables of *Sines* and Tangents, the Radius is conceiv'd, divided into 10000000 Parts; beyond which we never go in determining the Quantity of the *Sines* and Tangents. Hence, as the *Sine* of a Hexagon subtends the Sixth Part of a Circle, and is equal to the Radius; the *Sine* of 30° is 5000000.

1° The *SINE AD* being given; to find the *Sine Complement*.

From the Square of the Radius *AC* subtract the Square of the *Sine AD*: The Remainder will be the Square of the *Sine-Complement AG*: Whence, the Square Root being extracted, gives the *Sine Complement*. *E. gr.* Supposing *AC* 10000000, *AG* will be found 8660254, the *Sine* of 60°.



2° The SINE AD of the Arch AE being given; to find the Sine of the Half-Arch, or Half of AE.

Find the Chord of the Arch AE (See CHORD): for Half of this is its Sine. Thus, supposing DG and AD, as in the preceding Problem; we shall find the Sine of the Arch Half AE, or the Sine of  $15^{\circ} = 2588190$ .

3° The SINE DG, of the Arch DF being given; to find the Sine DE, of the double Arch DB, Fig. 7.

Since the Angles at E and G are right Angles; and the Angle B is common to each Triangle BCG and DEB; we shall have  $BC : CG :: BD : DE$ : wherefore CG being found by the Second Problem, and BD being double of DG; DE is found by the Rule of Proportion.

4° The SINES FG and DE (Fig. 8.) of the Arches FA and D A, whose Difference DF is greater than 45 Minutes, being given; to find any intermediate Sine, as IL.

To the Difference FD of the Arches, whose Sines are given; the Difference of the Arch IF, whose Sine is required, and the Difference of the given Sines DH; find a fourth Proportional: This added to the less given Sine FG; the Aggregate will be the Sine required.

5° To find the SINE of 45 Degrees.

Let HI (Fig. 6.) be a Quadrant of the Circle; then will HCI be a right Angle: consequently the Triangle, rectangular; therefore  $HI^2 = HC^2 + CI^2 = 2 HC^2$ ; wherefore, since HC the whole Sine, is 10000000; if from  $2 HC^2$  squared, 20000000000000, be extracted the Square Root 14142136; we shall have the Chord HI, whose Half 7071068 is the Sine of  $45^{\circ}$  required.

6° The SINE of a Minute or 60' FG, (Fig. 8.) being given; to find the Sine of one or more Seconds MN.

Since the Arches AM and AF are very small; AMF may be taken for a right Line, without any sensible Error in the Decimal Fractions of the Radius wherein the Sine is express'd; that is, the Arches AM and AF may be taken proportional to their Chords. Wherefore, since MN is parallel to FG; we shall have  $AF : FG :: AM : MN$ : Therefore AF, FG and AM being given, MN is easily had.

To Construct a Canon of SINES.

The Sines of  $30^{\circ}$   $15^{\circ}$   $45^{\circ}$  and  $36^{\circ}$  (which we have already shewn how to find,) being had; we can thence construct a Canon of all the Sines to every Minute, or even Second. For from the Sine of  $36^{\circ}$  we find those of  $18^{\circ}$   $9^{\circ}$   $4^{\circ}$   $30'$  and  $2^{\circ}$   $15'$ , by the Second Problem: The Sines of  $54^{\circ}$   $72^{\circ}$   $81^{\circ}$   $85^{\circ}$   $30'$  and  $87^{\circ}$   $45'$ , &c. by the first Problem. Again, for the Sine of  $45^{\circ}$ , find the Sine of  $22^{\circ}$   $30'$   $11^{\circ}$   $15'$ , &c. From the Sines of  $30^{\circ}$  and the Sines of  $54^{\circ}$ , find the Sine of  $12^{\circ}$ . From the Sine of  $12^{\circ}$ , find the Sines of  $6^{\circ}$   $30'$   $13^{\circ}$   $35'$   $78^{\circ}$ , &c. From the Sine of  $15^{\circ}$ , find the Sine of  $7^{\circ}$   $30'$ ,  $30^{\circ}$   $45'$ , &c. till you have 120 Sines succeeding each other orderly, at an Interval of 45 Minutes. Between these, find the intermediate Sines by the Fifth Problem: Thus will the Canon be compleat.

From the Sine of an Arch given; to find the Tangent and Secant. See TANGENT and SECANT.

To find the Logarithm of a given Sine; See LOGARITHM. Note, the Logarithm of a Sine, is call'd an Artificial Sine.

In every Triangle, the Sides are as the Sines of the opposite Angles. See TRIANGLE.

The Sine BC (Fig. 9.) and the Versed Sine AB, being given in common Measure, not in Parts of the Radius; to find the Arch EFC in Degrees. Find the Semi-diameter AD, (See SEMI-DIAMETER.) Then in the Triangle DBC, besides the Right Angle B, by the Sides AC and DC, we find the Angle ADC, which shews the Number of Degrees in the Arch, the Double whereof is the Arch FC; the use of which Problem is in finding the Segment of a Circle. See SEGMENT.

Line of SINES, a Line on the Sector, Gunter's Scale, &c. the Description and Use whereof see under the Articles SECTOR and GUNTER'S SCALE.

SINE-CURES are Ecclesiastical Benefices without Cure of Souls. See BENEFICE, and CURE.

No Church, where there is but one Incumbent, can properly be a Sine-Cure: And though the Church being down, or the Parish being become destitute of Parishioners, the Incumbent may be thereby necessarily acquitted from the actual Performance of publick Duty, yet he is still under an Obligation to do it, whenever a Church shall be built, and there are a competent Number of Inhabitants: And in the mean while, if the Church be Presentative, as most such Churches are, the Incumbent is instituted into the Cure

of Souls; and such Benefices are rather Depopulations than Sine-Cures, and it will be proper for the new Incumbent to read the 39 Articles, and the Liturgy in the Church-yard, &c. and to do what other Incumbents usually do.

But a Rectory, or a Portion of it, may properly be a Sine-Cure, if there be a Vicar endowed, and then it doth not come within the Statute of Pluralities, 21 H. VIII. c. 13. which declareth, That no Parsonage that hath a Vicar endowed, shall be comprehended, &c. so that here no Dispensation is necessary to hold this Sine-Cure with a former Living: Nor need he read the Articles or Divine Service, as required by 13 Eliz. c. 12. which extends only to a Benefice with Cure. — A Sine-Cure Donative wants no Institution and Induction: but one Presentative must have both; especially if it consist in Glebe and Tythes, and not in a Portion of Money: But the Institution must not run in *Curam Animarum*, but in *Rectoriam, five portionem Rectorie* de AB, &c. — By the above-mention'd Statute 21 H. VIII. not only Prebends and Rectories, with Vicarages endowed, but Deaneries and Archdeaconries, are declared to be Benefices without Cure.

SINE-DIE, in Law, when Judgment is given against the Plaintiff; he is then said to be in *miseriordia pro falso clamore suo*: But when for the Defendant, then it is said, *Eat inde sine die, i. e.* he is dismissed the Court. — The Phrase is also used in Parliament, for the Adjournment of any Debate, without fixing the Day when it shall come on again, and is looked upon as a genteeler Dismission of the Thing required.

SINEW, in Anatomy, &c. is what we otherwise call a Nerve. See NERVE.

SINGING, the Action of making divers Inflexions of the Voice, agreeable to the Ear, and even answering to the Notes of a Song or Piece of Melody. See SONG.

The first thing done in learning to sing, is to raise a Scale of Notes by Tones and Semi-tones, to an Octave, and descend again by the same Notes; and then to rise and fall by greater Intervals, as a 3d, 4th, and 5th; and to do all this by Notes of different Pitch. Then these Notes are represented by Lines and Spaces, to which the Syllables *fa, sol, la, mi*, are applied, and the Pupil taught to name each Line and Space thereby; whence this Practice is usually call'd *Sol-fa-ing*. The Nature, Reason, Defects, &c. whereof, see under the Article SOL-FA-ING.

SINGULAR Number, in Grammar, the first manner of declining Nouns, and conjugating Verbs; used when we only speak of a single Person or Thing. See NUMBER.

The Latins, French, English, &c. have no Numbers but the Singular and Plural; the Greeks and Hebrews have likewise a Dual. See PLURAL, DUAL, &c.

SINGULTUS, in Medicine, a convulsive Motion of the Midriff, commonly call'd Hiccough. See HICCOUGH.

SINICAL Quadrant, a Kind of Quadrant furnish'd with an Index, and two Sights, to take Altitudes, &c. by; and, besides, its Side, or Face, covered over with Sines, drawn from each Side, intersecting each other; whereby the Seamen can solve, by Inspection, any Problem in Plain Sailing. See SAILING.

Its Construction and Use; see under the Article QUADRANT.

SINISTER, something on, or towards the left Hand. Hence Sinister is ordinarily used among us for unlucky; tho' in the Holy Rites of Divining, the Romans used it in an opposite Sense. Thus *Avis Sinistra*, or a Bird on the left Hand, was esteem'd a happy Omen: Whence in the Law of the Twelve Tables, *Ave Sinistra populi magister est*. And hence the Greeks, according to *Lipsius*, call the left Hand, *deuteron*, best.

Some derive the Word Sinister, a *Sinenso*; because the Gods, by such Auguries, permit us to proceed in our Designs.

SINISTER, in Heraldry. The Sinister Side of an Escutcheon is the left Side. Sinister chief Point, is the next middle Chief, on the left Side. Sinister base Point, is next the base Point, at the bottom of the Escutcheon. See POINT, ESCUTCHEON, &c.

SINISTER Aspect, among Astrologers, is an Appearance of two Planets, happening according to the Succession of the Signs; as Saturn in Aries, and Mars in the same Degree of Gemini. See ASPECT.

SINISTRI, a Sect of ancient Hereticks, thus call'd; because they held the left Hand, *Sinistram manum*, in Abhorrence, and made it a Point of Religion, not to receive any thing therewith. What in us, is a Piece of Civility; in them was a Superstition. *Balsaman* observes, that they were likewise called *Sabbathians* and *Novarians*. See NOVARIANS, &c.

SI non omnes, a Writ of Association, whereby, if all in Commission cannot meet at the Day assign'd, it is permitted, that two or more of them may finish the Business. See ASSOCIATION.

SINOPER, in Natural History. See RUDDLE.

SINOPE or SENOPLE, in Heraldry, the Green Colour in Armories; thus called by the ancient Herald, tho' *Pliny* and *Istare*, by Color *Prasinus*, or *Sinople*, mean a brownish



brownish Red, such as that of our Ruddle. *Sinople* signifies Love, Youth, Beauty, Rejoicing and Liberty; whence it is, that Letters of Grace, Abolition, Legitimation, &c. are used to be seal'd with Green Wax. See GREEN. F. *Menezstrier* derives it from the Greek, *Prasina kopla*, Green Armouries; by corruptedly retrenching the first Syllable, *pra*; which is no new Thing among Oriental Words, witness *Salonica* for *Theffalonica*.

**SINUOSITY**, a Series of Bends and Turns in Arches, or other irregular Figures; sometimes jetting out, and sometimes falling in. Such is the Motion of a Serpent, &c. 'Tis the *Sinuosity* of the Sea Coasts that forms Bays, Ports, Capes, &c. *Du Loir* observes, that the Course of the River *Meander*, creeping in a thousand agreeable *Sinuosities*, served *Dedalus* as a Model to form his Labyrinth by. See LABYRINTH.

**SINUS**, in Chirurgery, a little Bag or Sacculus, form'd by the Side of a Wound, or Ulcer; wherein Pus is collected. See Pus.

*Sinus's* that slope downwards, *Scultet* observes, are difficult to heal: Yet that Surgeon undertakes to cure any *Sinus* in a Week, by the Medicaments he describes Page 338, and an agglutinative Bandage. He adds, that he never comes to make an Incision, till he finds that the Pharmaceutical Applications are ineffectual; and that for the Dilatation of *Sinus's*, he does not use the deceitful Scalpel; as being more apt to deceive the Operator than the Patient.

**SINUS**, in Anatomy, a kind of Cavity in certain Bones, and other Parts, the Entrance whereof is very narrow, and the bottom wider and more spacious. See BONE. Of these *Sinus's*, we find several in the several Parts of the Body; particularly in the Basis of the Skull, on the *Ossa petrosa*, where the Ancients imagined their Use was to render the Bones more light: In several of the Joints of the Body, they serve to receive the Apophyses of the other Bones. In the Duplicatures of the *Dura Mater*, are several *Sinus's*, which Doctor *Drake* observes to be venous Channels, form'd for the Re-conveyance of the Blood. Of these, Four only are considerable, viz. the *Sinus Longitudinalis*, which running along the middle of the convex Part of the Brain, sends out a Branch on each Side, between the Brain and Cerebellum, call'd the *Lateral Sinus's*: And the *Torcular Herophili*, form'd out of a Concourse of the *Lateral Sinus's*, and Pineal Gland. They are all form'd of the several Venous Branches, which return the Blood from the Brain and Cerebellum, and deliver their Contents into the Jugular Veins; whereof they are, as it were, the Roots. The Coats of these *Sinus's*, are furnished with strong Fibres, by means whereof, they are dilated by the Influx of the Venal Blood, and again contracted with a reciprocal Motion, like the Pulse of an Artery. See DURA MATER.

**SINUS COLLEGE**. See COLLEGE.

**SIPHON** or **SYPHON**, in Hydraulicks, a crooked Tube, one Leg or Branch whereof is longer than the other; used in the raising of Fluids, emptying of Vessels, and in various Hydrostatical Experiments. ---The Word in the original Greek, *σιφων*, signifies, simply, *Tube*, whence some apply the Term to common Tubes or Pipes: *Wolffius*, particularly describes two Vessels under the Name of *Siphons*; the one Cylindrical in the Middle, and Conical at the two Extremes; the other Globular in the Middle, with two narrow Tubes fitted to it, Axis-wise; both serving to take up a Quantity of Water, &c. and to retain it when up.

But the most useful and celebrated *Siphon* is as follows: A crooked Tube A B C, (Tab. Hydraulicks Fig. 2.) is provided, of such a Length, and with such an Angle, as that when the Orifice A, is placed on an horizontal Plane, the Height of A B, may not exceed 30 Foot. For common Uses, a Foot, or half a Foot high, suffices. If, now, the less Arm A B, be immerg'd in Water, or any other Liquid, and the Air be suck'd out of it by the Aperture C, till the Liquor follow; the Liquor will continue to flow out of the Vessel, through the Tube B C; as long as the Aperture A is under the Surface of the Liquor. Note, instead of sucking out the Air; the Event will be the same, if the *Siphon* be at first filled with the Fluid, and the Aperture C stopp'd with the Finger, till the Aperture A be immerg'd.

The Truth of the Phenomenon is known by abundance of Experiments. Nor is the Reason of part of it far to seek. In sucking, the Air in the Tube is rarified, and the Equilibrium destroyed, consequently the Water must be raised into the lesser Leg A B, by the preponderating Pressure of the Atmosphere.

The *Siphon* being thus filled, the Atmosphere presses equally on each Extremity thereof; so as to sustain an equal Quantity of Water in each Leg: But the Air not being able to sustain all the Water in the longer Leg, unless it exceed 32 Feet in Height; it will be more than able to sustain that in the shorter Leg; with the Excess of Force, therefore, will raise new Water into the shorter Leg; which new Water cannot make its way, but by protruding the first before it. By this means is the Water continually driven out at the longer End, as 'tis continually raised at the shorter.

But *Wolffius*, and some other Authors assert, that the Water continues to flow through the *Siphon*, even when removed under a Receiver, and the Air exhausted from it. The Reason of this, if it be true, is very difficult to account for.

Some will have it, that there is still Air enough left in the evacuated Receiver, to raise the Water to an Inch or two. But as both Mercury and Water are found to fall entirely out of the Torricellian Tube, in *Vacuo*; the Pressure of the thin remaining Air, can never be the Cause of the Ascent, both of Mercury and Water, in the less Leg of the *Siphon*.

Hence, as the Height of the *Siphon* is limited to 31 Foot; for this only Reason, that Air cannot raise Water higher; It does not appear, whether or no we are in the Right in rejecting *Hero's* Method of carrying Water, by means of a *Siphon*, over the Tops of Mountains, into an opposite Valley. For *Hero* only orders the Apertures of the *Siphon* to be stopp'd, and Water to be pour'd through a Funnel into the Angle or Meeting of the Legs, till the *Siphon* were full; when, shutting the Aperture in the Angle, and opening the other two, the Water will continue to flow. Now, if there only need Air for the first Rise of the Water into the less Leg, not for the Continuation of the Motion; it were possible to raise the Water much higher than the Height of the Atmosphere would carry it. ---The real Cause, therefore, of this extraordinary, tho' well-known Phenomenon; needs some further Disquisition. This is certain, that a *Siphon* once set a running, will persist in its Motion, tho' removed into the most perfect Vacuum our Air-Pumps will make: Or, if the lower Orifice of a full *Siphon* be shut, and the whole be thus placed in a Receiver, with a Contrivance for opening the Orifice when the Air is exhausted; the Water will be all emptied out of the Vessel, as if it had been in open Air.

This, too, is remarkable enough, that the Figure of the *Siphon* may be varied at pleasure, (see Fig. 3. &c.) provided only the Orifice C be below the Level of the Surface of the Water to be drawn up; but, still, the further 'tis distant from it, the faster will the Fluid be carried off. And if, in the Course of the Flux, the Orifice A be drawn out of the Fluid; all the Liquor in the *Siphon* will go out at the lower Orifice C: That in the Leg C B, dragging, as it were, that in the shorter Leg A B after it. If a fill'd *Siphon* be so disposed, as that both Orifices A and C be in the same horizontal Line; the Fluid will remain pendant in each Leg; how unequal soever the Length of the Legs may be. Fluids, therefore, in *Siphons*, seem, as it were, to form one continued Body; so that the heavier Part descending, like a Chain, pulls the lighter after it.

Lastly, it must be observed, that the Water will flow out, even through a *Siphon* that is interrupted, by having the Legs A D and F C joyned (Fig. 4.) together by a much bigger Tube full of Air.

The *Siphon Wirtembergicus*, is a very extraordinary Machine of this Kind, performing most of the Things the common *Siphon* will not reach, E. gr. In this, though the Legs be in the same Level, yet the Water rises up the one, and descends through the other: The Water rises, even tho' the Aperture of the less Leg be only half immerg'd in Water: the *Siphon* has its Effect after continuing dry a long time: either of the Apertures being opened, the other remaining shut for a whole Day, and then open'd, the Water flows out as usually. Lastly, The Water rises and falls indifferently through either Leg. ---The Project of this *Siphon*, was laid by *Jordanus Pellerier*, and executed at the Expence of Prince *Frederic Charles* Administrator of *Wirtemberg*, by his Mathematician, *Schabackard*, who made each Branch 20 Feet long, and 18 Feet apart; the Description thereof was published by *Reiselinus* his Physician, which gave Occasion to M. *Papin* to invent another, that did the same Things, described in the *Philosophical Transactions*; and which *Reiselinus*, in another Paper in the *Transactions*, ingenuously owns to be the very same with that of *Wirtemberg*. Its Structure will appear from its Figure; which is represented, Tab. Hydraulicks, Fig. 5.

**SIRE**, a Title of Honour in France; now given to the King only, as a Mark of Sovereignty. In all Placets and Requests, Epistles, Discourses, &c. to the King, he is address'd under the Title of *Sire*. Some derive the Word from the Latin, *Herus*, Master: Of which Opinion seems *Will. Butler*, who, in speaking to King *Francis I.* always calls him *Here*, q. d. Master, or *Sire*. Others derive the Word from the Greek, *κωσ*, Lord; of which Opinion is *Pasquier*, who adds, that the ancient *Franks* gave the Title to God, calling him *Beau sire Diex*. Others derive the Word from the Syrian, and maintain, it was first given to the Merchants who traded to Syria. *Ménage* will have it come from *Senior* Elder; whence *Seigneur*, then *Seignior*, and *Sire*.

**SIRE** was likewise anciently used in the same Sense with *Sieur* and *Seigneur*, and applied to Barons, Gentlemen and Citizens. The *Sire de Joinville* has wrote the History of *St. Louis*.



**SIRIUS**, in Astronomy, the *Dog-Star*; a very bright Star of the first Magnitude in the Mouth of the Constellation *Canis Major*, or the *Great Dog*. See **CANIS**. The *Arabs* call it *Ashere*, *Eschere*, *Scera*; the *Greeks*, *Sirius*; and the *Latins*, *Canis canens*. Its Longitude, according to Mr. *Flamsteed*, is  $9^{\circ} 49' 1''$ , its Latitude  $39^{\circ} 32' 8''$  South.

**SISTRUM** or **GISTRUM**, an ancient musical Instrument, used by the Priests of *Ijis* and *Osiris*. *Spon* describes it as of an oval Form, in manner of a Racket, with three Sticks travelling it breadth-wise, which playing freely, by the Agitation or Beating of the Instrument, made a kind of Sound, which to the Ancients seem'd melodious. Mr. *Malcolm* takes the *Sistrum* to have been no better than a kind of a Rattle. *Fer. Bosius* has an express Treatise on the *Sistrum*, intitled, *Isiacus de Sistro*. *Oiselinus* observes, that the *Sistrum* is found represented on several Medals; and also on *Talismans*. *Osiris* on some Medals, is painted with a Dog's Head and a *Sistrum* in his Hand.

**SITE** or **SCITE**, the Situation of a House, &c. and sometimes the Ground-Plot, or the Spot of Earth it stands on.

**SITE**, in Logic, one of the Predicaments, declaring a Subject to be so and so placed. See **PLACE**.

**SITOPHYLAX**, in Antiquity, an *Athenian* Magistrate, who had the Intendance of the Corn, and was to take Care that no Body bought more than was necessary for the Provision of his Family. By the *Attic* Laws, particular Persons were prohibited buying more than fifty Measures of Wheat a Man; of those Measures, we mean, called *φορμαι*: And the *Sitophylax* was to look to the Observation of this Law. 'Twas a Capital Crime to prevaricate in it. There were Fifteen of these *Sitophylax*'s, Ten for the City, and Five for the *Pireum*. The Word is form'd from the *Greek*, *σιτοφύλαξ*, and *φυλαξ*, *Keeper*.

**SITUS**, in Geometry and Algebra, the Situation of Lines, Surfaces, &c. *Wolffius* gives us some Things in Geometry, which are not deduced from the common Analysis; particularly things depending on the *Situs* of Lines and Figures. In effect, M. *Leibnitz* has invented a particular Kind of Analysis, call'd *Analysis Situs*, and built a peculiar kind of Calculus thereon, call'd *Calculus Situs*.

**SIXAIN**, **SIXTH**, **SEXAGENA**, in War, an Order of Battle wherein Six Battalions having been ranged in a Line; the Second and Fifth are made to advance, to form the Van-guard; the First and Sixth to retire, to form the Rear-guard; the Third and the Fourth remaining on the Spot, to form the Corps, or Body of the Battle. The Word is *French*, where it signifies the same thing.

**SIX Clerks**, Officers in *Chancery* of great Account, next in Degree below the Twelve Masters; whose Business is to enroll Commissions, Pardons, Patents, Warrants, &c. which pass the Great Seal. They were anciently *Clerici*, and forfeited their Places if they married: They are also Attornies for Parties in Suits depending in the Court of *Chancery*. Under them were formerly 60 Clerks, who, with the Under-Clerks, did the Business of the Office; which Number was afterwards increased to 90. At present the Number is indefinite; an Order having been made, for the reducing them to their ancient Number of 60; by not filling up the Vacancies that may happen by Death, &c. till they are fallen to that Standard.

**SIXTH**, in Music, one of the Simple Original Concords, or Harmonical Intervals. See **CONCORD**. The *Sixth* is of two Kinds; *greater* and *lesser*; and hence is esteem'd one of the Imperfect Concords; though each of them arise from a Division of the Octave. See **OCTAVE**. The *greater Sixth* is the Concord resulting from a Mixture of the Sounds of two Strings, that are to each other as 3 to 5. The *lesser Sixth* results from two Strings, which are to each other as 5 to 8. See **SCALE**. The *lesser Sixth* is composed Diatonically of Six Degrees, whence its Name; and of Five Intervals, Three whereof are Tones, and Two Semi-tones; Chromatically of Eight Semi-tones; Five whereof are greater, and Three less. It has its Form or Origin from the *Ratio*, *Super-tri-partiens quintas*, as of 8 to 5. The *greater* is composed Diatonically like the less, of Six Degrees and Five Intervals; among which are Four Tones, and a Semi-tone: And Chromatically of Nine Semi-tones; Five whereof are greater, and Four less; of Consequence it has a less Semi-tone more than the former. It has its Origin from the *Ratio* *Super-bi-partiens tertius*, as of 5 to 3. Anciently the *Sixth* had only one Reply, which was the 13th; but in the modern System, it has several, as the 20th, 27th, &c. all marked indifferently in the thorough Base, by the Figure 6. And even the *Sixth* itself, both greater and lesser, when used naturally, is not expressed any otherwise than by a Simple *Sixth*. But when 'tis greater or less accidentally, to the 6 is added some other Mark, as may be seen in M. *Brosset*.

Besides the two kinds of *Sixth*'s here described, which are both good Concords; there are two others that are vicious and dissonant. The first is the *Defective Sixth*, composed of two Tones and three Semi-tones, or of Seven Semi-tones, five whereof are greater, and two less. The second is the

*Redundant Sixth*, composed of Four Tones, a greater Semi-tone, and a less. Whence some call it *Pentatonon*, as comprehending Four Tones. These two being both dissonant, should never be used in Melody, and very rarely in Harmony.

As to the two Consonant *Sixth*'s, they were anciently to be used very sparingly; but at present we make them as often as we please, as we do with Thirds; the *Sixths* being in reality, no other than inverted Thirds; but Care is usually taken, that the first *Sixth* that occurs be less, and the last greater; and that from the greater, we rise to the Octave, and from the less, fall to the Fifth.

**SIZE**, an Instrument used to find the Weight of fine round Pearls withal. See **PEARL**. It consists of five thin Pieces or Leaves, about two Inches long, and half an Inch broad; fastned together at one End by a Rivet. In each of these, are several round Holes drill'd, of different Diameters. Those in the first Leaf serve for weighing Pearls from  $\frac{1}{4}$  a Grain to Seven Grains. Those of the Second, for Pearls from Eight Grains or two Carats, to five Carats, &c. and those of the Fifth, for Pearls from  $6\frac{1}{2}$  to  $8\frac{1}{2}$ .

**SKELETON**, in Anatomy, an Assemblage or Arrangement of all the Bones of a dead Animal, disposed in their natural Situation, and kept in that Disposition by means of Wiars, &c. *Skeletons* serve to good Purpose, in learning the Osteology. See **OSTEOLOGY**.

For the several Bones a *Skeleton* consists of; See **BONE**.

The Word is form'd from the *Greek* *σκέλλω*, I dry.

**SKIFF** or **SQUIFF**, a Shallop; or the less of two Ships-boats. See **BOAT**.

**SKIN**, in Anatomy, a large thick Membrane, spread over the whole Body, serving as the external Organ of Feeling, and as a Cover and Ornament of the Parts underneath. The *Skin* consists of Three Parts; the external one, called the *Cuticle*, *Epidermis*, or *Skarf-Skin*. See **CUTICLE**. The middle-most is called the *Corpus Reticulare*, because pierced through with a great Number of Holes, like a Net or Sieve. See **RETICULARE CORPUS**. The innermost, called the *Cutis*, is a Fibrous Substance, wove out of the Extremities of Arteries, Veins, Nerves, Tendons, &c. Whence arise abundance of little Eminences, call'd *Papillæ Pyramides*. See **CUTES** and **PAPILLÆ**.

It is likewise set with an Infinity of Glands, called *Milliary Glands*, each whereof has its excretory Duct, passing along with the Pyramidal *Papillæ*, through the Holes of the *Corpus Reticulare*, and terminating at the Cuticle. The *Papillæ* are held by the Moderns to be the Organ of Feeling, and the Excretory Vessels serve to carry off the Matter of Perspiration, which is separated from the Blood in the Milliary Glands. See **MILLIARY GLANDS**, **PERSPIRATION** and **FEELING**.

Nutrition, M. *Perrault* observes, is sometimes taken in throughout the whole Body of Animals, at the Pores of the *Skin*. The subtle Substances of nutritious Matters applied externally to those Bodies, are found to penetrate them, to mix with the Blood and Juices, and are there assimilated. On this Account, he adds, it is, that Butchers Dogs, Turnspit-Dogs, &c. are generally very Fat, and even Butchers, Cooks, &c. themselves. M. *Dodart* takes it, that Plants receive a great Part of their Food by the external Bark, not all by the Root. See **ROOT**.

**SKIN**, in Commerce, is particularly used for this Membrane stripped off the Animal, to be prepared by the Tanner, Skinner, Currier, Parchment-Maker, &c. and converted into Leather, &c. See **LEATHER**.

The Use of *Skins* is very ancient; the first Garment in the World being made thereof. The *Danes* and other Northern Nations, have a long Time dress'd in *Skins*.

Morocco's are made of the *Skins* of a kind of Goats. See **MOROCCO**.

Parchment is usually made of Sheeps *Skins*; sometimes of Goat *Skins*. See **PARCHMENT**.

Velom is a kind of Parchment made of the *Skin* of an abortive Calf, or at least of a sucking Calf. See **VELOM**.

The True Chamois or Shammy, is made of the *Skin* of an Animal of the same Name; though frequently counterfeited with Goats and Sheeps *Skins*. See **CHAMOIS**.

Shagreen is prepared at *Constantinople*, of the hind Part of the *Skin* of a Horse, Mule or Ass of the Country, prepared and tanned, and when soft and manageable, stretch'd on a Frame, and exposed to the Sun. This done, they sprinkle Mustard-Seed on the *Skin*; taking Care to rub it several Times over with the Hand. By means hereof, and the Heat of the Sun, the Grain of the Leather is rais'd up, and there hardned. See **CHAGRIN**.

For the several Preparations of *Skins*; See **TANNING**, **CURRYING**, **CHAMOISING**, &c.

**SKINKER**, a Cup-bearer, or Butler. See **BUTLER**.

**SKIRMISH**, in War, a Combat, in Presence of two Armies, between Persons who advance from the Body for that Purpose, and introduce, or invite to a general, regular Fight. The Word seems form'd from the *French*, *Escarmonche*, which signifies the same thing, and which *Nico* derives from the *Greek*, *χαρμυ*.



*scutum*, which signifies at the same time, both *Light Combat* and *Joy*. *Menage* derives it from the German, *Schirmen* or *Skermen*, to Fence. *De Cange*, from *Scaramuccia*, a light Engagement, of *Scara* and *Muccia*, a Body of Soldiers hid in Ambush; in regard most *Skirmishes* are performed by Persons in Ambuscade.

SKULL, in Anatomy. See CRANIUM.

SKY, the blue Air or Atmosphere. See ATMOSPHERE.

The Azure Colour of the *Sky*, Sir *Isaac Newton* attributes to Vapours beginning to condense therein, which have got Consistence enough to reflect the most reflexible Rays, viz. the Violet ones; but not enough to reflect any of the less reflexible ones. See REFLEXIBILITY.

*M. de la Hire* attributes it to our viewing a black Object, viz. The dark Space beyond the Regions of the Atmosphere, thro' a white or lucid one, viz. the Air illumined by the Sun: A Mixture of Black and White always appearing Blue. See BLUE.

This Account is not his; 'tis as old as *Leonardo da Vinci*.

SLAB, the Outside sappy Plank or Board saw'd off from the Sides of a Timber Tree.

SLAUGHTER. See MAN-SLAUGHTER.

SLATE, a blue fossil Stone, very soft when dug out of the Quarry, and on that Account easily cut or saw'd into thin long Squares or Escallops, to serve in Lieu of Tiles for the Covering of Houses. See COVERING. 'Tis sometimes also used to make Tables of; to Pave withal, &c. The Ancients were unacquainted with the Use of *Slate*, and instead thereof cover'd their Houses with Shingle, as we read in *Pliny*. Besides the *Blue Slate*, we have in *England* a *Greyish Slate*, call'd also *Horsham Stone*, from a Town in *Sussex* of that Name, where the greatest Quantities of it are found.

The *Blue Slate*, is a very light, lasting, and beautiful Covering but chargeable withal, in regard the Roof must be first Boarded over, the *Slates* hung on Tacks, and laid with finer Mortar than Tiles. The *Grey Slate* is chiefly used in the Covering of Churches, Chappels, Chancels, &c.

'Tis dearer than Tiles, but far more durable. The Timber of the Roof needs to be very strong for these *Grey Slates*, it being almost double the Weight of Tiles. See TILE.

To judge of the Goodness of *Slate*, Mr. *Colepepp*, in the *Philosophical Transactions*, orders it to be knock'd against any hard Body, to make it yield a Sound: If the Sound be good and clear, the Stone is firm and good; otherwise, 'tis crazy.

Another Method of proving its Goodness, is, by weighing it exactly, then letting it lie 6 or 8 Hours under Water, and wiping it very clean, if it weighs more now than it did before, 'tis of that Kind that soaks in Water, and therefore will not long endure, without rotting the Lath or Timber. Another Method of Trial is, by placing a *Slate* half a Day perpendicularly in a Vessel of Water, so as to reach a considerable Height above the Level thereof: If the *Slate* be firm and close, then it will not draw Water, that is, the Water will not have ascended above half an Inch above the Level of that in the Vessel, nor that perhaps any where but at the Edges, the Texture whereof might be loosened by hewing; but a bad Stone will have drawn the Water to the very Top, be it as high as it will. There are *Slates* in several Places, which the most experienced *Slaters*, or Coverers, conjecture to have continued on Houses several Hundreds of Years, and are yet as firm as when first put up.

M. *Leibnitz* informs us, in the History of the *French Academy*, that in several Parts of the Dutchy of *Brunswick*, particularly about *Osteroda*, &c. there are Horizontal Veins of *Slate*, wherein are found very exact and finish'd Representations of various Kinds of Fishes and Plants, appearing in their natural Breadth and Length, but without any Thickness. The same Impressions are also frequently found even in a Mixture of Copper and Silver. M. *Leibnitz* accounts for this Appearance, by supposing the Lakes and Meadows of the Places to have been cover'd over with a Kind of Earth, which has buried the Fishes and Plants; or that some very muddy Water, much impregnated with Earth, has covered them up, or carried them away. This Earth he takes to have since hardened into *Slate*; and length of Time, or some other Cause, to have consumed the delicate Matter of the Fish, &c. Much as the Bodies of Flies or Ants, which are found enclosed in Amber, are quite dissipated, and nothing left but a mere Delineation. The Form impress'd in the *Slate*, by means of the Cavity remaining therein; which Cavity has been at length filled up with a Metallic Matter. Whether that the Subterranean Fire, in baking the Earth into *Slate*, has separated the Metal therefrom; or whether a Metallic Vapour penetrating the *Slate*, has become fix'd in these Cavities.

SLAVE, a Person in the absolute Power of a Master, either by War or Conquest. See SERVANT.

We find no mention of *Slaves* before the Deluge; but immediately after, viz. in the Curse of *Cain*, Gen. ix. 25. whence 'tis easily inferred, that Servitude commenced soon

after that Time: For in *Abraham's* Time we find it generally established. Some will have it to have commenced under *Nimrod*, because it was he who first began to make War, and of consequence to make Captives; and to bring such as he took either in his Battles, or Irruptions, into Slavery.

The Romans called their *Slaves* *Servi*, from *Servare* to keep, save; as being such as were not killed, but saved, to yield Money either by Sale, or by their Work. Other Authors are of Opinion, that the Roman Name *Servi* might come from that of *Serbi*; as that of *Slaves* from *Sclavi*, a People. Slavery is absolutely abolished in *England*, and *France*, as to Personal Servitude: Our Servants are not *Slaves*, but only subject to certain determinate Services. The Moment a *Slave* steps on *English* Ground, he becomes Free.

SLAVES make a very considerable Article of the Traffick in *America*. The *English South-Sea Company* have the sole Privilege of furnishing the *Spanish West-Indies* with *Slaves*, by Treaty. See NEGRO. *Menage* and *Vossius* derive the Word from *Sclavus*, which is the Name of a *Scythian* People, according to the latter, whom *Charlemagne* condemned to perpetual Imprisonment, whence the *Italians* have made their *Schiavo*, the *Germans* their *Slaef*, and we *Slave*: But the former will have it the Name of a People whom the *Italians*, and other Nations, used to buy to make Drudges of; whence the proper Name of a Nation, in Time, became the Name of a State or Condition.

Among the Romans, when a *Slave* was set at Liberty, he changed his Name into a Surname; took the *Nomen* or *Pre-nomen* of his Master; to which he added the *Cognomen* or Nick-name he had been called by when a *Slave*. See LIBERTIN. By the Civil Law, the Power of making *Slaves* is esteem'd a Right of Nations, and follows as a natural Consequence of War. The *Lacedaemonians*, say some, or as others say, the *Affyrians*, first introduced the Practice; which the Romans not only approved of, but even invented new Manners of making of *Slaves*: For Instance, a Man born Free, among them, might sell his Freedom, and become a *Slave*. This voluntary Slavery was first introduced by a Decree of the Senate, in the Time of the Emperor *Claudius*, and at length abrogated by *Leo*. The Romans had Power of Life and Death over their *Slaves*, which no other Nations had; and even this Severity was moderated by the Laws of the Emperors; and by one of *Adrian*, it was made Capital to kill a *Slave* without a Cause. The *Slaves* were esteem'd the proper Goods of their Masters, and all they got belong'd to them: But, if the Master were too cruel in his Domestic Corrections, he was obliged to sell his *Slave* at a moderate Price. As Slavery was not abolished by the Gospel, the Custom of having *Slaves* lasted a long Time in *Christendom*. In the Time of *Louis the Gross*, they were so numerous in *Egypt*, that 'twas found a difficult Matter to quell a Body of them who had made Head against their Masters: Yet *Barrholus*, who lived in 1300, observes, there were none left in his Time.

SLEASY *Holland*, a Kind of *Holland* thus call'd, because made in *Silesia* in *Germany*; and which, from its Slightness, occasions all thin, slight, ill-wrought *Hollands* to be called *Sleasy*. See HOLLAND.

SLEDGE, a Kind of Machine, or Carriage, without Wheels, for the Conveyance of very weighty Things, as huge Stones, Bells, &c. The Dutch have a Kind of *Sledge*, whereon they can carry a Vessel of any Burthen by Land. It consists of a Plank a Foot and a Half broad, and the Length of the Keel of a moderate Ship, raised a little behind, and hollow in the Middle; so that the Sides go a little aslope, and are furnish'd with Holes to receive Pins, &c. The rest is quite even.

SLEEP, that State wherein the Body appearing perfectly at Rest, external Objects move the Organs of Sense as usually, without exciting the usual Sensations. See WAKING.

SLEEP, according to *Robault*, consists in a Scarcity of Spirits; which occasions that the Orifices or Pores of the Nerves in the Brain, whereby the Spirits used to flow into the Nerves, being no longer kept open by the Frequency of the Spirits, shut of themselves. For this being supposed, as soon as the Spirits, now in the Nerves, shall be dissipated, the Capillaments of those Nerves, having no Supplement of new Spirits, will become lax, and cohere as if cemented together; and so be unfit to convey any Impression to the Brain; besides, the Muscles being now void of Spirits, will be unable to move, or even sustain the Members: Thus will Sensation, and Motion, be both destroyed. See SENSATION, MUSCULAR MOTION, SPIRITS, &c.

Sleep is broke off unnaturally, when any of the Organs of Sense are so briskly acted on, that the Action is propagated to the Brain: For upon this, the few Spirits remaining in the Brain, are all called together, and unite their Forces to unlock the Pores of the Nerves, &c. But if no Object should thus affect the Organ, yet Sleep would in some Time be broke off naturally; for the Quantity of Spirits generated in Sleep, would at length be so great,



great, that, stretching out the Entrances of the Nerves, they would open themselves a Passage.

With regard to Medicine, *Sleep* is defined, by *Boerhaave*, to be that State of the *Medulla* of the Brain, wherein the Nerves do not receive so copious, nor so forcible an Influx of Spirits from the Brain as is required to enable the Organs of Sense, and voluntary Motion, to perform their Offices.

The immediate Cause hereof appears to be the Scarcity of Animal Spirits, which being spent, and requiring some Time to be recruited, the minute Vessels, before inflated, become flaccid and fall: Or else, 'tis owing to such a Pressure of the thicker Blood against the Cortex of the Brain, as that the *Medulla*, becoming likewise compressed by its Contiguity with the Cortex, the Passage of the Spirits is obstructed. The natural Cause of *Sleep* is any Thing that may contribute to these two. —And hence its Effects are understood: For in *Sleep* several Functions are suspended, their Organs and Muscles are at Rest; the Spirits scarce flow through them, therefore there is a less Consumption of them; but the solid *Villi* and Fibres of the Nerves are but little chang'd, but an Equilibrium obtains throughout; there is no Difference of Pressure on the Vessels, nor of Velocity in the Humours. The Motion of the Heart, Lungs, Arteries, Viscera, &c. is increased; nor is it chang'd or abated by the Action of the Senses, or of voluntary Motions: The Effects of which are, that the Vital Humours circulate more strongly and equably thro' the Canals, which are now freer, laxer, and opener, as not being compressed by the Muscles. Hence the Blood is driven less forcibly, indeed, into the Lateral Vessels, but more equably; thro' the greater Vessels, both more strongly, and more equably. Thus are the Lateral Fibres sensibly filled, as being less traversed, and at length remain at rest, with the Juices they have collected: Hence the lateral adipose Cells become filled and distended with an Oily Matter. By this means the Circulation, being almost wholly perform'd in the larger Blood Vessels, becomes gradually slower, and at length scarce sensible, if the *Sleep* be too long continued: Thus, in moderate *Sleep*, is the Matter of the Chyle best converted into *Serum*; that, into thinner Humours; and those, into Nourishment. The Attrition of the solid Parts is less considerable; the cutaneous Secretion is increased, and all the rest diminish'd. The Parts wore off are now best supplied, as an equable, continual Repletion, restores the Humours, and repairs the Solids, the preventing and disturbing Causes being then at rest. In the mean Time, that the nutritious Matter is best prepared; there is an Aptitude in the Vessels to receive, and in the Humours to enter, and the Means of Application, and Consolidation, are at liberty: Hence, a new Production, and Accumulation, of Animal Spirits, in all the Humours, as to Matter, and in the minutest Vessels as to Repletion: The Consequence of which is, an Aptitude for *Waking*, and an In-aptitude for *Sleep*; so that upon the first Occasion the Man awakes. See *NUTRITION*, &c.

Some of the more extraordinary Phenomena of *Sleep*, yet to be accounted for, are; That when the Head is hot, and the Feet cold, *Sleep* is impracticable: That spirituous Liquors first bring on Drunkenness, then *Sleep*: That Perspiration, during the Time of *Sleep*, is twice as great as at other Times: That upon *Sleeping* too long, the Head grows heavy, the Senses dull, the Memory weak, with Coldness, Pitsuitousness, an Indisposition of the Muscles for Motion, and a want of Perspiration. That much *Sleeping* will sustain Life a long Time, without either Meat or Drink: That upon a laudable *Sleep*, there always follows an Expansion of all the Muscles, a repeated Yawning, and the Muscles and Nerves acquire a new Agility: That *Fœtus*'s always *sleep*; Children often, Youth more than grown Persons, and they more than old Men; and that People, rising from violent Distempers, *sleep* much more than when perfectly at Health.

**SLIDING**, in Mechanicks, called, by some Authors, *Superincassus Radens*, is, when the same Point of a Body, moving along a Surface, describes a Line on that Surface: Such is the Motion of a Parallelepiped, protruded along a Plane.

**SLIDING RULE**, a Mathematical Instrument, serving to work Questions in Gauging, Measuring, &c. without the Use of Compasses; merely by the *sliding* of the Parts of the Instrument one by another, the Lines and Divisions whereof give the Answer, by Inspection. See *RULE*.

This Instrument is variously contrived, and applied by various Authors; particularly *Everard*, *Coggeshal*, *Gunter*, *Hunt*, and *Partridge*; but the most usual and useful ones, are those of *Everard* and *Coggeshal*; the Description, and Uses whereof, are as follow.

*Everard's* **SLIDING-RULE** is principally used in Gauging. See *GAUGING*.

'Tis ordinarily made of Box, a Foot long, an Inch broad, and  $\frac{1}{2}$  thick. It consists of three Parts: A Rule, on each Side whereof *a b* and *c d*, Tab. Surveying, Fig. 17. is a Groove; and two small Scales, or *Sliding Pieces*, *m, n*, to

*slide* in the Grooves. When both these Pieces are drawn out to their full Extent, the Instrument is three Foot long.

On the *first broad Face* of the Instrument *a b*, are four Lines of Numbers; for the Properties, &c. whereof see *LINE* of NUMBERS. The first mark'd A, consisting of two Radius's number'd 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; and then 2, 3, 4, 5, &c. to 10. On this Line are four Brass Centre-Pins, two in each Radius; one in each whereof is mark'd M B, to signify that the Numbers 'tis set against, 2150.40 are the Cubic Inches in a Malt-Bushel; the other two are marked with A, to signify that the Numbers they are set against, viz. 282, are the Cubic Inches in an Ale-Gallon. The second and third Lines of Numbers, are on the *Sliding Pieces*, and are exactly the same with the first. Close to the Figure 7, in the first Radius, is a Dot mark'd S i, set directly over 707, denoting 707 to be the Side of a Square inscribed in a Circle, whose Diameter is Unity. Close to 9 is another Dot, mark'd S e, set over 886, which is the Side of a Square, equal to the Area of a Circle, whose Diameter is Unity. Another Dot, nigh W, is set over 231, the Number of Cubic Inches in a Wine-Gallon; and another near C, is set over 3.14 the Circumference of a Circle, whose Diameter is Unity. The fourth Line of Numbers, mark'd M D, to signify Malt Depth, is a broken Line of two Radius's number'd 2, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 9, 8, 7, &c. the Numbers being set directly against M B on the first Radius.

On the *second broad Face*, mark'd *c d*, are 1°. A Line of Numbers of one Radius, number'd 1, 2, 3, and to 10, noted by the Letter D. On this are four Centre-Pins, the first, mark'd W G, is the Gauge-Point for a Wine-Gallon, i. e. the Diameter of a Cylinder, whose Height is an Inch, and Content 231 Cubic Inches, or a Wine-Gallon, which is 17.15 Inches: The second Centre-pin A G stands at the Gauge-Point for an Ale-Gallon, which is 18.95 Inches. The third M S stands at 86.3 the Side of a Square, whose Content is equal to the Inches in a solid Bushel. The fourth M R. is the Gauge-point for a Malt-bushel, which is 52.32 Inches. 2°. Two Lines of Numbers on the *Sliding-Piece*, which are exactly the same as those on the *Sliding-Piece* on the other Side. Close to the Division 8 is a Dot mark'd c, which is set to 795. the Area of a Circle, whose Diameter is Unity; and another mark'd d, stands at 785, the Area of a Circle, whose Diameter is Unity. 3°. Two Lines of Segments, each number'd 1, 2, 3, to 100; the first, for finding the Ulage of a Cask taken, as the Middle Frustum of a Spheroid, lying with its Axis parallel to the Horizon; and the other, for finding the Ulage of a Cask standing.

Again, on one of the *narrow Sides*, noted *e*, are 1°. A Line of Inches, number'd 1, 2, 3, &c. to 12, each subdivided into 10 equal Parts. 2°. A Line, by which, with that of Inches, we find a mean Diameter for a Cask, in the Figure of a Middle Frustum of a Spheroid: 'Tis number'd 1, 2, 3, &c. to 7, and mark'd *Spheroid*. 3°. A Line for finding the mean Diameter of a Cask, in the Figure of the Middle Frustum of a Parabolic Spindle, which Gaugers call, the *Second Variety* of Casks; 'Tis number'd 1, 2, 3, &c. and noted *Second Variety*. 4°. A Line, by which we find the mean Diameter of a Cask of the *Third Variety*, i. e. of a Cask in the Figure of two Parabolic Conoids, abutting on a common Base; 'tis number'd 1, 2, 3, &c. and noted *Third Variety*.

On the *other narrow Face*, mark'd *f*, are, 1°. A Foot divided into 100 equal Parts, mark'd F M. 2°. A Line of Inches, like that before-mention'd, noted I M. 3°. A Line for finding the mean Diameter for the fourth Variety of Casks, which is the Middle Frustum of two Cones, abutting on a common Base. It is number'd 1, 2, 3, &c. and noted F C, signifying Frustum of a Cone.

*Note*, on the Backside of the two *Sliding-Pieces* are a Line of Inches, from 13 to 36, when the two Pieces are put Endwise; and against that, the correspondent Gallons, or Hundred Parts, that any small Tub, or the like open Vessel (from 13 to 36 Inches Diameter) will contain at one Inch deep.

#### Use of Everard's SLIDING-RULE.

1°. *To multiply one Number by another*. Suppose 4 required to be multiplied by 6: Set 1 on the Line of Number S B, to 4 on the Line A; then, against 6 upon B is 24, the Product sought upon A. Again, to multiply 26 by 68, set 1 on B to 26 on A; then, against 68 on B is 1768 on A, the Product sought.

2°. *To divide one Number by another*. Suppose 24 to be divided by 4: Set 4 on B to 1 on A; then against 24 on B is 6 on A, which is the Quotient. Again, to divide 952 by 14; set 14 on A to 1 on B, and against 952 on A you have on B, 68, which is the Quotient.

3°. *To work the Rule of Three*. If 8 give 20, what will 22 give? Set 8 on B to 20 on A, then against 22 on B stands 55 on A; the Number sought.



40. To find a mean Proportional between two Numbers; Suppose between 50 and 72: Set 50 on C to 72 on D; then against 72 on C you have 60 on D, which is the Mean required.

50. To extract the Square Root of a Number. Apply the Lines C and D to one another, so as 10 at the End of D be even with 10 at the End of C; then are these two Lines a Table, shewing the Square Root of any Number less than 1000000 by Inspection: For against any Number on C, the Number answering to it on D, is the Square Root thereof. Note, If the given Number consist of 1, 3, 5, or 7 Places, seek it on the first Radius, on the Line C, and against it is the Root required at D.

60. Either the Diameter, or Circumference of a Circle, being given; to find the other: Set 1 on the Line A against 3, 141 (to which is writ C) on the Line B; and against any Diameter on the Line A, you have the Circumference on B; and contrariwise: thus, The Diameter being 20 Inches, the Circumference will be 62.831 Inches; and the Circumference being 94, 237, the Diameter will be 30.

70. The Diameter of a Circle given, to find the Area in Inches, or in Ale or Wine-Gallons. Suppose the Diameter 20 Inches, what is the Area? Set 1 upon D, to 785 (noted d) on C; then against 20 on D is 314.159 the Area required. Now to find that Circle's Area in Ale-Gallons, set 18.25 (mark'd A G) upon D, to 1 on C; then against the Diameter 20 upon D, is the Number of Ale-Gallons on C, viz. 1.11. The same may serve for Wine-Gallons, Regard only had to the proper Gauge-Point.

80. The two Diameters of an Ellipsis being given, to find the Area in Ale-Gallons: Suppose the Transverse Diameter 72 Inches, and the Conjugate 50: Set 359.05 the Square of the Gauge-point on B, to one of the Diameters (suppose 50) on A; then against the other Diameter 72 on B, you will have the Area on A, viz. 10.02 Gallons, the Content of this Ellipsis at one Inch deep. The like may be done for Wine-Gallons, if instead of 359.05 you use 249.11 the Square of the Gauge-Point for Wine-Gallons.

90. To find the Area of a Triangular Surface in Ale-Gallons: Suppose the Base of the Triangle 260 Inches, and the Perpendicular let fall from the opposite Angle 110 Inches; Set 282 (mark'd A) upon B to 130, half the Base on A: Then against 110 on B is 50.7 Gallons on A.

100. To find the Content of an Oblong in Ale-Gallons: Suppose one Side 130 Inches, and the other 180; set 282 on B to 180 on A; then against 130 upon B is 82.97 Ale-Gallons, the Area required.

110. To find the Content of a regular Polygon in Ale-Gallons, one of the Sides being given: Find the Length of the Perpendicular let fall from the Centre to one of the Sides: This multiplied by half the Sum of the Sides, gives the Area. For an Instance: Suppose a Pentagon, whose Side is 1 Inch; here, the Perpendicular will be found 837, by saying, As the Sine of half the Angle at the Centre, which in this Polygon is  $36^\circ$ , is to half the given Side 5, so is the Sine of the Complement of  $36^\circ$ , viz.  $54^\circ$  to the Perpendicular aforesaid. Whence the Area of a Pentagon, whose Side is Unity, will be found 1.72 Inches, which divided by 282, give 1.0061, the Ale-Gallons in that Polygon.

120. To find the Content of a Cylinder in Ale-Gallons: Suppose the Diameter of the Base of the Cylinder 120 Inches, the Perpendicular Height will be 36 Inches: Set therefore the Gauge-Point (A G) to the Height, 36 on C; then against 120, the Diameter on D, is found 1443.6, the Content in Ale-Gallons.

130. The Bung, and Head-Diameters, of any Cask, together with its Length, being given; to find its Content in Ale, or Wine-Gallons.

10. Suppose the Length of a Cask taken, (as the Middle Frustum of a Spheroid which is the first Case or Variety) be 40 Inches, its Head-diameter 24 Inches, and Bung-diameter 32 Inches; subtract the Head-diameter from that of the Bung; the Difference is 8. Look, then, for 8 Inches on the Line of Inches, on the first narrow Face of the Rule; and against it, on the Line Spheroid stands 5.6 Inches, which added to the Head-Diameter 24, gives 29.6 Inches for that Cask's Mean-Diameter: Set therefore the Gauge-Point for Ale (mark'd A G) on D, to 40 on C; and against 29.6 on D, is 97.45, the Content of the Cask in Ale-Gallons. If the Gauge-Point for Wine (mark'd W G) be used instead of that for Ale; you will have the Vessel's Content in Wine-Gallons.

20. If a Cask, of the same Dimensions as the former be taken (as the Middle Frustum of a parabolic Spindle, which is the Second Variety) see what Inches, and Parts, on the Line mark'd Second Variety, stand against the Difference of the Bung and Head-Diameters, which in this Example is 8; and you will find 5.1 Inches, which added to 24, the Head-Diameter makes 29.1 Inches, the Mean-Diameter of the Cask: Set therefore the Rule, as before, and

against 29.1 Inches, you will have 94.12 Ale-Gallons, for the Content of the Cask.

30. If the Cask taken be the Middle-Frustum of two parabolic Conoids, which is the Third Variety; against 8 Inches, the Difference of the Head and Bung-Diameters, on the Line of Inches, you will find 4.57 Inches on the Line called Third Variety; this added as before to 24, gives 28.57 for the Cask's Mean-Diameter: Proceeding as before, you will find the Content 90.8 Gallons.

40. If the Cask taken be the Frustums of two Cones, which is the Fourth Variety, against 8 Inches on the Line of Inches, you will find on the Line mark'd F C, 4.1 Inches to be added to 24 Inches: The rest, carried on as before, gives the Content of the Cask 87.93 Ale-Gallons.

140. A Cask partly empty, lying with its Axis parallel to the Horizon; to find the Quantity of Liquor therein: Find its whole Content, as above; which suppose 97.455 Gallons; and suppose the Inches, left dry, 8, and the Bung-Diameter 32: Then, as the Bung-Diameter on C is to 100 on the Line of Segments L, so are the dry Inches on C to a fourth Number on the Line of Segments: And as 100 upon B is to the Cask's whole Content on A, so is that fourth Number to the Liquor wanting to fill up the Cask; which, subtracted from the whole Contents of the Cask, gives the Liquor remaining therein. E. Gr. Set 32, the Bung-Diameter on C, to 100 on the Segment Line L; then against 8, the dry Inches on C, stands 17.6 on the Segment Line: Set therefore 100 on B, to the Cask's whole Content on A; and against 17.6 on B, you have 16.5 Gallons on A; subtracting therefore the said Gallons from 97.45, the Vessel's whole Content; the Liquor in the Cask will be 80.95 Gallons.

150. A Cask partly standing upright, or with its Axis perpendicular to the Horizon, to find the Liquor therein. Suppose the Length of the Cask 40 Inches, and 10 of them dry; set 40 Inches, on the Line C, to 100 on the Segment Line S; and against 10, the dry Inches on the Line C, stands 24.2 on H the Segment Line. Set, then, 140 on B, to 97.455, the Cask's whole Content on A; and against 24.2 on B, you will have 23.5 Gallons, which is what is wanting to fill up the Cask: This, therefore, subtracted from the whole Content 97.455, gives 73.955 Gallons, for the Quantity of Liquor remaining in the Cask.

160. To find the Content of any right-angled Parallelepiped (E. gr. a Cistern, Utting-Fat, or the like) in Malt-Bushels. Suppose the Length of the Base 80 Inches, the Breadth 50, and Depth 9 Inches: Set the Breadth 50 on B, to the Depth 9 on C; then against the Length 80 on A, stands 16.8 Bushels on B, the Number required.

Coggeshal's SLIDING-RULE, is principally used in measuring of the Superficies, the Solidity of Timber, &c. See MEASURING, &c.

It consists of two Rulers, each a Foot long, which are framed, or put together, various ways; sometimes they are made to slide by one another, like Glaziers Rules: Sometimes a Groove is made in the Side of a common two-foot Joint-Rule, and a thin Sliding-Piece put in, and Coggeshal's Lines added on that Side: But the most usual and commodious way, is to have one of the Rulers slide along a Groove made along the Middle of the other, as 'tis represented in Table Surveying, Fig. 18.

On the Sliding-Side of the Rule are four Lines of Numbers, three whereof are double, that is, are Lines to two Radius's, and one, a single broken Line of Numbers: The three first, mark'd A, B, C, are figured 1, 2, 3, &c. to 9; then 1, 2, 3, &c. to 10. Their Construction, Use, &c. are the same as those on Everard's Sliding-Rule. The single Line, called the Girt-Line, and noted D, whose Radius is equal to the two Radius's of any of the other Lines, is broke for the easier measuring of Timber, and figured 4, 5, 6, 7, 8, 9, 10, 20, 30, &c. 4 to 5. It is divided into 10 Parts, and each 10th subdivided into 4, and so on to 10, &c.

On the back-side of the Rule, are, 10. A Line of Inch-Measure, from 1 to 12; each Inch being divided and subdivided. 20. A Line of Foot-Measure; consisting of one Foot, divided into 100 equal Parts, and figured 10, 20, 30, &c. The Back-side of the Sliding-Piece is divided into Inches, Halves, &c. and figured from 12 to 24; so that when slid out, there may be a Measure of two Foot.

Use of Coggeshal's SLIDING-RULE, in Measuring Plain Superficies.

1. To measure a Square. Suppose, E. gr. the Sides be each 5 Feet: Set 1 on the Line B, to 5 on the Line A; then against 5 on the Line B, is 25 Feet; the Content of the Square on the Line A.

2. To measure a long Square. Suppose the longest Side 18 Foot, and the shortest 10: Set 1 on the Line B, to 10 on the Line A; then against 18 Foot, on the Line B, is 180 Feet, the Contents on the Line A.

3. To



3. *To measure a Rhombus.* Suppose the Side 12 Feet, and the Length of a Perpendicular let fall from one of the obtuse Angles, to the opposite Side, 9 Feet: Set 1, on the Line B, to 12, the Length of the Side, on the Line A; then against 9, the Length of the Perpendicular on the Line B, is 108 Feet, the Content.

4. *To measure a Triangle.* Suppose the Base Seven Feet, and the Length of the Perpendicular let fall from the opposite Angle to the Base, 4 Feet: Set 1 on the Line B, to 7 on the Line A; then against half the Perpendicular, which is 2, on the Line B, is 14 on the Line A, for the Content of the Triangle.

5. *To find the Content of a Circle, its Diameter being given.* Suppose the Diameter 3.5 Feet: Set 11 on the Girt-Line D, to 95 on the Line C; then against 3.5 Feet on D is 9.6 on C, which is the Content of the Circle in Feet.

6. *To find the Content of an Oval or Ellipsis.* Suppose the longest Diameter 9 Feet, and the shortest 4. Find a mean Proportional between the two, by setting the greater 9 on the Girt-Line, to 9 on the Line C; then, against the less Number 4, on the Line C, is 6; the mean Proportional sought. This done, find the Content of a Circle, whose Diameter is 6 Feet; this, when found, by the last Article, will be equal to the Content of the Ellipsis sought.

Use of Coggeshal's SLIDING-RULE, in the Measuring of Timber.

1<sup>o</sup>. *To measure Timber the usual Way.* Take the Length in Feet, Half-Feet, and, if required, Quarters; Then measure half way back again; there girt the Tree with a small Cord or Line; double this Line twice, very evenly, and measure this fourth Part of the Girt or Perimeter, in Inches, Halves, and Quarters. The Dimensions thus taken, the Timber is to be measured as if Square, and the Fourth of the Girt taken for the Side of the Square, thus; Set 12 on the Girt-Line D, to the Length in Feet on the Line C, then against the Side of the Square, on the Girt-Line D, taken in Inches, you have, on the Line C, the Content of the Tree in Feet.

For an Instance: Suppose the Girt of a Tree, in the Middle, be 60 Inches, and the Length 30 Feet, to find the Content, set 12 on the Girt Line D, and 30 Feet on the Line C; then against 15, one Fourth of 60, on the Girt-Line D, is 46.8 Feet; the Content on the Line C. If the Length should be 9 Inches, and the Quarter of the Girt 35 Inches; here, as the Length is beneath a Foot, measure it on the Line of Foot-measure, and see what decimal Part of a Foot it makes, which you will find 75. Set 12, therefore, on the Girt Line to 75 on the first Radius of the Line C, and against 35 on the Girt Line is 64 Feet on C, for the Content.

2<sup>o</sup> *To measure round Timber the true Way.* The former Method, though that generally in Use, is not quite just. To measure Timber accurately, instead of the Point 12 on the Girt Line, use another, viz. 10.635; at which there should be placed a Centre-pin. This 10.635 is the Side of a Square equal to a Circle, whose Diameter is 12 Inches. For an Instance: Suppose the Length 15 Feet, and  $\frac{1}{4}$  of the Girt 42 Inches: Set the Point 10.635 to 15 the Length; then against 42 on the Girt Line is 233 Feet for the Content sought; whereas by the common Way, there arises only 184 Feet. In effect, the common Measure is only to the true Measure, as 11 to 14. See TIMBER.

3<sup>o</sup> *To measure a Cube:* Suppose the Sides to be 6 Feet each; set 12 on the Girt Line D, to 6 on C; then against 72 Inches (the Inches in 6 Feet) on the Girt Line, is 216 Feet on C, which is the Content required.

4<sup>o</sup> *To measure unequally-squared Timber;* that is, where the Breadth and Depth are not equal. Measure the Length of the Piece, and the Breadth and Depth (at the End) in Inches: Then find a mean Proportional between the Breadth and Depth of the Piece. This mean Proportional is the Side of a Square, equal to the End of the Piece; which found, the Piece may be measur'd as Square Timber. For an Instance: Let the Length of the Piece of Timber be 13 Feet; the Breadth 23 Inches, and the Depth 13 Inches: Set 23 on the Girt Line D, to 23 on C; then against 13 on C is 17.35 on the Girt Line D, for the mean Proportional. Again, setting 12 on the Girt Line D, to 13 Feet, the Length on the Line C; against 17.35 on the Girt Line, is 27 Feet, the Content.

5<sup>o</sup> *To measure taper Timber:* The Length being measured in Feet, Note, one third of it; which is found thus: Set 3 on the Line A, to the Length on the Line B; then against 1 on A, is the third Part on B: Then if the Solid be round, measure the Diameter at each End in Inches, and subtract the less Diameter from the greater; add half the difference to the lesser Diameter; the Sum is the Diameter in the middle of the Piece. Then set 13.54 on the Girt to

the Length of the Line C, and against the Diameter in the middle, on the Girt Line, is a Fourth Number on the Line C. Again, set 13.54 on the Girt Line to the third Part of the Length on the Line C; then against half the Difference on the Girt Line, is another fourth Number on the Line C, these two fourth Numbers added together, give the Content. For an Instance; Let the Length be 27 Feet (one Third whereof is 9) the greater Diameter 22 Inches, and the lesser 18; the Sum of the Two will be 40, their Difference 4, and half the Difference 2, which added to the less Diameter, gives 20 Inches for the Diameter in the middle of the Piece. Now set 13.54 on the Girt Line, to 27 on the Line C, and against 20 on D, is 58.9 Feet. Again, set 13.54 of the Girt Line to 9 on the Line C; and against 2 on the Girt Line (represented by 20) is 196 Parts; therefore, by adding 58.9 Feet to 126 Feet, the Sum is 59.96 Feet the Content.

If the Timber be Square, and have the same Dimensions; that is, the Length 27 Feet, the Side of the greater End 22 Inches, and that of the lesser 18 Inches, to find the Content: Set 12 on the Girt Line to 27 the Length on the Line C, and against 20 Inches, the Side of the mean Square on the Girt Line, is 75.4 Feet. Again, set 12 on the Girt Line to 9 Feet, one Third of the Length, on the Line C, and against 2 Inches, half the Difference of the Squares of the Ends on the Girt Line, is 25 Parts of a Foot, both together make 75.65 Feet, the Content of the Solid.

*The Girt or Circumference of a Tree, or round Piece of Timber given; to find the Side of a Square within, or the Number of Inches of a Side, when the round Timber is Squar'd.* Set 10 on A to 9 on B; then against the Girt on A, are the Inches for the Side of the Square on the Line B.

SLING, *Fundus*, a String-Instrument, serving for the casting Stones with the greater Violence. — *Pliny, L. 7. C. 56.* attributes the Invention of the Sling to the Phœnicians. *Vegetius* attributes it to the Inhabitants of the Balearic Islands; who were famous in Antiquity, for the dextrous Management thereof. *Florus* and *Strabo* say they had three Kinds of Slings; some longer, others shorter, which they used according as their Enemies were nearer or more remote. *Diodorus* adds, that the first served them for a Head-band, the second for a Girdle, and that the Third they constantly carried with them in the Hand.

SLINGING, is used variously at Sea; but chiefly for the hoisting up Casks or other heavy Things, with Slings or Contrivances of Ropes, spliced into themselves at either End, with an Eye big enough to hold the Thing to be Slung.

SLIPPING (among Gardeners) is the pulling off a Sprig from a Branch, or a Branch from an Arm of the Tree: and so a Slip may have its Rents double and treble Slipped, or its Stalk ragged.

SLOOP, is a floating Vessel of the Shallop-kind. See FLOATING VESSEL.

In our Navy, they are Attenders on the Men of War; and are usually about 60 Ton, and carry about 30 Men. See NAVY.

SLOUGH, a deep and muddy Place; also the cast Skin of a Snake, the Damp of a Coal-pit, and the Scar of a Wound, are so called. The Slough of a Wild Boar is the Bed, Soil, or Mire, wherein he wallows, or in which he lies in the Day-time: Slough (in Hunting) is used for a Company of some Sorts of Wild-Beasts.

SLUICE, a Frame of Timber, Stone, or other Matter, serving to retain and raise the Water of a River, &c. and, on Occasion, to let it pass: Such is the Sluice of a Mill, which stops and collects the Water of a Rivulet, &c. to let it fall, at length, in the greater Plenty upon the Mill-wheel: such also are those used as Vents or Drains to discharge Water off Land: And such are the Sluices of Flanders, &c. which serve to prevent the Waters of the Sea overflowing the lower Lands, except when there is Occasion to drown them.

Sometimes there is a kind of Canal inclosed between two Gates or Sluices, in artificial Navigations, to save the Water, and render the Passage of Boats equally easy, and safe, upwards and downwards; as in the Sluices of Briare in France, which are a kind of massive Walls, built Parallel to each other at the Distance of 20 or 24 Feet, closed with strong Gates, at each End, between which is a kind of Canal or Chamber, considerably longer than broad, wherein a Vessel being inclosed, the Water is let out at the first Gate, by which the Vessel is raised 15 or 16 Foot, and pass'd out of this Canal into another much higher. By such means a Boat is convey'd out of the *Louvre* into the *Seyne*, though the Ground between them be raised above 150 Feet higher than either of those Rivers. — The Word is form'd of the French, *Escluse*, which *Menage* derives from the Latin, *Exclusa*, found in the *Salic Law* in the same Sense. But this is to be restrained to the Sluices of Mills, &c. for as to those serving to raise Vessels, they were unknown to the Ancients.

SMACK,



**SMACK**, is a small Vessel with but one Mast. See **MAST**. Sometimes, such are employed as Tenders on a Man of War, and they are also used for Fishing upon the Coasts.

**SMALL-POX**, *Variola*. See **POX** and **VARIOLÆ**.

**SMALT**, a kind of Mineral Matter, prepared and purified Abroad, and brought hither, sometimes in Form of a blue Powder, and sometimes in Cakes; chiefly used along with Starch, to give Linens the finer and clearer Cast; and best known by the Name of *Stone-blue*. See **BLUE**.

The Preparation of *Smalt*, as practised in *Hermannia*, we have described in the *Philosophical Transactions* by Dr. *Krieg*; Who tells us, that the Matter 'tis made of, is the Mineral Stone, called *Cobalt* or *Cadmia*, which being pulveriz'd, and the lighter Stuff wash'd away, the Remainder is laid on a Furnace, and by a Fire, underneath and aside it, the Flames whereof are reverberated over it, a Matter is separated from it in Form of a Smoak, which sticking to the Walls, makes what we call *Arsenic*. See **ARSENIC**.

When the Cobalt has done smoaking, 'tis cool'd, mix'd with Pot-ashes and Powder of white Flint-stones, the Mixture put in Pots, and melted for five or six Hours in a Furnace. By this means, the Matter is form'd into a blue Glass, which being put in cold Water, cracks and grows tender, and is at length powder'd by an Engine, the finest part separated by a Sieve, put into a Mill, and ground in Water, into the finest Powder, which by washing is still further separated from the coarser, then dried in warm Chambers, barrell'd up, and sent away.

**SMARAGD**, a precious Stone of a green Colour, very Beautiful and Brilliant. See **PRECIOUS STONE**.

The Oriental *Smaragds* are the most in Esteem, as being the hardest, and their Splendor the most vigorous; so as even to tinge the ambient Air with their Greenness. Great Virtues are ascribed to the *Smaragd*. *Cardan* and others say, it resists Plagues, Poisons and Dysenteries; that it refreshes the Spirits, &c.

The Word is form'd from the Greek, *σμεραγδος*.

**SMECTYMNUS**, a Term that made some Figure in the Time of the Civil Wars, and during the *Inter-regnum*. It was form'd of the initial Letters of the Names of Five eminent Presbyterian Ministers of that Time, viz. *Stephen Marshall*, *Edmund Calamy*, *Thomas Young*, *Matthew Newcomen*, and *William Spurstow*, who, together, wrote a Book against Episcopacy, in the Year 1641, whence they and their Retainers, were called *Smectymnians*.

**SMELL**, Odor, with regard to the Organ, is an Impression made on the Nose, by little Particles continually exhaling from odorous Bodies. See **NOSE**, &c.

*Smell*, with regard to the Object, is the Figure and Disposition of Odorous Effluvia, which sticking on the Organ, excite the Sense of *Smelling*. See **SMELLING**.

With regard to the Soul, *Smell* is the Perception of the Impression of the Object on the Organ, or the Affection in the Soul resulting therefrom. See **SENSE**.

The Chymists teach, that Sulphur is the Principle of all *Smells*, and that these are more or less strong, as the Sulphur in the odorous Body, is more or less dried and exalted. Sulphur, they say, is the Foundation of Odors, as Salt is of Savors, and Mercury of Colours. See **SMELLING**.

*Smell*, like Taste, consists altogether in the Arrangement, Composition and Figure of the Parts; as appears from the following Experiments of Mr. *Boyle*;

1° From a Mixture of Two Bodies, each whereof, is, of itself, void of all *Smell*; a very urinous *Smell* may be drawn: That is, by the Grinding of Quick-lime with Sal-Ammoniac. 2° By the Admixture of common Water, which of itself, is void of *Smell*, or inodorous; another inodorous Body may be made to emit a very rank *Smell*. Thus Camphor dissolved in Oil of Vitriol, is inodorous; yet mix'd with Water, immediately exhales a very strong *Smell*. 3° Compound Bodies may emit *Smells*, which have no Similitude to the *Smells* of the Simples they consist of. Thus Oil of Turpentine, mixt with a double Quantity of Oil of Vitriol, and Distilled; after Distillation, there is no *Smell* but of Sulphur; and what is left behind in the Retort, being again urged by a more violent Fire, yields a *Smell* like Oil of Wax. 4° Several *Smells* are only to be drawn by Motion and Agitation. Thus Glass, Stones, &c. which even when heated, yield no *Smell*, yet when rubbed and agitated in a peculiar Manner, emit a strong *Smell*; particularly Beech-wood in turning, yields a kind of Rosy *Smell*. 5° A Body that has a strong *Smell*, by being mix'd with an inodorous one, may cease to have any *Smell* at all: Thus if Aqua-fortis, not well dephlegmated, be poured on Salt of Tartar, till it cease to ferment; the Liquor, when evaporated, will yield inodorous Crystals, much resembling Salt of Nitre. Yet when burnt, will yield a most noisom *Smell*. 6° From a Mixture of Two Bodies, the one whereof smells extremely ill, and the other not well; a very pleasant aromatic Odor may be gain'd, viz. by a Mixture of Aqua-fortis, or Spirit of Nitre, with an inflammable Spirit of Wine. 7° Spirits of Wine, by mixing with an almost inodorous Body, may

gain a very pleasant, aromatic *Smell*. Thus inflammable Spirits of Wine, and Oil of *Dantzic* Vitriol, mix'd in equal Portions, then digested, and at last distill'd, yield a Spirit of a very fragrant *Smell*. 8° A most fragrant Body may degenerate into a foetid one, without the Admixture of any other Body. Thus if the Spirit, mentioned in the former Experiment, be kept in a well closed Receiver, it will soon turn to the Rankness of Garlic. 9° From two Bodies, one whereof is inodorous, and the other foetid; a very pleasant *Smell* may arise, much resembling Musk, viz. by putting Pearls into Spirit of Vitriol: For when dissolved, they yield a very agreeable *Smell*.

**SMELLING**, the Act whereby we perceive *Smells*; (See **SMELL**) or the Act, whereby we become sensible of odorous Bodies, by means of certain Effluvia thereof, which sticking on the Olfactory Organ, and briskly enough to have their Impulse propagated to the Brain, excite a Sensation in the Soul. See **SENSATION**.

The principal Organs of *Smelling*, are the Nostrils, and the Olfactory Nerves; the minute Ramifications of which latter are distributed throughout the whole Concave of the former: Their Description, see under their proper Heads.

*Smelling* is performed by the odorous Effluvia floating in the Air, being drawn into the Nostrils, in Inspiration, and struck with such Force against the Fibrillæ of the Olfactory Nerves, which the Figure of the Nose, and the Situation of the little Bones, render opposite thereto, as to shake them, and give them a vibratory Motion; which Action being communicated thence to the common Sensory, occasion an Idea of a sweet, or foetid, or sour, or an aromatic, or a putrified Object, &c.

The Matter in Animals, Vegetables, Fossils, &c. which chiefly affects the Sense of *Smelling*, *Boerhaave* observes, is that subtle Substance inherent in the oily Parts thereof, call'd *Spirit*: For that when this is taken away from the most fragrant Bodies; what remains, has scarce any *Smell* at all; but this pour'd on the most smell-less Bodies, gives them a Fragrancy. *Instit. cap. de Olfac.*

*Willis* observes, That Brutes have, generally, the Sense of *Smelling* in much greater Perfection than Man; as by this, alone, they distinguish the Virtues and Qualities of Bodies unknown before; hunt out their Food at a great Distance, as Hounds, and Birds of Prey, or hid among other Matters, as Ducks, &c. Man having other means of judging of his Food, &c. did not need so much Sagacity in his Nose: Yet have we Instances of a great deal, even in Man.

In the *Histoire des Antilles*, we are assured, there are Negroes who, by the *Smelling*, alone, can distinguish between the Foot-steps of a Frenchman and a Negro. 'Tis found that the Laminæ, wherewith the Upper Part of the Nostrils is fence'd, and which serve to receive the Divarications of the olfactory Nerves, are always longer, and folded up together in greater Number, as the Animal has this Sense more accurate. The various Windings and Turnings of these Laminæ, detain and fetter the more of the odoriferous Particles.

**SMELTING**, among Refiners, the melting of Metal in the Ore in a *Smelting* Furnace; in order to separate the metallic from the earthy Parts. See **METAL**.

**SMINTHEAN**, **SMINTHEUS**, in Antiquity, an Epithet given to *Apollo*, from the Greek *σμιθος*, a Rat. --- There are two different Accounts of the Origin of this Appellation: The first, that in the City of *Chrysa* in *Asia*, was a Priest of *Apollo*, call'd *Crines*, with whom that God being offended, sent a Herd of Rats to spoil all his Lands. But *Crines* appeasing the Deity, he came in Person to his Assistance, took his Lodgings with *Crines's* Shepherd, told him who he was, and destroyed all the Rats with his Arrows: In Memory whereof, *Crines* built a Temple to his Deliverer, under the Name of *Apollo Smintheus*. --- *Clemens Alexandrinus*, in his Exhortation to the Greeks, gives us a different Story. The *Cretans*, says he, intending to send out a Colony, consulted the Oracle of *Apollo* as to the Place; the Answer was, That they should place their Colony where those, born of the Earth, should oppose them. Upon their Arrival in the *Hellepont*, the Rats, in the Night-time, gnawed asunder all the Strings of their Bows: This they deem'd an Accomplishment of the Oracle, and built a City call'd *Sminthia*.

**SMOAK**, a humid Matter, exhaled in Form of Vapour, by the Action of Heat, either external or internal. See **FIRE**.

*Smoak*, Sir *Isaac Newton* observes, ascends in the Chimney by the Impulse of the Air it floats in: For that Air being rarified by the Fire underneath, has its specific Gravity diminished; thus, being determined to ascend, itself, it carries up the *Smoak* along with it. The Tail of a Comet, that great Author takes to ascend from the Sun after the same manner. See **COMET**.

*Smoak* of fat unctuous Woods, as Fir, Beech, &c. makes what we call *Jamp-black*. See **BLACK**.

There are various Inventions for preventing and curing *Smoking* Chimneys; as the Oculipiles of *Vitruvius*, the Ventiducts of *Cardan*, the Windmills of *Bernard*, the Capitals of *Serlio*, the little Drums of *Paduanus*, and several Artifices of *de Lorme*, &c. See **CHIMNEY**.



In the *Philosophical Transactions*, we have the Description of an Engine invented by Monsieur *Dalesme*, which consumes the *Smoke* of all Sorts of Wood, and that so totally as the most curious Eye cannot discover it in the Room, nor as the nicest Nose smell it, though the Fire be made in the middle of the Room. It consists of several Iron Hoops, four or five Inches Diameter, which shut into one another; and is placed on a Trever. A Brand taken out of the Fire *smokes* instantly; but ceases as soon as returned. The most stercid Things, as a Coal steep'd in Cat's-piss, which stinks abominably when taken out of the Fire, yet in it makes not the least ill Scent; no more than Red Herrings broil'd, &c.

**SMOKE** *Earthings*, were the pentecostal or customary Oblations, offered by the Inhabitants within any Diocess, when they made their Processions to the Cathedral Church; which came by degrees into an annual, standing Rent, called *Smoke-Earthings*.

**SMUGGLING**, a Cant Term for the Running of Goods; or the stealing them ashore without paying Custom. See CUSTOM.

**SMUT**, a Disease in Corn, whereby the Pulp or Meal thereof is damaged, and its natural Taste, Colour, &c. alter'd.

The *Smut* is usually ascribed by the Husbandmen to the excessive Fatness and Rankness of the Soil; to the manuring the Land with rotten Vegetables, as Straw, Hawn and Fern; and to the sowing *smutty* Seed.

Mr. *Bradley* makes no doubt to call the *Smut* a *Blight*, and to account for it on the same Principle as the Blights befalling other Plants, particularly Fruit Trees, viz. from innumerable little Insects, brought, or at least hatch'd by the eastern Winds, which prey on and devour the native Juices of the Corn, and poison them with a Mixture of their own. See BLIGHT.

An approved Method to prevent the *Smut*, the same Mr. *Bradley* gives us, as follows: The Wheat, for Seed, to be washed in three or four Waters, stirring it well round, and with great force, each time, and skimming off all the light Wheat swimming a-top. This done, 'tis to be steep'd in a Liquor thus prepared: Into a sufficient Quantity of Water, put as much Salt, as, when stirred about, will make an Egg swim; and to this add as much more Salt; stir the whole well, and to the Brine, put two or three pound of Alum beaten fine. In this Mixture, lay the Wheat to steep, at least, thirty or forty Hours. Take it out the Night before 'tis to be sown, and sift some slack'd Lime on it; this dries and fits it for sowing.

Note, many steep their Wheat in Brine, yet have plenty of *smutty* Corn: The Reason is, that they don't either make their Brine strong enough, or don't let the Wheat stay long enough therein. 'Tis a common Notion among them, that steeping it so long, rots the Grain; but Experience shews the contrary.

**SNAKE Root.** See SERPENTARIA *Radix*.

**SNEEZING**, a convulsive Motion of the Muscles of the Breast used in Expiration; wherein, after suspending the Inspiration begun, the Air is repelled from the Mouth and Nose with a momentary Violence. See RESPIRATION.

The Cause is an Irritation of the Upper Membrane of the Nose, which communicates with the Intercoastal Nerve by means of the Twigs that it detaches to it. This Irritation is performed either externally by strong Smells; as Marjoram, Roses, &c. or by Dust floating in the Air, and taken in by Inspiration; or by sharp, pungent Medicines, as Cresses and other Sternutatories, which vellicate the Membrane of the Nose; or internally by the Acrimony of the Lympha or Mucus, which naturally moistens that Membrane.

The Matters cast forth in *Sneezing*, come primarily from the Nose and Throat, the pituitary Membrane continually exuding a Mucus thither; and, secondarily, from the Breast, the Trachea and the Bronchia of the Lungs.

*F. Strada*, in an express Treatise on *Sneezing*, has discovered the Original of the Custom of saluting those who *Sneeze*. He shews it to be a Remain of Paganism; tho' he owns 'twas in use among the *Jews* as well as among the *Romans*. From an Epigram in the Anthology, it appears, that among the Ancients, a Person after *Sneezing*, made a short Prayer to the Gods; as *Σαὶ σάζον, Jupiter save me*.

**SNOW**, a Meteor form'd in the middle Region of the Air, of Vapour raised by the Action of the Sun or subterraneous Fire, there congeal'd, its Parts contipated, its specifick Gravity increased, and thus returned to the Earth in form of little Villi or Flakes. See METEOR and VAPOUR.

The *Snow* we receive, may properly enough be ascribed to the Coldness of the Atmosphere through which it falls. When the Atmosphere is warm enough to dissolve the *Snow* before it arrives at us; we call it *Rain*: If it preserve itself undissolved, it makes what we call *Snow*. See RAIN.

The Uses of *Snow* must be very great, if all be true *Boerhaave* has said in its behalf, in an express Treatise, *de Nivis usu medico*: He there shews that it fructifies the Earth, (which, indeed, is a very old and general Opinion) preserves from the Plague, cures Fevers, Colicks, Tooth-Aches,

Sore-Eyes, and Pleurifies (for which last Use, his Country-men of *Denmark* use to keep *Snow*-Water gathered in *March*) He adds, that it contributes to the prolongation of Life; giving Instances of People in the *Alpine* Mountains that live to great Ages: And to the preserving of dead Bodies: Instances whereof, he gives in Persons buried under *Snow* in passing the *Alps*, which are found uncorrupted in the Summer when the *Snow* is melted.

He observes, that in *Norway*, *Snow*-water is not only their sole Drink in the Winter; but *Snow* even serves for Food; People having been known to live several Days, without any other Sustainance.

Indeed the Generality of these medicinal Effects of *Snow*, are not to be ascribed to any specific Virtue in *Snow*; but to other Causes. It fructifies the Ground, for Instance, by guarding the Corn, or other Vegetables, from the intenser Cold of the Air, especially the cold, piercing Winds. And it preserves dead Bodies, by constipating and binding up the Parts, and thus preventing all such Fermentations or internal Conflicts of their Particles, as would produce Corruption. See COLD.

'Tis a popular Error, that the first *Snow* that falls in the Year, has particular Virtues. In *Italy*, they cool their Wines all the Summer with *Snow*-water.

Dr. *Grew*, in a Discourse of the Nature of *Snow*, observes, that many Parts thereof are of a regular Figure, for the most part so many little Rowels or Stars of Six Points, and are perfect and transparent Ice, as any we see on a Pond, &c. Upon each of these Points are other collateral Points, set at the same Angles, as the main Points themselves: Among which there are divers others irregular, which are chiefly broken Points, and Fragments of the regular Ones. Others also by various Winds, seem to have been thaw'd, and froze again into irregular Clusters; so that it seems as if the whole Body of *Snow* were an infinite Mass of Icicles irregularly figured. That is, a Cloud of Vapours being gathered into Drops, the said Drops forthwith descend; upon which Descent, meeting with a freezing Air as they pass through a colder Region, each Drop is immediately froze into an Icicle, shooting itself forth into several Points; but these still continuing their Descent, and meeting with some intermitting Gales of warmer Air, or in their continual Waftage to and fro, touching upon each other, some of 'em are a little thaw'd, blunted, and again froze into Clusters, or intangled so as to fall down in what we call Flakes. The Lightness of *Snow*, although it is firm Ice, is owing to the Excess of its Surface, in Comparison to the Matter contained under it; as Gold itself may be extended in Surface, till it will ride upon the least Breath of Air. See ICE and FREEZING.

Signior *Sarotti*, in the *Philosophical Transactions*, mentions a red or bloody *Snow*, which fell on the Mountains *le Langhe*, near *Genoa* on *S. Joseph's* Day. This *Snow* when squeez'd, yielded a Liquor of the same Colour.

**SNUFF**, a Preparation of Tobacco, made by reducing it into a Powder, fit to be taken at the Nose; in order to purge or clear the Head of Pituita. See TOBACCO.

Ordinarily, Tobacco is only the Basis of *Snuff*; other Matters being added to give it a more agreeable Scent, &c.

The kinds of *Snuff*, and their several Names, are infinite; and new ones are daily invented; so that it would be as impertinent as 'tis impossible, to give a Detail of them. We shall only say, that there are Three grand Sorts; the First granulated; the Second an impalpable Powder; and the Third the Bran or the coarse Part remaining after sifting the second Sort.

**SOAP**, a kind of Past, sometimes hard and dry, and sometimes soft and liquid; much used in washing, and whitening Linens, and for various other Purposes, by the Dyers, Perfumers, Hatters, Fullers, &c. See DYING, HAT, FULLING, &c.

The principal Soaps of our Manufacture, are the *Soft*, the *Hard*, and the *Ball Soap*. The *Soft Soap*, again, is either White or Green: The Process of making each kind, is as follows;

*Method of making the several Kinds of SOAP.*

1<sup>o</sup> *Green, Soft-Soap.* The chief Ingredients used in making of *Green Soap*, are Lyes drawn from Pot-ash and Lime, boil'd up with Tallow and Oil. First, the Lye and Tallow are put into the Copper together, and when melted, the Oil is put to it, and the Copper made to boil; then the Fire is damp't or stop't up, while the Ingredients lie in the Copper to knit or incorporate; which done, the Copper is set on boiling, being fed or filled with Lyes as it boils, till there be a sufficient Quantity put therein: Then it is boil'd off with all convenient speed, and put to Casks.

2<sup>o</sup> *White Soft Soap.* One sort of *White Soap* is made after the same manner as *Green Soft Soap* is, Oil excepted, which is not used in White. The other sort of *White Soft Soap*, is made from Lyes of Ashes of Lime boil'd up at twice with Tallow. First, a quantity of Lyes and Tallow are put into the Copper together, and kept boiling; being



fed with Lyes as it boils, until it grains, or is boiled enough; then the Lyes are separated or discharged from the tallowish Part, which Part is removed into a Tub, and the Lyes thrown away: This is called the *First half Boil*. Then the Copper is charged again with fresh Tallow and Lyes, and the first half Boil put out of the Tub into the Copper a second Time; where it is kept boiling with fresh Lyes and Tallow, till it comes to Perfection. It is then put out of the Copper into the same sort of Casks as are used in Green soft Soap.

3° *Hard Soap* is made with Lyes from Ashes and Tallow, and most commonly boild at Twice: The First, called a *Half-boiling*, hath the same Operation as the first Half-boil of soft White Soap. Then the Copper is charged with fresh Lyes again, and the first Half-boil put into it, where it is kept boiling, and fed with Lyes as it boils, till it grains, or is boiled enough; then the Lye is discharged from it, and the Soap put into a Frame to cool and harden.

*Note*, There is no certain Time for bringing off a Boiling of any of these Sorts of Soap. It frequently takes up part of two Days.

4° *Ball-Soap*, commonly used in the North, is made with Lyes from Ashes and Tallow; the Lyes are put into the Copper, and boild till the watery Part is quite gone, and there remains nothing in the Copper but a sort of Nitrous Matter (the very Strength or Essence of the Lye) to this the Tallow is put, and the Copper kept boiling and stirring for above half an Hour, in which time the Soap is made; and then it is put out of the Copper into Tubs or Baskets with Sheets in them, and immediately (whilst soft) made into Balls.

*Note*, it requires near Twenty-four Hours to boil away the watery Part of the Lye.

SOAPS, both dry and liquid, are held of some Use in Medicine: The Liquid against Fevers; to be applied by rubbing the Soals of the Patient's Feet therewith: And the Dry, dissolved with Spirit of Wine, in the Cure of cold Humours: Besides its being used in Suppositories, and in the Composition of a kind of Plaster, commonly called *Emplast de Sapone*.

SOAP Earth, a kind of Earth found in the Levant, and used as a Soap. See EARTH.

The Soap-Earth, Dr. Smith tells us, is only had in two Places near *Duraclea*, Six Leagues to the East of *Smyrna*. 'Tis, in effect, of itself, a fine Soap, boiling and shooting up out of the Earth.

'Tis gathered always before Sun-rise, and in Mornings when there falls no Dew; so that a Stock must be laid up in the Summer Months, to serve all the Year.

In some Places, it comes up an Inch or two above the Surface of the Ground: But the Sun rising on it, makes it fall again. Every Morning there returns a fresh Crop.

SOC, in Law, a Power, Authority, or Privilege to minister Justice, and execute Laws: Also the Shire, Circuit, or Territory wherein such Power is exercised by him indued with such Jurisdiction.

And hence the Law Latin Word *Soca* for a Seignory or Lordship, enfranchised by the King, with Liberty of holding a Court of his *Sock-men* or *Sockagers*, that is, his Tenants, whose Tenure is hence called *Socage*. See SOCAGE.

This kind of Liberty still subsists in several Parts of England, under the Name of *Soke* or *Soken*. *Skene* defines *Sok*, to be *Secla de hominibus suis in curia secundum consuetudinem Regni*. *Brady* makes mention of these Liberties: *Soc*, *Sac*, *Sol*, *Team*, *Infangthef* and *Utsangthef*.

In the Laws of Henry I. *Soca* is used as synonymous with Franchise, or a privileged Place, Refuge, Asylum, Sanctuary, &c. From the Saxon, *Soen* and *Home*.

SOCAGE or SOCCAGE, a Tenure, by which Men held their Lands on condition of ploughing those of their respective Lords, with their own Ploughs, and at their own Charges. See SERVICE, VASSAL, TENURE, &c.

This slavish Tenure was afterwards, by the mutual Agreement of Lord and Tenant, turned into the Payment of a certain Sum of Money, which is hence called *Liberum Socagium*, free or common Socage. Whereas the other was *Villanum Socagium*, or base Socage: Inasmuch as those who held Lands by this Tenure, were not only bound to plough their Lords Lands; but took the Oath of Fealty to them, *Sicut de Villanis*. See FEALTY.

*Socage* was a Tenure of that Extent, that *Jittleton* tells us, all the Lands in England, which were not held by Knight's Service, were held in *Socage*: So that it seems the Land was divided between the two Tenures, which, as they were of different Natures, so the Descent of the Land was in a different Manner. For the Lands held in Knight's-Service, descended to the eldest Son; but those held in *Villano Socagio*, equally among all the Sons. Yet if there was but one Messuage, the eldest Son was to have it; so, as the rest had the Value of the Messuage equally divided between them.

*Skene* defines *Socage*, a Tenure of Lands, whereby a Man is infeoffed freely, without Wardship and Marriage, paying to his Lord some small Rents, &c. which is called *Free Socage*, &c.

*Bracton* thus describes it, *Dici poterit Socagium a Socco & inde tenentes Sockmanni, eo quod deputari sunt ut viantur tantum modo ad Culturam, & quorum Custodia & Marnagia ad propinquiores parentes jure sanguinis pertinebunt, &c.*

Several Divisions of *Socage* we meet withal in Law-writers, as *Socage in Capite*, &c. But by Stat. 12. Car. II. all Tenures from and after the 24th of February, 1645, shall be adjudg'd and taken for ever, to be turn'd into free and common Socage.

SOCCUS, SOCK, in Antiquity, a kind of high Shoe, reaching above the Ankle, wore by the Actors in the ancient Drama, in representing of Comic Persons. See COMEDY.

The *Soccus* was much lower than the *Cothurnus*; and was the distinguishing Wear of the Comedians; as the *Cothurnus* was of the Tragedians: Hence *Soccus* is frequently used for Comedy itself. Comedy, says M. Fenelon, must talk in an humbler Style than Tragedy; the *Sock* is lower than the *Buskin*. See BUSKIN.

SOCIETY, an Assemblage, or Union of several Persons in the same Place, for their mutual Assistance, Security and Interest.

Of Societies we have a great many Kinds, distinguished by the different Ends proposed by them: *Civil Societies*, *Trading Societies*, *Religious Societies*, &c.

*Civil SOCIETY*. See GOVERNMENT.

*SOCIETY*, in Trade, is a Contract or Agreement between two or more Persons, whereby they bind themselves together for a certain Time, and agree to share equally in the Profits or Losses which shall accrue in the Affairs for which the Society or Co-partnership is contracted. See CO-PARTNER.

We have several very considerable Societies of this Kind; as the *Merchant Adventurers*, the *Turkey*, *East India*, *Muscovy*, *Eastland*, *Greenland*, *Spanish*, *African*, *South-Sea* and *Hudson's Bay Companies*. The Institutions, Policies, &c. whereof, see under the Article COMPANY.

By the Roman Law, the Social Contract needs no other Solemnity, but the sole Consent of Parties, without any Writing at all: But among us, Articles of Co-partnership are required. There is no Contract wherein Probity is more required than in Society; inasmuch as the Laws pronounce those Null, that are made contrary to Equity, and with design to deceive.

The French distinguish three Kinds of Mercantile Society: *Ordinary Society*, called also *Collective* and *General*; *Society in Commendam* or *Commandity*; and *Anonymous Society*, called also *Momentary* and *Incommue*. The first is, where several Merchants act alike in the Affairs of the Society; and do all under their collective Names, which are public and known to every Body. — *Society in Commendam*, &c. is that between two Persons, one of whom only puts his Money into Stock, without doing any other Office of a Co-partner; the other, who is called the *Complimentary* of the Society, dispatching all the Business under his own Name. This Society is very useful to the State; inasmuch as all kinds of Persons, even Nobles and Men of the Robe, may contract it; and thus make their Money of Service to the Publick: And those who have no Fortune of their own to trade withal, hereby find means of establishing themselves in the World, and of making their Industry and Address serviceable. *Anonymous Society*, is that, where all the Members are employ'd, each particularly, in the common Interest, and each accountable for Profits, &c. to the rest; but without the Publick's being informed thereof; so that the Seller has only an Action against the particular Buyer, no other Name appearing. 'Tis also called *Momentary*, because frequently made on particular Occasions, and ceasing with them; as in the making a Purchase, the selling any Commodity, &c. Of this they distinguish four Kinds: *Society* by Participation, which is usually form'd by Letters from one City to another, where a Merchandise is to be bought or sold. The Second is, when two or three Persons go together to Fairs to buy Goods. The Third, when two or three Persons agree to buy up the Whole of some Commodity, in any Country; to sell it again at their own Price. And the Fourth is, when three or four Persons make a Journey together, to buy and sell the same Commodity. Beside Merchants, People of Quality, &c. are admitted into these Anonymous Societies.

*Religious SOCIETIES*, are Parties of Persons formed, either to live regularly together; or to promote the Interest of Religion; or to cultivate it in themselves.

Of the first Kind, are all Congregations of Religious; particularly the *Jesuits*, who are called the *Society of Jesus*; though they more usually call themselves the *Company of Jesus*. See JESUITES. — The *Society of the Sorbonne*. See SORBONNE. — The *Society of S. Thomas de Villeneuve*, instituted in 1660, by F. Ange le Pronst. — The *Society of S. Joseph*, instituted in 1638. — The *Society of Bretagne*, a Reform of Benedictines in 1606. And the *Society of Jesus*, a religious military Order, instituted by Pius II.

Of the second Kind are: the *SOCIETY for Reformation of Manners*; and putting in Execution the Laws against Immorality and Prophaneness. It was set on foot about 30 Years ago, by five or six private Persons in London; but is since exceedingly increased, by Numbers of Members of all Denominations.



nions. A particular Body of the most considerable hereof, bear the Expences of Prosecutions, &c. without any Contribution from the rest: These chiefly apply themselves to the Prosecuting Persons for Swearing, Drunkenness, and Profaning the *Sabbath*. Another Body of about 50 Persons, apply themselves to the suppressing Lewdness; and by them above 500 lewd Houses have been actually suppress'd. A third Body consists of Constables. A fourth, of Informers. Besides these, are Eight other regular, mix'd Bodies of House-keepers, and Officers, who inspect the Behaviour of Constables and other Officers, assist in searching disorderly Houses, seizing Offenders, giving Information, &c.

There are several other Societies of this kind at *Bristol*, *Canterbury*, *Nottingham*, &c.

The SOCIETY for propagating the Gospel in foreign Parts, was instituted by King *William*, in 1701, for securing a Maintenance for an Orthodox Clergy, and making other Provisions for the Propagation of the Gospel in the Plantations, Colonies, Factories, &c. --- To that end, He Incorporated the Archbishops, several Bishops, and other of the Nobility, Gentry and Clergy, to the number of 90, into a Body, with Privilege to purchase Two thousand Pounds a Year, Inheritance and Estates for Lives or Years, with other Goods, to any Value. They meet yearly on the third Friday in February, to chuse a President, Vice-President and other Officers; and the third Friday in every Month to transact Business, depute fit Persons to take Subscriptions for the said Uses; and of all Monies so received, to give account to the Lord Chancellor, &c. They have a standing Committee at the Chapter-house, to prepare Matters for the monthly Meeting, which is held at St. Martin's Library.

The SOCIETY for Propagating Christian Knowledge, was begun in 1699 by some Persons of Worth, &c. Its original Design was to propagate Religion in the Plantations, to secure the pious Education of the Poor at Home, and to reclaim those that err in the Fundamentals of Christianity.

In the Year 1701, they had procured considerable Charities, and had transmitted the same to the Plantations, in Libraries, Bibles, Catechisms, &c. with a voluntary Maintenance for several Ministers, to be employ'd in the Plantations. But the Society for Propagating the Gospel in foreign Parts, being then instituted, they were Incorporated, by Charter, into the same; and thus discharged, as a particular Society, from the further Pursuit of that Branch of their original Design: Whereupon they wholly turned themselves to the other; and are now very considerable, by great Accessions from among the Clergy and Laity.

They meet weekly, to concert Measures for raising Charity for Education of poor Children, and setting up Schools for that Purpose; as also for the more regular Disposal of pious Books and Catechisms; for Instruction of the Ignorant, Erroneous, &c. By the Assistance of Members of other religious Societies, they have procured Subscriptions for the Education of above Three thousand Children, who are placed out in Schools about *London*, and taught Reading, Writing, Psalmody, &c. They have dispersed great Numbers of good Books among the Poor, in the Fleet, Army, &c. and have procured several to be translated into *Welsh* and other foreign Languages, and dispers'd accordingly. See CHARITY School.

Of the third Kind, are divers religious Societies, properly thus called; first set on foot in *London* about the Year 1678, by a few young Men, who agreed to meet weekly, for Prayer, Psalmody and spiritual Conference. They are now increased to Forty distinct Bodies, who have set up public Prayers in many Churches where it was not, procured frequent Administrations of the Sacrament; and maintain Lectures on that Subject, in one Church or another almost on every Sunday-evening.

Royal SOCIETY. See ROYAL Society.

SOCINIANS, a late Sect of Antitrinitarians, who, in these Ages, have revived some of the Errors of *Paulus Samosatensis*, *Photinus* and *Arius*; whence they are also occasionally call'd *Arians*, *Photinians*, &c. tho' in many respects different from any of them. See ARIAN, PHOTINIAN, &c.

*Faustus Socinus*, a Gentleman of *Sienna*, whence they take their Name, was not the first Author of the Sect; for he says himself, in his Letter to *Martin Vatau*, wrote in 1548, that he advances no Dogma but what had been published by others before him, even in *Poland*, e'er he came to settle there. The Truth is, he may be rather said to have refined, by his Subtilties, on the Notions that already prevailed there in his Time, than to have invented a new System.

In his Life, wrote by a *Polish* Knight, we read, that he had not applied himself to the Study of Theology and Divinity, nor had studied any thing but Logic; till 35 Years of Age; but had spent the greatest part of his Life at the Court of the Great Duke of *Tuscany*. Upon his retiring thence, he began to think of Religion; and, prepossessed as he was with the Writings of his Uncle *Jacobs Socinus*, he form'd a System thereon. *Jacobs* had explained the first Words in the Gospel

of *S. John*, *In principio erat Sermo*; by these, *In principio Evangelii erat Sermo*; as if the Beginning, there spoke of, were only the beginning of the Gospel.

This Interpretation, never heard of in all Antiquity, is followed by *Faustus*, in his Comment on the Fourteen first Verses of that Gospel. He adds, that he who is called *Word*, had not been from all Eternity, nor even before the Creation of the World; but that by *Word*, must be meant the Man *Jesus Christ*, God born of the Virgin, under the Emperor *Augustus*. But this is a Paradox, which all his Followers do not equally come into. However, they all deny, not only the Divinity of *Jesus Christ*, but the Existence of the Holy Ghost, the Mystery of the Incarnation, Original Sin, and Grace.

Their Sentiments are explain'd at length, in their Catechism printed several Times, under the Title of *Catechesis Ecclesiarum Polonicarum unum Deum Patrem illiusque filium Unigenitum, una cum Sancto Spiritu ex sacra scriptura consentaneum*. Still, they are divided on several Articles. Some of them leave *Socinus*, as to what regards the Worship offered to *Jesus Christ*; not being able to conceive how divine Worship should be given a mere Man.

The Heresy of the *Socinians* spread exceedingly in *Poland*, *Lithuania*, *Transylvania*, and the neighbouring Places. *Racow* was their chief School; and there all their first Books were published. But they were exterminated out of *Poland* in 1655; since which time they have chiefly shelter'd in *Holland*; where, however, their public Meetings have been prohibited: But they find means to conceal themselves under the Name of *Arminians* and *Anabaptists*. See UNITARIAN.

SOCLE or ZOCCLE, in Architecture, a flat, square Member under the Bases of Pedestals, of Statues, Vases, &c. which it serves as a Foot, or Stand. See PEDESTAL, STATUE, &c.

The Word is *French*, form'd from the *Italian Zoccola*, or the *Latin Soccus*, the Shoe of the ancient Actors. *Vitruvius* calls it *Quadra*.

A continued SOCLE, is a kind of continued Stand, or Pedestal, without either Base, or Cornice ranging round the whole Building; called by *Vitruvius*, *Stereobata*, and the *French*, *Soubassement*. See STEREOBATA.

SOCOME, in our Law-Books, &c. a Custom of grinding at the Lord's Mill. There is *Bound Socome*, where the Tenants are bound to it, and *Love Socome*, where they do it freely, out of Love to the Lord.

SOCRATIC-Philosophy, the Doctrines and Opinions, with regard to Morality and Religion, maintained, and taught by *Socrates*. See PHILOSOPHY.

By the Character of *Socrates*, left us by the Ancients, particularly his Scholar *Plato*, *Laertius*, &c. He appears to have been one of the best, and the wisest Persons in all the Heathen World.

To him is ascribed the first introducing of Moral Philosophy; which is what is meant by that popular Saying, *Socrates first called Philosophy down from Heaven to Earth*; that is, from the Contemplation of the Heavens and heavenly Bodies, he led Men to consider themselves, their own Passions, Opinions, Faculties, Duties, Actions, &c.

While young, he was exceedingly fond of natural Knowledge, as he witnesses of himself in *Plato*: But in his older Age, he cast aside this part of Philosophy as obscure, uncertain, impracticable, and even useless and impertinent; and applied himself wholly to moral or active Philosophy.

'Twas he, first, who when all the other Philosophers boasted they knew all Things, own'd, ingenuously, he knew nothing; but this, that he knew nothing. Which *Pyrrho*, the Father of the *Sceptic Philosophy*, improved on, when he said he knew nothing; not even this, that he knew nothing. Yet in an Answer of the Oracle, it was pronounced; *Ἀδελφὸν ἀπ' ἅπαν Σωκράτης σφωδράτισθαι*. That *Socrates* was the Wisest of all Men. See PYRRHONIAN.

He was accused by *Anytus*, *Melitus* and *Lycon*, three Persons, whose Hatred he had incurred, by his severe Declamations against the Poets, of which Number two of the first were, and the Third an Actor. His Accusation was, That he corrupted the *Athenian* Youth, and broached new Superstitions. He was condemned to drink Cicuta, by 281 Votes, as we are told by *Quintilian*.

After his Death, his Fellow-citizens repented to that degree, that the *Gymnasia*, Courts of Justice, &c. were all shut up; *Melitus* put to Death, *Anytus* banish'd, and a Statue erected to *Socrates*. He wrote nothing himself; yet almost all the Sects of Philosophers refer their Origin to his Discipline; particularly the *Platonists*, *Peripateticks*, *Academicks*, *Cynicks*, *Stoicks*, &c. But the greatest Part of his Philosophy, we have in the Works of *Plato*. See PLATONIC Philosophy; see also ACADEMIC, PERIPATETIC, STOIC, &c.

SODOMY, an unnatural Crime, thus called from the City of *Sodom*, which was destroy'd by Fire for the same. See BUGGARY.



The *Levitical* Laws adjudged those guilty of this execrable Evil to the Fire, *Lev. c. 18* and *20*. And the Civil Law assigns the same Punishment. Our Laws make it Felony.

SOFA, in the *East*, is a kind of Alcove, raised half a Foot above the Floor of a Chamber or other Apartment, and esteem'd the Place of State, where Visitors of Distinction are received.

Among the *Turks*, the whole Floor of their State-Rooms is cover'd with a kind of Tapistry, and on the Window-side is raised a *Sofa* or *Sopha*, laid with a kind of Matrass, cover'd with a Tapistry much richer than the other. On this Tapistry the *Turks* are seated, both Men and Women, like the *Taylors* in *England*, cross-legg'd, leaning against the Wall which is bolster'd with Velvet, Sattin or other Stuff suitable to the Season. Here they eat their Meals, only laying a Skin over the Tapistry, to serve as a Table-cloth, and a round wooden Board over all, cover'd with Plates, &c.

The Embassadors of *France* stood out a long while, and refused to visit the Grand Vizier, unless he'd receive them on the *Sofa*: At length he granted them the *Sofa*.

SOFFITO or SOFIT, in Architecture, any Plafond or Ceiling, form'd of cross Beams, or flying Cornices, the square Compartiments or Pannels whereof are enrich'd with Sculptures, Painting, or Gilding. Such are those we see in the Basilics and Palaces of *Italy*, in the Apartments at *Luxembourg*, at *Paris*, &c. See CEILING.

The Word is *Italian*, and signifies the same with the *Latin*, *Lacunar* and *Laquear*; with this Difference, that *Lacunar* is used for any Ceiling, with square, hollow Pannels, called *Lacus*; and *Laquear* for Compartiments interlaced with Plat-bands, after the manner of Knots or *Laquei*.

SOFFITO or *Sofit*, is particularly used for the under Side or Face of an Architrave; and for that of the Corona or Larmier, which the Ancients called *Lacunar*, and we usually, *Plafond*. See PLAFOND.

It is enrich'd with Compartiments of Rosets; and in the *Doric* Order has 18 Drops, disposed in three Ranks, Six in each, placed to the Right of the Guttæ, at the Bottom of the Triglyphs. See GUTTÆ, DORIC, ARCHITRAVE, &c.

SOFL, &c. See SOPHI.

SOFTENING, in Painting, the mixing and diluting of Colours with the Brush or Pencil.

They also say, *soften* Designs in Black and White, made with the Pen, &c. to weaken the Teint. To *soften* a Portrait, according to *Felicien*, is to change some of the Strokes, and give a greater Degree of Sweetness and *Softness* to the Air thereof, which before had something rough and harsh in it.

SOIL, in Agriculture, Gardening, &c. denotes Earth or Ground consider'd, with regard to the Quality of its Mould, for the Production and Growth of Vegetables. See EARTH, MOULD, VEGETABLES, &c.

M. *Bratley* reduces all Soils to three Heads, viz. Sand, Loam or Mother-Earth, and Clay. See SAND, LOAM and CLAY.

Gravels and all the open Soils, till we come at Loam, are of the *sandy* Race; and the binding Earths, from Loam down to the Stiffness of Chalk, may be ranged under the Clay-kind.

Loam or Mother-Earth, is the Medium between the Two, and includes all the intermediate Kinds.

Each of these Soils tends alike to Vegetation; and each has its Salts proper thereto; but in different Proportions: A Peck of Clay having twice as much Salts in it as the same Quantity of Loam; and four Times as much as Sand.

Now, 'tis found to be the Salts or Juices of the Soil, not the Earth itself, that Plants are fed and subsisted by. (For in many Experiments of Vegetation, where Plants of Fifteen or Twenty pound Weight have been produced, there has been no sensible Diminution in the Weight of the Earth). See VEGETATION.

Hence, at first Sight, it might seem, that Clay were the most proper, and Sand the least proper Soil to promote the Growth of Plants; which is contrary to Experience. The Reason is, that the Parts of Clay being close wrought together, do not so easily give out their Salts; nor can the tender Fibres of many Plants make their Way through it, in search of their Food. But if its Parts be well open'd, by digging and breaking it into very small Pieces, and those Parts be kept open by a Mixture of some sharp Sand, or other like Matter, that Author adds, we shall see the Effects of its Vigour. Sand, on the other hand, giving its Salts readily, puts forth its Plants very early, and will make them germinate a full Month sooner than Clay; but as it is hasty, 'tis soon spent. The Sun's Warmth calls up all its Salts early in the Spring, and there is but little left for them to subsist long on, if the Heat continue.

Each Kind has its peculiar Plants, which will not grow on the other; but the peculiar Plants of both the other two will grow in Loam, as partaking equally of the Qualities of both. Loam, then, must be allowed the best and most bene-

ficial Soil, where it can be had: And where it cannot, if, by a Mixture of other Earths, we can make a Composit to resemble it; we have more to expect from it, especially in Plantations of durable Trees, than from a Composition of Dung or other forcing Ingredients, which, like Excess of high intemperate Foods and Liquors, though they give a hasty Growth, yet make the Thing short-lived. The Composition or Soil here meant, is equal Quantities of Sand and Clay well mix'd. See TIMBER; see also HOT-BED.

Generally, a Mixture of two or three Soils, is better than any simple Soil; especially where the Hot and Dry are mix'd with the Cold and Moist. Clay laid on Sand or Gravel, or Sand on Clay, is the best Manure. See MANURE.

But 'tis not the Nature of the Soil alone; but its Depth is also to be regarded, and what Soil is underneath. For the best Soil, if it be not above a Foot deep, and lie on a stiff Clay, or hard cold Stone, is not so fertile as a leaner Soil of greater Depth, or lying on a warm Lime-stone, Sand or Gravel, through which the superfluous Moisture may descend, and not stagnate on the Clay or Stone, to chill the Roots of Plants.

Indeed, Regard is to be had to the Climate; for even in *England*, cold, moist Clays are more fruitful in the South than the North.

Some general Rules with respect to Soils, are as follow. 1<sup>o</sup> All Land that moulders to Dust with Frost, with all sorts of warm Lands, black Mould, yellow Clay, (if not too wet) and that turns Black after Rain, are good for Corn. 2<sup>o</sup> Lands bringing forth large Trees and Weeds, Black-Thorn, Thistles, rank Grass, &c. generally prove fruitful. 3<sup>o</sup> Straw-berries, Betony, Thyme, &c. give Indication to Wood, and Camomile to a Mould disposed for Corn. 4<sup>o</sup> All Land that binds after Frost and Rain, that turns White and full of Worms, that is extremely moist, bears Holly, Yew, Box, Broom, Heath, Moss, &c. is of a cold Temperature. 5<sup>o</sup> Black, Dun and Yellow Sand, and hot, stony Gravel, are generally unfruitful. See GARDEN, ORCHARD, BILL, PARLIAMENT, &c.

SOIT *fait comme il est desire*, Be it done as 'tis desired; a Form used when the King gives the Royal Assent to a private Bill prefer'd in Parliament.

SOKA, *Soke*, *Soc*, in ancient Customs, the Privilege of Tenants excused from customary Impositions. See SOC.

It also denotes the Territory wherein the chief Lord exercised his Liberty of keeping Courts within his own Domains.

Also a Quit-Rent, or Payment made to the Lord by his Tenant, for acting in Quality of a *Soc-man* or Freeholder. See SOCAGE.

The Rent-gatherer in the *Soka*, was called *Soke-Reeve*.

SOL, in Music, the Fifth Note of the Gamut: Ut, Re, Mi, Fa, Sol. See NOTE and GAMUT; see also MUSIC.

SOL or *Sou*, Shilling, a *French* Coin, of Billon, i. e. Copper with a little Silver mix'd; equal to Twelve Deniers or Pence; and the 20th Part of the Livre or Pound. See SHILLING; see also DENIER and LIVRE.

The *French* Sol is rated at one Tenth Part less than the *English* Penny. See COIN, PENNY, &c.

The Word is form'd from the *Latin* *Solutus*, Shilling. *Bodin* is mistaken, when he derives it à *Sole*, by reason of the Sun struck on it.

The Sol was first struck on the Foot of 12 Deniers Tournois, whence it was also called *Douzain*, a Name it still retains, tho' its ancient Value be changed; the Sol having been since augmented by Three Deniers, and struck with a Punchion of a *Flower de Lys*, to make it Current for 15 Deniers. Soon after, the old Sols were coin'd over again, and both Old and New indifferently Current for 15 Deniers. In 1709, the Value of the same Sols was raised to 18 Deniers. Towards the latter End of the Reign of *Louis* the Fourteenth, the Sols of 18 Deniers were again lowered to 15, where they now stand.

The *Dutch* have also two Kinds of Sols: The one of Silver, called *Sols de gros*, and likewise *Schelling*. See SCHELLING.

The other of Copper, called also *Stuyver*. See STUYVER.

In old Authors we read of Gold Sols, which were different at different Times. In the Time of the *Salic* Law, the Sol was Forty Deniers; and thus it continued till the Time of King *Pepin*, when it was reduced to Twelve. Some have imagined, that the *French* had anciently Silver Sols.

SOL, in Astrology, &c. signifies the Sun. Sol in Aries, &c. See SUN.

SOL, in the Hermetical Philosophy signifies Sulphur. See SULPHUR.

SOL, *Sun*, in Chymistry, is Gold; thus called from an Opinion, that this Metal is, in a particular Manner, under the Influence of that Luminary. See GOLD.

What should have been the principal Inducement of torturing this Metal, with so much Violence to obtain from it some medicinal Virtues, Dr. *Quincy* observes, is not easy to be guess'd; unless it was to keep up the Authority of an ill-deserved Regard, and a Jealousy, that they could not be well



well in the common Opinion for Physicians, who could not do extraordinary Things in their Profession with a Metal, which had such a prodigious Influence on other Accounts. Many, indeed, there have been, who have honestly opposed this Artifice; but the contrary Sides have a long Time prevailed, and to such a Degree, that this Metal itself has not only been transformed into all the Shapes imaginable for medicinal Purposes; but even its Name has been transferr'd to do Honour to, and enhance the Price of many other worthless Preparations, that bore any Resemblance to its sensible Qualities.

Hence many Tinctures of a yellow Colour, are presently the *Golden Tincture* of something or other.

Most, indeed, acknowledge, that Gold in Substance, or reduced into the smallest Particles by the Hammer, as in the Leaf-Gold, is not digestible in the Stomach, so as to be transmitted into the Blood, and be of any Efficacy there. But there are, nevertheless, many, who are confident of its doing extraordinary Matters, if reduced into a Powder, by Amalgamation with Mercury, and by evaporating the Mercury afterwards.

*Zacutus Lusitanus*, is one of the smartest Pleaders on this side the Controversy, against *Musa*, *Picus Mirandola* and *Platerus*; who, besides many Instances of its Efficacy, urges the Authority of *Avicen*, *Serapion*, *Geber* and many of the Arabian Physicians, with those of other Countries, and of later Date. *Quercetan*, *Schroder*, *Zwelfer* and *Emmuller*, with many other more modern, practical Physicians, fell into the same Opinion. But which side soever is in the right, the present Practice rejects all Pretensions to Medicine from it.

SOL, in Heraldry, the Gold Colour in the Arms of Sovereign Princes. See METAL.

SOLAR, something belonging to the Sun. See SUN.

Thus we say, SOLAR Fire, in contradistinction to Culinary Fire. See FIRE.

The SOLAR Year, which consists of 365 Days, 5 Hours, 49 Minutes; in Opposition to the Lunar Year, which only consists of 354 Days. See YEAR.

The Solar Year, is either Tropical, or Siderial.

Tropical Year, is that Space of Time, wherein the Sun returns again to the same equinoctial or solstitial Point; which is always equal to 365 Days, 5 Hours, and about 49 Minutes. The Siderial Year, is the Space wherein the Sun comes back to any particular, fixed Star; which is about 365 Days, 8 Hours, and 9 Minutes. See SIDERIAL, &c.

SOLAR System, the Order and Disposition of the several heavenly Bodies, which revolve round the Sun as the Centre of their Motion, viz. the Planets, Primary and Secondary, and the Comets. For a Scheme of the Solar System, see SYSTEM.

SOLAR Eclipse, is a Privation of the Light of the Sun, by the Interposition of the opaque Body of the Moon. See ECLIPSE.

|              |         |        |
|--------------|---------|--------|
| SOLAR Spots, | } See { | SPOTS. |
| SOLAR Cycle, |         | CYCLE. |
| SOLAR Month, |         | MONTH. |

SOLDER, popularly called *Sodder*, a metallic or mineral Composition, used in *Soldering* or joyn'g together other Metals.

*Solders* are made of Gold, Silver, Copper, Tin, Glass of Tin, and Lead; always observing, that in the Composition, there be some of the Metal to be *Solder'd*, mix'd with some higher and finer Metals.

Goldsmiths make four Kinds of *Solder*, viz. *Solder* of Eight; where, to seven Parts of Silver there is one of Brass or Copper. *Solder* of Six, where only a sixth Part is Copper. *Solder* of Four; and *Solder* of Three. 'Tis the Mixture of Copper in the *Solder* that makes raised Plate always come cheaper than flat.

The *Solder* used by Plumbers, is made of two Pounds of Lead to one of Tin. Its Goodness is tried by melting it, and pouring the bigness of a Crown-piece on a Table; for, if good, there will arise little, bright, shining Stars therein. See PLUMBERY.

The *Solder* for Copper is made like that of the Plumbers; only, with Copper and Tin: For very nice Works, instead of Tin, they sometimes use a Quantity of Silver. See COPPER.

*Solder* for Tin, is made of two Thirds of Tin, and one of Lead; but where the Work is any thing delicate, as in Organ-pipes, where the Juncture is scarce discernible, 'tis made of one Part of Tin of Glass, and three Parts of Pewter. See TIN.

The Duke of Florence's Nail, anciently so much admired, as being half Iron and half Gold, when as those Two Metals were deem'd irreconcilable; was joyn'd by a kind of *Solder*, made by *Turneisser*, an ingenious Chymist of Venice: The Secret whereof, was never discover'd till publish'd by *Tache-mus*. The *Solder* is nothing but a little Copper or Cyprus Vitriol put between the Gold and the Iron. For, naturally, the great Acidity of the Gold, reduces the Iron into a Scoria

or Rust; when the Two are applied immediately over one another; but this Difficulty is removed, by the Interposition of a little Copper, be it in the smallest Quantity imaginable.

The Word is form'd from the Latin, *Solidare*, to strengthen.

SOLDERING, or *Soddering*, among Mechanicks, the joyn'g and fastening together of two Pieces of the same Metal, or of two different Metals, by the Fusion and Application of some metallic Composition on the Extremities of the Metals to be joyn'd. See SOLDER.

Goldsmiths *Solder* with Gold, Silver and Copper mix'd together: Plumbers with Lead and Tin. See PLUMBERY, &c.

Copper is usually *Solder'd* with Tin; sometimes, according to the Work, with a Mixture of Copper and Silver. In the *Soldering* of all these Metals, they generally use Borax in Powder, and sometimes Rosin. As to Iron, 'tis sufficient that it be heated red-hot; and the two Extremities, in this State, hammer'd together. By this means they become incorporated together. See BRAZING.

SOLDIER, a military Man, serving a Prince in War, in Consideration of a certain *Solde* or daily Pay. See MILITARY.

The *Soldier* is he who takes Pay; the Vassal he who serves at his own Expences. See VASSAL and SERVICE.

*Du Cange* observes, that the ancient *Soldiers* were not to be short of Five Foot and a Half; and that this Measure was called *Incoma*.

The Word is form'd from the Italian, *Soldato* of the Latin *Solida* or *Solidus*, the Solde or Pay. *Pasquier* derives it from the old Gaulish *Soal* doyer. And *Nicod* from *Soldurius*. See SOLDURII.

SOLDURII, in Antiquity, a kind of Clients or Retainers to the great Men: Gaul, particularly *Aquitania*; mentioned by *Cæsar*.

The *Soldurii* were People, who shared all the good and all the ill Fortune of their Patrons; To whom, if any Disaster happened, they either underwent the very same, or kill'd themselves; and *Cæsar* assures us, that no one had ever been known to refuse the Alternative, *Lib. III. de Bel. Gal. Vigenarius* takes them to have been more than common Soldiers, and even Gentlemen in Pension, or Appointment. *Athenens* calls them *Συναποδνήσμοντες*, q. d. who die with their Masters.

SOLECISM, or *Solæcism*, in Grammar, a gross Impropriety in Speech, contrary to the Use of the Language, and the Rules of Grammar, either in respect of Declension, Conjugation or Syntax.

An Actor on the Roman Theatre having made a wrong Gesture; the Audience immediately cried out he had committed a *Solecism* with his Hand. Ablanc.

SOLECISMS, on some Occasions, are pardonable. *Impetratum est a ratione ut peccare suavitatis causa liceret*. *Vargelas* is frequently repeating that of *Quintillian*: *Aliud est Latine, aliud Grammaticè loqui*. *Baltasar Strolberg* has a Latin Treatise of the *Solecisms* and Barbarisms falsely attributed to the New Testament. See BARBARISM.

The Word is Greek, *σολοιτισμός*, derived from the *Soli*, a People of Attica, who being transplanted to Cilicia, lost the Purity of their ancient Tongue, and became ridiculous to the Athenians for their Improprieties therein.

SOLEMN, something perform'd with much Pomp, Ceremony and Expence.

Thus we say, *Solemn Feasts*, *Solemn Funerals*, *Solemn Games*, &c. See FEAST, GAME, &c.

SOLEMN, in Law, signifies something Authentic, or that is cloath'd in all its Formalities. A *Solemn Testament*, in the Civil Law, is to be attested by seven Persons, and seal'd with their Seals.

A *Solemn Marriage*, is that perform'd in one's own Parish Church, after Publication of the Bans, and in Presence of Witnesses.

SOLET and Debet. See DEBET and SOLET.

SOLE-Tenant, in Law, is he or she, who holds only in his or her own Right, without any other Person joyn'd. See TENANT.

E. gr. If a Man and his Wife hold Land for their Lives, the Remainder to their Son; Here, the Man dying, the Lord shall not have Heriot, because he dies not *Sole Tenant*.

SOLEUS, in Anatomy, a Muscle called also *Gastrocnemius Intermus*. See GASTROCNEMIUS.

SOL-FA-ING, in Music, the naming and pronouncing of the several Notes of a Song, by the Syllables *Sol*, *Fa*, *La*, &c. in learning to sing it. See NOTE.

Of the Seven Notes in the Scale, *ut*, *re*, *mi*, *fa*, *sol*, *la*, *si*; only Four are in Use among us, viz. *fa*, *sol*, *la*, *mi*. Their Office is principally in Singing: that by applying them to every Note of the Scale, it may not only be pronounced more easily; but chiefly, that by them, the Tones and Semi-tones of the natural Scale, may be better mark'd out and distinguish'd.

This Design is obtained by the Four Syllables, *fa*, *sol*, *la*, *mi*; thus, from *fa* to *sol* is a Tone; also from *sol* to *la*, and from *la* to *mi*, without distinguishing the greater or lesser Tone; but from *la* to *fa*, also from *mi* to *fa*, is a Semi-tone.



If, then, these be applied in this Order, *fa, sol, la, fa, sol, la, mi, fa, &c.* They express the Natural Series from *c*; and if that be to be repeated to a Second or Third Octave, we see by them how to express all the different Orders of Tones and Semi-tones in the Diatonic Scale; and still above *mi*, will stand *fa, sol, la*; and below it, the same reversed, *la, sol, fa*; And one *mi* is always distant from another by an Octave; which cannot be said of any of the rest because after *mi* ascending, comes always *fa, sol, la, fa*, which are repeated invertedly, descending.

To conceive the Use of this: it is to be remember'd, that the first Thing in teaching to sing, is to make one raise a Scale of Notes by Tones and Semi-tones to an Octave, and descend again by the same Notes, and then to rise and fall by greater Intervals, at a Leap, as a Third, Fourth and Fifth, &c. And to do all this, by beginning at Notes of different Pitch. Then, these Notes are represented by Lines and Spaces, to which those Syllables are applied, and the Learner taught to name each Line and Space, by its respective Syllable; which makes what we call *Sol-fa-ing*: The Use whereof is, that while they are learning to tune the Degrees and Intervals of Sound, express'd by Notes set on Lines and Spaces; or learning a Song, to which no Words are applied; they may do it the better, by means of an articulate Sound: but, chiefly, that by knowing the Degrees and Intervals express'd by these Syllables, they may more readily know the true Distance of Notes. See SINGING.

Mr. *Malcolm* observes, that the Practice of *Sol-fa-ing*, common as it is, is very useless and insignificant, either as to the Understanding or Practising of Music; yet exceedingly perplexing: The various Application of the several Names, according to the various Signatures of the Clef, are enough to perplex any Learner; There being no less than 72 various Ways of applying the Names *sol, fa, &c.* to the Lines and Spaces of a particular System. See SCALE.

SOLID, in Physicks, a Body whose minute Parts are connected together, so, as not to give Way, or slip from each other upon the smallest Impression. See SOLIDITY.

The Word is used in this Sense, in Contradistinction to Fluid. See FLUID and FIRMNESS.

For the Laws of Gravitation of  
SOLIDS immersed in Fluids  
Specifically lighter than the  
Solids - - - - - } See GRAVITY.

The Laws of Gravitation of  
SOLIDS immerg'd in Fluids  
Specifically heavier - - - }

To find the Specific Gravity of  
SOLIDS - - - - - } See SPECIFIC Gravity.  
To find the Ratio of the Specific  
Gravity of SOLIDS to Fluids. }

The Laws of the Resistance of  
SOLIDS moving in Fluids - - } See RESISTANCE.  
SOLID of the least Resistance - - }

SOLID, in Geometry, is a Magnitude indued with Three Dimensions; or extended in Length, Breadth and Depth. See DIMENSION.

Hence, as all Bodies have these Three Dimensions, and nothing but Bodies; *Solid* and *Body* are frequently used indifferently. See BODY.

A *Solid* is terminated, or contained under one or more Planes or Surfaces; as a Surface is under one or more Lines. See SURFACE and LINE.

From the Circumstances of the terminating Lines, *Solids* become divided into Regular and Irregular.

Regular SOLIDS, are those terminated by regular and equal Planes. See REGULAR.

Under this Class come the *Tetraedron, Hexaedron* or *Cube, Octaedron, Dodecaedron* and *Icosaedron*. See TETRAEDRON, CUBE, &c. each under its proper Article.

Irregular SOLIDS, are all such as do not come under the Definition of *Regular Solids*; such are the *Sphere, Cylinder, Cone, Parallelogram, Prism, Pyramid, Parallelopiped, &c.* See SPHERE, CYLINDER, CONE, &c. each under its proper Article.

The Geneses, Properties, Ratio's, Constructions, Dimensions, &c. of the several *Solids*, Regular and Irregular, Spherical, Elliptical, Conical, &c. See under each respective Heads.

*Cubature* or *Cubing* of a SOLID, is the measuring of the Space comprehended under a *Solid*, i. e. the *Solidity* or *Solid Content* thereof. See SOLIDITY.

*Solid Angle*, is that form'd by three or more plain Angles meeting in a Point: Or, more strictly, a *Solid Angle*, as B, (Tab. Geometry, Fig. 30.) is the Inclination of more than two Lines, A B, B C, B F, which concur in the same Point B, and are in the different Planes.

Hence, for *Solid Angles* to be equal, 'tis necessary they be

contained under an equal Number, of equal Planes, disposed in the same manner.

And as *Solid Angles* are only distinguishable by the Planes under which they are contained; and as Planes thus equal, are only distinguishable by Compræence, they are Similar; and consequently Similar *Solid Angles*, are equal, & vice versa. See SIMILAR.

The Sum of all the Plane Angles constituting a *Solid Angle*, is always less than  $360^\circ$ ; otherwise they would constitute the Plane of a Circle, and not a *Solid*. See ANGLE.

For the Method of Cubing the several Kinds of Solids; See CUBATURE.

SOLID Bastion } See BASTION.  
SOLID Place } See LOCUS.

SOLID Numbers, are those which arise from the Multiplication of a Plain Number, by any other whatsoever. Thus 18 is a *Solid Number*, made of 6 (which is Plain) multiplied by 3; or of 9 multiplied by 2. See NUMBER.

SOLID Problem, in Mathematicks, is one which cannot be Geometrically solved, but by the Intersection of a Circle, and a Conic Section; or by the Intersection of two other Conic Sections, besides the Circle.

Thus, to describe an Isosceles Triangle on a given Right Line, whose Angle at the Base, shall be triple to that at the Vertex, is a *Solid Problem*. See PROBLEM.

SOLIDITY, in Physicks, a Property of Matter or Body, whereby it excludes every other Body from the Place itself possesses.

*Solidity* is a Property common to all Bodies, whether Solid or Fluid. See BODY.

The Idea of *Solidity*, Mr. *Lock* observes, arises from the Resistance we find one Body make to the Entrance of another into its own Place. 'Tis usually called *Impenetrability*; but *Solidity* expresses it best; as carrying somewhat more of positive with it than the other, which is negative.

*Solidity*, he adds, seems the most extensive Property of Body; as being that whereby we conceive it to fill Space: 'Tis distinguish'd from meer Space, by this latter not being capable of Resistance or Motion. See SPACE.

'Tis distinguish'd from *Hardness*, which is only a firm Cohesion of the Solid Parts, so as they mayn't easily change their Situation. See HARDNESS.

The Difficulty of changing Situation, gives no more *Solidity* to the hardest Body than the softest; nor is a Diamond a Jot more *Solid* than Water. By this we distinguish the Idea of the Extension of Body, from that of the Extension of Space: That of Body, is the Continuity or Cohesion of solid, separable, moveable Parts; that of Space, the Continuity of unsolid, inseparable, immoveable Parts. See EXTENSION.

The *Cartesians*, however, will, by all means, deduce *Solidity*, or, as they call it, *Impenetrability*, from the Nature of Extension; and contend, that the Idea of the former, is contain'd in that of the latter; and hence argue against a *Vacuum*. Thus, say they, one Cubic Foot of Extension cannot be added to another, without having two Cubic Feet of Extension; for each has in itself, all that is required to constitute that Magnitude. And hence they conclude, that every Part of Space is Solid, or Impenetrable; inasmuch as of its own Nature it excludes all others. But the Conclusion is false, and the Instance they give follows from this, that the Parts of Space are immoveable; not that they are Impenetrable or Solid. See IMPENETRABILITY.

SOLIDITY, in Geometry, the Quantity of Space contain'd in a Solid Body; call'd also the *Solid Content*, and the *Cube* thereof. See CUBATURE.

The *Solidity* of a Cube, Prism, Cylinder, or Parallelopiped, is had by multiplying its Basis into its Height. See CUBE, PRISM, CYLINDER, &c.

The *Solidity* of a Pyramid or Cone, is had by multiplying either the whole Base into a Third Part of the Height; or the whole Height into a third Part of the Base. See PYRAMID and CONE.

To find the SOLIDITY of any Irregular Body.

Put the Body in a hollow Parallelopiped, and pour Water or Sand upon it, and Note the Height of the Water or Sand A B (Tab. Geometry, Fig. 32.) then, taking out the Body, observe at what Height the Water (or Sand when levelled) stands, as A C. Subtract A C from A B; the Remainder will be B C. Thus is the irregular Body reduced to a Parallelopiped, whose Base is F C G F; and Altitude B C. To find the *Solidity* whereof, see PARALLELOPID.

Suppose, *E. gr.* A B 8, A C 5; then will B C be 3: Suppose, again, D B 12, D E 4; then will the *Solidity* of the irregular Body be found 144.

If the Body be such, as that it can't be well laid in such a kind of Channel; *E. gr.* if it be required to measure the



*Solidity* of a Statue, as it stands; a quadrangular Prism or Parallelopiped is to be framed over it: the rest as before.

To find the *SOLIDITY* of a hollow Body.

If the Body be not comprized in the Number of regular Bodies; its *Solidity* is found as in the preceding Problem. If it be a Parallelopiped, Prism, Cylinder, Sphere, Pyramid or Cone; the *Solidity*, first of the whole Body, including the Cavity, then that of the Cavity, which is supposed to have the same Figure with the Body itself, is to be found, according to the respective Methods delivered under PARALLELOPIPED, PRISM, &c. For the latter being subtracted out of the former, the Remainder is the *Solidity* of the hollow Body required.

*SOLIDITY*, in Architecture, is applied both to the Consistence of the Ground whereon the Foundation of a Building is laid; and to a Mass of Masonry, of extraordinary Thickness, without any Cavity within.

The *Solidity* of the *Egyptian* Pyramids is inconceivable. See PYRAMID.

*SOLIDS*, in Anatomy, &c. all the continuous and continent Parts of the Body are thus call'd, in Opposition to the Fluids or the Parts contained therein. See BODY.

Of the *Solid* kind, are the Bones, Cartilages, Ligaments, Membranes, Fibres, Muscles, Tendons, Arteries, Veins, Nerves, Glands, Lymphæducts and Lacteals. See BONE, CARTILAGE, LIGAMENT, &c. under their respective Articles.

Notwithstanding the great Number and Appearance of the *Solids* of the Body; we find from the Microscope, Injections, Vesicatories, Atrophies, &c. that the *Solid* Parts are exceedingly small and inconsiderable, in comparison of the Fluids. Nay, 'tis almost demonstrable, from a Consideration of the Rise and Generation of the Vessels, and the Resolution of the greatest Vessels into their smallest constituent ones, that the whole Mass of *Solids* in the Body, consists merely of Fibres, as their common Elements. See FIBRE.

In, effect, the whole Mass of *Solids*, as well as Fluids, a minute Stamen or Animalcule, only excepted, arose from a very subtil fluid Colliquament, not unlike the Nervous Juice; as is shewn by *Malpighi*, in his *Treatise de Ovo Incubato*. See EGG.

The White of the Egg never nourishes, till, from its natural Thickness, it have been brought, by Incubation, through innumerable Degrees of Fluidity, to become subtil enough to enter the minute Vesicles of the Stamen or Seed. The first, soft, tender *Solids* arising from this subtil Humor pass through infinite, intermediate Degrees, e'er they arrive at their utmost *Solidity*. See GENERATION.

All the *Solids* therefore in our Bodies (unless any one will be so nice as to except the first Stamen) only differ from the Fluids, out of which they arise, by their Rest, Cohesion and Figure; and a fluid Particle will become fit to form a Part of a *Solid*, as soon as there is a Force sufficient to effect its Cohesion with the other *Solid* Parts. See NUTRITION.

*SOLILOQUY*, a Reasoning or Discourse, which a Man holds with himself. See MONOLOGUE.

*Papias* says, that *Soliloquy* is properly a Discourse by Way of Answer, to a Question that a Man has proposed to himself.

*Soliloquies* are become mighty common Things on the modern Stage; yet can nothing be more inartificial or more unnatural, than an Actor's making long Speeches to himself, to convey his Intentions, &c. to the Audience.

Where such Discoveries are to be made, the Poet should rather take Care to give the Dramatic Persons such Confidants, as may necessarily share their inmost Thoughts; By which means, they will be more naturally convey'd to the Audience. Yet is even this a Shift, an accurate Poet would not be found to have Occasion for. The Use and Abuse of *Soliloquies*, is well delivered by the Duke of *Buckingham*, in the following Lines:

*Soliloquies had need be very few,  
Extremely short, and spoke in Passion too.  
Our Lovers talking to themselves, for want  
Of others, make the Poet their Confidant:  
Nor is the Matter mended yet, if thus  
They trust a Friend, only to tell it us. —*

*SOLITARY*, something retired, or in private; remote from the Company, or Commerce of others of the same Species.

A *Solitary* COLUMN, is a Column that stands alone in any public Place; as the *Trajan* Column. See COLUMN.

A *Solitary* WORM, is a Worm sometimes found in the Intestines, and which is always the only one of the Kind; as being placed in the Pylorus, and extending thence, the whole Length of the Intestines; so that there is no Room for another. See WORM.

*SOLITARIES*, is also the Title of the Nuns of *S. Peter of Alcantara*, instituted in 1676, by Cardinal *Barberin*, when Abbot of *Notre Dame de Farsa*, in that City.

They propose to imitate the severe, penitent Life of *St. Peter of Alcantara*; keep a continual Silence, never open their Mouths to any Body but themselves; employ their Time wholly in spiritual Exercises, and leave the Temporal Concerns to a Number of Maids, who have a particular Superior in a separate Part of the Monastery. They always go Bare-footed, without Sandals, gird themselves with a thick Cord, and wear no Linnen.

*SOLITAURILIA*, in Antiquity. See SUOVETAURILIA.

*SOLLICITOR*, a Person employ'd to follow, and take care of Suits depending in Courts of Law, or Equity; formerly allowed only to Nobility, whose menial Servants they were; but now frequently used to others, to the great Increase of Champarty and Maintenance. See ATTORNEY.

*SOLLICITOR General*, hath his Office by Patent, during the King's Pleasure.

The Attorney General, and he, had anciently a Right to their Writs of Summons, to sit in the Lords House on special Occasions, till the 13th Car. II. since which, they have almost constantly been chosen Members of the House of Commons. He has the Care and Concern of managing the King's Affairs, and hath Fees for Pleading, besides other Fees arising by Patents, &c. He hath his Attendance on the Privy Council; and the Attorney General, and he, were anciently reckoned among the Officers of the Exchequer: They have Audience, and come within the Bar in all other Courts.

*SOLSTICE*, in Astronomy, the Time when the Sun is in one of the *Solstitial Points*, that is, when he is at his greatest Distance from the Equator; which is 23 Degrees and a Half; thus called, because he then appears to stand still, and not to change his Place in the Degrees of the Zodiac, any Way: An Appearance owing to the Obliquity of our Sphere, and which those who live under the Equator are Strangers to. See SOLSTITIAL POINTS.

The *Solstices* are Two, in each Year; the *Estival* or *Summer Solstice*, and the *Hyemal* or *Winter Solstice*.

The *Summer Solstice*, is when the Sun is in the Tropic of *Cancer*; which is on the 11th of *June*; when he makes the longest Day. See TROPIC and DAY.

The *Winter Solstice*, is when he enters the first Degree of *Capricorn*; which is on the 11th of *December*; when he begins to return towards us, and makes the shortest Day.

This is to be understood, as in our Northern Hemisphere; for in the Southern, the Sun's Entrance into *Capricorn*, makes the *Summer Solstice*, and that into *Cancer*, the *Winter Solstice*. See ECLIPTIC, SUMMER, WINTER, &c.

*SOLSTITIAL Points*, are those Points of the Ecliptic, wherein the Sun's Ascent above the Ecliptic, and his Descent below it, are terminated. See POINT.

The first Point, which is in the beginning of the first Degree of *Cancer*, is called the *Estival* or *Summer Point*; and the latter, which is in the beginning of the first Point of *Capricorn*, the *Winter Point*. See SOLSTICE.

The *Solstitial Points* are Diametrically opposite to each other.

*SOLSTITIAL Colure*, is that passing through the *Solstitial Points*. See COLURE.

*SOLUBLE*, in Medicine, *Loose*, or apt to go to Stool. See LAXATIVE, STOOL, &c.

*Soluble Tartar*, is a kind of Salt, chymically prepared, by boiling Eight Ounces of Cream of Tartar, with Four of Fix'd Salt of Tartar. See TARTAR.

*SOLVENT*, the same with Dissolvent. See DISSOLVENT.

*SOLUTIO Continui*, or *Solution of Continuity*, a Term used by Physicians, &c. to express a Disease common to the solid Parts of the Body, wherein their natural Cohesion is separated.

If this happen to a simple, similar Part of the Body; 'tis called, simply, *Solutio Continui*.

If on a compound, or organical Part, it acquires a particular Denomination, from the Nature of the Part, the Difference of the Cause, or the Manner of the Application; as, a Wound, Rupture, Fracture, Puncture, Fissure, Contusion, Ulcer, Corrosion, Dilaceration, Exfoliation, Caries, &c. See WOUND, RUPTURE, FRACTURE, &c.

*SOLUTION*, in Algebra and Geometry, is the answering of a Question; or resolving any Problem proposed. See RESOLUTION.

The *Solution* of the Problem of the Quadrature of the Circle, and that of the Duplication of the Cube, by Right Lines, are held impossible. See QUADRATURE and DUPLICATION.

*SOLUTION of Continuity*, in Chirurgery; See SOLUTIO Continui.

*SOLUTION*, in Physicks, the Reduction of a Solid, or firm Body, into a fluid State, by means of some Menstruum. See MENSTRUUM.

*Solution,*



*Solution*, is frequently confounded with what we otherwise call *Dissolution*; but there is a Difference. See DISSOLUTION.

**SOLUTION**, in Chymistry, is sometimes used for the Analysis, or Reduction of a natural Body into its chymical Principles. See PRINCIPLE and ANALYSIS.

In this Sense, *Solution* is the same with what we otherwise call *Resolution*. See RESOLUTION.

**SOLUTIVE**. See LAXATIVE.

**SOMNAMBULI**, an Appellation given to People, who walk in their Sleep; more usually called *Noctambuli*. See NOCTAMBULI.

The Word is form'd from the *Latin*, *Somnus*, Sleep, and *Ambulo*, I walk.

**SOMNIFEROUS**. See SOPORIFEROUS.

**SON**, a relative Term, applied to a Male Child, consider'd in the Relation he bears to his Parents. See FATHER.

The Children of the King of *England*, are called *Sons* and *Daughters of England*. See KING. The Eldest *Son* is born Duke of *Corrwal*, and created Prince of *Wales*. See PRINCE.

The younger *Sons* are called *Cadets*. See CADET.

The King of *France's* Children were anciently call'd *Fils*, and *Filles de France*, *Sons* and *Daughters of France*; and the Grand-children, *Petits Fils*, and *Petites Filles de France*. At present, the *Daughters* are called *Mes-dames*, and the Grand-daughters, *Mes-demoiselles de France*.

Natural SON } See { BASTARD.  
Adoptive SON } See { ADOPTIVE.

**SON of God**, a Term used in various Senses, in the Holy Scriptures; as, 1<sup>o</sup>. For the *Word*, or the Second Person in the Blessed Trinity: who is thus called, with respect to the Manner of his Generation; as being begotten of the Father.

Him, the Orthodox believe to be Co-eternal, and Co-equal with the Father; and to have been with him, the eternal Principle and Source of the Holy Spirit. See TRINITY.

The Term *Son*, is applied to him, both before and after his Incarnation. Thus we say, The *Son* of God Created the World; the *Son* of God was Incarnate, and lived 33 Years on Earth, &c.

2<sup>o</sup> Several Creatures are also called *Sons of God*; not as being so by Nature and Generation; but on divers other Accounts. Thus the Angels are called *Sons of God* by *Job*; in respect of their Creation, Adoption, &c. And great Men are called *Sons of God* in the *Psalms*; as being his Lieutenants; or, the Depositaries of his Authority. Good Men, and particularly the Elect, are also called *Sons of God*, in various Places of the Sacred Writings.

**SON of Man**, is frequently used in Scripture, to signify *Man*; as expressing not only the Nature of *Man*; but his Frailness.

The Expression is very usual among the *Hebrews* and *Chaldeans*. *Daniel*, *Ezekiel*, and *Jesus Christ*, are particularly thus called; the First once, and the Two latter, frequently.

Sometimes, the Word is also used for the Wicked and Reprobate; in contradistinction to those call'd *Sons of God*.

**SONATA**, in Music, a Term called by the *Italians*, *Suonata*, of *Suono*, Sound, as signifying a Piece or Composition of Music, wholly executed by Instruments; and which is, with regard to the several Kinds of Instruments, what the *Cantata* is, with regard to Voices. See CANTATA.

The *Sonata*, then, is properly a grand, free, humorous Composition, diversified with a great Variety of Motions and Expressions, extraordinary and bold Strokes, Figures, &c. And all this purely according to the Fancy of the Composer; who, without confining himself to any general Rules of Counter-Point, or to any fix'd Number or Measure, gives a Loose to his Genius, runs from one Mode, Measure, &c. to another, as he thinks fit.

We have *Cantata's* of 1, 2, 3, 4, 5, 6, 7, and even 8 Parts; but usually they are performed by a single Violin, or with two Violins and a thorough Bass for the Harpsichord, and frequently a more figured Bass for the Bass-Viol, &c.

There are a Thousand different Species of *Sonata's*; but the *Italians* usually reduce them to three Kinds: *Suonate de Chiesa*; that is, *Sonata's* proper for Church-Music, which usually begin with a grave, solemn Motion, suitable to the Dignity and Sanctity of the Place and the Service; after which they strike into a brisker, gayer and richer Manner. These are what they properly call *Sonata's*.

The second Kind comprehends the *Suonate de Camera*, or *Sonata's* proper for the Chamber, &c. These are properly Series's of several little Pieces, proper for Dancing; only composed to the same Tune. They usually begin with a Prelude or little *Sonata*, serving as an Introduction to all the rest: Afterwards come the *Alleman*, *Pavan*, *Courant*, and other serious Dances; then *Gigues*, *Gavots*, *Minnets*, *Chacons*, *Passecailles* and other gayer Airs: The whole composed in the same Tone or Mode.

**SONG**, in Poetry, a little Composition, consisting of simple, easy, natural Verses, set to a Tune, in order to be sung. See SINGING.

Each Stanza of a *Song*, is called a *Couplet*. See STANZA and COUPLET.

The *Song* bears a deal of Resemblance to the *Madrigal*; and more to the *Ode*, which is nothing but a *Song* according to the ancient Rules. See MADRIGAL and ODE.

Its Object is usually either Wine or Love; whence *M. le Brun* defines a modern *Song*, to be either a soft and amorous, or a brisk and bacchic Thought, express'd in a few Words.

Indeed, this is to restrain it to too narrow Bounds; for we have devout *Songs*, satirical *Songs*, and panegyric *Songs*.

But, be the *Song* what it will, the Verses are to be easy, natural, flowing, and to contain a certain Harmony, which neither shocks the Reason nor the Ear; and which unites Poetry and Music agreeably together.

Anciently, the only Way of preserving the Memory of great and noble Actions, was, by recording them in *Songs*; and in *America* there are still People, who keep their whole History in *Songs*. See DRUID.

**SONG**, in Music, is applied in the General, to any single Piece of Music, whether contrived for a Voice or Instrument. See MUSIC and COMPOSITION.

A *Song*, *Mr. Malcolm* observes, may be compared to an Oration: For, as in this latter, there is a Subject, viz. some Person or Thing the Discourse is referr'd to, and which is always to be kept in View throughout the whole; so, in every truly regular and melodious *Song*, there is one Note which regulates all the rest; wherein the *Song* begins, and at last ends, and which is, as it were, the principal Matter, or musical Subject, to be regarded in the whole Course of the *Song*. And, as in the Oration, there may be several distinct Parts, which refer to particular Subjects, yet must they have an evident Connection with the principal Subject, which regulates the whole; so in Melody, there may be several sub-principal Subjects, to which the different Parts of the *Song* may belong: But these are, themselves, under the Influence of the principal Subject, and must have a sensible Connection with it. This principal or fundamental Note, is called the *Key of the Song*. See KEY.

**SONNA**, a Book of Mahometan Traditions, wherein all the Orthodox Mussulmans are required to believe. See MAHOMETISM.

The Word signifies, in *Arabic*, the same with *Misna* in the *Hebrew*, that is, *Second Law*, or, as the *Jews* call it, *Oral Law*. See MISCHNA.

The Adherents to the *Sonna* are called *Sonnites*; and as among the *Jews*, there is a Sect of *Caraites*, who reject the Traditions as Fables, invented by the Rabbins; there are also Sectaries among the *Mahometans*, called *Sciaites*, who reject the Traditions of the *Sonnites*; as being only founded on the Authority of an apocryphal Book, and not derived to them from their Legislator.

There is the same Enmity between the *Sonnites* and *Sciaites*, as between the rabbinist *Jews* and the *Caraites*. The *Sciaites* reproach the *Sonnites* with obtruding the Dreams of their Doctors, for the Word of God: And the *Sonnites*, in their Turn, treat the *Sciaites* as Hereticks, who refuse to admit the divine Precepts, have corrupted the *Alcoran*, &c.

**SONNET** or *Sonetto*, in Poetry, a kind of Composition, contained in Fourteen Verses, viz. two Stanza's or Measures of four Verses each, and two of Three: The Eight first Verses to be all in two Rhimes.

The *Sonnet* is of *Italian* Origin, and *Petrarch* is allowed to be the Father. 'Tis held the most difficult and artful of all poetical Compositions; as requiring the last Accuracy and Exactness. 'Tis to end with some pretty, ingenious Thought: The Close to be particularly Beautiful.

In *Malherb*, and some other Poets, we meet with *Sonnets*, where the two first Stanza's are not in the same Rhime; but they are held irregular; and, in effect, great Part of the Merit of these Pieces, consists in a scrupulous Observation of the Rules.

*Ronsard*, *Malherb*, *Maynard* and *Gombaut*, have composed abundance of *Sonnets*; but among two or three Thousand, there are scarce Two or Three to be much admired.

*Pasquier* observes, that *du Bellai* was the First who introduced *Sonnets* into *France*. But *du Bellai* himself says, That *Melin de S. Gelais*, first converted the *Italian Sonnet* into *French*.

**SOOT**, an earthy, volatile Matter, arising from Wood, Coals and other Fuel, along with the Smoke, by the Action of Fire; or, rather, it is the Smoke itself, fixed and gathered on the Sides of the Chimney. See SMOKE and FIRE.

*Soot*, is found an excellent Manure for Corn Lands, especially where the Soil is cold. See MANURE.

The Dyers make considerable Use of *Soot*, for a kind of Dun Colour; which, 'tis true, has no agreeable Smell; but in Return has the Property of saving Cloaths and other Stuffs from Moths.

*Soot of Frankinsence*, is the smallest and finest Part of the Incense, called *Olibanum*, or *Male Incense*; burnt after the manner of Rosin to make Lamp-black.



*Dioscorides* shews how to make a Soot of Butter, which has several Uses in Medicine.

The Soot found in the Furnaces of Glass-houses, is used by Painters.

SOPHI or SOFI, a Title or Quality given the Emperor of Persia.

The *Sophi's* value themselves, and with some Reason, of their illustrious Extraction; The Race being Second to none in the East. They are descended in a right Line from *Houssien*, second Son of *Ali*, *Mahomet's* Cousin, and *Farima*, *Mahomet's* Daughter. There is no Prince in the World, whose Authority is more absolute than that of the *Sophi* of Persia. His Power is not even limited by any Laws he himself can make; but he suspends, changes, and annuls them at Pleasure.

The Title is said to have taken its Rise from a young Shepherd thus named, who attained to the Crown of Persia in 1370. Others derive *Sophi*, from the *Sophi's* or Sages, anciently called *Magi*.

*Loffius* gives us a different Account of the Word. *Sophi*, in Arabic, he observes, signifies Wool, and adds, That it was applied by the Turks out of Derision to the Kings of Persia, ever since *Ishmael's* Time, because, according to the Scheme of Religion, he is to wear no other Covering on his Head, but an ordinary, red, woollen Stuff; whence the Persians are also called *Kisselbais*, *q. d.* Red-heads. But *Bochart* says, That *Sophi*, in the original Persian Language, signifies One that is pure in his Religion, and who prefers the Service of God in all Things; and derives it from

*Sofi's* or *Sofees*, a kind of Order of Religious among the *Mahometans* in Persia; thus called, from a kind of coarse Camelot which they wear, called *Souf*, from the City *Souf* in Syria, where 'tis principally manufactured.

*Scheik Sofi*, who laid the first Foundation of the Grandeur of the Royal House of Persia, was the Founder, or rather the Restorer of this Order. *Ishmael*, who conquered Persia, was, himself, a *Sofi*, and valued himself on his being so. He chose all the Guards of his Person from among the Religious of this Order; and would have all the great Lords of his Court *Sofi's*. The King of Persia is still Grand Master of the Order; and the Lords continue to enter into it, tho' it be now fallen into great Contempt.

The vulgar *Sofi's* are now chiefly employ'd as Ushers, and Attendants of the Court; and even as Executioners of Justice; and the Emperor last reigning, would not allow them, according to Custom, to gird the Sword on him. This Neglect, into which the *Sofi's* are fallen, has occasioned the late Emperors to disuse the Title of *Sofi* or *Sophi*: However, *M. de la Croix* is mistaken, when he says, That they never bore it. The more eminent of those *Sofi's* are called *Scheick*, *q. d.* Reverend.

SOPHISM, in Logic, a captious, fallacious Reasoning; or an Argument, which with some Subtlety, carries much Appearance of Truth; but little Solidity. See FALLACY.

A *Sophism* is, properly an Argument false at bottom, and only invented to amuse and embarrass the Person to whom it is used. See SOPHIST.

SOPHISM'S, or *Sophistical Arguments*, among Logicians, are particularly such as are not in Form, or are founded on Equivocals; as, *You have every Thing you have not lost; but you have not lost Horns: Therefore you have Horns.*

SOPHIST, a Person who frames *Sophisms*; that is, uses subtle Arguments, with design to deceive those he would persuade or convince. See SOPHISM.

The Term *Sophist*, which is now reproachful, was anciently honourable; and carried a very innocent Idea. *St. Augustin* observes, it signified, simply, a Rhetor or Professor of Eloquence; such as were *Lucian*, *Athenæus*, *Libanius*, &c.

*Suidas*, and after him, *Olareus Celsius* in an express Dissertation on the Greek *Sophists*, tell us, That the Word was applied indifferently to all, who excelled in any Art or Science; whether Divines, Lawyers, Physicians, Poets, Orators or Musicians. But this seems to be stretching the Sense of the Word without all Measure. 'Tis possible a Rhetor might have made Verses, &c. but that it was on account of his poetical Talent, that he was denominated *Sophist*, is what we see no Reason to apprehend. However, *Solon* is the First who appears to have ever bore the Appellation; which is given him by *Isocrates*: Afterwards, it was scarce ever given, but to Philosophers and Declaimers.

The Title was in great Credit among the *Latins* in the XIIth Century, and in the Time of *St. Bernard*; but it began to lose Ground in Greece, as early as *Plato's* Time; on account of *Protagoras* and *Gorgias*, who made a sordid Traffic thereof, by selling Eloquence for Money. Hence *Seneca* calls the *Sophists* *Charleians* or *Emperics*.

*Cicero* says, That the Title *Sophista* was given to such as profess'd Philosophy with too much Ostentation, to make a Trade of it, by running from Town to Town, to retail their deceitful Science. A *Sophist*, therefore, was then, as now, a Rhetor, or Logician, who makes it his Business to ensnare and perplex People, by frivolous Distinctions, vain Reason-

ings and captious Discourses. Nothing has conduced more to the Increasing of the Number of *Sophists*, than the contentious School Philosophy. People are there taught to puzzle and obscure the Truth, by barbarous, unintelligible Terms, as *Antipredicaments*, great and little *Logicals*, *Quiddities*, &c.

The Title of *Sophist* was given to *Rabanus Maurus*, by way of Eminence. *John Hinton*, an English Scholastic Writer, endeavoured to get, and bear, as a Credit to him, the Title of *Sophist*.

The Word is form'd from the Greek *σοφισ*, Wise; or rather from *σοπιστης*, Impostor, Deceiver.

SOPHISTICATION, in Chymistry, Alchymy, &c. a Term particularly applied to the Counterfeit Works of fraudulent Alchymists, who use indirect Means of whitening Copper, gilding Silver, and giving other superficial Tinctures; as also of making Augmentations, by divers Mixtures, and other illegal Operations, to delude those, at whose Expence they are employ'd.

Hence the Term is also applied to Merchandizes, and other Goods adulterated, mix'd or alter'd by the Deceit of the Seller.

Musc, at present, is almost all *Sophisticated*, as well as Bezoard, Balm of Gilead, Lapis Lazuli, and other valuable Drugs. Canary Wines are *Sophisticated* on the Place, before ever they come near our Ports.

SOPORIFIC, *Soporiferous* or *Soporative*, a Medicine that has the Faculty of procuring Sleep. See SLEEP.

Such are Opium, Laudanum, &c. See OPIATE.

The Word is form'd from the Latin, *Sopor*, Sleep: The Greeks, in lieu hereof, use the Word *Hypnotic*; which see.

SOPOROUS or *sleepy* Diseases, are the *Coma* or *Catephera*, *Lethargy* and *Carus*, which rather appear to differ as to more or less, than as to Essence.

In this they all agree, That they induce a morbid Sweat. See COMA, &c.

SORBONNE, the House or College of the Faculty of Theology, established in the University of Paris. See COLLEGE.

It was founded in 1252, by *St. Louis*, or rather by *Robert de Sorbon* his Confessor and Almoner; first, Canon of *Cambray*, and afterwards of the Church of *Paris*. He gave his new House his own Name; which he himself took from the Village of *Sorbon*, or *Serlon*, near *Sens*, where he was born. The Foundation was laid in 1250: Queen *Blanche*, in the Absence of her Husband, furnishing him with a House before the Palace of *Julian* the Apostate, whereof some of the Remains are still seen. Afterwards, the King gave him all the Houses he had in the same Place, in exchange for some others in another.

The College has been, since, magnificently rebuilt by the Cardinal *de Richelieu*. The Design of its Institution, was for the Use of poor Students in Divinity.

There are Lodgings in it for 36 Doctors, who are said to be of the *Society of the Sorbonne*. Those admitted into it without being Doctors, are said to be of the *Hospitality of the Sorbonne*. Six Regent Doctors hold Lectures every Day, for an Hour and Half each: Three in the Morning, and Three in the Afternoon. See DOCTOR.

SORBONNE is also used in the General, for the whole Faculty of Theology at Paris: In regard the Assemblies of the whole Body are held in the House of the *Sorbonne*; and that the Bachelors of the other Houses of the Faculty, as the House of *Navarre*, &c. come here to hold their *Sorbonnique* or Act, for being admitted Doctor in Divinity. See FACULTY.

SORCERY, the Crime of Witchcraft, or Divination by the Assistance of the Devil. See MAGIC, WITCHCRAFT and DIVINATION.

Some hold *Sorcery* to be properly what the Ancients call *Sortilegium*, or Divination by means of *Sortes* or *Lots*. See SORTES.

My Lord Coke, 3d Inst. Fol. 44. describes a Sorcerer, *Qui utitur Sortibus in cantationibus Demonum*. *Sorcery* is Felony, by Stat. 1<sup>o</sup> Jac. In the Mirror, *Sorcery* is said to be a Branch of Heresy; and by Stat. 12. Car. II. it is excepted out of the general Pardons.

*Sorcery* was a Thing formerly very common; at least the Credulity of those Ages made it pass for such; and People suffered frequently for it. In a more knowing and less believing Age, 'tis out of Doors.

In effect, the most probable Opinion is, That the several glaring Instances of *Sorcery* we meet withal, in our old Law-Books and Historians, if well enquired into, would be found, at Bottom, no other than artful Poisonings.

SORITES, in Rhetoric, &c. a kind of Argument, wherein a Number of Propositions are gradually and minutely laid together; and something inferred from the whole: Whence *Cicero* calls it *Syllogismus accervatus*, a Syllogism heaped up or accumulated.

Such was that merry Way *Themistocles* used of proving, That his little Son, under Ten Years old, commanded the whole World; thus: My Son commands his Mother; his Mother me; I the *Athenians*; the *Athenians* the *Greeks*;



Greece commands *Europe*: *Europe* the whole World: Therefore my Son commands the whole World.

This Method of Disputing, prevailed much among the Stoicks; especially with *Zeno* and *Chrysippus*. But 'tis very captious and sophistical.

The Word is formed from the Greek *σῶς*, *cumulus*, Heap.

**SORRANCES**, among Farriers, is used to signify two Things, *viz.* either an ill State or Habit of a Horse's Body, arising from some Part diseased; or a Loosening and Solution of the Continuity of the Parts, which according to the various Circumstances thereof, acquires various Names, as *Fracture*, *Wound*, *Ulcer*, *Rupture*, *Convulsion*, *Cramp*, *Excoriation*.

**SORTES**, in Antiquity, *Lots*, a Method of deciding dubious Cases, where there appears no ground for a Preference, by referring the Thing to the Conduct of Chance; as in casting of Dice, drawing of Tickets, &c. See **CHANCE**.

The ancient *Sortes* or *Lots*, were instituted by God himself; and in the Books of the *Old Testament*, we meet with divers standing and perpetual Laws, and divers particular Commands, prescribing and regulating the Use thereof. Thus the Scripture informs us, That the *Lot* fell on *St. Matthias*, when a Successor to *Judas* in the Apostolate was to be chosen. And our Saviour's Garment itself, was cast *Lots* for. *Sortii sunt Christi Vestem*.

The *SORTES Prænestinae*, were famous among the Greeks. The Method of these, was to put an Infinity of Letters, or even whole Words into an Urn; to shake them together, and throw them out; and whatever should chance to be made out in the Arrangement of the Letters, &c. composed the Answer of this Oracle.

In what Repute soever, this Method of Divination might, anciently, have been, *M. Dacier* observes, That in *Cicero's* Time its Credit was low; insomuch that none but the credulous Populace had recourse to it.

In lieu of this, another kind of *Sortes* was introduced into Greece and Italy, which was to take some celebrated Poet, as *Homer*, or *Euripides*, or *Virgil*, to open the Book, and whatever first presented itself to the Eye upon opening, was taken for the Ordinance of Heaven. This made what they call'd *Sortes Homericae*, and *Sortes Virgilianæ*; which succeeded to the Use of the *Sortes Prænestinae*.

This Superstition pass'd hence into Christianity; and the Christians took their *Sortes* out of the Books of the *Old* and *New Testament*. The first Passage that it presented, upon opening a Book of Scripture, was esteem'd the Answer of God himself.

If the first Passage did not happen to be any Thing to the Purpose for which the *Sortes* were consulted; another Book was opened, till a Passage were met withal, that might be taken for an Answer. This was called *Sortes Sanctorum*.

*St. Augustin* does not disapprove of this Method of learning Futurity, provided it be not used for worldly Things; and owns he has practised it himself.

*Gregory of Tours* adds, That the Custom was, to lay the Bible on the Altar, and to pray the Lord, that he'd discover what was to come to pass.

Instances of the Use of the *Sortes Sanctorum* are very frequent in History. *Heraclius*, *Mr. Fleury* tells us, in his War against *Cosroe*, to learn where he should take up his Winter Quarters, purified his Army for three Days, and then opened the Gospels, and found the Place appointed for his Winter Quarters, was in *Albania*.

*Gilbert of Nogent*, informs us, That in his Time, that is, about the beginning of the XIIth Century, the Custom was at the Consecration of Bishops, to consult the *Sortes Sanctorum*, to learn the Success, Fate, &c. of their Episcopate.

The Practice is founded on a Supposition, that God presides over the *Sortes*; and on the 33d Verse of the 16th Chapter of *Proverbs*; *The Lot is cast in the Bosom, and its Decision is from the Almighty*.

In effect, many Divines hold, that the *Lot* is conducted in a particular Manner by Providence; that 'tis an extraordinary Manner wherein God declares his Will by a kind of immediate Revelation. The *Sortes Sanctorum*, however, were condemn'd by the Council of *Agda* in 506, at the Time they were beginning to take footing in France, &c.

**SORTILEGE**, a kind of Divination by *Sortes* or *Lots*. See **SORTES**.

**SOTERIA**, in Antiquity, Sacrifices offered to the Gods, in Gratitude for their having delivered from Danger. See **SACRIFICE**.

The Term is also applied to poetical Compositions made for the same End. *Orpheus* is the first, who appears to have composed *Soteria*.

Our Latin Poets give the same Name to Poems in Latin Verse, wrote to give Thanks to God or the Saints, for having preserved them on any Occasion: *F. Petavius* being delivered from a dangerous Disease, by the Intercession, as he supposed, of *St. Genesius*, composed that fine Piece in Honour of that Saint, still extant under the Title of *Soteria*.

The Word is form'd from the Greek, *σῶτης*, Saviour.

**SOVERAIGN**, the first Being; the Supreme, or the Almighty: A Term, in Strictness, only applicable to God.

*Pasquier* derives it from the Latin, *Superior*, the First in any Thing, or he who is superior to the rest.

Whence, in the ancient French Customs, we meet with *Sovereign Master of the Household*; *Sovereign Master of the Forests*; *Sovereign Master of the Treasury*: and hence, under *Charles VI.* the Title *Sovereign* is given to Bailiffs and Seneschals, with regard to their Superiority over *Prevots* and *Chatelains*.

**SOVERAIGN**, with regard to Men, is applied to Kings and Princes, who are Supreme and Independant, and hold of no Body but God and their Sword. See **KING**, **PRINCE**, &c.

The Authority of a *Sovereign* is only bounded by the Laws of God, of Nature, and the fundamental Laws of the State.

The Title is also given to such as are invested with certain Rights, which only belong to *Sovereigns*: As the Right of Coining Money; sending Agents to Diets, to treat of War and Peace: In which Sense, the Feudatories of the Empire, and the Tributaries of the Grand Signor, are called *Sovereigns*.

*Sovereign* is also applied to Judges, who have a Power from a Prince, to decide the Processes of his Subjects without Appeal or in the last Ressort. At *Paris* there are five *Sovereign* Companies; the Parliament, the Chamber of Accounts, the Court of Aids, the Grand Council, and the Court of Monies. In *England*, we have but one *Sovereign* Court; the House of Lords.

**SOUL**, a Spirit inclosed in an organiz'd Body. See **SPIRIT** and **BODY**.

Many of the ancient Philosophers asserted an *Anima Mundi*, a *Soul* which moved and animated the Machine of the Universe, and gave Action to all natural Causes. This Doctrine, *Plato* handles very fully in his *Timæus*. See **ANIMA MUNDI**.

Others have given particular *Souls* to all the heavenly Bodies, the Sun, Stars, Earth, &c. to regulate their Motions.

The Philosophers, many of them, allow of two, and others of three kinds of *Souls*.

A *Rational Soul*, which they hold to be Divine, and infused by the Breath of God.

An *Irrational* or *Sensitive Soul*, which Man has in common with Brutes, and which is form'd out of the Elements.

To which some add a *Vegetative Soul*; which we have in common with Plants; and which, as the First is the Principle of Reason and Understanding, or that in us which thinks and understands; and the Second, the Principle of Life; so this Third is the Principle of Growth, Nutrition and Vegetation. See **VEGETATIVE**, &c.

The *Epicureans* took the Substance of the *Soul*, we mean of the rational *Soul*, to be a subtil Air, composed of their Atoms, or primitive Corpuscles. See **ATOM**.

The Stoicks held it to be a Flame or Portion of heavenly Light.

*Spinoza* and his Followers, allowing of only one kind of Substance, *viz.* Matter, maintain the *Soul* to be of the same Substance with the Body, *viz.* Material. See **SUBSTANTIAL**.

The *Cartesians* make Thought the Essence of the *Soul*, and from this Principle, deduce its Immateriality and Immortality. See **THINKING**.

But the Principle is False; nor is there any need to define the *Soul* a Substance that thinks, to prove it Immortal. 'Tis enough, that the *Soul* be capable of Thinking; and that it produce its own Thoughts, without having Thought its Essence. 'Tis no more essential to the *Soul* to Think than to Will: For a Thing I can conceive the *Soul* without, cannot be its Essence.

Again, if Thought be the Essence of the *Soul*; as a Thing cannot produce itself, its own Being, or Essence; the *Soul* does not produce its own Thoughts, nor its own Will: And thus is it brought to the Condition of Brutes, or even of inanimate Bodies without any Action, any Liberty, &c.

If the *Cartesians* only mean this of the Faculty of Thinking; they do wrong even to call this the Essence of the *Soul*. 'Tis no more its Essence, than the Faculty of Willing is. And we conceive something in the *Soul*, prior to both those Faculties.

The *Soul* is a spiritual Substance, proper to inform, or animate a human Body, and by its Union with this Body, to constitute a reasonable Animal or Man. This is its Essence; and this its Definition.

It must be owned, the *Cartesians* prove the Spirituality and Immortality of the *Soul*, from its Thinking, exceedingly well: But they are not to have the Honour of this Proof, as their own Invention. All the great Philosophers used it before them, and use it still. See **IMMORTALITY**.

The Philosophers are not at all agreed, as to the Manner wherein the *Soul* resides in the Body. Some hold it equally diffused throughout every Part thereof. Others say it influences



fluences, and acts on every Part of the Body, though it has its principal Residence in some particular Part, call'd the *Sensory*. See *SENSORY*.

This principal Part, *Des Cartes* maintains, is the Pineal Gland of the Brain, where all the Nerves terminate, &c. See *PINEAL Gland*.

*Borry*, a Northern Physician, in a Letter to *Bartholin*, asserts, That in the Brain is found a certain, very subtle, fragrant Juice, which is the principal Seat or Residence of the reasonable Soul; and adds, That the Subtlety and Fineness of the Soul, depends on the Temperament of this Liquor, rather than on the Structure of the Brain, to which 'tis usually ascribed. This Liquor, we conceive, must be the same with what we usually call the *Nervous Juice*, or *Animal Spirits*. The Constitution whereof, is, doubtless, of great Importance, with regard to the Faculties of the Soul. See *SPIRIT*.

Mr. *Lock* distinguishes Two principal Faculties for Powers of the rational or human Soul, viz. *Perception* and *Willing*. See *POWER*.

To these, other Philosophers add others; as *Sensation*, *Liberty*, *Memory*, *Imagination* and *Habit*. See *UNDERSTANDING*, *WILL*, *SENSATION*, *LIBERTY*, &c.

The Mystic Divines distinguish Two principal Parts in the Soul: The *Upper-part*, which comprehends the Understanding and the Will; and the *inferior Part*, which comprehends Imagination and Sensation. Thus, say they, *Jesus Christ* was happy on the Cross in his *upper Part*, and suffered in his *lower Part*. The lower Part did not communicate to the Upper, either its Troubles or its Failings; nor the Upper to the Lower, its Peace or Beatitude. From this Distinction, the Quietists take in hand to maintain, That whatever passes contrary to good Morals, in the lower Part of the Soul, is not contrary to the Purity of the upper Part, inasmuch as the Will has no Share therein.

As to the Soul of Brutes, the *Cartesians*, and some others, deny its Existence, in the common Sense of the Word *Soul*; that is, they strip off all the Properties or Faculties of the *Human Soul*: And the *Peripateticks*, on the contrary, invest it with the greatest Part of them.

In Man, a particular Agitation of the Fibres of the Brain is accompanied with a Sensation of Heat; and a certain Flux of animal Spirits towards the Heart, and Viscera, is followed by Love or Hatred.

Now the *Peripateticks* maintain, That the Brutes feel the same Heat and the same Passions, on the same Occasions: That they have the same Aversion for what incommodes them, and, in the general, are capable of all the Passions, and all the Sensations we feel.

The *Cartesians* deny they have any Perceptions or Notices at all; that they feel any Pain or Pleasure; or love or hate any thing. The Ground of their Opinion is, That they allow of nothing in Brutes, but what is material, and that they deny Sensations and Passions, to be any Properties of Matter. Some of the *Peripateticks*, on the other hand, maintain Matter, when subtilized, framed, ranged and moved in a certain Manner, to be capable of Sensation and Passion; that Beasts may feel and perceive, by means of the animal Spirits, which are a Matter thus modified; and that the *human Soul* itself, only becomes capable of Sensation and Passion, by means thereof.

But we must own it very difficult, to reconcile the Idea we have of Matter, with that we have of Thought; to conceive that Matter figured in any manner, whether in a Square, a Sphere, or an Oval, should be Pleasure, Pain, Heat, Colour or Smell; to conceive that Matter, however, agitated, whether in a Circle, a Spiral, Parabola or Ellipsis, should be Love, Hatred or Joy.

The Maintainers of the contrary Opinion, urge that Appearance of Sense, of Fear, Caution, Love for their Young, infinite Sagacity, both for their own Preservation and that of their Species, visible through the whole Brute Creation. And 'tis true, all the Actions of Beasts plainly express an Understanding; for every thing that is regular, expresses it; even a Machine or Watch expresses it: and a Plant much more; the Radicle of the Seed turning downwards, and the Stem upwards, whatever Situation the Seed is sown in: the young Plants knitting from Space to Space, to strengthen it; its putting forth Prickles, &c. to defend it, &c. mark a great Understanding. All the Motions of Plants and Brutes plainly discover an Intelligence; but the Intelligence does not reside in the Matter thereof: 'Tis as distinct from the Beast or Plant, as is that which ranged the Wheels of the Watch, is distinct from the Watch itself.

For, in effect, this Intelligence appears infinitely Great, infinitely Wise, infinitely Powerful; and the same which form'd us in our Mother's Womb, which gives our Growth, &c.

Thus, in Brutes, there is not either Understanding or Soul, in the Sense we generally use the Word: They eat without Pleasure, cry without Pain, grow without knowing it. They fear nothing; know nothing; and if they act in such manner, as shews Understanding; 'tis because God

having made them, to preserve them, has formed their Bodies, so as to avoid whatever might hurt them, mechanically.

Otherwise, it might be said, That there is more Understanding in the vilest Insect, nay, in the smallest Grain, than in the most knowing of Men; for 'tis evident, either of them contains more Parts, and produces more regular Motions and Actions, than we are capable of understanding. Thus does the great *F. Mallebranch*, argue against the Souls of Brutes. *Recherche de la Verite*, liv. 6.

SOUL'S Cheat, a Legacy anciently bequeathed at their Deaths, by our scrupulously pious Ancestors, to the Parish Priest, to compensate for any Tythes that might have been forgot in their Lives. See *TYTHE*.

SOUND, a Perception of the Soul, communicated by means of the Ear; or, the Effect of a Collision of Bodies, and a tremulous Motion consequent therein, communicated thence to the circumambient Fluid, and propagated through it to the Organs of Hearing. See *EAR* and *HEARING*.

To illustrate the Cause of Sound; we observe; first, That a Motion is necessary in the sonorous Body, for the Production of Sound. Secondly, That this Motion exists, first, in the small and insensible Parts of the sonorous Bodies, and is excited in them by their mutual Collision, and Percussion against each other, which produces that tremulous Motion, so observable in Bodies, that have a clear Sound, as Bells, musical Chords, &c. Thirdly, That this Motion is communicated to, or produces a like Motion in the Air, or such Parts of it, as are apt to receive and propagate it; inasmuch as no Motion of Bodies, at a Distance, can affect our Senses without the Mediation of other Bodies, which receive those Motions from the Body, and communicate them immediately to the Organ. Lastly, That this Motion must be communicated to those Parts, that are the proper and immediate Instruments of Hearing.

Further, That Motion of a sonorous Body, which is the immediate Cause of Sound, may be owing to two different Causes; either the Percussion between it and other hard Bodies, as in Drums, Bells, Chords, &c. or the beating and dashing of the sonorous Body and the Air, immediately against each other, as in Wind Instruments, as Flutes, Trumpets, &c.

But in both Cases, the Motion, which is the Consequence of the mutual Action, and the Immediate of the sonorous Motion which the Air conveys to the Ear; is an invisible, tremulous or undulating Motion in the small and insensible Parts of the Body.

To explain this; all sensible Bodies are supposed to consist of a Number of small and insensible Parts or Corpuscles, which are of the same Nature in all Bodies, perfectly hard and incompressible. See *CORPUSCLE*.

Of these, are composed others, somewhat greater, but still insensible; and these different, according to the different Figures and Union of their component Parts. These, again, constitute other Masses bigger and more different than the former, and of the various Combinations of these last, are those gross Bodies composed, that are visible, touchable, &c. The first and smallest Parts, we have observed, are absolutely hard; the others are compressible, and united in such manner, that being compress'd by an external Impulse, they have an elastic or restitutive Power, whereby they restore themselves to their natural State. See *ELASTICITY*.

A Shock, then, being made by one Body upon another, the small Particles, by their elastic Principle, move to and again with a very great Velocity, in a tremulous, undulating Manner, somewhat like the visible Motions of grosser Springs; as we easily observe in the Chords of musical Instruments. And this is what we may call the *Sonorous Motion*, which is propagated to the Ear: But observe, that 'tis the insensible Motion of those Particles next the smallest, which is supposed to be the immediate Cause of Sound; and of these, only those next the Surface, communicate with the Air: The Motion of the whole, or of the greater Parts, being no further concerned, than as they contribute to the other.

To apply this Theory; strike a Bell with any hard Body, and you easily perceive a sensible Tremor in the Surface, spreading itself over the whole; and that more sensibly, as the Shock is greater. Upon touching it in any other Part, the Motion and the Sound too, are stopp'd. Now this is apparently a Motion of the small and insensible Parts, changing their Situations, with respect to one another, which being so many, and so closely united, we cannot perceive their Motions separately and distinctly; but only a Trembling, which we reckon to be the Effect of the Confusion of an infinite Number of little Particles, closely joyn'd, and only moving in infinitely little Lines.

Mr. *Perrault* adds, That this visible Motion of the Parts, contributes no otherwise to Sound, than as it causes the invisible Motion of the smaller Parts, which he calls *Particles*, to distinguish them from the sensible ones, which he calls *Parts*, and from the smallest of all, which we call *Corpuscles*.

This



This he supports from the Instance of a Chord, which being struck, and the *Sound*, and sensible Undulations at Rest again, if you approach the Chord softly with the Finger, you'll find a small tremulous Motion, which is the Remains of the Vibrations of the whole Chord, and the Parts. Now, the Parts vibrate without any *Sound*; but no sooner is the Vibration felt by the Finger, than the *Sound* is heard again; which he ascribes to this, That the Motion of the Parts being insufficient to move the Particles, whose Motion is the first that ceases, requires some Assistance from dashing against the Finger, whereby to become enabled to give the Particles the Motion necessary for the producing of *Sound*. He finishes his Proof, by the Instance of Flutes; which when made of different Matters, as Wood, Metal, &c. whose Parts are very different, but their Particles nearly the same, if their Lengths and Bores be the same; there is very little sensible Difference in their *Sounds*.

The sonorous Body having made its Impression on the contiguous Air, that Impression is propagated, from one Particle to another, according to the Laws of Pneumatics.

A few Particles, for instance, driven from the Surface of the Body, drive the neighbouring Particles into a less Space; and the Medium, as it is thus rarified in one Place, becomes condensed in the other: But the Air thus compress'd in the second Place, is, by its Elasticity, returned back again, both to its former Place, and its former State; and the Air, contiguous to that, is compress'd: and the like obtains, when the Air less compress'd expanding itself, a new Compression is generated. From each Agitation of the Air, therefore, there arises a Motion of the Air, analogous to the Motion of a Wave on the Surface of Water; which we call a *Wave* or *Undulation* of Air. See *UNDULATION*.

In each Wave, the Particles go and return back again, through very short, but equal Spaces; the Motion of each Particle is analogous to the Motion of a vibrating Pendulum, while it performs two Oscillations; and most of the Laws of the Pendulum, with very little Alteration, are applicable thereto. See *PENDULUM*.

*Sounds* are as various, as are the Means that concur to their Production.

The principal Varieties are reducible to the Figure, Constitution, Quantity, &c. of the sonorous Body, the Manner of Percussion, with the Velocity, &c. of the Vibrations consequent thereon; the State and Constitution of the Medium; the Disposition, Distance, &c. of the Organ; the Obstacles between the Organ and the sonorous Object, and the adjacent Bodies: The most notable Distinctions of *Sounds*, arising from the various Degrees and Combinations of the Conditions mentioned, are into *loud* and *low* (or strong or weak) into *grave* and *acute* (or sharp and flat, or high and low) and into *long* and *short*. The Management whereof, makes the Office of Music. See *SOUND in Music*.

The Velocity of *Sound* is the same, with that of the Waves; which does not differ much, whether it go with the Wind or against it. By the Wind, indeed, a certain Quantity of Air is carried from one Place to another; and the *Sound* is accelerated, while its Waves move through that Part of the Air, if their Direction be the same as that of the Wind. But as *Sound* moves vastly swifter than Wind, the Acceleration it will hereby receive, is inconsiderable. In effect, the most violent Winds we know of, have their Celerity to that of *Sound*, only as 1 to 33; and all the Effect we can perceive from the Wind, is, that it increases and diminishes the Space of the Waves; so that the *Sound* may be heard to a greater Distance than otherwise it would.

That the Air is the ordinary Medium of *Sound*, appears from various Experiments, in rarified and condensed Air.

In an exhausted Receiver, a small Bell may be heard some Distance; but when exhausted, it can scarce be heard at the smallest Distance. If the Air be condensed, the *Sound* will be louder, proportionably to the Condensation, or Quantity of Air crowded in: Of which we have many Instances in Mr. Hawksbee's Experiments; and this does not only succeed in forced Rarefactions, &c. but in such also, as are Natural; as is evident from *Fredricus's* Story of his Journey to the Top of Mount *Carpathus* in *Hungary*.

But 'tis not the Air alone, that is capable of the Impressions of *Sound*; but Water also: as is manifest, by striking a Bell under Water, the *Sound* of which may plainly enough be heard, only not so loud, and also a Fourth deeper, by the Ear of some good Judges in musical Notes. Indeed *Mersenne* says, a *Sound* made under Water, is of the same Tone or Note, as if made in Air, and heard under Water.

The Velocity of *Sound* is variously reported by various Authors,

Sir *Isaac Newton* makes its Progress, in a Second of Time, to be 968 Feet; the Honourable Mr. *Francis Roberts* 1300 Feet; Mr. *Boyle* 1200 Feet; Dr. *Walker* 1338 Feet; *Mersenne* 1474 Feet; Mr. *Flamsteed* and Dr. *Halley* 1142 Feet; the *Florentine Academy* 1148 Feet; the *French Observers*, *Hist. Acad. Reg.* 1172. The Reason of which Variety, Mr. *Derham* ascribes partly to those Gentlemen using Strings

and Plummetts instead of regular Pendulums; partly to there not being Distance enough between the sonorous Body and the Place of Observation; and partly, to there being no Regard had to the Winds.

Some of the most considerable Queries, relating to the Laws of *Sounds*, the same Author proposes; and answers several of them accurately, from Experiments made for that Purpose by himself, as follows;

How far a *Sound* moves in a Second of Time? *Sound* moves 1142 Seconds in a Second, which is just an *English* Mile in  $9\frac{1}{4}$  or 9.25 half Seconds; two Miles in  $18\frac{1}{2}$ ; three Miles in  $27\frac{3}{4}$ , &c.

Does the Report of a Gun, discharged with its Mouth towards us, come sooner than when the Muzzle is from the Observer? By repeated Experiments, it appears, there is no Difference in the *Sound*, from this different Direction.

Do *Sounds* move in the same Time, the same Spaces, in all States of the Atmosphere, and Heights of the Barometer, by Day and by Night, in Summer and in Winter, in snowy and in clear Weather, in this or that Climate? By repeated Experiments, it does not appear there arises any Difference from any of these different Circumstances.

Do the Winds affect the Motion of *Sounds*? By repeated Experiments, it appears, there is some, though a very small Difference in the Velocity of *Sounds*, with or against the Wind; which is also augmented, or diminished, by the Strength or Weakness of the Wind.

Do a great and intense *Sound*, and a small or languid one, move with the same Velocity? It appears that they do.

Does the *Sound* of a Gun move equally swift at all Elevations of the Gun? They do.

Do different Quantities or Strengths of Gun-powder, occasion any Difference, as to the Velocity of the *Sound*? None.

Does *Sound* move in a right Line, the nearest Way; or does it sweep along the Earth's Surface? And is there any Difference in the Time, if the Piece be discharged in an acclive and a declive Position? *Sound* moves the nearest Way; and the Velocity appears to be the same in Acclivities and Declivities.

Have all kinds of *Sounds*, as those of Guns, Bells, &c. the same Velocity? And are *Sounds* equally swift in the Beginning of their Motion, and in the End? There appears no Inequality in either of these respects.

For the Reflection of *SOUND*, } See } *ECCHO*.  
For the Refraction of *SOUND*, } See } *REFRACTION*.

*SOUND*, in Music, the Quality and Distinction of the several Agitations of the Air, consider'd as their Disposition, Measure, &c. may make Music. See *MUSIC*.

*Sound* is the Object of Music, which is nothing but the Art of applying *Sounds*, under such Circumstances of Tone and Tune, as to raise agreeable Sensations.

The principal Affection of *Sound*, whereby it becomes fitted to have this End; is that, whereby it is distinguished into *Acute* and *Grave*. See *GRAVITY*, &c.

This Difference depends on the Nature of the sonorous Body, the particular Figure and Quantity thereof; and even, in some Cases, on the Part of the Body where it is struck; and is that which constitutes what we call different Tones. See *TONE*.

The Cause of this Difference appears to be no other than the different Velocities of the Vibrations of the *sound*ing Body. In effect, the Tone of a *Sound*, is found, by abundance of Experiments, to depend on the Nature of those Vibrations, whose Differences we can conceive no otherwise, than as having different Velocities: And since 'tis proved, That the small Vibrations of the same Chord, are all performed in equal Time; and that the Tone of a *Sound*, which continues for some Time after the Stroke, is the same from first to last: It follows, that the Tone is necessarily connected with a certain Quantity of Time in making each Vibration, or each Wave; or that a certain Number of Vibrations or Waves, accomplished in a given Time, constitute a certain and determinate Tone.

From this Principle, are all the Phenomena of Tune deduced. See *TUNE*.

From the same Principle, arise what we call *Concords*, &c. which are nothing but the Results of frequent Unions and Coincidences of the Vibrations of two sonorous Bodies, and consequently of the Waves and undulating Motions of the Air, occasioned thereby. See *CONCORD*.

On the contrary, the Result of less frequent Coincidences of those Vibrations, is what we call a *Discord*. See *DISCORD*.

Another considerable Distinction of *Sounds*, with regard to Music, is that, whereby they are denominated *long* and *short*; not with regard to the sonorous Body's retaining a Motion once received, a longer or a less Time, though gradually growing weaker; but to the Continuation of the Impulse of the efficient Cause of the sonorous Body, for a longer or a shorter Time, as in the Notes of a Violin, &c. which are made



made longer or shorter, by Strokes of different Length or Quickness.

This Continuity, is, properly, a Succession of several Sounds, or the Effect of several distinct Strokes, or repeated Impulses on the sonorous Body, so quick, that we judge it one continued Sound; especially if it be continued in the same degree of Strength: And hence arises the Doctrine of Measure and Time. See TIME.

Sounds, again, are distinguished, with regard to Music, into Simple and Compound; and that two Ways:

In the First, a Sound is said to be Compound, when a Number of successive Vibrations of the sonorous Body and the Air, come so fast upon the Ear, that we judge them the same continued Sound; as in the Phenomenon of the Circle of Fire, caused by putting the fir'd End of a Stick in a quick, circular Motion; where, supposing the End of the Stick in any Point of the Circle, the Idea we receive of it there, continues till the Impression is renewed by a sudden Return.

A simple Sound, then, with regard to this Composition, should be the Effect of a single Vibration, or of so many Vibrations as are necessary to raise in us the Idea of Sound. In the Second Sense of Composition, a simple Sound is the Product of one Voice, or one Instrument, &c.

A compound Sound, consists of the Sounds of several distinct Voices or Instruments all united in the same individual Time and Measure of Duration, that is, all striking the Ear together, whatever their other Differences may be: But in this Sense, again, there is a two-fold Composition; a Natural and Artificial one.

The natural Composition, is that proceeding from the manifold Reflexions of the first Sound from adjacent Bodies, where the Reflexions are not so sudden, as to occasion Echo's; but are all in the same Tune with the first Note. See RESONANCE.

The artificial Composition, which alone comes under the Musicians Province, is, that Mixture of several Sounds, which being made by Art, the Ingredient Sounds are separable, and distinguishable from one another. In this Sense, the distinct Sounds of several Voices or Instruments, or several Notes of the same Instrument, are called Simple Sounds; in contradistinction to the Compound ones, wherein, to answer the End of Music, the Simples must have such an Agreement in all relations, chiefly as to Acuteness and Gravity, as that the Ear may receive the Mixture with Pleasure. See COMPOSITION.

Another Distinction of Sounds, with regard to Music, is that, whereby they are said to be smooth and even, or rough and harsh, also clear and hoarse; the Cause of which Differences, depends on the Disposition and State of the sonorous Body, or the Circumstances of the Place; but the Ideas of the Differences must be sought from Observation.

Smooth and rough Sounds depend, principally, on the sounding Body; Of these we have a notable Instance in Strings that are uneven, and not of the same Dimension or Constitution throughout.

M. Perrault, to account for Roughness and Smoothness, maintains, there is no such thing as a simple Sound; but that the Sound of the same Chord or Bell, is a Compound of Sounds of the several Parts of it; so that where the Parts are homogeneous, and the Dimensions, or Figure uniform, there is always such a perfect Mixture and Union of all the Sounds, as makes one uniform and smooth Sound: Contrary Conditions, produce Harshness. In effect, a Likeness of Parts and Figure, makes an Uniformity of Vibrations, whereby a great Number of similar and coincident Motions conspire to fortify and improve each other, and unite, for the more effectual producing of the same Effect.

This Account he confirms, from the Phenomena of a Bell, which differs in Tone, according to the Part 'tis struck in; and yet strike it any where, there is a Motion over all the Parts. Hence, he considers the Bell as composed of an infinite Number of Rings, which, according to their different Dimensions, have different Tones; as Chords of different Lengths have; and when struck, the Vibrations of the Parts immediately struck, specify the Tone, being supported by a sufficient Number of Consonant Tones in other Parts. This must be allowed, that every Note of a string'd Instrument, is the Effect of several simple Sounds: For there is not only the Sound resulting from the Motion of the String; but that from the Motion of the Parts of the Instrument, which has a considerable Effect in the total Sound, as is evident from hence, that the same String on different Violins, sounds very differently.

But Perrault affirms the same of every String in itself, and without considering the Instrument. Every Part of the String, he says, has its particular Vibrations, different from the gross and sensible Vibrations of the whole; and these are the Causes of different Motions and Sounds in the Particles, which uniting, compose the whole Sound of the String, and make an uniform Composition, wherein the Tone of the particular Part struck, prevails; and all the others mix under a due Subordination with it, so as to make the Composition smooth and agreeable. If the Parts be unevenly, or irregularly constituted, the Sound is harsh; which is the Case in what we call false Strings, and

various other Bodies; which, for this Reason, have no certain and distinct Tone; but a Composition of several Tones, which don't unite and mix, so as to have one predominant, to specify the total Tone.

As to clear and hoarse Sounds, they depend on Circumstances that are accidental to the sonorous Body: Thus a Voice or Instrument will be hollow and hoarse, if raised within an empty Hog'shead, that yet is clear and bright out of it: The Effect is owing to the Mixture of other and different Sounds, raised by Reflexion, which corrupt and change the Species of the primitive Sound.

For Sounds to be fit to obtain the End of Music, they ought to be smooth and clear, especially the first; since without this, they cannot have one certain and discernable Tone, capable of being compared to others, in a certain relation of Acuteness, of which the Ear may judge; and of Consequence can be no Part of the Object of Music. Upon the whole, then, with Mr. Malcolm, we call that a harmonic or musical Sound, which being clear and even, is agreeable to the Ear, and gives a certain and discernable Tune; (hence called tunable Sound) which is the Subject of the whole Theory of Harmony. See HARMONY.

SOUND, in Geography, a Streight, or Inlet of the Sea, between two Capes or Head-lands. See STREIGHT.

The Word is particularly used, by way of Eminence, for that famous Streight, which joins the German Sea to the Baltic.

It is situate between the Island of Zeland and the Coast of Schonen. 'Tis about sixteen Leagues long, and generally five broad, excepting against the Castle of Cronenbourg, where 'tis but one: So that there is no Passage for Vessels, but under the Cannon of the Fortresses.

This has given occasion to the Danes to settle a Toll on all Vessels, which is one of the best Revenues of the Crown of Denmark; and to forbid all Pilots from passing through the great and little Belt, which are two other Inlets into the Baltic, though somewhat less commodious than the former. The Swedish Vessels are exempted from paying this Toll, by the Treaty of 1658, whereby the Danes yielded South-Gotland to the Swedes. See TOLL.

SOUND-Board, the principal Part of an Organ, and that which makes the whole Machine play. See ORGAN.

The Sound-board or Summer, is a Reservoir, into which the Wind drawn in by the Bellows, is conducted by a Port-vent, and hence distributed into the Pipes placed over the Holes of its upper Part. This Wind enters them by Valves, which open by pressing upon the Stops or Keys, after drawing the Registers, which prevent the Air from going into any of the other Pipes, but those 'tis required in.

Organs, whose longest blind Pipes are four Foot, have their Sound-Board from five to six Feet. Organs of 16 Feet have two Sound-Boards, which communicate the Wind from one to the other, by a Pewter Port-vent.

SOUNDING, in Navigation, the trying of the Depth of the Water, and the Quality of the Bottom, by a Line and Plummet, or other Artifice.

There are two Kinds of Lines occasionally used in Sounding the Sea; the Sounding Line and the deep Sea Line.

The first, is the thickest and shortest, as not exceeding 20 Fathom in Length; and marked at two, three and four Fathoms, with a Piece of black Leather between the Strands; and at Five, with a Piece of white Leather.

The Sounding Line may be used when the Ship is under Sail, which the deep Sea-Line cannot. The Plummet is usually in form of a Nine-pin, and weighs 18 Pounds; the End is frequently greased, to try whether the Ground be Sandy or Rocky, &c. Near Banks, Shores, &c. they are Sounding continually.

Dr. Hook has invented a manner of Sounding the Depth of the deepest Sea, without any Line; only by a wooden Globe, lighter than Water, to which, at a little Distance is a piece of Lead or Stone fix'd, by means of a springing Wire in the First, fitted into a Staple in the Second. The whole being let gently down, with the Stone or Lead foremost, as soon as that arrives at the Bottom, it will stop; but the Ball, by the Impetus it has acquired in descending, will be carried a little lower after the Weight is stopp'd; by which means the springing Wire will be enabled to fly back, and disengaging itself, will re-ascend.

By observing, then, the Time of the Ball's stay under Water by a Watch or Pendulum, and the Help of some Tables; the Depth of the Sea is found.

In some Experiments made in the Thames with a maple Globe,  $5\frac{1}{2}$  Inches in Diameter, and weighing 4 Pound and a Half, lined with Pitch; and a conical Weight 11 Inches long, the sharp End downwards; at the Depth of 19 Feet, there passed six Seconds; and at the Depth of 10 Feet  $3\frac{1}{2}$  Seconds between the Immersion and Emergence of the Ball. From these Numbers given, the Depths, at any other stays, may be computed by the Rule of Three.

SOUP, a kind of Potage made of Bread, and Broth or the



the Juice of Flesh, or other Matters ; usually served at the beginning of a Meal.

*Soup* is esteem'd essential to a *French Meal*. Occasionally, they improve the Relish by the Addition of Onions or Leaks, or Cabbage or Turnips, &c. The Word is *French*, form'd from the *Italian*, *Zuppa* or *Suppa*, of the *Latin*, *Sapa*, Wine boil'd away to a Third Part. Others derive it from the *German*, *Soupp*, or the *Celtic*, *Souben*, which signify the same Thing.

SOURCE. See SPRING.

SOUTH *direct Dials*, } See { DIAL.  
SOUTHERN Signs, } SIGN.

SOWING. See SEMINATION and SEMBRADOR.

SOWNE, a Term used in the *Exchequer* ; seeming to be a Corruption from the *French Souvenu* ; that is, remembred. For the Statute, 4 H. 5. c. 7. in the Original *French*, hath *Des Estreats oriens Souvenu*. And such Estreats and Casualties, as are not to be remembred, run not in Demand, that is, are not Leviable. So now in the *Exchequer*, they say, such Estreats, as the Sheriff by his Industry cannot get, are Estreats that *Sowne* not ; and Estreats that *Sowne*, are such as he may gather. See ESTREAT.

SPACE, a simple Idea. The Modes, whereof, are Distance, Capacity, Extension, Duration, &c. See MODE, EXTENSION, DURATION, &c.

SPACE, in Philosophy, considered barely in Length between any two Bodies ; is the same Idea which we have of Distance. See DISTANCE.

If it be considered in Length, Breadth and Thickness, it is properly called *Capacity*. See CAPACITY.

When considered between the Extremities of Matter, which fills the Capacity of *Space*, with something Solid, Tangible and Moveable, it is then called EXTENSION. So that Extension is an Idea belonging to Body only ; but *Space*, it is plain, may be considered without it. See BODY.

*Space*, therefore, in the general Signification, is the same thing with Distance, considered every Way, whether there be any solid Matter in it or not.

Accordingly, *Space*, is either *Absolute* or *Relative*.

*Absolute Space*, is that considered in its own Nature, without regard to any thing External ; which always remains the same ; and is infinite and immoveable.

*Relative Space*, is that moveable Dimension, or Measure of the former, which our Senses define by its Positions to Bodies within it ; and this the Vulgar use for immoveable *Space*.

*Relative Space*, in Magnitude and Figure, is always the same with *Absolute* ; but it is not necessary it should be so numerically ; as if you suppose a Ship to be, indeed, in absolute Rest, then the Places of all Things within her, will be the same Absolutely and Relatively, and nothing will change its Place : But, suppose the Ship under Sail, or in Motion, and she will continually pass through new Parts of absolute *Space* : But all Things on Board, considered relatively, in respect to the Ship, may be, notwithstanding, in the same Places, or have the same Situation and Position, in regard to one another.

Proper and absolute Motion, is defined to be the Application of a Body to different Parts of *Absolute*, that is, of infinite and immoveable *Space*. See PLACE, MOTION and REST.

The *Cartesians*, who make Extension the Essence of Matter, assert, That the *Space* any Body takes up, is the same thing with the Body itself ; and that there is no such Thing as mere *Space*, void of all Matter, in the Universe : But this see disproved under the Article VACUUM.

SPACE, in Geometry, is the Area of any Figure ; or that which fills the Intervals or Distance between the Lines that terminate it. See AREA and FIGURE.

The *Parabolic Space*, is that included in the whole Parabola. See PARABOLA.

The *Conchoidal Space*, and the *Cissoidal Space*, are what are included within the Cavity of the Conchoid and Cissoid.

By the new Methods now introduced, of applying Algebra to Geometry, 'tis demonstrated, That the *Conchoidal* and *Cissoidal Spaces*, though infinitely extended, are yet finite Magnitudes. See CONCHOID and CISSOID.

SPACE, in Mechanics, the Line a moveable Body, consider'd as a Point, is conceived to describe by its Motion. See MOTION.

SPHÆNOPHARYNGÆUS, in Anatomy, a Pair of Muscles, called also *Pterygopharyngæus*, *Cephalopharyngæus*, &c. See PTERYGOPHARYNGÆUS.

SPAGYRIC, an Epithet given to Chymistry ; which is called the *Spagyric Art*, or *Medicina Spagyrica* ; and to Chymical Physicians, who are also called *Spagyrist*s. See CHYMISTRY.

*Spissus* derives the Word from the *Greek*, *σπῆν*, to extract, and *ἀσπέν*, congregare to collect ; which are the two principal Offices of Chymists. *Paracelsus* first introduced the Word.

SPAHI, a Horse-man in the Ottoman Army, chiefly raised in *Asia*.

The chief Strength of the Grand Signor's Army consists in the Janisaries, who are the Foot, and the *Spahi*'s, who are the Horse. See JANISARY, &c.

The Aga or Commander of the *Spahi*'s, is also called *Spahi Agasi*.

SPALT, or SPELT, a white, scaly, shining Stone, frequently used to promote the Fusion of Metals. 'Tis found pretty frequently in *England* and *Germany* ; and sometimes brought from the *Levant*. The best is in long Scales, very soft, and easily pulveriz'd. The *English Spalt* is generally very hard.

SPAN, a Measure taken from the Space between the Thumb's End, and the Top of the little Finger, when both are stretch'd out. The *Span* is estimated at three Hand-breadth's, or nine Inches. See MEASURE.

SPANISH, or the SPANISH Language. See LANGUAGE.

SPANISH-Flies. See CANTHARIDES.

SPANISH-Inquisition, &c. See INQUISITION.

SPAR, in Natural History, a shining, stony Substance, frequently found in Caves and Grotto's, in the Clefts of Rocks, Lead-Mines, &c. See STONE, GROTTO, &c.

Mr. *Beaumont*, in the *Philosophical Transactions*, endeavours to account for the Origin and Growth of *Spar* ; which he makes to be a kind of *Rock Plant*.

*Spar*, he observes, may be form'd three Ways ; either from Steams alone, or from Steams coagulating Dew, as it falls on the Ground, or Waters issuing from the Joints of Rocks : Or, it may grow from Earths and Clays. To say nothing of the Account we have from *Switzerland*, viz. That Snow, by long lying and continual Frosts, becomes hardened into *Spar*.

We have Instances of the first Kind in many Grotto's where *Spars* produced from Steams, hang like Icicles ; Lead Ore being often found to grow in the same Manner. And as this *Spar* grows downwards ; so in many Places, from the Sides of it, issue little Plants of *Spar*, shooting upwards, contrary to the Tendency of the others. An Instance of the Second, we have in a certain Place in *Italy*, where Crystals (which are a sort of *Spars*) are produced in clear Evenings, from a Coagulation of Dew falling on Nitrous Stones. But hereof we have Instances enough nearer Home. See STALACTITES.

For the third Kind of Generation of *Spar*, never before taken Notice of by Naturalists ; Mr. *Beaumont* gives us Instances of it in *Mendip Hills*, and other Mines, wherein are Subterraneous Vaults or Grotto's. In the Bottoms of some of these, is a Stream incumbent thereon. From this Earth, shoots up Spires of various Heights, &c. from the first Buddings out of it, till it is come as high as a Man's Finger ; the biggest ordinarily an Inch in Diameter. These Spires have all irregular Ridges and Furrows ; and some sooner, some later, begin on the Tops to be congealed into *Spar* ; and so gathering a Crust downwards by degrees, are all at last, turned into an absolute *white Spar* or Stone. See PETRIFICATION.

SPARADRAP, in Pharmacy, &c. an ancient Name for a Sear-cloth, or Cere-cloth ; or a Cloth smear'd on each Side with a kind of Plaister. See CERE-CLOTH.

'Tis prepared by melting a sufficient Quantity of some Plaister or Unguent, and dipping a linnen Cloth therein, till such time as it have imbibed its fill. 'Tis then taken out, cool'd and polish'd on a Marble.

There are as many different Kinds of *Sparadrap*, as there are of Plaisters for the Cloth to be dipp'd in. 'Tis sometimes also called *Tela Gualteriana*.

SPARRING, among Cock-fighters, is the fighting a Cock with another to breathe him. In *sparring*, they put Horts on their Spurs, that they may not hurt one another. To *spar* the Cock, imports in general, to breathe him, to embolden him to Fight.

SPASMA or SPASMUS, in Medicine, a *Greek* Term, *σπασμα*, of equal Import with the *Latin*, *Convulsio*, and the *English*, *Convulsion*. See CONVULSION.

A *Spasmus* happening after the taking of Hellebore, or any other violent Purgative, is mortal.

There are *Spasms* peculiar to certain Members, and distinguished by particular Names : That of the Mouth is called *Spasmus Cynicus* ; that of the Penis, *Satyriasis*, &c. See SATYRIASIS, CYNICUS, &c.

*Cardan* distinguishes two Kinds of *Spasms* : The first consisting in a constant Contraction of the Muscles, which renders the Members rigid, and inflexible. The Second, in sudden, unnatural Motions and Palpitations, frequently intermitting and beginning again.

Accidental *Spasms*, are of little Continuance : There are some arising from Flatulencies ; from Bites of venomous Beasts, from the Puncture of a Nerve, the Acrimony of the Humours vellicating the Stomach, Vapours of the Matrix, excessive Cold, &c.

SPASMODIC, something belonging to a *Spasma*, or Convulsion ;



vulsion; as a *Spasmodic Medicine*, *Spasmodic Disease*, &c. See SPASMA.

Hunger, according to M. Hecquet, is a *Spasmodic Affection* of the Fibres of the Stomach; unless it arises from the Fibres being too much moisten'd by the Liquor thereof, so as to incapacitate them for their Office. See HUNGER.

SPATULA, an Instrument used by Surgeons and Apothecaries; made flat at one end, and round at the other. The Surgeons have little Silver or Steel *Spatulas*, to spread their Plasters and Unguents withal.

The Apothecaries have large ones of Wood, to stir their Drugs in diluting, tempering or boiling them. The Word is form'd from the *Latin*, *Spathus*, of the *Greek* *σπάθιον*.

SPAVIN, a Disease in a Horse; being a Swelling or Stiffness in the Ham, that causes him to halt.

There are two Kinds of *Spavins*, viz. the *Ox-Spavin*, which is a callous Tumour, at the Bottom of the Ham, on the Inside, hard as a Bone, and very painful. While 'tis yet young, some Horses only halt with it, at the first coming out of the Stable.

The *dry Spavin* is more easily perceived, by the Horse's raising one of his hind Legs, with a Twitch, higher than the other. Sometimes 'tis found on both Legs. This Kind frequently degenerates into the *Ox-Spavin*, for which there is no Remedy, but to apply the Fire; which, however, is not always successful.

The Word is form'd from the *French*, *Esparvin*, which signifies the same thing.

There are two other Kinds of *Spavin*, which have their Seat in the Hoof, viz. the *Blood Spavin*, and *Bone Spavin*; which see under their proper Articles.

SPAWS, are Springs of Water, arising out of Minerals in the Earth, or from Mines of Nitre, Sulphur, Allum, Bitumen, Copperas, &c. See MINERAL and WATER.

*Spaws* are physical Waters, some purging by Urine, others by Vomit, and Stool.

That in *Yorkshire* is the most noted of this Kind in *England*. See BATH.

SPAYING, the Operation of Castrating the Females of several Kinds of Animals, as Sows, Bitches, &c. to prevent any further Conception, and promote their fattening. See CASTRATION.

'Tis perform'd, by cutting them in the mid Flank, on the left Side, with a sharp Knife or Lancet, taking out the Birth-Bag and cutting it off, and so stitching up the Wound, anointing the Sore with Tar, and keeping the Animal warm for two or three Days.

The usual Way, is to make the Incision a-slope, two Inches and a Half long, that the Fore-finger may be put in towards the Back, to feel for Two Kernels, as big as Acorns on both Sides the Birth, one of which is drawn to the Wound, the String thereof cut, and thus both taken out.

SPEAKER, a Member of the House of Commons, elected by a Majority of the Votes thereof, to act as Chair-man, or President, in putting Questions, reading Briefs or Bills, keeping Order, reprimanding the Refractory, adjourning the House, &c.

The first Thing done upon the first Meeting of a Parliament, is to chuse a *Speaker*; who is to be approved of by the King; and who upon his Admission, begs his Majesty, That the Commons, during their Sitting, may have *free Access to his Majesty*; *Freedom of Speech in their own House*, and *Security from Arrests*.

The *Speaker* is not allowed to persuade or dissuade, in passing of a Bill; but only to make a short and plain Narrative; nor to Vote, unless the House be equally divided. See PARLIAMENT.

The Lord Chancellor is usually *Speaker of the House of Lords*. See CHANCELLOR.

The *Speaker of the Convocation*, is called the *Prolocutor*. See PROLOCUTOR.

SPEAKING, the Art or Act of expressing one's Thoughts in articulate Sounds or Words. See WORD and VOICE; see also SPEECH and GRAMMAR.

Pliny, *Aelian*, *Plutarch* and other Authors, make mention of several Beasts that have *Spoke*: And *Pliny* himself, speaks with Assurance, in his History, of an Ox that *Spoke*. *Philostratus*, in his Life of *Apollonius*, gives the like Privilege to an Elm, and even to Ships. *Homer* makes *Xanthos*, one of *Achilles's* Horses, speak; wherein he has been followed by *Oppian*. But these are all fabulous: We have much better Authority for a Serpent, and an Ass's speaking. See LANGUAGE.

SPEAKING-*Trumpet*. See TRUMPET.

SPECIAL, something that has a particular Designation; from the *Latin*, *Species*; in Opposition to *general*, of *Genus*. See SPECIES and GENUS.

The King in his Letters, frequently says, of our *Special Grace*, full Power and royal Authority.

SPECIAL *Matter*, in Evidence, in Law. See GENERAL *Issue*.

SPECIAL *Verdict*, &c. See VERDICT, &c.

SPECIALTY, in Law, is most commonly taken for a Bond, Bill, or such like Instrument. Sometimes it is also used for *Special* or particular Acquaintance.

SPECIES, an Idea, which relates to some other more general one; or is compriz'd under a more universal Division of a Genus. See GENUS.

*Species* is a mere Term of Relation: And the same Idea may be a *Species*, when compared to another more general one; and a *Genus*, with regard to a more particular one. Thus Body is a *Genus*, with regard to an animate and inanimate Body; and a *Species*, with regard to Substance.

The last *Species*, is that which can only be divided into Individuals. See INDIVIDUAL.

Animal is a *Species*, with regard to Body; and Man is a *Species* with regard to Animal. God destroy'd Mankind by the Deluge; but he preserv'd the *Species*. See DELUGE.

SPECIES, in Logic, is one of the Five Words, call'd by *Porphyrus*, *Universals*. See UNIVERSAL.

The Word is *Latin*, form'd from the ancient Verb, *Specio*, I see; as if a *Species* of Things were a Collection of all the Things seen at one View.

SPECIES, in Rhetoric, is a particular Thing, contained under a more universal one.

The Orators also call it *Hypothesis*, *E. gr.* Virtue is to be loved, is the *Genus* or *Thesis*. Temperance is to be preserved here, at this Time, is the *Species* or *Hypothesis*. See THESIS.

SPECIES, in the ancient Music, a Sub-division of one of the Genera.

The Genera of Music were Three, the *Enharmonic*, *Chromatic* and *Diatonic*; the two last of which were variously sub-divided into *Species*; nor was the First without *Species*, though those had not particular Names as the *Species* of the other Two had.

These *Species* were also called the *Chroai*, Colours of the Genera: The Constitution whereof, see under the Article GENERA.

SPECIES, in Opticks, the Image painted on the Retina by the Rays of Light reflected from the several Points of the Surface of Objects, received in at the Pupilla, and collected, in their Passage through the Crystallin, &c. See VISION.

The Philosophers have been in great Doubt, whether the *Species* of Objects, which give the Soul an Occasion of Seeing, are an Effusion of the Substance of the Body; or a mere Impression which they make on all ambient Bodies, and which they all reflect, when in a proper Distance and Disposition; or, lastly, whether they are not some other more subtle Body, as Light, which receives all these Impressions from Bodies, and is continually sent and returned from one to other, with the different Figures and Impressions it had taken on all Sides: But the Moderns have decided this Point by their Invention of artificial Eyes, wherein the *Species* of Objects are received on a Paper or Linnen-cloth in the same manner as they are received in the natural Eye. See EYE.

The Ancients have distinguished the *Species*, whereby Objects become visible, into *Impressæ* and *Expressæ*.

*Impress'd Species* are such, as come from without; or are sent from the Object to the Organ; such are those we have already been speaking of.

*Express'd Species*, are those, on the contrary, from within; or that are sent from the Organ to the Object.

*Le Clerc*, in his System of Vision, by one of those Revolutions very frequent in philosophical Opinions, has call'd upon the Stage again the *Species expressæ*, of the ancient Philosophers. For, according to him, 'tis not by *Species* or Images impress'd on the Optic Nerve, that the Soul sees Objects; but by Rays, which she herself directs to them, and which she uses as a Blind Man does his Staff, to grope out Objects.

The Peripateticks account for Vision, from a kind of *Intentional Species*, thus: Every Object, say they, expresses a perfect Image of itself on the Air next to it. This expresses another lesser one on the Air next to that; and this a Third still less. Thus are the Images continued from the Object to the Crystallin, which these Philosophers hold the principal Organ of Seeing. These they call *Species intentionales*; and to account the better for their Generation, affirm, That Objects exhibit them in the same Manner, as Mirrors do a Man's Face.

SPECIES, in Theology, the Appearances of the Bread and Wine in the Sacrament, after Consecration: Or, as the *Romanists* call them, the Accidents remaining in the Bread, &c. whereby they become sensible to us, after their Substance is destroy'd.

The *Species* of the Bread, &c. are its Whiteness, Quantity, Figure, Friableness, &c. Of Wine, its Flavour, Quickness, specific Gravity, &c.

The Generality of the *Romish* Divines, hold, That the *Species* are absolute Accidents: And the *Cartesians*, who are bound to deny any such Things as absolute Accidents, are greatly puzzled to explain the *Species*, without incurring the Censure of Heresy. F. *Magnan* is forced to assert, That the



the *Species* are mere Delusions and Appearances, which God impresses on our Senses. See *ABSOLUTE Accident*.

*SPECIES*, in Commerce, are the several *Pieces* of Gold, Silver, Copper, &c. which having pass'd their full Preparation, and Coinage, are currant in Public. See *COIN*.

*Species decried*, or *cried down*, are such as the Prince has forbidden to be received in Payment.

*Light Species*, are those that fall short of the Weight prescribed by Law.

*False Species*, are those of different Metal from what they should be, &c.

*SPECIES*, in Algebra, are the Symbols, or Characters, whereby the Quantities are represented. See *CHARACTER*.

*SPECIFIC*, in Philosophy, that which is proper, or peculiar to any thing; that characterizes it, and distinguishes it from every other Thing.

Thus the attracting of Iron is *Specific* to the Load-stone, or a *Specific Property* of the Load-stone.

A just Definition should contain the *specific Notion* of the Thing defined, or that which *specifies* and distinguishes it from every thing else. See *DEFINITION*.

*SPECIFIC*, in Medicine, a Remedy, whose Virtue and Effect is peculiarly adapted to some certain Disease; is adequate thereto; and exerts its whole Force immediately thereon.

Thus Quinquina, or the Jesuits Bark, is held a *Specific* for intermitting Fevers or Agues; Mercury for the Venereal Disease, &c. See *QUINQUINA*.

Authors make mention of three Kinds of *Specific Medicines*.

1° Such as are eminently and particularly friendly to this or that Part, as the Heart, the Lungs, the Brain, the Stomach, &c.

2° Such as seem to attract, expell, or evacuate some determinate Humour, by a kind of *Specific Power* they are endowed withal; as Jalap is supposed to purge watery Humors, Rhubarb, Bile, &c.

And, 3° Such as remove the Cause of a Disease, by some sudden Property, without our knowing how or why; or the Manner of whose Operations we are entirely ignorant of, and have only learnt their Effects by Experience.

In the Use of these last, there is no Enquiry into the Nature of the Disease; no regard had to the Symptoms or Phenomena: Nor is the Medicine to be at all adapted to the particular Circumstances thereof. All that we regard, is the Name of the Disease, and that of the Remedy: As, immediately, upon finding an intermitting Fever, we prescribe the Bark; to assuage Pain, Opium; to expel Poison, some particular Antidote.

A *Specific Medicine*, therefore, stands in Opposition to a *Scientific* or *Methodic Medicine*. See *MEDICINE*.

*SPECIFIC Gravity*, in Hydrostatics, that Gravity, or Weight peculiar to each *Species*, or Kind of natural Body; and whereby it is distinguished from all other Kinds. See *WEIGHT*.

In this Sense, a Body is said to be *specifically Heavier* than another, when under the same Bulk it contains a greater Weight than that other; and that other, is said to be *specifically Lighter* than the First. Thus, if there be two equal Spheres, each a Foot in Diameter; only the one Wood, the other Lead: Since the Leaden one is found heavier than the Wooden one, it is said to be *specifically* or in *Specie*, *Heavier*, and the Wooden one *specifically Lighter*.

This kind of Gravity, some call *relative Gravity*; in opposition to *absolute Gravity*, which increases in Proportion to the Quantity or Mass of the Body. See *GRAVITY*.

#### Laws of the SPECIFIC Gravity and Levity of Bodies.

1. If two Bodies be equal in Bulk, their *specific Gravities* are, to each other, as their absolute Gravities. Thus a Body is said to be twice as heavy, *specifically*, as another, if it have twice its Gravity under the same Bulk.

Hence, the *specific Gravities* of equal Bodies, are as their Densities. See *DENSITY*.

2. The *specific Gravities* of Bodies of the same Weight, are in a reciprocal Ratio of their Bulks. Hence, the Masses of two Bodies of the same Weight, are in a reciprocal Ratio of their Bulks.

3. The *specific Gravities* of two Bodies are, in a Ratio, compounded of the direct Ratio of the absolute Gravities, and the reciprocal one of their Bulks.

Hence, again, the *specific Gravities* are as the Densities.

4. A Body *specifically* heavier than a Fluid, loses so much of its Weight therein, as is equal to a Quantity of the Fluid of the same Bulk.

For, suppose a Cubic Inch of Lead immersed in Water: a Cubic Inch of Water will, thereby, be expell'd from its Place: But the Weight of this Water was sustained by the Resistance of the ambient Water. Therefore, such a Part of the Weight of the leaden Cube, must be sustained by the Resistance of the ambient Water, as is equal to the Weight of the Water expell'd. The Gravity of the Body immerg'd, therefore, must be diminished by so much,

Hence, 1° Since a Fluid *specifically* heavier, has a greater Weight, in the same Bulk, than a lighter; the same Body will lose a greater Part of its Weight in a Fluid, *specifically* heavier than in a lighter; and therefore it weighs more in a lighter than a heavier.

2° Equal homogeneous Bodies weighing equally in Air, lose their Equilibrium, if one of them be immerg'd in a heavier Fluid; the other in a lighter.

3° Since the *specific Gravities* are as the absolute Gravities under the same Bulk; the *specific Gravity* of the Fluid, will be to the Gravity of the Body immersed; as the Part of the Weight lost by the Solid, to the whole Weight.

4° Two Solids equal in Bulk, lose the same Weight in the same Fluid; but the Weight of the *specifically* heavier Body, is greater than that of the *specifically* lighter; therefore, the *specifically* lighter, loses a greater Part of its Weight, than the *specifically* heavier.

4. Since the Bulks of Bodies equal in Weight, are reciprocally as the *specific Gravities*; the *specifically* lighter, loses more Weight in the same Fluid than the heavier; wherefore, if they be in *Equilibrio* in one Fluid; they will not be so in another; but the *specifically* heavier, will preponderate, and that the more as the Fluid is denser.

5. The *specific Gravities* of Fluids, are as the Weights lost by the same Solid immersed in the same.

#### To find the SPECIFIC Gravity of any Fluids.

On one Arm of a Balance suspend a leaden Globe; and to the other, fasten a Weight, which is in *Equilibrium* therewith in the Air. Immerse the Globe successively in the several Fluids, whose *specific Gravities* are to be determined, and observe the Weight which balances it in each. These several Weights, subtracted, severally, from the first Weight, the Remainders are the Parts of the Weight lost in each Fluid. Whence the Ratio of the *specific Gravity* of the Fluids is seen. See *HYDROSTATICAL Balance*.

Hence, as the Densities are as the *specific Gravities*; we find the Ratio of the Densities of the Fluids at the same time.

This Problem is of the utmost Use; as by it, the Degree of Purity or Goodness of Fluids, is easily found; a Thing, not only of Service in Natural Philosophy; but also in common Life, and in the Practice of Physic.

At different Seasons of the Year, the *specific Gravities* of the same Fluids, are found different. *Joan. Casp. Eisenhmidius*, in his *Disquisitio Nova de Ponderibus*, &c. gives us Variety of Experiments relating hereto: The principal whereof, to save the Trouble of too frequent Experiments, we shall here subjoin.

Table of SPECIFIC Gravities of several Fluids.

| A Cubic Inch Paris Measure. | In Summer |    |    | In Winter          |    |    |
|-----------------------------|-----------|----|----|--------------------|----|----|
|                             | O.        | D. | G. | O.                 | D. | G. |
| Of Mercury                  | 7         | 1  | 66 | 7                  | 2  | 14 |
| Oil of Vitriol              |           | 7  | 59 |                    | 7  | 71 |
| Spirit of Vitriol           |           | 5  | 33 |                    | 5  | 38 |
| Spirit of Nitre             |           | 6  | 24 |                    | 6  | 44 |
| Spirit of Salt              |           | 5  | 49 |                    | 5  | 55 |
| Aquafortis                  |           | 6  | 23 |                    | 6  | 35 |
| Vinegar                     |           | 5  | 15 |                    | 5  | 21 |
| Distill'd Vinegar           |           | 5  | 11 |                    | 5  | 15 |
| Burgundy Wine               |           | 4  | 67 |                    | 4  | 75 |
| Spirit of Wine              |           | 4  | 32 |                    | 4  | 42 |
| Pale Ale                    |           | 5  | 1  |                    | 5  | 9  |
| Brown Ale                   |           | 5  | 2  |                    | 5  | 7  |
| Cows Milk                   |           | 5  | 20 |                    | 5  | 25 |
| Goats Milk                  |           | 5  | 24 |                    | 5  | 28 |
| Urine                       |           | 5  | 14 |                    | 5  | 19 |
| Spirit of Urine             |           | 5  | 45 |                    | 5  | 53 |
| Oil of Tartar               |           | 7  | 27 |                    | 7  | 43 |
| Oil of Olives               |           | 4  | 53 | Is froze in Winter |    |    |
| Oil of Turpentine           |           | 4  | 39 |                    |    |    |
| Sea Water                   |           | 6  | 12 |                    | 6  | 18 |
| River Water                 |           | 5  | 10 |                    | 5  | 13 |
| Spring Water                |           | 5  | 11 |                    | 5  | 14 |
| Distill'd Water             |           | 5  | 8  |                    | 5  | 11 |

That the *specific Gravity* may be found the more accurately; the Weight of the Thread not immersed in the Fluid, is to be subtracted from the Weight of the Solid in Air; and the Force necessary to make the Thread subside (if it be *specifically* lighter) is to be added to the Weight lost. But if the Thread that sustains the Solid be heavier than the Fluid; the whole Weight of the Thread in the Air is to be subtracted from the Weight of the Solid in Air; and the Weight the Thread loses from the Weight lost in the Fluid. Indeed, this Precaution may be spared, if in examining the *specific Gravity* of several Fluids, Care be taken that the same Thread be immersed to the same Depth in each.



6. To determine the *Ratio* which the *specific Gravity* of a Fluid has to the *specific Gravity* of a Solid, that is *specifically* heavier than the Fluid.

Weigh any Mass of the Solid in the Fluid, and note the just Weight therein: The *specific Gravity* of the Fluid will be to that of the Solid, as the Part of the Weight lost by the Solid, is to its whole Weight.

7. The *specific Gravities* of equally heavy Bodies, are reciprocally as the Quantities of Weight lost in the same Fluid. Hence we find the *Ratio* of the *specific Gravities* of Solids, by weighing Masses thereof, that are equal in Air, in the same Fluid; and noting the Weights lost by each.

The *specific Gravities* of various Solids, have been determined by many Authors. *Marin Ghetaldus*, particularly tried the *specific Gravities* various Bodies had, especially metallic Ones; which were borrowed thence by *Oughtred*. In the *Philosophical Transactions*, we have very prolix Tables of *specific Gravities*, by various Authors.

It will be sufficient for us to give those of some of the more usual Bodies, as determined with great Care and Accuracy by *M. Perit*; and publish'd by *F. Mersenne*; and from him by several others.

*Table of the SPECIFIC Gravities of several Solids.*

An Hundred pound Weight of Gold, is equal in bulk to

|                             |                              |
|-----------------------------|------------------------------|
| 71 $\frac{1}{2}$ of Mercury | 38 $\frac{1}{4}$ of fine Tin |
| 60 $\frac{1}{2}$ of Lead    | 26 of Lead-stone             |
| 54 $\frac{1}{2}$ of Silver  | 21 of Marble                 |
| 47 $\frac{1}{2}$ of Copper  | 14 of Stone                  |
| 45 of Brass                 | 12 $\frac{1}{2}$ of Sulphur  |
| 42 of Iron                  | 5 of Wax                     |
| 39 of Tin                   | 5 $\frac{1}{2}$ of Water.    |

8. A Body *specifically* heavier, descends in a Fluid *specifically* lighter, with a Force equal to the Excess of its Weight, over that of an equal Quantity of the Fluid.

Hence, 1<sup>o</sup>, The Force which sustains a *specifically* heavier Body in a Fluid, is equal to the Excess of the absolute Gravity of the Body above that of the Fluid, under the same Bulk; *E. gr.* 47  $\frac{1}{2}$  Pound of Copper loses 5  $\frac{1}{2}$  Pounds of its Weight in Water; therefore a Power of 42 Pounds is able to sustain it.

2<sup>o</sup> Since the Excess of the Weight of a Solid over the Weight of a Fluid *specifically* heavier, is less than that over the Weight of a *specifically* lighter Fluid under the same Bulk; it will descend with less Force in a *specifically* heavier Fluid than in a lighter; and, consequently, will descend more slowly in the former than in the latter.

9. A *specifically* lighter Body, sinks in a heavier Fluid, till the Weight of a Quantity of the Fluid, equal in Bulk, to the Part immersed, is equal to the Weight of the whole Body.

Hence, 1<sup>o</sup>, Since the *specific Gravities* of Bodies of the same Weight, are reciprocally as their Bulks; and the Bulks of Fluids equal in Weight, are as the Parts of the same Solid immersed therein; the *specific Gravities* of Fluids are reciprocally as the Parts of the same Body immersed therein.

2<sup>o</sup> A Solid, therefore, immerses deeper in a lighter Fluid than a heavier; and deeper as the Proportion of the *specific Gravity* of the Solid to that of the Fluid is greater.

3<sup>o</sup> If a Body be of the same *specific Gravity* with a Fluid; the whole Body will be immersed; and it will remain in any given Place of the Fluid.

4<sup>o</sup> If a *specifically* lighter Body be wholly immersed in a Fluid; it will be urged by the collateral Columns of the Fluid, to ascend with a Force equal to the Excess of the Weight of the Fluid, Bulk for Bulk, over the Weight of the Solid.

5<sup>o</sup> A Body, therefore, *specifically* lighter, lying on the Bottom of a Vessel, will not be raised up, unless the heavier Fluid rise above such a Part, as is equal in Bulk to a Quantity of the Fluid of the same Weight with the whole Solid.

10. The *specific Gravity* of a Solid, is to the *specific Gravity* of a lighter Fluid, wherein 'tis immersed, as the Bulk of the Part immersed, is to the whole Bulk.

11. The *specific Gravities* of equal Solids, are as their Parts immersed in the same Fluid.

12. The Weight and Bulk of a *specifically* lighter Body, and the Weight of the *specifically* heavier Fluid, being given, to find the Force required, to keep the Solid wholly immersed under the Fluid.

As this Force is equal to the Excess of the Weight of the Fluid, beyond that of an equal Bulk of the Fluid; from the given Bulk of the Solid, and the Weight of a Cubic Foot of Water, find, by the Rule of Three, the Weight of a Bulk of Water, equal to that of the Body. From this, subtract the Weight of the Solid; the Remainder is the Force required. *E. gr.* Suppose the Force necessary to detain a Solid Eight Feet in Bulk, and 100 Pounds in Weight, under Water, required: Since a Cubic Foot of Water is found

to weigh 70 Pound, the Weight of Water under the Bulk of Eight Feet, is 560; whence, 100 Pound, the Weight of the Solid, being subtracted; the Remainder 460 Pound, is the Force necessary to detain the Solid under Water.

Hence, since a *specifically* lighter Body ascends in a heavier Fluid, with the same Force that would prevent its Ascent: by the present Problem, we can likewise find the Force wherewith a *specifically* lighter Body ascends in a heavier.

13. The Weight of a Vessel, to be made of a *specifically* heavier Matter; and that of a *specifically* lighter Fluid, being given: to determine the Cavity the Vessel must have, to swim on the Fluid.

The Weight of a Cubic Foot of the Fluid being given; the Bulk of the Fluid equal to the Weight of the Vessel, is found by the Rule of Three. If, then, the Cavity be made a little bigger than this, the Vessel will have less Weight under the same Bulk, than the Fluid, and will therefore be *specifically* lighter than the same, and consequently, will swim. *E. gr.* Suppose it required to make an Iron Ball of 30 Pounds Weight, so as it shall swim upon Water. Since the Weight of a Cubic Foot of Water is 70 Pound, the Quantity of Water equal to 30 Pounds, will be found 728 571<sup>1</sup>/<sub>2</sub>; and therefore the Cube of the Diameter of the Sphere 1392174<sup>1</sup>/<sub>2</sub>, whence the Cube Root being extracted 1' 1" 1<sup>1</sup>/<sub>2</sub>" is the Diameter of a Sphere of Water of 30 Pounds. If, therefore, the Diameter of the Cavity be made a little bigger, *e. gr.* 1  $\frac{1}{2}$  or 2 Feet; so much less of the Ball will be immersed as the Diameter is increased.

14. The Force employ'd to retain a *specifically* lighter Solid, under a heavier Fluid; and the Weight lost by a heavier Solid in a lighter Fluid; are each added to the Weight of the Fluid, and weigh together with it.

The several Theorems here delivered, are not only all demonstrable from the Principles of Mechanicks; but are conformable to Experiment. In effect, Experience is here found to answer exactly to Calculation, as is abundantly evident from the Courses of philosophical Experiments, now frequently exhibited; where the Laws of *specific Gravitation* are well illustrated.

SPECILLUM, is an Instrument, wherewith Surgeons search Wounds; in manner of a Probe.

SPECIOUS *Arithmetic*, is that conversant in Quantities, design'd by *Species*, that is by the Letters of the Alphabet; in contradistinction to that, where the Quantities are express'd by Numbers, which is call'd *Numerous Arithmetic*. See ARITHMETIC; see also SPECIES.

*Specious Arithmetic*, is what we more usually call *Algebra*. See ALGEBRA.

SPECTACLE, *Specter*; some extraordinary Object, which draws the View and Attention; and is not beheld without some Emotion.

The Term is chiefly used by the Ancients, for theatrical and amphitheatrical Performances: For Comedies, Combats of Gladiators, of Beasts, and even for solemn Processions, as those of the *Circus*, &c.

The People of *Rome* were extremely fond of *Spectacles*; and the *Roman* Historians observe, There was no surer Way of gaining their Affections, and making Parties to introduce Tyranny and Oppression, than by the Use of *Spectacles*.

SPECTACLES, an Optic Machine, consisting of two Lens's set in Horn, or other Matter; and applied on the Nose; to assist in Defects of the Organ of Sight. See LENS.

Old People and all Presbyters, use *Spectacles* of convex Lens's, to make Amends for the Flatness of the Eye, which does not make the Rays converge enough to have them meet in the Retina. See PRESBYTER.

Short-sighted People, or Myopes, use concave Lens's, to keep the Rays from converging so fast, through the great Roundness of the Eye, as to make them meet e'er they reach the Retina. See MYOPES.

In *Spain*, and at *Venice* especially, *Spectacles* are used with a different View: All the People of Note and Fashion there, have them continually on their Noses; a Folly, that has its Source in the natural Pride of those People, who value themselves on a profound Wisdom; and affect to stare very near at every Thing; as if their Eyes were weakened, and wore out with Excess of Attention. *Vign. de Marco*.

*F. Cherubin*, a Capuchin, describes a kind of *Spectacle-Telescopes*, for the viewing of remote Objects with both Eyes; hence called *Binoculi*. Though *F. Rheita* had mentioned the same before him, in his *Oculus Enoch* and *Elia*. See TELESCOPE.

The same Author invented a kind of *Spectacles*, with three or four Glasses, which perform'd extraordinarily.

*Spectacles* were certainly unknown to the Ancients; yet are they not of so late a Date as the Telescope. *Francisco Redi*, in a very learned Treatise on *Spectacles*, will have them to have been invented in the 13th Century, between the Years 1280 and 1311; and adds, that *Alexander Despina*, a Monk of the Order of *Predicants* of St. Catherine at *Pisa*, first communicated the Secret, which was of his own Invention; upon learning, that another Person had it as



well as himself. This History is wrote in the Chronicles of that Convent.

The same Author tells us, That in an old Manuscript still preserv'd in his Library, compos'd in 1299, *Spectacles* are mentioned as a Thing invented about that Time: And that a famous Jacobin, one *Jourdon de Rivalto*, in a Treatise compos'd in 1305, says, expressly, That 'twas not yet 20 Years, since the Invention of *Spectacles*. He likewise quotes *Bernard Gordon* in his *Lilium Medicina*, wrote the same Year, where he speaks of a Collyrium, good to enable an Old Man to read without *Spectacles*.

*Du Cange*, however, carries the Invention of *Spectacles* farther back; assuring us, That there is a Greek Poem in Manuscript in the French King's Library, which shews, That *Spectacles* were in Use in the Year 1150: still, the Dictionary of the Academy *Della Crusca*, under the Word *Occhiale*, inclines to *Redi's* Side; and quotes a Passage from *Jourdon's* Sermons, which says, That *Spectacles* had not been 20 Years in Use: Now *Salviati* has observed, that those Sermons were made between the Years 1330 and 1336.

**SPECTATOR**, a Person present at a *Spectacle*.

Among the *Romans*, *Spectators*, *Spektatores*, were a kind of Gladiators, who had had their Discharge; and were frequently hired to be present, as *Spectators*, at the Combats of Gladiators, &c. the People were entertained withal. See **GLADIATOR**.

**SPECULARIA**, the Art of preparing, and making *Specula* or Mirrors: Or, the Laws of Mirrors, their Phenomena, Causes, &c. call'd also *Catoptricks*. See **CATOPTRICKS**.

**SPECULARIS Lapis**, in natural History, is a kind of Stone, clear as Glass, used in several Countries where 'tis found, for Window-lights, &c. 'Tis a kind of Talc, splits easily into thin Laminæ or Plates; and is sometimes calcined to make a fine Plaster. See **TALC**.

**SPECULUM**, *Mirror*, in Opticks, any polish'd Body, impervious to the Rays of Light: Such as Water in Wells and deep Rivers, polish'd Metals, and Glasses lined with Mercury, or other opake Matter, popularly call'd *Looking-Glasses*. See **LOOKING-GLASS**.

The several Kinds and Forms of  
*Specula*, plain, concave and convex  
 The Theory and Phenomena of the  
 several Kinds of *Specula* - - -  
 The Method of preparing, grind-  
 ing, &c. Glass or Metal *Specula*  
 of various Forms - - - - -

See under **MIRROR**.

The Laws and Effect of the *Specula* of various Forms - - -  
 The Theory of concave *Specula* - - -

See particularly under  
**REFLECTION**.  
**BURNING-GLASS**.

**SPECULUM Ani**, an Instrument, wherewith Surgeons dilate the Fundament, examine Sores, extract Bones, or let out any peccant Matter that may be there lodged.

**SPECULUM Matricis**, is an Instrument used by Surgeons, to examine and dress corrupted Places in the natural Parts of Women. Its Form is the same with that of the *Speculum Ani*.

**SPECULUM Oris**, is an Instrument serving to examine Disorders in the Mouth.

There are two Kinds: the one common; the other bigger and stronger, fit not only to keep down the Tongue; but also the lower Jaw; while the Mouth is surveyed, to the very Extremity of the Throat, and the necessary Remedies applied.

**SPEECH**, the Art, or Art of expressing a Man's Thoughts, by certain Signs invented for that Purpose.

These Signs are principally *Sounds*, made by the *Voice* and *Letters*. See **VOICE** and **LETTER**.

**SPEECH**, in Grammar, an Assemblage of several Words ranged in Order. See **LANGUAGE**.

The Grammarians generally make *Eight Parts of Speech*; i. e. Eight kinds of Words used in Discourse, viz. *Noun*, *Pronoun*, *Verb*, *Participle*, *Adverb*, *Conjunction*, *Preposition* and *Interjection*; each of which see under its proper Article **ADVERB**, **NOUN**, **PRONOUN**, &c.

*F. Buffier*, one of the last and best Writers of Grammar, only admits of three Parts of Speech, viz. *Noun*, *Verb* and *Abstractive*; which last includes the *Adverb*, *Conjunction* and *Preposition*. See **MODIFICATIVE**.

**SPELL**, a kind of Charm, to drive away a Disease, by hanging a Word or Sentence on a Paper about the Neck. See **CHARM** and **PHYLACTERY**.

**SPELL**, in the Sea Language. *To Spell*, is to let go the Sheets and Bowlines of a Sail, and brace the Weather Brace, that the Sail may be loose in the Wind. *To do a Spell*, is to do any thing by Turns, for a short Time, and then leave it. *To give a Spell*, is to be ready to work in such a one's Room. *Fresh Spell*, is when fresh Men come to work; especially when the Rowers are relieved, with another Gang.

**SPELLING**, that Part of Grammar properly called *Orthography*. See **ORTHOGRAPHY**.

*Dr. Jones* gives the following Rules or Maxims of *Spelling*. 1<sup>o</sup>. That all Words were originally writ as *spelt*. 2<sup>o</sup>. That in all Words, whose Sounds have been since alter'd (the Origin of the Difficulty of *Spelling*) the Alteration was made for the sake of Ease and Pleasure: And hence, 3<sup>o</sup>. All Words that can be written several Ways, must be *spelt* according to the hardest, sharpest and most unusual Sound.

**SPELTER**, or *Zinck*, a kind of imperfect Metal, which some confound with *Bismuth*, and others with *Spalt*; others making it a female Antimony. See **ZINCK**.

The *Spelter* is a kind of mineral Lead, very hard, white and brilliant; which though not perfectly malleable, yet stretches a little under the Hammer.

'Tis found in greatest Quantity in the Mines of *Gesslar* in *Saxony*; and is ordinarily sold in large, square, thick Cakes, whence one would judge it to have been melted as it came out of the Mines, and cast into that Figure.

'Tis used to clear and whiten Tin, in making of Pewter, much as Lead is used to purify Gold and Silver.

Those who imagine that the *Spelter* is put in to increase the Weight, are mistaken; since in melting Five or Six hundred Weight of Tin, they scarce put in a Pound of *Spelter*, and that mix'd with Turmeric. 'Tis also used in the making of Solder, and with Curcuma, in the melting of Copper, to give that Metal a gold Colour; which, however, is not permanent. See **SOLDER**.

The Best is white, in fine Scales, difficult to break, &c.

**SPERM** or *Sperma*, the Seed whereof an Animal is form'd. See **SEED**.

The Word is Greek, σπέρμα.

**SPERMA-Ceti**, in Pharmacy, usually call'd *Parmacity*, is a Preparation made from the Brain, and Cerebel of a kind of Animal, call'd by some, the *Male Whale*, and by the *Latins*, *Orca*; only distinguish'd from the common Whale, by its having Teeth, in lieu whereof, the Whale has a kind of Tufts in the Throat. See **WHALE**.

The Ancients were great Strangers to the Nature of this Preparation; insomuch, that *Schroder* seems in doubt, whether to reckon it an animal or mineral Substance.

It had its Name *Sperma Ceti*, Seed or Sperm of a Whale, given it, no doubt, to raise the Value, by a Notion of its Scarcity.

The Method of preparing it, is a Secret in the Hands of a very few: The Process is thus;

The Brain being taken out of the Animal, is melted over a gentle Fire, and put into Moulds, like those wherein Sugar-Loaves are form'd. When cold and drain'd of its Oil, 'tis taken out and melted over again; and this they continue to do till it be well purified, and become white. 'Tis then cut with a Knife for the Purpose, and reduced into Flakes, such as we have it from the Druggists.

It must be chosen white, clear and transparent, of a rankish Smell, which some fancy to partake of that of the Violet: some sophisticate it with Wax; but the Deceit is discovered, either by the Smell of the Wax, or by the Dulness of the Colour.

Some also sell a Preparation made from the Tail of the Whale, instead of that from the Brain; which last kind turns Yellow, as soon as opened to the Air. In the General, there is no Merchandise that should be kept closer from the Air than *Sperma Ceti*.

'Tis of some Use in Medicine. *Dr. Quincy*, says, 'tis a noble Remedy in many Cases, as the Asthma, &c. though chiefly used in Bruises, inward Hurts, and after Deliveries. But 'tis certain, its greatest Property, and that which makes it so much in Vogue, is its softning the Skin, and resolving Tumours of the Breast. Whence it comes to be used by the Ladies in Pastes, Washes, &c.

**SPERMATIC**, in Anatomy, something belonging to the *Sperm* or *Seed*.

The Ancients made a general Division of the Parts of the Animal Body into *Spermatic* and *Fleshy*.

The *spermatic* Parts, were those, which by their Colour, &c. bore some Resemblance to Seed, and were supposed to be form'd thereof; such are the Nerves, Membranes, Bones, &c.

The *Fleshy*, were those supposed to be form'd of the Blood, after Conception. But the Moderns, with much better Reason, hold all the Parts to be *spermatic* in this Sense, and either form'd of the Ovum of the Female, or of the Semen of the Male. See **GENERATION**.

*M. Andry* mentions *spermatic Worms* in the human Body. See **WORMS**.

**SPERMATIC Vessels**, called also *Vasa preparantia*, are certain Vessels appointed for the bringing of the Blood to the Testicles, &c. to be secreted and prepared into Seed; and for the carrying back again the Blood, remaining after the Secretion is effected. See **SEED**.

The *spermatic Vessels* are two Arteries and two Veins. *Spermatic Arteries* arise from the fore Part of the Trunk of the Aorta, below the Emulgents. Their Structure is very singular, in that, contrary to the Fabric of all other Arteries, which are largest at their Exit from the Trunk, these are smallest at their Origin, and grow bigger in their Progress toward.



wards the Testes. By this means, the Blood receives a Check at its first going off for those Parts, which disposes it for the future Changes, &c. it is to pass. The same End is answered in Quadrupeds, by having these Arteries curl'd and contorted in their Passage like a Screw.

The Reason why Nature has taken another Method in Man; Mr. Cowper observes, is, that in that Case, the Abdominal Muscles must have been much larger than they are; by which means, the Intestines would have been frequently let down into the Scrotum; an Inconvenience Quadrupeds are secured from, by the horizontal Position of their Bodies.

The *spermatic Arteries*, in their Progress, meeting with the *spermatic Veins*, enter together with them the inner Lamella of the Peritonæum, where, insinuating into the Duplication of the Process, and being cloathed therewith, they pass on to within three or four Fingers Breadth of the Testicles, where they divide into Two unequal Branches; the biggest of which, goes to the Testicle, and is distributed therein (See TESTICLE.) And the less in the *Parastata* or *Epididymis*. See PARASTATA.

The *spermatic Veins* take the same Course with the Arteries; only a little above the Testicles, they split into several Branches, which uniting, form a Plexus, called *Corpus Varicosum Pampiniforme* or *Pyramidale*. The Blood returned by the *spermatic Veins*, is delivered on the right Side to the Cava, and on the Left, into the emulgent Vein.

SPERMATOCELE, in Medicine, a Rupture occasioned by a Contraction of the femoral Vessels, whereby they are let fall into the Scrotum. Harris.

SPHACELUS, in Medicine, a total Mortification of any Part, occasioned by an Interception of the Blood and Spirits. See MORTIFICATION.

The Word is Greek, σφακελ, form'd, perhaps, of σφάττω, I kill.

The *Sphacelus* is distinguished from the Gangrene; which is only a Mortification begun, and, as it were, the Road to a *Sphacelus*, which is the State and Perfection thereof. See GANGRENE.

The *Sphacelus* is distinguished by the Lividness or Blackness of the Part affected; its Softness, Insensibility and cadaverous Smell.

The other Causes of the *Sphacelus*, are close Ligatures, excessive Colds, great Inflammations, Bites of Mad Dogs. 'Tis sometimes, also, called *Necrosis*, and sometimes *Sideratio*. See NECROSIS and SIDERATIO.

A *Sphacelous Foot*, according to *Aquapendente*, ought to be cut off in the mortified Part, near the live Part. When the Foot is off, the dead Flesh left behind, is to be consumed by the Application of an actual Caustery, repeated several Times, till the Patient feel the Heat of the Fire. Sculter.

SPHÆRISTERIUM, in Antiquity, the seventh Part of the ancient Gymnasium; being that wherein the Youth practised Tennis-Playing. See GYMNASIUM.

The *Sphæristerium* or Tennis-Court, was between the Place, named *Palastra*, and that where they run Races, which was between the Portico's and the outer Wall: Though *Viruvius* does not make mention of it in the Description he gives of the ancient Gymnasium.

The Exercise here perform'd was called *Sphæristica* and *Sphæromachia*, which some will have to have differ'd from the modern Tennis; but 'tis not known wherein the Difference consisted.

The *Milesians* were particularly averse to this Exercise; and the *Athenians* as remarkably fond of it.

They frequently gave the Right of Citizens to the *Sphæristes*, or Masters in this Art, by way of Respect.

SPHENOIDAL Suture, in Anatomy, a Suture thus call'd, from its encompassing the *Os Sphenoides*, which it separates from the *Os frontis*, the *Os petrosum* and *Os occipitis*. See SUTURE.

SPHENOIDES, in Anatomy, a Bone of the Head, common to the Cranium and upper Jaw. See CRANIUM, &c.

It is situate in the lower Part of the Skull, whereof it is, as it were, the Basis, and is connected to all the other Members thereof, by the *Sphenoidal Suture*. Its Form, is irregular, and not easy to be described; whence some have call'd it *Multiforme*. It has its Name *Sphenoides* from the Greek, σφην, Cuneus, Wedge, from the Form of its Insertion into the other Bones of the Skull.

In Adults, 'tis one continued Bone; but in young Children, sometimes consists of Three, and sometimes of Four distinct Pieces.

SPHENOSTAPHYLINUS, in Anatomy, a Muscle of the Larynx. It descends from a round, fleshy Origination, near the Root of a Process of the *Os Sphenoides*, and is implanted into the posterior Part of the Uvula, where it joins its Partner. It serves to draw the Uvula upwards and backwards; and hinders the masticated Aliment from passing into the Foramina Narium in Deglutition.

SPHERE, in Geometry, a Solid Body contained under one single Surface, and having a Point in the middle, call'd the Centre, whence all the Lines drawn to the Surface, are equal. See SOLID, &c.

The *Sphere* is supposed to be generated by the Revolution of a Semi-circle, as K, (Tab. Geometry Fig. 34.) about its Diameter AB, which is also called the *Axis of the Sphere*, and the extreme Points of the Axis, A and C the *Poles of the Sphere*. See CENTRE, CIRCUMFERENCE, AXIS, POLE, &c.

#### Properties of the SPHERE.

1° A *Sphere* is equal to a Pyramid, whose Base is equal to the Surface, and its Height to the Radius of the *Sphere*.

Hence a *Sphere* being esteem'd such a Pyramid, its Cube or Solid Content, is found like that of a Pyramid. See PYRAMID.

2° A *Sphere* is to a Cylinder, standing on an equal Basis, and of the same Height, as 2 to 3. Hence, also, may the Cube or Content of the *Sphere* be found. See CYLINDER.

3° The Cube of the Diameter of a *Sphere*, is to the Solid Content of the *Sphere*, nearly as 300 to 157: And thus, also, may the Content of the *Sphere* be measured.

4° The Surface of a *Sphere* is quadruple that of a Circle described with the Radius of the *Sphere*. For since a *Sphere* is equal to a Pyramid, whose Base is the Surface, and its Altitude, the Radius of the *Sphere*: The Surface of the *Sphere* is had, by dividing its Solidity by a third Part of its Semi-diameter.

If, now, the Diameter of the Circle be 100, the Area will be 7850; consequently, the Solidity 1570000, which divided by a Third of the Semi-diameter, 100; the Quotient is the Surface of the *Sphere* 31400; which is manifestly quadruple the Area of the Circle.

The Diameter of a SPHERE being given, to find its Surface and Solidity.

Find the Periphery of the Circle described by the Radius of the *Sphere*. See PERIPHERY.

Multiply this, found, into the Diameter; the Product is the Surface of the *Sphere*. Multiply the Surface by a sixth Part of the Diameter, the Product is the Solidity of the *Sphere*.

Thus, supposing the Diameter of the *Sphere* 56, the Periphery will be found 175; which multiplied by the Diameter, the Product 9800 is the Surface of the *Sphere*; which multiplied by one sixth Part of the Diameter, gives the Solidity 919057. Or, thus;

Find the Cube of the Diameter 175616; then to 300157, and the Cube found, find a Fourth proportional, 919057. See PROPORTIONAL. This is the Solidity of the *Sphere* required.

For Segments and Sectors of Spheres; see SEGMENT and SECTOR.

Doctrine of the SPHERE } See } SPHERICKS.  
Projection of the SPHERE } } PROJECTION.

SPHERE of Activity of any Body; is that determinate Space or Extent, all round about it, to which, and no farther, the Effluvia continually emitted from that Body, do reach, and where they operate according to their Nature. See EFFLUVIA.

Thus we see the magnetical Effluvia have certain Bounds and Limits, beyond which they will have no Influence to turn, or attract the Needle: But where-ever a Needle is placed, so as it may be moved by a Load-stone, it may be said to be within the *Sphere* of Activity of the Stone. See MAGNET.

SPHERE, in Astronomy, that concave Orb or Expanse, which invests our Globe, and in which the heavenly Bodies, Sun, Stars, Planets and Comets, appear to be fix'd, at equal Distances from the Eye. See HEAVENS.

This is also call'd the *Sphere of the World*; and is the Subject of the *Spherical Astronomy*. See SPHERICAL Astronomy.

This *Sphere*, as it includes the fix'd Stars, whence we also occasionally call it, the *Sphere of the fix'd Stars*, is vastly great. The Diameter of the Earth's Orbit is so small, in respect of the Diameter hereof, that the Centre of the *Sphere* is not sensibly changed by any Alteration of the Spectator's Place in the several Parts of the Orbit: But still, in all the Points of the Earth's Surface, and at all times, the Inhabitants have the same Appearance of the *Sphere*; that is, the fix'd Stars seem to possess the same Points in the Surface of the *Sphere*. For our Way of judging of the Places, &c. of the Stars, is to conceive right Lines drawn from the Eye or the Centre of the Earth, through the Centres of the Stars, and continued thence, till they cut the fore-said *Sphere*; the Points where these Lines terminate therein, are the apparent Places of those Stars. See PLACE and PARALLAX.

The better to determine the Places of the heavenly Bodies in the *Sphere*; several Circles are imagined to be described in the Surface thereof; hence called *Circles of the Sphere*. See CIRCLE of the Sphere.



Of these, some are said to be *greater*, as the Ecliptic, Meridian, Equator, &c. others *less*, as the Tropicks, Parallels, &c. See GREATER and LESSER.

Of these, again, some are *moveable*, or owe their Origin to the Motion of the Earth, &c. such is the Ecliptic, Secondaries of the Ecliptic, &c. See each Circle under its proper Head; as EQUATOR, ECLIPTIC, HORIZON, &c.

SPHERE, in Geography, &c. a certain Disposition of the Circles on the Surface of the Earth, with regard to one another; which varies in various Parts thereof. See EARTH.

The Circles originally conceived on the Surface of the *Sphere* of the World, are almost all transferred, by Analogy, to the Surface of the Earth; where they are conceived to be drawn directly underneath those in the *Sphere*, or in the same Planes therewith; so that were the Planes of those of the Earth continued to the *Sphere*, they would coincide with the respective Circles thereon.

Thus we have a Horizon, Meridian, Equator, &c. on the Earth.

As the Equator in the Heavens divides the *Sphere* into two equal Parts; the one *North* and the other *South*; so does the Equator on the Surface of the Earth, divide the *Globe* in the same Manner. See EQUATOR.

And as the Meridians in the Heavens, pass through the Poles of the Horizon; so those on the Earth, &c. See MERIDIAN.

With regard, then, to the Position of some of these Circles in respect of others, we have a *Right*, a *Parallel*, and an *oblique Sphere*.

A *right SPHERE*, is that where the Equator cuts the Horizon of the Place at right Angles: For the particular Phenomena, &c. whereof; see RIGHT *Sphere*.

A *parallel SPHERE*, is where the Equator is parallel to the sensible Horizon, and in the Plane of the Rational. See PARALLEL *Sphere*.

An *oblique SPHERE*, is where the Equator cuts the Horizon obliqually. See OBLIQUE *Sphere*.

*Armillary*, or *artificial SPHERE*, is an astronomical Instrument, representing the several Circles of the *Sphere*, in their natural Order; serving to give an Idea of the Office and Position of each thereof, and to solve various Problems relating thereto.

'Tis thus called, as consisting of a Number of Fasciæ or Rims of Brass, or other Matter, called by the *Latins*, *Armilla*, from their resembling of Bracelets, or Rings for the Arm.

By this, 'tis distinguished from the *Globe*, which, though it have all the Circles of the *Sphere* on its Surface; yet is not cut into *Armilla* or *Rings*, to represent the Circles, simply and alone; but exhibits also the intermediate Spaces, between the Circles. See GLOBE.

*Armillary Spheres*, are of different Kinds, with regard to the Position of the Earth therein; whence they become distinguished into *Ptolomaic* and *Copernican Spheres*. In the First whereof, the Earth is in the Centre; and in the latter near the Circumference, according to the Position that Planet has in those Systems. See SYSTEM.

The *Ptolomaic SPHERE*, is that commonly in Use, and is represented (Tab. Astronomy, Fig. 21.) with the Names of the several Circles, Lines, &c. of the *Sphere*, inscribed thereon. See PTOLOMAIC.

In the Middle, upon the Axis of the *Sphere*, is a Ball, representing the Earth; on whose Surface are the Circles, &c. of the Earth. The *Sphere* is made to revolve about the said Axis, which remains at rest: By which Means, the Sun's Diurnal and Annual Course about the Earth, are represented according to the *Ptolomaic Hypothesis*: And even by Means hereof, all Problems relating to the Phenomena of the Sun and Earth, are solved, as upon the Celestial Globe; and after the same Manner; which see described under the Article GLOBE.

The *Copernican SPHERE*, represented (Fig. 22.) is very different from the *Ptolomaic*, both in its Constitution and Use; and more intricate in both. Indeed the Instrument is in the Hands of so few People, and its Use so inconsiderable, except what we have in the other more common Instruments, particularly the Globe and *Ptolomaic Sphere*, that we shall be easily excused the not filling up Room, with any Description thereof.

SPHERICAL Angle, is the mutual Inclination of Two Planes, whereby a *Sphere* is cut: Thus the Inclination of the two Planes, C A F and C E F (Tab. Trigon. Fig. 9.) forms the *Spherical Angle* A C E. See SPHERE and ANGLE.

The Measure of a *Spherical Angle*, A C E, is an Arch of a great Circle A E, described from the Vertex C, as from a Pole, and intercepted between the Legs C A and C E.

Hence, 1<sup>o</sup> Since the Inclination of the Plane C E F, to the Plane C A F, is every where the same; the Angles in the opposite Intersections G and F, are equal.

2<sup>o</sup> Hence the Measure of a *Spherical Angle* A C E, is described with the Interval of a Quadrant A C or E C, from the Vertex C between the Legs C A, C E.

If a Circle of the *Sphere*, A E B F (Fig. 8.) cut another C E D F, the adjacent Angles, A E C and A E D are equal to two Right ones; and the vertical Angles A E C and D E B equal to one another. The former likewise, holds of several Angles form'd on the same Arch C E D, at the same Point E.

Hence, any Number of *Spherical Angles*, as A E C, A E D, D E B, B E C, &c. made on the same Point E, are equal to four right Angles. See SPHERICAL Triangle.

SPHERICAL Triangle, a Triangle comprehended between three Arches of great Circles of a *Sphere*, intersecting each other in the Surface thereof. See TRIANGLE.

#### Properties of the SPHERICAL Triangles.

1. If in two *Spherical Triangles*, (Tab. Trigon. Fig. 10.) A B C and a b c  $A=a$ ,  $B=b$  and  $C=c$ : Then will B and the Sides, including the Angles, be respectively equal, the whole Triangles are equal: That is,  $BC=bc$ ,  $B=b$  and  $C=c$ .

Again, if in two *Spherical Triangles*  $A=a$ ,  $C=c$  and  $AC=ac$ ; then will  $B=b$ ,  $AB=ab$  and  $bc=BC$ . Lastly, if in two *Spherical Triangles*  $AB=ab$ ,  $AC=ac$ , and  $BC=bc$ , then will  $A=a$ ;  $B=b$  and  $C=c$ ; the Demonstrations whereof, coincide with those of the like Properties in plain Triangles. The Theorems of the Congruency of rectilinear Triangles, extending to all other curvilinear, circular, parabolical, &c. provided their Sides be Similar. See TRIANGLE.

2. In an equilateral Triangle A B C (Fig. 11.) the Angles at the Base, B and C, are equal; and if in any Triangle, the Angles B and C, at the Base B C, are equal; the Triangle is equilateral.

3. In every *Spherical Triangle*, each Side is less than a Semi-circle: Any two Sides taken together are greater than the Third; and all the three Sides together are less than the Periphery of a great Circle: And a greater Side is always opposed to a greater Angle, and a less Side to a less Angle.

4. If in a *Spherical Triangle* B A C (Fig. 12.) two Legs A B and B C taken together, be equal to a Semi-circle; the Base A C being continued to D; the external Angle B C D will be equal to the internal opposite one B A C.

If the two Legs together, be less than a Semi-circle, the external Angle B C D, will be greater than the internal opposite one A: And if the Legs be greater than a Semi-circle, the external Angle B C D, will be less than the internal opposite one A; and the Converse of all these holds, viz. If the Angle B C D be equal to, greater, or lesser than A; the Sides A B and B C are equal to, greater, or lesser than a Semi-circle.

5. If in a *Spherical Triangle* A B C, two Sides A B and B C, be equal to a Semi-circle; the Angles at the Base A and C, are equal to two Right ones: If the Sides be greater than a Semi-circle, the Angles are greater than two Right ones; and if less, less. And, conversely.

6. In every *Spherical Triangle*, each Angle is less than two Right ones; and the Three together, less than Six right Angles, and greater than two.

7. If in a *Spherical Triangle* B A C (Fig. 13.) the Sides A B and A C be Quadrants; the Angles at the Base, B and C, will be right Angles. And, conversely, If the intersected Angle A be a right Angle, B C will be a Quadrant: If A be obtuse, B C will be greater than a Quadrant; and if acute, less. And, conversely.

8. If a *Spherical* rectangular Triangle, the Side B C (Fig. 14.) adjacent to the right Angle B, be a Quadrant; the Angle A will be a right Angle; if B E be greater than a Quadrant, the Angle A will be obtuse; and if B D be less than a Quadrant, the Angle A will be acute. And, conversely.

9. If in a *Spherical* rectangular Triangle, each Leg be either greater or lesser than a Quadrant; the Hypotenuse will be less than a Quadrant. And, conversely.

10. If in a *Spherical Triangle* A B C (Fig. 15.) rectangular only at B, one Side C B be greater than a Quadrant, and the other Side A B less; the Hypotenuse A C will be greater than a Quadrant. And, conversely.

11. If in a *Spherical* obliquangular Triangle A C B (Fig. 16.) both Angles at the Base, A and B, be either obtuse or acute; the Perpendicular C D let fall from the Third Angle C to the opposite Side A B, falls within the Triangle: if one of them, A, be obtuse; and the other, B, acute; the Perpendicular falls without the Triangle.

12. If in a *Spherical Triangle* A C B, all the Angles A, B and C be acute; the Sides are each less than a Quadrant. Hence, if in an obliquangular *Spherical Triangle*, one Side be greater than a Quadrant, one Angle is obtuse, viz. that opposite to this Side.

13. If in a *Spherical Triangle* A C B, two Angles A and B, be obtuse, and the third C acute; the Sides A C and C B opposite to the obtuse Sides, are greater than a Quadrant; and that opposite to the acute Side A B, less than a Quadrant.



Quadrant. Hence, if the two Sides be less than a Quadrant, the two Angles are acute.

14. If in a *Spherical Triangle*, the several Sides be each greater than a Quadrant; or only two of them greater, and the Third equal to a Quadrant; the several Angles are obtuse.

15. If in an obliquangular *Spherical Triangle*, two Sides be less than a Quadrant, and the Third greater; the Angle opposite to the greatest will be obtuse, and the rest acute.

*Resolution of SPHERICAL Triangles.* See TRIANGLE.

*SPHERICAL Geometry*, the Doctrine of the Sphere; particularly of the Circles described on the Surface thereof, with the Method of projecting the same on a Plane. See SPHERICKS.

*SPHERICAL Trigonometry*, the Art of resolving *Spherical Triangles*; i. e. from three Parts of a *Spherical Triangle* given, to find the rest. *E. gr.* From two Sides of one Angle; to find the other two Angles, and the third Side. See SPHERICAL Triangle and TRIGONOMETRY.

*SPHERICAL Astronomy*, that Part of Astronomy which considers the Universe, such as it appears to the Eye. See ASTRONOMY.

Under *Spherical Astronomy*, then, come all the Phenomena and Appearances of the Heavens and heavenly Bodies, such as we perceive them; without any Inquiry into the Reason, the Theory, or the Truth thereof: by which it is distinguished from *Theoretical Astronomy*, which considers the real Structure of the Universe, and the Cause of those Phenomena.

In the *Spherical Astronomy*, the World is conceived to be a concave, *spherical Surface*, in whose Centre is the Earth, or rather the Eye, about which the visible Frame revolves, with Stars and Planets fix'd in the Circumference thereof. And on this Supposition all the other Phenomena are determined.

The *Theoretical Astronomy* teaches us, from the Laws of Opticks, &c. to correct this Scheme, and reduce the whole to a juster System. See SYSTEM.

*SPHERICITY*, the Quality of a *Sphere*; or that whereby a thing becomes *Spherical*, or round. See SPHERE.

The *Sphericity* of Pebbles, Fruits, Berries, &c. of Drops of Water, Quick-silver, &c. of Bubbles of Air under Water, &c. Dr. Hook takes to arise from the Incongruity of their Particles with those of the ambient Fluid, which prevents their Coalescing; and by pressing on them, and encompassing them all around equally, turns them into a round Form. See DROP.

This, he thinks, appears evidently, from the Manner of making small round Shot of several Sizes, without casting the Lead into any Moulds; from Drops of Rain being form'd, in their fall, into round Hail-stones; and from Drops of Water falling on small Dust, Sand, &c. which straight produce an artificial round Stone; and from the small, round, red-hot Balls, form'd by the Collision or Fusion of Flint and Steel, in striking Fire.

But all these Cases of *Sphericity* seem better accounted for, from the great Principle of Attraction; whereby the Parts of the same Fluid drop, &c. are all naturally ranged as near the Centre as possible, which necessarily induces a *spherical Figure*: and, perhaps, a repelling Force between the Particles of the Drop, and of the Medium, contribute not a little thereto. See ATTRACTION.

*SPHERICKS*, the *Doctrine of the Sphere*, particularly of the several Circles described on the Surface thereof; with the Method of projecting the same in Plano. See SPHERE.

The principal Matters shewn herein, are as follow:

1. If a Sphere be cut in any Manner, the Plane of the Section will be a Circle, whose Centre is in the Diameter of the Sphere.

Hence, 1<sup>o</sup>, The Diameter H I (Tab. Trigon. Fig. 17.) of a Circle, passing through the Centre C, is equal to the Diameter A B of the generating Circle; and the Diameter of a Circle, as F E, that does not pass through the Centre, is equal to some Chord of the generating Circle.

Hence, 2<sup>o</sup>, As the Diameter is the greatest of all Chords; a Circle passing through the Centre, is the *greatest Circle of the Sphere*; and all the rest are *lesser* than the same.

3<sup>o</sup> Hence, also, all *great Circles of the Sphere* are equal to one another.

4<sup>o</sup> Hence, also, if a *great Circle of the Sphere* pass through any given Point of the Sphere, as A; it must also pass through the Point diametrically opposite thereto, as B.

5<sup>o</sup> If Two great Circles mutually intersect each other, the Line of the Section is the Diameter of the Sphere, and therefore two great Circles intersect each other in Points diametrically opposite.

6<sup>o</sup> A *great Circle of the Sphere*, divides it into two equal Parts or Hemispheres.

7<sup>o</sup> All great Circles of the Sphere, cut each other into two Parts; and, conversely, all Circles that thus cut each other, are *great Circles of the Sphere*.

8<sup>o</sup> An Arch of a great Circle of the Sphere, intercepted

between another Arch H I L (Fig. 18.) and its Poles A and B, is a Quadrant.

That intercepted between a *less Circle* D E F, and one of its Poles A, is greater than a Quadrant; and that between the same and the other Pole B, less than a Quadrant; and, conversely.

9. If a *great Circle of the Sphere* pass through the Poles of another, that other passes through the Poles of this. And if a great Circle pass through the Poles of another, the Two cut each other at right Angles; and conversely.

10. If a great Circle, as A F B D, pass through the Poles A and B of a lesser Circle D E F, it cuts it into equal Parts; and at right Angles.

11. If two great Circles A E B F and C E D F (Fig. 19.) intersect each other in the Poles E and F of another great Circle A C B D; that other will pass through the Poles H and h, I and i of the Circles A E B F and C E D F.

12. If two great Circles A E B F and C E D F, cut each other mutually; the Angle of Obliquity A E C, will be equal to the Distance of the Poles H I.

13. All *Circles of the Sphere*, as G F and L K (Fig. 20.) equally distant from its Centre C, are equal; and the further they are removed from the Centre, the less they are: Hence, since of all parallel Chords, only two, D E and E K are equally distant from the Centre; of all the Circles parallel to the same great Circle, only two are equal.

14. If the Arches F H and K H, and G I and I L, intercepted between a great Circle I M H and the lesser Circles G N F and L O K; be equal, the Circles are equal.

15. If the Arches F H and G I of the same great Circle A I B H, intercepted between two Circles G N F and I M H, be equal, the Circles are parallel.

16. An Arch of a parallel Circle I G (Fig. 21.) is similar to an Arch of a great Circle A E; if each be intercepted between the same great Circles C A F and C E F.

Hence the Arches A E and I G, have the same *Ratio* to their Peripheries; and, consequently, contain the same Number of Degrees. And hence the Arch I G is less than the Arch A E.

17. The Arch of a great Circle, is the shortest Line which can be drawn from one Point of the Surface of the Sphere to another: And the Lines between any two Points on the same Surface, are the greater, as the Circles whereof they are Arches, are the less.

Hence, the proper Measure, or Distance of two Places on the Surface of the Sphere, is an Arch of a great Circle intercepted between the same.

*SPHEROID*, in Geometry, a Solid approaching to the Figure of a Sphere, but not exactly round, but oblong; as having one of its Diameters bigger than the other; and generated by the Revolution of a Semi-ellipsis about its Axis.

When 'tis generated by the relation of the Semi-ellipsis about its greater Axis, 'tis call'd an *Oblong Spheroid*; and when generated by the Revolution of an Ellipsis about its less Axis, an *oblate Spheroid*. See OBLATE.

The Contour of a Dome, *Daviler* observes, should be Half a *Spheroid*. Half a Sphere, he says, is too low to have a good Effect below. See DOME.

For the Solid Dimensions of a *Spheroid*, 'tis  $\frac{4}{3}$  of its Circumscribing Cylinder: Or it is equal to a Cone, whose Altitude is equal to the greater Axis, and the Diameter of the Base to four Times the less Axis of the generating Ellipsis.

Or a *Spheroid* is to a Sphere described on its greater Axis, as the Square of the less Axis to the Square of the greater: Or 'tis to a Sphere described on the lesser Axis, as the greater Axis to the less. The Word is form'd from *Sphæra*, and *εἶδος*, *Shape*.

*SPHINCTER*, in Anatomy, a Term applied to a kind of circular Muscles, or Muscles in Form of Rings, which serve to close and draw up several Orifices in the Body, and prevent the Excretion of the Contents. See MUSCLE.

The Word is form'd from the Greek *σφιγκτης*, *Strictor*, i. e. something that binds and constricts a Thing very closely; these Muscles having an Effect much like that of a Purse-string.

*SPHINCTER Ani*, is a circular Muscle, serving to shut the *Anus*, and keep the Excrements from coming away involuntarily. See ANUS and EXCREMENTS.

'Tis near two Inches broad, and hangs down below the *Rectum*, near an Inch. It is fasten'd on the Sides to the Bones of the *Coxendix*, and behind to the *Os sacrum*: Before, in Men, to the *Accelerator Urinae*, and in Women, to the *Vagina Uteri*. See RECTUM.

Some would have it Two Muscles, and some Three; but without much Reason.

*SPHINCTER Vessæ*, is a Muscle consisting of circular Fibres, placed at the Exit of the Bladder, to prevent the perpetual dripping of the Urine. See URINE and BLADDER.

It keeps the Bladder constantly shut; and is only opened, when by the Contraction of the Abdominal Muscles, the Bladder is compress'd, and the Urine forced out.



**SPHINCTER Vaginae**, a constrictory Muscle, serving to hinder the Reflux of the Blood from the *Clitoris*, &c. in Coition. See VAGINA.

**SPHINCTER Gulae** } See { **OESOPHAGÆUS.**  
**SPHINCTER Labiorum** } **CONSTRUCTOR.**

**SPHINX**, in Sculpture, &c. a Figure or Representation of a Monster of that Name, famed among the Ancients; now mostly used as an Ornament in Gardens, Terrasses, &c.

'Tis represented with the Head and Breasts of a Woman, the Wings of a Bird, the Claws of a Lion, and the rest of the Body like a Dog.

It is supposed to have been engender'd by *Typhon*, and sent by *Juno*, to be revenged on the *Thebans*. Its Office was to propose dark, enigmatical Questions to all Passers-by, and if they did not give the Explication thereof, to devour them.

It made horrible Ravages on Mount *Sphingion*, and could not by any means be destroyed, till after *Oedipus* had solved the following Riddle; What Animal is it, that in the Morning walks on four Legs; at Noon on Two, and at Night on Three?

Among the *Egyptians*, the *Sphinx* was the Symbol of Religion, by reason of the Obscurity of its Mysteries. And on the same account, the *Romans* placed a *Sphinx* in the *Pronaos* or Porch of their Temples.

**SPICA-Nardi**, Spike-nard, a kind of Ear growing even with the Ground, and sometimes in the Ground; used in the Composition of Treacle. See TREACLE.

It likewise should be used in the Compound-Syrop of Chicory, in lieu of Cinnamon, which the Apothecaries generally put for it, because cheaper.

The Ear or *Spica*, is about the Length and Thickness of a Finger; very light, covered with long, reddish Hairs, of a strong Smell, and a bitterish, sharp Taste. There rise several of these Ears from the same Root. The Stem is small, and the Root the Thickness of a Quill.

The *Spica-Nardi*, is usually reckon'd in the Number of Roots. 'Tis also call'd *Nardus Indicus*; because brought from the *East-Indies*.

'Tis accounted a *Stomachic* and *Nephritic*, proper to strengthen the Stomach, and promote the Discharge of Urine.

There is also another Kind, call'd *Spica-Celtica*, growing in the *Pyreneans*, and the Mountains of *Tirol*.

**SPICA Virginis**, a Star of the first Magnitude in the Constellation *Virgo*. See VIRGO.

Its Place is in the more southerly Hand. Its Longitude, according to Mr. *Flamsteed*, is  $19^{\circ} 31' 22''$ ; its Latitude  $2^{\circ} 1' 59''$  South.

**SPICE**, any kind of aromatic Drug, that has hot and pungent Qualities; such are *Pepper*, *Nutmeg*, *Ginger*, *Cinnamon* and *Cloves*. See PEPPER, NUTMEG, &c.

Some also apply the Word to medicinal Drugs brought from the *East*, as *Senna*, *Cassia*, *Frankincense*, &c. See each under its proper Article, SENNA, CASSIA, &c.

**SPIDERS-Silk**. See SILK.

**SPIKING up the Ordnance**; a Sea Phrase, for the fastening a Quoin with *Spikes* to the Deck, close to the Breech of the Carriages of great Guns; that they may keep close and firm to the Ship's Sides, and not get loose when the Ship rolls, and by that means endanger the breaking out of the Butt-head of a Plank.

**SPINA Ventosa**, in Medicine, &c. an Ulceration, wherein the Bones are eaten by a malignant Tumour, without any Pain of the *Periosteum*, or Membrane that covers the Bone. After which, an indolent Swelling being risen, the Part affected is quite eat out with the Ulcer; whence frequently follows a necessity of Amputation.

**SPINAL Marrow** } See { **MEDULLA Spinalis.**  
**SPINAL Nerves** } **NERVE.**

In the History of the *French Academy of Sciences*, for the Year 1714, we have an Instance of a Fœtus born without either Brain, Cerebel, or *Spinal Marrow*, though perfectly well form'd in other respects. It had gone its natural Time; lived two Hours; and even gave Signs of Life, upon sprinkling the Baptismal Water on its Head.

Instances of this Kind, as this is not the only one we meet withal, furnish a terrible Objection against the Existence of the animal Spirits, which should be generated in the Brain, or at least in the Cerebel or *Spinal Marrow*; and which are generally allowed of such absolute Necessity in the Animal Oeconomy. See SPIRIT.

**SPINALIS**, in Anatomy, a Muscle on the Side of the Neck, arising from the Five superior Processes of the Vertebrae of the Thorax, and inferior of the Neck; and in its Ascent, becomes more fleshy, and is lastly inserted into the inferior Part of the Vertebrae of the Neck, laterally. It serves to draw the Neck backwards.

**SPINDLE**, in the Sea Language, is the smallest Part of

a Ship's Capstan, which is betwixt the two Decks: The *Spindle* of the Jeer Capstan hath Whelps to heave the Viol. Also the Axis of the Wheel of a Watch or Clock, is called the *Spindle*, and its Ends the *Pevets*. See CLOCK, &c.

**SPINE**, or *SPINA Dorsi*, in Anatomy, the Series or Assemblage of Vertebrae, or Bones of the Back, which sustain the rest of the Body, and to which are connected the Ribs. See VERTEBRÆ.

The *Spine* is usually divided into four Parts; the Neck, which contains Seven Vertebrae; the Back, Twelve; the Loins, Five; and the *Os sacrum*, Four. The *Spine* includes a kind of Medulla, much resembling that of the Brain, hence call'd *Medulla Spinalis*, or *Spinal Marrow*; which see.

It has its Name *Spine*, by reason the hind Part thereof is Edg'd, or *Spiny*. Some call it the *Canalis Sacer*.

**SPINET**, a Musical Instrument, rank'd in the Second or Third Place among harmonious Instruments. See MUSIC.

It consists of a Chest or Belly, made of the most porous and resinous Wood to be found; and a Table of Firr fasten'd on Rods, call'd *Sound-boards*, which bear on the Sides. On the Table is raised a little Prominence, wherein are placed as many Pins as there are Chords to the Instrument.

The Instrument is played by two Ranges of continued Keys, the foremost Range being in the Order of the Diatonick Scale; and the other Range set backwards in the Order of the Artificial Notes or Semi-tones. See SCALE.

The Keys are so many long, flat Pieces of Wood, which when touched and press'd down at one End, make the other raise a Jack, which sounds the Strings by means of the End of a Crow's Quill, wherewith 'tis armed. The 30 first Strings are of Brass, the other more delicate ones of Steel or Iron Wire. They are all stretch'd over Two Bridges glued to the Table.

The Figure of the *Spinet* is a long Square, or Parallelogram a Foot and Half broad; some call it a *Harp Couch'd*, and the *Harp*, an *Inverted Spinet*.

The *Spinet* is generally tuned by the Ear; which Method of the practical Musicians, is founded on this Supposition, That the Ear is a perfect Judge of an Octave and Fifth. The general Rule, is to begin at a certain Note, as *c*, taken towards the middle of the Instrument, and tuning all the Octaves up and down, and also the Fifth's, reckoning Seven Semi-tones to each Fifth, by which means the whole is tuned.

Sometimes to the common or fundamental Play of the *Spinet*, is added another similar one in Unison, and a Third in Octave to the first; to make the Harmony the fuller. They are played either separately or together; which is call'd the *double* or *triple Spinet*. Sometimes a Play of Violins is added, by means of a Bow, or a few Wheels parallel to the Keys, which press the Strings, and make the Sounds last as long as the Musician pleases; and heighten and soften them, as they are more or less press'd. The Harpsichord is a kind of *Spinet*, only with another Disposition of the Keys. See HARPSICHORD.

The Instrument takes its Name from the little Quills Ends, wherewith the Strings are drawn, which are supposed to resemble *Spinae*, Thorns.

**SPINNING**, in Commerce, the reducing of Silk, Line, Hemp, Wooll, Hair or other Matters into Thread. See THREAD.

*Spinning*, is either perform'd on the Wheel, or with a Distaff or Spindle, or with other Machines proper for the several kinds of Working. Hemp, Line, Nettles and other like Plants are to be wet in *Spinning*: Silks, Wools, Cottons, &c. are spun dry, and don't need Water; yet there is a Way of *Spinning* Silk as it comes off the Cafes or Balls, where hot, and even boiling Water is to be used. See SILK; see also WHEEL, DISTAFF, &c.

**SPINOSISM**, the Doctrine of *Spinosæ*; or, Atheism proposed after the Manner of *Spinosæ*. The Retainers whereto, are called *Spinozists*.

The great Principle of *Spinozism* is, That there is nothing properly and absolutely existing, but Matter, and the Modifications of Matter; among which are even comprehended, Thought, abstract and general Ideas, Comparisons, Relations, Combinations of Relations, Properties, &c. See MATTER, SUBSTANCE, &c.

*Spinosæ* or *Espinosæ*, was a Man well known in *Holland*. He was born a Jew; but did not make Profession of any Religion, either the Jewish or Christian. He composed several Books in *Latin*, the most celebrated whereof, is his *Traëctatus Theologicæ Politicæ*, wherein he overturns the Foundation of all Religion: The Book, accordingly, was condemn'd by a publick Decree of the States; though it has since been sold publicly, and even reprinted, both in *Latin* and *French*, in that Country.

*Spinosæ*, here, maintains, That all Religions are only political Engines, calculated for the publick Good; to render the People obedient to Magistrates, and to make them practise Virtue and Morality.



He does not here lay down his Notion of the Deity openly; but contents himself with insinuating it.

In his Conversations, he used to be more express; and maintained, That God is not, as we imagine him, an infinite, intelligent, happy and perfect Being; nor any thing, but that natural Virtue, or Faculty, which is diffused throughout all Creatures. See NATURE.

There have been abundance of Answers made to this Work of *Spinosa*; but all exceedingly weak, except what we have in *Clark's Sermons at Boyle's Lecture*.

*Spinosa*, in the said Treatise, is very full on the Subject of the Authors of the Scriptures; and endeavours to shew, That the Pentateuch is not the Work of *Moses*; contrary to the common Opinion, both of the *Jews* and *Christians*. He has also his particular Sentiments, as to the Authors of the other Books. This Part of the Treatise has been answered by *M. Huet*, in his *Demonstration Evangelique*; and by *M. Simon*, in his *Hist. Crit. du vieux Test.* See PENTATEUCH.

SPINSTER, in Law, an Addition usually given to all unmarried Women, from the Viscount's Daughter downwards.

Yet Sir *Edward Coke* says, *Generosa* is a good Addition for a Gentlewoman; and that if she be named *Spinster* in any Original Writ, Appeal or Indictment, she may abate and quash the same.

*Spelman* says, That anciently, even the Queens used the Distaff and Spindle; whence *Spinster* became a common Appellation for all Women.

SPIRAL, in Geometry, a curve Line, of the circular Kind, which in its Progress, recedes from its Centre; as in winding from the Vertex down to the Base of a Cone. See SPIRE.

'Tis called from its Inventor, *Archimedes's Spire*, or *Helix*; and is thus described:

Divide the Periphery of a Circle A P p A (Tab. Geometry Fig. 39.) into any Number of equal Parts, by a continual Bisection in the Points p. Into the same Number of Parts divide the Radius C A, and make C M equal to one Part, C m to two Parts, &c. Then will the Points M m, m, &c. be Points in the *Spiral*, which connected, will give the *Spiral* itself. This now, is called the *first Spiral*, and the Space included between its Centre, and the Point A, the *Spiral Space*.

This first *Spiral* may be continued to a *second Spiral*, by describing another Circle with double the Radius of the First; and the Second may be continued a Third, by a third Circle, &c.

Hence, 1<sup>o</sup>, A P is to the Periphery, as C m to the Radius. Wherefore, if the Periphery be called *p*, the Radius A C = *r*, A P = *x*, P M = *y*; then will C M = *r - y*: Consequently as *p*:*m* :: *x*:*r - y*, we shall have *p r - p y = r x*.

2<sup>o</sup> If C M = *y*; then will *r x = p y*. Which Equation the *Spiral* has in common with the Quadratrix of *Dionysius*, and that of *Tschirnhausen*; and therefore *r<sup>n</sup> x<sup>m</sup> = p<sup>n</sup> y<sup>m</sup>* will serve for infinite *Spirals* and Quadratrices. See QUADRATRIX.

3<sup>o</sup> The Lines M m, M m, &c. are to one another as the Arches of the Circle, intercepted between M A and those Lines: And, when continued, making equal Angles with the first and second *Spiral*, are in arithmetical Proportion.

4<sup>o</sup> Lines drawn from M to the second *Spiral*, are to each other as the said Arches, together with the whole Periphery added on both Sides.

Quadrature of SPIRALS } See { QUADRATURE.  
Logistic SPIRAL } LOGISTIC.

SPIRAL, in Architecture, Sculpture, &c. is a Curve that ascends, winding about a Cone or *Spire*; so as all the Points thereof continually approach the Axis: By this it is distinguished from the *Helix*, which winds after the same Manner, around a Cylinder. See HELIX.

Ignorant Architects confound the Two: But the more knowing distinguish them carefully.

The *Spiral* Line is conceived to be thus generated.

If a Right Line as A B, (Tab. Geometry Fig. 40.) having one End fix'd at B, be equally moved round, so as with the other End B, to describe the Periphery of a Circle; and at the same Time, a Point be conceived to move forward, equally from B towards A in the Right Line A B, so as that the Point describes that Line, while the Line generates the Circle:

Then will the Point, with its two Motions, describe the curve B, 1, 2, 3, 4, 5, &c. which is called a *Spiral Line*, and the plain Space contained between the *Spiral Line*, and the Right Line B A, is called the *Spiral Space*.

Again, if the Point B be conceived to move twice as slow as the Line A B; so that it shall get but Half way along B A, when that Line shall have formed the Circle; and if then, you imagine a new Revolution to be made of the Line carrying the Point, so that they shall end their Motion, at least, together; there shall be formed a double *Spiral Line*; as in the Figure: From the Manner of which, may be easily drawn these Corollaries.

1. That the Lines B 12, B 11, B 10, &c. making equal Angles with the first and second *Spiral* (as also B 12, B 10, B 8, &c.) are in an arithmetical Proportion.

2. The Lines B 7, B 10, &c. drawn any how to the first *Spiral*, are to one another as the Arches of the Circle intercepted betwixt B A, and those Lines: Because whatever Parts of the Circumference the Point A describes, as suppose 7, the Point B will also have run over 7 Parts of the Line A B.

3. Any Line drawn from B to the second *Spiral*, as B 18, B 22, &c. are to each other, as the aforesaid Arches, together with the whole Periphery added on both Sides: For at the same time that the Point A runs over 12, or the whole Periphery, or perhaps 7 Parts more, shall the Point B have run over 12, and 7 Parts of the Line A B, which is now supposed to be divided into 24 equal Parts.

PROPORTIONAL SPIRALS, are such *Spiral* Lines, as the Rumb Lines on the Terrestrial Globe, which, because they make equal Angles with every Meridian, must also make equal Angles with the Meridians in the Stereographic Projection on the Plane of the Equator; and therefore will be, (as Dr. *Halley* observes) proportional *Spirals* about the Polar Point. From whence he demonstrates, that the Meridian Line, is a Scale of Log-Tangents of the Half Meridian-Complements of the Latitudes.

SPIRAL Stairs, in Building. See STAIRS.

SPIRE, SPIRA, in the ancient Architecture, is sometimes used for the Base of a Column; and sometimes for the *Astragal* or *Tore*. See BASE.

From the *Latin*, *Spire*, the Folds of a Serpent, which when laid, bears some Resemblance thereto; or from the *Greek*, *σπείρα*, the Coils of a Rope.

SPIRIT, in Theology, is used by way of Eminence, for the Third Person in the Holy Trinity; called *The Spirit*, or *The Holy Spirit*. See TRINITY and PERSON.

The *Macedonians*, &c. deny the Divinity of the *Spirit*. See MACEDONIANS.

The *Arians*, &c. deny his Co-equality with the Father. See ARIANS.

Divines express the Manner wherein the *Spirit* was produced by the active *Spiration* or Breathing of the Father and the Son; whence the Name *Spiritus*, Breath.

Order of the Holy SPIRIT. See HOLY GHOST.

SPIRIT, is also used among Divines, for the divine Power and Virtue; and the Communication thereof to Men.

In this Sense, the *Spirit* is said to have gone out on the Face of the Deep, *Genesis*, c. i. v. 2. And the Prophets to have been possess'd of the *Spirit* of God.

Providence, in this Sense, is that universal *Spirit*, whereby God makes all Nature to act. Thus the Holy Virgin is said to have conceived of the *Spirit*, 1. *Cor.* vii. 40.

SPIRIT, is also used for any Incorporeal Being, or Intelligence.

In this Sense, God is said to be a *Spirit*: Angels, *Spirits*; and the Devil an *Evil Spirit*. See GOD, ANGEL, DEVIL, &c.

In this Sense, the Human Soul is also call'd *Spirit*, from its thinking and reflecting Powers, which cannot be conceived to reside in any thing Material. See SOUL.

F. *Mallebranch* observes, 'tis extremely difficult to conceive what it is, should make the Communication between the Body and the *Spirit*; for if the *Spirit* have no material Parts, it can't move the Body: But the Argument must be false some how or other; for we believe that God can move Bodies, and yet don't attribute any material Parts to him.

Private SPIRIT, is a Term that made a great Figure in the Controversies of the two last Centuries. It signifies the particular View or Notion each Person has of the Dogmata of Faith, and the Truths of Religion, as suggested by his own Thought, and the Persuasion he is under with regard thereto.

The first Reformers denying strenuously any infallible Interpreter of the Scripture, or any settled Judge of Controversies; maintained, that every Person was to interpret and judge of revealed Truths, by his own Light, assisted by the Grace of God; and this was what they call'd *private Spirit* or *Judgment*.

Against this, the Arguments used by the Romanists are, That revealed Truths being one and the same for all Believers; the Rule God has given us for the judging of them, ought to represent them to us uniformly and the same; but the *private Spirit* informs *Luther* one way, and *Zuinglius* another. It divides *Oecolampadius*, *Bucer*, *Osiander*, &c. And the Doctrine it discovers to the *Confessionites*, is quite different from that it shews the *Anabaptists* and *Mennonites*, in the very same Passage of Scripture.

SPIRIT, in Chymistry, is one of the Principles of natural Bodies, called also *Mercury*. See PRINCIPLE and MERCURY.

The chymical Principle *Spirit*, is a fine, subtil, volatile, penetrating, pungent Liquor, which arises ordinarily before the Phlegm or Water, and sometimes after it.



The great Properties of this Liquor are, that it penetrates and opens solid Bodies, corrodes, breaks, dissolves, and even dissolves certain mix'd Bodies; coagulates others, and produces an Infinity of Effects; and those even contrary to one another.

In the general, the Chymists call *Spirits*, all the fine subtle, and not aqueous Particles, raised from Bodies by Heat, and reduced into Liquors by Distillation; such are *Spirit of Vitriol*, of *Salt-petre*, of *Salt*, &c.

They also call *Spirits*, those aqueous Liquors drawn by Liquidation, when they are impregnated with Salts, or other active Principles, raised, together with them, by the Violence of the Fire.

These, when they excite any Sensation of Heat on the Tongue, are particularly called *Acid*, or *Sharp Spirits*.

When they make any Erosion on the Tongue, they are call'd *Corrosive Spirits*. See CORROSIVE.

Such as Taste somewhat like common Salt, are call'd *Saline Spirits*. See SALT.

Such as partake of the Taste of common Sulphur, *Sulphurous Spirits*. See SULPHUR.

And when this Taste is very strong, *Urinous Spirits*. See URINOUS.

Such as take Fire readily, *Inflamable* or *Ardent Spirits*. See INFLAMABLE.

Such where the Acid predominates, though qualified with a little Sulphur, &c. are called *Mix'd Spirits*.

In this Sense, the Chymists are said to draw a *Spirit* from Sulphur, Salt and other Bodies, when they extract the Essence, or the subtlest Part thereof, by Distillation or otherwise. See DISTILLATION, &c.

*SPIRITS* is also a general Name among Distillers, for all distill'd Liquors that are neither Oil nor Phlegm.

*SPIRIT of Wine*, is only Brandy rectified once or more Times, by repeated Distillations. See BRANDY.

One may likewise make a perfect Rectification of *Brandy* into *Spirit of Wine*, at one single Distillation, by using a chymical Instrument, consisting of several Cucurbites, described by *Glaser*. See RECTIFICATION.

*Spirit of Wine* is used in Dying, as a non-colouring Drug, and giving no Colour itself, but serving to prepare the Stuffs to receive the Colours. See DYING.

The Consumption of *Spirit of Wine* is very considerable in several other Works and Manufactures, particularly the making of Varnish. See VARNISH.

*SPIRIT of Sulphur*, is a *Spirit* drawn from *Sulphur* melted and inflamed; the most subtle Part whereof, is converted into a Liquor, by sticking to a Glass Bell suspended over it, whence it falls Drop by Drop, into a Trough, in the Middle whereof, is placed the Stone Pot wherein the Sulphur is burnt. See SULPHUR.

This *Spirit* is held Specific for the same Diseases as *Spirit of Vitriol*. See SPIRIT of Vitriol.

*SPIRIT of Salt*, a yellow Liquor drawn, by Chymistry, from Sea Salt. See SALT.

The best, is that prepared in *England*. 'Tis much used in Medicine; but has not, perhaps, all the Virtues ascribed to it. The common *Spirit of Salt*, being very corrosive, may be dulcified, by letting it digest three Days on a gentle Sand heat, with an equal Quantity of *Spirit of Wine* mix'd therewith. See DULCIFYING, FRESH-water, &c.

*SPIRIT of Vitriol*, is *Vitriol* dried in the Sun, or in Defect thereof, by the Fire, and then distill'd by chymical Operations several Times repeated; first by a reverberatory Fire, and then in *Balneo Mariae*. See VITRIOL.

'Tis held excellent against the Epilepsy, as well as against burning and malignant Fevers.

The last *Spirit* drawn from *Vitriol*, and which is improperly called *Oil of Vitriol*, is used in the Dissolution of Metals and Minerals.

|                      |       |             |
|----------------------|-------|-------------|
| SPIRIT of Tartar     | } See | TARTAR.     |
| SPIRIT of Sugar      |       | SUGAR.      |
| SPIRIT of Turpentine |       | TURPENTINE. |
| SPIRIT of Venus      |       | VENUS.      |

*SPIRIT*, in Physicks. Sir *Isaac Newton* closes his immortal *Principia*, with observing, That he might "there have added some Things, concerning a most subtle *Spirit* " which pervades all, even the densest Bodies, and lies hid " therein; by the Force and Action whereof, the Particles " attract each other, at very small Distances, and when con- " riguous, cohere: And electric Bodies act at greater Di- " stances, both attracting and repelling the neighbouring " Corpuscles; and Light is emitted, reflected, and in- " flected and warms Bodies; and all Sensation is excited; " and the Members of Animals moved at the Instance of the " Will, viz. by Vibrations of this *Spirit*, propagated through " the solid Capillaments of the Nerves, from the external " Organs of Sense to the Brain, and from the Brain to the " Muscles."

But he chuses to post-pone them; " as not having a sufficient

" Number of Experiments, whereby the Laws of the Action " of this *Spirit* might be precisely determined." See NEW-  
TONIAN Philosophy; see also MEDIUM, VACUUM, &c.

*SPIRITS*, in Medicine, are the most subtle and volatile Parts, or Juices of the Body; by means whereof, all the Functions and Operations thereof are performed.

The *Spirits* are usually distinguished into *Vital* and *Animal*.

The Ancients, indeed, made a four-fold Distinction of *Spirits*; into *Vital*, *Animal*, *Natural* and *Genital*: Whereof, the First they placed in the Heart; the Second in the Brain; the Third in the Stomach and Liver; and the last in the Testicles: But as this Division is founded on a false Hypothesis; 'tis now deservedly set aside.

*Vital SPIRITS*, are only the finest, and most agitated Part of the Blood; whereon its Motion, and Heat depend. See BLOOD.

*Animal SPIRITS*, are an exceedingly thin, subtle, moveable Fluid, Juice or Humour separated from the Blood in the Cortex of the Brain, hence received into the minute Fibres of the Medulla, and by them discharged into the Nerves, by which it is convey'd through every Part of the Body, to be the Instruments of Sensation, muscular Motion, &c. See SENSATION, MUSCULAR Motion, &c.

The *Animal Spirits*, call'd also *Nervous Spirits* and *Nervous Juice*, only differ from the *Vital Spirits*, in that these last are still mix'd and blended with the grosser Parts of the Blood, and circulate along with it: Whereas, the *Animal Spirits* are secreted thence by the Glands whereof the cortical Substance is composed; and have a Motion, Circulation, &c. peculiar to themselves. See CIRCULATION.

Dr. *Willis* conceives, that the *Animal Spirits* are prepared by a proper Distillation of the subtlest Part of the arterial Blood, brought by the Carotides into the Cortex of the Brain; and shews, that the Blood contained in the Sinus's of the Dura Mater, acts in this Distillation in the same Manner as Fire does in the chymical Distillations perform'd by Defluxion, where being placed over the Matter to be distill'd, it makes the subtlest Parts thereof descend.

The Existence of the *Animal Spirits* is controverted: But the infinite Use they are of in the Animal Oeconomy, and the exceedingly lame Account we should have of any of the Animal Functions without them, will still keep the greatest Part of the World on their Side. And, in effect, the learned *Boerhave* had gone a good way towards a Demonstration of their Reality.

The Blood brought to the Brain by the Carotides, and Vertebral Arteries, he shews, is infinitely prepared, secreted elaborated and changed from its natural State, e'er it arrives there, inasmuch as, contrary to the Nature of the rest, instead of cohering by the Fire, it immediately resolves wholly into a thin Vapour, without any Faeces behind. And is thus exceedingly well fitted for the Formation of so extraordinary a Fluid.

He shews, further, That the *Animal Spirits* are not form'd from the Cruor, but the Serum of the Blood, which *Malpighi's* History of the Growth of the Fetus in an incubated Egg, shews to be divisible into Parts or Corpuscles, inconceivably smaller than the Cruor.

He adds, That the Nature of the Juice is such, as that no Salts or Oils in the Body can contribute any thing to it; and that in all appearance, 'tis only a most subtle, pure Water; which Liquor is found to resemble these *Spirits* in its extraordinary Miscibility, Mobility, Solidity, Softness, Simplicity and want of Elasticity.

The same Author shews, further, from the Magnitude of the Carotids and Vertebrales, their straight uninterrupted Course, the great Quantity of Blood they bring, the Bulk of the Cortex, &c. that there must be a very great Quantity of this Liquor; that there is fresh prepared every Moment of Life; and that it is driven, every Moment, by the Action of Heat, &c. from the Brain and Cerebel, to all the Parts of the Body furnished with Nerves; which Motion, he shews from the exceeding Fineness, Crookedness, &c. of the Ramifications must be very gentle, equable and constant, one Part continually driving before it another. Upon the whole, 'tis no Wonder it escapes the Notice of our Senses; and that no Ligatures, Wounds, Punctures, Injections or the like, make either it or the Apertures of the Nerves through which it flows, visible: Nor does it avail, what some, who allow the Existence of the *Animal Spirits*, urge against their being any coherent Juice or Liquor, viz. That we should find it ooze out and wet the adjacent Parts, upon cutting a Nerve, as we do in cutting a Lymphatic, &c. that upon binding a Nerve, the upper Part would swell; that the Agitations which Objects make on the Filaments, would deaden, &c. that 'tis impossible a Liquor should have two opposite Motions at the same Time; and that the Velocity of Sensations, and the Rapidity of the Motions of Man, prove, that the *Animal Spirits* are rather Light than a Liquor. *Mem. de Trev.*



For the Secretion of the  
Animal SPIRITS from  
the Blood, and the Ap-  
paratus in order there-  
to - - - - -  
For the Course of the  
Animal SPIRITS, and  
the Vessels thro' which  
they are carried - - -  
For the Office of the  
Animal SPIRITS in  
muscular Motion and  
Sensation - - - - -

See BRAIN and SECRETION.

See NERVE and SECRETION.

See MUSCLE and SENSATION.

SPIRITUALITIES of a Bishop, are such Profits, as arise to him from the Benefit of his Jurisdiction in his Diocese, and not as a Baron of the Parliament. See BISHOP.

Such are those of his Visitations, Institutions, Ordinations, Presentation-Money, &c. See VISITATION, &c.

SPIRITUALIZATION, in Chymistry, the Action of extracting Spirits from natural Bodies. See SPIRIT.

Spiritualization, is an Operation that belongs principally to fermented Salts; then to fermented Juices and Liquors; the Fermentation rendering the Spirits Volatile and Inflammable. See FERMENTATION.

Spirit of Wine, is sometimes *Spiritualiz'd* to that degree, that upon throwing a Quantity into the Air, not a Drop shall fall down; but the whole evaporate and be lost.

SPITTLE. See SALIVA and SPUTUM.

SPITTLE-House, a Corruption of the Word *Hospital*.

See HOSPITAL.

SPLANCHOLOGY, in Anatomy, a Discourse, or Explication of the Viscera. See VISCERA.

Sarcology is divided into three Parts, viz. *Splanchnology*, *Myology* and *Angeology*. See SARCOLOGY.

*Splanchnology*, is that which treats of the Internal Parts, and particularly the Viscera. The Word is form'd from the Greek *σπλάγχνον* Viscus, Intestin, and *λόγος*, Discourse.

SPLEEN, *Lien*, in Anatomy, a soft, spongy Viscus, of a darkish Red, or rather Livid Colour, ordinarily resembling the Figure of a Tongue, though sometimes triangular, and sometimes roundish.

The *Spleen* is usually single, though sometimes there are Two, and sometimes Three found. 'Tis situate in the Left Hypochondrium, between the spurious Ribs and the Stomach; is somewhat convex on the Side, towards the former, and concave towards the latter. Its ordinary Length is Six Inches; Breadth Three, and Thickness One. It is connected to the Omentum, and by Means of that and the Blood Vessels, to the Stomach and Left Kidney, and sometimes to the Diaphragm.

It is covered with two Tunics; the External derived from the Peritonæum, and connected to the Internal only, by the Intervention of the Blood Vessels. The inner consists of Fibres very curiously interwoven. From this, probably, are derived those innumerable Cells or little Bladders, which make up the main Bulk of the *Spleen*: Though *Malpighi* rather takes them to arise from the Venous Duct. The Cells communicate with each other, and discharge themselves into the Trunk of the Vein. Their Inside, according to *Malpighi*, is furnished with various minute Glands adhering together; Six, Seven or Eight whereof, form a kind of small conglomerate Glands, wherein the Arteries and Veins seem to terminate.

Its Blood-Vessels are the *Splenic Artery*, which furnishes it with Blood, from the *Cœliac*; and the *Splenic Vein*, which carries it thence, by the *Porta*, to the Liver. See SPLENIC.

Its Nerves come from the *Plexus Lienaris*, near the Bottom of the Stomach. The Vessels are all, as soon as they enter the *Spleen*, wrapt up in one common Capsula or Membrane, and plentifully distributed together throughout the Substance of the *Spleen*. Besides these, are Lymphaticks in great Abundance.

The Anastomoses between the Arteries and Veins of the *Spleen*, are more apparent than in any other Part of the Body. And this Viscus is observed to be furnished with a greater Proportion of Blood than any other Parts. See ANASTOMOSIS.

The Use of the *Spleen* has been disputed in all Ages; both, as no immediate Use thereof appears from Dissection, and as we find, that Animals from whom it has been cut, live very well without it. All the Effects, e. gr. following the cutting it from a Dog, are, that the Animal grows more Salacious than usual; that it urinates more frequently; is more hungry than ordinary; and for the first Days is troubled with a Vomiting and Nausea. 'Tis added, That 'tis necessary the Part be taken away to make a good Runner.

Hence some have imagined that the *Spleen* only served to make a Balance in the Weight of the Body; others, that it was only intended for the sake of Symmetry, others, an useless Load, and one of Nature's Redundances; others, a Pit or Common-Shore to discharge the Forces of the Blood into; others a Fire, by the Heat whereof, the Action of the Ventracles is animated.

Many of the Ancients took it to be the Receptacle of the *Attra Buis* or Melancholic Humour; for which Reason, some of them call it the *Organ of Laughter*.

Mr. *Cowper*, from the great Quantity of Blood, and the apparant inoculations of the *Spleen*, draws a very natural Conjecture of the Use thereof; at least of the peculiar Mechanism. He takes, then, the *Spleen* to be only a subordinate Organ, ministering to the Circulation; and thinks, that by this Congress of the Arterial and Venal Blood, an Impetus is communicated to the latter, by which its Progress through the Ramifications of the *Porta* to the Cava, is promoted, which would otherwise be so broke by the double Ramifications of the *Porta*, as to want Strength sufficient to carry it to the Heart. See CIRCULATION.

The Action or Effect of the *Spleen*, according to Dr. *Boerhaave*, is to receive the fresh arterial Blood, prepare it in its Glands, and pour it into its Cells; to return what Blood is left from this Action, to the little Veins, and thence to the *Splenic Vein*; to mix the Humour thus prepared, with the nervous Juice, and to prepare, attenuate, and more intimately unite them together into one Humour.

*Malpighi*, and afterwards Dr. *Keil*, and some others, take the *Spleen* to be a viscous Assistant to the Liver, in the Secretion, &c. of the Bile. We have observed, that by reason of the Nearness of the Liver and Heart, and the swift Motion of the Blood in the Aorta, a Humour consisting of Particles that combine so slowly as those of the Bile do, could not be prepared but by bringing the Blood round about through the Stomach, Intestines and Omentum, &c. to the Liver, to abate its Velocity.

Now Dr. *Keil* conjectures, that those Part were not sufficient to receive all the Blood necessary to be sent to the Liver; therefore Nature framed the *Spleen*, into whose Cavities the Blood being poured from a small Artery, moves at least as slowly as any that passes otherwise to the Liver; by which Means the Particles that compose the Bile in the Blood, which passes through the *Ramus Splenicus*, by so long and slow a Circulation, have more Chances for uniting than otherwise they would, had they been carried by the Branches of the *Cœliac* directly to the Liver; consequently without the *Spleen*, such a Quantity of Bile as is now secreted, that is, as Nature requires, could not have been secreted by the Liver. See BILE; see also LIVER.

SPLEEN, is also used for a Disease; by Physicians more usually called the *Hypochondriac Disease*. See HYPOCHONDRIC and VAPOURS.

SPLENETIC, a Person affected with Oppilations and Obstructions of the *Spleen*.

In *Splenetic* People, the *Spleen* is swell'd beyond the natural Bulk, or harden'd, so as to shew a Schirrous Tumour thereon. *Splenetic* People are distinguished by a Livid, Lead-coloured Complexion; their Character is to be very prone to Laughter; which is an Expedient Nature is supposed to make use of, to evacuate the too redundant Humour the *Spleen* is charged withal, whence it is that the Ancients made the *Spleen* the Organ of Laughter; and hence that popular Saying of a Person laughing heartily, *That he vents his Spleen*.

SPLENIC Vessels, a large Artery, and a Vein of the *Spleen*. See SPLEEN.

The *Splenic Artery*, is a Trunk of the left *Cœliac*, serving to bring the Blood from that Artery to the *Spleen*, to be there secreted, prepared, &c. its Progress is very much contorted; and after its Arrival at the Surface of the *Spleen*, it is diffused through the Substance thereof in small Branches, which seem to terminate in the Cells.

The *Splenic Vein* is form'd out of the several minute Veins of the *Spleen*, uniting as they quit the Surface thereof. It carries the Blood secreted, &c. in the *Spleen*, to the Left Branch of the *Vena Porta*, to be thence convey'd to the Liver, there to be further prepared and converted into Bile.

The *Splenic Vein* and Artery manifestly communicate with each other: For Water being poured into one of them, presently discharges itself by the other. See SPLEEN.

SPLENII, in Anatomy, a Pair of Muscles, called also from their Form *Triangulares*.

They arise from the four upper Spines of the *Vertebrae* of the Back, and from the two lower of the Neck, and ascending obliquely, adhere to the upper transverse Processes of the *Vertebrae* of the Neck, and are inserted into the upper Part of the Occiput. They pull the Head backwards to one Side. They are call'd *Splenii*, from a supposed Resemblance to an Ox's *Spleen*.

SPLINT, or SPLINT, among Farriers, a callous, insensible Excrescence; or kind of hard Gristle, that sometimes sticks to an Horse's Shank-Bone, and generally comes upon the Inside: If there be one opposite thereto on the Outside, it is called a *Pegg'd* or *Pinn'd Splint*, because it doth, as it were, pierce the Bone, and is extremely dangerous.

SPLENTS, in Surgery, Pieces of Wood used in binding up broken Limbs. See FURULA.



The Word is also used for the Pieces of a fractured Bone.

**SPLICE**; at Sea they say, a Cable or Rope is *Spliced*, when the Ends of two Pieces being untwisted, the several Strands are wrought into one another by a Fidd. Also when an Eye is to be made at the End of a Rope, the Ends of the Strands, are, by a Fidd, drawn into the Ends of the other Ropes Strands; and this is call'd a *Splice*.

To *Splice* among Gardeners, is to graft the Top of one Tree into the Stock of another, by cutting them sloping, and fastening them together. See **ENGRAFTING**.

**SPODIUM**, in Pharmacy, a kind of Calx or Ashes, esteem'd an excellent Cardiac, and held to have the same Virtues with Coral.

The *Spodium* of the ancient Greeks, was a kind of Ashes found on the Hearths of Furnaces wherein Brass was made; call'd by them *σπίδιον*, *q. d. Cinis*.

That of the *Arabian* Physicians, as *Avicenna* and others, was made of the burnt Roots of Rushes and Reeds.

The Moderns make their *Spodium* of Ivory burnt and calcined to a Whiteness. 'Tis sometimes counterfeited, by burning Bullocks or Dogs-bones; but these are of no Value.

The *Anti-Spodium*, which the Ancients substituted for their *Spodium*, was made of Myrtle-Leaves, Galls and some other Ingredients, calcined.

**SPOILS**, whatever is taken from an Enemy in War.

Among the *Greeks*, the *Spoils* were divided in common among the whole Army; only the Generals Quota was the biggest.

By the Military Discipline of the *Romans*, the *Spoils* belong'd to the Republick; particular Persons had no Title to them; and each of the Generals, as valuing themselves on their Probity, always carried them to the Publick Treasury. Sometimes, indeed, the Pillage was distributed by the General among the Soldiery, to encourage them, or to reward them: But this was not done without a world of Prudence and Reservedness, otherwise it came under the Crime of *Peculatus*.

The Consuls *Romulus* and *Veturius*, were condemn'd for having sold the *Spoils* taken from the *Æqui*. *Livy*, lib. 8.

**SPONDAULES**, in Antiquity, a Player of the Flute, or other Wind Instrument of that Kind, who, during the Offering of Sacrifice, performed some suitable Air in the Priest's Ear to prevent the hearing of any Thing that might distract him, or lessen his Attention. See **SACRIFICE**.

The Word is form'd from the *Greek* *σπονδή*, *Libation*, and *αυλή*, *Flute*.

**SPONDEE**, **SPONDAEUS**, in the *Greek* and *Latin* Prosody, a Foot of a Verse consisting of two long Syllables; as *Vertunt*. See **FOOT** and **QUANTITY**.

The *Spondee* is a grave Measure: All *Greek* and *Latin* Hexameters end with a *Spondee*. See **VERSE** and **MEASURE**.

There are also *Spondee* or *Spondaic Verses*; that is, Verses composed wholly of *Spondees*, or at least that end with Two *Spondees*, as,

*Constitit atque oculis Phrygia agmina circumspexit.*

**SPONDYLUS**, a Term anciently used for a Vertebra of the *Spina Dorsi*. See **VERTEBRA**, &c.

**SPONGE**. See **SPUNGE**.

**SPONGIOSA**, in Anatomy, an Epithet given to several Parts of the Body, from their Texture, which is Porous and Cavernous, like that of the *Sponge*; as

*Corpora Spongiosa Penis*, call'd also *Corpora Cavernosa* and *Nervosa*. See **CAVERNOSA CORPORA**.

*Ossa Spongiosa* of the Nose, call'd also *Ossa Turbinata*, and *Cribiformia Ossa*. See **TURBINATA Ossa** and **CRIBIFORME**.

**SPONTANEOUS**, in the Schools, a Term applied to such Motions of the Body and Mind as we perform of our selves, without any Constraint.

Thus, in Morality, those Actions preform'd from an inward and natural Principle, conformable to the Inclination of Nature, excluding all Constraint, but not excluding Necessity, are call'd *Spontaneous Actions*. See **NECESSITY**.

In Medicine, an Evacuation effected without any Application for that purpose, is call'd a *Spontaneous Evacuation*. And a Lassitude or Weariness, not occasioned by any preceding Fatigue, is call'd a *Spontaneous Weariness*.

The Word is form'd from the *Latin* Adverb, *Sponte*, of one's own accord.

'Tis held a grievous and dangerous Error, with regard both to Religion and Morality, to hold that human Liberty only consists in a *Spontaneity*: *M. le Clerc* has been very harshly treated, for making *St. Augustin* of this Opinion. See **LIBERTY**.

**SPONTANEOUS Generation**. See **EQUIVOCAL Generation**.

**SPOONING**: In the Sea Language, when a Ship being under Sail, in a Storm at Sea, cannot bear it; but is forced to put right before the Wind; then the Seamen say, she *Spoons*; and when in such a Case, there is Danger lest she should bring her Masts by the Board, with her rolling about, or scel under Water, and so founders, they usually set up

the Fore-sail to make her go the steadier, especially if there be Sea-room enough; and this they call *Spooning* with the Fore-sail.

**SPORADES**, in Astronomy, a Name the Ancients gave to such Stars as were not included in any Constellation. See **STAR**.

These, the Moderns more usually call *Informes*. See **INFORMES**.

Many of the *Sporades* of the Ancients have been since form'd into new Constellations, *E. gr.* Of those between *Leo* and *Ursa Major*, *Hevelius* has form'd a Constellation, call'd *Leo Minor*; of those between *Ursa Minor* and *Auriga*, another Constellation call'd *Lynx*; of those under the Tail of *Ursa Major*, another call'd *Canis venaticus*, &c. See **CONSTELLATION**.

**SPORADIC**, in Medicine, an Epithet given to such Diseases as have some special or particular Cause, and are dispersed here and there, regarding particular Constitutions, Ages, or other Circumstances. See **DISEASE**.

*Sporadic* stand in Opposition to *Epidemic* Diseases, which are those arising from a general Cause, and that are common to all Kinds of Persons, of what Complexion and Quality soever. See **EPIDEMIC**.

The Word is form'd from the *Greek* *σπορας*, dispersed, spread, &c.

**SPORTULA**, in Antiquity, a Dole, or Largess, either of Meat or Money, given by Princes or great Men, to the People, or the Poor.

The *Sportula* was properly the Panier, or Basket wherein the Meat was brought, or wherewith the Poor went to beg it; thence the Word was transferred to the Meat itself; and thence to Money sometimes given in lieu of it.

*Sportula* was frequently used in Opposition to *Recta cena*, a plentiful Meal; as in *Martial*,

*Promissa est nobis Sportula recta data.*

*St. Cyprian* calls *Sportulantes Fratres*, such Clergymen as then received Gifts for their Maintenance, like our Prebends.

**SPOTS**, in Astronomy, dark Places, observed on the Disks or Faces of the Sun and Moon. See **SUN** and **MOON**.

The *Spots* in the Sun are only visible through a Telescope: Some distinguish them into *Maculae* or dark *Spots*, and *Faculae* or bright *Spots*; but there seems little Foundation for any such Division. See **MACULAE** and **FACULAE**.

The *Solar Spots* have not been long observed. They are very changeable, as to Number, Form, &c. are sometimes in a Multitude, and sometimes none at all.

Some imagine they may become so numerous, as to hide the whole Face of the Sun; at least the greatest part of it; And to this, ascribe what *Plutarch* tells us, viz. That in the First Year of the Reign of *Augustus*, the Sun's Light was so faint and obscure, that one might look steadily at it with the naked Eye. See **ECLIPSE**.

To which *Kepler* adds, That in 1547, the Sun appeared reddish, as when viewed through a thick Mist; and hence conjectures, That the *Spots* in the Sun are a kind of dark Smoaks or Clouds floating on the Surface thereof. Others will have them Stars or Planets transiting the Body of the Sun. But 'tis much more probable they are opaque Bodies, in manner of Crusts, form'd like the Scums on the Surface of Liquors. See **SUN**.

The *Lunar Spots* are fix'd. Some will have them the Shadows of the Mountains, or uneven Places of the Moon's Body; but their Constancy discredits this Opinion. The more general and probable Opinion is, That the *Spots* in the Moon, are Seas, Lakes, Morasses, &c. which absorbing Part of the Sun's Rays reflect the fewer to us; so as to appear in form of dark *Spots*: Whereas the earthy Parts, by reason of their Solidity, reflect all their Light, and thus appear perfectly bright. *M. Hartsoecker* has another Opinion, and takes the *Spots* in the Moon, many of them at least, for Forests, Groves, &c. the Leaves and Branches whereof, intercept the Rays reflected from the Ground, and send them elsewhere.

The Astronomers reckon about 48 *Spots* on the Moon's Face; to each whereof, they have given Names. The 21<sup>st</sup> is one of the most considerable, and is call'd *Tycho*.

**Planetary Spots**: Astronomers find that the Planets are not without their *Spots*. *Jupiter*, *Mars* and *Venus*, when viewed through a Telescope, shew several very remarkable ones; and it is by the Motion of these *Spots*, that we conclude the Rotation of the Planets round their Axes, in the same Manner as that of the Sun is deduced from the Motion of his *Maculae*. See **PLANET**, **SUN**, &c.

**SPOUT**, or **Water-SPOUT**, in Natural History, an extraordinary Meteor, or Appearance, at Sea, and sometimes at Land, very dangerous to Ships, &c. ofteneft observed in hot, dry Weather; call'd by the *Latins*, *Typho*, and *Sipho*, by the *French*, *Trompe*, &c. See **METEOR**.

Its first Appearance is in form of a deep Cloud, the upper Part whereof is White, and the lower Black. From the lower



lower Part of this Cloud hangs, or rather falls down, what we properly call the *Spout*, in manner of a Conical Tube, biggest a-top. Under this Tube is always a great boiling, and flying up of the Water of the Sea, as in a *Jet d'Eau*. For some Yards above the Surface of the Sea, the Water stands as a Column or Pillar; from the Extremity whereof, it spreads and goes off, as in a kind of Smoak. Frequently, the Cone descends so low, as to touch the Middle of this Column, and continue for some time contiguous to it; though sometimes it only points to it, at some Distance, either in a perpendicular or oblique Line.

Frequently 'tis scarce distinguishable, whether the Cone or the Column appear the first, both appearing all of a sudden against each other. But sometimes the Water boils up from the Sea to a great Height, without any Appearance of a *Spout* pointing to it, either perpendicularly or obliquely. Indeed, generally, the boiling or flying up of the Water, has the Priority, this always preceding its being form'd into a Column.

Generally, the Cone does not appear hollow, till towards the End; when the Sea-water is violently thrown up along its Middle, as Smoak up a Chimney. Soon after this, the *Spout* or Canal breaks and disappears; the boiling up of the Water, and even the Pillar, continuing to the last, and for some time afterwards; sometimes till the *Spout* form itself again and appear anew; which it sometimes does, several times in a Quarter of an Hour.

M. de la Pyme, from a near Observation of two or three *Spouts* in *Yorkshire*, described in the *Philosophical Transactions*, gathers, that the *Water-Spout*, is nothing but a Gyration of Clouds by contrary Winds, meeting in a Point or Centre; and there, where the greatest Condensation and Gravitation is, falling down into a Pipe or great Tube, somewhat like *Archimedes's* Spiral Screw; and in its working and whirling Motion, absorbing and raising the Water in the same Manner as the Spiral Screw does; and thus destroys Ships, &c.

Thus, *June* the 21<sup>st</sup>, he observed the Clouds mightily agitated above, and driven together; upon which they became very black, and were hurried round, whence proceeded a most audible whirling Noise, like that ordinarily heard in a Mill. Soon after, issued a long Tube or *Spout*, from the Centre of the congregated Clouds, wherein he observed a spiral Motion, like that of a Screw; by which the Water was raised up. Again, *August* 15, 1687, the Wind blowing at the same Time out of several Quarters, created a great Vortex and Whirling among the Clouds; the Centre whereof, every now and then, dropt down, in Shape of a long, thin, black Pipe, wherein he could distinctly behold a Motion like that of a Screw, continually drawing upwards and screwing up, as it were, where-ever it touch'd. In its Progress it moved slowly over a Grove of Trees, which bent under it like Wands in a circular Motion. Proceeding, it tore off the Thatch from a Barn, bent a huge Oak Tree, broke one of its greatest Branches, and threw it to a great Distance. He adds, That whereas 'tis commonly said, the Water works and rises in a Column, e'er the Tube comes to touch it; this is certainly a Mistake, owing to the Fineness and Transparency of the Tubes, which do most certainly touch the Surface of the Sea, e'er any considerable Motion can be raised therein; but which do not become opaque and visible, till after they have imbibed a considerable Quantity of Water.

The Dissolution of *Spouts*, he ascribes to the great Quantity of Water they have glutted; which by its Weight impeding their Motion, whereon their Force, and even Existence, depends, they break and let go their Contents; which used to prove fatal to whatever is found underneath.

A notable Instance hereof, we have in the *Philosophical Transactions*, related by Dr. *Richardson*. A *Spout* in 1718, breaking on *Emott-moor* nigh *Coln* in *Lancashire*, the Campaign was immediately overflow'd, a Brook, in a few Minutes, rose Six Feet perpendicularly high; and the Ground whereon the *Spout* fell, which was Sixty-six Feet over, was tore up to the very Rock, which was no less than Seven Feet deep; and a deep Gulf made for above half a Mile; the Earth being raised on either side in vast Heaps.

In *Pliny's* Time, the Seamen used to pour Vinegar into the Sea, to assuage and lay the *Spout*, when it approached them: Our Modern Seamen think to keep it off, by making a Noise with filing and scratching violently on the Deck; or, by discharging great Guns to disperse it.

SPRING, in Natural History, a Fountain or Source of Living Water arising out of the Ground. See WATER.

The Origin of *Springs* or Fountains, is a Thing much controverted among our latest Naturalists.

Messieurs *Mariotte* and *Perrault* ascribe it to Rains. Their Doctrine is, That the Rain-water penetrates the Earth till such time as it meets a Clayey Soil or Stratum; which proving a sufficient solid Bottom, to sustain and stop their Descent, they glide along it that way to which the Earth declines, till they meet with a Place or Aperture in the Surface of the Earth, through which they may escape, and make the Head of a River. See STRATUM.

Now, that the Rain is sufficient for this Effect, appears

hence; that upon calculating the Quantity of Rain and Snow that falls yearly on the Tract of Ground, that is to furnish, for Instance, the Water of the *Seine*; 'tis found, that River does not take up above one sixth Part of it. *Springs* ordinarily arise at the Feet of Mountains: The Reason, say they, is, That Mountains collect the most Waters, and give them the greatest Descent towards the same Side: and that if we sometimes see *Springs* on high Grounds, and even on the Tops of Mountains; they must be brought from other remoter Places, considerably higher, along on Beds of Clay or clammy Ground, as in their natural Channels. If then, there happen to be a Valley between a Mountain, on whose Top is a *Spring*, and the Mountain that is to furnish it with Water, the *Spring* must be look'd on as a Water conducted from a Reservoir of a certain Height through a subterraneous Channel, to make a Jet of an equal or somewhat less Height. See RAIN.

This Theory M. de la Hire has taken under Examination, in its most essential Article, and that where the Authors seem to have been the least distrustful.

He has endeavour'd to find, by Experiment, whether Rain or Snow-water could penetrate the Earth as low as the clayey Stratum: The Result of his Inquiry, is, That they don't penetrate even 16 Inches deep, in a Quantity sufficient to form the smallest Collection of Water on a Solid Bottom. Nay, this he found when the Earth he made his Experiment on, was quite naked of all Herbs and Plants; but as soon as ever any of these came up, and were grown to any Bulk, so far was the Rain that fell, from being able to gather itself at the Depth of 16 Inches, that it was not sufficient even to feed the Plants, but there was a Necessity for watering them. For the Quantity of Water expended in the ordinary Support of Plants, see VEGETATION.

Dr. *Halley* refers the Origin of *Springs* merely to Vapours, rais'd by the Heat of the Sun, or of Subterraneous Fires from the Sea, Lakes, Rivers, &c. These Vapours, thus rais'd, he supposes, are by the Winds, carried over the Low-lands, to the several Mountains and Ridges of Mountains, and are there compell'd, by the Stream of Air, to mount with it to the Tops, where the Atmosphere being very rare and cold, retains but a small Part of them; the rest is condensed into Dew, which presently precipitates, gleeting down by the Crannies of the Stones, and part of it entering the Caverns of the Hills, is gather'd therein, as in an Alembic, which being once full, the Overplus must run down at the lowest Part of the Reservoir, and breaking out by the Side of the Hills, forms single *Springs*, many of which running down by the Vallies or Guts between the Ridges of the Hills, and at length uniting, form *Rivulets*, and many of these meeting in a common Channel, form Rivers. See RIVER.

Now, to shew that Vapour is a sufficient Fund, to supply all our *Springs*, Rivers, &c. The same excellent Author makes an Estimate of the Quantity of Vapour raised from the Sun, by the Action of the Sun: The Result of an Experiment he made to that Purpose was, That the Thickness of Water evaporated from the Surface of the Sea, in the Space of Two Hours, in Summer-time, is one Fifty-third Part of an Inch; which for the Ease of Calculation, being only supposed to be  $\frac{1}{50}$ ; the Quantity of  $\frac{1}{50}$  of an Inch will be found exhaled in 12 Hours. On this Principle, every Mile square will be found to evaporate, in 12 Hours, 6914 Tuns of Water, and every square Degree, Thirty-three Millions of Tuns. The Area of the *Mediterranean* then being estimated at 160 Square Degrees, it will lose in Vapour, in a Summer's Day 5280 Millions of Tuns.

Yet the Quantity of Vapour thus raised, great as it is, is only the Remains of what is rais'd another Way, viz. by the Winds, which sometimes sweep the Water off, faster than the Sun takes it up.

To find now, the Quantity of Water the *Mediterranean* receives, allow the most considerable Rivers it receives, viz. the *Iberus*, *Rhone*, *Tyber*, *Po*, *Danube*, *Neister*, *Boristhenes*, *Tanais* and the *Nile*, each to furnish Ten Times as much Water as the *Thames*; not that any of them are, in reality, so great, but so to allow for the lesser *Rivulets*: But the *Thames* is found, by Calculation, to evacuate 20300000 Tuns of Water daily. All the Nine Rivers abovementioned, therefore, will only evacuate 1827 Millions of Tuns in a Day, which is little more than a Third of what is rais'd in that Time in Vapour. See VAPOUR.

After all that can be said in Favour, both of Rain and Vapour, it must be owned, they are both still press'd with great Difficulties; and there is still Room to look out for a better Theory.

The Perennity of divers *Springs*, always yielding the same Quantity of Water, when the least Rain or Vapour is afforded, as well as when the greatest, is a strong Objection to both. Mr. *Derham* mentions one in his own Parish of *Upminster*, which he could never perceive by his Eye to be diminish'd in the greatest Droughts, even when all the Ponds in the Country, as well as an adjoining Brook, have been dry for several Months together; nor ever to be increased in the most rainy Seasons, excepting perhaps, for a few Hours, or at most



for a Day, from sudden and violent Rains. Had this *Spring* its Origin from Rain or Vapour, there would be found an Increase and Decrease of its Water, corresponding to those of its Causes; as we actually find in such temporary *Springs*, as have undoubtedly their Rise from Rain and Vapour: Add to this, another considerable Thing in this *Upminster Spring*, and Thousands of others, *viz.* That it breaks out of so inconsiderable a Hillock or Eminence, as can have no more Influence in the Condensation of the Vapours or stopping the Clouds, than the lower Lands about it have. The very highest Ground in the County, he finds is not above 133 Yards above the Level of the Sea; and what is such an inconsiderable Rise of Land, to a Perennial Condensation of Vapours, fit to maintain so inconsiderable a *Spring*? Or the high Lands of the whole County, to the maintaining all its Fountains and Rivulets?

Other Naturalists, therefore, have Recourse to the Sea, and derive the Origin of *Springs* immediately thence; but how the Sea-water should be rais'd up to the Surface of our Earth, and even to the Tops of the Mountains, is a Difficulty they can't agree upon.

Some fancy a kind of hollow, subterranean Rocks to receive the watery Vapours from the Bottom of the Earth, and to act the Part of Alembics, in condensing and converting them into Waters. Others, as *M. de la Hire, &c.* set aside the Necessity of Alembicks, and think it enough that there be large subterranean Reservoirs of Water at the Height of the Sea, whence the Warmth of the Bottom of the Earth, or even the central Fire (if there be such a Thing) may raise Vapours, which pervading not only the Intervals and Fissures of the Strata, but the Bodies of the Strata themselves, at length arrive near the Surface; where, being condensed by the Cold, they glide along on the first Bed of Clay they meet withal, till an Aperture in the Ground lets them out. *M. de la Hire* adds, That the Salts of Stones and Minerals may contribute to the detaining and fixing the Vapours, and the converting them into Water.

But we have a still more natural and easy Way of exhibiting the Rise of the Sea-water up into Mountains, &c. by putting a little Heap of Sand, Ashes, a Loaf of Bread, or the like, in a Basin of Water: In which Case, the Sand, &c. will represent the dry Land, or an Island; and the Basin of Water the Sea about it. Here, the Water in the Basin will rise to, or near, the Top of the Heap, in the same Manner, and from the same Principle, as the Water of the Sea, Lakes, &c. rise in the Hills. The Principle of Ascent in both, is, doubtless, the same with that of the Ascent of Liquids in Capillary Tubes, or between contiguous Planes, or in a Tube fill'd with Ashes; all which are now generally accounted for from the Doctrine of *Attraction*; see ASCENT, CAPILLARY, ATTRACTION, &c.

SPRING, in Cosmography, one of the Seasons of the Year; commencing, in the Northern Parts of the World, on the Day the Sun enters the First Degree of *Aries*, which is about the 10th Day of *March*, and ending when the Sun leaves *Gemini*. See SEASON.

Or, more strictly, and generally, the *Spring* begins on the Day, when the Distance of the Sun's Meridian Altitude from the Zenith, being on the Increasing Hand, is at a Medium between the greatest and least. The End of the *Spring* coincides with the Beginning of *Summer*. See SUMMER.

SPRING, in Physicks, a natural Faculty, or Endeavour, Bodies have of returning to their first State, after having been violently put out of the same, by compressing, bending them, or the like: This Faculty the Philosophers usually call the *Elastic Force*, or *Elasticity*. See ELASTIC.

Fleas only jump to those excessive Heights, by means of a *Springy* Membrane, easily visible by a Microscope, and whereof we have a curious Figure in *Dr. Hook's Micrography*. By the elastic Force of this *Spring*, they are enabled to leap 200 times the Height of their own Body. See FLEA.

Nature has provided for the regular sowing of the Seeds of several Kinds of Plants, by furnishing them with a *Spring*, which is wound sometimes round the Outside, and sometimes round the Inside of the Case wherein the Seeds are contained. This *Spring*, when stretch'd to a certain Pitch, by the full Growth and Maturity of the Seed, suddenly, either breaks in two, as when on the Outside, and tears the Case along with it; or else, by its vehement Effort to unbend itself, as when in the Inside, it bursts the Case into Two Parts like Cups, and disperses the Seed. See SEMINATION.

SPRING, is particularly used for a Piece of temper'd Steel put in several Machines to give them Motion, by the Endeavour it makes to unbend itself.

In Watches, 'tis a fine Piece of well-beaten Steel, coil'd up in a cylindrical Case or Frame, which by stretching itself forth, puts the Wheels and the whole Movement in Motion. See WATCH.

The *Spring* of a Lock, Pistol or the like, is a Piece of Steel violently bent, which beats back the Bolt, or strikes down the Cock, when set at Liberty. See LOCK.

SPRING of the Air, or its Elastic Force. See AIR and ELASTICITY.

SPRING a Mast; so the Sea-men call it, when a Mast is crack'd, but not quite broken in any Part.

SPRING-Tide, is the increasing of a Tide after a dead Neap. See TIDE.

The *Spring-Tides* happen about Three Days before the Full or Change of the Moon; but the Top or Highest of the *Spring-Tides*, is three Days after the Full or Change: then the Water runs highest with the Flood, and lowest with the Ebb, and the *Tides* run more strong and swift, than in the Neaps. See NEAP, FLUX, EBB, &c.

SPRINGE, a Snare or Device made of twisted Wire, to catch Birds or small Beasts.

SPRINGY, or elastic Bodies, are such, as having had their Figure changed by the Stroke or Percussion of another Body, can recover again their former Figure; which Bodies, that are not Elastic, will not do. Thus if a Piece of Steel be bent any way, it will recover again its former Straitness; but a Piece of Lead will stand bent in any Form. See ELASTIC Bodies.

SPUNGE or SPONGE, a kind of Sea-Fungus or Mushroom found adhering to Rocks, Shells, &c. on the Sea-shore. See MUSHROOM.

The Ancients distinguish'd two Kinds, *Male* and *Female*: But the Moderns make only one Kind; which, however, they distinguish with regard to its Texture, into *Coarse* and *Fine*.

The Naturalists have been embarrass'd in all Ages, whether to range *Sponges* in the Animal, Mineral or Vegetable Family. Some wou'd have it a Concretion form'd of the Sea-mud; and others an Animal, from its Motion of Contraction and Dilatation.

The greatest Part of our *Sponges* are brought from the *Mediterranean*; though there are considerable Quantities from *Vicaria*, an Island on the Coast of *Asia*.

The Diving or Fishing for *Sponges* is there reckoned the top Qualification in the Youth, who all get the better Wives as they excel more herein. To this Proof, the Maids refer the Preference among several Suitors; placing themselves on the Brink of the Sea, to be Witnesses of the Address of each; and giving themselves as a Prize to the Conqueror. See DIVING.

The fine or small *Sponges* are the most esteem'd; and usually come to us from *Constantinople*. Their Goodness consists in their being very white, light, and the Holes small and close; the larger and coarser come from the Coasts of *Barbary*, particularly *Tunis* and *Algier*.

The *Sponge* is a very useful Matter in the Arts. In Physic it serves to foment Parts inflamed. By Analysis, it yields a deal of volatile, sharp Salts, like other Sea-Plants. Taken inwardly it choaks; and is for that Reason cut small, and fried or dipt in Honey, and given to Quadrupeds to kill them, which it seldom fails to do, by swelling and preventing the Passage of the Food into the Intestines.

In *Sponges* are found a kind of Stones call'd *Cysthoelithes*, held good for the Worms in young Children, and taken in Powder.

Pyrotechnical SPUNGES, are made of the large Mushrooms or fungous Excrescences growing on old Oaks, Ashes, Firs, &c. which being boil'd in common Water, then dried and well beaten, are put in a strong Lye, prepared with Salt-peter, and again dried in an Oven.

These make the black Match or Tinder brought from *Germany*, used to receive and sustain the Fire struck from a Flint and Steel, &c.

SPUNGE, in Gunnery, a Rammer or Staff, with a Piece of Sheep or Lamb-skin about its End; to serve for scouring of great Guns when discharged, e'er they be charged with fresh Powder. See CHARGE.

SPUNGING, in Gunnery, the clearing a Gun's Inside with a *Sponge*, in order to prevent any Parts of Fire from remaining in her; which would endanger the Life of him, who should load her again. See GUN.

SPUN-Tarn, among Sailors, the Tarn of untwisted Ropes, whose Ends are scraped and beaten thin, in order to be let into the Ends of other Ropes, and so made long as Occasion shall require.

SPUR, was anciently a Piece of the Armour of a Cavalier, fasten'd to the Talar, that is, the hind of that Part of the compleat Armour which cover'd the Legs and Feet.

At present, the *Spur* is a Piece of Iron or other Metal, consisting of two Branches encompassing the Cavalier's Heel, and a Rowel in form of a Star, advancing out behind to prick the Horse.

*Louis le Debonnaire* forbade Ecclesiasticks the profane Fashion of wearing *Spurs*.

Anciently the Difference between the Knight and Esquire was, that the Knight wore gilt *Spurs*, whence the Appellation of *Eques Auratus*, and the Squire silver'd ones. See KNIGHT and ESQUIRE.

The Word is derived from the German, *Sporren* or *Sperren*:  
SPURIOUS.



**SPURIOUS Diseases**, are such as in some Symptoms cannot be brought under any distinct Head, and therefore are call'd by the Name of some, with which they most agree; and hence, also, they are often denominated Bastards, *Norbi*; as a *spurious* or *bastard Pleurisy*, a *bastard Quinsy*, and the like. See **PLEURISY**, &c.

**SPURIOUS Flesh**, among Anatomists, that which is of a Constitution quite different from all the rest; as the *Flesh* of the Lips, Gums, Glans, &c. See **FLESH**; **GUMS**, **GLANS**, &c.

**SPUR-Way**, a Horse-way through a Man's Grounds, through which one may ride, by Right of Custom.

**SPUTUM**, in Medicine, &c. the Spittle, or Excrement voided at the Mouth. See **SALIVA**.

An Examen of the *Sputum*, is of great Consequence in Phthysical Cases; and *Bennet*, in his *Theatrum Tabidarum*, applies himself in a particular Manner thereto. See **PHTHISIS**.

The *Sputum Sanguinis*, is a very dangerous Symptom in that Disease.

**SPY**, a Person paid to watch the Actions, Motions, &c. of another; particularly as to what passes in an Army.

When a *Spy* is found in a Camp, he is immediately hanged. *Wicquefort* says, an Ambassador is an Honourable *Spy*, under Protection of the Law of Nations. See **EMBASSADOR**.

**SQUADRON of Ships**, a Division, or Part, of a Fleet, commanded by a Vice or Rear Admiral, or some other Commander or Commadore. See **FLEET**, **ADMIRAL**, &c.

The Number of Ships in the *Squadron* is not fix'd: A small Number of Vessels, if they be in a Body, and have the same Commander, may make a *Squadron*.

If there be a great Number, they are usually divided into Three *Squadrons*. And if the *Squadrons* be numerous, each *Squadron* is divided into Three Divisions.

The Word is form'd from the *Italian Squadrone* of the *Latin*, *Squadro*, used by Corruption for *Quadro*: In regard, at first, the *Squadrons* were always Square, and called also by the *Latins*, *Agmina Quadrata*.

**SQUADRON** is also a Body of Horse, whose Number is not fixed; but is usually from One hundred to Two hundred Men, according to the General's Pleasure, the Strength of the Army, or as Occasion serves.

It usually consists of Three Troops, each of Fifty Men, and it never exceeds Two hundred; because a greater Number can't be advantageously posted, nor have Room to act in narrow Grounds, Woods, Marshes, Defiles, &c. See **TROOP**.

The Eldest Troop takes the Right of the *Squadron*, and the Second the Left, the Youngest being in the Centre.

A *Squadron* is always drawn up Three deep, or in Three Ranks, with the Length of an Horse between each Rank.

The Standard is always in the Centre of the first Rank.

**SQUAMMOUS**, in Anatomy, an Epithet given to the Spurious or false Sutures of the Skull; because composed of *Squamme* or Scales like those of Fishes, or like Tiles laid so as to reach over one another. See **SUTURE**.

The *Suture Squamosa*, are also call'd *Temporales*, from their terminating the Temples, or *Ossa Temporis*.

**SQUARE**, in Geometry, a quadrilateral Figure, both Equilateral and Equiangular. See **FIGURE**, **QUADRILATERAL**, **EQUIANGULAR**, &c.

To find the Area of a Square: Seek the Length of one Side; multiply this by itself; the Product is the Area of the Square.

Thus, if the Length of a Side be 345, the Area will be 119025: And if the Side of a Square be 10; the Area will be 100.

Since, then, a Decempeda contains 10 Feet, a Foot 10 Digits, &c. a square Decempeda contains 100 square Feet, a square Foot 100 square Digits, &c.

The Properties of a Square, are, that its Angles are all Right, and, consequently, its Sides Perpendicular; that it is divided into two equal Parts, by a Diagonal; that the Diagonal of a Square, is incommensurable to the Side. See **DIAGONAL**, &c.

For the Ratio of Squares; they are to each other in a duplicate Ratio of their Sides. E. gr. a Square whose Side is double another, is quadruple the Square of the single Side.

SQUARE of the Cube } See POWER.  
SQUARE of the Surdsolid }

**Square Number**, the Product of a Number multiplied by itself: Thus 4, the Product of 2 multiplied by 2; or 16 the Product of 4 multiplied by 4, are Square Numbers. See **NUMBER**.

Such Number is called a *Square Number*, because it may be ranged into the Form of a Square, by making the Root, or Factor the Side of the Square. See **ROOT**.

The Difference of Two Square Numbers, whose Roots are not Unity, is an uneven Number, equal to double the Root of the less, increas'd by Unity.

Hence we have an easy Method of constructing Square Numbers for a Number of Roots proceeding in the natural Series;

the double of the Root of the Antecedent increas'd by Unity, being continually to be added to the preceding Square.

Thus, if  $n=1$ ;  $2n+1=3$ : If  $n=2$ ; then will  $2n+1=5$ : If  $n=3$ ; then will  $2n+1=7$ : If  $n=4$ ; then will  $2n+1=9$ , &c. Thus by a continual Addition of the uneven Numbers, arise the Square Numbers.

**Square Root**, a Number consider'd as the Root of a Second Power or Square Number; or a Number by whose Multiplication into itself, a Square Number is generated. See **ROOT**.

Thus the Number 2, being that by whose Multiplication into itself, the Square Number 4 is produced; is, in respect hereof, call'd a Square Root, or the Square Root of 4.

Since, as Unity is to the Square Root; so is the Root to the Square Number; the Root is a mean Proportional between Unity and the Square Number.

A Square Root consisting of 2 Parts, is call'd a *Binomial*; as  $20+4$ . See **BINOMIAL**.

If it consists of Three, a *Trinomial*, as  $6+2-1$ . See **TRINOMIAL**.

Now, every Square Number of a Binomial Root, is demonstrated to be compounded of the Square of the first Part, the Product of double the first into the second, and of the Square of the other Part.

To extract the Square Root out of any given Number; see **EXTRACTION of Roots**.

**Square**, is also an Instrument made of Wood or Metal, serving to describe and measure Right Angles withal; such is AEF, (Tab. Geometry Fig. 42.).

It consists of two Rules or Branches fasten'd perpendicularly at one of their Extremes. When the two Branches are moveable on a Joint, it is call'd a *Bevel*. See **BEVEL**.

To examine whether or no a Square be exact, describe a Semi-circle AEF, of any Length, at Pleasure; and therein, from each Extreme of the Diameter A and F, draw Right Lines to a Point taken at Pleasure in the Periphery, as E: To the Sides of the Angle AEF, apply the Square, so as its Vertex may fall on F: If this be possible, that Square is just.

**Geometrical Square**, a Compartment frequently added on the Face of the Quadrant, called also *Line of Shadows* and *Quadrat*: See **QUADRAT**.

**Magic Squares**. See **MAGIC Square**.

**Square Battle**, or *Battalion* of Men, is one that hath an equal Number of Men in Rank and File. See **BATTALION**.

To form any Number of Men into a Square Battle, as suppose 500, extract the nearest Square Root of 500, which is in Integers 22, and that will give the Number of Men for Rank and File. There will be a Remainder of 16 Men, who may be disposed of, as the Commander thinks best.

**Square Hollow**, or *hollow Square*, in the Military Art; is a Body of Foot drawn up with an empty Space in the Middle, for the Colours, Drums and Baggage; faced and covered by the Pikes every way, to keep off Horse.

**SQUARING**. See **QUADRATURE**.

**SQUILLITIC**. See **SCILLITIC**.

**SQUILLÆ**. See **SCILLÆ**.

**SQUINANCY** or *Esquinancy*, by the *Latins*, &c. call'd *Angina*, and by us, popularly *Quinsy*, a Disease which stops the Freedom of Respiration and Deglutition. See **RESPIRATION**.

The *Squinancy* consists in an Inflammation of the Throat; and particularly of the Muscles of the Larynx or Pharynx, which exactly closing the Chinks thereof, prevent the Air from passing in and out of the Trachea, and the Food from being swallowed and convey'd into the Stomach.

The *Squinancy* is divided into *true* and *spurious*; the *true Squinancy* is always accompanied with a Fever; the *bastard* or *spurious Squinancy* is free from it.

They are caused by a Defluxion of Blood, either pure or bilious, from the Branches of the Carotid Arteries; and there causing a Phlegmon, either a Simple or an Erysipetalous one. See **ANGINA**.

The Word is form'd from the *Greek σφυγγειν*, to *suffocate*.

The *Squinancy* is of all others the most dangerous, when the Tumour is neither perceivable on the inside nor the out. That appearing on the outside is the most curable. In violent *Squinancies*, recourse should be had to Laryngotomy or Bronchoromy, which though rarely practis'd, may yet be used with Safety. See **LARYNGOTOMY**, &c.

**SQUINTING**. See **STRABISMUS**.

**ST**, an indeclinable Term, chiefly used to command Silence. See **SILENCE**.

The *Romans* had these two Characters wrote over the Doors of their Eating Rooms, as who should say *Sed tace*, or *Silentium tene*.

*Porphyry* observes, the Ancients made a Point of Religion of it, not to speak a single Word in passing in or out of the Doors.

**STABLE-Stand**, in the Forest Law, is when a Person is found at his *Stand* in the Forest, with a Cross-Bow, or Long-Bow, ready to shoot at a Deer, or else standing close by a Tree with Grey-hounds ready to slip: It is one of the Four



Evidences or Presumptions, by which a Man is convicted of intending to steal the King's Deer; the other Three being Back-berond, Bloody-hand, and Dog-draw. See FOREST.

STACK of Wood, among Husbandmen, is a Pile of Wood three Foot long, as many broad, and twelve Foot high.

STACTE, in Pharmacy, a fatty Matter drawn from fresh Myrrh, pounded or press'd with a little Water. See MYRRH.

This Liquor is very Odoriferous, and held mighty precious; making, alone, the Perfume, called by *Dioscorides*, *Stacte*, and which smells finely, though very bitter to the Taste.

We have none of it now, but what is sophisticated; and what the Apothecaries call *Stacte*, is no more than liquid Storax. See STORAX.

STADHOUDER, STADTHOLDER, STADHOLDER, or STATHOLDER, a Governor or Lieutenant of a Province, in the *United Netherlands*; particularly that of *Holland*; where the Word is most used, by reason of the superior Importance of the Government of that Province.

The *Stadtholder*, i. e. the *Stadtholder* of *Holland*, is the first Member of the Republic: He is chief of all the Courts of Justice; and may preside therein when he pleases. All Sentences, Judgments, &c. are dispatch'd in his Name. When an Office becomes vacant in any of the Courts, the States propose three Persons to the *Stadtholder*, who is to chuse one of them. He can even pardon Criminals, which is a Right of Sovereignty; and has the Choice of Sheriffs, or chief Magistrates in each City; to which end the Council of the City present him two Persons, one of which he appoints.

In several Cities, he has the same Right, with regard to the Bourgher-maisters and Counsellors; as at *Rotterdam*, *Dort*, &c. He has also a Right to Casheer the Magistrates, and put others in their Room, when he finds it necessary for the public Good; upon giving a Reason for the same.

By Article VI. of the Union of *Utrecht*, the States constitute him Arbiter of all the Differences that may arise between the States of the several Provinces; or between the Cities and the Members of the States of the Province. To the Dignity of *Stadtholder*, is inseparably annex'd, that of Captain and Admiral General of the Province; in which Quality, he names all the Officers, and disposes of all the Military Charges. 'Tis he, takes care of the Execution of the Ordinances of the States; and his Authority gives him a Right to receive and hear Embassadors from foreign Princes, and even to send Embassadors on his own private Affairs.

The Office of *Stadtholder* is very Ancient: The Counts not being able to reside in *Holland*, appointed *Stadtholders* to command in their Absence, in the several Provinces; besides a Governor General of all the Seventeen Provinces of the *Netherlands*.

*William I.* Prince of *Orange*, was *Stadtholder* of *Holland* and *Zeeland*, at the Time when the *Dutch* shook off the *Spanish* Yoke; which enabled him to contribute greatly to that happy Event.

In 1567, the States thought fit to suppress the Office of *Stadtholder*, by Edict; and resolved it should never be confer'd on any Person for the future; but in 1672, *William III.* Prince of *Orange*, afterwards King of *England*, being elected Captain and Admiral General by the States; some Months afterwards, they revoked the Edict of Suppression in favour of that Prince, who was declared *Hereditary Stadtholder*; an Honour never confer'd before.

*Ménage* derives the Word from *Stat*, State, and *houder*, holding, q. d. Lieutenant of the States; but he is mistaken in the Etymology: The Word being compounded of *Stad* or *Stede*, Place, and *houder*, holding, in regard the Governor held the Place of the Counts, and represented them in their Absence.

STADIUM, an ancient *Greek* long Measure, containing 125 Geometrical Paces, or 625 Feet; corresponding to our Furlong. See FURLONG.

Eight of them make a Geometrical or *Italian* Mile; and 20, according to *M. Dacier*, a *French* League; according to others 24 make the League.

*Guillietiere* computes that the *Stadium* was only 600 *Athenian* Feet, which amount to 566 *French* Royal Feet, or 604 *English* Feet; so that the *Stadium* should only have been 113 Geometrical Paces.

It must be observed however, That the *Stadium* was different in different Times and Places. See MEASURE.

The Word is form'd from the *Greek*, *stade*, Station; and, 'tis said, on this Occasion, that *Hercules*, after running so far at one Breath, stood still.

The *Greeks* measured all their Distances by *Stadia*, which they call'd *stadia*.

STADIUM was also the Course or Career, wherein the *Greeks* run their Races. See GYMNASIUM.

*Pirruvius* describes it as an open Space 125 Paces long, terminated at the two Extremes with two Posts, called *Carcer* and *Mera*.

Along it was an Amphitheatre, where the Spectators were placed to see the *Athletæ* Exercise, Running, Wrestling, &c.

There were *Stada* likewise, covered over, and encompassed with Colonnades and Porticoes, serving for the same Exercises in ill Weather. Captive Children used to run the *Stadium*. Ablanc.

A more natural Derivation of the Word *Stadium*, from *stade*, or *Statio*, than that popular one mentioned in the last Article, is drawn from the *Athletæ* stopping and resting, when at the End of this Course: Whence the Name might be applied to the same Distance, measured in any other Place.

STAFF, an Instrument ordinarily used to rest on, in walking.

Cardinal *Bona* observes, in his Treatise of *Liturgica*, that anciently, those who used a *Staff* in the Church to lean on, were obliged to lay it by, and to stand alone, firm and upright, while the Gospel was a reading; to testify their respect, by their Posture, and to shew they were ready to obey *Jesus Christ*, and to go wheresoever he should command them.

The *Staff* is also frequently used, as a kind of natural Weapon, both of Offence and Defence. The *Lacedæmonians* never wore any Swords in Time of Peace; but contented themselves with a thick, crooked *Staff*, which was peculiar to them. Among the *Romans*, Mr. *St. Evremont* observes, Blows with a *Staff* were the gentlest Correction they gave their Slaves; inasmuch as they received them over their Cloaths.

Among the Masters of Honour and Arms, 'tis held a greater Affront to be beaten with a *Staff* than with a Sword; because the Sword is the Instrument of War, the *Staff* the Instrument of Outrage.

Blows with a *Staff* are very severely punished by the *French* Laws: By a Regulation of the Marshals of *France*, in 1653, for Reparations and Satisfaction of Honour, 'tis adjudged, That a Person who shall strike another with a *Staff*, shall be Imprison'd a whole Year; unless Six Months be moderated, upon paying 3000 Livres, applicable to the nearest Hospital: Beside which, the Offender is to ask Pardon of the Offended on his Knees, &c. ready to receive a like Number of Blows with a *Staff*; which on some Occasions one may oblige him to give; if he have too much Generosity, not to do it of himself. By another Regulation of the Marshals in 1679, he who strikes with a *Staff*, after receiving Blows with the Fist, in the Heat of a Fray, is condemn'd to Four Years Imprisonment; and to Four, if he even struck first with the Fist.

Pastoral STAFF } See { CROSIER.  
Augural STAFF } { LITUIS.  
Jacob's STAFF } { RADIUS Astronomicus.

STAFF, in Music, five Lines, on which, with the intermediate Spaces, the Notes of any Song or Piece of Music are mark'd. See MUSIC.

*Guido Arerin*, the great Author of the Modern Music, is said to be the first who introduced the *Staff*; marking his Notes, by setting Points (.) up and down them, to denote the Rise and Fall of the Voice; and each Line and Space he mark'd at the beginning of the *Staff* with *Gregory's* Seven Letters, *a, b, c, d, e, f, g*. See NOTE.

But others will have the Artifice of an older Date; and *Kircher* particularly affirms, That in the *Jesuits* Library at *Messina*, he found an old *Greek* MS. Book of Hymns, above 700 Years old; wherein some Hymns were written on a *Staff* of eight Lines, mark'd at the beginning with Eight *Greek* Letters. The Notes or Points were on the Lines, but no use made of the Spaces. See SCALE, GAMUT, SOLFING, &c.

STAFF, in Heraldry. See BATTOC.

STAFF, in Surveying, a kind of Stand, whereon to mount a Theodolite, Circumferentor, plain Table, or the like, for Use. It consists of Three Legs of Wood, joyned together at one End, whereon the Instrument is placed; and made pecked at the other, to enter the Ground. Its upper End is usually filled with a Ball and Socket. See BALL and SOCKET.

STAGE, in the Modern Drama, the Place of Action and Representation; included between the Pit and the Scenes.

The *Stage* answers to the *Proscenium* or *Pulpitum* of the ancient Theatre. See THEATRE, PULPITUM, PROSCENIUM.

LAWS of the STAGE, are the Rules and Decorums to be observed, with regard to the Oeconomy and Conduct of a Dramatic Performance to be exhibited on the Stage. These relate, principally, to the Unities, the Disposition of the Acts and Scenes, the Unravelling, &c. See UNITY, ACT, SCENE, CATASTROPHE, &c.

STAGGERS, or Stavers, in the Manage. See STAGGERS.  
STAIRS, in Building, the Steps whereby we ascend and descend, from one Story of a House to another. See STAIRS.



The Dimensions of *Stairs* are differently assigned by different Authors : In this however they agree, that they must not be more than Six, nor less than Four Inches high ; not more than 18, nor less than 12 Inches broad ; not more than 16, nor less than 6 Foot long, each Stair. But these Measures have only regard to fine Buildings ; ordinary Houses are excepted : Yet even in these, the *Stairs* are not to exceed Eight Inches in Height ; nor less than Nine Inches in Breadth ; nor Three in Length.

To reduce the Dimensions of *Stairs* to some natural, or at least geometrical Standard, *Vitruvius* borrows the Proportions of the Sides of a rectangle Triangle, which the ancient School express'd by the Numbers 3, 4 and 5. The first for the perpendicular Height ; the second for the horizontal Breadth ; and the third for the whole Slope or Inclination, from the Edge of one Stair to that of another.

But this Rule is set aside, and with good Reason, by the modern Builders. For, on this Principle, the lower the *Stairs*, the narrower they must be ; and *Stairs*, for Instance, Four Inches high (such as we find mentioned in ancient Architects) must be but  $5\frac{1}{2}$  Inches broad.

One Rule to be regarded in the making of *Stairs*, is, That they be laid according to the *Italian* Phrase, *Con un tantino da Scarpa*, i. e. somewhat sloping, or a little highest behind, that the Foot may, as it were, both ascend and descend at once ; which, though observed by few, is found a secret and delicate Deception of the Pains in mounting.

*Stair-Case*, an Ascent inclosed between Walls, or a Ballustrade, consisting of *Stairs* or Steps, with Landing-places and Rails ; serving to make a Communication between the several Stories of a House. See *STAIR*.

The Construction of a compleat *Stair-Case*, is one of the most curious Works in Architecture. The common Rules to be observed therein, are as follow ;

1<sup>o</sup> That it have a full, free Light, to prevent Accidents of slipping, falling, &c. 2<sup>o</sup> That the Space over Head be large and airy, which the *Italians* call *un bel Sfogolo*, good Ventilation, in regard a Man spends much Breath in mounting. 3<sup>o</sup> That the Half-paces, or Landing-places, be conveniently distributed for reposing in the Way. 4<sup>o</sup> That to prevent Rencounters, &c. the *Stair-Case* be not too narrow ; but this last is to be regulated by the Quality of the Building. 5<sup>o</sup> That Care be taken in placing the *Stair-Case*, so as the *Stairs* may be distributed, without Prejudice to the rest of the Building.

The Kinds of *Stair-Cases* are various : In some, the *Stairs* are straight, others winding ; in others both Ways.

Again, of straight *Stairs*, called also *Flyers*, some fly directly forwards, others are Square, others Triangular, others call'd *French Flights*. Of winding *Stairs*, call'd also spiral or corkscrew *Stairs*, some are Square, some Circular, or some Elliptical.

And these again, are various ; some winding round a solid and others an open Newel.

Lastly, of mix'd *Stairs*, some are call'd *Dog-leg'd* : Others both wind about a solid Newel, and fly about a square, open Newel.

*Stair-Cases* are of that Importance in Building, that we can't excuse the not giving a more particular Account of each kind.

Straight *STAIRS*, then, are such as always fly, that is, proceed in a Right Line, and never wind, whence their Denomination. See *FLYERS*.

Of these there are several Kinds ; as ——— *Direct Flyers* or *Plain Flyers*, which proceed directly from one Floor to another, without turning either to the Right or Left ; seldom used, except for Garret or Cellar *Stairs*. ——— *Square Flyers*, which fly round the Sides of a Square Newel, either solid or open ; having at every Corner of the Newel, a square, half Step, taking up  $\frac{1}{4}$  of a Circle. So that they fly from one half Step to another, and the Length of the *Stairs* is perpendicular to the Side of the Newel. ——— *Triangular Flyers*, which fly round by the Sides of a triangular Newel, either solid or open, having at each Corner of the Newel a Trapezial Half Step, taking up  $\frac{2}{3}$  of a Circle : So they fly from one Half Step to another ; and their Length is Perpendicular to the Side of the Newel. ——— *French Flyers*, which fly, first directly forwards, till they come within the Length of a Stair of the Wall ; and then have a square half Pace, from which you immediately ascend to another half Pace, from which the *Stairs* fly directly back again, parallel to their first Flight.

*Winding STAIRS*, are such as always wind, and never fly : Of these there is great Variety ; as, ——— *Circular winding Stairs*, whereof there are four Kinds, viz. such as wind about a solid Newel, the fore Edge of each being in a Right Line, pointing to the Centre of the Newel ; commonly used in Church Steeples and great old Houses. Such as wind round an open Newel, the Fore-side of each being in a right Line, pointing to the Centre of the Newel, as those in the Monument, London. Such as wind round a solid Newel,

only the Fore-side of each, an Arch of a Circle, either concave or convex, pointing near to the Circumference of the Newel. And such as resemble the last, in all other respects, save that they have an open Newel. Any of these winding *Stairs* take up less Room than any other Kind. In *Stairs* that wind round a solid Newel, Architects make the Diameter of the Newel either  $\frac{1}{2}$  or  $\frac{3}{4}$ ,  $\frac{1}{3}$  or  $\frac{2}{3}$  of that of the *Stair-case*, according as that is in Bigness. If very small, the Newel is but  $\frac{1}{2}$ , and if large  $\frac{2}{3}$ , &c.

In *Stairs* that wind round an open Newel, *Palladio* orders the Newel to be  $\frac{1}{2}$  the Diameter of the *Stair-case* ; though there does not appear any Reason why the Newel here should not be proportion'd to the *Stair-case*, as in the former. As to the Number of *Stairs* in each Revolution ; *Palladio* orders, that in a *Stair-case* of 6 or 7 Foot Diameter, the *Stairs* in each Revolution be 12 ; if the Diameter be 8, the *Stairs* to be 16 ; if 9 or 10, the *Stairs* to be 20 ; and if 18, to be 24. ——— *Elliptical winding Stairs*, whereof there are two Kinds ; the one winding round a Solid, the other round an open Newel. They are much of the same Nature as circular *Stairs*, excepting that in the one, the Newel is a Circle, and in the other an Ellipsis.

*Square winding Stairs*, are such as wind round a square Newel, either Solid or open ; the Fore-side of each Stair being a right Line, pointing to the Centre of the Newel. ——— *Triangular winding Stairs*, are such as wind round a triangular Newel ; the Fore-side of each being a right Line, pointing to the Centre of the Newel. ——— *Columnated winding Stairs* : *Palladio* mentions a *Stair-case* in *Pompey's* Portico at Rome, set on Columns, so, as that the Light they received from above, might distribute itself to all Parts alike. ——— *Double winding Stairs*, *Scamozzi* mentions a *Stair-case* of this Form, made by *Pietro del Bergho*, and *Jean Coffin*, at *Sciamburg* in France, in the King's Palace. They are so contrived, as that two Persons, the one ascending and the other descending, shall never meet. Dr *Grew* describes a Model of this kind of *Stair-case*, kept in the Museum of the Royal Society. The Foot of one of the *Stair-cases*, he says, is opposite to that of the other, and both make a parallel Ascent, and within the same Cylinder. The Newel in the Middle is hollow, and built with long Apertures, to convey Light from Candles placed at the Bottom and on the Sides of the Newel, into both Cases. ——— *Quadruple winding Stairs*, *Palladio* mentions a *Stair-case* of this Form, in the Castle of *Chambor* near *Bloys*. It consists of four *Stair-cases*, carried up together, having each its several Entrance, and going up one over another, in such Manner, as that being in the middle of the Building, the Four serve for four Apartments ; so that the People of the one need not go up and down the *Stairs* of the other ; yet being open in the Middle, they all see each other pass.

*Mixt STAIRS*, are such as partly fly, and partly wind ; whence some call them *Flyers* and *Winders*. Of these there are several Kinds, as, ——— *Dog-leg'd Stairs*, which first fly directly forwards, then wind a Semi-circle, and then fly directly backwards, parallel to that. ——— *Square Flyers and Winders*, have a square Newel, either Solid or open, and fly by the Sides of the Newel, winding a Quadrant of a Circle at each Corner. ——— *Solid and open Newel'd Flyers and Winders*, are of two Kinds ; the one winds a Quadrant of a Circle about a Solid Newel, then flies by the Side of a square open Newel ; then winds again, by the Side of a solid Newel, then flies again, and so alternately. The other flies first, then winds, and then flies again, alternately.

*STALACTITÆ*, or *STAGONITÆ*, in natural History, a sort of stony, sparry licles, which hang down from the Tops or Arches of Crotto's, Caves or subterranean Caverns ; and from the Roof of the Buildings, and Capitals of the Pillars of such Places, as are built over *Thermæ* or Hot Springs, &c. See *STONE* and *SPAR*.

Of this Kind, are the *Sal Alumen*, and *Vitriolum Stalacticum* ; the *Minera Ferri-stalactica*, the *Vitriolum Capillare*, the *Alumen Capillare*, &c.

The *Stalactite*, which incrustate or line the Tops and Sides of Caves, &c. are manifestly form'd of Exsudations or Extillations of petrifying Juices out of the neighbouring rocky Grounds. Those in the Cave on the Top of *Breton* Hill, Mr. *Derham* fancies, might be form'd by the Rains soaking through, and carrying with it Impregnations from the Stones ; the Hill, there, being all rocky.

*STALE*, the Urine of Cattle. — A *Stale* is also a living Fowl, put in any Place to allure other Fowl, where they may be taken ; For want of these, a Lark or any other Bird shot, his Entrails taken out, and dried in an Oven, in his Feathers, with a Stick thrust through to keep him in a convenient Posture, may serve as well as a live one.

*STALK*, in Botany. See *STEM*.

The *Stalk* is distinguish'd into several Kinds, viz. the *Naked Stalk* ; which has no Leaves on : *Crested Stalk*, that has Furrows or Ridges : *Winged Stalk*, which has Leaves on both Sides, *Striped Stalk*, which is of two or more Colours, &c.

*STALKING*,



**STALKING**, a Term of considerable Import in Fowling; applied to a kind of Screen or Device to hide the Fowler, and amuse the Game, while he gets within Shot.

Of such Devices there are several Kinds, viz. — A *Stalking Hedge*, which is an artificial Hedge, two or three Yards long, and a Yard and half high, made with small Wands, to be light and portable, yet bush'd out like a real Hedge, with Stakes to support it, while the Fowler takes his Aim.

*Stalking Horse*, is an old Jade train'd up for the Purpose, which will gently walk up and down as you would have him, in Water, &c. beneath whose Fore-shoulder, the Sportsman shelters himself and Gun. When thus got within Shot, he takes Aim from before the Fore-part of the Horse; which is much better than shooting under his Belly.

To supply the Defect of a real *Stalking Horse*, an Artificial one is frequently made, of old Canvas, shaped in form of a Horse, with his Head bent down, as if grazing; stuff'd with any light Matter, and painted. In the Middle it is fix'd to a Staff shod at the Foot, to stick into the Ground while Aim is taken.

For Change, when the Fowls begin to be used to the *Stalking Horse*, and to know it, some *Stalk* with an Ox, Cow, Deer or the like. Others use a *Stalking Tree*, and others a *Stalking Bush*.

**STAMINA**, in the Animal Body, are those simple, original Parts, which existed first in the Embryo, or even in the Seed; and by whose Distinction, Augmentation and Accretion, by additional Juices, the human Body, at its utmost Bulk is supposed to be form'd. See EMBRYO, BODY, &c.

All that is essential to the Animal, are the *Stamina*, which exist, *in ovo*; the rest being foreign, additional and even accidental.

The *Stamina* seem to coincide with the *Solids*, which are surprizingly small in Quantity. See SOLID.

The Word is *Latin*, and signifies *Threads*.

**STAMINA**, in Botany, those fine Threads or Capillaments growing up within the Flowers of Tulips, Lillies and most other Flowers, around the Style or Pistil. See FLOWER and PISTIL.

On the Tops of the *Stamina*, grow those little Capsulæ or Knots, call'd *Apices*, which M. *Tournefort* makes essential to the *Stamina*; whence M. *Reaumur*, who assures us in the Memoirs of the *French Academy*, that he could never discover any *Apices* on the Threads of the *Fucus Marinus*, refuses to call them *Stamina*; though he adds, one may suppose that the *Apices* fall as soon as the Threads or *Stamina* begin to be unfolded. See APICES.

In some tubular Flowers, as the *Narcissus*, *Digitalis*, &c. M. *Geoffroy* observes the *Stamina* are exceedingly short; and in some Flowers there are no *Stamina* at all, as in the long *Aristolochia*, wherein the *Apices* are immediately fasten'd on the Capsula, which incloses the Fruit. In some other Flowers, as those of Thistles, Lettice, Chicory, &c. the *Apices* are inclosed in the *Stamina*; several of which uniting, form a little Tube in Manner of a Scabbard, in the Inside whereof are the *Apices*, furnished with their Farina: The rest of the Cavity being taken up by the Pistil, which is a little Thread placed on the Embryo of the Seed.

M. *Tournefort* takes the Use of the *Stamina* to be, as it were, so many excretory Canals, for discharging the growing Embryo of its redundant Juices; and of these Excrements of the Fruit, he takes that *Farina* or Dust, found in the *Apices*, to be form'd. See FARINA.

But M. *Geoffroy*, Mr. *Bradley*, and other late Writers on Plants, as well as some former, assign the *Stamina* a nobler Use.

These Authors, explaining the Generation of Plants, in a Manner, analogous to that of Animals, maintain the Use of the *Stamina* to be to secrete, in their fine capillary Canals, a Juice, which being collected, harden'd and form'd into a Farina or Dust, in the Tips or *Apices*, is thence, when the Plant arrives at Maturity, discharged, by the bursting of the *Apices*, upon the Top of the Pistil; whence is a Passage for it to descend into the *Uterus*, where being received, it impregnates and fecundifies the Plant.

On this Principle, it may be said, that the same Flower contains both Sexes, which contribute each their Part to the Generation: That the *Stamina* are the Male-part; and the *Farina*, which is always found of an oily, glutinous Nature, the seminal Liquor; and that the Pistil is the Female Part, which conducts the Semen to the *Ova* or Embryo's. See GENERATION of Plants.

**STAMINEOUS Flowers**, among Botanists, are such as are so far imperfect, as to want those colour'd Leaves, we call *Petals*; and which only consist of the *Stylus* and the *Stamina*. See FLOWER.

Such Plants as bear these *Stamineous Flowers*, Mr. *Ray* makes to constitute a large Genus of Plants, which he calls *Herbe flore imperfecto, five apetalo, Stamineove*. And these he divides into such as,

1. Have their Fruit or Seed totally divided from the Flower; which are such Plants as are said to be of

different Sexes: The Reason of which is, that from the same Seed, some Plants shall arise with Flowers, and no Fruit; and others, with Fruit, and no Flowers: As Hops, Hemp, String-nettles, Spinach, Mercurialis and Phyllon.

2. Such as have their Fruit only a little disjoined from their Flowers; as the *Ambrosia Bardana Minor*, *Rutinus*, and the *Heliotropium Tricoccon*.

3. Such as have their Fruit immediately contiguous, or adhering to their Flower: And the Seed of these is either, 1. Triangular; and of this Sort, some are lucid and shining, as the *Lapathum*, *Rhabarbarum*, and *Bistorta*, to which also may be added the *Perficaria*: Others are rough and not shining, as the *Helleborus Albus*, *Fegopyrum*, *Convolvulus Niger*, and the *Polygonum*. 2. Such as have a roundish Seed, a little flattened or compressed, or of any other Figure but the former Triquetrous or Triangular one; and these have their Flower, or the Calyx of the Flower, adhering to the Bottom or Basis of the Seed or Fruit; as the *Potamogeton*, *Blitum Sylvestre*, *Parietaria*, *Atriplex*, *Blitum Sativum*, *Amuranthes*, *Holocericus*, and the *Saxifraga Aurea*. 3. Such whose Flowers adhere to the Top of the Seed; as the *Beta*, *Asarum*, *Archimilla*. And to these kind of Plants, Mr. *Ray* reduces also the *Kaligeniculatum*, *Sedum Fruticolum*, the *Scoparia* or *Belvidere* of the *Italians*.

**STAMP**. See PRINT.

**STAMPING-Mill**, or *Knocking-Mill*, an Engine used in the Tin-works, to bruise the Ore small. See TIN.

**STANCHEONS**, in Building. See PUNCHINS.

**STANDARD**, in War, a Banner or Flag, bore as a Signal for the joyning together of the several Troops belonging to the same Body. See BANNER.

The *Standard* is used for any Ensign of Horse; but more usually for that of the General. See FLAG and ENSIGN.

The ancient Kings of *France* bore St. *Martin's* Hood for their *Standard*. The *Turks* preserve a *Green Standard* bore by *Mahomet*, with a word of Devotion; as believing it to have been brought down by the Angel *Gabriel*. Every time 'tis display'd, all who profess the *Mahometan Faith*, are obliged to take Arms; those who refuse, are to be deem'd as Infidels. *Du Cange* derives the Word from *Standardum* or *Stantarum*, *Standardum* or *Standale*, Words used in the corrupt *Latin*, to signify the principal *Standard* of an Army. *Menage* derives it from the *German*, *Stander*, or the *English*, *Stand*.

**STANDARD**, in Commerce, the Original of a Weight, Measure or Coin, committed to the keeping of the Magistrate, or deposited in some publick Place, to regulate, adjust, and try the Weights used by particular Persons in Traffick. See MEASURE, WEIGHT, &c.

The Justness of Weights and Measures, is of that Consequence to the Security and good Order of Trade, that there is no civiliz'd Nation but makes it a Part of their Policy to preserve the Equality thereof by means of *Standards*. The *Romans* and *Jews* even seem to have affix'd a kind of religious Worship to these *Standards*, by laying them up in their Temples, as it were under the Eye of their Deities.

The *Standards* of Weights and Measures in *England*, are appointed by *Magna Charta*, to be kept in the *Exchequer*, by a special Officer, called the *Clerk* or *Comptroller of the Market*.

For Coins; the *Standard* of Gold Coin is 22 Carrats of fine Gold and 2 Carrats of Alloy in the Pound weight Troy; and the *French*, *Spanish* and *Flemish* Gold, are nearly of the same Fineness. The Pound Weight is cut into Forty-four Parts and a Half, each current for 21 Shillings. See GUINEA.

The *Standard* of Silver is 11 Ounces and two Penny-weight of Silver, and 18 Penny-weight of Alloy of Copper. Whether Gold or Silver be above or below *Standard*, is found by assaying. See ASSAY.

**STANDARDS**, or *Standils*, in Husbandry, are Trees, reserved at the felling of Woods, for Growth for Timber.

**STANNARIES**, are the Mines and Works, where Tin is dug and purified; as in *Cornwall*, and elsewhere. See TIN.

There are four Courts of the *Stannaries* in *Devonshire*, and as many in *Cornwall*; and there are several Laws about, and Liberties granted to these Courts in several Acts of Parliament, as in the Time of *Edward I.* and as abridged by *Edward III.* and in 17 Car. I. c. 15.

**STANZA**, in Poetry, a certain regulated Number of grave Verses, containing some perfect Sense, terminated with a Rest.

The Word is *Italian*, and literally signifies a *Stand* or *Station*, because of the Pause to be made at the end of each *Stanza* or complete Sense.

What the *Couplet* is in Songs, and the *Strophe* in Odes, the *Stanza* is in the greater and graver Pieces, as Epic Poems, &c. See COUPLET and STROPHES.

Indeed the *Italians* scarce write any Poems, but they divide them into *Stanzas*. There are *Stanzas* of 4, 6, 8, 10, 12 Verses, and sometimes of an uneven Number of Verses.



as 5, 7, &c. but these last are somewhat more difficult to execute, by reason of the three Verses to one Rhime.

The French lay it down as a Rule, That if the first Stanza begin with a Masculine or a Feminine Verse, the Second is to begin and end with the same. Every Stanza ought not only to contain a perfect Sense, but to be terminated with some lively and ingenious Thought, or some just and pertinent Reflexion.

Stanzas were first introduced from the Italian into the French Poetry, about the Year 1580, and thence transfer'd into the English.

The Use of Stanza's in Tragedy or Comedy, is condemn'd by all the best Criticks: For though we speak Verse on the Stage, 'tis still presumed we are speaking Prose. Stanza's shew a kind of Ingenuity, on the Part of the Poet, which has nothing of Nature in it on the Part of the Actor. Add to this, That Stanza's are not fit to express every thing. Wrath, Threatening, &c. fit very ill on a regular Stanza: Though Irresolution, Reveries, and every Thing that leads the Actor to think on what he is to resolve, agrees well enough with the unequal Cadence of the Stanza.

STAPES, in Anatomy, a little Bone situate in a Cavity of the *Fenestra ovalis*; thus call'd from its resembling a *Stirrop*. See EAR.

The *Stapes*, is one of the Four little Bones fastened to the Tympanum of the Ear; first discovered and published, as *Fallopian* tells us, by *John Philab Ingrassia*, a Physician of Sicily. Its Use is in stretching or relaxing the *Membrana tympani*. See TYMPANUM; see also HEARING and EAR.

STAPLE, primarily, signifies a publick Place or Market, whither Merchants, &c. are obliged to bring their Commodities to be bought by the People; such as the *Greve*, or rather the *Places* along the *Seine*, for the Wines and Corns at *Paris*; whither the Merchants of other Parts are obliged to bring those Commodities.

*Munge* derives the Word from *Stapulus*, which is found in the Ripuary Laws, to signify a Place where Justice is administered. Others derive it from the German, *Stapel*, or rather *Stapula*, which *Boxbornius* derives further, from the German, *Stapelen*, to put in a Heap.

STAPLE also signifies a City or Town, where Merchants jointly agree to carry certain Commodities, as Wooll, Cloth, Lead, Tin, &c. in order to their being commodiously sold by the Great.

In England, *Staples* were settled and appointed, to be constantly kept at *York*, *Lincoln*, *Newcastle upon Tyne*, *Norwich*, *Westminster*, *Canterbury*, *Chichester*, *Winchester*, *Exeter* and *Bristol*; to which Places Merchants and Traders were to carry Goods to sell in those Parts.

The *Staple Commodities* of England, were chiefly Wooll, Leather, Cloth, Tin, Lead, &c. though by *Staple Goods*, is now generally meant, any proper saleable Commodities, not easily subject to perish. See WOOLL, &c.

The Principal *Staples* now existing, are *Amsterdam* for all Goods from the *East-Indies*, *Spain*, the *Mediterranean*, and the *Baltick*: *Flushing* for those of the *West-Indies*; *Middleburg* for French Wines; *Dort* for *Rhenish* Wines and English Cloth; *Verre* in *Zeland* for Scotch Merchandizes, &c.

The *Staples* in the *Levant*, call'd by the French, *Eschelles* *Seales*, are such Cities where the English, French, Dutch, Italians, &c. have Consuls, Factors and Magazines; and whither they send Vessels regularly each Year. The principal of these are *Smyna*, *Alexandretta*, *Aleppo*, *Seyda*, *Cyprus*, *Salice*, *Alexandria*, *Cairo*, *Tunis*, *Algiers*, *Tripoli*, the *Moraa*, *Canina* and the Islands of the *Archipelago*. See FACTORY.

STAR, in Astronomy, a general Name for all the heavenly Bodies. See HEAVENLY BODY.

The Stars are distinguish'd, from the Phenomena of their Motion, &c. into *Fix'd* and *Erratic*.

*Erratic* or *wandering* STARS, are those whose Distances and Places, with regard to each other, are continually changing. These are what we properly call *Planets*. See PLANET.

Though, to the same Class, may likewise be refer'd, what we popularly call *Blazing Stars* or *Comets*. See COMET.

*Fix'd* STARS, call'd also, by way of Eminence, simply, *Stars*, are those which continually keep the same Distance, with regard to each other.

#### Concerning the fix'd STARS.

The principal Points that have come under the Consideration of Astronomers, are their *Distance*, *Magnitude*, *Number*, *Nature* and *Motion*.

#### Distance of the fix'd STARS.

The *Fix'd Stars*, are Bodies exceedingly remote from us; so remote, that we have no Distances in the Planetary System to compare to them. See DISTANCE.

Their immense Distance is argued hence, That they have no sensible Parallax: that is, that the Diameter of the Earth's Orbit bears no sensible Proportion thereto; but they are seen the very same, in all the Points thereof. Mr. *Flamsteed*, indeed, seems to have discovered a small Parallax: *Sirius*, e. gr.

he finds to have a Parallax of 20 Seconds. Admitting this, we have Data enough to determine their Distance, a thing hitherto despair'd of.

For thus, the Sun's Parallax being had, and his mean Distance being 34377 Semi-diameters of the Earth, the Distance of *Sirius* from the Earth will be found to be 35477064 Semi-diameters of the Earth. See PARALLAX.

Mr. *Huygens* attempts the Distance of the Stars by another Method, viz. by making the Aperture of a Telescope so small, as that the Sun through it appears no bigger than *Sirius*. In this State he found the Sun's Diameter only  $\frac{1}{27664}$  of his Diameter when seen with the naked Eye. Were the Sun's Distance, then, 27664 times as great as it is, it would be seen of the same Diameter with *Sirius*; so that allowing *Sirius* to be equal in Magnitude with the Sun (which is a very reasonable Supposition) the Distance of *Sirius* from the Earth, will be found to be to that of the Sun from the Earth, as 27664 to 1. On which Principle, *Sirius* will be 951005328 Semi-diameters distant from the Earth.

If it be urged, that these Methods are too precarious, to conclude any thing from them, yet this we can demonstrate, that the Stars are remoter than *Saturn*; nay, that they are vastly more remote than *Saturn*, as *Saturn* has a great Parallax, and the Stars scarce any at all.

#### Magnitude of the fix'd STARS.

The Magnitudes of the *fix'd Stars*, appear to be very different; which Difference arises, not from any diversity in their real Magnitudes, but from their Distances, which are different. From this Difference, the Stars become distributed into Seven several Classes, call'd *Magnitudes*. See MAGNITUDE.

The first Class, or those of the first Magnitude, are those nearest us, and whose Diameters are, therefore, biggest. Next these, are those of the second Magnitude, and so on to the Sixth, which comprehends the smallest Stars visible to the naked Eye. All beyond, are called *Telescopic Stars*: Not that all the Stars of each Class appear jully of the same Magnitude; there is a great Latitude in this respect; and those of the first Magnitude, appear almost all different in Lustre and Size. Other Stars there are, of intermediate Magnitudes, which Astronomers cannot refer to this, rather than the next Class, and therefore place them between the Two.

*Procyon*, for Instance, which *Ptolemy* makes of the first Magnitude, and *Tycho* of the Second, Mr. *Flamsteed* lays down as between the First and Second.

Thus, instead of Six several Magnitudes, we have really Six times Six.

Some Authors lay it down, that the Stars of the first Magnitude, are seen under an Angle of at least a Minute; but the Earth's Orbit seen from the *fix'd Stars*, we have observed only subtends an Angle of 20 Seconds; and hence they conclude, That the Diameter of the Stars is vastly greater than that of the Earth's whole Orbit.

Now a Sphere, whose Semi-diameter only equals the Distance between the Sun and Earth, is Ten Millions of times greater than the Sun; consequently, the *fix'd Stars* must be much more than Ten Millions of times greater than the Sun.

But here is a Mistake; for the Diameters, even of the largest Star, viewed through a Telescope, which magnify, e. gr. 100 Times, subtend no sensible Angle at all, but are mere lucid Points.

The Stars are likewise distinguished, with regard to their Situation, into *Asterisms* or *Constellations*, which are nothing but Assemblages of several neighbouring Stars, consider'd as constituting some determinate Figure, as of an Animal, &c. and denominat'd therefrom: A Division as ancient as the Book of *Job*; wherein we find mention of *Orion* and the *Pleiades*, &c. See CONSTELLATION.

Beside the Stars thus distinguished into *Magnitudes* and *Constellations*, there are others not reduced to either. Those not reduced into Constellations, are called *Infirms*, or *inform'd Stars*; of which Kind, several so reputed by the Ancients, have been since form'd into New Constellations by the Modern Astronomers; as *Cor Caroli* by Dr. *Halley*, *Scutum Sobiesci*, by *Hewelius*, &c. See INFORMES.

Those not reduced to Classes or Magnitudes, are call'd *Nebulous Stars*, being such as only appear faintly, in Form of little lucid Nebulae or Clouds. See NEBULOUS.

#### Number of the STARS.

The Number of Stars is vastly great, almost infinite; yet have Astronomers long ago, ascertain'd the Number of those visible to the Eye; which are found vastly fewer than one would imagine. *Hipparchus*, 125 Years before the Incarnation, on occasion of a new Star then appearing, made a Catalogue of the Stars, i. e. an Enumeration thereof, with an exact Description of their Magnitudes, Situations, Longitude, Latitude, &c. that it might be known, if any the like Change should be made for the future in the Heavens. *Hipparchus*, made the Number of visible Stars 1022. These



were reduced into 48 Constellations, and he laid it down, that if there sometimes appeared more in Winter Nights, 'twas owing to a Deception of the Sense.

*Ptolemy* added Four Stars to *Hipparchus's* Catalogue, and made the Number 1026.

In the Year 1437, *Uleig Beigh*, Grandson of *Tamerlane*; in a New Catalogue he made, only gives 1017.

But in the 17th Century, when Astronomy began to be retrieved, their Number was found to be much greater.

To the 48 Constellations of the Ancients, were added 12 New ones, discovered towards the South Pole, and two towards the North: Besides several others not universally admitted, as the *Flower de Lys*, the *Royal Oak*, &c.

*Tycho Brahe* published a Catalogue of 777 Stars, from his own Observations; which *Kepler*, from *Ptolemy* and others, increased to 1163, *Ricciolus* to 1468, and *Bayer* to 1725: *Dr. Halley* added 373 observ'd by him, within the Antarctic Circle. *Hevelius*, from his own Observations, and those of *Dr. Halley*, made a Catalogue of 1888 Stars: And *Mr. Flamsteed* has since made a Catalogue of no less than 3000 Stars, all from his own most accurate Observations. See CATALOGUE.

Of these 3000, 'tis true, there are many only visible through a Telescope; nor does a good Eye scarce ever see more than an Hundred together in the clearest Heaven: The Appearance of innumerable more, frequent in clear winter Nights, arises from our Sight's being deceived by their Twinkling, and from our viewing them confusedly, and not reducing them to any Order.

Yet for all this, the Stars are really almost infinite. *Riccioli*, makes no Scruple to affirm, in his new *Almagest*, That a Man who should say there are above Twenty thousand times Twenty thousand, would say nothing improbable.

For a good Telescope directed almost to any Point of the Heavens, discovers Numbers that are lost to the naked Sight; particularly in the Milky Way, which is nothing but an Assemblage of Stars, too remote to be singly seen, but so closely disposed, as to give a luminous Appearance to that Part of the Heavens where they are. See GALAXY.

In the single Constellation of the *Pleiades*, instead of 6 or 7 Stars seen by the best Eye, *Dr. Hook*, with a Telescope 12 Foot long, told 78; and with larger Glasses, many more of different Magnitudes. *F. de Rheita*, a Capuchin, affirms, That he has observed above 2000 Stars in the single Constellation of *Orion*.

The same Author found above 188 in the *Pleiades*. And *Huygens* looking at the Star in the Middle of *Orion's* Sword; instead of one, found it to be 12. *Gallilei* found 80 in *Orion's* Sword; 21 in the *Nebulous Star* of his Head; and 36 in the *Nebulous Star*, *Prosepe*.

#### Changes in the STARS.

The Changes that have happened in the Stars, are very considerable; contrary to the Opinion of the Ancients, who held, that the Heavens and heavenly Bodies, were incapable of any Change, the Matter thereof being Permanent and Eternal, infinitely exceeding the Hardness of Diamonds, and not susceptible of any different Form. And, in Effect, till the Time of *Aristotle*, and even 200 Years afterwards, there had no Change been observed.

The first, was in the Year 125, before the Incarnation; when *Hipparchus* discovering a new Star to appear, was first induced to make a Catalogue of the Stars, that Posterity, as we have observed, might perceive any future Changes of the like Kind.

In the Year 1572, *Tycho Brahe*, observed another new Star in the Constellation *Cassiopeia*, which was, likewise, the Occasion of his making a new Catalogue. Its Magnitude, at first, exceeded that of the biggest of our Stars, *Sirius* and *Jyra*; it even equalled that of *Venus*, when nearest the Earth; and was seen in fair Day-light. It continued Sixteen Months; towards the latter Part whereof, it began to dwindle, and at last totally disappeared, without any Change of Place in all that Time.

*Leovicius* tells us of another Star appearing in the same Constellation, about the Year 905, which resembled that of 1572; and quotes another ancient Observation, whereby it appears, that a new Star was seen about the same Place in 1264.

*Dr. Keill* takes those to have been all the same Star; and does not know but it may make its Appearance a-new 150 Years hence.

*Fabricius* discovered another new Star in the Neck of the *Whale*, which appeared and disappeared several times in the Years 1648 and 1662. Its Course and Motion, are described by *M. Bouilland*.

*Simon Marius* discovered another in *Andromeda's* Girdle; in 1612 and 1613, though *M. Bouilland* says, it had been seen before, in the XVth Century. Another was observed by *Kepler* in *Serpentarius*. Another of the Third Magnitude in the Constellation *Cygnus*, near the Bill, in the Year 1601, which disappeared in 1626, and was observed again by

*Hevelius* in 1659, till the Year 1561, and again in 1666 and 1671, as a Star of the Sixth Magnitude.

'Tis certain, from the ancient Catalogues, that many of the ancient Stars are now invisible. This is particularly notorious in the *Pleiades*, or Seven Stars, whereof only Six are now visible to the Eye; a Thing long ago observed by *Ovid*: Witness the Verse, *Quæ Septem dici, sex tamen esse solent*.

*M. Montanere*, in his Letter to the *Royal Society* in 1670, observes, that there are now wanting in the Heavens, two Stars of the second Magnitude, in the Stern of the Ship *Argo* and its Yard; which had been seen till the Year 1664. When they first disappeared 'tis not known; but he assures us, there was not the least Glimpse of them in 1668. He adds, he has observed many more Changes in the fix'd Stars, even to the Number of an Hundred.

#### -Nature of the fix'd STARS.

For the Nature of the fix'd Stars, their immense Distance leaves us greatly at a loss about it. What we can gather for certain from their Phenomena, is as follows;

1° That the fix'd Stars are greater than our Earth. This is demonstrable thus: Suppose two Stars C and D (Tab. Astronomy Fig. 31.) the one in the Eastern Horizon, and the other in the Western. As soon as D arrives in C; C will appear in D. But since both move with the same Velocity, while C describes the Arch CHD; the Star C describing an equal Arch CDH, will appear in F: Wherefore, if the Stars C and D be less than the Earth, the Star C will not be seen in the Eastern Horizon, when the other, C, is arrived at the Western: But as this is contrary to Experience, it follows, that the Stars being in L and S, and there seen at the same time by Spectators in A and B, are greater than the Earth A B.

2° The fix'd Stars are farther distant from the Earth, than the farthest of the Planets. For we frequently find the fix'd Stars, hid behind *Saturn's* Body; the highest of the Planets. See OCCULTATION.

3° The fix'd Stars shine with their own Light: For they are much further from the Sun than *Saturn*, and appear much less than *Saturn*; but since, notwithstanding this, they are found to shine much brighter than *Saturn*, 'tis evident they cannot borrow their Light from the same Source as *Saturn* does, viz. the Sun: But since we know of no other luminous Body beside the Sun, whence they might derive their Light; it follows, that they shine with their own native Light.

Hence 1°, we deduce, that the fix'd Stars are so many Suns; for they have all the Characters of Suns. See SUN.

2° That in all probability, the Stars are not less than our Sun.

3° That 'tis highly probable, each Star is the Centre of a System, and has Planets or Earths revolving round it, in the same Manner as round our Sun; i. e. has opaque Bodies illuminated, warm'd and cherish'd by its Light. See SYSTEM.

How immense, then, does the Universe appear! Indeed, it must either be Infinite, or infinitely near it. See UNIVERSE.

*Kepler*, 'tis true, denies that each Star can have its System of Planets as ours has; and takes them all to be fix'd in the same Surface or Sphere; urging, that were there one twice or thrice as remote as the other, it would appear twice or thrice as small, supposing their real Magnitudes equal; whereas there is no Difference in their apparent Magnitudes, justly observed, at all. But to this we oppose, that *Huygens* has not only shewn, that Fires and Flames are seen at such Distances, where other Bodies, comprehended under equal Angles, disappear; but it should likewise seem, that the Optic Theorem about the apparent Diameters of Objects being reciprocally proportional to their Distances from the Eye, does only hold while the Diameter of the Object has some sensible Ratio to its Distance.

4° The Stars which appear and disappear by turns, being always found to increase in Magnitude at their first Appearance, and to decrease as they begin to disappear, and being likewise still visible through Telescopes, for some Time after they are lost to the naked Eye (of which we have various Instances in the *Philosophical Transactions*) seem to be no other than Planets performing their Periods about the fix'd Stars, as their respective Suns; unless any Person should rather incline to *Dr. Keill's* Opinion, viz. That the Stars lose their Brightness, and disappear, by their becoming cover'd with Mists or Spots, such as are frequently found to over-spread the Sun. See SPOTS.

5° Those temporary Stars, which, upon their disappearing, have never been found to return again; are probably conjectured to be of the Number of Comets, which make long Excursions from their Suns, or the Centers of the upper planetary Systems, i. e. from the fix'd Stars; returning too seldom to have their Returns perceived. See COMET.

#### Motions of the STARS.

The fix'd Stars have two kinds of Motions; one called the First, common or diurnal Motion, or the Motion of the Firmament.



*Mobilis*: By this they are carried along with the Sphere or Firmament wherein they appear fix'd, round the Earth, from East to West, in the Space of 24 Hours.

The other, call'd the *Second* or *proper Motion*, is that whereby they go backwards from West to East round the Poles of the Ecliptic, with an exceeding Slowness, as not describing above a Degree of their Circle in the Space of 71 or 72 Years, or 551 Seconds in a Year.

Some have imagin'd, I don't know on what Grounds, that when they are got round to the Points, whence they first departed, Nature will have finish'd her Course, and the Stars having perform'd their Career, the Heavens will remain at rest, unless the Being, who first gave them Motion, appoint them to begin another Circuit.

On the footing of this Calculation, the World should last about Thirty thousand Years, according to *Ptolomy*; 25816 according to *Tycho*; 25930 according to *Riccioli*, and 24800 according to *Cassini*. See *PRÆCESSION of the Equinox*.

In effect, the Latitudes of the fix'd Stars, we find, by comparing the Observations of the ancient Astronomers with those of the Moderns, continues still the same; but their Longitude is by this Second Motion always increasing.

Thus, e. gr. the Longitude of *Cor Leonis*, was found by *Ptolomy*, A. D. 138, to be  $2^{\circ} 30'$ ; in 1115 'twas observ'd by the *Persians* to be  $17^{\circ} 30'$ ; in 1364, by *Alphonsus*,  $20^{\circ} 40'$ ; in 1586 by the Prince of *Hesse*  $24^{\circ} 11'$ ; in 1601 by *Tycho*  $24^{\circ} 17'$ ; and in 1690 by Mr. *Flamsteed*  $25^{\circ} 31' 20''$ ; whence the proper Motion of the Stars, according to the Order of the Signs in the Circles, parallel to the Ecliptic, is easily inferred.

'Twas *Hipparchus* first suspected this Motion, upon comparing the Observations of *Tymocharus* and *Aristillus* with his own. *Ptolomy*, who lived Three Centuries after *Hipparchus*, demonstrated the same by undeniable Arguments. See *LONGITUDE*.

Some, 'tis true, have imagined a Change in the Latitudes of the Stars; but such an Opinion has little Countenance from Observation. See *LATITUDE*.

*Tycho Brahe* makes the Increase of Longitude in a Century  $1^{\circ} 23' 40'' 12'''$ ; *Flamsteed* and *Ricciolus*  $1^{\circ} 23' 20''$ ; *Balladius*  $1^{\circ} 24' 54''$ ; *Hewelius*  $1^{\circ} 24' 46'' 50'''$ ; whence, with *Flamsteed*, the Annual Increase of the Longitudes of the fix'd Stars may be well fix'd at  $50''$ .

From these Data, the Increase of the Longitude of a Star for any given Time, is easily had; and hence the Longitude of a Star for any given Year, being given, its Longitude for any other Year, is readily found: E. gr. the Longitude of *Sirius* in Mr. *Flamsteed*'s Tables for the Year 1690 being  $9^{\circ} 49' 1''$ ; its Longitude for the Year 1724 is found, by multiplying the Interval of Time, viz. 34 Years by  $50''$ , the Product  $1700''$  or  $28' 2''$  added to the given Longitude, will give the Longitude required,  $10^{\circ} 17' 3''$ .

The principal Phenomena of the fix'd Stars, arising from their common and proper Motion, besides their Longitude, are their Altitudes, Right Ascensions, Declinations, Occultations, Culminations, Risings and Settings; which see under their proper Articles, ALTITUDE, ASCENSION, DECLINATION, OCCULTATION, &c.

The several Stars in each Constellation, e. gr. in *Taurus*, *Bootes*, *Hercules*, &c. their Longitudes, Latitudes, Magnitudes, Names, Places, &c. as fix'd by Mr. *Flamsteed* in the *Britannic Catalogue*; see under the proper Article of each Constellation, TAURUS, BOOTES, HERCULES, &c.

To learn to know the several fix'd Stars by the Globe; see *GLOBE*.

The Parallax and Distance of the fix'd Stars; see under *PARALLAX* and *DISTANCE*.

STAR, in Fortification, a little Hexagonal Fort, with Six Points, or Salliant and Re-entring Angles flanking one another, and their Faces 90 or 100 Foot long. See *FORT*.

They are frequently made in Lines of Circumvallation, after two or three Redoubts. See *REDOUBT*.

STAR, in Pyrotechny, a Composition of combustible Matters, which being borne or thrown aloft into the Air, exhibits the Appearance of a real Star.

Stars are chiefly used as Appendages to Rockets, a Number of them being usually inclosed in a Conical Cap or Cover at the Head of the Rocket, and carried up with it to its utmost Altitude, where the Stars taking Fire, are spread around, and exhibit an agreeable Spectacle. See *ROCKET*.

To make Stars; Mix 3 Pounds of Salt-petre, 11 Ounces of Sulphur, one of Antimony and three of Gunpowder Dust: Or 11 Ounces of Sulphur, 6 of Salt-petre,  $5\frac{1}{2}$  of Gunpowder Dust, 4 Ounces of Olibanum, one of Mastic, Camphir, Sublimate of Mercury, and Half a one of Antimony and Orpiment.

Moisten the Mass with Gum-water, and make it into little Balls, of the Size of a Chestnut, which dry either in the Sun or the Oven. These set on fire in the Air, will represent Stars.

STAR, in Heraldry, a Term frequently used, as signifying a Moveable or Charge, frequently borne on the Shield, and the honourable Ordinaries.

It differs from the *Mullet*, or *Spur-rowel*, in that it is not pierced as this last is. See *MULLET*.

It usually consists of five Rays or Spokes. When it has Six or Eight, as among the *Germans* and *Italians*, particular Mention must be made thereof in Blazoning.

On Medals, Stars are Marks of Consecration and Deification, being intended as Symbols of Eternity. *F. Joubert* says, they sometimes express the Children of Princes reigning; and sometimes the Children dead, and placed in the Rank of Deities. See *DEIFICATION*.

STAR, a Badge of the Honourable Order of the Garter. See *GARTER*.

Order of the STAR, or our Lady of the STAR, an Order of Knighthood instituted by King *John* of France in the Year 1352, denominated from a Star they wore on the Stomach.

At first there were but 30 Knights; but the Order in time became depreciated, by the Multitude of Persons admitted, without any Distinction. For which Reason, *Charles VII.* when Grand-master thereof, quitted it, and gave it the Chevalier *du Guet*, Knight of the Watch at *Paris*, and his Archers, who still wear a Star on their Cassock. But this Account is contradicted by others; who will have the Order instituted by King *Robert* in 1022 in Honour of the Holy Virgin, and to have fallen into Disregard during the Wars of *Philip de Valois*.

*Justiniani* mentions another Order of the Star, at *Messina* in *Sicily*, call'd also the Order of the Crescent. It was instituted in the Year 1268, by *Charles* of *Anjou*, Brother of *St. Louis*, King of the Two *Sicilies*.

Others will have it instituted in 1464, by *Renatus* Duke of *Anjou*, who took the Title of King of *Sicily*. At least, it appears from the Arms of this Prince, that he made some Alteration in the Collar of the Order; for instead of *Flower-de-Luces* and Stars, he only bore Two Chains, whence hung a Crescent, with the old French Word *Loz*, which in the Language of *Rebus*, signified *Loz* in a Crescent.

The Order being dropt into Obscurity, was raised again by the People of *Messina*, under the Name of the Noble Academy of the Knights of the Star, reducing the ancient Collar to a single Star placed on a forked Cross, and the Number of Knights to Sixty-two. Their Device was, *Monstrant Regibus Astra Viam*, which they express'd by the Four Initial Letters  $\begin{smallmatrix} M & R \\ A & V \end{smallmatrix}$  with the Star in the Middle.

STAR, in the Manage. White Stars in the Forehead, are esteem'd good Marks in all Horses, except White and Grey ones: where Nature fails to produce this good Criterion, our Jockies have frequent Recourse to Art.

The Method of making Stars, practis'd among the *Dutch*, is to roast a large Onion in hot Ashes, and when near thoroughly done, to divide it in two, and dip it in scalding hot Walnut Oil. This done, they immediately apply the flat Side thereof to the Place the Star is to be on, and keep it there Half an Hour. After taking it off, they anoint the Scalded Place with Ointment of *Roses*: In a short Time, the Scarf Skin falls off, and White Hair grows up in their Room; but the Middle always continues bare of Hair, which is the certain Characteristic of an Artificial Star.

The Method most used among us, is to shave the Hair from the Place 'tis to be made on; then to apply a little Oil of *Virriol* with a Feather, or the like, passing it lightly over the bald Place. This cuts away the Roots of the former Hair, which will be succeeded by White. The Sore is heal'd up with *Copperas* and green Ointment.

To make a black Star, on a White or other colour'd Horse; Wash the Place to be changed, frequently, with Fern Roots and Sage boil'd in Lye; and it will breed black Hairs. The same may be done, by beating four Milk, Galls and Rust together, and anointing the Part therewith.

A Red Star is made with an Ounce of *Aqua-fortis*, a pennyworth of *Aqua-vitæ*, and Silver to the Value of Eighteenpence, all heated together in a Glass, and the Place anointed therewith. This immediately turns the Hair to a perfect Red; but it lasts no longer than till the Horse cast his Coat; when it is to be renewed.

STAR-BOARD, is the Right-hand Side of a Ship, as Larboard is the Left:

Thus they say, Starboard the Helm, or Helm a Starboard, when the Man at the Helm should put the Helm to the Right Side of the Ship.

STARCH, a Fecula or Sediment found at the Bottom of Vessels, wherein the waste or refuse Wheat has been steep'd in Water: Of which Fecula, after separating the Bran from it, they form a kind of Loaves, which being dried in the Sun, or on a Furnace, is reduced into little Pieces, and so sold for Starch.

The best is white, soft and friable, easily broke into Powder. Such as require very fine Starch, don't content themselves, like the *Starch-men*, with the Refuse of Wheat, but use the finest Grain. The Process is as follows;



*Method of making STARCH of Wheat.*

The Grain being well cleaned, is put to ferment in Vessels full of Water, which they expose to the Sun, when in its greatest Heat; changing the Water twice a Day, for the Space of 8 or 12 Days, according to the Season. When the Grain bursts easily under the Finger, they judge it sufficiently fermented. The Fermentation perfected, and the Grain thus soften'd; 'tis put, handful by handful, in a canvas Bag, to separate the Flower from the Husks, which is done by rubbing and beating it on a Plank, laid across the Mouth of the empty Vessel that is to receive the Flower.

As the Vessels are filled with this liquid Flower, there is seen swimming a-top, a reddish Water, which is to be carefully scum'd off from time to time, and clean Water put in its Place; which, after stirring the whole together, is all to be strained through a Cloth or Sieve, and what is left behind, put into the Vessel with new Water, and exposed to the Sun for some time; and as the Sediment thickens at the Bottom, they drain off the Water four or five Times, by inclining the Vessel, but without passing it through the Sieve. What remains at bottom, is the *Starch*, which they cut in Pieces to get out, and leave it to dry in the Sun. When dry, 'tis laid up for Use.

To use *Starch*, they take as much as is needed, and steep in Water over Night, changing the Water four or five Times.

The *Starch-men* using the Refuse of Wheat, only observe a Part of all these Things in their Process; but their *Starch* falls far short of this.

*Starch* is used along with Smalt or Stone-blue, to stiffen and clear Linnen. The Powder thereof is also used to whiten and powder the Hair. 'Tis also used by the Dyers to dispose their Stuffs to take Colours the better.

*STAR-Chamber*; was a Chamber at *Westminster*, formerly so called, from its Roof being painted with *Stars*. See CHAMBER.

*Henry* the VIIth and VIIIth, ordered, by several Statutes, that the Chancellor, assisted by others there named, should have Power to punish Routs, Riots, Forgeries, Embraceries, Perjuries, and such other Misdemeanors, as were not sufficiently provided for by the common Law, and for which the inferior Judges were not so proper to give Correction. But this Court, by 17 *Car* I. c. 10. was intirely dissolv'd, and so continues to this Day.

*STAR-Fort*, in Fortification, is a Work with several Faces, generally composed of from 5 to 8 Points, with Salient and Re-entring Angles flanking one another; every one of its Sides containing from 12 to 25 Fathoms.

*STARTING*, among Brewers, is the putting of new Beer or Ale to that which is decayed, to revive it again.

*STATERA Romana*, or Steelyard, a Name given to the *Roman* Balance. See STEELYARD.

*STATERA* was also an ancient Silver Coin, weighing four *Attic* Drachms, or Half a *Roman* Ounce. It was worth about two Shillings or two Shillings and Two-pence *Sterling*. See COIN.

*STATE*, or *Estate*, an Empire, Kingdom, Province or Extent of Country under the same Government. See EMPIRE, KINGDOM, &c.

The *State*, or *States* of the King of *England*, include the *British* Islands and the *West India* Plantations, as *Virginia*, *Carolina*, *Mary-land*, &c. to which may be added, the Dutchies of *Brunswick-Lauenbourg*, *Bremen*, &c.

*STATE* is also used for the Policy or Form of Government of a Nation. Hence, *Ministers of State*; *Reasons of State*, &c. See *RATIO Status*, &c.

Politicians make several *Forms of State*, viz. the *Monarchic*, as that of *England*; see *MONARCHY*: The *Democratic*, as that of *Rome* and *Athens*; see *DEMOCRACY*: The *Oligarchic*, as that of *Venice*; see *OLIGARCHY*: And the *Aristocratic*, as that of *Sparta*; see *ARISTOCRACY*, &c.

*STATE of a Disease*. See *ACME*.

*STATES*, a Term applied to the several Orders, or Classes of a People, assembled to consult of Matters for the publick Good. See *ESTATES*.

*STATES-General*, the Name of an Assembly, consisting of the Deputies of the Seven United Provinces.

In this Assembly, the Deputies of each Province, what Number soever they be, have only one Voice, and are esteem'd as but one Person; the Votes being given by Provinces. Each Province presides at the Assembly in its Turn, according to the Order settled among them; *Guelderland* presides first, then *Holland*. &c. This Assembly is the Representative of the Sovereignty of the Union, which resides principally in the General Assembly of the *States* themselves of all the Provinces: But as the Assembly ordinarily consists of 7 or 800 Persons, it was resolved, after the Departure of the Earl of *Leicester*, in order to avoid Expence, and the Confusion of so numerous a Body, that the Provincial Estates should, for the future, be ordinarily represented by their

Deputies, under the Name of the *States-General*, who were always to reside at the *Hague*, and who alone are now called *States General*.

Since that new Regulation, there have been two General Assemblies of the *States* of the Provinces; the former held in 1600 at *Berg-op-Zoom*, to confirm the Truce agreed on with the Arch-duke *Albert*, with the greater Solemnity; and the latter in 1651.

*STATES of Holland*, an Assembly consisting of the Deputies of the Councils of each City; wherein resides the Sovereignty of that Province.

Originally, none but the Nobility and the Six principal Cities had Seats or Voices in the *States*. At present there are the Deputies of 18 Cities.

The Nobility have the first Voice. The other Provinces of the Union have likewise their *States*, representing their Sovereignty.

*STATICAL Baroscope*. See *BAROSCOPE*.

*STATICKS*, *STATICE*, a Branch of Mathematicks, which considers *Weight* or *Gravity*, and the Motion of Bodies arising therefrom.

Those who define *Mechanicks*, the Science of Motion, make *Staticks* a Member thereof, viz. that Part which considers the Motion of Bodies arising from Gravity. See *GRAVITY*.

Others make them two distinct Doctrines; restraining *Mechanicks* to the Doctrine of Motion, and Weight, in reference to the Structure and Power of Machines; and *Staticks* to the Doctrine of Motion, consider'd merely as arising from the Weight of Bodies, without any immediate respect to Machines: On which footing, *Staticks* should be the Doctrine or Theory of Motion; and *Mechanicks* the Application thereof to Machines. See *MECHANICKS*.

For the *Laws of STATICKS* } See { *GRAVITY*, *DESCENT*, &c.  
*STATICAL Barometer* } { *BAROMETER*.

*STATICKS*, *Statici*, in Medicine, a kind of Epilepticks, or Persons seiz'd with Epilepsies. See *EPILEPSY*.

The *Staticks* differ from the *Catalepticks*, in that, these last have no Sense of external Objects, nor remember any thing that passes at the Time of the Paroxysm: Whereas the *Statici* are all the while taken up with some very strong lively Idea, which they remember well enough, out of the Fit. See *EPILEPSY*.

*STATION*, in Geometry, &c. a Place pitch'd upon to make an Observation, take an Angle, &c.

An inaccessible Height or Distance is only to be taken, by making two *Stations*, from two Places, whose Distances are known. In making Maps of Provinces, &c. *Stations* are fix'd on all the Eminences, &c. of the Country, and Angles taken thence to the several Towns, Villages, &c.

In Surveying, the Instrument is to be adjusted by the Needle, to answer the Points of the Horizon; at every *Station*, the Distance from the last *Station* to be measured, and an Angle to be taken to the next *Station*; which includes the whole Business of Surveying. See *SURVEYING*.

In Levelling, the Instrument is rectified, that is placed level, at each *Station*, and Observations made forwards and backwards. See *LEVELLING*.

*STATION*, in Astronomy, the Position or Appearance of a Planet in the same Point of the Zodiac for several Days. See *PLANET*.

As the Earth, whence we view the Motions of the Planets, is out of the Centre of their Orbits, the Planets appear to proceed irregularly; being sometimes seen to go forwards, that is from West to East, which is called their *Direction*; sometimes to go backwards, or from East to West, which is call'd their *Retrogradation*. See *DIRECTION* and *RETROGRADATION*.

Now between these two States, there must be an intermediate one, wherein the Planet neither appears to go backwards nor forwards, but to stand still and keep the same Place in her Orbit, which is call'd her *Station*. See *STATIONARY*.

*STATION*, in Church History, is used for the Fast of the 4th and 6th Day of the Week; that is, those of *Wednesday* and *Friday*, which many among the Ancients observed with much Devotion.

These Fasts only held to 3 o'Clock in the Afternoon. See *FAST*.

*S. Peter of Alexandria*, in his *Canonical Epistle*, *Can.* 15. observes, that it was appointed in conformity with the ancient Tradition, to fast weekly on those Days: On *Wednesday*, in Memory of the Counsel the *Jews* took to put our Saviour to Death; and on *Friday*, on account of his Passion; some regard to which is still had by many in the Church of *England*.

*STATION* is also used in the Church of *Rome*, for certain Churches where Indulgences are to be had on certain Days. See *INDULGENCE*.

'Twas *St. Gregory* that fix'd the *Stations* at *Rome*, i. e. the Churches where the Office was to be perform'd each Day of *Lent*, and on Solemn Feast Days. These *Stations* be marked



mark'd down in his *Sacramentary*, as they now stand in the *Roman Missal*; attaching them chiefly to the Patriarchal and Titular Churches: But though the *Stations* were fix'd, and the Archdeacon did not fail, at each *Station*, to publish to the People the following *Station*.

*STATION* is also a Ceremony in the *Romish Church*, wherein the Priests or Canons go out of the Choir to sing an Anthem before the Crucifix, or the Image of our Lady. This Ceremony is ascribed to *S. Cyril*.

*STATIONARY*, in Astronomy, the State of a Planet when it seems to remain immoveable in the same Point of the Zodiac. See *STATION*.

The Planets having sometimes a progressive and sometimes a retrograde Motion; there will be some Point wherein they appear *Stationary*. Now a Planet will be seen *Stationary*, when the Line that joins the Earth's and Planet's Centre, is constantly directed to the same Point in the Heavens; that is, when it keeps parallel to itself. For all right Lines drawn from any Point of the Earth's Orbit, parallel to one another, do all point to the same Star; the Distance of those Lines being insensible, in comparison of that of the fix'd Stars.

*Saturn* is seen *Stationary*, at the Distance of somewhat more than a Quadrant from the Sun; *Jupiter* at the Distance of  $52^{\circ}$ , and *Mars* at a much greater Distance. *Saturn* is *Stationary* 8 Days, *Jupiter* 4, *Mars* 2, *Venus*  $1\frac{1}{2}$  and *Mercury*  $\frac{1}{2}$ ; though the several *Stations* are not always equal. See *SATURN*, &c.

*STATOCELE*, in Medicine, a Rupture, or Tumour in the Scrotum, consisting of a fatty Substance resembling Suet. See *HERNIA*.

*STATUARY*, a Branch of Sculpture, employ'd in the making of *Statues*. See *STATUE*.

*Statuary* is one of those Arts wherein the Ancients surpass'd the Moderns: Indeed 'twas much more popular, and more cultivated among the former than the latter. See *SCULPTURE*.

'Tis disputed between *Statuary* and *Painting*, which of the two is the most difficult and the most artful. See *PAINTING*.

The Invention of *Statuary* was at first very coarse. *Leon Battista Alberti*, who has an express Treatise on *Statues*, imagines that it took its Rise from something casually observed in the Productions of Nature, that, with a little Help, might seem disposed to represent the Figure of some Animal. The common Story is, That a Maid, full of the Idea of her Lover, made the first Essay, by the Assistance of her Father's Implements, who was a Potter. This at least, is pretty certain, that Earth is the first Matter *Statuary* was practis'd upon.

*STATUARY* is also used for the Artificer, who makes *Statues*. In this Sense we say, *Phidias* was the greatest *Statuary* among the Ancients, and *Michael Angelo* among the Moderns.

*STATUE*, a Piece of Sculpture in full Relievo, representing a human Figure. See *FIGURE*.

*Daviler*, more Scientifically defines *Statue* a Representation in high Relievo and Insulate, of some Person distinguish'd by his Birth, Merit or great Actions; placed as an Ornament in a fine Building, or exposed in a publick Place to preserve the Memory thereof.

*Statues* are form'd with the Chissel, of several Matters, as Stone, Marble, Plaster, &c. See *STONE*, *MARBLE*, *CHISSEL*, &c.

They are also cast of various Kinds of Metals, particularly Gold, Silver, Brass and Lead.

For the Method of casting *STATUES*; see *FOUNDRY* of *Statues*.

*Dedalus*, the Son of *Eupalamus*, who lived not only before the Siege of *Troy*, but even before the Expedition of the *Argonauts*, among many other notable Contrivances ascribed to him, is said to have been the Inventor of *Statues*. And yet 'tis certain, there were *Statuaries* before him; only he 'twas first found how to give them Action and Motion, and to make them appear as if alive. Before him, they made them with the Feet joined together, never intending to express any Action. He first loosened the Feet of his, and gave them the Attitudes of People walking and acting.

The *Phenicians* are said to have been the first who erected *Statues* to the Gods.

The *Greeks* succeeded in their *Statues* beyond the *Romans*; both the Workmanship and the Fancy of the *Roman Statues*, were inferior to the *Grecian*. Indeed we have very few remaining, that have escaped the Injuries of Time.

In Strictness, the Term *Statue* is only applied to Figures on Foot; the Word being form'd from the *Latin*, *Statura*, the Size of the Body; or from *Stare*, to stand.

*Statues* are usually distinguish'd into four Kinds; the first, are those less than the Life; of which Kind we have several *Statues* of Men, of Kings, and Gods themselves.

The Second, of those equal with the Life; in which Manner it was, that the Ancients, at the publick Expence, used to make *Statues* of Persons eminent for Virtue, Learning, or the Services they had done.

The Third, of those that exceed the Life; among which,

those which surpass'd the Life once and a half, were for Kings and Emperors; and those double the Life, for Heroes.

The Fourth Kind, were of those that exceeded the Life twice or thrice, or even more, and were called *Colossus's*. See *COLOSSUS*.

Every *Statue* resembling the Person it represents, is called *Statua Iconica*.

*Greek STATUE*, is used for a Figure that is Naked and Antique; it being in this Manner the *Greeks* represented their Deities, *Athlete* of the Olympic Games, and Heroes. The Reason of this Nudity, whereby the *Greek Statues* are distinguished, is, that those who exercised Wrestling, wherein the *Greek Youth* placed their chief Glory, always perform'd naked.

The *Statues* of Heroes were particularly called *Achillean Statues*, by reason of the great Number of Figures of that Prince, in most of the Cities of *Greece*.

*Roman STATUES*. This Appellation was given to such as were cloath'd, and which receive various Names from their various Dresses. Those of Emperors with long Gowns over their Armour, were called *Statue Paludate*; those of Captains and Cavaliers, with Coats of Arms, *Thoracate*; Those of Soldiers, with Cuirasses, *Loricatæ*; those of Senators and Augurs, *Trabeatæ*; those of Magistrates with long Robes, *Togatæ*; those of the People with a plain *Tunica*, *Tunicatæ*; and lastly, those of Women with long Trains, *Stolatæ*.

The *Romans* had another Division of *Statues*, into *Divine*, which were those consecrated to the Gods, as *Jupiter*, *Mars*, *Apollo*, &c. *Heroes*, which were those of the Demi-Gods, as *Hercules*, &c. and *August*, which were those of the Emperors; as those two of *Cæsar* and *Augustus*, under the Portico of the Capitol.

*Pedestrian STATUE*, a *Statue* standing on foot; as that of King *Charles II.* in the *Royal Exchange*, and that of King *James II.* in the *Privy Gardens*.

*Equestrian STATUE*, that representing some illustrious Person on Horseback; as that famous one of *Marcus Aurelius* at *Rome*, and those of King *Charles I.* and *II.* at *Charing-Cross* and in *Stocks-Market, London*.

*Curule STATUE*. Those are thus called, which are represented in Chariots drawn by *Bige* or *Quadrigæ*, that is, by two or four Horses; of which Kind there were several in the *Circus's Hippodromes*, &c. or in Cars, as we see on triumphal Arches in antique Medals. See *CURULE*.

*Allegorical STATUE*, that which, under a human Figure, or other Symbol, represents something of another Kind, as a Part of the Earth, a Season, Age, Element, Temperament, Hour, &c.

*Hydraulick STATUE*, any Figure placed as an Ornament to a Fountain or Grotto; or that does the Office of a *Fer d'Eau*, a Cock, Pipe or the like, by any of its Parts, or by an Attribute it holds. The same is to be understood of any Animal serving for the same Use.

|                        |         |                        |
|------------------------|---------|------------------------|
| <i>Colossal STATUE</i> | } See { | <i>COLOSSUS</i> .      |
| <i>Persian STATUE</i>  |         | <i>PERSIAN Order</i> . |
| <i>Caryatic STATUE</i> |         | <i>CARYATIDES</i> .    |

*STATURE*, the Size or Height of a Man; from the *Latin*, *Statura*, of *Stare*, to stand.

The *Stature*, or Pitch of Man, is found admirably well adapted to the Circumstances of his Existence. Had Man, observes *Dr. Grew*, been a Dwarf; he could scarce have been a reasonable Creature: For, to that End, he must have had a Jolt-head; and then he would not have had Body and Blood to supply his Brain with Spirits; or if he had had a small proportional Head, there would not have been Brain enough for his Business. Again, had Man been a Gyant, he could not have been so commodiously supplied with Food: For there would not have been Flesh enough of the best edible Beasts to supply his Turn; or if the Beasts had been made proportionably bigger, there would not have been Grass enough, &c. See *DWARF*, *GIANT*, &c.

'Tis a common Opinion, however, and has been so, ever since *Homer's* Time, that People in the earliest Ages of the World, much surpass'd the Moderns in *Stature*; and 'tis true, we read of Men, both in sacred and profane History, whose Pitch appears surprizing; but then 'tis true, they were esteemed Giants.

The ordinary *Stature* of Men, *Mr. Derham* observes, is in all probability the same now, as at the beginning; as may be gathered from the Monuments, Mummies, &c. still remaining. The oldest Monument in the World, is that of *Cheops*, in the first Pyramid of *Egypt*, which *Mr. Greaves* observes, scarce exceeds the Measure of our ordinary Coffins. The Cavity, he says, is only 6,488 Feet long, 2,218 Feet wide, and 2,160 deep: From which Dimensions, and those of several Embalmed Bodies, taken by him in *Egypt*, that accurate Writer concludes, there is no Decay in Nature; but that the Men of this Age are of the same *Stature* as those 3000 Years ago.



To these we have other and later Instances to add from *Hakewill*: The Tombs at *Pisa*, which are some Thousands of Years old, are no longer than ours: So is *Arbelfan's* in *Malmesbury Church*; *Sheva's* in *Paul's*, of the Year 693, &c.

The like Evidence, we have from the ancient Armour, Shields, Vessels, &c. dug up at this Day, *E. gr.* the Brass Helmet dug up at *Metaurum*, fits one of our Men; yet 'tis allowed to have been left there at the Overthrow of *Asdrubal*. Add, that *Augustus* was Five Foot Nine Inches, which was the Measure of our Queen *Elizabeth*; only the Queen exceeded the Emperor by Two Inches, Allowance being made for the Difference between the *Roman* and our Foot.

**STATUS** *de Manerio*, in ancient Records, all the Tenants and legal Men within the Lands of a Manor, assembled in their Lord's Court, to do their customary Suit, and enjoy their Rights and Privileges.

**STATUTE**, in its general Sense, signifies a Law, Ordinance, Decree, &c. See **LAW**, **DECREE**, &c.

In our Laws and Customs, *Statute* more immediately signifies an Act of Parliament, made by the Three Estates of the Realm; in which Sense, *Statute* is either general or special, public or private, &c. See **PARLIAMENT**.

**STATUTES**, or *Statute Sessions*, called also *Petit Sessions*, are Meetings in every Hundred, to which Constables repair, and others, both Masters and Servants, for deciding Differences between Masters and Servants, rating of Wages, bestowing People in Service who being fit to serve, either refuse to seek or cannot get Masters. See **SESSIONS**.

**STATUTE Merchant**, is a Bond acknowledged before one of the Clerks of the *Statutes Merchant* and Mayor or chief Warden of the City of *London*, or Two Merchants of the said City for that Purpose assigned, or before the Mayor, chief Warden, or Master of other Cities or Towns, or other sufficient Men for that Purpose appointed; sealed with the Seal of the Debtor and of the King, which is of two Pieces, the greater to be kept by the Mayor, chief Warden, &c. and the lesser by the said Clerks. See **BONDS**.

**STATUTE Staple**, is so called, either properly or improperly: Properly, it is a Bond of Record, acknowledged before the Mayor of the Staple, in the Presence of the Two Constables of the same Staple; for which Seal, the Fee of every Pound, if the Sum exceed not 100 *l.* is an Half-penny, and if it exceed 100 *l.* a Farthing; by Virtue of which *Statute Staple*, the Creditor may forthwith have Execution of the Body, Lands and Goods of the Debtor.

Improperly, it is a Bond of Record, founded upon the *Statute 23 H. VIII. c. 6.* of the Nature of a proper *Statute Staple* as to the Force and Execution of it, and acknowledged before one of the chief Justices, and in their Absence, before the Mayor of the *Staple*, and Recorder of *London*.

**STAVERS**, or **STAGGERS**, among Farriers, a Giddiness in a Horse's Head, which ends in Madness. 'Tis frequently occasion'd, by turning out a Horse to Grass too soon, e'er well cold; where, by hanging down his Head to feed, ill Vapours and Humours are generated, which oppressing the Brain, are the next Cause of this Disease. Sometimes it comes by over Exercise in hot Weather, which inflames the Blood, &c. and sometimes by noisome Smells in the Stable, excessive Eating, &c. The Signs of it, are Dimness of Sight, Reeling and *Staggering*, watery Eyes, &c. At length, for very Pain, he beats his Head against the Wall, thrusts it into the Litter, rises and lies down with Fury, &c. The Methods of Cure are various; but they all begin with Bleeding.

**STAY**, in the Sea Language, a big, strong Rope, fasten'd to the Top of one Mast, and the Foot of that next before it, towards the Prow, serving to keep it firm, and prevent its falling backwards.

All Masts, Top-masts and Flag-staves, have their *Stays*; except the Sprit sail and Top-mast. That of the Main-mast, is called the *Main-stay*. The Main-mast, Fore-mast, and those belonging to them, have also *Back-stays*, to prevent their pitching forwards or over-board; as going on either side her. See **BACK-STAYS**.

Hence, to *Stay a Ship*, or *bring her on the Stay*, is to manage her Tackle and Sails, so as that she cannot make any Way forwards, which is done in order to her Tacking about.

**STEADY**, is a Word of Command at Sea, for the Man at the Helm to keep the Ship *Steady* in her Course, and not to make Angles (or *Taxes* as they call them) in and out. See **HELM**.

**STEATOMA**; from *σταπ*, *Sevum*, Suet; is a Swelling, consisting of a Matter much like Suet, soft, without Pain, and without discolouring the Skin; contained in a Cystis; and easily turned out upon Incision.

**STEEL**, a kind of Iron refined and purified by the Fire, with other Ingredients; which renders it whiter, and its Grain closer and finer. See **IRON**.

*Steel*, of all other Metals, is that susceptible of the greatest

degree of Hardness, when well temper'd; whence its great Use in the making of Tools and Instruments of all Kinds.

The true Method of making *Steel* has been greatly concealed, and the Publick long abused by counterfeit ones.

The following Method we have from *Agricola*; and is affirmed by *Kircher* to be that practised in the Island of *Ilva*; a Place famous in all Ages for the Manufacture of good *Steel*, from the Time of the *Romans*, to Ours.

Heat a Quantity of Iron red-hot, cut it into small Pieces, mix it with a sort of Stone that easily melts. This Mixture put by little and little into a Crucible, first fill'd with Charcoal-dust, and heated red-hot; when melted off, three, four or more Pieces of Iron are to be put into the middle of it; there boil them five or six Hours with a strong Fire. The Workman is to stir the melted Matter often, that the Pieces of Iron may soak in the smaller Particles of the melted Iron; which Particles consume, and thin the grosser ones of the Iron Pieces, and are, as it were, a Ferment to them, and make them tender. One of the Pieces is now taken out of the Fire, and put under the great Hammer, to be drawn out into Bars and wrought; and hot as it is, plunged into cold Water. Thus temper'd, 'tis again worked upon the Anvil; then breaking it, 'tis consider'd, whether in any Part it looks like Iron; or whether it be wholly condensed and turned into *Steel*.

**STEEL**, in Medicine. See **CHALYBEAT**.

**STEELYARD**, in Mechanics, a kind of Balance, call'd *Statera Romana*, or the *Roman Balance*; by means whereof, the Gravity of different Bodies are found by the Use of one single Weight. See **BALANCE**.

#### *Construction of the STEELYARD.*

It consists of an Iron Beam A B (Tab. Mechanics, Fig. 35.) wherein a Point is assumed at Pleasure, as C, and on this a Perpendicular raised C D. On the less Arm A C, is hung a Scale or Bason to receive the Bodies weighed: The Weight I is shifted this and that Way on the Beam, till it be a Counter-balance to one, two, three, four, &c. Pounds placed in the Scale; and the Points are noted wherein I weighs as one, two, three, four, &c. Pounds.

From this Construction of the *Steelyard*, the Manner of using it is apparent. But the Instrument being very liable to Deceit, is therefore not to be countenanced in Commerce.

**Spring STEELYARD**, a kind of portable Balance, serving to weigh any Matter, from about one to forty Pounds.

It is composed of a Brass Tube, into which goes a Rod, and about that is wound a Spring of temper'd Steel in a spiral Form. On this Rod are the Divisions of Pounds and Parts of Pounds, which are made by successively hanging on to a Hook fasten'd to the other End, 1, 2, 3, 4, &c. Pounds. Now the *Spring* being fasten'd by a Screw, to the bottom of the Rod, the greater Weight is hung on the Hook, the more will the *Spring* be contracted, and, consequently, a greater Part of the Rod will come out of the Tube; the Proportions of which greater Weights are indicated by the Figures appearing against the Extremity of the Tube.

**STEEPLE**, an Appendage, raised on the western End of a Church, to hold the Bells. See **CHURCH** and **BELL**.

*Steeple*s are denominated from their Form, either *Spires* or *Towers*.

The first, are such as ascend continually diminishing either Conically or Pyramidically. The latter are more Parallelipeds, and are cover'd atop, Plat-form like. In each Kind, there is usually a sort of Windows or Apertures to let out the Sounds, and so contrived, at the same time, to drive it down.

*Masius*, in his Treatise of Bells, treats likewise of *Steeple*s. The most remarkable in the World, is that at *Pisa*, which leans all on one Side, and appears every Moment ready to fall; yet without any Danger. This odd Disposition, he observes, is not owing to a Shock of an Earthquake, as is generally imagined; but it was contrived so at first by the Architect; as is evident from the Ceilings, Windows, Doors, &c. which are all in the Level.

**STEERAGE**, the Art of Steering. See **STEERING**.

The Word is also used for a Place in a Ship before the Bulk-head of the great Cabin, where the Steers man stands and lodges.

**STEERING**, in Navigation, the directing of a Vessel from one Place to another, by means of the Helm and Rudder. See **HELM** and **RUDDER**.

He is held the best *Steers-man*, who uses the least Motion in putting the Helm over to and again, and that keeps the Ship best from making Yaws; that is, from running in and out.

There are three Methods of *Steering*. 1<sup>o</sup> By any Mark on the Land, so as to keep the Ship even by it. 2<sup>o</sup> By the Compass, which is by keeping the Ship's Head on such a Rhumb or Point of the Compass, as best leads to Port. 3<sup>o</sup> To *Steer* as one is bidden or conn'd; which in a great Ship, is the Duty of him that is taking his Turn at the Helm. See **CONDER**.



For the *Theory and Effect* of Steering; see *SAILING*.  
**STEGANOGRAPHY**; the Art of *secret Writing*; or of writing in Cyphers, known only to the Persons corresponding. See *CYPHER*.

One *Aeneas Tacticus*, Two thousand Years ago, as we are told by *Polybius*, had invented 20 different Manners of writing so as no Body but those let into the Secret, could understand any thing of the Matter.

But now-a-days, hardly any thing can be written by this Art, but what may be Decyphered, and the Meaning discovered. And to this Art of Decyphering, that excellent Mathematician, *Dr. Wallis*, hath contributed much.

**STEGNOSIS**, from *στέγω, constipo*, I fix, or harden; is an Obstruction of the Pores; whence *Stegnoticks* are the same as *Astringents*. See *ASTRINGENT*.

**STEGNOTICKS**, in Medicine, Remedies proper to close and stop the Orifices of the Vessels, when stretch'd, lacerated, &c. See *STYPTICK*.

Such are Pomgranate Leaves, red Roses, Plantain Leaves, Tormentil Root, &c.

*Stegnoticks* are proper in the Hemorrhoids, and other Fluxes of Blood.

The Word is form'd from the Greek *στέγω, impetro, constipo*, I hinder, close.

**STELLATE Plants**, such as have their Leaves growing on the Stalks, at certain Distances, in the Form of a Star with Beams; or such Flowers as are Star-like or full of Eyes, resembling Stars, in the Thrum or Pendants. See *PLANT*.

*Mr. Ray* makes this the Tenth Genus of *English Plants*; of this Kind is Cross-Wort, Mollugo, wild Madder, Asperula, or Woodruff, Gallium or Ladies Bed-straw, Aparine or Cleavers, Rubia Tinctorum or Dyers Madder.

To which he adds, as akin to this Genus, the Nasturtium Indicum, *Indian Cresse*, or yellow Lark-Spur.

**STELLIONATE, STELLIONATUS**, in the Civil Law, a kind of Crime committed by a fraudulent Bargain, where one of the Parties sells a thing for what it is not.

As if I sell an Estate for my own, which belongs to another; or convey a thing as free and pure, which is already engaged to another; or put off Copper for Gold, &c.

*Cicero* says, the Word comes from *Stellio*, a very subtle kind of Lizzard. We find mention hereof in the *Code, lib. 9. Tit. 34*.

The *Romans* frequently used *Stellionatus* to express all Kinds of Crimes that had no proper Names.

**STEM**, in Botany, that Part of a Plant arising out of the Root, and which sustains the Leaves, Flowers and Fruits. See *PLANT*.

In Trees, the *Stem* is called the *Trunk* or *Stock*; in *Latin*, *Caudex* and *Truncus*. See *STOCK*, &c.

In Herbs, 'tis ordinarily call'd the *Stalk*; by the *Latins*, *Caulis* and *Scapus*, when streight like a Column.

When slender, and creeping on the Ground, as that of Nummulary, some Authors call it *Viticulus*.

In the several Kinds of Corn and Plants of that Kind, 'tis call'd *Culmus*.

The *Stem* of the Plant, according to *Dr. Grewe*, is no more than the *Curtis* or Skin which at first covers the two Lobes, and the Plume of the Seed, and which is further dilated as the Plant grows. See *PLUME*, *SEED*, &c.

**STEM of a Ship**, is that main Piece of Timber which comes bending from the Keel below where it is Scarfed as they call it; that is pieced in, right before the Fore-castle. This *Stem* it is, that guides the Rake of the Ship, and all the Butt-ends of the Planks forwards, are fixed into it. This in the Section of a First Rate Ship, is called the *Main Stem*.

**STENTOROPHONIC Tribe**, a *speaking Trumpet*; thus call'd from *Stentor*, (a Person mentioned in the Fifth Book of the *Iliad*, who could call louder than Fifty Men) and *φωνη*, Voice.

The *Stentorophonic Horn* of *Alexander the Great* is famous; with this he could give Orders to his Army at the Distance of 100 *Stadia*; which is above 12 *English Miles*. See *SPEAKING Trumpet*.

**STEP**. See *PACE* and *STAIR*.

**STEP and Leap**, in the Manage, one of the Seven Airs or artificial Motions of a Horse; consisting, as it were, of three Airs; viz. the Pace or *Step* which is *terra a terra*; the raising a Curvet; and the whole finished with a *Salt* or *Leap*.

The *Step*, properly, puts a Horse on the Hand, and gives him a Rise to Leap; like one that runs e'er he leaps, that he may go the higher.

For Leaps of all kinds, the Rider is not to give any Aids or Helps with his Legs; only to hold him well up with the Bridle-hand when he rises before, that he may rise the higher behind; when he begins to rise behind, he is to put the Bridle-hand a little forwards to hold him before, and stay him there on the Hand, as if he hung in the Air; timing the Motion of the Bridle-hand so, as to take him like a Bull on the bound; which is the great Secret in Leaping.

**STERCORARIANS, or STERCORANISTS**, a Name those of the *Romish Church* have anciently given to such as held that the Eucharist was liable to Digestion, and all its Consequences, like other Foods. See *SACRAMENT*.

The Word is form'd from the *Latin*, *Stercus*, Dung. *Card. Humber* in his Answer to *Nicet Peñlorat*, treats him as a *Stercoranist*, merely for holding, that the Eucharist break'd the Fast; which Opinion he imagined led directly into *Stercoranism*.

**STEREOBATA**, in the ancient Architecture, the Basis or Foundation whereon a Wall or other Building is rais'd. See *BASE*.

This answers pretty well to the *continued Socle* or Basement of the Moderns: Some confound it with the ancient *Stylobata*, or Pedestal; but in effect, the *Stereobata* is that to the *Stylobata*, which the *Stylobata* is to the *Spira* or Base. See *STYLOBATA*.

The Word is form'd from the *Greek*, *στερεός*, solid Prop.

**STEREOGRAPHIC Projection of the Sphere**, is that wherein the Eye is supposed to be placed, in the Surface of the Sphere. See *PROJECTION of the Sphere*.

The Method and Practice of this Projection, in all the principal Cases, viz. on the Planes of the Meridian, Equinoctial and Horizon, is as follows;

#### 1° Stereographic Projection on the Plane of the Meridian.

Let *ZQNE* (Fig. 23.) be the Meridian, *Z* and *N* the Poles, as also the Zenith and Nadir; *E Q* the Equinoctial and Horizon; *Z N* the equinoctial Colure, and prime vertical Circle: *Z 15 N*, *Z 30 N*, *Z 45 N*, &c. are Hour-circles or Meridians, and also Azimuths, because the Pole is in the Zenith; and to describe these Circles, find the Points, 15, 30, 45, 60, &c. in the Equinoctial, by setting the Half-tangent of their Distance from *Q*; and then their Centres are found by setting their Co-secants, both ways, from their Points of Intersection with the Equator; *Σ*, *σ*, and *ϑ*, *ϑ*, are the Northern and Southern Tropics, which are described by setting the Half-tangent of 23 Degrees 30 Minutes from *Q* each Way; then the Tangent of its Complement, viz. 66 Degrees 30 Minutes, each way from thence on the Colure produced, gives their Centres; by this Method, all Parallels of Declinations may be drawn. Or you might have set the Co-secant of the Parallel from the Centre of the Primitive, which would also have found the same Point for the Centre of the Parallel, whose Radius is equal to the Tangent of its Distance from its Pole. These Parallels in this Projection, are also Almicanter, or Parallels of Altitude; *Σ*, *ϑ* is the Ecliptick, which must be divided from the Division on the Scale of Half-tangents; but denominated according to the Signs of the Zodiac, reckoning 30 Degrees to each Sign.

#### 2° Stereographic Projection on the Plane of the Equinoctial.

Let *SC* (Fig. 24.) be the Meridian, and solstitial Colure; *EN* the equinoctial Colure, and Hour-circle of 6; *P* the North Pole; *Σ*, *σ*, the Northern Tropick; *E Σ N* the Northern Half of the Ecliptick (whose Centre is found, by setting off the Secant of 23 Degrees 30 Minutes from *Σ*) and its Pole is at *a* the Intersection of the Polar Circle and Meridian, being the Place through which all Circles of Longitude must pass; and *E Z N* the Horizon of *London*, which is described thus: Set the Half-tangent of the Co-latitude, from *P* to *Z*; then the Tangent of the same, set from *P* to *O*, or its Secant from *Z* to *O*, gives its Centre; and its Pole will be at *b* 38 Degrees 30 Minutes, (in the Half-tangents) distant from *P*, where *b* is at the Zenith. To draw any other Circles in this Projection; 1. For Circles of Longitude, which must all pass through *a*, and the several Degrees of the Ecliptick; set the Tangent of 66 Degrees, 30 Minutes, from *a* downwards, on the Meridian produced; which will find a Point, through which a Perpendicular, drawn to the Meridian, shall contain in it the Centres of all the Circles of Longitude, whose Distances set off to the Radius *P a*, shall be the Tangents of the Degrees of their Distances from the Meridian, *S P C* (which is that belonging to 180 Degrees. 2. All Parallels of Declination are drawn by setting the Half-tangents of their Distances from *P*. 3. All Azimuths, or Vertical Circles must pass through *b d*, the Zenith: Since, therefore, the Zenith is 38 Degrees 30 Minutes distant from *P*, set the Co-secant of that (or the Secant of 51 Degrees 30 Minutes) from *b* on the Meridian extended below, and that shall find the Point *x*, the Centre of the Azimuth of East and West, viz. *E b N*; and the Centres of all the rest are in a Line that is perpendicular to the Meridian, and drawn through *x*. 4. Circles of Altitude or Almicanter, are lesser Circles, whose Poles are not in the Plane of the Projection; thus the Circle *O e*, is a Parallel of Altitude 50 Degrees above the Horizon. 5. All Hour-circles are straight Lines from the Centre to the Limb.

#### 3° Stereographic Projection on the Plane of the Horizon.

First draw a Circle representing the Horizon, and quarter it with two Diameters; then will *z* be the Zenith of the Place,



12 z 12 the Meridian ; 6 z 6 the prime Vertical, or Azimuth of East and West ; (Fig. 25.) make z P = Half-tangent of 38° 30' (or Tangent of 19° 15') P shall be the Pole of the World. Make Z E = Half-tangent of 51° 30' (or Tangent of 25° 45') and E o = Secant

z o = Tangent } of 38 Degrees 30 Minutes ; then shall o be the Centre of the Equinoctial 6 E 6. In this Projection Almicanter, are all parallel to the primitive Circle : And Azimuths are all right Lines passing through z the Centre of the Primitive, to the equal Divisions in the Limb. Parallels of Declination are all lesser Circles, and parallel to the Equinoctial, and their Intersections with the Meridian are found, by setting the Half-tangent of their Distance from the Zenith, Southward or Northward, or both Ways from z. Their Centres are found, by bisecting the Distance between those two Points ; for the Middle shall be the Centre of the Parallel. Thus z S = Half-tangent of 20° 00' = Distance of the Tropick of S from the

Zenith - - - - - to the Southward,  
And w = Half-tangent of 75° = Di- } or downward from  
stance of the Tropick of w from } z,  
the Zenith - - - - -

and the Intersection again with the North of the Meridian, is at 105° 30' } for { w } to the Northwards or upward from z.  
152° 30' }

For the Hour-circles make z c = Tangent of 51° 30', or P C equal Secant of 51° 30', draw G C T perpendicular to the produced Meridian : Then, if from c with the Radius z c, you set off the Tangents of 15° 30' 45°, &c. both ways, you will have the Centres of the several Hour-circles, 7 and 5, 8 and 4, &c. Note, In all Stereographick Projections, all Diameters are measured on the Scale of Half-tangents ; and this is the Ground of all Dialling, or the true Projection of the Hour-Circles of the Sphere on any given Plane. See SPHERICK Geometry, DIALLING, &c.

STEREOGRAPHY, the Art of drawing the Forms of Solids upon a Plane. See SOLID.

The Word is form'd from the Greek, στερεον, Solid, and γεωμετρία, I describe.

STEREOMETRY, that Part of Geometry, which teaches how to measure Solid Bodies, i. e. to find the Solidity or solid Content of Bodies ; as Globes, Cylinders, Cubes, Vessels, Ships, &c. See SOLID and SOLIDITY.

The Methods hereof, see under the respective Bodies, as GLOBE, SPHERE, CYLINDER, &c.

The Word is form'd from the Greek, στερεος, Solid, and μέτρον, Measure. See CUBATURE.

STEREOTOMY, the Art or Science of cutting Solids, or making Sections thereof ; as in Profiles of Architecture, in Walls and other Solids to be cut. See SECTION.

The Word is form'd from στερεος, and τομή, Section.

STERILITY, the Quality of something Barren ; in opposition to Fecundity. See BARRENNES and FECUNDITY.

Sterility was held a grievous Affliction by the Wives of the ancient Patriarchs. Nature has annex'd Sterility to all monstrous Productions, that the Creation might not degenerate. Hence the Sterility of Mules, &c. See MONSTER, MULE, &c.

The Sterility of Mercury, says the Alchymists, resembles that of Women who are too cold and moist ; and who, by being purged and heated, wou'd be raised from their Sterility, as Mercury is when purged according to the Rules of Art.

The Word is form'd from the Latin Sterilitas, of Sterilis, Barren.

STERLING, a Term frequent in the English Commerce. A Pound, Shilling, or Penny Sterling, signifies as much as a Pound, Shilling or Penny of lawful Money of England, as settled by public Authority. See POUND, SHILLING, &c.

Our Antiquaries and Critics are greatly divided, as to the Origin of the Word Sterling. Buchanan fetches it from the Cattle of Striveling or Sterling in Scotland, where a small Coin was anciently struck, that in time came to give Name to all the rest.

Cambden and Spelman derive the Word from Easterling ; observing, That in the Reign of King Richard I. Money coin'd in the East Parts of Germany, began to be of especial Request in England, by reason of the Purity thereof, and was called Easterling Money ; as all the Inhabitants of those Parts were called Easterlings ; some of whom, skill'd in Coinage, were soon after sent for over to perfect the English Money, which was thenceforwards denominated from them, Sterling for Easterling ; nor, says Cambden from Striveling in Scotland, nor from a Star which some dream to have been coined thereon ; for in old Deeds, the English Species are always call'd Nummi Easterlingi, which implied as much as good and lawful Money, &c.

Sommer, again, derives the Word from the Saxon, Steore, a Rule or Standard ; intimating, that this, as to Weight and Pineness, was to be the common Standard of all current Money.

In Store, and some other of our ancient Writers, Easterling

is used for a certain Coin, amounting nearly to our Silver-penny ; and on some Occasions we find the same Word Sterling used in the general for any Piece of Money ; it being observable, that, for a good while together, there was no other Coin but Pennies, with which Sterlings or Esterlings were become synonymous : Much as among the Ancients, the Words Denarius and Nummus were used. See PENNY, DENARIUS, NUMMUS, &c.

STERN of a Ship, is all the hindermost Part of her, generally speaking ; but properly, it is only the outmost Part of her, abaft. See SHIP, ABAFT, &c.

STERN, among Hunters, is the Tail of a Grey-hound or a Wolf.

STERNOMYOIDEUS, in Anatomy, a Pair of Muscles arising from the upper and internal Part of the Bone of the Sternum, and part of the Clavicle, and adjoining Part of the first Rib, with a broad Origin ; and which running from the Aspera Arteria, Glandulae Thyroideae, and Cartilago Scutiformis, terminates in the Base of the Os Hyoides. It draws the Bone straight upwards.

STERNOTHYROIDES, in Anatomy, a Pair of Muscles of the Larynx ; arising in the Sternum, or Breast Bone, and terminating in the Cartilago Thyroides. They serve to draw down that Cartilage.

STERNUM, Breast-bone, in Anatomy, a Bone that makes the Fore-part of the Breast, and is situated in the middle of the Ribs. See BONE.

In Adults, it consists of one single Piece ; but in Infants, of several, according to the Diversity of Age. Kerkringius tells us, he has never seen more than Six. They continue Cartilaginous 'till Seven Years of Age ; and are not very Solid afterwards, but Spongy.

At the lower Extremity of the Sternum, is a Cartilage, called Xiphoides or Ensisformis, because resembling the Point of a Sword. See XIPHOIDES, &c.

The Use of the Sternum is to defend the Heart, and to receive the Extremities of the true Ribs. See RIB.

The Word is form'd from the Latin, Sterno ; the Breast being, as it were, couch'd upon it.

STERNUTATIVE, or STERNUTATORY, a Medicine proper to occasion Sternutation, or Sneezing.

Sternutatories are of two Kinds, gentle and violent : Of the first Kind, are Betony, Sage, Marjoram, Tobacco, &c.

Of the latter, are Euphorbium, white Hellibore, Pellitory, &c.

Sternutatories have their Effect by their sharp, pungent Parts vellicating the inner Membrane of the Nose, which is exceedingly sensible, and occasioning the Serous Matter contained in the Glands of the Nose, and in several Sinus's situate in the Base of the Cranium, and the Os Frontis, to be expell'd. See NOSE.

STEW, a kind of small Fish-pond, the peculiar Service whereof is, to maintain Fish, and keep them in Readiness, for the daily Uses of a Family, &c. See FISH.

The Fish bred in the large Ponds, are drawn and put in here. For two large Ponds of three or four Acres apiece, 'tis advisable to have four Stews, each two Rods wide, and three long. The Stews are usually in Gardens, or at least near the House, to be more handy, and the better look'd to.

The Method of making them, is to carry the Bottom in a continual Declivity from one End, with a Mouth to favour the drawing with a Net. See POND.

STREWS or STUES, are Places anciently permitted in England, to Women of profess'd Incontinency, for the Proffer of their Bodies to all Comers.

These were under particular Rules, and Laws of Discipline appointed by the Lord of the Manor.

The Word is probably borrowed from the French, Estuves, hot Baths, in regard Wantons are wont to prepare themselves for venereal Acts, by Bathing ; and that this is not new, Homer shews in the Eighth Book of his Odyssey.

STEWARD, or Seneschal, an Officer, whereof there are various Kinds ; thus call'd from the Steda, Stead, Place or Room, and Weard, Ward, or Keeper, q. d. a Lieutenant ; or Person appointed in Place of another.

Lord High STEWARD of England, is the first and highest Officer of the Crown ; as having the Power of what We call a Vice Roy, the Danes, &c. Stadtholder, and the Swedes, Reichs droffer, q. d. Vice Rex.

The common Lawyers call him Magnus Angliae Seneschallus. His Office, as express'd in an ancient Record, was to supervise and regulate the whole Kingdom, both in Time of Peace and War, immediately under the King and after him ; an Authority so very great, that it was not judged safe, to trust it any longer in the Hands of any Subject.

The Office was Hereditary and Permanent, till the Time of Henry IV. since whom it has only been made Pro hac vice, occasionally ; as to officiate at a Coronation ; at the Arraignment and Trial of some Nobleman for Treason, or other great Crime. During his Stewardship, he bears a white Staff



in his Hand ; and the Trial, &c. ended, he breaks his Staff, and with it, his Commission expires.

**Lord STEWARD of the Household**, is an Officer to whom the State of the King's House is committed ; to be ruled and guided at his Discretion. He has Authority over all Officers and Servants of the King's House, except those of the Chapel, Chamber and Stable ; which are under the Lord Chamberlain, Master of the Horse, and Dean of the Chapel. See **CHAMBERLAIN**, &c.

The **Lord Steward**, by Virtue of his Office, judges of all Enormities, as Treasons, Murders, Felons, Bloodsheds, &c. committed in the Court, or within the Verge thereof ; which is Ten Miles all around the chief Tunnel of the Court (*London*, only, by Charter, exempted).

The same Officer ministers the Oath to the Members of the House of Commons, at the beginning of each Parliament ; and at the end of the Parliament, adjusts the parliamentary Expenses.

The Badge of his Commission is a white Staff, which he bears in the King's Presence ; but which at other Times is carried by a Footman bare-headed.

**STEWARD of a Ship**, is he who receives all the Victuals from the Purser ; and is to see it well stowed in the Hold : all Things of that Nature belonging to the Ship's Use, are in his Custody : He looks after the Bread, and distributes out the several Messes of Victuals in the Ship. He hath an Apartment for himself in the Hold, which is called the *Steward's Room*.

**STIGMATA**, in Antiquity, certain Marks impress'd on the Left Shoulder of the Soldiers, when listed.

**STIGMATA** were also a kind of Notes or Abbreviations, consisting only of Points disposed various Ways, as in Triangles, Squares, Crosses, &c.

**STIGMATA**, is also a Term introduced by the *Franciscans*, to express the Marks or Prints of our Saviour's Wounds, impress'd by him on the Body of their Seraphic Father, St. *Francis*. See **FRANCISCAN**.

'Twas one Morning, about the Feast of the Exaltation, in the Year 1224, that St. *Francis*, being at Prayers on Mount *Alverna*, whither he had retired to pass the *Michaelmas* Lent ; saw a Seraph with Six burning Wings, in other respects like a Man ; with his Hands and his Feet stretch'd upon a Cross. With two of the Wings he covered his Body, two were raised over his Head, and with two he flew swiftly down. Five Rays proceeded from the Five Wounds of the Person crucified, and were directed to the same Five Parts of the Body of the Saint.

Upon the Vision's disappearing, he saw the Marks of the Nails, &c. on his Hands and Feet ; the same as he had seen them in the Image of the Crucifix. His Hands and Feet were found pierced with Nails in the Middle ; the Heads of the Nails were plainly seen within the Flesh on one Side, and the Points clench'd on the other. On his right Side, appeared a red Scar, as from a Wound of a Spear, which frequently run with Blood, that stain'd his Gown, &c.

The good Man, we are told, took a World of Pains to hide the *Stigmata* ; but those of his Hands and Feet were seen in his Life-time, many all his Endeavours, by several of the Brotherhood, who affirmed it upon Oath, and by some Cardinals, says St. *Bonaventure*, who attested the Miracle both by Word and Writing, and express'd it in the Hymns, Anthems, &c. composed in Honour of St. *Francis*.

After his Death, they were seen by Fifty of his Religious, as well as by St. *Clara* and her Nuns, and an infinite Number of Seculars ; many of whom felt them with their Hands, to be the more certain.

A solemn Feast was hereupon appointed to be annually celebrated, in Memory of the Miracle, called *The Feast of the Stigmata of St. Francis* ; and a peculiar Mass or Office composed for the same.

An Archiconfraternity was erected on the same Occasion, by *Fri. Pizzi*, a *Roman* Chirurgion in the Year 1594.

**STIGMATA**, in Natural History, are Points, or Specks usually seen on the Sides of the Bellies of Insects ; particularly the Sphondilium, where they are very apparent.

They are nothing but the Extremities of certain Vessels fasten'd to the Sides in each Knot, and serving them for Lungs.

**STIBIUM**, an ancient Name for Antimony, now seldom used. See **ANTIMONY**.

**STILE** and *Stilus*. See **STYLE**.

**STILES**, in Carpentry, &c. are the upright Pieces, which go from the bottom to the top in any Wainscot.

**STILLATITIOUS Oils** ; are such as are procured by Distillation, in opposition to those got by Infusion, Expression, &c. See **OIL** and **DISTILLATION**.

**STILLYARD**, in Commerce. The *Company of the Stillyard* was a Community, or Corporation of foreign Merchants, establish'd at *London* ; thus call'd, from the Place where they had their Residence, called the *Stillyard*, near the Bridge, which was assigned them by Act of Parliament ;

and which, in some Records, is called *Guthalda Teutonorum* ; being, as some write, a broad Place or *Tart* where much *Steel* had used to have been sold.

This Company was created in the Year 1215, under *Henry III.* in favour of the free Cities of *Germany*, who had been assistant to him in his Wars against *France*. See **COMMERCE**.

It had render'd itself Mistress of all the *English* Manufactures, particularly those of Cloth ; which it was allowed not only to sell throughout the Kingdom, but also to transport Abroad. The Prejudice these Privileges did, by which they frequently abused the Nation, occasioned the Company's being broke, by Sentence of the Judges, under *Edward IV.* But it redeem'd its Rights, and lasted to the Year 1552, when it was suppress'd by *Edward VI.* See **HANSE**.

**STIMULATING**, a Property in angular or sharp Bodies, whereby they cause Vibrations and Inflections of the Fibres of the Nerves, and a greater Derivation of nervous Fluid into the Part affected.

*Stimulants* produce Pain, Heat, Redness, &c. They may be reduced to violent penetrating *Depilatories* ; gentle *Sinapisms*, *Vesicatories* and *Causticks*. See **SINAPISM**, **VESICATORY**, &c.

**STING**, an Apparatus in the Body of certain Insects, in manner of a little Spear ; serving them as a Weapon of Offence.

The *Sting* of a Bee or Wasp, is a curious Piece of Mechanism : It consists of an hollow Tube, at the Root whereof, is a Bag full of sharp, penetrating Juice ; which in *Stinging*, is injected into the Flesh through the Tube.

Within the Tube, Mr. *Derham* has observed, there lie two small sharp-bearded Spears : In the *Sting* of a Wasp, he told Eight Beards on the Side of each Spear, somewhat like the Beards of Fish-hooks.

One of these Spears in the *Sting* or Sheath, lies with its Point a little before the other ; to be ready, as shou'd seem, to be first darted into the Flesh : which once fix'd, by means of its foremost Beard, the other then strikes in too ; and so they alternately pierce deeper and deeper, their Beards taking more and more hold in the Flesh ; after which, the Sheath or *Sting* follows, to convey the Poison into the Wound ; which, that it may pierce the better, is drawn into a Point, with a small Slit below that Point, for the two Spears to come out at.

By means of these Beards it is, that the Animal is forced to leave its *Sting* behind it, when disturb'd, e'er it can have Time to withdraw the Spears into their Scabbard.

**STINK** or **STENCH**, a disagreeable Smell exhaling from a corrupted or other Body ; and which is prejudicial to the Nose and Brain. See **SMELL**.

A *stinking* Breath, is usually the Result either of diseased Lungs, or of scorbutick Gums, &c.

A *stinking* Nose, *fætor Naris*, is the Result of a deep Ulcer within the Nose, whence arise fetid Scabs, &c. Its Cause, according to *Galen*, is a sharp, purrid Humour falling from the Brain, or the *Processus Alantillares*.

A *stinking* Nose is reckoned by the Civillans, one of the legal Causes of annulling Marriage.

**STIPEND**, *Stipendium*, among the *Romans*, signified the same with *Tribute* ; and hence *Stipendiarii* were the same with *Tributarii*. See **TRIBUTE**.

**STIPULATION**, in the Civil Law, the Act of *Stipulating* ; that is, of treating and concluding of Clauses and Conditions to be inserted in a Contract. See **TREATY** and **CONTRACT**.

*Stipulations* were anciently performed at *Rome*, with abundance of Ceremonies ; the first whereof was, that one Party should interrogate, and the other answer, to give his Consent and oblige himself.

By the ancient *Roman* Law, no Body could *Stipulate*, but for himself ; but as the *Tabelliones* were publick Servants, they were allowed to *Stipulate* for their Masters ; and tho' Notaries succeeding the *Tabelliones*, have inherited the same Privilege.

The Word is form'd from the *Latin*, *Stipula*, a Straw ; because in making a Sale, a Straw was given the Purchaser, in sign of a real Delivery.

Which Custom is still retain'd in some Parts of *France*, particularly at *Verdun* : The Custom always has been on this Occasion, for the two Parties to break a Straw between them, and each take his Moiety ; which they afterwards join'd again, to recognize their Promise.

The *Stipulation* had its Origin in the *Lex Aquilia*, and another Law of the Emperor *Aradius*.

**STIRROP**, a Rest or Support for the Horse-man's Foot ; serving to keep him firm in his Seat, and enable him to mount. See **SADDLE**.

The great Art of a Cavalier in a Tournament, was to make his Antagonist lose his *Stirrop*.

For Combating, 'tis a Rule to have the Right Foot *Stirrop* somewhat shorter than the other.



*Matthiolus* observes, that the *Turks* have a knack of poisoning their *Stirrups*, with so subtle and penetrating a Poison, that it makes its Way through the Boots, and kills the Rider. *F. le Compté* tells us, that the *Tartars* ride cross-leg'd, and with their *Stirrups* exceedingly short.

*Stirrups* are allowed a modern Invention. *Ménage* observes, that *St. Jerom* is the first Author who mentions them.

**STOCK**, in Gardening, &c. the Stem or Trunk of a Tree. See **STEM**.

For *Stocks of Fruit-trees*; the best to Graft on; are those rais'd of Kernels of Wildings and Crabs of the most thriving Trees.

Though the Fruit always take after the Graft; yet the *Stock* has some Influence. A wild *Stock* is always found to enliven a dull Apple. See **ENGRAFTING**.

To have a Quantity of *Stocks* to graft on; old Trees are to be cut down within two Inches of the Ground, which will cause a multitude of Suckers to rise from the Roots. When these are risen Half a Yard, they are to be covered up with good Earth a Foot thick, and as soon as they have put forth Roots, in Winter are to be conveyed into the Nursery, where, in a Year or two, they will be ready to Graft. *Cherry Stocks*, *Plumb Stocks* and *Pear Stocks* may be thus raised from Suckers, as well as Stones or Seeds; but those raised this latter way are prefer'd. See **FRUIT-TREE**, &c.

**STOCK-FISH** or **STOCKFISCH**, in Commerce, a kind of dried, salted Fish; of a greyish Ash-colour, only the Belly somewhat whiter. See **FISH**.

The Commerce of *Stock-fish* is very considerable in *Holland*, both from the great Consumption thereof in the Country, and from their Victualling their Vessels therewith. 'Tis said to take its Name, from being as hard as a *Stock*, or from its needing to be beaten with a Stick, to fit it for Eating. See **FISHERY**.

**STOCKING**, that Part of the Cloathing of the Leg and Foot, which immediately covers their Nudity, and screens them from the Rigor of the Cold. Anciently, the only *Stockings* in Use, were made of Cloth or mill'd Stuffs sew'd together; but since the Invention of knitting and weaving *Stockings* of Silk, Wooll, Cotton, Thread, &c. the Use of *cloth Stockings*, is quite out of Doors.

The modern *Stockings*, whether wove or knit, are a kind of Tissues form'd of an infinite Number of little Knots, call'd *Stitches*, *Loops* or *Mashes*, intermingled in one another.

*Knit Stockings* are wrought with Needles made of polish'd Iron or Brass Wire, which interweave the Threads, and form the *Mashes* the *Stocking* consists of. This Operation is call'd *Knitting*; the Invention whereof it were difficult to fix precisely; though its commonly attributed to the *Scotch*, on this ground, that the first Works of this Kind came from thence. 'Tis added, that it was on this Account, that the Company of *Stocking-knitters* establish'd at *Paris* in 1527, took for their Patron *St. Fiacre*; who is said to have been the Son of a King of *Scotland*.

*Wove Stockings*, are ordinarily very fine: They are manufactured on a Frame Machine made of polish'd Iron; the Structure whereof is exceedingly ingenious, but withal exceedingly complex, so that 'twere very difficult to describe it well, by reason of the Diversity and Number of its Parts; nor is it even conceived, without a deal of Difficulty, when working before the Face.

The *English* and *French* have greatly contested the Honour of the Invention of the *Stocking-loom*; but the Matter of Fact, waving all national Prejudices, seems to be this; That 'twas a *Frenchman* first invented this useful and surprizing Machine; who, finding some Difficulties in procuring an exclusive Privilege, which he required, to settle himself at *Paris*, went over into *England*, where his Machine was admired, and the Workman rewarded according to his Merit.

The Invention thus imparted to the *English*; they became so jealous hereof, that for a long Time it was forbid, under Pain of Death, to carry any of the Machines out of the Island, or communicate a Model thereof to Foreigners. But as 'twas a *Frenchman* first enrich'd our Nation with it, so a *Frenchman* first carried it Abroad; and by an extraordinary Effort of Memory and Imagination, made a Loom at *Paris*, on the Idea he had form'd thereof, in a Voyage he made to *England*. This Loom first set up in the Year 1656, has served for the Model of all those since made in *France*, *Holland*, &c.

**STOCKS**, in Ship Carpentry, a Frame of Timber, and great Posts, made ashore, to build Pinnaces, Ketches, Boats and such small Craft, and sometimes small Frigates upon. See **SHIP** and **VESSEL**.

Hence we say, a Ship is on the *Stocks*, when she is a building.

**STOICISM**, the Doctrines and Opinions of *Zeno's* Followers, call'd *Stoicks*. See **STOICKS**.

**STOICKS**, a Sect of ancient Philosophers, the Followers of *Zeno*; thus call'd from the *Greek*, *σοα*, *Portico*, in regard

*Zeno* used to teach under a Portico or Piazza. See **PHILOSOPHY**.

The Author of this Sect, *Zeno*, was of *Cittium*, a Town in *Cyprus*, inhabited by a Colony of *Phœnicians*; whence he is supposed to have borrowed many of his Dogmata from the *Phœnician* Philosophy, which many learned Men have shewn was, itself, borrowed from the *Jewish* or *Mosaic* Philosophy; though it must be allowed, there appear as many Things in the *Stoick* Philosophy, borrowed from *Plato's* and *Socrates's* School, as from that of *Moses*.

*Zeno* making a trading Voyage from *Cittium* to *Athens*, richly laden with *Tyrian Purple*, was Shipwreck'd not far from Port; upon which, we are told, consulting the Oracle how he shou'd best spend the rest of his Life, he was answer'd, *εὖ ζῶντα ζήσεις τοῖς νεκροῖς*, By becoming of like Colour with the Dead; upon which he applied himself to the Study of the ancient Philosophers; became a Hearer of *Crates* the *Cynic*; but *Lactantius* tells us, he had too much natural Modesty to give in to the *Cynic* Impudence.

From *Crates*, he had recourse to *Xenocrates*, then to *Polemon*; and at length began to think of instituting a new Sect.

To this Purpose, a *σοα*, *Portico*, call'd from the Pictures of *Polignotus* therein, the *painted Portico*, was pitch'd on. Here using to walk and philosophize; he was soon attended by a great Number of Disciples, hence call'd *Στωϊκοί*, *Stoicks*.

He became exceedingly reverenc'd at *Athens*, for the Probity and Severity of his Life and Manners, and the Consistency thereof with his Doctrine; insomuch that the *Athenians* decreed him, when living, a golden Crown, and used in dubious Times to deposite the Keys of the City with him; and after his Death, consecrated an Altar to him.

One of his chief Followers was *Cleanthes*, who was succeeded by *Chrysippus*, and he by *Dicogenes Babylonius*, *Antipater*, *Panætius* and *Possidonius*, among the *Greeks*; and by *Cato*, *Varro*, *Cicero*, *Seneca*, the Emperor *Antoninus*, &c. among the *Romans*; and by *Pantænus*, and *Clement Alexandrinus*, among the *Christians*.

The *Stoicks* cultivated Logicks, Physicks, Metaphysicks, &c. but principally Ethicks. The principal of their Dogmata of the former Kinds, are as follows.

That there are certain *καταλήψεις*, *Comprehensions*; which others call *κοινὰς ἐνοίας*, common Notices or innate Ideas or Principles; and *ἰστέρι*, *Inchoate Intellects*, Beginnings of Understanding; naturally found in the Mind: That God is the seminal Cause of the Universe: That the World is an Animal; which Opinion the *Stoicks* maintain'd in common with the *Platonists*, by reason of God's inhabiting and informing every Part thereof, in quality of an *Animi Mundi*. See **ANIMA**. That Nature is an artificial Fire, tending to Generation: And, that the World is to be destroy'd at last by a Conflagration.

For the Morality of the *Stoicks*; 'twas couch'd much in Paradoxes: as, That a wise Man is void of all Passion or Perturbation of Mind: That Pain is no real Evil; but that a wise Man is happy in the midst of the severest Torture: That a wise Man is always the same, and always joyful; That none but a wise Man is free; all others are Servants; That none but a wise Man is Rich; That none but a wise Man ought to be esteem'd a King, Magistrate, Poet or Philosopher; That all wise Men are great; That all Things are a wise Man's, who is contented with himself; That wise Men are the only Friends, and the only Lovers; That nothing ever happens to a wise Man beyond Expectation; That all Virtues are insensibly connected together; That all good Things are equal, and equally to be desired; and that Goodness admits of no Increase or Diminution. Whether Virtue might be lost or no, was hotly disputed among them; *Chrysippus* held it might, by Drunkenness and Atrabilis; *Cicero*, that it could not, by reason of the firm *καταλήψεις*, *Comprehensions*.

They own'd but one God; whom, however, they call'd by various Names, as *Mind*, *Fate*, *Jupiter*, &c. by which they did not mean various Things; but various Powers and Relations of the same Things. Providence, they express'd under the Name of *Fate*, which *Chrysippus* defines to be a natural Series or Composition of Things mutually following each other by an immurable Nexus or Tie fix'd from all Eternity. Lastly, they held, That the human Soul surviv'd after Death. See **FATE**, &c.

**STOLE**, **STOLA**, a sacerdotal Ornament, wore by the *Romish* Parish Priests over the Surplice, as a Mark of Superiority in their respective Churches; and by other Priests over the Alb, at celebrating of Mass; in which Case, it goes across the Stomach; and by Deacons over the Left Shoulder, Scarf-wise. When the Priest reads the Gospel for any one, he lays the Bottom of his *Stole* on his Head.

The *Stola* is a broad Swath or Slip of Stuff, hanging from the Neck to the Feet, with Three Crosses thereon.

The Bishops anciently pretended, that the Parish Priests were never to appear before them, but in their *Stoles*. In



*Flanders and Italy*, they always preach in *Stoles*. 'Tis supposed to be a Representation of the Extremities of the long Robe wore by the ancient High Priests. The Word is Greek, *Stola*, signifying a long Robe or Vestment.

The *Stola* of the ancient Romans, &c. was very different from that now in Use; that being a kind of Robe fitter for Women than Men; tho' 'twas held a Robe of Honour among all Nations. Kings themselves sometimes used it, and sometimes bestowed it as a Reward of Virtue.

*Green of the Stole*, the eldest Gentleman of his Majesty's Bed-chamber; whose Office and Honour it is, to present and put on his Majesty's first Garment or Shirt every Morning; and to order the Things in the Chamber. See *Bed-Chamber*.

*Order of the Stole*, an Order of Knights instituted by the Kings of *Arragon*; though as to the particular Author, or Time of the Institution, we are in the Dark. The first Time we hear of it, is under *Alphonfus V.* who mounted the Throne in 1416. *Justiniani* takes it to have been instituted about the Year 1332.

*Order of the Golden Stole*, a military Order at *Venice*; thus called from a golden *Stole* which the Knights wear over the Left Shoulder, reaching to the Knee, both before and behind, a Palm and a Half broad. None are raised to this Order but the *Patricians* or noble *Venetians*. *Justiniani* observes, That the Time of the Institution of this Order is unknown.

*STOMACH, Ventricle*, in Anatomy, &c. a hollow, membranous Organ, destined to receive the Food, and convert it into Chyle. See *Food, Digestion, Chyle, &c.*

Its Form is longish, compared by some to a Gourd; by others to a Bag-pipe. 'Tis situate in the Epigastrium, declining a little further to the Left than the Right. Its upper Part is connected to the Diaphragm, the bottom to the Cawl; the right Side to the Duodenum, and the Left to the Spleen.

It has two Orifices, one at each end. The Left Orifice is called *σφαγίτης*, from *σφα*, Mouth; and also *ναδία*: This is join'd to the Oesophagus, of which it seems to be only a Continuation: By this Orifice, the Aliments enter the Stomach; where being digested, they ascend obliquely to the Pylorus, or right Orifice, which is united to the first of the Intestines. See *Pylorus*.

The *Stomach* consists of four Membranes or Coats; the first and inmost is form'd of short Fibres, which stand perpendicularly upon the Fibres of the next Coat; they are to be seen plainly towards the Pylorus: when the *Stomach* is distended with Meat, these Fibres become thick and short. Whilst they endeavour to restore themselves by their natural Elasticity, they contract the Cavity of the *Stomach* for the Attrition and Expulsion of the Aliments. This Coat is much larger than the rest, being full of Plaits and Wrinkles, and chiefly about the Pylorus: These Plaits retard the Chyle, that it run not out of the *Stomach* before it be sufficiently digested. In this Coat, there are also a great Number of small Glands which separate a Liquor, which betweens all the Cavity of the *Stomach*, and helps the Concoction of the Aliments; for which Reason this Coat is called the *Tunica Glandulosa*.

The Second is much finer and thinner; it is altogether Nervous; is of an exquisite Sense, and is called *Nervosa*.

The Third is Muscular, being made of streight and circular Fibres; the streight run upon the upper Part of the *Stomach*, between its superior and inferior Orifices, and the circular run obliquely from the upper Part of the *Stomach* to the Bottom. Of these, the innermost descends towards the right Side, and the outermost towards the Left; so that by their Action, both Ends of the *Stomach* are drawn towards its Middle, and the whole is equally contracted; by their Contraction and continual Motion, the Attrition and Digestion of the Aliments, is in great measure performed.

The fourth Tunic is common; it comes from the Peritoneum. The *Stomach* sends Veins to the Portæ, and Branches to the Gastroepiplois, accompanied with others of the Celiac; all lying immediately under the fourth Coat.

The Eighth Pair of Nerves gives two considerable Branches to the *Stomach*, which are spread much about the upper Orifice; by which it is render'd very sensible; whence also, proceeds the great Sympathy betwixt the *Stomach*, Head and Heart; on account whereof, *Van Helmont* thought, that the Soul had its Seat in the upper Orifice of the *Stomach*.

For the Motion of the *Stomach*; Dr. *Pitt* in the *Philosophical Transactions*, acquaints us, that in dissecting a Dog, he found the peristaltic Motion of the Guts continued through the *Stomach*; the Pylorus, which is usually found as high as the Diaphragm, being, in every Undulation, brought below the very bottom of the *Stomach*; so that he could manifestly observe a Constriction in the middle of the *Stomach*, at every Motion downwards, passing it in, so as to be able to compress whatever was contained in its Cavity.

These Motions, he observes, were as regular as any he ever observed in the Guts; and adds, That he has since observed the same in three others; whence one may safely enough conclude it holds of all. See *PERISTALTIC*.

Hence, we easily see the Reason of the quick Distribution of the Nourishment; the Food being no sooner opened by the Drink and Spittle, &c. than it has a free Motion through the Pylorus into the Intestines, from this Compression in the middle of the *Stomach*. See *INTESTINES*.

Ruminating Animals have four *Stomachs*; yet 'tis observed that some of these, which have four in *Europe*, have only two in *Africa*, probably by reason the Herbs in *Africa* are more nourishing. See *RUMINANT*.

Birds that live ordinarily of Seeds, cover'd with a tough Rind, have a kind of *Stomach* call'd the *Crop* or *Gizzard*, consisting of four large Muscles without-side, and a hard callous Membrane within. See *GIZZARD*.

Such as live on Flesh, as Eagles, Vulturs, &c. have only one. See *CARNIVOROUS, GRANIVOROUS, &c.*

*STOMACHIC*, a Medicine that strengthens the *Stomach*; and promotes the Office of Digestion. See *STOMACH*.

Of this Kind are Wormwood, Rhubarb, Mint, Mastic, Aloes, Pepper, Cinnamon, Aromatick Bitters, &c. good Wine is also a *Stomachic*.

*STOMACHIC*, in Anatomy, is applied to the Arteries, Veins, &c. of the *Stomach*; call'd also *Gastric*. See *GASTRIC*.

The *Stomachic Veins* terminate in the Trunk of the Vena Porta, and the Splenic Vein.

The *Stomachic Arteries* arise from the Celiac.

The *Stomachic Nerves* come from the Eighth Pair.

*STONE*, in Natural History, a hard, solid, mineral Body, neither fusible nor malleable, form'd, in Succession of Time, in the Body of the Earth. See *FOSSIL*.

#### Origin and Formation of STONES.

For the Origin and Formation of *Stones*, M. *Tournefort*, on his Return from the *East*, in the Year 1702, proposed to the *Royal Academy*, a new Theory.

On a curious Survey of the famous Labyrinth of *Cren*, he observed, that several People had Engraven their Names in the living Rock, whereof its Walls are form'd; and, what was very extraordinary, the Letters whereof they consisted, instead of being hollow, as they must have been at first (being all cut with Knife-points) were prominent, and stood out from the Surface of the Rock, like so many Basso-Relievo's. See *LABYRINTH*.

This is a Phenomenon no otherwise accountable for, than by supposing the Cavities of the Letters fill'd intensibly, with a Matter issuing from out of the Substance of the Rock; and which even issued in greater Abundance than was necessary for filling the Cavity. Thus is the Wound made by the Knife healed up, much as the Fracture of a broken Bone is consolidated by a Callus, form'd of the extravasated nutritious Juice, which rises above the Surface of the Bone: And this Resemblance is the more just; as the Matter of the Letters was found whitish, and the Rock itself greyish.

Something very like it, is observed in the Barks of Trees, wherein Letters have been cut with the Knife; so that the Poet had Reason to say, That the Characters grew as the Trees themselves grew: *Crescent ille, crescentis amores*.

M. *Tournefort* supports his Opinion by similar Calus's apparently form'd in several other *Stones*, which re-unite them, after, by Accident, they have been broken.

From these Observations, it follows, that there are *Stones* which grow in the Quarries, and of Consequence that are fed; that the same Juice which nourishes them, serves to rejoin their Parts when broken; just as in the Bones of Animals, and the Branches of Trees, when kept up by Bandages; and in a Word, that they vegetate.

There is, then, no room to doubt but that they are organized; or that they draw their nutritious Juice from the Earth. This Juice must be first filtrated and prepared in their Surface; which may be here esteem'd as a kind of Bark, and hence it must be convey'd to all the other Parts.

'Tis highly probable, the Juice which fill'd the Cavities of the Letters, was brought thither from the bottom of its Roots; nor is there any more Difficulty in conceiving this, than in comprehending how the Sap should pass from the Roots of our largest Oaks, to the very Extremities of their highest Branches.

It must be own'd, the Heart of these Trees is exceedingly hard; and yet those of *Yew*, call'd *Iron Wood*, *Guaiacum* and *Ebony*, are much harder. Coral is as hard in the Sea as out of it; and Sea Mushrooms, which every Body allows to grow, are true *Stones*, and so, like the common *Stones*, are used in *America* to make Lime of.

None, we believe, ever doubted that Shells grow by means of a nutritious Juice; and yet this Juice is convey'd along



along the narrow Canals of these excessively hard Bodies, as well as through those of Plants, which are much less hard. See SHELL.

Some Stones, then, must be allow'd to vegetate and grow like Plants: But this is not all; probably they are generated in the same Manner; at least there are abundance of Stones, whose Generation is inconceivable, without supposing they come from a kind of Seed, wherein the organical Parts of the Stones are wrapped up in little; as those of the largest Plants are in their Grains.

The Stones, call'd *Cornu Ammonis*, *Lapis Judaicus*, *Astroites*, those of *Belgium* and *Florence*, the several kinds of Pyrites, Sea Mushrooms, Crystals of the Rock, and an Infinity of other Stones, suppose their several Seeds; as much as Mushrooms, Truffles, and various Kinds of Mosses, whose Seeds were never yet discovered. See MUSHROOM, CRYSTAL, CORAL, &c.

How should the *Cornu Ammonis*, which is constantly in Figure of a Volute, be form'd without a Seed, containing that same Structure in little? Who moulded it so artfully? And where are the Moulds? Far from this; these Kinds of Stones are found in the Earth, like common Flints. Nor were either Moulds or any thing like them, ever discover'd. See *Cornu Ammonis*.

M. *Tournefort* examines the several Kinds of Stones above-mentioned, and finds them under the same Necessity of Seed. Again, that immense Quantity of Flints, wherewith the *Crauf Arles* is cover'd, is a strong Argument in behalf of this Theory.

The Country there, for 20 Miles round, is full of roundish Flints; which are still found in equal abundance, to whatever Depth you dig. M. *Pereire*, who first proposed the Generation of Stones by means of Seeds (though he took the Word *Seed* in a very different Sense from M. *Tournefort*) first brought this extraordinary Campaign as a Proof thereof. In effect, how could so many similar Flints be form'd? There is no saying they are coeval with the World, without asserting at the same time, That all the Stones in the Earth were produced at once; which were to go directly contrary to the Observations above-mentioned.

Among the Seeds of Stones, M. *Tournefort* observes, there are some, which don't only grow soft by the Juices of the Earth, but even become liquid. These, then, if they penetrate the Pores of certain Bodies, grow hard, petrify and assume the Figure or Impression of the Body: Thus what we call *Pectinites*, *Conchites*, *Mytilites*, *Ostracites*, *Nautilites*, *Echinites*, &c. are real Stones, the liquid Seeds whereof have insinuated into the Cavities of the Shells, call'd *Pecten*, *Concha*, *Mytilus*, *Ostrea*, *Nautilus*, *Echinus*.

On the contrary, if those liquid Seeds fall on Flints, on Shells, Sand, &c. they inclose those several Bodies, and fixing between them, form a kind of Cement, which yet grows like other Stones. 'Tis highly probable that such Rocks as are only an Assemblage of malicated Flints have been form'd by a Number of these liquid Seeds; in like Manner as the Quarries full of Shells; unless the Rocks have envelop'd these Bodies in their Growth.

He adds, that there are Seeds of real Stones inclosed in the Spawn of certain Shell-fish; as well as that hard solid Matter destin'd to the forming their Shells.

There is a particular Kind of Shell-fish, call'd *Pholas*, which is never found any where but in Cavities of Flints, which are always found exactly fitted to receive them. Now, 'tis highly improbable the Fish should come and dig such a Nitch to spawn in; 'tis much more likely, the Stones they are found inclosed in, were at first soft; and that the Matter they are form'd of, was originally found in the Spawn, in like Manner as the Matter which forms the Egg-shell, is really found in the Seed thereof.

From the whole, he concludes, that the Seed of Stones, and even of Metals, is a kind of Dust, which probably falls from them while they are alive, i. e. while they continue to vegetate as above. This Dust may be compared to the Seeds of several Plants, as those of Ferns, Capillaries, Mosses, Truffles, &c. which no Microscope e'er yet discover'd; though their Existence is not at all doubted.

Probably Flints and Pebbles are among Stones, what Truffles are among Plants: Nor is this Opinion new; *P. L.* assures us. That *Theophrastus* and *Mutianus* believed, that Stones produced Stones: And *Gregory Nazianzen* adds, that there were Authors who even believed that Stones made Love, *"Ἐστὶ καὶ ἀφ' ἑστέων γὰρ καὶ δαίμονες ἔρωτες"*, *Poem. de Virgin.*

M. *Geoffroy* accounts for the Origin and Formation of Stones, in a different Manner.

He lays it down as a Principle, that all Stones, without Exception, have been Fluid; or at least a soft Paste, now dried and harden'd; witness the Stones wherein are found foreign Bodies; witness, also, figured Stones, &c.

On this Principle, he examines the Formation of the different Kinds of Stones; and shews, that the Earth alone suffices for the same, independent of all Salts, Sulphurs, &c. The

metallic Particles contain'd in Flints, give them their Colour; but these are only Accidents; for Proof of which, he instances the Saphirs and Emeralds of *Auvergne*, which lose all their Colour by a moderate Fire consuming their metallic Parts; but without any Damage to their Transparency; they being hereby render'd mere Crystals.

To view Rock Crystal, indeed, one would not take it for Earth; and yet Earth it must be, not Water congeal'd, as the Ancients imagin'd. See CRYSTAL.

Mr. *Geoffroy* conceives two Kinds of little primitive Parts in the Earth: Those of the first Kind, are exceedingly fine, thin Lamellæ, equal to each other, or nearly so. Now, when these meet together, from any Cause whatever, in a sufficient Quantity; the Regularity and Equality of their Figures determines them to range themselves equally and regularly; and thus to form a homogeneous Compound, which is very hard, from the immediate Contact of the Parts, and very transparent, by reason of their regular Disposition, which leaves a free Passage to the Rays of Light every Way; and this is Crystal. See CRYSTAL.

The Parts of the second Kind have all kinds of irregular Figures; and must accordingly form Assemblages that are much opaker and less hard. Now Crystal is form'd wholly of Parts of the first Kind; and all other Stones of a Mixture of the two kinds of Parts together: This Mixture is absolutely necessary, in order to unite and bind together the Parts of the second Kind, and give them a Hardness and Consistence, without which they would only make a Sand or Dust. Water, now appears the fittest Vehicle, to carry the Parts of the first Kind. This is seen from several petrifying Springs, which incrustate the Pipes through which their Waters are convey'd, or even solid Bodies laid in them for some time. The Water does not dissolve those earthy Parts; it only keeps them in Fusion, as it does the Juices wherewith Plants are fed.

This Water, thus charged with earthy Particles of the first Kind, M. *Geoffroy* calls the *Stony* or *Crystalline Juice*, whereof those Bodies are primarily form'd.

STONES are of various Kinds, with regard to the Places they are produced in: the most ordinary are under Ground; others in the Bodies of Men and other Animals; others seem to be generated by the Sea, as Pumice, &c. and others, the Effect of a petrifying Virtue in certain Waters.

Of these, some serve simply for Magnificence and Ornament; as all those called

*Precious Stones*; which make the Commerce of Lapidaries and Jewellers. See *Precious Stone*.

Others, much usefuller, if one might credit all the Virtues attributed to them, are used in Medicine, such as *Bezoards*, *Jewels Stone*, *Eagles Stone*, &c. See *Bezoard*, &c.

Others, again, are used in Painting; either to prepare Colours from, by calcining and grinding them, or to be used as Crayons or Pencils for Designing; of which Number are the *Armenian Stone*, *Black Lead*, *Ruddle*, &c.

Lastly, much the greatest Quantity, and those too of the most immediate and common Use, are those employ'd in Building; such as *Free-stone*, *Marble*, *Lime-stone*, *Fire-stone*, &c. each of which see under their proper Articles.

#### *A Scheme of the several Kinds of STONES from Bishop Wilkins.*

*Stones are either Vulgar, Middle-priced, or Precious.*

1. *Vulgar STONES*, or such as are of little Price, are distinguishable by their different Magnitudes, Uses, and Consistence, into the

Greater Magnitudes of Stone, used either about Buildings, whether of

Walls; chiefly being of a softer Consistence, whether Natural or Factitious.

1 { *Free Stone*  
    { *Brick*

Harder Consistence; not easily yielding to the Tool of the Workman, growing either in

2 { *Great Masses*.  
    { *Ragg*  
    { *Lesser Masses*; whether such as are for their Figure,

More knobbed, and unequal; used for the striking of Fire, either the more common, which is less heavy; or the less common, which is more heavy, as having something in it of a metalline Mixture.

3 { *Flint*.  
    { *Marchasite*, *Fire-stone*.

More round and even.

4 *Pebble*.

Roof, or Pavement, being of a laminated Figure, either Natural or Factitious.

5 { *Slate*  
    { *Tile*

Metals, either for the



- Sharpening, or trying of them  
 6 { *Wet-stone.*  
     *Touch-stone.*  
 Polishing, or cutting of them; being either of a more  
 spongy and soft, or of a more hard Consistence.  
 7 { Pumice.  
     Emery.  
 Lesser Magnitudes, either more, less or minute.  
 8 { Sand.  
     Gravel.

2. *Middle priced STONES*, are either of a

Shining Politure, or capable of it; whether of a  
 Simple white Colour, and more soft Consistence,

1. Alabaster.

Sometimes White, sometimes Black or Green, and some-  
 times variegated with Veins, growing in greater or  
 lesser Masses.

2 { Marble, Porphyry,  
    Agat.

Spotted with Red, upon a greenish Colour, or with Spots  
 of Gold-colour upon Blue.

3 { Jaspis, Heliotrope.  
    Lazul, Azure Stone.

Transparency, either

Brittle; whether Natural or Factitious

4 { Crystalline  
    Glasf,

Fill into Flakes, either greater or lesser.

5 { Selenite, *Muscovia* Glasf, Ifing Glasf, Spar.  
    Talk.

Relation to Metals, attracting Iron, or making of Brasf.

6 { Load-stone  
    Cadmia, Calaminaris.

Incombustible Nature.

7 Amiantus.

Strange Original; not being properly Minerals, though  
 usually reckoned amongst them; but either a submarine  
 Plant, or supposed to proceed from a liquid Bitumen.

8 { Coraline.  
    Amber.

3<sup>o</sup> *Precious STONES*; which see under the Article  
 PRECIOUS Stone.

STONE is also a certain Quantity or Weight of some Com-  
 modities:

A Stone of Beef at *London*, is the Quantity of Eight  
 Pounds: In *Herefordshire*, Twelve Pounds; in the *North*,  
 Sixteen Pounds. A Stone of Glasf is Five Pounds; of Wax,  
 Eight Pounds.

A Stone of Woolf (according to the Statute II. H. 7.)  
 ought to weigh Fourteen Pounds, yet in some Places it is  
 more, in others less; as in *Gloucestershire*, Fifteen Pounds;  
 in *Herefordshire* Twelve Pounds.

Among Horse-Courfers, a Stone is the Weight of Fourteen  
 Pounds.

**Building STONE**: Of this there are several Kinds; the  
 principal among us, are *Marble*, *Fire-stone*, *Purbeck-stone*,  
*Reg-stone*, *Alabaster*, *Free-stone* and *common Stone*; of all  
 which, except the two last, we have spoke under their proper  
 Article; which see.

For *Free-stone*, that dug in the Peninsula of *Portland*, and  
 thence call'd *Portland stone*, is much used; being softer and  
 whiter than *Purbeck-stone*, and is commonly raised out of  
 the Quarries in bigger Blocks than that. Some also call  
*Rigate* or *Fire-stone*, *Free-stone*.

Mr. Boyle observes, That a competent Knowledge of the  
 Manner of the Sap or Juice found in Stones used in Building,  
 is of the last Importance; the same Stone dug out of the same  
 Quarry at one Season, being found to moulder away in a few  
 Winters, which dug at another Season, will brave the Weather  
 for many Ages; and that there are others, which though  
 dug at the proper Season, yet make but ruinous Buildings,  
 if used at an improper Season.

The same Author adds, That as there are some sort of  
 Stones which will decay in a few Years, there are others will  
 not have attain'd their full Hardness in 30 or 40 Years, or  
 even much more. See PORPHYRY.

For the drawing of STONE out of the Quarry. See  
 QUARRY.

Precious STONE  
 Bolonian STONE  
 Eagles STONE  
 Jewish STONE  
 Pumice STONE  
 Touch STONE  
 Emery STONE  
 Infernal STONE  
 Calamine STONE  
 Philosophers STONE

See

PRECIOUS.  
 BOLONIAN.  
 ÆTITES.  
 JUDÆICUS.  
 PUMICE.  
 TOUCH.  
 EMERY.  
 LAPIS.  
 CALAMINARIS.  
 PHILOSOPHERS.

STONE, in Medicine, a Disease call'd also *Calculus*, and  
*Lithiasis*; and, occasionally, the *Gravel*. See CALCULUS,  
 LITHIASIS and GRAVEL.

It consists of a stony Concretion, form'd either in the Blad-  
 der or Kidneys; which prevents the Discharge of Urine, and  
 occasions violent Pains. See BLADDER and KIDNEYS.

The Stone is generated, according to some Authors, of the  
 earthy viscid Parts of the Blood, harden'd, in course of Time,  
 by the Heat of the Kidneys; much after the manner as Brick  
 is baked in a Furnace.

Dr. Quincy supposes the Stone generated of the harder  
 Parts of the Urine, pent up by the Straightness of the Ducts,  
 and brought into Contact and Cohesion.

*Et Müller* ascribes the Stone, sometimes to the stony and  
 metallic Particles of our Foods and Drinks, which the Reins,  
 through Weakness and Relaxation thereof, cannot eject; but  
 more usually to the unequal Strength of the Kidneys:  
 Whence it is that we see one Kidney breed Stones, and the  
 other found.

The Stone in the Bladder, is first form'd in the Pelvis of  
 the Kidneys, whence falling into the Bladder, it becomes  
 augmented by new Lamellæ or Coats. See PELVIS.

The Diagnostic Signs of the Stone in the Kidneys, are,  
 1<sup>o</sup> A fix'd, obtruse Pain in the Region of the Loins, appear-  
 ing like a Weight loading the Reins. As the Stone falls out  
 of the Pelvis into the Ureter, the Pain is exceedingly acute  
 and racking, which holds till either the Stone be got into the  
 Bladder, or returned again to the Pelvis. 2<sup>o</sup> An Inflexibility  
 of the Spina Dorsi, from the Extension and Compression of  
 the Nerves. 3<sup>o</sup> A Stupor of the Thigh and Leg of that  
 Side, from the Consent of Parts. 4<sup>o</sup> A Retraction of the  
 Testicle. 5<sup>o</sup> A very small Quantity of Urine, either thin  
 and limpid, or bloody. But as soon as the Stone is got into  
 the Bladder, the Urine becomes thick, turbid, blackish and  
 in great Quantity.

The Diagnostics of the Stone in the Bladder, are a Sense  
 of Heaviness in the Perinæum and inguinal Region, a perpe-  
 tual and troublesome Desire of making Water, which is  
 followed with a sharp Pain, principally in the Glans of the  
 Penis, whence a Prolapsus of the Anus. But the surest Way  
 of finding it, is by the Touch, viz. by thrusting the Finger  
 or a Catheter up the Anus.

The Cure of the Stone, is either by a Liquor that will  
 dissolve or break the concrete Stone; so as it may be evacuated  
 Piece-meal; which is call'd a *Lithontriptic*; or by enlarging  
 the Capacities of the Vessels; or by the Operation of Cutting,  
 call'd *Lithotomy*.

We have yet no assured Lithontriptic known, how many  
 soever may pretend to it; the most noted, are *Daffey's*  
*Elixir*, *Tipping's Liquor*, and *Rogers's Powder*. See LITHON-  
 TRIPTIC.

The most usual Cure is by Cutting; the various Manners  
 whereof, see under LITHOTOMY.

In some desperate Cases, the Stone has been known to make  
 itself a Way through the Spinal Muscles.

Dr. Lister observes, that Stones are found, not only in the  
 Bladder and Kidneys, but also in the pituitary Ducts,  
 the Brain, Liver, Lungs, Ventricle, Intestines and Joints of  
 the Hands and Feet; to which may be added, that in the  
*Philosophical Transactions*, we have likewise Accounts of  
 Stones in the Pineal Gland, the Heart, Gall, Bladder, &c.

The Stone, *Et Müller* says, is not a Disease, but the Pro-  
 duct of a Disease: The Disease, properly, is the *Lithiasis*,  
 or the Disposition of the Kidneys and Bladder to generate  
 Stones.

Stones are distinguish'd into three Kinds, White, Red  
 and Yellow; which last are the most usual. *Decker's* recom-  
 mends calcin'd Egg-shells as excellent in all Suppressions of  
 Urine: *Hamilton*, Linseed Oil, and Mr. Boyle, the Herb  
*Arsemart*.

STONE-Blue, a mineral Preparation, properly call'd  
*Smalt*. See SMALT.

STONE-Henge, in Antiquity, a fam'd Pile or Monument,  
 on *Salisbury Plain*, six Miles distant from that City.

It consists of three Ranks of huge rough Stones, ranged  
 one within another, some of them Twenty-eight Feet high,  
 and Seven broad; sustaining others, laid across their Heads,  
 and fasten'd by Mortaises; so that the whole must have an-  
 ciently hung together.

Antiquaries are strangely at a loss, as to the Origin, Use,  
 Structure, &c. of this wonderful Fabrick. Most of them  
 allow the Stones to be artificial, and to have been made on  
 the Spot; which is the more probable, as we are pretty well  
 assured the Ancients had the Art of making Stones with Sand  
 and a strong Lime or Cement; and as the Stones are too big  
 for any Land Carriage; and yet are in a Plain, which for  
 some Miles round, scarce affords any Stones at all.

The Legends give us various other Accounts; some will  
 have them brought miraculously by St. Patrick from *Ireland*,  
 others, &c.

As to its Use, some Antiquaries take it to have been an  
 ancient Temple of the *Druids*, others of the *Romans*, de-  
 dicated



dedicated to *Cælus*; in which they are confirm'd by its having been open atop. Others, reading it *Stone Hengist*, maintain it to have been a Monument erected in Memory of *Hengist*, the first General of the Saxons in *England*: And others, to name no more, will have it a Funeral Monument, raised to that brave *Romano-Briton*, *Aurelius Ambrosius*; to which Opinion, some Circumstances of his Actions, and still remaining *Latin* Name of the Place (*Mons Ambrosii*) and that very ancient *Welsh* Proverb, *Mal givaisb Emrys*, Like the Work of *Ambrosius*, give some Countenance.

**STOOL**, in Medicine. A Thing is said to be voided by *Stool*, when it is discharged by the Anus or Fundament. See **ANUS**.

In the *Philosophical Transactions*, we have Instances of sick Persons voiding factitious Stones, Balls, &c. by *Stool*. See **EXCREMENT**.

**STOOMING** of *Wine*; is a putting Bags of Herbs, or other Ingredients into it. See **WINE**.

**STOOPING**, in Falconry, is when an Hawk being upon her Wings, at the Height of her Pitch, bends down violently to take the Fowl.

**STOPS** } in Grammar. See { **POINTS**.  
**STOPPING** } { **PUNCTUATION**.

**STORAX** or **STYRAX**, a resinous odoriferous Gum, brought from *Syria*; whereof there are three Kinds, viz. the *red Storax*, *Storax Calamita*, and *liquid Storax*.

The *red Storax*, call'd also *Jere's Incense*, is a Gum or Resin oozing out at an Incision made in the Trunk and biggest Branches of a Tree, call'd *Storax*, not unlike our Quince Tree. Its Fruit is of the Size of a Filberd, and contains a white, oily Kernel, of a Smell perfectly like *Storax*.

It must be chosen in a Mass, of a reddish Colour, soft and fat, and of an agreeable Smell, bearing no Resemblance to *liquid Storax*.

That in Cakes, in Balls, &c. is all sophisticated; and only a wretched Composition of *liquid Storax*, and the Impurities of the true *red Storax* and other Drugs. That in Powder is still worse.

*Red Storax* is of some Use in Medicine; and is also used by the Perfumers, and often substituted for Incense.

The *Storax Calamita*, thus call'd from the Rushes or Quills, in *Latin*, *Calami*, it was anciently brought in, is, in reality, only a Composition of several excellent Drugs, and among the rest, of *red Storax*, whence its Name; though Authors have hitherto taken it for a natural Gum, different from the *red Storax*.

It must be chosen in fine white Tears, very dry, and not bitter; sometimes 'tis in reddish Masses, full of these whitish Tears, only mix'd with a ruddy Substance. These two Kinds are esteem'd excellent Pectorals, Stomachicks and Cephalicks.

*Liquid Storax*, is a kind of factitious Rosin, of a greyish Colour, composed of true *Storax*, common Rosin of the Pine, Oil and Wine, beaten with Water, into the Consistence of an Unguent. The Druggists also call it *Stacte*, to distinguish it, and sell it for the better Price. See **STACTE**.

The best is that of *Holland*. 'Tis easily kept in a Cellar, by pouring Water on it from Time to Time. 'Tis an Ingredient in an Unguent which Experience has shewn to be excellent against the Scorbutus and Gangrene.

**STORGE**, a *Greek* Term, *Στοργή*, frequently used by Naturalists, to signify that Parental Instinct, or natural Affection, which all, or most Animals bear their Young. See **INSTINCT**.

This *Storge* is an admirable Principle implanted by the All-wise Creator throughout the Animal World, for the Preservation thereof; and is govern'd by such Rules as make it best contribute thereto. By means of this, with what Care and Alacrity do they nurse their Young? and what Dangers will they avoid for their Security? Even the most timorous Animals, which at other times fly the Face of Men, Dogs, &c. will, for the sake of their Young, expose themselves.

Thus Hens instead of flying from, will assault such as meddle with their Brood; and Partridges, e'er their Young can fly, will frequently drop down before the Dogs, first at less, then at greater Distances, to dodge and draw them off, from pursuing their Young. With what Concern do others lead about their Young in Places of Safety? and some even admit them for Shelter into their Bowels.

Thus the Opossum, Dr. *Zyffon* observes, has a curious Bag on purpose for the securing and carrying about her Young; and some say, the Tears lie in it. The same Author adds, from *Oppian*, that the Dog-fish upon any Storm or Danger, receives her Young into her Belly, which come out again when the Fright is over. The Squatina and Glaucus do the like.

With what Tenderneß do others seek and prepare the Food for their Young, teach them to suck, cherish or lull them to Rest, &c. like so many Nurses, deputed by the Creator to take Care of his Creatures? And still in Proportion, as they

grow up and become fit to look to themselves, this *Storge* abates; and at length, when no longer needed, becomes extinct. Mr. *Ray* observes, that young Doves are fed with Meat first eat by the Dam, and foddens a-while in her Pro-lobe. And *Chusius* observes, that the old Female *Ethiopian* takes no Food but from the Male, after this Manner.

The Returns made by the Young to the Parent Animal, when grown old, are not less considerable. *Pliny* says of Rats, that they nourish their aged Parents with eminent Piety.

St. *Ambrose*, and after him *Olaus Magnus*, observe of the Crane, that when their Parents, through old Age, are bereft of their Feathers, and left half naked, their Offspring stand around them, and cherish them with their own Feathers; that they seek Food for them; and when Nature, as it often happens, repairs their Decays, and restores them to Strength again, they take them up by Turns, on their Wings, and habituate their unpractised Limbs to their ancient Art of Flying.

**STOVE**, in Building, a Hot-house or Room. See **FIRE**, **CHIMNEY**, &c.

*Palladio* observes, that the Ancients used to warm their Rooms with certain secret Pipes, which came through the Walls, conveying Heat to several Parts of the House, from one common Furnace. Whether this were a common Custom, says Sir *Henry Wotton*, or a Curiosity, we cannot determine; but it was certainly, both for Profit and Use, far beyond the *German Stoves*.

**STOVE**, among Confectioners, a little Closet well closed on all Sides, wherein are several Stories or Rows of Shelves made of Wiars one above another, for the drying of Sweetmeats.

**STOWAGE**, is a Place where Goods are stow'd or laid up; or the Money paid for such a Place.

**STRABISMUS**, an ill Disposition of the Eye, which makes it look a-squint.

This Indisposition consists in a Retraction of the Ball of the Eye, towards one Side; occasion'd by a Convulsion, or a Palsie of one of its Muscles.

Children are apt to acquire it through the Carelessness of their Nurses, in placing them always on the same Side the Light, or of any other remarkable Object that occasions them to turn their Eyes that Way.

To remedy it, Care is to be taken, that the Light, or other notable Body, be placed on the other side of them; or else a Mask put on them, the Holes whereof are so disposed, as that to see through them, the Child be obliged to turn his Eyes the opposite Way. The Word is form'd from the *Greek* *στραβισμός*, which signifies the same.

**STRAIGHT**, or, as some chuse to write it, *Streight*, or, as others, *Strait*, in Hydrography, a narrow Sea, or Gut shut up between Lands on either Side, and affording a Passage out of one great Sea into another.

The most celebrated *Streight* in the World, is that of *Gibraltar*, which is about 130 Miles long and 12 broad, joining the *Mediterranean* Sea, with the *Atlantic* Ocean.

The *Streight of Magellan*, discover'd in 1520 by *F. Magellan*. It was used some time, as a Passage out of the North into the South Sea; but since the Year 1616, that the *Streight of le Maire* has been discovered, the former has been disused; both because of its Length, which is full 300 Miles, and because the Navigation thereof is very dangerous, from the Waves of the North and South Seas meeting herein, and clashing.

The *Streight* at the Entrance of the *Baltic*, is call'd the *Sound*. See **SOUND**.

That between *England* and *France*, *Le Pas de Calais*, or the Channel. The *Streights* of *Babalmanda*, of *Weigats*, of *Jesso*, of *Anian*, of *Davis* and *Hudson*, &c.

**STRAIGHT** is also used in Geography, for an Isthmus or Neck of Land between two Seas; preventing the Communication thereof. See **ISTHMUS**.

**STRAIN** or *Sprain*, a violent Extension of the Sinews or Tendons of some Muscle. See **TENDON**.

**STRAND** and *Stream*, in ancient Customs, a Freedom from all Impositions upon Goods or Vessels by Land or Water.

**STRANDED**, (from the *Saxon Strand*, i. e. a Shore or Bank of the Sea or a great River) is when a Ship is by Tempest or ill Steerage, run on Ground, and so perishes.

**STRANGER**, in Law, has a special Signification, for a Person who is not Privy or Party to an Act: As, a *Stranger* to a Judgment, is he to whom a Judgment does not belong; in which Sense it stands directly contrary to *Party* or *Privy*.

**STRANGURY**, in Medicine, a Disease occasioning a very frequent and involuntary Emission of Urine, in very small Quantities, and, as it were, Drop by Drop; with an intense Pain. See **URINE**.

It arises from the too great Acrimony of the Urine, which vellicating the Nervous Parts of the Bladder, occasions a continual Inclination to urine.



New Beer, and other Liquors not well fermented, are used to occasion the *Strangury*.

The extreme Sharpness of the Urine, sometimes produces an Ulcer in the Bladder.

The Word is form'd from the Greek *σπᾶνξ*, Gutta, Drop, and *σπῶν*, Urine.

Some Authors confound the *Strangury*, which the Latins call *Urine Stillicidium*, with the *Urine Incontinentia*.

The Difference between them, consists in this, that in the former, the Urine comes away with Pain, in the latter, without. The former proceeds from the Acrimony of the Urine; and the latter from a Relaxation or Palsy of the Sphincter of the Bladder, which cannot keep the Neck thereof close shut. See URINE.

STRAP, among Surgeons, a Sort of Band to stretch out Members in the setting of broken, or disjointed Bones. See BANDAGE.

STRAPADO, a kind of Military Punishment, wherein the Criminal's Hands being tied behind him, he is hoisted up with a Rope, to the Top of a long Piece of Wood, and let fall again almost to the Ground; so that by the Weight of his Body in the Shock, his Arms are dislocated.

Sometimes he is to undergo three *Strapado's*, or more.

The Word is form'd from the French, *Estrapade*, which signifies the same Thing, and which is supposed to come from the old Verb *Estreper*, to break, extirpate.

STRATA, in Natural History, the several Beds or Layers of different Matter, whereof the Body of the Earth is composed. See EARTH.

The *Strata*, include all the Layers of Earths, Minerals, Metals, Stones, &c. lying under that upper Tegument or *Stratum*, the Turf or Mould. See FOSSIL.

The Time when those several *Strata* were laid, was, doubtless, at the Creation; unless, with some great Naturalists, as *Steno*, *Dr. Woodward*, &c. we suppose the Globe of Earth to have been dissolved by the Flood. See DELUGE.

At that Time, says Mr. *Derham*, whenever it was that the Terraqueous Globe was in a Chaotic State, and the earthy Particles subsided, then these several Beds were re-positied in that commodious Order, wherein they are now found; and that, as is asserted, according to the Laws of Gravity; the lower still heavier than the upper.

But Dr. *Leigh*, in his Natural History of *Lancashire*, speaking of the Coal-pits, denies the *Strata* to lie according to the Laws of Gravitation; observing that the *Strata* there, are first a Bed of Marble, then Free-stone, next Iron-stone, then Coal or Channel Mire, then some other *Strata*, then Coal again, &c.

This determined Mr. *Derham* to make a nicer Enquiry into the Matter; accordingly, in 1712, he caused divers Places to be bored, laying the several *Strata* by themselves; and afterwards determined very carefully their specific Gravity. The Result was, that in his Yard, the *Strata* were gradually specifically heavier and heavier, the lower and lower they went; but in another Place in his Fields, he could not perceive any Difference in the specific Gravities.

Acquainting the Royal Society therewith, their Operator Mr. *Hanksbee*, was order'd to try the *Strata* of a Coal-pit, which he did to the Depth of 30 *Strata*: The Thickness and specific Gravity of each whereof, he gives us in a Table in the *Philosophical Transactions*; and from the whole make this Inference, that it evidently appears, the Gravities of the several *Strata* are in no manner of Order; but purely Casual, as if mix'd by Chance. See VEIN and COAL-PIT.

STRATAGEM, a Military Wile; or a Device in War, for the surprizing or deceiving an Enemy.

The Ancients dealt mightily in *Stratagems*; the Moderns wage War more openly, and on the Square.

*Frontinus* has made a Collection of the ancient *Stratagems* of War.

The Word is form'd from the Greek *στρατηγία*, I lead an Army.

STRATARITHMETRY, in War, &c. the Art of drawing up an Army or any Part of it, in any given Geometrical Figure; and of expressing the Number of Men contain'd in such a Figure, as they stand in Array, either near at Hand, or at any Distance assign'd. *Harris*.

The Word is form'd from the Greek, *στράτη*, Army, *ἀριθμός*, Number, and *μέτρον*, Measure.

STRATEGUS, in Antiquity, an Office among the *Athenians*, whereof there were two chosen yearly, to command the Troops of the State.

*Plutarch* says, there was one chose from out of each Tribe; but *Pollux* seems to say, they were chose indifferently out of the People. 'Twas the People themselves made the Choice; and that on the last Day of the Year, in a Place call'd *Pnyx*.

The two *Strategi* did not command together; but took their Turns, Day by Day; as we find from *Herodotus* and *Cornelius Nepos*. Some times, indeed, as when a Person was found of Merit vastly superior, and exceedingly fam'd in War, the Command was given to him alone: But it was ever a Rule, never to put any Person in the Office, but who had no Lands in *Attica*, and who had Children, that there

might be some Hostages, and Securities for his Conduct and Fidelity.

STRATIFICATION, in Chymistry, an Arrangement of different Matters, in several *Strata* or Layers, alternately; call'd by the Latins, *Stratum super Stratum*; and mark'd in Books of Chymistry with S S S.

This Operation is used in calcining of Minerals or Metals with Salts or other Matters. See CALCINATION.

To purify Gold by Cementation, they *Stratify* Laminæ, or Plates of Gold in a Crucible, with a dry Paste call'd Cement. See GOLD and PURIFICATION.

STRAY. See ESTRAY.

STREAM-Anchor, is a small one, made fast to a *Stream* Cable; for a Ship to ride by in gentle *Streams*, and in fair Weather. See ANCHOR.

STREAM-Works, are certain Works in the Tin-Mines, when the Miners follow the Veins of Metal, by cutting Trenches, &c.

STRENÆ, in Antiquity, Presents made, out of Respect, on New-year's Day; and as a happy Augury for the ensuing Year.

The ancient Lawyers derive the Origin of the Word hence, That these Presents were only given *viris strenuis*, as *Symmachus* observ'd; who adds further, That the Use hereof was first introduced by King *Tatius*, *Romulus's* Colleague, upon his giving, first together the happy Branches, which were the Presages of a New Year, in the sacred Grove of the Goddess *Strenia*.

Anciently, a Pound of Gold was given to the Emperors every New-year's Day, by way of *Strena*. *Du Cange* observes, that *Strina* or *Strima* was used for a kind of Tribute the People of *Dalmatia* and *Croatia* pay'd to the *Venetians*, or to the Kings of *Hungary*, whom they obey'd voluntarily.

STRENGTH, as it concerns the Animal Oeconomy. The *Strengths* of different Animals of the same Species, or of the same Animal at different Times, are demonstrated to be in a triplicate Proportion of the Quantities of the Mass of their Blood: The whole *Strength* of an Animal, is the Force of all the Muscles taken together; therefore, whatsoever increaseth *Strength*, increaseth the Force of all the Muscles, and of those serving Digestion, as well as others. See MUSCLE.

Yet notwithstanding the Truth of this, the Quantity of Blood may be increased in such Circumstances, as to abate the *Strength*. The Equilibrium between the Blood and Vessels being destroy'd, wonderfully lessens the *Strength*. The sudden Suppression of Perspiration, though it increases the Quantity of the Blood, as it must considerably do, by *Sanctorius's* Calculation, yet it lessens the *Strength*; because the retained Matter, being what ought to be evacuated, so alters the Texture of the Blood, as to make it unfit for muscular Motion. Suppose the increased Quantity to be joined by an extraordinary Viscidity, the Quantity of small separable Parts decreasing, as the Viscidity increases, the Quantity of animal Spirits separated in the Brain, will be less; and the Tensity of the Fibres being in Proportion to the animal Spirits forced into them, they will not be able to counterpoise the great Weight of the Blood, and so the *Strength* will be diminished.

*Bellini* proves, that if the Blood be so vitiated, as to increase or diminish *Strength*; it amounts to the same as if the Blood were in a natural State, but its Quantity increased or diminished in the same Proportion: So that the Blood, when vitiated, may so impair the *Strength* of the Muscles as even to spoil Digestion; and yet in some Cases, it may be so vitiated, as to help Digestion, and increase *Strength*.

M. *de la Hire*, in a Calculation of the *Strength* of a Man in drawing and bearing, shews, that an ordinary Man walking in a horizontal Direction, and with his Body inclining forwards, is only equal to Twenty-seven Pounds; which is much less than one would have imagined.

He adds, That this Force would be much greater, if the Man were to walk backwards; and that 'tis for this Reason, the Watermen fetch their Oars from before, backwards: And though he observes, the Gondoliers of *Venice* fetch them the contrary Way, yet this is, because they chuse to lose the Advantage of *Strength*, to have that of seeing the Place they are going to, in the numerous Turns and Canals they there meet withal.

'Tis known by Experience, that a Horse draws, horizontally, as much as Seven Men; consequently, his *Strength* will be 182 Pounds. A Horse, as to pushing forwards, has a great advantage over a Man, both in the *Strength* of its Muscles, and the Disposition of the whole Body; but the Man has the Advantage over the Horse in ascending. M. *de la Hire* shews, that three Men loaden with 100 Pounds apiece, will ascend a pretty steep Hill with more Ease and Expedition, than a Horse loaden with 300 Pounds.

*Hakerill* furnishes us with abundance of Instances of extraordinary *Strength*: *Klumper*, Provost of the great Church of *Mosna* in 1529, carried a Pipe of Wine out of the Cellar, and laid it in the Cart. --- *Mayolus* saw one hold a marble Pillar in his Hand three Foot long, and one in Diameter,



ameter, which he toss'd in the Air, and catch'd again like a Ball. — A little Man of *Mantua*, call'd *Rodamas*, could break a Cable. — *Ernando Burgh* fetch'd up Stairs, an Ass loaden with Wood, and threw both into the Fire. At *Constantinople*, in 1581, one lifted a Piece of Wood which Twelve Men could scarce raise; then lying all along, bore a Stone which Ten Men could but just roll on him. — G. of *Fronsberg*, Baron of *Mindeheim*, cou'd raise a Man off his Seat with his middle Finger, and shove a Cannon out of its Place. — *Cardan* saw a Man dance with two Men in his Arms, two on his Shoulders and one on his Neck. *Patacona*, Captain of the *Cossacks*, could tear an Horse-shoe; and the same is reported of the present *Augustus* King of *Poland*. — On *Purney* Common, is a Stone with an Inscription, mentioning a Man, who in that Place out-drew Five Horses in his own Team. — A gigantic Woman of the *Netherlands*, could lift a Barrel of *Hamburg* Beer. Mr. *Carew* had a Tenant that could carry Six Bushels of Wheat in Meal (of Fifteen Gallons Measure) with the Lubber a-top of it. And *J. Roman* of the same County, could carry the Carcass of an Ox. See *Hakewill's Apology*, p. 238.

**STRENGTHENERS**, such Medicines as add to the Bulk and Firmness of the Solids. See **SOLIDS** and **STRENGTH**.

*Strengtheners* differ from *Cordials*, as a Bandage doth from a Flesh-brush: The latter are such as facilitate and drive on the vital Actions; but the former, such as confirm the Stamina, and maintain the Solids in such a Condition, as to exert themselves into Action on all proper Occasions, with the greatest Force and Vigour.

The continual Waste, which constant Motion makes in the Constitution, were it not for frequent and proper Supplies, would soon wear the Body quite out. The Attritions and Abrasions of the circulating Fluids, would quickly carry away the Canals in which they circulate, were not somewhat furnished in their Composition, which is suited to fall into, adhere with, and recruit that which is washed off. And those Particles must be much more disposed so to do, whose Adhesions are greatest, when once they come into Contact; such are those of Bodies we call Glutinous, and which easily form themselves into Jellies, and such-like Consistences; for the Parts of such Bodies are very light, by the over-proportion of their Surfaces to their Solidities, whereby their Motions are both more languid, when in Circulation; and when they stop, their Cohesions will be much the stronger, with whatsoever they happen to fall into Contact.

Medicines of this Tribe, are therefore of great Service in Hæticks; where the swift Motion of a thin, sharp Blood, wears away the Substance of the Body, instead of nourishing it; for they not only retard the inordinate Motion; but give such a Weight and Consistence to the Juices, as fits them also for Nourishment. There are likewise other Causes, which may weaken the Solids, by admitting, or occasioning them to relax too much. Whatsoever therefore acts as a Stimulus, and crisps and corrugates the Fibres into a more compacted Tone, which most austere and pointed Bodies do, will remove such Weakness, and increase Strength: And as also, too much Moisture may contribute to such a Relaxation, what has no other Quality but absorbing, and drying up such superfluous Humidities, may deserve, though accidentally, to come under this Denomination.

**STRETCH**: When at Sea, they are going to hoist the Yard, or hale the Sheet; they say, *Stretch forward the Sheets*, meaning, that the Part which the Men are to hale by, should be put into their Hands, in order to their Haling.

**STRIAE**, in the ancient Architecture, the Lists, Fillets or Rays which separate the Striges or Flutings of Columns. See **LIST** and **FLUTING**.

**STRIE**, among Naturalists, the small Hollows or Channels in the Shells of Cockles, Scollops, &c.

**STRICTOR**, in Anatomy, the same as *Sphincter*. See **SPHINCTER**.

**STRIGES**, in the ancient Architecture, are what in the Modern we call *Flutings*. See **FLUTING**.

They are thus call'd, as supposed to have been originally intended to imitate the Folds or Plaits in Womens Robes; which the *Latins* call *Striges*.

The Fillets or Spaces between them, were call *Strie*.

**STRIKE**, is a Measure, containing four Bushels; two of which make a Quarter. A *Strike* of Flax, is as much as can be heckled at one Handful.

**STRIKE**, is a Sea Word variously used. When a Ship in a Fight, or upon meeting with a Man of War, lets down, or lowers her Top-sails, at least half-Mast high; they say, *She Strikes*, meaning, she yields or submits, or pays her Devoir to that Man of War, as she passes by. When a Ship touches Ground in a Shoal-water, they say, *She Strikes*.

When any Top-mast is to be taken down, they say, *Strike the Top-mast*. And when any Thing is let down or lowered into the Hold, they call it *Striking down into the Hold*.

**STRIKING**. The Punishment appointed by our Laws,

for *Striking within the King's Court*, whereby Blood is drawn, is, that the Criminal shall have his Right Hand struck off, in a most sad and solemn Manner.

For *Striking in Westminster-Hall*, while the Courts of Justice are sitting, the Punishment is Imprisonment for Life, and Forfeiture of one's Estate.

**STRING**, in Music. See **CHORD**.

If two *Strings* or Chords of a musical Instrument only differ in Length; their Tones, that is, the Number of Vibrations they make in the same Time, are in an inverted *Ratio* of their Lengths.

If they only differ in Thickness, their Tones are in an inverted *Ratio* of their Diameters. As to the Tension of *Strings*, to measure it regularly, they must be conceived stretch'd or drawn by Weights; and then, *ceteris paribus*, the Tones of two *Strings* are in a direct *Ratio* of the Square Roots of the Weights which stretch them, that is, e. gr. the Tone of a *String* stretch'd by a Weight 4, is an Octave above the Tone of a *String* stretch'd by the Weight 1.

'Tis an Observation of an old standing, that if a Viol or Lute-string be touch'd with the Bow, or Hand, another *String*, on the same, or another Instrument, not far from it, if in Unison to it, or in Octave, or the like, will at the same Time tremble of its own accord. See **UNISON**.

But it is now found, that not the whole of that other *String* doth thus tremble; but the several Parts, severally, according as they are Unisons to the whole, or the Parts of the *String* so struck. Thus supposing A B to be an upper Octave to *ac*, and therefore an Unison to each half of it  $a \text{---} 4 \text{---} c$  stop'd at *b*.

If while *ab* is open, A B be struck, the two Halves of this other, that is *ab* and *bc* will both tremble; but the middle Point will be at rest; as will be easily perceived, by wrapping a bit of Paper lightly about the *String* *ac*, and removing it successively from one End of the *String* to the other. In like manner, if A B were an upper Twelfth to *ac*, and, consequently, an Unison to its three Parts *a 1, 1 2* and *2 c*; if *ac* being open, A B be struck, its three Parts *a 1, 1 2* and *2 c* will severally tremble; but the Points *1* and *2* remain at Rest.

This, Dr. *Wallis* tells us, was first discover'd by Mr. *William Noble* of *Merton College*; and after him by Mr. *T. Piquet* of *Wadham College*, without knowing that Mr. *Noble* had observed it before. To which we may add, that M. *Sauvart*, long afterwards, proposed it in the *Royal Academy* at *Paris*, as his own Discovery, as 'tis like enough it might: But upon his being inform'd, by some of the Members then present, that Dr. *Wallis* had publish'd it before, he immediately resign'd all the Honour thereof.

**STRING-HALT**, is a sudden twitching or snatching up of an Horse's hinder Leg, much higher than the other, as if he trod on Needles; generally befalling the best mettled Horses.

It frequently happens upon taking Cold, after hard Riding, or sore Labour; especially by washing them when too hot, which chills the Blood, and so benumbs the Sinews, as to take away the Sense and Feeling of the Member.

To Cure it, the middle Vein is taken up above and underneath the Thigh; under which is found a *String*, which is to be cut away, and the Part anointed with Butter and Salt.

**STROAKING**, a Method of Cure some People have given into, in certain Diseases; consisting in a mere Application of the Hand to the Part affected, in the way of Friction or Rubbing.

That Friction has very considerable Uses in many Diseases, is allow'd. See **FRICTION**.

But, as to the particular Efficacy of the *Stroak* of particular Persons; we see little Foundation for it in Nature. Experience, indeed, affords some; to which we don't know what to object.

Mr. *Thoresby*, in the *Philosophical Transactions*, gives several remarkable Instances of Cures perform'd by that famous *Stroaker*, Mr. *Greatrix*. Mr. *Thoresby's* own Brother being seiz'd with a violent Pain in his Head and Neck, Mr. *Greatrix* coming accidentally thither, gave immediate Ease to his Head, by only *Stroaking* it with his Hand: He then fell to *stroak* his Back; whence the Pain immediately fled to his Right Thigh: Then he pursued it with his Hand to the Knee, from thence to the Leg, Ankle, Foot, and at last to the great Toe, where it grew more violent; but upon rubbing there, it vanish'd.

Another Relation of the same Author having a great Pain and Weakness in her Knees, which occasion'd a white Swelling, that had hung to her several Years, in spite of all Means; the same *Stroaker* rubbing both her Knees, gave her present Ease, the Pain flying downwards from his Hand, till he drove it out of the Toes, after which the Swelling soon went absolutely away.



Mr. *Thoresby* gives various other like Instances, all among his Acquaintance; and adds, That when Mr. *Greatrix* stroaks only for Pains, he uses nothing but his Hand; but that for Ulcers, or running Sores, he uses Spittle on his Hand or Fingers. See TOUCHING.

**STROPHE**, in the Greek and Latin Poetry, a Stanza, or certain Number of Verses including a perfect Sense; succeeded by another, consisting of the same Number and Measure of Verses, in the same Disposition and Rythmus, call'd the *Antistrophe*.

What the *Couplet* is in Songs, and the *Stanza* in Epic Poetry; *Strophe* is in Odes. See COUPLET.

The Word is Greek, *στροφή* of *σπίνω*, I turn; because at the End of the *Strophe*, the same Measures returned again; or rather, as the Term related, principally, to the Music or Dancing, because at first coming in, the Chorus or the Dancers turn'd to the Left, and that Measure ended, they turn'd back again to the Right.

**STRUCTURE**, in Architecture. See BUILDING.

**STRUMÆ**, in Medicine, Tumours arising most usually on the Neck; call'd also *Scrophule*, and, popularly the *Evil*, or *King's Evil*. See EVIL.

The Word is Latin, form'd, as some will have it, a *struendo*; because they grow insensibly, *Structim assurgunt*.

The Greeks call them *χολάδες*, Sores.

**STUC**, in Masonry, from the Italian *Stucco*, &c. a Composition of Lime and the Dust of white Marble, pounded together and sifted; whereof Figures and other Ornaments of Sculpture are made.

This is what *Pliny* means by *Marmoratum Opus*; and *Albarium Opus*. See PLAISTER and MOSAIC.

**STUFF**, in Commerce, a general Name for all Kinds of Works made of Gold, Silver, Silk, Wooll, Hair, Cotton or Thread, manufactured on the Loom; of which Number are *Velvets*, *Brocades*, *Mohairs*, *Sattins*, *Taffeta's*, *Cloths*, *Serges*, *Rateens*, and various other Kinds; explain'd under their respective Articles of this *Dictionary*.

**STUFF** is particularly used, for certain Kinds of flight woollen *Stuffs*, used principally for Linings and Womens wear, as *Linseys*, *Rateens*, &c.

**STUM**, is the Flower of Wine, set a working. See WINE, MUST, &c.

Hence to *Stum*, is to put certain Ingredients into sick and decay'd Wine, in order to revive it, and make it brisk.

**STUMBLING**, in the Manage, &c. a Vice in a Horse, either natural or accidental.

The *Natural* arises from the Sinews of the fore Legs being somewhat too straight, which cramps the Horse, and prevents his using his Legs with the necessary Freedom and Nimbleness.

The Way to cure him, is to cut him of the Cords, *i. e.* to make a Slit on the Top of his Nose, and with a Corner, to raise up the great Sinews, to cut them asunder, and heal them up again with a proper Salve. The *Accidental* arises from a Splint, Wind-gall, being founder'd, prick'd, stubbed, gravel'd, &c.

**STUPIFIERS**, in Medicine, the same as Narcoticks and Opiates. See OPIATES.

**STUPHA**, or **STUPE**, the same as Fomentation. See FOMENTATION.

**STUPOR**, a Numbness, occasioned by any accidental Bandage that stops the Motion of the Blood and nervous Fluids, or by a Decay in the Nerves, as in a Palsy, &c.

**STYGIAN Liquors**, a Term some Chymists apply to acid Spirits, from their Efficacy in destroying or dissolving mixt Bodies. See SPIRIT.

**STYLE**, a kind of Point, or Bodkin, wherewith the Ancients wrote on Plates of Lead, or on Wax, &c. and which is still used to write on Ivory Leaves, and Paper prepared for that Purpose, &c. See WRITING.

This is the Origin of all the other Significations of the same Word in *English*.

**STYLE**, in Chirurgery, is a long Steel Instrument, that goes diminishing towards one End, so as to be of a conical Form.

'Tis used to be thrust in red-hot, in *Canula*, and to be pull'd out again, immediately: 'Tis put in and drawn out successively, as often as is necessary. In order to do this, 'tis good to have two *Styles*, to be put in alternately. See CANULA.

**STYLE**, in Dialling, the Gnomon or Cock of a Dial, rais'd on the Plane thereof, to project a Shadow. See GNOMON.

**STYLE**, in Botany, the Part rising up the middle of a Flower, and bearing, by its lower Part, on the Seed.

This we more usually call the *Pistil*. See PISTIL.

**STYLE**, in Matters of Language, is a particular manner of delivering a Man's Thoughts in Writing, agreeably to the Rules of *Syntax*; or, as *F. Buffier* more accurately defines it, the Manner where the Words constructed according to the Laws of *Syntax*, are arranged among themselves, suitably to the Genius of the Language. See LANGUAGE.

This Definition fixes the Notion of *Style* to something

determinate, which before was very vague and arbitrary, whence many Authors, even of Note, confounded it with *Syntax* itself. See SYNTAX.

From the Definition, it appears, that *Style* supposes or includes the *Syntax*; and that *Syntax* does not extend so far as *Style*: For the *Syntax* may be very just, where the *Style* is wretched, were it only in this Example; *God always rewards with great Fidelity, and greater Liberality, the Just*: Or this, *There is no Body, who more than I honour you*.

The Regimens and Terminations of each Word, are perfectly just in each of these Phrases: There is no Fault then, in the *Syntax*; but there is something wanting in the Arrangement of the Words, to make them in the Genius of the Language; there is a Fault then, in the *Style*.

Indeed, against what particular Rule of Grammar the Fault is committed, 'tis scarce possible to determine precisely; the Taste and Use of a Language being so exceedingly delicate and precarious. 'Tis true, a Fault in *Style*, is not less a Fault against Grammar, than is a Fault in *Syntax*; Only the former is less precise and palpable than the latter.

A very common Error in Grammarians, *F. Buffier* adds, is to confound two Kinds of *Styles* in one: The *Grammatical Style*; or that directed by the Rules of Grammar; and the *Personal Style*, which depends less on the Grammar, than on the Person that writes; whether with regard to his particular Taste and Genius, or with regard to his Matter, or the Kind or Character of his Work.

There are a great many Differences between the Two; the most essential is, that the one may be diversified an infinite Number of Ways, and the other cannot.

In effect, the *Personal Style* is naturally variable, according to the different Genius's, Humours, and Complexions.

'Tis the Imagination that acts, that conceives, that proposes, and that expresses Things, according to its Character, which is different in all Men, and which is to be varied, according to the particular Kind of the Work.

Hence arises the *Gay*, the *Grave*, the *Florid*, the *Jejune*, the *Copious*, the *Concise*, the *Poetical*, the *Epistolary*, the *Burlesque Styles*.

These *Personal Styles* are all Independent on the *Grammatical*; and we have Authors, who excel in the one, yet are miserably defective in the other. The *Personal Style* is not under the Direction of Grammar; but of the Imagination, or rather of Rhetoric, that Art having to do directly with our Thoughts, as Grammar with our Words.

This, however, may be said, That Grammar is far from being able to vary the same Words of a Phrase with equal Perfection; and that generally there is but one Way of delivering them in the Taste and Genius of the Language. Thus, the *Grammatical Style*, is invariable in the following Phrase, and proportionably in others. *Death is a Law, which all Men are to undergo*: For you cannot well range the Words otherwise than they here are, without going out of the Bounds of Grammar. Would you say, *a Law is Death, which all Men*, &c. or, *a Law is Death, which*, &c.

But in the *Personal Style*, where the Imagination comes to be concern'd, this Sentence might be varied infinite Ways, according to the Kind of the Writing, whether Oratorical, Poetical, &c. As, *Death neither spares the Prince nor the Peasant. Death knocks equally at the Monarch's Palace and the Beggar's Hut*, &c.

**STYLE**, in Oratory and Poetry, is restrain'd wholly to what *F. Buffier* calls the *Personal Style*.

*Language* refers principally to the Matter of the Discourse, viz. the Words; *Elocution* to the particular Members or Parts thereof; and *Style*, to the whole Composition.

The Masters of the Art, reduce the Kinds of *Style* to Three, the *Sublime*, the *Low*, and the *Intermediate* or *equable Style*.

The *Sublime*, is that consisting in magnificent Words and Sentences; which, by its noble Boldness, ravishes the Hearers, and extorts Admiration even from the Unwilling. See SUNLIME.

The *Low* or *simple Style*, is that ordinarily used in smaller and humbler Works, as Epistles, Dialogues and common Discourse. The chief Virtues hereof are Perspicuity, Smoothness, easiness and Cleanliness; it must be very sparing in the Use of Tropes and Figures, especially the more violent ones, as the *Prosopœia*, *Apostrophe*, &c.

The *intermediate, equable Style*, partakes of the Magnificence of the *Sublime*, and the Simplicity of the *Low*. It neither rises to the Majesty of the one in Words or Sentences; nor yet is smartly pointed like the other: But, as *Tully* excellently expresses it, *Est Stylus quidam interjectus, intermedius, & quasi temperatus; nec acumine inferioris, nec fulmine utens superioris, vicinus amborum, in neutro excellens utriusque particeps*.

The same Author calls it the *Florid* and *Polish'd Style*; it being in this that all the Graces and Beauties of Language are principally to be used.



For the Choice of *Style*, in the General, 'tis the Matter is to determine it. Such *Style*, says *Cicero*, is to be chosen, as expresses great Things magnificently, middle Things moderately, and low Things subtly: But more particularly as there are three Branches of the Duty of an Orator, to teach, to delight, and to move; the *simple Style* is used to teach, the Middle to delight, and the Sublime to move.

Again, the *simple* or *low Style* is fit for Comedy, the Sublime for Tragedy, and the Middle for History.

*Cæsar*, 'tis true, rather used the *Simple* than the *Intermediate Style*; but then he wrote Commentaries, not a History, as is observed by *Tully*.

Again, the *simple Style* is fit for Bucolicks and Eclogues, the *intermediate Style* for Georgicks, and the *Sublime* for Epicks; which triple Difference we easily descry in *Virgil*, though he sometimes mixes them all in the *Æneid* itself, using the *simple Style* in the Fifth Book, where he describes Games, and the *Intermediate* in the Beginning of the Poem. Care is still to be taken, that the *Style* be not flat and dull, on pretence of being *simple*.

*M. Boileau* observes, that in all Languages a mean Thought express'd in Noble Terms, is better liked than the noblest Thought express'd in mean Terms: The Reason he gives, is, that every Body can't judge of the Force and Justness of a Thought; but scarce any Body but perceives the Meanness of the Words. The latter we find by our Senses, the former by our Reason.

He adds, That the Words in different Languages don't always answer justly to one another; and that a noble Greek Term can't frequently be express'd in another Language, but by a very mean one.

This we see in the Words *Asinus* in *Latin*, *Ane* in *French*, and *Ass* in *English*, which are the meanest imaginable, in those three Languages; yet the Word expressing that Animal, has nothing mean in it, either in *Greek* or *Hebrew*, but is used in the finest and noblest Passages.

Add to this, that Languages are exceedingly capricious on this Head: A Bull, a Heifer, a Goat, a Boar, &c. may be used in the sublimest Passages, without debasing the *Style*; but a Cow, a Sheep, a Hog, a Sow, &c. would be intolerable. Shepherd and Herdsman, are fine Words; Hog-keeper and Cow-ward, which carry the same Ideas, vitious to the last Degree.

The chief Faults in *Style*, are, its being *tumid* and *swollen*; or *cold* and *puerile*; or *stiff* or *loose*; or *dry* and *jeune*. A *swollen Style*, is that immediately stuff'd with big Words and Sentences; such are those Verses of the Emperor *Nero*, ridiculed by *Persius*.

*Torva minalloneis impleunt Cornua Bombis  
Et raptum Vitulo caput ablatura superbo  
Bassar, & Lynceum manas flexura Corymbis, &c.*

A *cold* or *puerile Style*, is that which affects certain trifling Ornaments, cold Jest, remote and strain'd Allusions, redundant Descriptions, &c. Such, e. gr. as, *A Centaur's riding himself: More gold, er than Gold, &c.* Of this Vice, that Passage of *Virgil* seems guilty.

*Num Capri potueri capi? Num incensa cremavit  
Troja Fides?*

And that in *Plutarch*, and *Dion Cassius*; 'Twas no wonder *Diana's Temple should be burnt the Night Alexander was born*; as that *Goatess, attending at so great a Birth, could not be in the Way to extinguish the Flames*. And that in *Plautus*, where a Person is represented so exceedingly covetous, that he would invoke *Heaven and Earth, if he saw but a Grain of Smoak escape out of his Cottage*.

A *loose Style*, is that which wanting Articles, Numbers, &c. fluctuates here and there, not connected or hung together. This is a Fault so frequent, especially in young Writers, that we shall spare giving Instances of it.

A *dry jeune Style*, is that destitute of Ornament, Spirit, &c. The Ancients made a notable Distinction of *Styles*, into *Læconic* and *Asiatic*.

*Asiatic Style*, is that which is very diffusive and prolix; or where abundance of Words are used to express a little Matter: Thus call'd, by the *Greeks*, from the People of *Asia*, who affected such Redundancies, in Opposition to the

*Læconic Style*, which is distinguish'd by its exceeding Conciseness; and by comprehending a deal of Matter under a few Words. See *LÆCONIC*.

Such, e. gr. is that Answer returned by the *Lacedæmonians*, to a long Epistle of an Enemy, threatening to destroy them with Fire and Sword; *to, si, is*; that is, *Do if you can*: Or, that return'd by the same to King *Philip*, demanding some extravagant Thing of them, *to, non, no*. Or that of *Cleomenes* the Spartan General to the Ambassador of *Samos*; *As to what you have said, the first Part I don't remember, the middle I don't understand; the last I don't approve*. Or that

Epistle of *Archidamus* to the *Elei*, who were preparing War against him; *Archidamus to the Elei*: 'Tis good to be quiet. Or that of *Cæsar* to the Roman Senate, after his conquering *Pharnaces*, King of *Pontus*: *Veni, vidi, vici*; I came, I saw, I conquer'd.

*STYLE*, in *Jurisprudence*, the particular Form, or Manner of Proceeding in each Court or Jurisdiction, agreeably to the Rules and Orders establish'd herein. Thus we say, the *Style* of the Court of *Rome*, of the Court of *Chancery*, of Parliament, of the Privy Council. See *CHANCERY*, &c.

*STYLE*, in Music, the manner of Singing and Composing. The *Style* is, properly, the manner each Person has, either of Composing, of Performing or Teaching; which is very different, both in respect of the different Genius's of Countries and Nations, and of the different Matters, Places, Times, Subjects, Expressions, &c.

Thus we say, the *Style* of the *Charissimi*, of *Lully*, of *Lambert*; the *Style* of the *Italians*, the *French*, the *Spaniards*, &c. The *Style* of gay Pieces of Music, is very different from that of serious Pieces: The *Style* of Church Music, very different from Theatrical Music. The *Style* of the *Italian* Compositions, is poignant, florid, expressive; that of the *French* Compositions, natural, flowing, tender, &c.

Hence, the various Epithets, given to distinguish these various Characters; as, the ancient and modern *Style*, the *Italian* and *German Style*, the Ecclesiastical and Dramatic *Style*, the gay, grave, majestic, natural, soft, familiar, gallant, low, sublime *Styles*, &c.

The *Stylo Recitativo* or *Dramatico*, in the *Italian* Music, is a *Style* fit to express the Passions. The *Stylo Ecclesiastico* is full of Majesty, very grave, and fit to inspire Devotion.

*Stylo Moretico*, is a various, rich, florid *Style*, capable of all Kinds of Ornaments, and, of consequence, fit to express various Passions, particularly Admiration, Grief, &c.

*Stylo Madrigalesco*, is a *Style* proper for Love, and the other softer Passions.

*Stylo Hyperchematico*, is a *Style* proper to excite Mirth, Joy, Dancing, &c. and, of consequence, full of brisk, gay Motions.

*Stylo Symphonico*, is a *Style* fit for Instrumental Music: But as each Instrument has its particular Effect, there are as many different *symphonical Styles*. The *Style* of Violins, for Instance, is usually Gay; that of Flutes, Melancholy and Languishing, and that of Trumpets, Sprightly and Animated.

*Stylo Melismatico*, is a natural, artless *Style*, which any Body, almost, may sing.

*Stylo Phantastico*, is a free, easy, humorous Manner of Composition, far from all Constraint, &c.

*Stylo Choraico*, is the *Style* proper for Dancing; and is divided into as many different Kinds, as there are Dances; as the *Style* of Sarabands, of Minuets, of Gavots, of Rigadoons, &c.

*STYLE*, in Chronology, a particular Manner of accounting Time, with regard to the Retrenchment of Ten Days from the Calendar, in the Reformation made thereof under Pope Gregory XIII.

*Style* is either *Old* or *New*.

The *old Style*, is the *Julian* Manner of Computing, which obtains in *England* and some other Protestant States, who refused to admit of the Reformation. See *JULIAN*.

The *new Style* is the *Gregorian* Manner, followed by the Catholics, in consequence of that Reformation. See *GREGORIAN*.

Hence, there arose a Difference of Ten Days, between the *Old Style* and the *New*, the latter being so much before-hand with the former: So that when the Catholics, e. gr. reckon'd the 21st of *May*, we only reckon'd the 11th.

This Difference of Ten Days, was increased in the Year 1707, to 11 Days, by reason that Year was not the *Bissextile* in the *Old Style*, but was, in the *New*: So that the 10th Day of the one, corresponded to the 21st of the other.

There are several Places, however, where the *new Style* has begun to obtain, even among Protestants; and 'tis not unlikely, that the *old Style* may, in Time, dwindle quite away. At the Diet of *Ratisbon* in 1700, it was decreed, by the Body of Protestants of the Empire, that Eleven Days should be retrenched from the *old Style*, to accommodate it for the future to the *New*. And the same Regulation has since pass'd in *Sweden* and *Denmark*. *England* holds out, almost alone, for the *old Style*. See *CALENDAR*.

*STYLET*, *STILETTO*, a little, dangerous Poniard, which is hid in the Hand, and chiefly used in treacherous Assassinations.

The Blade is usually Triangular, and so slender, that the Wound it makes, is almost imperceptible.

The *Styler* is strictly prohibited in all well Policy'd States. *STYLTES*, an Appellation given to a kind of Solitaries, who spend their Life, seated on the Tops of Columns, to be the better disposed for Meditation, &c. See *SOLITARY*.

Of these, we find several mention'd in ancient Writers, and even as low as the IXth Century. The Founder of the Order



Order was *St. Simon Stylites*, a famous Anchorite in the Vth Century; who first took up his Abode on a Column Six Cubits high; then on a Second of 12 Cubits; a third of 22; and at last on another of 36, where he lived several Years.

The Extremities of these Columns were only three Foot in Diameter, with a kind of Rail or Ledge about, that reach'd almost to the Girdle, somewhat resembling a Pulpit. There was no lying down in it.

The Faquiers or devout People of the *East*, imitate this extraordinary kind of Life to this Day. See *FAQUIER*.

*STYLOIDES*, in Anatomy, an Apophysis of the *Os premaxillare*, thus call'd from its resembling a *Style* or *Stylus*. See *PETROSUM OS*.

*STYLOGLOSSUS*, in Anatomy, a pair of Muscles, running off sharp and fleshy, from the *Processus Styloides*; whence descending obliquely forwards, it is inserted into the Root of the Tongue. It serves to pull the Tongue up in the Action of Deglutition.

*STYLOHYOIDEUS*, in Anatomy, a pair of Muscles springing from the *Processus Styloides*, and inserted into the Basis and Horns of the *Os Hyoides*; which it draws, laterally, upwards.

*STYLOPHARYNGÆUS*, in Anatomy, a pair of Muscles, arising round and fleshy, from the *Processus Styloides*; and which in its oblique Descent, becomes thicker, and is afterwards expanded on the back Parts of the Fauces. It serves to draw up and dilate the Pharynx.

*STYPTIC*, in Medicine, a Remedy that has the Virtue of stopping Blood, or of binding up the Aperture of a wounded Vessel. See *BLOOD*.

The Service, Nettle, *Solomon's Seal*, &c. are *Stypticks*.

There are various *Styptic* Waters and Powders of surprizing Efficacy, in most of which, Vitriol is the principal Ingredient.

The usual *Styptic Water* is made of Colcothar calcined, or Vitriol dissolved with burnt Allum, Sugar-candy, the Urine of a young Man, &c.

Dr. *Colbatch's Styptic Powder* has been famed; though Mr. *Cowper*, in the *Philosophical Transactions*, gives us a Number of Instances, wherein it was applied with very little, or ill Success in human Subjects; though he gives us others made in Dogs, where it answer'd well.

M. *Tournefort* observes, from the Analysis he has made of *Styptic* and Astringent Plants, that Acids and Earths prevail therein; though some of them yield an urinous Spirit. On this Principle, he asserts, That their Salt is analogous to Allum, and that there is somewhat of Sal Ammoniac in their Texture. *Chomel* observes, that this does not hold universally.

*STYRAX*, in Medicine. See *STORAX*.

*SUB*, a *Latin* Preposition, signifying *under*; frequently used, in Composition, in our Language.

*Sub-Brigadier*, is an Officer in the Cavalry, who commands under the Brigadier; assisting him in the Discharge of his Functions. See *BRIGADIER*.

*Sub-Chantor*, an Officer in the Choir, who officiates in the Absence of the Chantor, &c. See *CHANTOR*.

*Sub-Dean*, a Dignity in certain Chapters beneath the Dean. See *DEAN*.

*Sub-Prior*, a Claustal Officer, who assists the Prior, &c.

*Sub-Deacon*, an inferior Minister, who anciently attended at the Altar, prepared the Sacred Vessels, &c. and was invested with the first of the Holy Orders.

According to the Canons, a Person must be 22 Years of Age, to be promoted to the Order of *Sub-Deacon*.

'Tis disputed among the *Romanists*, whether the *Sub-deaconhood* be a Sacrament or not; in regard *Sub-Deacons* are ordain'd without Imposition of Hands, and that there is no mention made of them in Scripture. Yet *Bellarmin* holds the affirmative Side of the Question. By the Papal Canons, a married Man may be ordain'd *Sub-Deacon*; upon Condition his Wife consent to it, make a Vow of Continence, and shut herself up in a Monastery. See *DEACON*.

*SUBALTERN*, a *subordinate* Officer, or one who discharges his Post under the Command and Direction of another.

Such are Lieutenants, Sub-lieutenants, Cornets and Ensigns, who serve under the Captain.

We also say *Subaltern* Courts, Jurisdictions, &c. Such are those of inferior Lords, with regard to the Lord Paramount, Hundred Courts, to County Courts, &c.

For the *Subaltern* Persons in an Epic Poem, F. *Bossu* observes, there is no Necessity to be very strict in preserving every one's Character. See *CHARACTER*.

The Patriarchs, M. *St. Remond* tells us, had several Wives, who did not all hold the same Rank; but there were several *subaltern* to the principal Wife. Grammar we also say is *subaltern* to Rhetoric. The Word is form'd from the *Latin*, *sub*, and *alter*, another.

*SUBCLAVIAN*, is applied to any thing under the Arm-pit or Shoulder; whether Artery, Nerve, Vein or Muscle.

*SUBCLAVIUS*, in Anatomy, is a Muscle that ariseth from the lower Side of the Clavicle, near the Acromium; and descends obliquely to be inserted into the upper Part of the first Rib, near the Sternum.

*SUBCONTRARY Position*, in Geometry, is when two similar Triangles are so placed, as to have one common Angle, V, (Tab. Geometry Fig. 44.) at the Vertex, and yet their Base not parallel.

Thus, if the scalenous Cone BVD be so cut by the Plane CA, as that the Angle at C=D; the Cone is then said to be cut *Subcontrarily* to its Base BA.

*SUBCUTANÆUS*, in Anatomy, a thin membranous Muscle, running under the Skin, call'd also *Quadratus*. It arises with a pretty broad Origin, from the hind Part of the Neck, and from the Pectoral Muscle below the Clavicle. It adheres firmly to the Panniculus Carnosus; from which it is not separated without Difficulty, and therefore was not anciently distinguish'd from it; and is inserted, obliquely, on each Side, into the lower Jaw-bone near the Skin, Lips, and sometimes the bottom of the Nose; all which Parts it draws downwards and a-wry.

A Convulsion herein is call'd a *Spasmus Cynicus*. In some Persons, it reaches to the Ears; and in others not; which is the Reason some Folks have a Faculty of moving the Ears, which others want.

*SUBDUCTION*, in Arithmetick, the same as *Subtraction*. See *SUBTRACTION*.

*SUBDUPE Ratio*, is when any Number or Quantity is contained in another, Twice; thus Three is said to be *Subdupe* of 6, as 6 is dupe of 3. See *RATIO*.

*SUBJECT*, a Person under the Rule and Dominion of a Sovereign Prince or State.

Of *Subjects*, some are so by Birth, others by Acts of Naturalization. Anciently, the Lords call'd, abusively, those who held Lands or Fees of them, or ow'd them any Homage, *Subjects*.

*SUBJECT* is also used for the Matter of an Art or Science; or that which it considers, or whereon it is employ'd: Thus the human Body is the *Subject* of Medicine; and in this Sense, Anatomists call the Body they are Dissecting, and whereon they read Lectures, their *Subject*. See *OBJECT*.

The *Subject* of Logic, is Thinking or Reasoning; but more particularly, in a Syllogism, one of the Terms of a Proposition is call'd the *Subject*, and the other the *Attribute*. See *PROPOSITION*.

In Poetry, the *Subject* is the Matter treated of; the Event related, or set in a fine View, and enrich'd with Ornaments.

*SUBJECT* is also the Substance or Matter to which an Accident is added. See *ACCIDENT*.

'Tis a Maxim, That two Contraries can never subsist in the same *Subject*.

*SUBJUNCTIVE*, in Grammar, the fourth Mood, or Manner of conjugating Verbs; thus call'd, because usually subjoin'd to some other Verb, or at least to some other Particle, as, *I see what you aim at. Though this be true, &c.* See *MOOD*.

The *Greek* is almost the only Language that properly has any *Subjunctive* Mood, though the *French*, *Spanish* and *Italian* have some Shew thereof. In all other Languages, the same Inflections serve for the Optative and the *Subjunctive* Moods: For which Reason, the *Subjunctive* Mood might be retrench'd from the *Latin* and those other Grammars; it not being the different Ways of signifying, which may be very much multiplied, but the different Inflections, that constitute the different Moods. See *OPTATIVE*, &c.

*SUBLAPSARY*, in Theology; or *Infralapsary*; a Term applied to such as hold, that God having foreseen the Fall of Adam, and in consequence thereof, the Loss of Mankind; resolved to give a Grace sufficient to Salvation to some, and to refuse it to others. See *GRACE*.

*Sublapsary* is used in Opposition to *Infralapsary*. See *INFRA LAPSARY*.

*SUBLIMATE*, a chymical Preparation, the Basis whereof is Mercury, or Quick silver. See *MERCURY*.

There are two Kinds of *Sublimate*, *Corrosive* and *Sweet*.

*Corrosive Sublimate*, is prepared of Mercury, either crude or revived from Cinnabar, together with Spirit of Nitre, Vitriol lixiviated to a Whiteness, and Sea Salt decripitated; the whole reduced into a white brilliant Mass by *Sublimation*.

*Sweet Sublimate*, is the same with *Corrosive*, only temper'd and sweeten'd by the Addition of *Mercurius Dulcis*, and thus reduced into a white Mass full of hard glittering Pieces, like little Needles, by being pass'd several times over the Fire, and through several Matrases.

To take away all its Malignity, it should be dulcified at least Thrice.

*Corrosive Sublimate* is White, and full of shining, crystallin Veins. It cannot act, unless it find some Humidity to act on; and is then a violent Poison, which corrodes and destroys the Parts of the Body with much Violence. Oil of Tartar per Deliquium, is held the best Antidote against it.

*Sweet Sublimate*, is thus call'd, in Opposition to the *Corrosive*. 'Tis given internally, in the Cure of several Diseases, particularly Venereal ones. See *VENEREAL*.

*SUBLIMATION*, in Chymistry, an Operation which differs very little from Distillation, excepting, that in Distillation,



tion, only the Fluid Parts of Bodies are raised; but in this, the Solid and Dry; and that the Matter to be distilled may be either Solid or Fluid; but *Sublimation* is concerned only about solid Substances. See *DISTILLATION*.

There is also another Difference, namely, that Rarefaction, which is of very great Use in Distillation, has hardly any Room in *Sublimation*; for the Substances which are to be *Sublimed*, being Solid, are incapable of Rarefaction; and so it is only Impulse can raise them.

However, it may not be improper to inquire a little more nicely into the Reason of such a Diversity in the Elevation of Bodies; why some do ascend with a gentle Heat, and others are not to be raised by the most vehement Fire: And such an Enquiry will more properly come in here, because this Head contains all the Business of Volatility and Fixation. See *VOLATILITY* and *FIXITY*.

The Cause of this Elevation, and Ascent in the Particles of Bodies, is to be ascribed to the Fire; not only on the account of Impulse, but of another Property the Fire has; namely, to insinuate itself into all the Interstices of these Bodies, and thereby break the Cohesion of their Parts, so that at last they become divided into very small Parts, if not into the smallest that Art can reduce them into.

Particles thus separated and divided, lose much of their Gravity. For the Gravity of the same Particle decreases in the same Proportion as the Cube of the Diameter is lessened. Suppose, therefore, a Body, whose Diameter is 12: If, then, its Diameter be made less by 1, viz. 11, the Gravity of that Body will be only  $9\frac{1}{4}$ , or thereabouts: A Body, therefore, by being divided into very minute Corpuscles, is very easily *sublimed*.

Add, that the Surface of a Body decreases in a very different Manner from Gravity only as the Square of the Diameter is lessened. Where the Gravity decreases, in such a Series, as is express'd by the Numbers 1728, 1331, 1000, the Diminution of the Surface will observe this Proportion, viz. 144, 121, 100; and when, upon reducing the Diameter to 6, the Gravity becomes less than 2, the Surface will still amount to 36.

How much this contributes to a quick Ascent, will appear from the *Sublimation* of Camphire, Benzoin and Arsenick; whose Particles, as they cohere but loosely, are, for that Reason, diffused into a larger Surface; upon which account they are the easiest to be *sublimed* of any; nay, these solid Particles, upon account of their Surface, will sooner ascend than some Fluids.

So Flower of Sulphur rises sooner than Oil, not only than that of Vitriol, but any other, though ever so light.

By this Contrivance of Nature, viz. that the Gravity of Bodies decreases in a triplicate, but their Surface in a duplicate Proportion of their Diameters; it comes to pass, that Bodies, which have a very different Gravity, may be raised with the same Force. Thus the Salts of Animals, as of Harts-horn, human Blood, of Vipers, &c. being composed of very minute Corpuscles, as is found by Experience, in distilling them, do easily ascend; because the Surface in them, is not lessened so much as the Gravity is; and the Salts of Vegetables, as of Tartar, Balsam, &c. which are of a more close Texture, by reason of their larger Surfaces, are without much difficulty raised.

The Corpuscles also of Minerals and Metals, though very compact and heavy, do, in some measure, give way to the Fire, and are capable of being *sublimed*. In all these Instances, the Breadth of the Surface, which exposeth the Particles more to the Impetus of the Fire, is the Reason why they are raised with as much Ease, as if their Gravity had been lessened, by diminishing their Surface: So that Particles though ever so different in Weight, may be equally raised by the same Degree of Heat, if the Proposition of their Gravity be reciprocal to that of their Surfaces.

*SUBLIME*, in Discourse, something extraordinary and surprizing, which strikes the Soul, and makes a Work ravish and transport.

This is what *Longinus*, who has wrote expressly on the Subject, means by *Sublime*. The Definition, indeed, is not his, but *M. Boileau's*; for the Author writing his Book after another of *Cecilius*, on the same Subject, employ'd almost wholly in shewing what the *Sublime* is, declined defining it, as supposing it well known.

By the Definition, it may appear, that the *Sublime* is a very different Thing from what the Orators call the *sublime Style*. See *STYLE*.

The *sublime Style* necessarily requires big and magnificent Words; but the *Sublime* may be found in a single Thought, a single Figure, a single Turn of Words. A thing may be in the *sublime Style*, and yet not be *Sublime*, i. e. have nothing extraordinary and surprizing.

For Instance: *The Almighty Author of the Universe, with a single Word, created Light*. This, now, is in the *sublime Style*, yet it is not *Sublime*, there being nothing extraordinary in it, which another Person might not easily hit on. But as *God said, Let there be Light, and there was Light*;

so extraordinary a Turn of Expression, which shews the Obedience of the Creature to the Orders of his Creator, is truly *Sublime*, and has something more than Human.

*Longinus* makes five Sources of the *Sublime*: The First, a certain Elevation of Mind, which makes us think happily. The Second, in the Pathetic, or that natural Vehemence and Enthusiasm, which strikes and moves us: These Two are owing almost wholly to Nature, and must be born with us; whereas the rest depend, partly, on Art. The Third is, the turning of Figures in a certain Manner, both those of Thought and of Speech. The Fourth, Nobleness of Expression, which consists of two Parts, the Choice of the Words, and the elegant, figurative Diction. The Fifth, which includes all the rest, is the Composition and Arrangement of the Words in all their Magnificence and Dignity. See *PATHEtic*, &c.

*SUBLIMING POTS*. See *ALUDELS*.

*SUBLINGUAL Glands*, in Anatomy, two Glands under the Tongue, placed on each Side thereof. See *TONGUE*.

These with the *Sipoglottides* filtrate a serous Humour, of the Nature of Saliva, which they discharge by little Ducts near the Gums, into the Mouth.

*SUBMULTIPLE*, in Geometry, &c. a *Submultiple Quantity*, is that which is contained in a certain Number of times in another, and which therefore repeated a certain Number of times, becomes equal thereto. Thus 3 is a *Submultiple* of 21.

In which Sense, a *Submultiple* coincides with a *Quota Part*. See *QUOTA PART*.

*Submultiple Ratio*, is that between the Quantity contain'd, and that containing: Thus the *Ratio* of 3 to 21 is *Submultiple*. See *RATIO*.

In both Cases, *Submultiple* is the Reverse of *Multiple*: 21, e. gr. being a *Multiple* of 3, and the *Ratio* of 21 to 3 a *multiple Ratio*. See *MULTIPLE*.

*SUBMULTIPLE* - - - - -  
*SUBMULTIPLE Subsuperparticular* } See *RATIO*.  
*SUBMULTIPLE Subsuperbipartiens*

*SUBNORMAL*, in Geometry, a Line which determines the Point in the Axis of a Curve, where a Normal or Perpendicular, rais'd from the Point of Contact of a Tangent to the Curve, cuts the Axis. See *CURVE*.

Or, the *Subnormal* is a Line, which determines the Point wherein the Axis is cut by a Line falling perpendicularly on the Tangent in the Point of the Contact.

Thus *T M* (Plate Conicks, Fig. 19.) being a Tangent to a Curve in *M*; And *M R* a Normal or Perpendicular to the Tangent; the Line *P R* intercepted between the Semiordinate *P M* and the Normal *M R*, is call'd the *Subnormal*.

Hence, 1<sup>o</sup>, In a Parabola, as *A M*, &c. the *Subnormal* *P R* is to the Semiordinate *P M*, as *P M* is to *P T*, and *M R* to *T M*.

2<sup>o</sup>, In the Parabola, the *Subnormal* *P R* is Subduple the Parameter; and, consequently, an invariable Quantity.

*SUBORDINATION*, a relative Term, expressing the Degree of Superiority or Inferiority, between one thing and another.

There is a Series of *Subordinations* running throughout all Nature. In the Church, there are several Degrees of *Subordination*, as of Deacons to Priests; Priests to Prelates, &c.

The like are observable in the secular State; In Offices of War, Justice, &c. and even

In the Sciences, Trigonometry is *subordinate* to Geometry; and in the Virtues, Abstinence and Chastity are *subordinate* to Temperance. In Music, some call the plagal Tones, *subordinate Tones*. See *TONE*.

*SUBORNATION*, is a secret or under-hand preparing, instructing or bringing in, a false Witness, or corrupting or alluring a Person to do such a false Act.

Hence the *Subornation* of Perjury, mention'd in the Act of General Pardon, 12 Car. II. c. 8. is the alluring to Perjury. See *PERJURY*.

*SUBPOENA*, is a Writ, whereby all Persons under the Degree of Peerage, are call'd into Chancery, in such Cases, where the Common Law hath made no Provision, so that the Party can have no Remedy by the ordinary Course of Common Law.

The Peers, in such Cases, are called by the Lord Chancellor's Letter, giving Notice of the Suit intended against them, and requiring them to appear.

There is also a *Subpoena ad testificandum*, for summoning of Witnesses, as well in Chancery, as in other Courts.

There is also a *Subpoena* in the Exchequer, as well in the Court of Equity there, as in the Office of Pleas.

The Name is taken from the Words in the Writ, which charge the Party summoned to appear at the Day and Place assigned; *Subpoena centum librarum*.

*SUBPOPLITEUS*, in Anatomy. See *POPLITEUS*.

*SUBREPTION*, the Action of obtaining a Favour from a Superior by Surprise, or by a false Representation.

*Subrepticia*



*Subreption* differs from *Obreption*, in that *Obreption* is a false Expression of the Quality of a Thing or Fact, &c. And *Subreption*, a want of Expression; or a fraudulent Reticency or Concealment of a Thing, which would have render'd the obtaining of the Favour more difficult.

The Word is form'd from the *Latin*, *sub*, under, and *repto*,

I creep.  
**SUBREPTITIOUS** or **SURREPTITIOUS**, a Term applied to a Letter, Licence, Patent or other Act, fraudulently obtain'd of a Superior, by concealing some Truth, which had it been known, would have prevented the Concession or Grant.

The Benefit of Letters, Licences, &c. is forfeited, when they are found contrary to the Informations given; they being then reputed *Subreptitious*.

Papal Bulls and Signatures are Null and *Subreptitious*, when the true State of the Benefice, the Manner of the Vacancy, and other necessary Matters, are not justly signified to the Pope.

*Subreptitious* differs from *Obreptitious*. See **SUBREPTION**.

**SUBROGATION**, in the Civil Law, the Action of substituting a Person in the Place, and intitling him to the Right, of another.

In its general Sense, *Subrogation* implies a Succession of any Kind; whether of a Person to a Person, or of a Person to a Thing.

There are two Kinds of *Subrogations*, the one *Conventional*, the other *Legal*.

The *Conventional*, is a Contract, whereby a Creditor transfers his Debt, with all Appurtenances thereof, to the Profit of a third Person.

*Legal Subrogation*, is that which the Law makes in favour of a Person, who discharges an antecedent Creditor; in which Case there is a legal Translation of all Rights of the ancient Creditor to the Person of the new one.

This the Civilians more usually call *Succession*, as being wholly the Work of the Law, and to distinguish it from the *conventional Subrogation*, which they also call *Cession*. See **CESSION**.

The Word is form'd from the *Latin*, *Subrogatio*, of the Verb *Rogare*, which, among the ancient *Romans*, signified to ask, to interrogate; whence it was, that they call'd the Laws themselves *Rogationes*, in regard the People made them, upon being ask'd by the Magistrates. And as Laws made by the People could not be changed without their Consent, and without being ask'd a-new, if they thought good to have the Law wholly abolish'd, *Lex abrogabatur*; if only a Part of it were to be abolish'd, *Lex derogabatur*; and if any Clause or Amendment were added to it, *Lex subrogabatur*.

The new Magistrates were also *Subrogated* in the Place of the old ones; for during the Time of the Republic, no Magistrate could be, but by Consent of the People, nor, of consequence, but by Law; since whatever the People thought good, was Law. This is what occasion'd *Salmasius* to say, That *Subrogare* and *Substituere per Legem*, were Reciprocals.

**SUBSCAPULARIS**, in Anatomy, a Muscle arising from the Basis and Side of the Scapula; and, spreading itself under the whole Convex, or Under-side of it, is inserted by a Semicircular Tendon, into the Neck of the *Os Humeri*, and draws it down to the Side of the Trunk.

**SUBSCRIPTION**, the Signature put at the bottom of a Letter, Writing, or Instrument. See **SIGNATURE**.

In Church History, we meet with Instances of *Subscriptions*, wrote in the Blood of *Jesus Christ*. *Nicetas*, in the Life of *Ignatius*, speaking of the *Subscriptions* made at the Council, wherein that Father was deposed, says, They *Subscribed*, not with common Ink, but, what strikes a Man with Horror, with a Pen dipp'd in the Blood of *Christ*. The Historian *Theophanes*, tells us, That Pope *Theodore* mix'd the Blood of *Christ* with the Ink, wherein he wrote the Deposition of *Pyrrhus*.

**SUBSCRIPTION**, in the *English* Commerce, is used for the Share or Interest, particular Persons take in a publick Stock, or a Trading Company, by writing their Names, and the Shares they require, in the Register thereof. Half the Commerce in *England* is carried on in *Subscription*. See **COMPANY**, **BUBBLE**, **FUND**, &c.

The *French* have likewise adopted the Word *Subscription*, using it in speaking of the Actions of the *India* Company.

A *Subscription* differs from an Action; in that the first is properly only an Action begun, or an Engagement, by making the first Payment, to acquit the rest in the Time limited; and that the other is the whole Action, perform'd in all its Parts. See **ACTION**.

**SUBSCRIPTION**, in the Commerce of Books, particularly signifies an Engagement a Person enters, to take a certain Number of Copies of a Book going to be printed; and the reciprocal Obligation of the Bookseller or Publisher, to deliver the said Copies on certain Terms.

The usual Conditions of these *Subscriptions*, are, on the Part of the Bookseller, to afford the Books cheaper to a Subscriber than to another, by one Third or one Fourth of the

Price; and on the Part of this latter, to advance half the Money in Hand, and to pay therest on the Delivery of the Copies: An Agreement equally advantageous to the one and the other; as the Bookseller is hereby furnished with Money to carry on Works, which would otherwise be above his Stock; and the Subscriber, as it were, receives Interest for his Money, by the moderate Price the Book stands him in.

*Subscriptions* had their Rise in *England*, and 'tis but very lately that they are got into other Countries. They were first set on Foot, in the middle of the last Century, for the printing of *Walton's Polyglot Bible*, which is the first Book ever printed by Way of *Subscription*.

From *England*, they pass'd a few Years ago into *Holland*, and are just now introduced into *France*. F. *Montfaucon's* Collection of Antiquities, is the first Book there publish'd by *Subscriptions*, which were so very numerous, that great Numbers were refused. The same Method has been since proposed, for the Publication of S. *Chrysostom* by the *Benedictins*; but not with equal Success.

All the other Books since printed by *Subscription*, are M. *Dacier's* Translation of *Plutarch's* Lives; the Description of *Versailles*, and F. *Daniel's* History of the *French* Militia.

In *England*, they are become exceedingly frequent; and their Frequency has render'd them liable to some Abuses, which begin to discredit them.

**SUBSEQUENT**, something that comes after another, particularly with regard to the Order of Time. When two Festivals happen on the same Day, the principal One is celebrated; and the other transferr'd to the *Subsequent* Day, i. e. to the Morrow.

**SUBSESQUIALTERATE**  
**SUBSUPERPARTICULAR** } See **RATIO**.  
**SUBSUPERPARTIENS**

**SUBSIDY**, in Law, any Aid, Tax or Tribute granted by Authority of Parliament to the King; on pressing Occasions of the State; levied either on Persons, Lands or Goods. See **DUTY**.

Such are the Land Tax, as 'tis call'd; which is usually at the Rate of three or four Shillings in the Pound, for Lands, and of two Shillings and eight Pence for Goods, &c. See **TAX**.

In the List of *English* Duties, or Impositions, are divers Kinds of *Subsidies*: Old *Subsidy*, Additional Imposition to the old *Subsidy*. New *Subsidy*, third *Subsidy*; Two-thirds *Subsidy*. See **DUTY**, **CUSTOM**, &c.

The ancient *Saxon* Kings had no *Subsidies* collected after the Manner of ours; but in lieu thereof, had several *Customs*, whereby they levied Money or personal Service on the People, for the Repairing of Cities, Castles, Bridges, military Expeditions, &c. which they call'd *Burglote*, *Brigbote*, *Herefare*, *Heregeld*, &c.

But upon the Lands becoming oppress'd by the *Danes*, King *Egbertus* in the Year 1007, agreed to pay them yearly 10000 Pounds for Redemption of Peace, which Sum was afterwards increased to 36000 Pounds, and at length to 48000 Pounds, which was call'd *Danegeld*, and was levied on Land; each Hide, or Plough-land, that of the Church only excepted, being cess'd 12 Pence. See **DANEGELD**.

Hence the Tribute came to be call'd *Hydagium*, a Name that afterwards became common to all Taxes and *Subsidies* imposed on Lands; as those on Cattle, being call'd *Hornegeld*. See **HIDAGE**.

Both these the *Normans* sometimes call'd from the *Greek*, *Taxes*, and sometimes from their own Language, *Tailage*, and sometimes, according to the Custom beyond-Sea, *Subsidia* and *Auxilia*.

After the Conquest, these *Subsidies* seem to have been granted differently from what they now are; as every Ninth Lamb, every Ninth Fleece, every Ninth Sheep, &c. Sometimes the Rate was every Tenth, and sometimes every Fifteenth, &c. See **TENTH**, **FIFTEENTH**, &c. See also **BENEVOLENCE**.

In *France*, the King alone, by his own Authority, imposes *Subsidies* on his People, at his own Discretion. What *Grotius* says, that those who pay *Subsidies* to other Sovereigns, to engage them in their Defence against powerful Enemies, by so doing, acknowledge their own Weakness, and that such an Acknowledgment diminishes somewhat of their Dignity; must be understood of such States as are too weak to defend themselves, and who, in respect hereof, render themselves, in some measure, Tributary; not of such as subsisting by their own Strength, give *Subsidies* to their weaker Neighbours, to prevent their being over-run by others.

Such, e. gr. as the King of *France* is, with regard to *Sweden*, and several other Princes; to whom he generally grants *Subsidies* in the Treaties he concludes with them.

**SUBSTANCE**, in Physicks, something that we conceive to subsist of itself, independantly of any created Being, or any particular Mode or Accident.



Thus a Piece of Wax is a *Substance*; because we can conceive it as subsisting of itself, and of its own Nature, without any Dependence on any other created Nature, or without any particular Mode, Form, Colour, &c. See *MODE*.

*Spinoza* maintains, that there is but one only *Substance* in Nature, whereof all the Creatures are so many different Modifications; and thus he makes the Soul of the same *Substance* with the Body. The whole Universe, according to him, is but one *Substance*; which *Substance*, he holds endow'd with an Infinity of Attributes, in the Number of which are *Thought* and *Extension*. All Bodies are Modifications of this *Substance*, consider'd as extended; and all Spirits Modifications of the same *Substance*, consider'd as Thought. See *BODY* and *THINKING*.

But Mr. *Lock*'s Philosophy of *Substances*, is much more Orthodox: Our Ideas of *Substances*, that great Author observes, are only such Combinations of simple Ideas, as are taken to represent distinct Things, subsisting by themselves; in which the confused Idea of *Substance*, is always the Chief. Thus the Combination of the Ideas of a certain Figure, with the Powers of Motion, Thought and Reasoning, joined to *Substance*, make the ordinary Idea of Man; and thus the Mind observing several simple Ideas to go constantly together, which being presumed to belong to one Thing, are call'd, and united in one Subject, by one Name; which we are apt, afterward, to talk of and consider as one simple Idea. See *IDEA*.

We imagine not these simple Ideas to subsist by themselves; but suppose some *Substratum*, wherein they subsist, which we call *Substance*. See *SUBSTRATUM*.

The Idea of pure *Substance*, is nothing but the supposed, yet unknown Support of these Qualities, which are capable of producing simple Ideas in us. See *QUALITY*.

The Ideas of particular *Substances* are composed out of this obscure and general Idea of *Substance*, together with such Combinations of simple Ideas, as are observed to exist together, and supposed to flow from the internal Constitution, and unknown Essence of that *Substance*.

Thus we come by the Ideas of Man, Horse, Gold, &c. Thus the sensible Qualities of Iron, or a Diamond, make the complex Idea of those *Substances*, which a Smith, or a Jeweller commonly knows better than a Philosopher. See *DEFINITION*.

The same happens concerning the Operations of the Mind, viz. Thinking, Reasoning, &c. which we concluding not to subsist by themselves, nor apprehending how they can belong to Body, or be produc'd by it; we think them the Actions of some other *Substance*, which we call Spirit; of whose *Substance* or Nature we have as clear a Notion, as of that of Body; the one being but the suppos'd *Substratum* of the simple Ideas we have from without; as the other of those Operations, which we experiment in ourselves within: So that the Idea of *Corporeal Substance* in Matter, is as remote from our Conceptions, as that of *Spiritual Substance*.

Hence we may conclude, that he has the perfect Idea of any particular *Substance*, who has collected most of those simple Ideas which do exist in it; among which, we are to reckon its active Powers and passive Capacities, though not strictly simple Ideas.

*Substances* are generally distinguish'd by secondary Qualities; for our Senses fail us in the Discovery of primary ones, as the Bulk, Figure, Texture, &c. of the minute Parts of Bodies, on which their real Constitutions and Differences depend. See *PARTICLE*.

But secondary Qualities are nothing but Powers, with relation to our Senses.

The Ideas that make our Complex ones of *Corporeal Substances*, are of three Sorts: First, the Ideas of primary Qualities of Things, which are discovered by our Senses; such as Bulk, Figure, Motion, &c. Secondly, the Sensible secondary Qualities, which are nothing but Powers to produce several Ideas in us, by our Senses. Thirdly, the Aptness we consider in any *Substance*, to cause or receive such Alterations of primary Qualities, as that the *Substance* so alter'd, should produce in us different Ideas from what it did before.

Besides the complex Ideas we have of material *Substances*, by the simple Ideas taken from the Operations of our own Minds which we experiment in ourselves as Thinking, Understanding, Willing, Knowing, &c. co-existing in the same *Substance*, we are able to frame the complex Idea of a Spirit: And this Idea of an immaterial *Substance*, is as clear, as that we have of a Material.

By joining these with *Substance*, of which we have no distinct Idea, we have the Idea of Spirit: And by putting together the Ideas of coherent, solid Parts, and Power of being mov'd joined with *Substance*, of which likewise we have no positive Idea; we have the Idea of Matter.

Further, there are other Ideas of *Substances*, which may be called *Collective*, which are made up of any particular *Substances*; considered as united into one Idea, as a Troop,

Army, &c. which the Mind does by its Power of Composition. These collective Ideas, are but the artificial Draughts of the Mind, bringing Things remote, and independant, into one View, the better to contemplate and discourse of them united into one Conception, and signified by one Name. For there are no Things so remote, which the Mind cannot, by this Art of Composition, bring into one Idea; as is visible, in that signified by the Name Universe. See *COMPOSITION*.

*SUBSTANTIAL*, or *SUBSTANCIAL*, in the Schools, something belonging to the Nature of *Substance*.

'Tis generally disputed, whether or no, there be such Things as *substantial Forms*; i. e. Forms independant of all Matter; or Forms that are *Substances* themselves. See *FORM*.

*Substantial*, is also used in the same Sense with *Essential*; in opposition to *Accidental*; in which relation, it gives room for abundance of Distinguish's. See *ESSENTIAL*.

*SUBSTANTIVE*, in Grammar, a Quality ascribed to a Noun or Name, when the Object it designs, is consider'd, simply, in itself, and without any regard to its Qualities. See *NOUN*.

When the Object is consider'd, as cloath'd with certain Qualities, the Noun is said to be *Adjective*.

For a more palpable Criterion; All Nouns, to which one cannot add the Word *Thing*, are *Substantives*; and all those to which *Thing* may be added, are *Adjectives*. See *ADJECTIVE*.

*F. Buffier* observes, 'tis a common Mistake in Grammarians, to define a Noun *Substantive*, to be that which denotes or expresses a *Substance*.

The Mistake arises hence, that finding all *Substances* express'd by *Substantives*, they have call'd all Kinds of Nouns, *Substantives*. But it does not follow, that all Nouns design *Substances*; witness the Nouns *Accident*, *Lightness*, &c. which are far from expressing *Substances*, and yet are true Nouns *Substantives*. Perhaps Grammarians mean nothing here by *Substance*, but the Subject spoke of: If so, the Definition is laudable.

Nouns *Substantives* sometimes, become *Adjectives*; and Nouns *Adjectives* become *Substantives*. In effect, the Nature of the Adjective being to express the Quality of an Object; if that Quality be the Object itself spoke of, then, on the Foot of our Definition, it becomes a *Substantive*. If, I say, a good Prince, the Word *good* is apparently an Adjective, because it represents the Prince, as cloath'd with the Quality of Goodness. But if I say, *The Good ought to be prefer'd to the Bad*; 'tis evident, *Good* is the Subject spoke of, and, consequently, a *Substantive*.

Indeed, Custom does not allow us to use all *Adjectives* indifferently, as *Substantives*; nor all *Substantives*, as *Adjectives*. The Laws regarded herein are as follow;

All Nouns either signify an Individual, as *Socrates*, *Alexander*, &c. or a Species, as *Man*, *Horse*, &c. or an essential Quality, as *Rational*, *Material*; or an accidental one, as *Black*, *White*, *Good*, *Fair*, &c. or a Dignity, Office, Art, &c. as *King*, *President*, *Philosopher*, &c.

Thus have we four Kinds of Nouns; whereof the 1<sup>o</sup> is very rarely taken adjectively; for as they signify Individuals or particular Beings, they can scarce be applied to any thing but the Thing they properly signify: yet we have sometimes known the Name of *Cato* taken Adjectively; as, *This is to be Cato, indeed*. Nor does *Malherbe* scruple to say in French, *Plus Mars que le Mars de la Thrace*.

2<sup>o</sup> Proper Names are sometimes converted into the Name of Dignities, &c. as *Cesar*, *Augustus*, &c. In which Case, they may be consider'd, in the same Light, as Nouns of the fourth Kind.

3<sup>o</sup> Those of the second Kind, are also sometimes taken Adjectively, as, *He is much a Man*, &c. The third Kind are *Adjectives* themselves: For the fourth Kind, all Grammarians rank them among *Substantives*; excepting *F. Buffier*, who will have them to be *Adjectives*; or, to use his own Term, *Modificatives*. Be this as it will, they are frequently used adjectively; *He is more a King, and more a Philosopher than any of his Predecessors*.

Now for *Adjectives* taken *substantively*, 1<sup>o</sup> Participles Passive, are very rarely thus taken; though we sometimes say, *The Loved are less happy than the Lovers*; *The Taught have the Advantage of the Untaught*; *The Besieged made a Salley*, &c. And, 2<sup>o</sup> Participles Active are taken still more rarely for *Substantives*. We scarce ever, say the *Loving*, the *Reading*; but the *Lover*, the *Reader*; yet we say *Student*, the *Protestant*, the *Tenant*, the *Appellant*, the *Opponent*, &c.

3<sup>o</sup> For Nouns *Adjectives*, those applied to Men, are not only used *substantively*, but are even become *Substantives* by Use; whether they be such as regard Religion; as *Christian*, *Pagan*, *Mahometan*, &c. Or Opinion; as *Stoic*, *Peripatetic*, *Cartesian*, &c. Or Country; as the *English*, *French*, *Italians*; Or the Temperament; as the *Melancholic*, *Phlegmatic*, *Choleric*, &c. Under the same Rule, are likewise comprehend-



hended abundance of Adjectives, signifying a Number of People agreeing in some common Attribute; as, the Learned, the Great, the Devout, the Brave, the Dissolute, &c. But the Use is here to be regarded; for we don't say the Eloquent, as we say the Learned; but Elegant Writers, &c. 'Tis Custom, and the Ear alone, that are to decide about these Differences.

Again, Adjectives taken *substantively*, for other Things beside Men, are either so used, to signify a Number or Set of Things that have some common Quality; or to express an abstract Quality. In both which, as in those of Men, there are some authorized by Custom, and others form'd every Day on their Model.

With regard to which last, Use, again, and the Ear, are to decide. Here All the Adjectives of Colours, are used *substantively*; as the White, Black, Green, &c. Some of those of Qualities; as the Cold, &c. Those of Time; as the Past, Present, Future: And many of other Matters; as the Agreeable, the Sublime, the Principal, &c. Nor is it only in the Positive, but also in the Comparative and Superlative Degrees, that Adjectives are used *substantively*; as, The better of the two: The best of it, &c.

**SUBSTITUTE**, a Person appointed to officiate for another, in case of Absence, or other legal Impediment.

In the French Law, the *Procureurs*, or Proctors, are obliged to name two of their Brethren for *Substitutes*, whose Names are wrote after theirs in the List; to receive Significations and Summons's made in their Absence.

The Word is form'd from the Latin, *sub*, under, and *statuo*, I appoint, establish.

**SUBSTITUTE**, in Medicine, a Drug, or Remedy that may be used in lieu of another; or that supplies the Place of another of like Virtue, which is not to be had; call'd also a *Succedaneum*. See **SUCCEDANEUM**.

The Root of the great Centaureum, and sometimes Monk's Rhubarb, are used as *Substitutes* to Rhapontic.

**SUBSTITUTION**, in Grammar, the using of one Word for another; or a Mode, State, Manner, Person or Number of a Word for that of another. This the Grammarians otherwise call *Syllepsis*. See **SYLLEPSIS**.

**SUBSTITUTION**, in the Civil Law, a Disposition of a Testator, whereby he *Substitutes* one Heir to another, who has only the Use-fruit, and not the Property of the Thing left him.

*Substitution* is a kind of Inheritance, call'd *Fiduciary*, or *Fidei-commisso*, in regard the immediate Inheritor has only the Use or Fruit of the Thing; the Body thereof being substituted and affected to certain Persons, who are likewise to have the Use-fruit in their Times, but never the Property. In some Countries, the *Substitution* is perpetual; in France, it only holds to the fourth Generation.

*Substitution* answers to *Remainder*, in our common Law. See **REMAINDER**.

Among the Romans, there were abundance of these Fiduciary Heirs; who enjoy'd Inheritances, till they returned them into the Hands of the right Heir; and the Reason why they did not likewise restore the Fruits, or that the Fruits were not deem'd to make a Part of the Inheritance, but only of the Thing, was, that the Fiduciary was obliged to run the Risks, and to stand the Charge of the Culture of the Land.

**SUBSTITUTION**, in Algebra, Fractions, &c. is the putting in the Room of any Quantity in an Equation, some other Quantity, which is equal, but express'd after another Manner. See **QUANTITY**.

**SUBTRACTION**, in Arithmetic, the second Rule, or rather Operation, in Arithmetic; whereby we deduct a less Number from a greater, to learn the precise Difference:

Or, more justly, *Subtraction* is the finding of a certain Number from two Homogeneous ones given; which, with one of the given Numbers, is equal to the other. See **ARITHMETIC**.

The Doctrine of *Subtraction* is as follows;

To subtract a less Number from a greater.

1<sup>o</sup> Write the less Number under the greater, in such Manner, as that homogeneous answer to homogeneous Figures, i.e. Unites to Unites, Tens to Ten, &c. as we have directed under **ADDITION**. 2<sup>o</sup> Under the two Numbers, draw a Line. 3<sup>o</sup> Subtract, severally, Unites from Unites, Tens from Tens, Hundreds from Hundreds; beginning at the right Hand, and proceeding to the Left; and write the several Remainders in their correspondent Places, under the Line. 4<sup>o</sup> If a greater Figure come to be subtracted from a less; borrow an Unite from the next Left-hand Place; this is equivalent to 10, and added to the less Number, the *Subtraction* is to be made from the Sum: Or if a Cypher chance to be in the next Left-hand Place, borrow the Unite from the next further Place. By these Rules, any Number may be subtracted out of another greater. For Example;

If it be required, from  
To Subtract

9800403459  
4743865263

The Remainder will be found 5056538196

For, beginning with the right Hand Figure, and taking 3 from 9, there remains 6 Unites, to be wrote underneath the Line: Going then to the next Place, 6 I find, can't be taken from 5; wherefore, from the Place of Hundreds 4, I borrow one, which is equivalent to Ten, in the Place of Tens; and from the Sum of this 10 and 5, viz. 15, subtracting 6, I find 9 Tens remaining, to be put down under the Line. Proceeding to the Place of Hundreds, 2 with the 1 borrowed at the last Place, make 3, which subtracted from 4, leave 1. Again, 5 in the Place of Thousands, cannot be subtracted from 3; for which Reason, taking one from 4, in the Place of Hundreds of Thousands, into the empty Place of Tens of Thousands, the Cypher is converted into Ten Tens of Thousands, whence one Ten being borrowed, and added to the 3, and from the Sum 13 Thousand, 8 Thousand being subtracted, we shall have 5 Thousand to enter under the Line: Then subtracting 6 Tens of Thousands from 5, there remain 3. Coming now to take 8 from 4; from the 8 further on the Left, I borrow one, by means whereof, the two Cyphers will be turned each into 9. And after the like Manner, is the rest of the *Subtraction* easily perform'd.

If heterogeneous Numbers be to be subtracted from each other; the Unites borrow'd, are not to be equal to Ten; but to so many as there go of Unites of the less Kind, to constitute an Unite of the Greater. For Example;

| l.    | s. | d. |
|-------|----|----|
| 45    | 16 | 6  |
| 27    | 19 | 9  |
| <hr/> |    |    |
| 17    | 16 | 9  |

For since 9 Pence cannot be subtracted from 6 Pence; of the 16 Shillings, one is converted into 12 Pence; by which means, for 6 we have 18 Pence; whence 9 being subtracted, there remains 9. In like Manner, as 19 Shillings cannot be subtracted from the remaining 15; one of the 45 Pounds is converted into 20 Shillings, from which, added to the 15, 19 being subtracted; the Remainder is 16 Shillings. Lastly, 27 Pounds subtracted from 44 Pounds, there remains 17.

If a greater Number be required to be subtracted from a less, 'tis evident the Thing is impossible. The less Number, therefore, in that Case, is to be subtracted from the greater; and the Defect to be noted by the negative Character. E. gr. If I am requir'd to pay 8 Pounds, and am only Master of 3; when the Three are paid, there will still remain 5 behind; which are to be noted, 5.

*Subtraction* is prov'd, by adding the Remainder to the *Subtrahend*, or Number to be subtracted: For if the Sum be equal to the Number whence the other is to be subtracted, the *Subtraction* is justly perform'd: For Example;

|                       | l.  | s. | d. | q.            |
|-----------------------|-----|----|----|---------------|
| 9800403459            | 156 | 11 | 3  | $\frac{1}{4}$ |
| 4743865263 Subtrahend | 21  | 17 | 2  | $\frac{1}{2}$ |
| <hr/>                 |     |    |    |               |
| 5056538196 Remainder  | 134 | 14 | 0  | $\frac{3}{4}$ |
| <hr/>                 |     |    |    |               |
| 9800403459            | 156 | 11 | 3  | $\frac{1}{4}$ |

**SUBTRACTION**, in Algebra, is perform'd by connecting the Quantities with all the Signs of the Subtrahend changed; and at the same time uniting such as may be united; as is done in Addition. Thus  $+7a$  subtracted from  $+9a$ , makes  $+9a - 7a$  or  $2a$ .

In the *Subtraction* of Compound algebraic Quantities; the Characters of the Subtrahend, are to be changed into the contrary ones, viz.  $+$  into  $-$ ; and  $-$  into  $+$ . See **QUANTITY**.

To Subtract specious Numbers, or Quantities from one another; both those affected with the same, and those with contrary Characters.

1<sup>o</sup> If the Quantities design'd by the same Letter, have the same Signs; and the less be to be subtracted from the greater; the *Subtraction* is perform'd as in common Arithmetic, e. gr.

|       |   |    |    |   |     |   |     |    |
|-------|---|----|----|---|-----|---|-----|----|
| 5b    | + | 4d | -f | = | 5b. | + | 4p. | -1 |
| 2b    | + | d  | -f | = | 2b. | + | 1p. | -1 |
| <hr/> |   |    |    |   |     |   |     |    |
| 3b    |   | 3d | -0 |   | 3   | - | 3p. | 0  |

2<sup>o</sup> If a greater Quantity be to be subtracted out of a less; the less must be subtracted out of the greater, and to the Remainder, must be prefix'd the Sign  $-$ , if the Quantities be affected with the Sign  $+$ ; or the Sign  $+$ , if they be affected with  $-$ .



$$\begin{array}{r} 16a + 6b - 9d = 16\text{lib.} + 2\text{sh.} - 9d \\ 19a + 3b - 11d \quad 19 \quad + 3 \quad - 11 \\ \hline -3a - 1b + 2 \quad -3 \quad - 1 \quad + 2 \end{array}$$

3° If the Quantities have different Signs; the *Subtraction* is converted into Addition, and to the Aggregate is prefix'd the Sign of the Quantity, whence the *Subtraction* is to be made: For Example;

$$\begin{array}{r} 8a - 5c + 9d = 8\text{lib.} - 5 + 9d \\ 6a - 8c - 7d = 6 \quad - 8 - 7 \\ \hline 2a + 3c + 16d = 2\text{lib.} + 3 + 16 \end{array}$$

4° If the Quantities be express'd in different Letters; they must be connected; only the Characters of the *Subtrahend* must be changed into the contrary ones: For Example;

$$\begin{array}{r} a + b - c \quad a + d \\ d - e + f \quad c - e - g \\ \hline a + b - c - d + e - f \quad a + d - c + e + g \end{array}$$

SUBTRACTION of *Logarithms* } See { LOGARITHM.  
SUBTRACTION of *Vulgar Fractions* } FRACTIONS.  
SUBTRACTION of *Decimals* } DECIMALS.

SUBSTRUCTION, in Building. See FOUNDATION.

SUBSTYLAR Line, in Dialling, a right Line, whereon the Style or Gnomon of a Dial is erected. See GNOMON.

In Polar, Horizontal, Meridional and Northern Dials, the *Substylar* Line is the Meridian Line, or Line of 12 a Clock; or the Interfection of the Plane, whereon the Dial is delineated, with that of the Meridian. See MERIDIAN.

In Easterly and Westerly Dials, the *Substylar* Line, is the Line of Six a Clock; or the Interfection of the Plane, whereon the Dial is delineated, with the prime Vertical. See DIAL.

SUB-TANGENT, of a Curve, is the Line that determines the Interfection of the Tangent with the Axis; or, that determines the Point wherein the Tangent cuts the Axis, prolonged. See CURVE.

Thus, in the Curve AM, &c. (Tab. Analyticks, Fig. 10.) the Line TP intercepted between the Semiordinate PM, and the Tangent TM, is the *Sub-tangent*. And PR is to PM, as PM to PT; and PM to PT, as MR to TM.

'Tis a Rule in all Equations, that if the Value of the *Sub-tangent* come out positive, the Point of Interfection of the Tangent and Axis, falls on that Side of the Ordinate, where the Vertex of the Curve lies; as in the Parabola and Paraboloides.

If it come out Negative, the Point of Interfection will fall on the contrary Side of the Ordinate, in respect of the Vertex or beginning of the Absciss; as in the Hyperbola, and Hyperboliform Figures.

And, universally, in all Paraboliform, and Hyperboliform Figures, the *Sub tangent* is equal to the Exponent of the Power of the Ordinate, multiplied into the Absciss. Thus in the common Parabola, whose Property is  $px = yy$ . The *Subtangent* is in Length, equal to  $x$ , the Absciss multiplied by 2, the Exponent of the Power of  $yy$ , the Square of the Ordinate; that is, it is equal to twice the Absciss; and by the former Rule for Paraboliform Figures, it must be taken above the Ordinate, in the Axis produced.

Thus, also, in one of the cubical Paraboloids, where  $pxx = yyy$ . The Length of the *Sub-tangent* will be  $\frac{2}{3}$  of the Absciss. Thus in the Figure, you will see that the *Sub-tangent* in any Curve is a Line, which determines the Interfection of the Tangent in the Axis.

SUBTENSE, in Geometry, a right Line, opposite to an Angle, and presumed to be drawn between the two Extremities of the Arch, which measures that Angle. See ARCH.

The *Subtense* of the Angle coincides with the Chord of the Arch. See CHORD.

In every rectangle Triangle, the Square of the *Subtense* of the right Angle, is equal to the Squares of the *Subtenses* of both the other Angles; by the 47th Prop. of *Euclid*. This wonderful Property of that Triangle, was first discover'd by *Pythagoras*, who in the Transport of Joy, hereby occasion'd, sacrificed a Hecatomb. See TRIANGLE.

The Word is form'd from the *Latin*, *sub*, under, and *tendo*, I stretch.

SUBTERRANEAN, something under Ground. See FOSSIL.

Naturalists talk much of *Subterranean Fires*, as the Cause of Volcano's. See FIRE and VOLCANO.

*Subterranean Winds*, as the Cause of Earthquakes. See EARTHQUAKE.

Mr. Boyle gives us an Instance, from the Dissertation de *Almirand. Hungar. Aquis*, of a huge *Subterraneous Oak*

dug out of a Salt Mine in *Transylvania*, so hard, that it could not easily be wrought on by Iron Tools; which yet, being exposed to the Air out of the Mine, became so rotten, that in four Days, it was easy to be broken and crumbled between one's Fingers.

Mr. *Derham* adds, That the Trees turned out of the Earth, by the Breaches at *West Thurrock* and *Dagenham*, though probably no other than Alder, and interred many Ages ago, in a rotten, oozy Mould, were so exceedingly tough, hard and sound at first, that he could make but little Impressions on them with the Strokes of an Ax; yet being exposed to the Air and Water, soon became so rotten, as to be crumbled between the Fingers.

SUBTILE, in Physicks, intimates a Thing exceedingly small, fine, and delicate; such as the Animal Spirits, &c. the Effluvia of odorous Bodies, &c. are supposed to be. See EFFLUVIA.

One kind of Matter is only more *subtile* than another, in that being divided into smaller Parts, and those, too, more agitated; on the one hand, it makes less Resistance to other Bodies; and on the other, insinuates itself more easily into their Pores.

The *Cartesians* suppose a *subtile Matter* for their first Element. See CARTESIANISM and ELEMENT.

This they lay down as so exceedingly Fine, that it penetrates the minute Pores of Glass and other solid Bodies; and from this they account for most of the Phenomena of Nature. See VACUUM, PLENUM, SUCTION, &c.

Yet they don't pretend to prove the Existence of this Matter, otherwise than by Consequence. See MATERIA *Subtilis*.

SUBTILE Matter. See MATTER.

SUBTILIZATION, the Act of *subtilizing*, or rendering any thing smaller and *subtiler*; particularly, the dissolving or changing a mixt Body into a pure Liquor, or a fine Powder.

SUBTRIPLE Ratio, is when one Number or Quantity is contain'd in another three times; thus 2 is said to be *Subtriple* of 6, as 6 is Triple of 2. See RATIO.

SUBURBICARY, an Epithet given to those Provinces of *Italy*, &c. which composed the ancient Diocese or Patriarchate of *Rome*. See PROVINCE.

The Term is form'd from the *Latin*, *sub*, under, and *urbis*, City. They were also sometimes call'd *Urbicary* Provinces.

Authors usually reckon Ten of these *Suburbicary* Provinces; whereof *Italy*, from the *Po* to the *Heel* made Seven, and the Isles of *Sicily*, *Sardinia*, and *Corfica*, the other Three.

Yet *Salmasius* will have the *Suburbicary* Provinces confined to those Four in the Neighbourhood of *Rome*, to which the Authority of the *Præfect* of *Rome* extended; and these he makes the Limits of the Diocese of ancient *Rome*. See DIOCESE.

F. *Sirmond* takes the other Extreme, and comprehends all the *West* under the Name of *Suburbicary* Provinces. *Rufinus*, who lived in the Age of the Council of *Nice*, explains the Power ascribed to the Pope, in the Sixth Canon of that Council, by saying, That he had the Care and Intendance of the *Suburbicary* Provinces. Hence, the different Sentiments of Authors, with regard to the *Suburbicary* Provinces; some only considering the Pope as Bishop of *Rome*; others, as Patriarch of the *West*, &c.

SUCCEDANEUM, in Pharmacy, a Remedy substituted in the Place of another first prescribed, when the Ingredients are wanting, necessary for the Composition of that other. See SUBSTITUTE.

*Substitute* and *Succedaneum*, are of equal Import, unless, with some Authors, we chuse to use *Substitute*, where a Simple of like Virtue is put for another; and *Succedaneum*, where a Compound is used with the same Intention.

The Word is form'd from the *Latin*, *Succedo*, to succeed, to come after.

SUCCENTURIATÆ, in Anatomy. See RENES *Succenturiatæ*.

SUCCENTURIATION, the Act of Substituting. See SUBSTITUTION.

SUCCENTURIATUS, in Anatomy, a Muscle, call'd also *Pyramidalis*. See PYRAMIDALIS.

SUCCESSION, in Philosophy, an Idea we get, by reflecting on that Train of Ideas constantly following one another in our Minds when awake. See IDEA and MORN.

The Distance between any Parts of this *Succession*, is what we call *Duration*. When this *Succession* of Ideas ceases, we have no Perception of Time or Duration thereof; but the Moment we fall asleep, and that wherein we awake, seem connected. See DURATION.

They, who think we get the Idea of *Succession* from our Observation of Motion by our Senses, will come near Mr. *Lock*'s Sentiment, above, when they consider that Motion produces an Idea of *Succession* no otherwise, than by producing a continued Train of distinguishable Ideas.

A Man that looks on a Body moving, perceives no Motion, unless that Motion produce a constant Train of *successive* Ideas. But where-ever a Man is, though all Things be



at rest about him, if he Thinks, he will be conscious of Succession.

**SUCCESSION**, in Astronomy. The *Succession of the Signs*, is the Order wherein they follow each other, and according to which, the Sun enters, successively, into one, then into another, call'd, also, *Consequence*. This Order is express'd in the two following Technical Verbes;

*Sunt Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libraque, Scorpius, Arcitenens, Capri, Amphora, Pisces.*

When a Planet is direct, it is said to go according to the Order and *Succession of the Signs*, that is, from Aries to Taurus, &c. when Retrograde, it is said to go contrary to the *Succession of the Signs*, viz. from Gemini to Taurus, then to Aries, &c. See SIGN.

**SUCCESSION**, in Law, implies a Right to the Universality of the Effects left by a Defunct.

Of this, there are several Kinds, *ab-intestate, intestate, &c.*

A *Succession, ab-intestate*, is that, a Person has a Right to by being next of Kin, which is, what we call, being next Heir at Law. See AB-INTESTATE.

A *testamentary Succession*, is that, a Person comes to by Virtue of a Will.

*Succession in the direct Line*, is that, coming from Ascendants or Descendants. *Collateral Succession*, is that, coming by Uncles, Aunts, or other Collaterals.

A *vacant or abandon'd Succession*, is a burthensome or vexatious One, which no Body will accept of. There is no real *Succession* in Benefices; for here, no Body Inherits. *Successions* were anciently divided into Noble and Base.

In Effects, that cannot be divided, as Kingdoms, &c. the *Succession* falls on a single Head, which is usually the eldest Son of the Deceased, as being supposed an indivisible Representative of his Father. In Effects, that are divided, all the Children represent their Father. 'Twas on this Principle, M. *Courtilz* observes, that each of the Sons of *Jacob* had his Share assign'd him in the Land of *Promise*. 'Tis true, *Manassah* and *Ephraim*, the two Sons of *Joseph*, had likewise their Shares; but this was because a double Portion had been allotted their Father, wherein he was treated as elder Brother, in consideration of the great Services he had done his Father and Brethren.

**SUCCESSOR**, a Person who has a Right to hold the Place another held before him; whether he arrive at it by Election, Collation, Inheritance; or otherwise.

Our Historians tell us, that Queen *Elizabeth* could never bear to hear of a *Successor*. The King of the Romans is Presumptive *Successor* to the Empire. The Canonists say, a Coadjutor is a necessary *Successor* to a Prelature; a Resignatory to the Resignant.

The Civilians say, a Titular Ufu-fructuary, can do nothing to the Prejudice of his *Successor*.

**SUCCINUM**, in Pharmacy, *Karabe* or *Amber*; a bituminous Juice or Resin, which from a Fluor grows hard and brittle. See AMBER.

The Whitest, and most Transparent, is accounted best; it is of no great Use in Medicine, *per se*, as its Texture seems too compact to open and yield to the natural Elaborations; though some have a great Opinion of it, as a Balsamick, and gave it in Gonorrhoea's particularly.

But it is certain, that what Pharmacy extorts from it, is of wonderfull Efficacy, especially in nervous Cases.

**SUCCISA**; a medicinal Herb, call'd also *Morsus Diaboli*, or the Devil's Bit.

'Tis a powerful Sudorific, insomuch that Sir *Theodore Mayerne* observes, in the *Philosophical Transactions*, laying a Person sick of a Plague, or other malignant Fever, on a Bed thereof, moderately hot; he shall sweat 'till they take him off; and much more, if he drink of the Decoction or Juice of the Herb. The *Succisa* is now little used.

**SUCCOTRINE Aloes**. See ALOES.

**SUCCUBUS** or **SUCCUBA**, a Term used to signify a *Dæmon*, who assumes the Shape of a Woman, and, as such, lies with a Man.

Some Authors use *Incubus* and *Succubus*, indiscriminately; but they ought to be distinguish'd; *Incubus* being only properly used, where the *Dæmon* is supposed to be in Form of a Man, and, as such, lies with a Woman. See INCUBUS.

**SUCULA**, in Mechanicks, a bare Axis, or Cylinder, with Staves in it to move it round, without any Tympanum. See AXIS.

**SUCCUS Pancreaticus** } See { PANCREATIC Juice.  
**Succus Nervosus** } { NERVOUS Juice.

**SUCKERS** or Off-sets, in Agriculture, Gardening, &c. are young Shoots, that proceed from the Root of a Tree, and are of the same Kind and Nature with the Tree from which they spring; for such as grow from Trees rais'd by Grafting or Inoculation, follow the Nature of the Stock. See ENGRAFTING.

They sometimes put forth near the Body of the Mother Plant; but other *Suckers* at more Distance are best; yet the former removed when there is least Sap in the Top, and preserving what Fibrous Roots are upon them, often prosper well. When they are taken up, the Ground is to be well opened, and if they grow from the Body of the Tree, or great Roots, they must be cut off close to the Stem, and set presently. See STOCK.

It forwards much the springing out of *Suckers*, to bear the Roots of Trees, and stir them in some Places.

**SUCKING-Pump**. See PUMP.

**SUCTION**, the Act of *Sucking*, or of drawing up a Fluid, as Air, Water, &c. by the Mouth and Lungs.

Air is *suck'd* in by the Muscles of the Thorax, and Abdomen, distending the Cavity of the Lungs and Abdomen, by which means the Air included therein, is rarified, and ceases to be a Counterbalance to the external Air, which, of consequence, is driven in by the Pressure of the Atmosphere through the Mouth and Nostrils. See RESPIRATION.

Air is *suck'd* through a Pipe, in the same Manner as with the naked Mouth: It being here all one as if the Mouth were extended the Length of the Pipe.

The *Suction* of heavier Liquors is perform'd after the same Manner, *e. gr.* in lying prone to drink out of a Spring, &c. the Lips are applied close to the Surface of the Water, so as to prevent any Passage of the Air between them; then the Cavity of the Abdomen, &c. being distended as before, the Pressure of Air incumbent on the Surface of the Water without the Circumference of the Mouth, prevailing over that upon the Water within the same, the Fluid is rais'd, from the same Principle as Water in a Pump. See PUMP.

In sucking a heavy Liquor, as Water, through a Pipe, the longer the Pipe is, the greater Difficulty is found in the *Suction*; but the Bigness or Diameter of the Pipe, makes no Alteration therein. The Reason of this, arises from the great Principle in Hydrostatics, that Fluids press according to their perpendicular Altitudes. See FLUID.

For, as the external Air raises Columns of the Fluid with greater or less Difficulty, as their Altitudes are less, not as their Thicknesses are so; if two such Columns be conceived, the one twice as high as the other, and that other twice as thick as this first; though the very same Quantity of Water is to be *suck'd* through the Pipe, and the Force of the Air to raise it be exactly the same, in both Cases; yet there will be required a greater Distension of the Breast, and a greater Nifus of the Muscles, to raise and suck the former than the latter.

From what we have said, it evidently enough appears, that what we call *Su-Tion*, is not perform'd by any active Faculty in the Mouth, Lungs, &c. but is perform'd by the mere Impulse and Pressure of the Atmosphere. See AIR.

**SUCULA** or **SUCCULA**, is a Term in Mechanicks, for a bare Axis or Cylinder, with Staves in it, to move it round; but without any Tympanum or Peritrochium.

**SUDAMINA**, little Pimples in the Skin, like Millet Grains, frequent in Youth, especially those of a hot Temperament, and that use much Exercise.

**SUDATORY**, a Name given by the ancient Romans, to their Sweating-houses; sometimes also call'd *Iaconica*.

The *Sudatory* was a Species of their *Hypocausta*. See HYPOCAUSTUM.

**SUDOR**, in Medicine. See SWEAT.

*Sudor Anglicanus*, or the *English Sweat*, is an Epidemic Disease, first perceived in *England*, in 14<sup>th</sup> 5.

'Twas, properly, a sort of Plague; thus call'd, because attended with an extraordinary kind of Sweat.

It made its Return four Times in the Space of 66 Years, viz. in 1506, 1517, 1528 and 1551.

It began with a Sweat, which never ended, but either with the Death of the Patient, or his Recovery. If he survived 24 Hours, he was safe. Few People escaped of it at first; too much Care, and too little, were found equally destructive.

The Patient was to wait, without stirring, either in his Bed, or in his Cloaths, according to the Condition Nature was surprized in; without burthening him either with Remedies or with Foods; without cloathing either too much or too little; and, if possible, without either eating or drinking. The Sweat to be kept up, without either promoting it, by any extraordinary Heat, or checking it by the least Cold.

This was what was found by Experience; and which was at length practis'd, with happy Success. The Disease was first felt on the 21<sup>st</sup> of September, and in the same Day, spread itself all over *England*; where, after a great Mortality, it stop'd all at once, towards the End of October.

Its Ravages were so great, that in some Parts, it took off a Third Part of the People, in a very little Time.

At its Return under Henry VIII. in 1516, it was as general, and as dangerous as before, and again disappeared all at once.

At the third Attack, in 1528, 'twas less fatal; insomuch that *Bellay*, Bishop of *Bayonne*, then Ambassador in *England*,



*England*, who Sweat like the rest, tells us, that of Forty thousand Souls, seiz'd with it in *London*, only Two thousand died. In 1534, it pass'd over into *Ireland*, where it kill'd great Numbers.

**SUDORIFIC**, in Medicine, a Remedy that causes, or promotes Sweat. See **SWEAT**.

*Sudorificks* only differ from *Diaphoreticks*, in the Degree of their Action; the one promoting sensible Perspiration, the other insensible. See **DIAPHORETICKS**.

To the Class of *Sudorificks*, belong, 1<sup>o</sup>, all Things that moving violently through the Body, attenuate the Humours, and accelerate their Motion.

2<sup>o</sup> Such Things, as at the same Time diminish the Resistance in the Sudatory Vessels about the Cutis.

To which some add a third Kind, viz. such as absorb the Acidities of the Blood, and thus set at liberty the Matter of the Sweat.

The first Intention is chiefly effected, by a copious drinking of very hot Waters; by Acids drawn from Vegetables by Fermentation and Distillation; or those of Fossils, attenuated by repeated Distillations; especially if these be drunk mix'd with hot Water; by *Alcali's*, both volatile and fix'd, diluted with hot Water; by all compound *Salts*, dissolved in Water; by Sapa's, metallic Crystals, or the attenuated Parts of Metals themselves, as *Stribium Diaphoreticum*, fix'd *Sulphur* of Tachenius; *Bezoardic Mineral*, *Diaphoretic Mercury*, *Diaphoretic Gold*, &c. by sharp, subtil, acrimonious Aromaticks, as *Absynthium*, *Abrotonum*, *Opium*, *Asparagus*, *Anis*, *Asclepias*, *Aristolochia*, *Gum Ammoniac*, *Carduus Benedictus*, *Caraways*, *Cinnamon*, *Camomile*, *Saffron*, *Capillus Veneris*, *China*, *Dittany*, *Eupatorium*, *Gentian*, *Hyssop*, *Laurel*, *Mint*, *Leek*, *Rosemary*, *Sage*, *Savin*, *Sassafras*, *Scordium*, *Thyme*, *Veronica*, *Nettle*, and other Medicines compounded hereof, as *Treacle*, *Mirbrideate*, *Diascordium*, *Orvietan*, &c.

The Second is chiefly effected, by cleansing the Skin, by vaporous *Lotions*, *Baths*, and *Frictions*; by relaxing the Cutaneous and Subcutaneous Vessels, which is best done by hot Water sprinkled all over the Body, the Head excepted; by increasing the external Heat about the naked Body, as by the Warmth of a Bed, a Vapour-bath, &c.

The Third is effected by Absorbents, as *Corals*, *Crabs-Eyes*, *Diaphoretic Antimony*, *Bezoard*, &c. See each under its proper Article.

**SUET**, a kind of Fat, found in Sheep, Oxen, Hogs, &c. which melted down and clarified, makes what we call *Tallow*, used in the making of Candles. See **FAT** and **TALLOW**.

Anatomists, &c. distinguish four Kinds of Fat in the Body of an Animal. The first, which fixes itself, and after melting, cools into a very firm Consistence, they call *Suet*.

'Tis found in greatest Abundance in the lower Belly, and about the Kidneys. The Word is form'd from the *Latin*, *Suedum*, a Sue.

*F. le Compre* mentions a Tree in *China*, that bears *Suet* or Tallow. 'Tis much about the Height of our Cherry Tree: Its Fruit is cover'd with a Rind, which divides into 3 Segments of a Sphere, which when ripe, open in the middle like a Chestnut, and shew Three white Grains, of the Size of our Small-nuts. The Flesh, or Pulp of these Grains, which include a little Stone, has all the Qualities of our *Suet*, the Colour, Smell, Consistence, &c. and accordingly they make Candles of it; after first melting it down with a little Oil of Olives, to make the Paste the softer and more manageable.

**SUFFICIENT**, in the School Theology. *Sufficient Grace*, is a Help or Assistance God gives to Man, to enable him to act and perform his Duty. See **GRACE**.

'Tis allowed an Article of Faith, that Grace is necessary, and that without Grace, nothing that is Good, or that can any way intitle to Heaven, can be done: 'Tis allow'd too, that God does not refuse the necessary Assistances; and 'tis allow'd, that Man, frequently, either does not act, when he should, or acts what he should not.

From these Principles, which are generally admitted by all Sects, however different in other respects, it follows, that there is some Assistance of God which Man resists; some, wherewith Man does not act, wherewith yet he might act; or some, whereby he does Evil, by which he might do well. 'Tis this Assistance that is call'd *Sufficient Grace*; because *sufficing* to make us act, though we don't act with it.

**SUFFITUS**, or **SUFFIMENTUM**, in Medicine, a thickish Powder, &c. prepared of odoriferous Plants, Gums, &c. which being thrown on Coals, the Vapours or Steam thereof, are received by Smelling. See **FUMIGATION**.

**SUFFOCATION**, in Medicine, &c. a Loss or Obstruction of Respiration.

*Suffocations* sometimes arise from a too great Abundance of Blood thrown on the Lungs, or the Muscles of the Larynx, and preventing the Ingress of the Air; as is the Case in Squinancies, *suffocating Catarrhs*, *Peripneumonies*, &c. See **SQUINANCY**, &c.

The Fumes of Wines, or strong Beers, when boiling, cause *Suffocation*, by interrupting the Circulation of the Blood.

And the same may be observed of the Fumes of Lime, wherewith Walls are whitened; and those of Charcoal, Antimony, Sulphur, Vitriol and Spirit of Nitre.

The *Suffocation* under Water, is owing partly to the Passage of the Air being stopp'd up, and partly to the Irruption of the Water into the Breast. See **DROWNING**.

The *Suffocation of the Womb or Matrix*, is a Disease pretty frequent in Women, call'd also, *Fits of the Mother*.

In this, the Patient imagines a malignant Vapour rising from the Matrix, and so pressing against the Lungs and the Diaphragm, as to prevent the free Motion necessary to Respiration.

Its true Cause, is a Convulsion of the Muscles of the Larynx, which straighten the Wind-pipe, and prevent the Air's passing into the Lungs. Hence it is, that Hysterical Women feel Constrictions in the Throat, as if one were strangling them with a Cord. See **HYSTERIC**.

In *France*, they dispatch their People that are raving Mad, by *suffocating* them between two Pillows.

**SUFFRAGAN**, in the Ecclesiastical Polity, a Term applied to a Bishop, with respect to his Arch-Bishop, on whom he depends, and to whom Appeals are made from the Bishop's Official. See **BISHOP**.

In this Sense, the Archbishop of *Canterbury* has Twenty-one *Suffragans*; and the Archbishop of *York* Four.

The Term was never heard of before the VIIIth Century.

Some distinguish between *Bishop* and *Suffragan* thus: *Dicuntur Episcopi qui Archiepiscopo Suffragari & assistere tenentur: Et Suffraganei dicuntur quia eorum Suffragis cause Ecclesiasticæ judicantur. Spelman*. Others say, they are call'd *Suffragans*, because when call'd by the Metropolitan to a Synod, they have a Right of *Suffrage* or of Voting; or because they could not be consecrated without his *Suffrage* and Consent.

**SUFFRAGAN** is also used for a *Chorepiscopus*, or an Assistant-Bishop, or a Coadjutor, who has a Title, *in partibus injudicium*, and assists another in the Discharge of his Function, or discharges it himself in the Absence of that other. These some call *Subsidiary Bishops*.

By Statute 36 *Henry VIII*. every Bishop and Archbishop is allowed to appoint, some one, some two, and some three *Bishops-Suffragans*; the Seats or Residences whereof, are fix'd by the same Statute.

The *Suffragan-Bishop* for the Diocese of *Canterbury*, to be at *Dover* only; for *York*, at *Nottingham* and *Hull*; for *London*, at *Colchester*; for *Winchester*, at *Guilford*, *Southampton*, and in the Isle of *Wight*, &c.

*Du Cange* observes, that the Title *Suffragan* has also been given to such Priests as are subject to the Visitation of the Arch-deacon: And *Suffragans of the Pope*, to the Bishops of such Dioceses, as are immediately subject to the Pope.

**SUFFRAGE**, a Voice or Vote, given in an Assembly, where something is deliberated on, or where a Person is elected to an Office or Benefice. See **VOTE**.

*Suffrages* are sometimes given by Word of Mouth; and sometimes in Writing, as at Elections lyable to a Scrutiny. See **SCRUTINY**.

The President of the Assembly usually collects the *Suffrages*.

The Word is form'd from the *Latin*, *Suffragium*, which anciently signified *Silver*, as appears in the VIIIth Novel of *Justinian*: *Ut Judices sine Suffragio fiant*; and the VIth Novel: *Qui emerit presulatum per Suffragium, Episcopatu & Orde Ecclesiastico excidat*.

*Suffrages of the Saints*, in the *Romish Church*, are the Prayers and Intercessions they are supposed to make to God, in behalf of the Faithful.

**SUFFERANCE**, in ancient Customs, was a Delay, or Respite of Time the Lord granted his Vassal, for the Performance of Fealty and Homage; so as to secure him from any feudal Seizure. See **SERVICE**, **VASSAL**, **FEE**, &c.

*Sufferance*, say the Customs, is equivalent to Fealty and Homage, while it holds.

The Word is also used for a Delay which the Lord grants his Vassals, to free their Hands of Fees or Inheritances they have acquired, till they have pay'd the Due of Indemnity, &c.

**SUFFRUTEX**, among Botanists, a Name given to a low, woody, perennial Species of Plants, sending out no Leaves from its Root, and beginning to be branched from the very bottom of the Stalk; such as *Lavender*, *Rue*, *Sage*, &c. See **PLANT**, **TREE**, &c.

**SUFFUMIGATION**, in Medicine, a Term applied to all Remedies that are received into the Body in form of Fumes, i. e. of Smoak or Perfumes. See **SMOAK**.

These are composed of different Matters, according to the Nature of the Disease.

*Suffumigations* are intended to soften sharp, serous Humours, to provoke or check the Course of the Menstrues, to raise a Salivation in venereal Evils, &c.

The Word is form'd from the *Latin*, *sub*, under, and *fusus*, Smoak.

**SUFFUSION**,



**SUFFUSION**, in Medicine, an overflowing of some Humour, shewing itself in the Skin; particularly that of the Blood or Bile. See **BLUSHING**.

That Redness ordinarily arising from Shame, is only a Suffusion of Blood appearing in the Cheeks.

The Jaundice is a Suffusion of Bile over the whole Body.

See **JAUNDICE**.

**SUFFUSION** is also used for a little Film or Pellicle, form'd in the aqueous Humour of the Eye, before the Pupil; call'd, also, **Cataract**. See **CATARACT**.

**SUGAR**, *Saccharum*, a very sweet, agreeable Juice, express'd from a kind of Canes, growing in great Plenty in the East and West Indies; particularly in *Madera*, *Brasil* and the *Caribbee* Islands.

'Tis a Question not yet decided among the Botanists, &c. whether the Ancients were acquainted with this Cane, and whether they knew how to express the Juice from the same? What we can gather from the Opinions and Arguments of the one Party and the other; is, That if they knew the Cane and the Juice, they did not know the Art of Condensing, Hardening and Whitening it, and, of consequence, knew nothing of our *Sugar*.

Some ancient Authors seem to mention *Sugar*, under the Name of *Indian Salt*; but they add, that it ooz'd out of the Cane of itself; and there harden'd like a Gum; and was even friable between the Teeth, like our common Salt; whereas, ours is express'd by a Machine on purpose, and coagulated by the Fire.

Theirs, *Salmasius* tells us, was refreshing and loosening, whereas, ours is hot, and excites Thirst. Hence, some have imagined, that the ancient and modern *Sugar-Plant* were different: But *Martholus*, on *Dioscorides*, C. 75. makes no doubt they were the same; and others are even of Opinion, that ours has a laxative Virtue, as well as that of the Ancients, and that it purges Pituita.

The Generality of Authors, however, agree, that the ancient *Sugar* was much better than the Modern; as consisting of only the finest and maturest Parts, which made themselves a Passage, and were condensed in the Air.

The Interpreters of *Avicenna* and *Scrapion*, call *Sugar*, *Spoium*; the *Persians*, *Lalatis*, and the *Indians*, *Mam-buc*.

*Salmasius* assures us, that the *Arabs* have had the Art of making *Sugar*, such as we now have it, above 800 Years. Others produce the following Verses of *P. Terentius Varro Atacinus*, to prove that it was known before *Jesus Christ*.

*Indica non magna nimis Arbore crescit arundo,  
Illius extentis premittitur radicibus humor,  
Dulcia cui nequeunt succo contendere mella.*

Another Question among Naturalists is, Whether the *Sugar Canes* be originally of the *West Indies*; or whether they have been translated thither from the *East*?

The Learned of these last Ages, have been much divided on the Point: But since the Dissertation of *F. Labat*, a Dominican Missionary, publish'd in 1722, there is no longer room to doubt, but that the *Sugar-Cane* is as natural to *America* as *India*; all that can be said in favour of the latter, is, That the *Spaniards* and *Portuguese* learnt from the Orientals, the Art of expressing its Juice, boiling it, and reducing it into *Sugar*.

#### Culture of the SUGAR-Cane.

The Reed or Rush, whence this useful Juice is drawn, resembles those others we see in Morasses, and on the Edges of Lakes; excepting that the Skin of these latter is hard and dry, and their Pulp void of Juice; whereas the Skin of the *Sugar-Reed* is soft, and the spongy Matter or Pith it contains, very juicy, though that in a greater or less Degree, according to the Goodness of the Soil, its Exposure to the Sun, the Season 'tis cut in, and its Age; which four Circumstances contribute equally to its Goodness and its Bulk.

The *Sugar-Cane* usually grows five or six Foot high, and about half an Inch in Diameter; though *F. Labat* mentions some extraordinary ones in the Isle of *Tobago*, Twenty-four Foot high. The Stem or Stalk is divided by Knots, a Foot and Half apart. At the Top it puts forth a Number of long, green, rusted Leaves, from the Middle whereof, arise the Flower and the Seed. There are likewise Leaves springing out from each Knot; but these usually fall as the Cane rises; and 'tis a Sign, either that the Cane is naught, or that 'tis far from its Maturity, when the Knots are seen beset with Leaves.

The Ground fit for *Sugar-Canes*, is that which is light, soft and spongy; lying on a Descent, proper to carry off the Water, and well turn'd to the Sun. They usually plant them in Pieces, cut a Foot and Half below from the Top of the Flower. These are ordinarily ripe in Ten Months, though sometimes not till Fifteen; at which Time, they are found quite full of a white, succulent Marrow, whence is express'd

the Liquor whereof *Sugar* is made. When ripe, they are cut, their Leaves cleared off, and they are carried in Bundles to the Mills. The Mills consist of Three wooden Rollers, cover'd with Steel Plates; and have their Motion either from the Water, the Wind, Cattle, or even the Hands of Slaves. See **SUGAR-MILL**.

Two Rules belonging hereto are, That no Canes above four Foot, or under two Foot and a Half long, be sent to the Mills; and, That no more Canes be cut than can be conveniently press'd in 24 Hours; in regard they will heat, ferment and grow sour.

The Juice coming out of the Canes, when press'd and broke between the Rollers, runs through a little Canal into the *Sugar-House*; which is near the Mill; where it falls into a Vessel, whence it is convey'd into the first Copper or Cauldron, to receive its first Preparation, only heated by a slow Fire to make it simmer. With the Liquor, is here mix'd a Quantity of Ashes or beaten Lime; the Effect of which Mixture, assisted by the Action of the Fire, is, that the unctuous Parts are separated from the rest, and raised to the Top, in form of a thick Scum, which is kept constantly scumming off; and serves to feed the Poultry, &c. withal.

#### Preparation of SUGAR.

The Juice, in the next Place, is purified in a second Copper; where a brisker Fire makes it boil; and all the Time the casting up of its Scum is promoted by means of a strong Lye, compos'd of Lime-water and other Ingredients.

This done, 'tis purified and scum'd in a third Boiler, wherein is cast a kind of Lye, that assists in purging it; collects together its Impurities, and makes them rise to the Surface; whence they are taken with a Skimmer.

From the Third, 'tis removed to a Fourth Boiler, where the Juice is further purified by a more violent Fire: and hence to a Fifth; where it takes the Consistence of a Syrop.

In a Sixth Boiler, the Syrop receives its full Coction; and here all the Impurities left from the former Lyes, are taken away by a new Lye, and a Water of Lime and Allom cast into it. In this last Cauldron, there is scarce found one Third of what was in the First; the rest being waisted in Scum.

By thus passing, successively, a Number of Coppers, the *Sugar Juice* is purified, thicken'd, and rendred fit to be converted into any of the Kinds of *Sugar* hereafter mention'd. The Size of the several Coppers always diminishes, from the first to the last; each being furnished with a Furnace, to give a Heat proportionable to the Degree of Coction the Juice has received. In some large *Sugar-Works*, there are also particular Coppers, for the boiling and preparing the Scums.

#### The several Kinds of SUGAR made in the Caribbee Islands.

*F. Labat* mentions Seven different kinds of *Sugars* prepared in the *Caribbees*, viz.

|  |                       |
|--|-----------------------|
| Crude SUGAR, or <i>Muscovado</i>           | Royal SUGAR           |
| Strain'd or Broken SUGAR                   | Candied SUGAR         |
| Earth'd or White SUGAR in Powder           | SUGAR of fine Syrop   |
| Refined SUGAR, either in Powder or Loaves. | SUGAR of coarse Syrop |
|  | SUGAR of the Scum.    |

*Crude SUGAR*, or *Muscovado*, is that first drawn from the Juice of the Cane, and whereof all the rest are compos'd.

The Method of making it, is that already described as for *Sugar* in the General.

We need only add, That when taken out of the sixth Copper, 'tis put in a Cooler, where stirring it briskly together, 'tis let stand to settle, till a Crust, of the Thickness of a Crown-piece, be form'd thereon. The Crust form'd, they stir it up again, then put it into Vessels, where it stands to settle, till it be fit to Barrel.

*Strain'd or Broken SUGAR*, though whiter and harder, does not differ much from the *crude Sugar*. Though 'tis held a Medium between this last and the *Earth'd Sugar*; which is the white *Powder Sugar*. The Preparation of this *Sugar*, is the same as that of the raw *Sugar*, with this Difference, that to Whiten it, they strain the Liquor through Blankets, as it comes out of the first Copper.

The Invention of *Strain'd Sugar* is owing to the *English*, who are more careful than their Neighbours, in the Preparation hereof; for they not only strain it, but when boil'd, put it in square wooden Forms, of a pyramidal Figure; and when it has purified itself well, they cut it in Pieces, dry it in the Sun, and barrel it up.

*Earth'd SUGAR*, is that which is whiten'd by means of Earth laid on the Top of the Forms 'tis put in, to purge it self.

The making of this *Sugar*, is begun after the same manner as that of raw *Sugar*; except that they only use the best Canes in it; that



that they work with more Care and Nicety; that when the Liquor is in the first Copper, the Ashes they put in, are little or nothing mix'd with Lime, for fear of reddening it; and that they strain it through a Blanket, from the first to the second Copper.

When it has pass'd all the Six Coppers, 'tis laden out into a Cooler; whence 'tis put into conical Moulds or Forms, the Tips whereof are perforated, but now stopp'd with Linnen or other Stuff; and these ranged evenly before the Furnace. When it has been a Quarter of an Hour in the Forms, 'tis cut with a *Sugar-Knife*, that is, 'tis stirred briskly this way and that, for Half an Hour.

This serves, not only to promote the forming of the Grain; and the diffusing it equally throughout; but also to determine the unctuous Parts of the *Sugar* to mount to the Top that they may be scum'd off.

The Forms being left to stand 15 Hours in this State, the Holes at the bottom are then unstopp'd, to give a Passage to the Syrop, and to determine it to take that Way. When enough of these Forms are fill'd, to fill a Stove, which usually contains Five or Six hundred Forms; they visit the *Sugar* in all the Forms, to examin the Quality thereof, and to see if it quit the Form easily; that it may either have the Earth given it, as the Refiner, who visits it, judges proper; or be melted over again, if it don't prove well.

This done, the Forms are planted, each on its Pot, with the Tip of the Cone downwards; the Top is taken off, and in lieu thereof, they put in some *Sugar* in Grain, to within an Inch of the Edge; which Space is left for the Earth prepared for it.

The Earths here used, are of various Kinds; the good Qualities of each whereof, are, that they don't tinge the Water, that they let it filtrate easily through, and that they don't imbibe the fatty Part of the *Sugar*. E'er put in the Forms, 'tis steep'd in Water 24 Hours; and at length applied, in the Consistence of a Pulp.

As soon as the Earth is on the *Sugar*, all the Windows of the Refining Room are shut, that the Air and Heat may not dry the Earth. When 'tis quite dry, which usually happens in nine or ten Days Time, 'tis taken off; and after cleaning the Surface of the *Sugar* with Brushes, and raking it up an Inch deep, and again laying it Level as before; they give it a second Earth.

The Whiteness of the *Sugar* of each Form, is seen from the first Earth; Experience shewing, that a Second or Third Earth don't make the *Sugar* any thing whiter, but only whitens the Head of the Loaf. When the second Earth is taken off, they clean the Surface of the *Sugar* with a Brush, and with a Knife loosen the Edge of the *Sugar*, where it sticks to the Form, that neither the Form nor the *Sugar*-Loaf be damaged in taking out the latter. The Windows are now open'd, and the Forms left to stand Eight or Ten Days to dry. While the *Sugar* is draining in its Forms, a Stove is prepared to receive them.

The Stove being sufficiently heated, by Means of the Furnace therein, Loaves are taken out of the Forms one after another; and such as are white from one End to t'other, are carry'd to the Stove, as are, also, the rest, after cutting off what is not white, to be farther refin'd.

When the Loaves are all rang'd in the Stove, a moderate Fire is made for about two Days, during which Time, they visit every Part of the Stove very carefully, to see that every Thing is in good Order, and to repair any Thing that may go amiss.

After these two Days, they shut the Trap-Door a-top of the Building, and increase the Fire. Eight or ten Days and Nights continu'd violent Fire usually suffice to dry a Stove of *Sugar*.

When they judge it sufficiently done, they open the Trap-Door, and chuse a hot dry Day to pound the *Sugar*, which is perform'd with huge, hard, heavy Wooden Pettles; when pounded, 'tis put up in Barrels, and well trodden down as 'tis put in, that the Barrels may hold the more.

**SUGAR of the Scum.** This is all made of the Scums of the two last Coppers; those of the former being reserv'd for the making of Rum.

The Scum destin'd to make *Sugar*, is kept in a Vessel for that Purpose, and boil'd every Morning in a Copper set apart for that Use. With the Scum, is put into the Copper a fourth Part of Water, to retard the boiling, and give Time for its purging: When it begins to boil, the usual Lye is put in, and 'tis carefully scum'd: When almost enough boil'd, Lime and Allom-Water are thrown in; and when 'tis ready to be taken out, they sprinkle it with a little powder'd Allom.

**SUGAR of Syrop.** There are three Kinds of Syrops that run from *Sugar*. The first from the Barrels of raw *Sugar*, which is the coarsest of all: The second, from the Forms or Moulds after they are perforated, and e'er they receive their Earth: The third, that coming from the Forms after they have had their Earth; which last is the best.

The coarse Syrops should only be used for Rum; but *Sugar* being grown dear, Endeavours have been used to make some hereof, and that with tolerable Success. They are first clarify'd with Lime-Water, and, when boil'd, are put up in Barrels, with a *Sugar-Cane* in the Middle, to make them purify themselves. After twenty Days, a Quantity of coarse Earth is thrown in, to make 'em cast the Remainder of their Syrop, and fit 'em to be return'd into raw *Sugar*. The *Dutch* and *German* Refiners, first taught the Islanders how to turn their Syrop into crude *Sugar*.

The second Syrop is wrought somewhat differently: After the Copper 'tis to be boil'd in is half full, eight or ten Quarts of Lime-Water are cast in: 'Tis then boil'd with a brisk Fire, and carefully scum'd: Some add a Lye, and others none. F. *Labat* takes the former Method to be the better, tho' it requires more Trouble and Attention. This *Sugar* may be Earth'd alone, or, at least, with the Heads of Loaves, the dry'd Tops, and such other Kinds of *Sugars* as may not be mix'd with the proper earth'd *Sugar*, nor yet with the raw *Sugar*.

For the third Syrop, after boiling and scumming it as the former, they put it instantly into Coolers, the Bottoms whereof are cover'd half an Inch thick with white *Sugar*, very dry, and well pounded; and the whole is well stir'd, to incorporate the two together. This done, they strew the Surface over with the same pounded *Sugar*, to the Thickness of one Fifth of an Inch; this assisting the *Sugar* in forming its Grain. When settled, and the Crust gather'd at the Top, a Hole is made in the Crust five or six Inches Diameter.

By this Aperture, they fill the Cooler with a new Syrop, pour'd gently in, which insensibly raises up the former Crust. When all the Syrops are boil'd, and the Cooler is full, they break all the Crusts; and after mixing them well, put it up in Forms or Moulds.

The rest is perform'd in the same manner as in the earth'd *Sugar*, from which it only differs in that it falls short of its Lustre and Brilliant; being, in reality, sometimes whiter and finer, tho' of a flatter and duller white.

**Refin'd SUGAR.** Crude *Sugar*, strain'd *Sugar*, and the Heads or Tops of Loaves that have not whiten'd well, are the Matter of this *Sugar*.

In a Refinery are usually two Coppers, the one serving to clarify, the other to boil the clarify'd Liquor; tho' they sometimes clarify in both, and boil afterwards. For the Operation of Refining, the same Weight of Lime-Water and of *Sugar* are put in the Copper; and as the Scum is rais'd by the Heat, 'tis taken off, and when it ceases to rise any more, the Syrop is strain'd through a Cloth.

After this, 'tis clarify'd; that is, a Dozen of Eggs is thrown, White, Yolk, Shell and all; after having first broke and beaten them well in Lime-Water. When the fat, and other Impurities of the *Sugar*, which this Composition gathers together on the Surface of the Syrop, have been scum'd off; a few more Eggs are thrown in, and 'tis scum'd afresh. This they repeat 'till the *Sugar* is sufficiently clarify'd; which done, 'tis again strain'd through the Cloth.

When taken out of this Copper, 'tis boil'd in the second; which done, 'tis put out into Coolers, the Bottoms whereof are first cover'd half an Inch thick with fine white powder'd *Sugar*. As soon as 'tis there, 'tis briskly stirred about, and the Surface strew'd over with pounded *Sugar*. The rest is perform'd as in *Sugars* of fine Syrops, or in earth'd *Sugar*; only more Care and Exactness is used.

**Royal SUGAR.** The Matter of this *Sugar* ought to be the finest refined *Sugar* to be found. This they melt with a weak Chalk-Water; and sometimes, to make it the whiter, and prevent the Lime from reddening it, they use Allom-Water.

This they clarify three Times, and pass as often thro' a close Cloth, using the very best Earth. When prepared with these Precautions, 'tis whiter than Snow, and so transparent, that we see a Finger touching it, even thro' the thickest Part of the Loaf.

**SUGAR-Candy.** This is better made of earth'd *Sugar*, than refin'd *Sugar*, in regard the former is sweeter.

The *Sugar* to be used herein, is first dissolved in a weak Lime-Water, then clarify'd, scum'd, strain'd through a Cloth, and boil'd, and put in Forms or Moulds that are travers'd with little Rods, to retain the *Sugar* as it Crystallizes. These Forms are suspended in a hot Stove, with a Pot underneath, to receive the Syrop that drops out at the Hole in the Bottom, which is half stopp'd, that the Filtration may be the gentler. When the Forms are full, the Stove is flat up, and the Fire made very vehement.

Upon this the *Sugar* fastens to the Sticks that cross the Forms, and there hangs in little Splinters of Crystal. When the *Sugar* is quite dry, the Forms are broke, and the *Sugar* taken out, candied. Red *Sugar-Candy* they make, by casting into the Vessel, where the *Sugar* is boiling, a little Juice of the Indian Fig; and if 'tis desir'd to have it performed



they cast a Drop of some Essence in, when the *Sugar* is put-  
ting into the Forms.

This Method of making *Sugar-Candy* is that of *F. Labat*,  
practis'd in the *Caribbees*: The Method in *Europe*, describ'd  
by *Pomet*, is somewhat different.

*White Sugar-Candy* they make of white refin'd *Sugar*,  
boil'd with Water into a thick Syrop, in a large Peel. 'Tis  
candied in a Stove, whither 'tis carry'd, inclos'd in bras  
Peels, cross'd with little Rods, about which the Crytals  
fasten as they are form'd.

The Fire of the Stove is kept equable for fifteen Days;  
after which, the *Sugar* is taken out of the Peels to be dry'd.  
*Red or brown Sugar Candy* is made like the white, except  
that they only use brown *Sugars* and earthen Pots.

*Barley Sugar*, is a *Sugar* boil'd till it be brittle, and  
then cast on a Stone anointed with Oil of sweet Almonds,  
and form'd into twist'd Sticks, about the Length of the  
Hand, and the Thickness of a Finger.

It should be boil'd up with a Decoction of *Barley*, whence  
it takes its Name; but in Lieu thereof, they now generally  
use common Water, to make the *Sugar* the finer. To give  
it the brighter Amber Colour, they sometimes cast *Saffron*  
into it. 'Tis found very good for the Cure of Colds and  
Rheums.

*SUGAR of Roses*, is white *Sugar* clarify'd, and boil'd  
into a Consistence, in *Rose-Water*; when boil'd, they  
form it into Lozenges, sometimes into little Hail, of  
the Size of Peas; by keeping it stirring till it be cold and  
dry. 'Tis reputed good to soften and allay Acrimonies, &c.  
of the Brea'st.

*SUGAR of Saturn* } See SATURN.  
*SUGAR of Lead* }

**SUGGESTION**, the Act of furnishing one with a  
Thought, or Design, or of insinuating it artfully into his  
Mind.

In the Civil Law a Testament is said to be made *by Sug-  
gestion*, when 'tis made by Surprise, and contrary to the In-  
tention of the Testator. See TESTAMENT.

If *Suggestion* be prov'd, the Testament becomes null.  
Articles and Legacies of *Suggestion* are not admittable against  
a Testament wrote with the Testator's own Hand, which is  
never suspected.

**SUIT**, or **SUTE**, *Seſta*, in Law, (from the *French Suite*,  
a following one another) is used in divers Senses.

As, 1<sup>o</sup>. *Suit in Law*; which is of two Kinds, *Real* and  
*Personal*: The same with what we call *Real* and *Personal*  
*Actions*. See ACTION.

2<sup>o</sup>. *Suit of Court*, or *Suit of Service*; an Attendance  
which the Tenant owes the Court of his Lord. See SERVICE.

3<sup>o</sup>. *Suit Covenant*; is when your Ancestor hath covenanted  
with mine to *sue* to his Court.

4<sup>o</sup>. *Suit Custom*; when I and my Ancestors owe *Suit* time  
out of Mind.

5<sup>o</sup>. *Suit Real*, or *Regal*; when Men come to the Sheriff's  
Turn or Leet.

6<sup>o</sup>. *Suit* signifies the following one in *Chase*, as *Fresh*  
*Suit*.

Lastly, *Suit* signifies a Petition made to the King, or any  
Great Person.

**SULPHUR**, in Natural History, a fat unctuous Mineral  
Substance, fusible and inflammable by Fire, and not dissolu-  
ble or miscible in Water. See FOSSIL.

It is particularly call'd *Fossil*, or *Mineral Sulphur*, to di-  
stinguish it from the *Sulphur of Metals*, or of the *Philoso-  
phers*. See METAL.

*Sulphurs* make a particular Class of Fossils, divided into  
*Solid* and *Fluid*.

The *Solid Sulphurs* are, common *Sulphur*, or *Sulphur* pro-  
perly so call'd, *Arsenic* and *Ambar*. See ARSENIC and  
AMBAR.

The *Liquid Sulphurs* are, *Asphaltum*, or *Pis asphaltum*,  
*Bitumen*, *Petroleum*, *Naptha*, and *Oleum Terræ*, &c. See  
BITUMEN, PISASPHALTUM, PETROLEUM, NAPTHA, &c.

**SULPHUR**, properly so call'd, or *Brimstone*, is of three  
Kinds, viz. *Vivum*, *Mineral*, and *Common Sulphur*.

*Sulphur Vivum* is thus called, as being such as it is taken  
out of the Mine: It is a kind of greyish argillous Clay,  
which easily takes Fire, and, in burning, casts a strong sul-  
phurous Smell. Its Colour occasions its being sometimes  
call'd *Grey Sulphur*.

'Tis chiefly brought from *Sicily*; and is but little used,  
except in some Galenical Compositions, and to *sulphur*  
Wine, to make it keep in Carriage.

The best is soft, smooth, friable, and shining, of a Mouse-  
Colour, and not too full of Smell.

*Mineral Sulphur*, call'd also *Yellow Sulphur*; is a Kind of  
hard, earthy Bitumen, of a shining yellow Colour, a strong  
stinking Smell, easily taking Fire, and dissolving.

'Tis found in great Quantities in the Neighbourhood of  
Vulcanos or burning Mountains, as *Vesuvius*, *Ætna*, &c. yet is

it likewise found in its particular Mines; and we have very  
good from several Parts of *Italy* and *Switzerland*, tho' the  
best is that of *Quitto* and *Nicaragua* in *America*.

'Tis from this *Sulphur*, that the *Common Sulphur* used in  
Gunpowder, and on divers other Occasions, is drawn, by  
Means of Fire and Whale Oil, which dissolving it, 'tis  
pour'd into Moulds; and thus form'd into those Cylinders  
we find it in.

This *Common Sulphur* is either better or worse, according  
to the Refinery it comes from. That of *Holland* has a long  
Time had the Vogue; the second Place has been given to  
that of *Venice*, and the third to that of *Marseilles*; but the  
Order seems to have been since chang'd, and that from *Mar-  
seilles* is now in the first Place.

It is chosen in large thick Cylinders, of a golden yellow  
Colour, very brittle, and when broke, appearing all brilliant,  
as if Crytallized.

Beside the Use of *Sulphur* in the Composition of Gun-  
powder, whereof it is one of the three Ingredients, and that  
which makes it take Fire so readily, (See GUNPOWDER) 'tis  
of some Use in Medicine, and more in Chymistry. 'Tis  
also used in whitening Silken and Woollen Stuffs; to which  
End, the Vapour thereof is contriv'd to be receiv'd by them.  
See BLEACHING.

Its Vapour also whitens red *Roses*, and even young *Rooks*;  
taken out of the Nest, and expos'd thereto, become perfect-  
ly white. It has the same Effect on Gold; which is to be  
restored to its Colour by boiling it in Water with Tartar.

The Chymical Analysis of *Sulphur* is very difficult; its  
Principles being so volatile, and withal so fast bound to-  
gether, that they either rise all together, or are dissipated and  
lost in being separated.

*M. Homberg*, however, has at length found the Secret of  
separating the Principles, and of saving them at the same  
Time. He finds it consists of an Acid Salt, an Earth, an  
oily, bituminous, and inflammable Matter, and usually a little  
Metal.

The three first he finds, by a long Series of Operations,  
are in pretty equal Quantities; but the last, which he finds  
to be Copper, inconsiderable. The Acid, he adds, is ex-  
actly the same with that of *Vitriol*; the Oil thick and red  
as Blood, appears to be the inflammable Part, and that which  
constitutes the Chymical Principle *Sulphur*, but that it  
retains some heterogeneous Matter in the Operation. The  
Earth is extremely fix'd, and unalterable by the strongest  
Fire.

*M. Geoffroy* tried the Recomposition of *Sulphur* on *M.  
Homberg's* Principles, and with Success. The pure Acid Salt  
of *Sulphur*, being mix'd with an equal Quantity of the oily  
Matter, and earthy Alkali, and a little Oil of Tartar, and  
the Operation conducted according to the Rules of Art, the  
Mixture was converted into a pure burning Sulphur.

This done, he attempted the Composition of *Sulphur*,  
not by recompoundng it out of the same Matters it had  
been resolv'd into, but by using Matters judg'd of the same  
Nature. Thus, by substituting Oil of *Vitriol* for the Acid  
Salt, and Oil of Turpentine for the inflammable Part, he suc-  
ceeded as before.

Again, he found that fixed Salts, as they are Acids ab-  
sorb'd in Earth, serve for two Principles at once, and need  
nothing but an inflammable Oil to make *Sulphur*: And even  
in Lieu of this Oil, *M. Geoffroy* employ'd, with equal Suc-  
cess, Charcoal, Pit-coal, and other Solids.

Indeed, *Mr. Boyle* and *Glauber* had before made common  
*Sulphur*, and that by Mixtures, such as *M. Geoffroy* de-  
scribes; but they were both mistaken as to the Reason there-  
of; the one concluding, that the *Sulphur* he thus got, had  
been contain'd in the fix'd Salts, and the other in the Coal;  
neither of them dream'd, that 'twas the Mixture of the  
three Principles that produced the Mixt.

*Flowers of Sulphur*, are the purest and finest Part of  
*Sulphur*, gain'd by evaporating *Sulphur*, by Sublimation, or  
burning it in Pots made for that Purpose, and gathered in  
the Capital of the Cucurbit, where the Vapour sticks. See  
FLOWER.

This Preparation, as, indeed, *Sulphur* in most of its  
Forms, is found excellent for the Lungs. The best Flower of  
*Sulphur* is that of *Holland*, which is in Cakes, or Pieces, light,  
soft, friable, and rather white than yellow. If it be in  
Powder, it must be very fine, of a yellow Colour, that is  
both whitish and gilt at the same Time.

Instead of this, we have frequently put upon us a vile  
Mixture of *Sulphur*, exalted by Fire, and mix'd with  
Starch, or Wheat Flower; and sometimes only *Sulphur*-  
Dust well sifted.

By adding fix'd Nitre, or *Sal Polychrest*, to the Flowers  
of *Sulphur*, we have the white Flowers of *Sulphur*.

*Magistery*, or *Balm*, or *Milk of Saturn*, is *Sulphur*  
dissolved in a sufficient Quantity of Water, with Salt of  
Tartar; and precipitated by Means of a Spirit of Vinegar,  
or some other Acid. See MAGISTERY.



\*Tis called *Milk of Sulphur* from its Whiteness; and *Balm of Sulphur*, or of the Lungs, from its excellent Use in Diseases of the Lungs and Breast. See BALSOM, &c.

*Salt of SULPHUR*, is a Chymical Preparation, very improperly thus called, as being no other than the Sal Polychreston, impregnated with Spirit of *Sulphur*, and reduced to an Acid Salt, by evaporating the Humidity thereof. Some hold it a powerful Febrifuge. See SALT.

*SULPHUR of Antimony*, is a sulphurous Matter drawn from Antimony by divers Operations. See ANTIMONY.

That drawn from the Faces of the Crocus Metallorum, is by some called, *Golden Sulphur*.

*SULPHUR Metallorum*, or *Sulphur of Metals*, called also, *Sulphur Figen*, is used among the Chymists and Alchymists for a peculiar Matter, which enters the Composition of all Metals. See METAL.

Metals are suppos'd to consist of two essential Parts, or Principles; Mercury as the Basis, or Metallic Matter; and *Sulphur* as the Binder or Cement, which fixes the fluid Mercury into a coherent malleable Mass. See METAL and MERCURY.

Some of the latest and best Chymists, particularly Mons. *Homburg*, will have this *Sulphur* to be no other than Fire. See FIRE, GOLD, BURNING-GLASS.

*SULTAN*, or *SOLDAN*, a Title, or Appellation given the *Turkish* Emperor.

It had its Rise under *Mahmoud*, Son of *Sebesteghin*, the first Emperor of the Dynasty of the *Gaznerides*, towards the Close of the IVth Century of the Era of the *Hegira*: When that Prince going to *Segestan* to reduce *Kalaf*, the Governor of that Province, who affected the Sovereignty; *Kalaf* was no sooner advertis'd of his coming, than he went out before him, delivered the Keys of his Fortrefs, and own'd him his *Sultan*, that is, his Lord or Commander.

The Title pleas'd *Mahmoud* so well, that he assumed it ever afterwards; and from him it pass'd to his Descendants, and to other Mahometan Princes.

*Vatier* will have the Word *Turkish*, and to signify King of Kings; adding, that it was first given the Princes *Angro-lipex* and *Masgud*, about the Year 1055; others will have it originally *Persian*, alledging, in Proof hereof, an ancient Medal of *Cosroe's*; others derive it from *Soldan quasi solus dominus*; others from the Hebrew שולט, *Schalat*, to rule, reign: From the Hebrew it pass'd into the Arabic, and thence to the *Turks*.

In the *Roman* Ceremonial, we find mention made of a *Soldan*, or Marshal, who is to attend the Pope when he marches in State.

*SULTANA*, the Wife of a Sultan. The Favourite *Sultana* is called *Hbascki-Sultan*, i. e. private *Sultana*.

The *Sultana* Queen is the Emperor's chief Wife. The old *Sultana*, Mother of the Emperor reigning, is called the *Sultana Valide*. *Sultana* is also a *Turkish* Vessel.

*SUM*, in Mathematicks, signifies the Quantity that arises from the Addition of two or more Magnitudes, Numbers, or Quantities together. See ADDITION.

This is sometimes called the *Aggregate*; and, in Algebra, it is usually denoted by the Letter Z, which stands for *Zuma*, or *Suma*; and sometimes by the Letter S.

*SUM* of an Equation, is when the absolute Number being brought over to the other Side, with a contrary Sign, the whole becomes equal to O: This *Des Cartes* calls the *Sum* of the Equation propos'd. See EQUATION.

*SUMAC*, a Drug used to die in Green; as also in the Preparation of Black Morocco, and other Leather. See MOROCCO.

It consists of the Leaves and young Branches of a Shrub, not unlike the little Service-Tree: The Leaves are longish, pointed, and hairy: The Flowers grow in Clusters, and are red, like our Roses. Its Fruit is a Kind of Grape, of a very attringent Quality; and its Seed almost oval, and inclosed in Capsulæ of the like Figure.

The Antients used them, instead of Salts, to season their Meats withal; whence the *Latins* call the Tree *Rhus Obsoniorum*, from its Use in the Dressing of Leather: 'Tis also called *Rhus Coriaria*. 'Tis the *Arabs* call it *Sumac*.

*SUMMARY*, an Abridgment, containing the Sum and Substance of a Thing in a few Words.

The *Summary* placed at the Head of a Book, a Chapter, a Law, or the like, is very useful to the Reader, to facilitate the Understanding thereof.

A Recapitulation, is to contain a *Summary* of the whole preceding Discourse. See RECAPITULATION.

*SUMMATORIUS Calculus*, the Method of summing differential Quantities; that is, from any Differential given, to find the Quantity from whose Differencing the given Differential results.

This Method we more usually call, *The inverse Method of Fluxions*; and For-igners, *Integralis Calculus*. See CALCULUS Integralis, and Fluxions.

*SUMMER*, one of the Seasons of the Year, commencing, in these Northern Regions, on the Day the Sun enters *Cancer*; and ending when he quits *Libra*. See SEASON.

Or, more strictly, and universally, the *Summer* begins on the Day when the Sun's Meridian Distance from the Zenith is the least. It ends on the Day when its Distance is a Mean betwixt the greatest and smallest.

The End of *Summer* coincides with the Beginning of Winter. See WINTER.

*SUMMER*, in Architecture, is a large Stone, the first that is laid over Columns and Pilasters, in beginning to make a cross Vault; or 'tis the Stone which being laid over a Piedroit or Column, is hollowed, to receive the first Haunce of a Plat-band.

The Word is form'd from the *French*, *Sommier*, which signifies the same Thing.

*SUMMER*, in Carpentry, is a large Piece of Timber, which being supported on two Stone Peers, or Posts, serves as a Lintel to a Door, Window, &c.

There are also *Summers* used in various Engines, &c. serving to sustain the Weight, &c.

*SUMMERS*, in Building. See BRESS-SUMMERS and GIRDERS.

*SUMMET*, the Vertex, or Point of any Body; as of a Triangle, a Pyramid, a Pediment, &c. See VERTEX.

The Word is formed from the *French*, *Summer*, which signifies the same Thing.

*SUMMONER*, or *SUMMONITOR*, an Apparitor, who is to cite Offenders to appear at a certain Time and Place, to answer to the Charge exhibited against them.

*SUMMONS*, in Law, a citing or calling a Person to any Court, to answer any Complaint, or even to give in his Evidence, &c.

This is the same with the *Vocatio in Jus*, or the *Citatio* of the Civilians: Hence our old Word *Summer*, or *Summoner*.

*Summons in Terra Petita*, is that made on the Land which the Party, at whose Suit the *Summons* is sent out, seeks to have.

*Summons ad Warrantizandum*, is a Process, whereby a Vouchee is called. See VOUCHEE.

*SUMMONS*, in War. To *summons* a Place, is to send a Drum, or Trumpet, to command the Governor to surrender; or, in Defect thereof, to protest to make an Assault, and to lay all in Fire and Blood.

*SUMMUM Bonum*, in Ethicks, the chief Good of Human Nature; or that, which, by its Enjoyment, renders truly and compleatly happy.

The Schools distinguish this chief Good of Man, into that which is simply and adequately so, and beyond which there can be no other; and into a lesser and subordinate one, which is in some measure attainable in this imperfect State.

This last they call *Felicitas Viatorum*; and the former, *Felicitas Compræhensorum*.

*SUMPTER-Horse*, is an Horse that carries Provisions and Necessaries for a Journey.

*SUMPTUARY* Laws, are Laws made to restrain Excess in Apparel, Furniture, Eating, &c.

Most Ages and Nations have had their *Sumptuary* Laws; and some retain them still, as the *Venetians*, *French*, &c. 'Tis observed, that no Laws are ever worse executed than *Sumptuary* Laws.

The *Sumptuary* Laws of that ancient *Locrian* Legislator *Zaleucus*, are famous: By these it was ordained, That no Woman should go attended with more than one Maid in the Street, except she were drunk: That she should not go out of the City in the Night, unless she went to commit Fornication: That she should not wear any Gold or Embroider'd Apparel, unless she purpos'd to be a common Strumpet. That Men should not wear Rings or Tissues, except when they went a Whoring, &c.

The *English* have had their Share of *Sumptuary* Laws, tho' all repealed by a Statute 1<sup>o</sup> Jac. I. or obsolete.

Under King *Henry IV.* *Cambden* tells us, Pride was got so much into the Foot, that it was proclaim'd, That no Man should wear Shoes above six Inches broad at the Toes. And their other Garments were so short, that it was enacted, 25 Ed. IV. That no Person under the Condition of a Lord, should, from that Time, wear any Mantle or Gown, unless of such Length, that, standing upright, it should cover his Privy Members and Buttocks.

Among the *Romans*, the *Sumptuary* and *Cibary* Laws were very numerous: By the *Lex Orchia*, the Number of Guests at Feasts was limited, tho' without Limitation of the Charges thereof. By the *Fannian* Law, made Twenty-two Years afterwards, it was enacted, That more than ten Ass should not be spent at any ordinary Feast: For the solemn Feasts, as the *Saturnalia*, &c. an hundred As's were allowed; Ten of which, *Gellius* informs us, was the Price of a Sheep, and an hundred of an Ox.

By the *Didian* Law, which was prefer'd eighteen Years after, it was decreed, That the former *Sumptuary* Laws should be of Force, not only in *Rome*, but also in Italy: And that for every Transgression, not only the Matter of the Feast,



Feast, but all the Guests too, should be liable to the Penalty.

SUN, *Sol*, in Astronomy, the great Luminary which enlightens the World, and by his Presence, constitutes Day. See DAY.

The *Sun* is usually reckon'd among the Number of *Planets*; but that he ought rather to be numbr'd among the *fix'd Stars*, will be shewn in its Place. See STAR and PLANET.

According to the Copernican Hypothesis, which is now generally received, and which has even Demonstration on its Side, the *Sun* is the Centre of the planetary and cometary System; round which all the Planets and Comets, and our Earth among the rest, revolve, in different Periods, according to their different Distances from the *Sun*. See *its Motion Illustrated and Demonstrated under the Article* PLANET.

But the *Sun*, though thus eas'd of that prodigious Motion, whereby the Ancients imagined him to revolve daily round our Earth; yet is he not a perfectly quiescent Body.

From the Phenomena of his Maculæ or Spots, it evidently appears, that he has a Rotation round his Axis; like that of the Earth whereby the natural Day is measured; only slower. Some of these Spots have made their first Appearance near the Edge or Margin of the *Sun*, and have been seen some time after on the opposite Edge; whence, after a Stay of about 14 Days, they have re-appeared in their first Place, and taken the same Course over again; finishing their entire Circuit in 27 Days time; which is hence deduced to be the Period of the *Sun's* Rotation round his Axis. This Motion of the Spots, is from *East* to *West*, whence we conclude that of the *Sun*, to which the other is owing, to be from *East* to *West*.

For the various Appearances of the Solar Spots, their Cause, &c. see MACULÆ and SPOTS.

For the annual Motion of the *Sun* round the Earth; 'Tis easily shewn by Astronomers, That the annual Motion of the Earth will occasion such an Appearance, though it be demonstrated that there is no such Thing.

A Spectator in the *Sun*, would see the Earth move from *West* to *East*, for the same Reason as we see the *Sun* move from *East* to *West*. And all the Phenomena resulting from this annual Motion, in whichsoever of the Bodies it be, will appear the same from either. Let S, for Instance (Tab. Astronomy, Fig. 39.) represent the *Sun*, A B C D the Earth's Orbit, which it passes through from *West* to *East*, in the Space of a Year.

Now, a Spectator in S, viewing the Earth at A, will refer it to the Point of the Sphere of the Stars,  $\gamma$ : When arrived in B, the Spectator will see it, as in the Point  $\delta$ ; when in C, as in the Point  $\epsilon$ , &c. till after its whole Circuit, it will be again seen in  $\gamma$ . Thus will the Earth appear to describe the whole Ecliptic, and to pass, successively, from Sign to Sign.

Suppose, now, the Spectator removed from the *Sun* to the Earth, which imagine in C; the Distance of the fix'd Stars, we have shewn, is so vast, that that of the *Sun* is but a Point to it. The Spectator, therefore, now situate on the Earth, will see the same Face of the Heavens, the same Stars, &c. as before; the only Difference will be, that as before he imagined the Earth in the Heavens, and the *Sun* in the Centre; he will now suppose the *Sun* in the Heavens, and the Earth in the Centre.

The Earth, therefore, being in C, the Spectator will see the *Sun* in  $\gamma$ ; and the Spectator being carried along with the Earth, and partaking of his annual Motion, will not perceive either his own Motion, or that of the Earth; but observing the *Sun*, when the Earth is arrived at D, the *Sun* will be seen at  $\delta$ . Again, while the Earth proceeds to A, the *Sun* will seem to have moved through the Signs  $\delta$ ,  $\epsilon$ , and  $\gamma$ : And while the Earth describes the Semi-circle A B C, the *Sun* will appear to have moved in the concave Surface of the Heavens, through the Six Signs,  $\epsilon$ ,  $\delta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ ,  $\gamma$ . So that an Inhabitant of the Earth will see the *Sun* go through the same Orbit or Circle in the Heavens, and in the same Space of Time, as a Spectator in the *Sun* would see the Earth describe the same.

Hence arises that apparent Motion of the *Sun*, whereby he is seen to advance, insensibly, toward the eastern Stars: In-somuch, that if any Star near the Ecliptic, rise any Time with the *Sun*; after a few Days, the *Sun* will be got more to the East of the Star, and the Star will rise and set before him.

For the several Phenomena resulting from the *Sun's* apparent Motion, or the Earth's real Motion, as the Diversity of Day and Night, of Seasons, &c.; See EARTH.

#### Nature, Properties, Figure, &c. of the SUN.

1° As the Solar Spots are sometimes found to stay Three Days longer behind the *Sun*, than they spend in passing over the Hemisphere visible to us; we easily deduce, that they don't adhere to the Surface of the *Sun*, but are at some Distance therefrom.

2° As the Spots frequently rise and vanish, even in the midst of the *Sun's* Disk; and undergo several Changes, both

with regard to Bulk, and Figure, and Density; it follows, that they frequently rise, *de novo*, about the *Sun*, and are again dissipated.

3° Hence it should follow, that they are form'd out of the Exhalations of the *Sun*; and are no other than Solar Clouds. See VAPOUR, CLOUD, &c.

4° Since, then, Exhalations proceeding from the *Sun*, rise above him, and stop at a certain Altitude; 'tis evident there is some Fluid incompassing the *Sun*, to urge the Exhalations to rise; and this Fluid must be denser at bottom, and rarer at top, like our Atmosphere. See ATMOSPHERE.

5° Since the Spots frequently dissolve and disappear in the middle of the *Sun's* Disk; the Matter of the Spots, that is, the Solar Exhalations, fall back again to the *Sun*: Whence it follows, that there must arise various Alterations in the *Sun's* Atmosphere, and the *Sun* himself. See RAIN, HAIL, METEOR, &c.

6° Since the Revolution of the Spots round the *Sun* is found very regular, and the Spots very near the *Sun*; it follows, That the Spots do not revolve round the *Sun*; but that the *Sun*, together with his Atmosphere, wherein the Maculæ are, move round their common Axis, in an Interval of about 27 Days; and hence it is, that the Spots near the Limb, being viewed obliquely, appear narrow and oblong.

7° Since the *Sun*, in every Situation, appears like a circular Disk; its Figure, as to Sense, must be Spherical; though we shall hereafter shew, That it is really Spheroidal.

Besides the Maculæ or dark Spots, several Authors make mention of Faculæ or Spots brighter than the rest of the *Sun's* Disk; and those generally larger, and very different from the Maculæ, both in Figure, Duration, &c.

These Faculæ, Kircher, Scheiner, &c. take to be Eruptions of Flames; and hence take Occasion to represent the Face of the *Sun* as full of Volcano's, &c. But Huygens, using the best Telescopes, could never find any such Things, though he has sometimes spied certain Places in the Maculæ themselves, more lucid than the rest. But these do not seem owing to any kindled Matter, which were scarce consistent with their Duration, and their frequent Change into Maculæ; but to the Refraction of the *Sun's* Rays through the thinner Exhalations, when as the Groffer, in their Neighbourhood, intercept the same. See FACULÆ.

8° That the Substance of the *Sun*, is Fire, we thus prove: The *Sun* shines, and his Rays, collected by concave Mirror, or convex Lens's, burn, consume, and melt the most solid Bodies, or else convert them into Ashes, or Glass. Wherefore, as the Force of the solar Rays is diminished by their Divergency, in a duplicate Ratio of the Distances reciprocally taken; 'tis evident, their Force and Effect is the same, when collected by a burning Lens or Mirror, as if we were at such Distance from the *Sun*, where they were equally dense. The *Sun's* Rays, therefore, in the Neighbourhood of the *Sun*, produce the same Effects, as might be expected from the most vehement Fire; consequently, the *Sun* is of a fiery Substance. See FIRE.

Hence it follows, That its Surface is every where Fluid; that being the Condition of Flame. See FLAME.

Indeed, whether the whole Body of the *Sun* be Fluid, as some think, or Solid, as others; we don't determine: But as there are no other Marks, whereby to distinguish Fire from other Bodies, but Light, Heat, a Power of Burning, Consuming, Melting, Calcining and Vitriifying; we don't see what should hinder, but that the *Sun* may be a Globe of Fire like ours, invested with Flame.

9° Since the Maculæ are form'd out of the solar Exhalations; it appears, that the *Sun* is not pure Fire, but that there are Heterogeneous Particles mix'd along with it.

10° The Figure of the *Sun* is a Spheroid, higher under the Equator than about the Poles. This we prove thus: The *Sun* has a Motion about his own Axis, and therefore the solar Matter will have an Endeavour to recede from the Centres of the Circles wherein it moves; and that, with the greater Force, as the Peripheries of the Circles are greater. But the Equator is the greatest Circle, and the rest, towards the Poles, continually decrease; therefore the solar Matter, though at first in a spherical Form, will endeavour to recede from the Centre of the Equator, further than from the Centres of the Parallels.

Consequently, since the Gravity whereby it is retain'd in its Space, is supposed to be uniform throughout the whole *Sun*; it will really recede from the Centre, more under the Equator than under any of the Parallels. And hence the *Sun's* Diameter, drawn through the Equator, will be greater than that passing through the Pole, i. e. the *Sun's* Figure is not perfectly Spherical, but Spheroidal. See SPHEROID.

For the Parallax of the *Sun*; see PARALLAX.

For the *Sun's* Distance: As the Determination thereof depends on that of the Parallax; and as the *Sun's* Parallax is not found without a long, operose Calculus; So, Astronomers don't agree much about either of them.

The mean Distance of the *Sun* from the Earth, some make 7490 Diameters of the Earth, others 10000, others 12000; others



others 15000; but allowing *M. de la Hire's* Parallax of 6", the *Sun's* mean Distance will be 17188 Diameters of the Earth; and allowing that of *Cassini*, only 14182. See DISTANCE.

The apparent Diameter of the *Sun*, is not found always the same. *Ptolemy* makes it, when greatest, 33' 20", *Tycho* 31', *Kepler* 31' 4", *Ricciolus* 32' 8", *Cassini* 32' 20", *De la Hire* 32' 43". Its mean, apparent Diameter, according to *Ptolemy*, is 32' 18"; according to *Tycho* 31'; according to *Kepler* 30' 30"; according to *Ricciolus* 31' 40"; according to *Cassini* 31' 40"; according to *De la Hire* 32' 10". Its least Diameter, *Ptolemy* makes 31' 20"; *Tycho* 30'; *Kepler* 30'; *Ricciolus* 31'; *Cassini* 31' 8"; *De la Hire* 31' 38".

The true Diameter of the *Sun* to that of the Earth, is computed to be, as 10000 to 208. See DIAMETER.

For the Eclipses of the *Sun*; see ECLIPSE.

Cycle of the *Sun*. See CYCLE.

Meridian Altitude of the *Sun*, &c. See MERIDIAN Altitude.

SUNDAY, the First Day of the Week; thus call'd by our idolatrous Ancestors, because set apart for the Worship of the *Sun*.

'Tis now also call'd the *Lord's Day*, because kept a Feast in Memory of our *Lord's* Resurrection on this Day; and *Sabbath Day*, because substituted, under the new Law, in the Place of the *Sabbath*, in the old Law. See SABBATH.

In the Breviary, and other Offices, we meet with *Sundays* of the first and second Class: Those of the first Class, are *Palm*, *Easter*, *Advent* and *Whit-Sunday*, those of *Quasimodo* and *Quadragesimo*; each whereof, see under its proper Article.

Those of the second Class, are the common *Sundays*. Anciently, each *Sunday* in the Year had its particular Name, which was taken from the Introit of the Day; which Custom has only been continued to some few in *Leut*; as *Reminiscere*, *Oculi*, *Letare*, *Judica*.

It was *Constantine the Great*, that first made a Law for the Observation of *Sunday*; and that, according to *Eusebius*, appointed it should be regularly celebrated throughout the *Roman Empire*.

Before him, and even in his Time, they observed both the *Jewish Sabbath* and *Sunday*, at the same Time; both to satisfy the Law of *Moses*, and to imitate the Apostles, who used to meet together on the first Day.

Indeed, some are of Opinion, that the *Lord's Day*, mention'd in the *Apocalypse*, is our *Sunday*; which they will have to have been so early instituted by the Apostles. Be this as it will, 'tis certain, a Regard was had to this Day, even in the earliest Ages of the Church; as appears from the first Apology of *Justin Martyr*, where he describes the Exercise of the Day, not much unlike to ours.

By *Constantine's* Laws, made in 321; it was decreed, That for the future, the *Sunday* should be kept a Day of Rest in all Cities and Towns; but he allowed the Country People to follow their Work. In 538, the Council of *Orleans* prohibited this Country-labour; but in regard there were still abundance of *Jews* in the *Gauls*, and that the People gave into a good many Superstitious Usages, in the Celebration of the New *Sabbath*, like those of the *Jews* in that of the Old; the Council declares, That to believe it unlawful to travel with Horses, Cattle and Carriages, to prepare Foods, or to do any thing relating to the Cleanness and Decency of Houses or Persons, favours more of Judaism than Christianity.

SUNDAY Letter. See DOMINICAL Letter.

SUN-Flower. See TOURNESOL.

SUOVETAURILIA, or SOLITAURILIA, a Sacrifice among the ancient *Romans*; wherein they offer'd Three Victims, of Three different Kinds, viz. a Bull, a Ram and a Boar.

*Livy* describing it, calls it *Suovetaurilia*, as composed of *Sus*, *Ovis* and *Taurus*, the Names of the Three Victims sacrificed. *Dion. Halicarnassus* describing the same, calls it *Solitaurilia*, in regard 'twas required, that the Victims were intire, and without any Defect; *Sollus*, or *solus*, in the Language of the *Osci*, signifying Integer.

SUPERBIPARTIENS  
SUPERPARTICULARIS  
SUPERPARTIENS  
SUPERQUADRIPARTIENS  
SUPERTRIPARTIENS

} See RATIO.

SUPERCARGO, a Person imploy'd by the Owners of Ships, to go a Voyage, to oversee the Cargo or Lading, and to dispose of it to their best Advantage, for which Service he is allowed good Provision, because the Trust reposed in him, is very considerable.

SUPERCILIUM, in Anatomy, the Eye-brow. See EYE.

SUPERCILIUM, in the ancient Architecture, the uppermost Member of the Cornice, call'd by the Moderns, *Corona*, *Crown*, or *Larmier*.

Mr. *Evelyn* conceives, it should rather have been call'd *Stillicidium*, *Drip*, to denote its Office of Sheltering the Order from Rain, &c. See CORONA and LARMIER.

SUPERCILIUM, is also used for a square Member under the upper Tore in some Pedestals. Some Authors confound it with the Tore itself.

SUPEREROGATION, in Theology, what a Man does beyond his Duty, or beyond what he is commanded to do.

The *Romanists* stands up strenuously for Works of *Supererogation*; and maintain, that Evangelical Councils are such. By means hereof, a Stock of Merit is laid up; which the Church has the Disposal of, and which she distributes in Indulgences to such as need. See INDULGENCE.

The Reformed Church don't allow of any Work of *Supererogation*; but held, with the Apostle, *That when we have done our best, we are but unprofitable Servants*. See MERIT.

SUPERFETATION, in Medicine, an After-Conception; or a second Generation, happening when the Mother, already pregnant, conceives, of a later Coition; so that she bears at once Two Fetus's of unequal Age and Bulk, and is delivered of them at different Times. See BIRTH, CONCEPTION, FETUS, &c.

We meet with Instances of *Superfetations* of Women, in *Hippocrates*, *Aristotle*, *Pliny*, *du Laurens*, &c. But they are much more frequent in Hares and Sows.

An Instance of an extraordinary Kind of *Superfetation*; we have in *Bartholin*; who tells us, That a *Danish* Girl was born big with Child.

*Menzelius*, a German Physician, adds, That in 1672, the Wife of a Physician, in *Thuringia*, was delivered of a Girl big with another; whereof she was delivered in Eight Days Time; and which was Baptized, and died a Day after her Mother.

The Naturalists hold, That Female Rats are frequently born with young Rats in their Wombs.

In the King of *Denmark's* Cabinet, is seen an Egg, in the middle whereof is another Egg perfectly form'd. See EGG.

We meet with something like a *Superfetation* in Plants too; there being a kind of Lemon found to grow inclosed in the Body of another.

In the History of the Royal Academy of Sciences, for the Year 1709, mention is made of a Letter from a very considerable Magistrate, to the Academy, containing a very remarkable Instance of a *Superfetation*; a Butcher's Wife of *Aix* being delivered in that Year of Nine Children, each about Two Days after other, all well form'd and alive.

The Word is form'd from the *Latin*, *Super*, over, and *fetus*, Embryo.

SUPERFICIAL Content. See SUPERFICIES, AREA and MEASURING.

SUPERFICIES, or SURFACE, in Geometry, a Magnitude, considered as having Two Dimensions; or extended in Length and Breadth; but without Thickness or Depth. See DIMENSION.

In Bodies, the *Superficies* is all that presents itself to the Eye. See BODY.

A *Superficies* is chiefly consider'd, as the external Part of a Solid; when we speak of a *Surface* simply, and without any regard to Body, we usually call it *Figure*. See FIGURE.

A Rectilinear SUPERFICIES, is that comprehended between Right Lines.

A Curvilinear SUPERFICIES, that comprehended between Curve Lines. See CURVE.

A Plane SUPERFICIES, is that which has no Inequality, but lies evenly between its boundary Lines. See PLANE.

A Convex SUPERFICIES, is the exterior Part of a spherical Body. See CONVEX.

A Concave Surface, is the internal Part of an orbicular Body. See CONCAVE.

The Measure or Quantity of a Surface, is call'd the Area thereof. See AREA.

The finding of this Measure or Area, is call'd the *Quadrature* thereof. See QUADRATURE.

To Measure the Surfaces of the several Kinds of Bodies, as Spheres, Cubes, Parallelepipids, Pyramids, Prisms, Cones, &c. See SPHERE, CUBE, PARALLELEPIPID, &c.

Line of SUPERFICIES, a Line usually found on the Sector, and *Gunter's* Scale. See SCALE.

The Description and Use hereof, see under the Articles SECTOR and GUNTER'S Scale.

SUPERFINE, in the Manufactures, a Term used to express the superlative Fineness of a Stuff.

Thus a Cloth, a Camler, &c. are said to be *Superfine*, when made of the finest Wool, Silk, &c. or when they are the finest that can be made.

The Term is particularly used among Gold Wiar-drawers, for the Gold or Silver-wiar, which after being drawn through an infinite Number of Holes, each less and less, is, at length, brought not to be bigger than a Hair. See GOLD-WIAR.

SUPERINCESSUS radens } Sec { SLIDING.  
SUPERINCESSUS volvens } { ROLLING.  
SUPER-



**SUPER-Institution**; is one Institution upon another; as if A be admitted and instituted to a Benefice upon one Title, and B admitted, instituted, &c. by the Presentation of another.

**SUPERINTENDANT**, in the *French* Customs, an Officer who has the prime Management and Direction of the Finances or Revenues of the *French* King.

The Term is also used for the first Officer in the Queen's Family, who has the chief Administration of the Household.

They have also a *Superintendent* of the Buildings, answering to the Surveyor of the Works among us.

The Cardinal de Richelieu made himself *Superintendent* of Commerce.

**SUPERINTENDANT**, is also an Ecclesiastical Superior in several Reform'd Churches where Episcopacy is not admitted; particularly among the *Lutherans* in *Germany*, and the *Calvinists* in some other Places.

The *Superintendent* is, in Effect, little else but a Bishop; only his Power is somewhat more restrain'd than that of our Bishops.

He is the chief Pastor, and has the Direction of all the inferior Pastors within his District or Diocese.

In *Germany* they had formerly *Superintendents General*, who were superior to the ordinary *Superintendents*. These, in reality, were Archbishops; but the Dignity is sunk into Disuse; and, at present, none but the *Superintendent* of *Wittenberg* assumes the Quality of *Superintendent General*.

**SUPERIOR**, something rais'd above another, or that has a Right to command another.

Thus an Abbot is call'd the *Superior* of an Abbey; and a Prior the *Superior* of a Convent. See **ABBOT**, &c.

The Canonists hold, that a perpetual *Superiority* forms a Title: But a *Superior* may be continued by those who constituted him such, yet without the *Superiority's* being render'd, by that Means, perpetual. The Church of *France* allow the *Superiority* of the Pope; not his *Infallibility*, as all the other *Romish* Churches do.

**SUPERJURARE**: Antiently, when a Criminal endeavour'd, &c. to excuse himself by his own Oath, or by that of one or more Witnesses; and yet the Crime so notorious, that he was convicted by the Oaths of many more Witnesses; this was call'd *Superjurare*.

**SUPERLATIVE**, in Grammar, an Inflexion of Nouns Adjectives, serving to augment and heighten their Signification, and to shew the Quality of the Thing to be in the highest Degree. See **DEGREE**.

In *English*, the *Superlative* is usually form'd by the Addition of *est*; as *Richest*, *Holiest*, &c. Rarely by the Addition of *issimo*, as *Generalissimo*; more frequently by the prefixing of *most*, as *Most Honourable*, *Most Amiable*, &c.

The *French* are generally forc'd to form their *Superlatives*, by prefixing of *le plus*, sometimes of *tres*, and sometimes of *fort*.

The *Italians* and *Spaniards* have great Advantages over them in this Respect; their Language abounding with magnificent Words to exaggerate Things withal: yet the *Hebrews* are more poor than the *French* in this Respect, as having neither *Comparatives* nor *Superlatives*.

They use to express these Degrees by the Particles *joter* and *meod*, sometimes by the Preposition *min*, and sometimes by re-doubling the Words; which is what we frequently find in the Vulgate.

**SUPERNUMERARY**, something over and above a fix'd Number.

In several of the Offices are *Supernumerary* Clerks, &c. to be ready on extraordinary Occasions, &c.

There are also *Supernumerary* Surveyors of the Excise, to be ready to supply Vacancies when they fall. They have but half Pay.

In Music, the *Supernumerary*, call'd by the *Greeks* *Proslambanomenos*, is the lowest of the Chords of their System; answering to *a*, *mi*, *la*, of the lowest Octave of the Moderns. See **PROSLAMBANOMENOS** and **DIAGRAM**.

**SUPER-purgation**, in Medicine, an excessive, over-violent Purging. See **PURGATION**.

A Man who had taken Powder of *Diacarthamus* inwardly, was sent by it to Stool an hundred times; and was cured of the *Super-purgation* by a Pound of Capon-Broth, an Ounce of *Saccharum Rosatum*, five Grains of *Laudanum*, and the Yolk of an Egg.

In lieu of *Laudanum*, they sometimes use a Drachm and a half of new Treacle. *Burnet*.

**SUPERSCAPULARIS inferior**; call'd also *Infraspinatus*; a Muscle that helps to draw the Arm backwards. It covers all the Space that is between the Spine, and the *Teres minor*; and is inserted into the Neck of the *Humerus*.

**SUPERSCAPULARIS superior**, in Anatomy, a Muscle call'd also *Supraspinatus*. See **SUPRASPINATUS**.

**SUPERSEDEAS**, is a Writ issued in divers Cases, importing, in general, a Command to stay or forbear the

doing of that which ought not to be done, but which, in Appearance of Law, ought to be done; were it not for that Cause, whereon the Writ is granted. Thus, a Man, regularly, is to have Surety of Peace, against him of whom he will swear he is afraid; and the Justice requir'd hereunto can't deny it him: yet, if the Party be formerly bound to the Peace, either in Chancery, or elsewhere, this Writ lies, to stay the Justice from doing that, which otherwise he ought not to deny.

**SUPERSTITION**, an extravagant Devotion, or a Religion ill directed, and ill conducted. See **RELIGION**.

'Twas a Piece of *Superstition* in the ancient *Romans*, to observe the Flight of Birds, the Entrails of Victims, &c.

The *Romish* Priests make a fine Penny of the *Superstition* of the People: *Monf. Thiers* has an express Treatise des *Superstitions Populaires*. Women, he observes, are naturally more inclin'd to *Superstition* than Impiety. *Plutarch* has endeavour'd to shew, that *Superstition* is worse than Atheism. The Punishment allotted by several Councils for the *Superstitions*, was to fast a Month in Prison.

**SUPERVISOR**, signifies a *Surveyor*, or *Overseer*.

It was formerly, and is still amongst some, a Custom, especially of the better Sort, to make a *Supervisor* of a Will, but it is to little Purpose; as being now so carelessly executed. However, the first Intendment might be good, that he should supervise the Executors, and see the Will truly perform'd.

**SUPINATION**, in Anatomy, the Action of a *Supinator* Muscle; or the Motion whereby it turns the Hand, so, as that the Palm is lifted upwards towards Heaven. See **SUPINATOR**.

**SUPINATORES**, in Anatomy, two Muscles of the Arm; the one call'd *Supinator longus*, the other *Supinator brevis*.

The first arises by a fleshy Beginning, three or four Fingers Breadth above the external Extuberance of the *Humerus*. It lies along all the Radius, to whose inferior and external Part it is inserted by a pretty broad Tendon.

The last comes from the external and upper Part of the *Ulna*, and passing round the Radius, is inserted into its upper and fore Part, below the Tendon of the *Biceps*. These turn the Palm of the Hand upwards.

**SUPINE**, in the *Latin* Grammar, a Part of the Conjugation of a Verb, of like Effect with the Infinitive Mood. See **VERB**, **MOOD**, &c.

There are two Kinds of *Supines*, the one in *um*, whose Signification is active, and marks a Motion, as *dare nuptum*; the other in *u*, having a passive Signification, as *horrendum Auditum*, &c. The *Supines* have neither Number nor Person.

They have their Name, says *Probus*, and after him *Vossius*, quod ad instar *Supinorum* & *otiosorum hominum omnia habent confusa*. Or, according to *Priscian*, quod nascantur a participiis passivis quae supina appellata sunt, quia in infimo loco sita totam conjugationis molem suscipiant.

**SUPPLANTALIA**, among Physicians, Plasters apply'd to the Soles of the Feet, generally made of Leaven, Mustard, wild Radish, Salt, Soap, Gunpowder, &c.

**SUPPLEMENT** of an Ark in Geometry, or Trigonometry, is the Number of Degrees that it wants of being an intire Semicircle; as Complement signifies what an Ark wants of being a Quadrant. See **QUADRANT**, **COMPLEMENT**, &c.

**SUPPLEMENT**, in Matters of Literature, an Appendage to a Book, to supply what is wanting therein. See **PARRERON**.

*Frenshemius* has wrote divers *Supplements*, to restore the Books of several ancient Authors, Part whereof had been lost.

The *French* also use the Word *Supplement* for a Kind of Tax, or After-payment charg'd on Lands, Offices, &c. that are pretended to have been sold beneath their Value.

**SUPPLICAVIT**, a Writ issuing out of Chancery, for taking the Surety of Peace against a Man. It is directed to the Justices of the Peace, and Sheriff of the County; and is grounded on the Statute 1 *Ed. 3.* which appoints, that certain Persons shall be assign'd by the Lord Chancellor to take Care of the Peace.

**SUPPORTED**, in Heraldry, a Term apply'd to the uppermost Quarters of a Shield, when divided into several Quarters; these seeming, as it were, *supported* or sustain'd by those below. See **QUARTER'D**.

The Chief is also said to be *supported* when it is of two Colours, and the upper Colour takes up two Thirds of it: In this Case it is *supported* by the Colour underneath.

**SUPPORTERS**, in Heraldry, Figures in an Achievement, plac'd by the Side of the Shield, and seeming to support, or hold up the same. See **ACHIEVEMENT**, **SHIELD**, &c.

The *Supporters* of the *English* Arms are a Lion and an Unicorn; some of the former Kings had a Leopard and an Unicorn; others Griffons; others Eagles. See **ARMS**.

The *Supporters* of the *French* Arms are Angels; which are said to have been first introduc'd by *Philip VI*; his De-



vice being an Angel over-throwing a Dragon : The Dragon being at that Time the Device of the King of *England*.

Those of the Prince of *Monaco*, are Augustin Monks : Those of the Family of the *Ursini*, Bears, in Allusion to their Names.

In *England*, none below the Degree of a Banneret are allow'd *Supporters*.

Some make a Difference between *Tenant* and *Supporter* : When the Shield is bore by a single Animal, 'tis call'd *Tenant* ; when by two, they are call'd *Supporters*. See *TENANT*.

**SUPPOSITION**, in Music, the using of two successive Notes, of the same Value, as to Time ; the one whereof being a Discord, *supposes* the other a Concord. See *HARMONY*.

The Harmony, Mr. *Malcolm* observes, is always to be full on the accented Parts of the Bar, or Measure, but on the unaccented, Discords may transiently pass, without any Offence to the Ear. This transient Use of Discords, follow'd by Conords, makes what we from the *French* call *Supposition*. See *CONCORD* and *DISCORD*.

There are several Kinds of *Supposition* : The first is, when the Parts proceed gradually from Concord to Discord ; and Discord to Concord ; the intervening Discord serving only as a Transition to the following Concord.

Another Kind is, when the Parts do not proceed gradually from the Discord to the Concord, but descend to it by the Distance of a Third.

A third Kind, like the second, is, when the rising to the Discord is gradual, but the descending from it to the following Concord, is by the Distance of a fourth.

A fourth Kind, very different from all the rest, is, when the Discord falls on the accented Parts of the Measure, and the Rising to it is by the Distance of a fourth. In which Case 'tis absolutely necessary to follow it immediately, by a gradual Descent into a Concord, that has just been heard before the Harmony ; to make the preceding Discord pass without Offence, and only seem a Transition into the Concord.

**SUPPOSITION**, in Arithmetick. See *POSITION*.

**SUPPOSITORY**, in Pharmacy, a solid Medicine thrust up the Fundament, in lieu of a Liquid one, or Clyster, where that would not be so convenient. See *CLYSTER*.

'Tis compos'd of common Honey, mix'd up with either Soap, or Oil, and form'd into Pieces of the Length and Thickness of the little Finger, only Pyramidal.

The *Suppository* was invented for the Convenience of such as have an Aversion to the taking of Clysters ; or to be used where the Disease does not allow thereof.

The *Latins* call it *Balanus*, because anciently made in Figure of an Acorn.

To the Composition is sometimes added Powder of Scammony, Euphorbium, Colocynthis, &c.

On some Occasions 'tis made simply of a Cut of Bacon, the Stem of a Leek, or the like Matter, thrust, like a Tent, up the Anus, to irritate the Sphincter Muscle, and oblige it to extrude the Excrements.

**SUPPRESSION**, in the Customs, the Extinction or Annihilation of an Office, Right, Rent, &c.

From the *Latin* *sub* and *premo*, I press under.

**SUPPRESSION**, in Grammar, an Omission of certain Words in a Sentence, which yet are necessary to a full and perfect Construction : As, I come from my Father's ; that is, from my Father's House.

*Suppression* is a Figure of Speech very frequent in our Language ; chiefly used for Brevity and Elegance. Some Rules relating hereto, are as follow :

1°. Whenever a Word comes to be repeated in a Sentence oftner than once, 'tis to be *suppress'd* : Thus we say, This is my Master's Horse ; not, This Horse is my Master's Horse.

2°. Words that are necessarily imply'd, may be *suppress'd*.

And 3°. All Words that Use and Custom *suppress* in other Languages, are to be *suppress'd* in *English* ; unless there be particular Reasons for the contrary.

**SUPPRESSION**, in Medicine, is apply'd to the Humours that are retain'd in the Body by some Obstruction or Stoppage of the usual Out-lets. As, a *Suppression* of Urine, of the Menses, &c. See *URINE*, *MENSES*, &c.

**SUPPURATION**, in Medicine, the Action whereby extravasated Blood, or other Humours, are chang'd, in the Body, into Pus. See *PUS*.

The Change is begun by a Dissipation of the most subtle and spirituous Parts of the Blood : What is left behind, thickens and purifies by little and little ; that is, its Salts and Sulphurs disengage themselves from the grosser Parts wherein they were embarrass'd. These Parts thus disengaged, and acting on one another, bruise and break each other, and thus excite a Fermentation, which increases the Heat of the Part ; whereby the Matter is further digested, and a Pain and Tension produc'd. At length the Blood loses its Colour, and becomes quite white, by the Mixture of its Acid, sulphurous and acrimonious Particles ; as we see happens to sulphurous Alkalies, when mix'd with Acids. See *DIGESTION*.

The Word is form'd from the *Latin*, *sub*, under, and *pus*, pus.

**SUPPURATIVE**, a Medicine that promotes *Suppuration*. See *SUPPURATION*.

*Suppuratives* are all hot ; by which Means, increasing the Heat of the Part, they resolve the Humour into a Pus. See *DIGESTIVE*.

Such are Mallows, Lilly-Roots, Drachylon, &c.

**SUPPUTATION**. See *COMPUTATION*.

**SUPRALAPSARY**, in Theology, a Person who holds, that God, without any Regard to the good or evil Works of Men, has resolv'd, by an eternal Decree, to save some, and damn others.

Such are also call'd *Antelapsaries* ; and are oppos'd to *Sublapsaries* and *Infralapsaries*. See *SUBLAPSARIES*.

According to the *Supralapsaries*, the Object of Predestination is *Homo creabilis & labilis* ; and according to the *Sublapsaries*, *Homo creatus & lapsus*.

The *Supralapsaries* seem, in one single absolute Decree, to confound two several ones which ought to be distinguish'd : The one, the Conditional Decree preceding the Fore-sight of the Man's Obedience, or Disobedience to the Grace of God ; The other, the Absolute Decree following this Fore-sight. See *DECREE*.

The Predeterminants also, admit an Absolute Decree prior to the Foresight of Original Sin, in common with the *Supralapsaries* ; but distinguish themselves from them, as also from the *Infralapsaries* and *Jansenists* ; in that their Absolute Decree includes the offering of sufficient Means of Salvation to the Reprobate ; so that, as to the Point of Power, nothing hinders but they might be sav'd. See *GRACE*.

**SUPRASPINATUS**, in Anatomy, a Muscle thus call'd from its fleshy Origination, at the upper End of the Basis of the Scapula, above the Spine, to the upper Part whereof it is connected, as also to the superior Rib of the Scapula ; whence marching along the upper Inter-scapulum, or thin Part of the Scapula, which it fills, it passes under the Acromium and Articulation of the Humerus. It helps to lift the Arm upwards.

**SUPREMACY**, in the *English* Customs, the Superiority of the King over the Church of *England*, whereof he is establish'd Head. See *KING*.

The King's *Supremacy* was first establish'd by King *Henry VIII.* in 1534, after breaking with the Pope. It is since confirm'd by several Canons, as well as by the Articles of the Church of *England* ; and is pass'd into an Oath, which is requir'd as a necessary Qualification for all Offices and Employments both in Church and State, from Persons to be ordain'd, from the Members of both Houses of Parliament, &c. See *OATH*.

This Right of *Supremacy* chiefly consists in the following Articles, 1. That the Archbishops of either Province cannot summon the Bishop and Clergy to Convocation, nor enact any Canons without the King's express Consent, by 25 H. 8. c. 19. Whereas before that Act, the Convocation was often call'd, and Laws made by it for governing the Church, without any Authority from the Crown. 2. In that there lies now an Appeal from the Archbishop to the King in Chancery ; and on such an Appeal, a Commission under the Great Seal is to be directed to certain Persons, whereof commonly half are Laymen, and half Clergymen, which is call'd the Court of Delegates, and which finally determine all Ecclesiastical Causes, by 25 H. 8. c. 19. tho' sometimes a Review is granted. Before this Statute, the Appeal from the Archbishop's Court lay to the People only. 3. The King can grant Commissions for visiting such Places, as are exempt from the Jurisdiction of the Bishops or Archbishops ; and Appeal lies from thence to the King in Chancery : Whereas before 25 H. 8. the Pope only could visit them, and receive Appeals from those Courts. 4. Persons in holy Orders, are not, as formerly, exempt from the King's Temporal Laws, any more than Laymen. 5. The Bishops and Clergy do not swear, or pay any Obedience to the Pope ; but must take the Oaths of Allegiance and Supremacy to the King.

**SURA**, in Anatomy, the Shin-Bone ; the same as *Fibula*. See *FIBULA*.

**SURBATING**, among Farriers, is when the Sole of a Horse's Foot is wore, bruise'd, or spoil'd, by beating the Hoof against the Ground in travelling without Shoes, or going in hot, sandy Lands, or with a Shoe that hurts the Sole, lies too flat to it, &c.

Sometimes, it happens by over-riding a Horse, while young, e'er his Feet are harden'd ; and sometimes by the Hardness of the Ground, and high lifting his Feet.

The Signs hereof, are his halting on both Fore-legs, and going stiffly, and creeping as if half foundered.

In the general, there is nothing better for *Surbated* Feet than Tar melted into the Foot ; or Vinegar boil'd with Soot to the Consistence of a Broth, and put into the Foot boiling hot, with Hards over it, and Splints to keep it in.



**SURCHARGE** of the Forest, is when a Commoner puts more Beasts in the Forest than he has a Right to. See **FOREST**.

**SURCINGLE**, a Girdle, wherewith the Clergy of the Church of *England* usually tye their Cassocks.

**SURCOAT**, a Coat of Arms, to be wore over other Armour. See **COAT of Arms**.

**SURD**, in Arithmetick, an irrational Number, or Quantity; or a Number, &c. that is incommensurate to Unity. See **IRRATIONAL NUMBER**.

When any Number or Quantity hath its Root propos'd to be extracted, and yet is not a true figurate Number of that Kind; that is, if its square Root being demanded, it is not a true Square: If its Cube Root being requir'd, itself be not a true Cube, &c. then it is impossible to assign, either in whole Numbers or Fractions, any exact Root of such Number propos'd.

And whenever this happens, it is usual in Mathematicks, to mark the requir'd Root of such Numbers or Quantities, by prefixing before it the proper Mark of Radicality, which is  $\sqrt{\phantom{x}}$ : Thus  $\sqrt{2}$  signifies the Square Root of 2, and

$\sqrt[3]{16}$ , or  $\sqrt{(3) 16}$ , signifies the Cubic Root of 16: Which Roots, because they are impossible to be express'd in Numbers exactly, (for no effable Number, either Integer or Fraction, multiply'd into itself, can ever produce 2; or being multiply'd Cubically, can ever produce 16) are very properly call'd *Surd Roots*.

There is also another Way of Notation now much in Use, whereby Roots are express'd without the Radical Sign, by their Indexes: Thus, as  $x^2$ ,  $x^3$ ,  $x^4$ , &c. signify the Square Cube, and 5th Power of  $x$ ; so  $x^{\frac{1}{2}}$ ,  $x^{\frac{1}{3}}$ ,  $x^{\frac{1}{4}}$ , signify the Square Root, Cube, &c. of  $x$ .

The Reason of which is plain enough; for Since  $\sqrt{x}$  is a Geometrical mean Proportional between 1 and  $x$ , so  $\sqrt[4]{x}$  is an Arithmetical mean Proportional between 0 and 1; and therefore as 2 is the Index of the Square of  $x$ ,  $\frac{1}{2}$  will be the proper Index of its Square Root, &c.

Observe also, that for Convenience, or Brevity's Sake, Quantities or Numbers, which are not *Surds*, are often express'd in the Form of *Surd Roots*. Thus,  $\sqrt{4} \sqrt{2} = \frac{2}{4}$

$\sqrt[3]{27}$ , &c. signify,  $2\frac{3}{2}3$ , &c.

But tho' these *Surd Roots* (when truly such) are inexpressible in Numbers, they are yet capable of Arithmetical Operations, (such as Addition, Subtraction, Multiplication, Division, &c.) which how readily to perform, the Algebraist ought not to be ignorant.

*Surds* are either *Simple*, which are express'd by one single Term; or *Compound*, which are form'd by the Addition or Subtraction of simple *Surds*: As  $\sqrt{5} + \sqrt{2} : \sqrt{5} -$

$\sqrt{2}$ , or  $\sqrt{7} + \sqrt{2} : \sqrt{7} - \sqrt{2}$ : Which last is call'd an universal Root, and signifies the Cubic Root of that Number, which is the Result of adding 7 to the Square Root of 2.

To reduce rational Quantities to the Form of any *Surd Roots* assign'd; involve the rational Quantity according to the Index of the Power of the *Surd*, and then prefix before it the Radical Sign of the *Surd* propos'd. Thus to reduce  $a=10$ , to the Form of  $\sqrt{15} = b$ , you must square  $a=10$ ; and prefixing the Sign, it will stand thus,  $\sqrt{a a} = \sqrt{100}$ , which is the Form of the *Surd* desir'd.

So also, if 3 were to be brought to the Form of  $\sqrt[4]{12}$ , you must raise 3 up to its fourth Power, and then prefixing the Note of Radicality to it, it will be  $\sqrt[4]{81}$ , or  $81^{\frac{1}{4}}$

which is in the same Form with  $\sqrt[4]{12}$ .

And this Way may a simple *Surd Fraction*, whose Radical Sign refers only to one of its Terms, be changed into another, which shall respect both Numerator and Denominator. Thus  $\frac{\sqrt{2}}{25}$  is reduc'd to  $\sqrt{\frac{2}{25}}$  and  $\frac{5}{\sqrt{4}}$ , to

$\sqrt{\frac{125}{4}}$ ; where the Radical Sign affects both Numerator and Denominator.

To reduce simple *Surds*, having different Radical Signs, (which are call'd Heterogeneous *Surds*) to others that may have one common Radical Sign, or which are Homogeneous; divide the Indexes of the Powers by their greatest common Divisor, and set the Quotients under the Dividends; then multiply those Indexes cross-ways by each other's Quotients, and before the Product set the common Radical Sign  $\sqrt{\phantom{x}}$ ; with its proper Index: Then involve the Powers of the given Roots alternately, according to the Index of each other's Quotient; and before those Products, prefix the common Radical Sign before found.

To Reduce  $\sqrt[2]{a a}$  and  $\sqrt[4]{b b}$

2)  $\sqrt{a a}$  2)  $\sqrt[4]{b b}$

1 X 2

$\sqrt[4]{b b}$

$\sqrt[4]{a a a a}$

To reduce *Surds* to the lowest Terms possible: Divide the *Surd* by the greatest Square, Cube, Biquadrate, &c. or any other higher Power, which you can discover is contain'd in it, and will measure it without any Remainder; and then prefix the Root of that Power before the Quotient, or *Surd*, so divided, and this will produce a new *Surd* of the same Value with the former, but in more simple Terms. Thus,  $\sqrt{16 a a b}$ , by dividing by  $16 a a$ , and prefixing the Root  $\sqrt[4]{a}$ , will be reduc'd to this,  $\sqrt[4]{a} \sqrt{b}$ , and  $\sqrt{12}$ , will be depress'd to  $2\sqrt{3}$ . Also  $\sqrt[5]{c b^3 r}$  will be brought down to  $b\sqrt[3]{c r}$ .

This Reduction is of great Use whenever it can be perform'd: But if no such Square, Cube, Biquadrate, &c. can be found for a Divisor, then you must find out all the Divisors of the Power of the *Surd* propos'd; and then see whether any of them be a Square, Cube, &c. or such a Power as the Radical Sign denotes; and if any such can be found, let that be used in the same Manner as is above said, to free the *Surd* Quantity in Part from the Radical Sign. Thus, if  $\sqrt{288}$  be propos'd; among its Divisors will be found the Squares, 4, 9, 16, 36, and 144; by which, if 288 be divided, there will arise the Quotients 72, 32, 18, 8, and 2; wherefore instead of  $\sqrt{288}$ , you may put  $2\sqrt{72}$ , or  $3\sqrt{32}$ , or  $4\sqrt{18}$ , or  $6\sqrt{8}$ , or lastly,  $12\sqrt{2}$ , and the same may be done in Species. But for the whole Arithmetic of *Surds*, see *Kersey's Algebra*, and others on the same Subject.

**SURETY** of the Peace, (so call'd, because the Party that was in fear, is thereby secur'd) is the acknowledging a Bond to the Prince, taken by a competent Judge of Record, for the keeping the Peace. See **PEACE**.

This Peace, a Justice of the Peace may command, either as a Minister, when commanded thereto by higher Authority; or as a Judge, when he doth it of his own Power, deriv'd from his Commission.

*Surety of the good abearing*, differs from this; that whereas the Peace is not broken without an Affray, or such like; the *Surety de bono gestu* may be broken by the Number of a Man's Company, or by his or their Weapon, or Harness.

**SURFACE**, in Geometry. See **SUPERFICIES**.

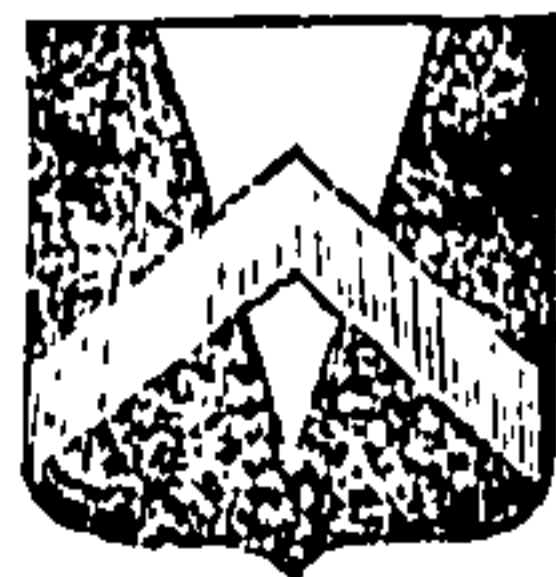
**SURFEIT**, an Indisposition caus'd by Excess in Eating or Drinking, that is, by over-charging the Stomach. It is usually attended with Eruptions, and sometimes with a Fever. See **PLENITUDE**.

**SURFEIT-Water**, is a Water distill'd from Poppies, and other Herbs, proper to cure Indigestions.

**SURGE**: The Sailors call a Wave or Billow of the Sea a *Surge*: Also, when they are heaving at the Capstan, if the Cable happen to slip back a little, they say, The Cable *surges*.

**SURGERY**. See **CHIRURGERY**.

**SURMOUNTED**, is the Herald's Term for the Bearing of one Ordinary upon another: thus in the adjoining Figure, a Pile is surmounted of a Chevron. *Harris*.



**SURNAME**, a Name added to the Proper or Baptismal Name, to denominate the Person of such a Family. See **NAME**.

'Twas the *Romans* first introduced the Use of Hereditary Names; and that on Occasions of their League with the *Sabines*; for the Confirmation whereof, it was agreed, That the *Romans* should prefix *Sabine* Names, and the *Sabines*, *Roman* Names, to their own.

These new Names became Family Names, or *Surnames*, and the old Ones continued personal Names. The former they call'd *Cognomina*, and the latter *Prænomina*. See **PRÆNOMEN** and **COGNOMEN**.

When they came to be used among the *French* and *English*, they were call'd *Sur-names* or *Sir-names*, not because they are the Names of the Sire or Father; but, according to *Cambden*, because they are super-added to the personal Name; or, rather, with *Du Cange*, because at first, this Family-name was wrote over (*Sur*) the other Name thus: *de Tourbon* *Louis*.

In lieu of *Surnames*, the *Hebrews*, to keep up the Memory of their Tribes, used the Name of their Father, with the Addition of *Ben*, Son; as *Melchi Ben-Aldi*, *Shidi Ben Cofam*, &c. so the *Greek*, *Ἰσίδωρος τῷ Δαίδαλῳ*; *Icarus, the Son of Dedalus*, *Dedalus the Son of Eupalmus*, &c.

So, also, the ancient *Britons*. *Ceorred*, *Ceorwalding*, *Ceorwald Cuthing*, that is, *Ceorred Son of Ceorwald*. Son of *Cuth*; and in the same Sense, the later *Welsh* use *Ap* for *Map*, Son,



as, *ap Owen*, *Owen ap Harry*, *Harry ap Rhese*; and the *Irish*, *Mac*, as *Donald Mac Neal*, *Neal Mac Con*, &c. and the old *Normans*, *Fitz*, as *John Fitz Robert*, *Robert Fitz Ralph*, &c.

*Scaliger*, adds, That the *Arabs* used their Father's Name, or *Surname*, without their personal Name; as, *Aven-Pace*, *Aven-Zoar*, &c. *q. d.* Son of *Pace*, Son of *Zoar*, &c.; as if *Pace* had a Son at his Circumcision, call'd *Haly*, he would be call'd *Aven-Pace*, concealing *Haly*; but his Son, however he were nam'd, would be call'd *Aven-Haly*, &c.

The *Romans*, in Time, multiplied their *Sur-names*: Besides the general Name of the Race or Family, call'd, also, *Gentilitium*; they took a particular one, to distinguish the Branch of the Family, call'd *Cognomen*; and sometimes a Third, on account of some personal Distinction; as that of *Africanus*, by *Scipio*; of *Torquatus* by *Manlius*.

These Three different Kinds of *Sur-names*, had also their different Names, *viz.* *Nomen*, *Cognomen*, *Agnomen*; but these last were not Hereditary; being, in effect, a kind of *Nick-names*, if that Word be indifferent with respect to Good and Evil.

In these, too, they have been imitated by later Times: Thus, in our *English* History, we find that *Edgar* was call'd the *Peaceable*; *Ethelred*, the *Unready*; *Edmond*, *Iron-side*; *Harold*, *Hare-foot*; *William*, the *Bastard*; *Henry I.* *Beauclerk*; *John*, *Lack-land*, &c. But as these Names were never bore by the Sons, *Cambden* thinks it strange, that *Plantagenet* should be accounted the *Sur-name* of the Royal Family of *England*, till *Henry VII.*; or *Tydur* or *Tudor*, that from *Henry VII.* to *King James I.*; or that of *Steward* from *James I.* to *King George*; or, that *Valoys* should be esteem'd the *Sur-name* of the late Family of *French* Kings; or *Bourbon* of the present; or *Oldenburg* of the Kings of *Denmark*; or *Hapsbourg* of the Emperors. See *PLANTAGENET*.

*Du Chesne* observes, that *Sur-names* were known in *France* before the Year 987; when the Lords began to assume the Names of their Demaines. *Cambden* relates, That they were first taken up in *England*, a little before the Conquest, under *King Edward the Confessor*: But he adds, they were never fully establish'd among the common People, till the Time of *King Edward II.* till then they varied with the Father's Name; if the Father, *E. gr.* were call'd *Richard* or *Roger*, the Son was call'd *Richardson* or *Hodgson*; but from that Time they were settled, some say, by Act of Parliament.

The oldest *Sur-names*, are those we find in *Domesday-Book*, most of them taken from Places, with the Addition of *de*, as *Godefridus de Mannevilla*, *Walterus de Vernon*, *Robert de Oily*, &c.; others from their Fathers, with *Filius*, as *Gulielmus Filius Osborni*; others from their Offices, as *Eudo Dapifer*, *Gulielmus Camerarius*, *Gislebertus Cocus*, &c. But the inferior People are noted, simply, by their Christian Names; without any *Sur-names* at all.

In *Sweden*, 'till the Year 1514, no Body ever took any *Sur-name*; and the common People there, have none to this Day; nor even the native *Irish*, *Poles* and *Bohemians*, &c. 'Tis very late that the *Welsh* have had any; and those they have, are generally only form'd, by leaving out the *a* in *ap*, and annexing the *p* to their Father's Name, as in lieu of *Evan ap Rice*, they now say, *Evan Price*; for *ap Howel*, *Powel*, &c.

*Du Tillet* maintains, That all *Sur-names* were given by way of *Sobriquets*, or *Nick-names*; and adds, That they are all significant and intelligible, to those who understand the ancient Dialects of the several Countries. The greatest Part of our *Sur-names*, and those of greatest Account, *Cambden* shews, are local, and borrowed from the Places in *Normandy*, &c. where the respective Persons, who came over with the Conqueror, and first bore them, had their Possessions, or their Birth; such as *Mortimer*, *Warren*, *Albigny*, *Percy*, *Devreux*, *Tankerville*, *Nevil*, *Tracy*, *Montfort*, &c. He adds, That there is not a Village in *Normandy*, but gives Name to some Family in *England*. Others were taken from Places in *England*, as *Aston*, *Sutton*, *Wotton*, &c.

The *Saxon* common People generally took their Father's or Mother's Christian Name, with the Addition of *Son*: Though many were *Sur-named* from their Trade, as *Smith*, *Carpenter*, *Taylor*, *Weaver*, *Fuller*, &c. others from their Offices, as *Porter*, *Shepherd*, *Carter*, *Cook*, *Butler*, &c. others from their Complexion, as *Fair*, *sax*, *Pigot*, *Blunt* or *Blind*; others from Birds, as *Wren*, *Finch*, &c. others from Beasts, as *Lamb*, *Hare*, *Hart*, &c. others from the Winds; others from Saints, &c.

**SURPLUSAGE**, in common Law, signifies a Superfluity, or Addition, more than needeth; which sometimes is the Cause that a Writ abateth.

It is sometimes also applied to Matter of Account, and denotes a greater Disbursement than the Charge of the Accountant amounteth to.

**SURREBUTTER**, in Law, a second Rebutter, or a Rebutting more than once. See **REBUTTER**.

**SURREJOYNDER**, is a second Defence of the Plaintiff's Action, opposite to the Defendant's Rejoinder. See **REJOINDER**.

**SURRENDER**, an Instrument in Writing, testifying, That the particular Tenant of Lands and Tenements for Life or Years, doth sufficiently consent and agree, That he, who has the next or immediate Remainder or Reversion thereof, shall have the present Estate of the same in Possession; and that he yields and gives up the same to him; for every Surrender ought, forthwith, to give Possession of the Things surrender'd.

There may also be a Surrender without Writing, whence, a Surrender is divided into that in Deed, and that in Law. Surrender-in-Deed, is that which is really and sensibly perform'd.

Surrender-in-Law, is in the Intendment of Law, by way of Consequent, and not Actual. As if a Man have a Lease of a Farm, and during the Term, he accepts of a new Lease; this Act is in Law, a Surrender of the former.

There is also a customary Surrender of the Copy-hold, as may be seen in *Coke sup. Littlet. Sect. 74*.

**SURROGATE**, a Person substituted or appointed in Room of another; most commonly of a Bishop, or Bishop's Chancellor. See **BISHOP**, **SUFFRAGAN**, &c.

**SURSOLID**, or **SURDESOLID**, in Arithmetic, the Fifth Power of a Number, or the Fourth Multiplication of any Number, consider'd as a Root. See **POWER**.

The Number 2, for Instance, consider'd as a Root, and multiplied by itself, produces Four, which is the Square, or second Power of 2; and 4 multiplied by 2, produces 8, the third Power, or the Cube or solid Number of 2; 8, again, multiplied by 2, produces 16, the fourth Power, or *Quadrato-quadratum* of 2; and 16 multiplied once more by 2, produces 32, the fifth Power, or *Sursolid*, or *Surdesolid* Number of 2.

**SURSOLID Problem**, is that which cannot be resolved, but by Curves of an higher Kind, than the Conic Sections. See **PROBLEM**.

*E. gr.* To describe a regular Endecagon, or Figure of Eleven Sides in a Circle, it is required to describe an Isosceles Triangle on a Right Line given, whose Angles at the Base, shall be quintuple to that at the Vertex; which may easily be done by the Interfection of a Quadratrix, or any other Curve of the second Gender, as they are by some called, but not by any lower Curve. See **CURVE**.

**SURVEYING**, the Art or Act of measuring Lands; *i. e.* of taking the Dimensions of any Track of Ground, laying down the same in a Map or Draught; and finding the Content or Area thereof. See **MEASURING**, **MAP**, &c.

*Surveying*, call'd also *Geodesia*, is a very ancient Art; 'tis even held to have been the First, or primitive Part of Geometry, and that which gave Occasion to, and laid the Foundation of, all the rest. See **GEOMETRY**.

*Surveying* consists of Three Parts or Members; the First, is the taking of the necessary Measures, and making the necessary Observations on the Ground itself: The Second, is the laying down of these Measures and Observations on Paper; and the Third, the finding the Area or Quantity of the Ground thus laid down.

The First is what we properly call *Surveying*. The Second we call *Plotting* or *Protracting*, or *Mapping*: And the Third, *Casting up*.

The First, again, consists of Two Parts, *viz.* the making of Observations for the Angles, and the taking of Measures for the Distances.

The former of these is performed by some one or other of the following Instruments, *viz.* the *Theodolite*, *Circumferentor*, *Semi-circle*, *Plane Table* or *Compass*: The Description and Manner of using each whereof; see under its respective Article, **THEODOLITE**, **CIRCUMFERENTOR**, **PLANE TABLE**, **COMPASS**, &c.

The latter is performed, by means either of the Chain or the Perambulator: The Description and Manner of applying each whereof; see under its respective Article, **CHAIN** and **PERAMBULATOR**.

The second Branch of *Surveying*, is perform'd by means of the *Protractor* and *Plotting Scale*: The Use, &c. whereof; see under **PROTRACTOR**, **PLOTTING SCALE**, &c. See also **MAP**.

The Third is perform'd, by reducing the several Divisions, Inclosures, &c. into *Triangles*, *Squares*, *Trapeziums*, *Parallelograms*, &c. but especially *Triangles*; and finding the Areas or Contents of these several Figures, by the Rules delivered under the Articles **AREA**, **TRIANGLE**, **SQUARE**, &c.

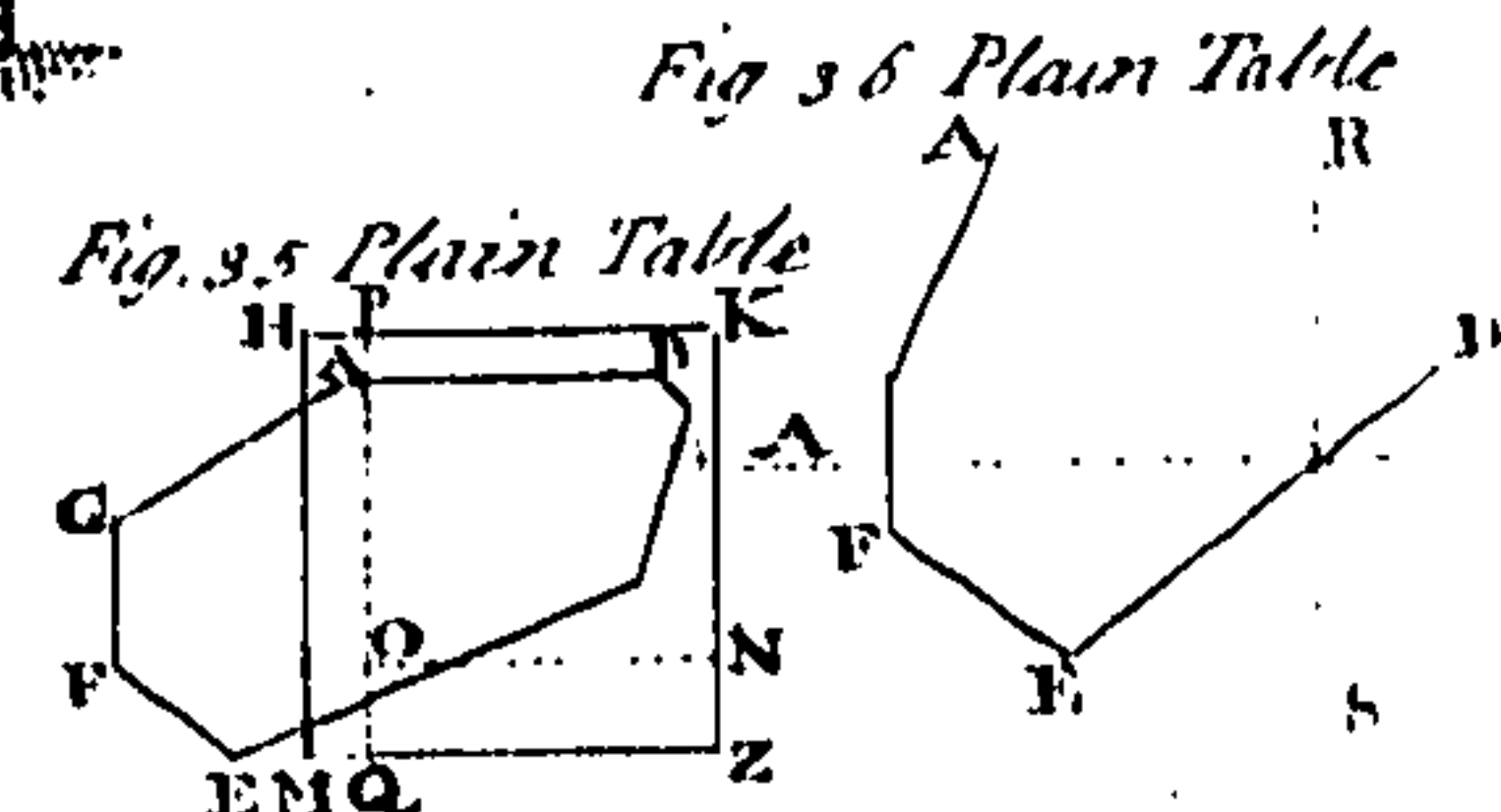
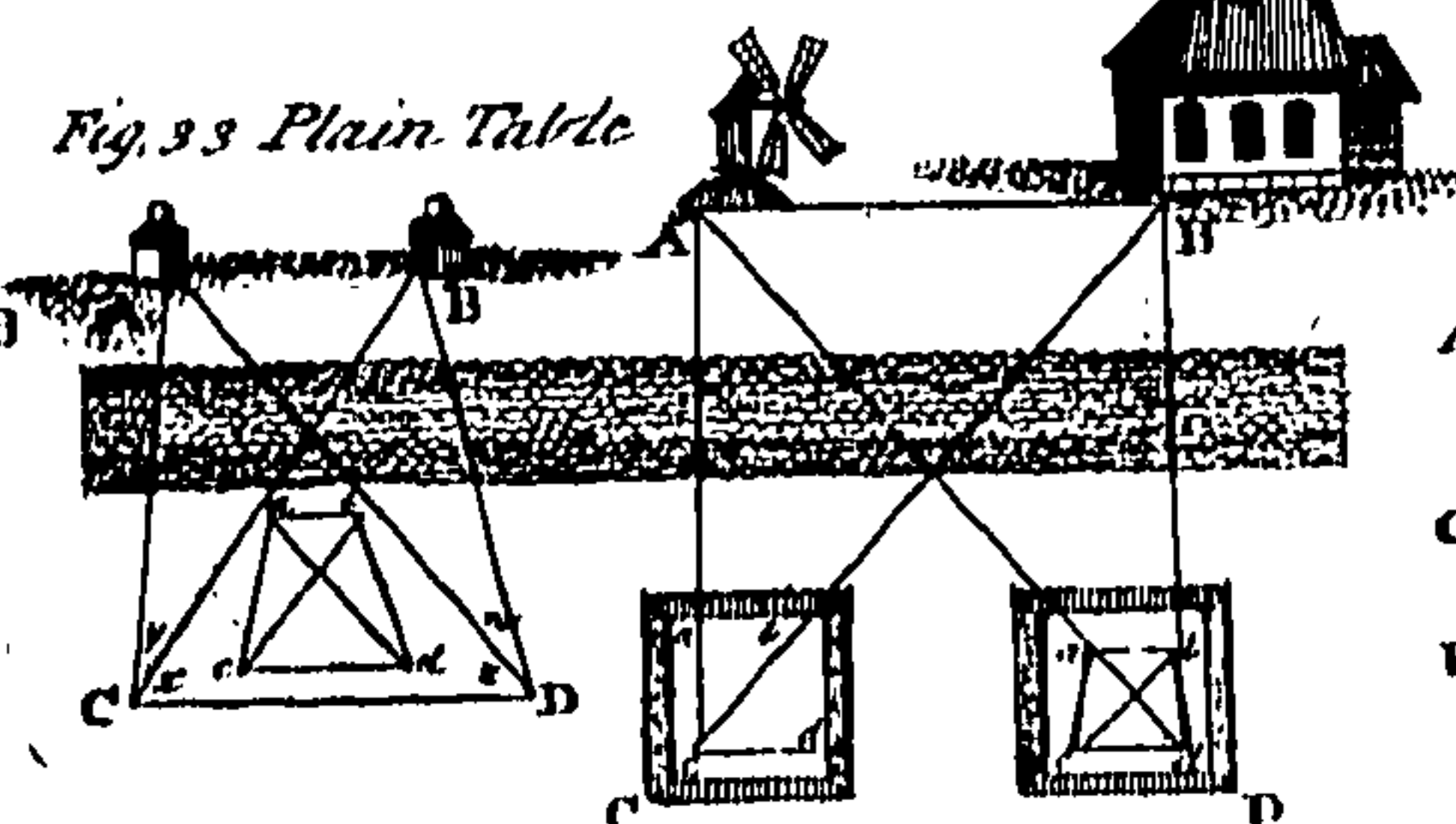
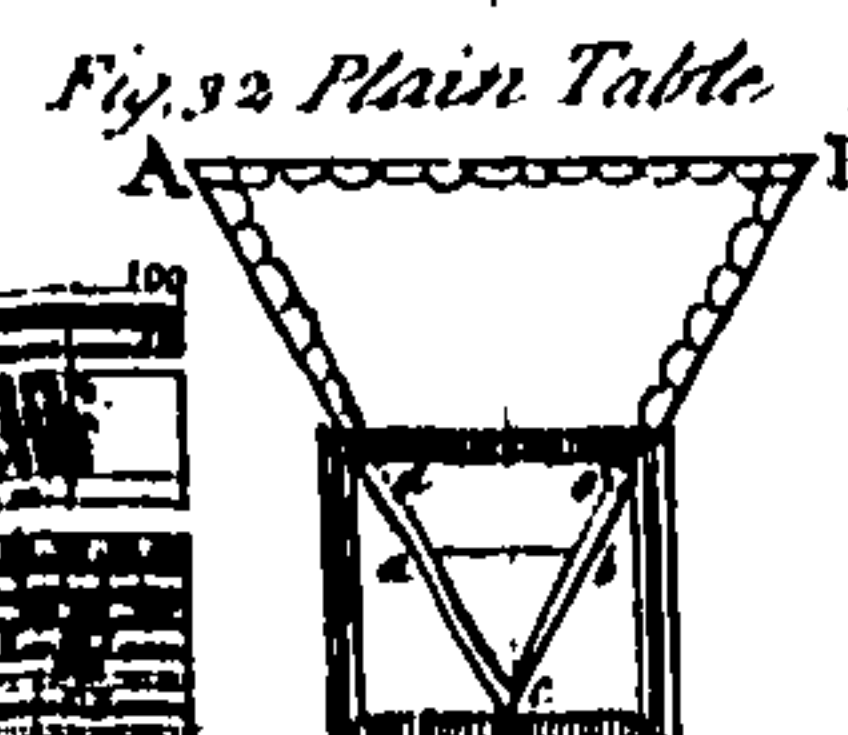
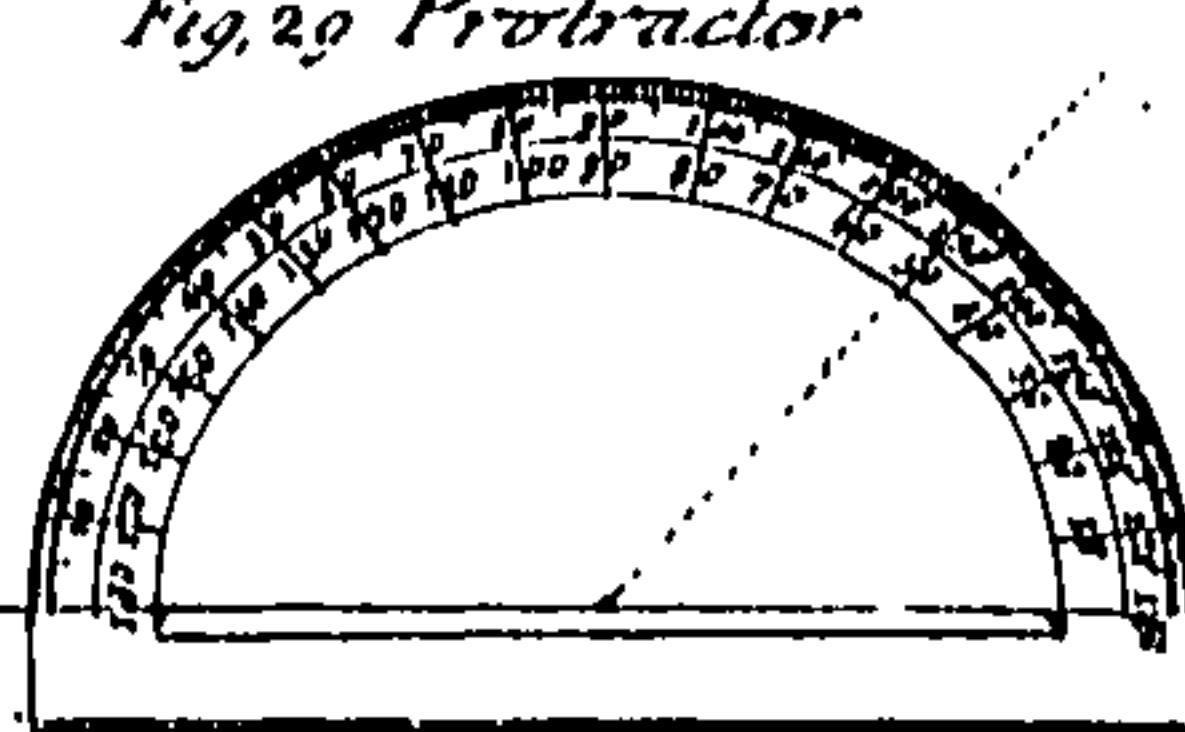
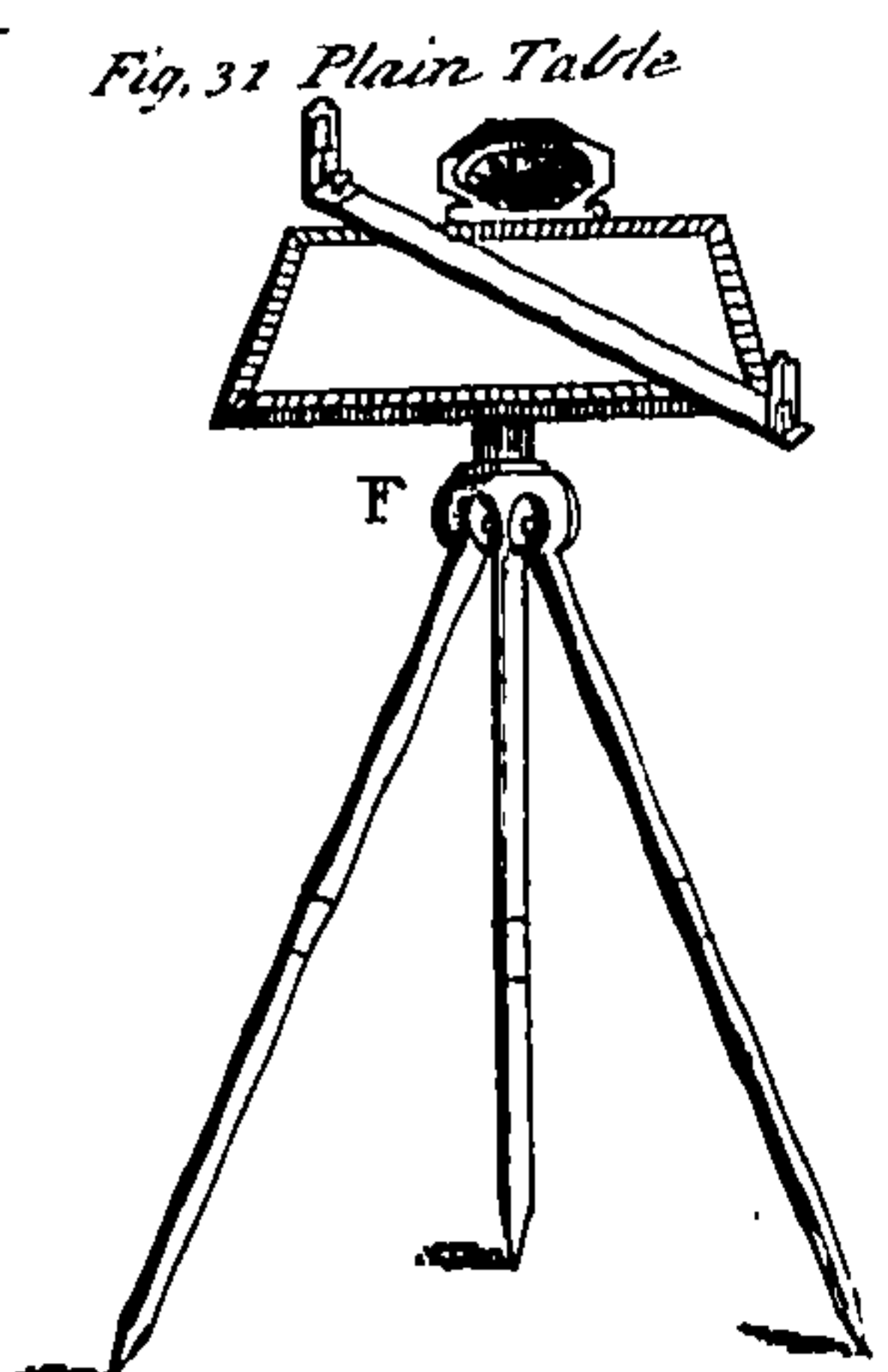
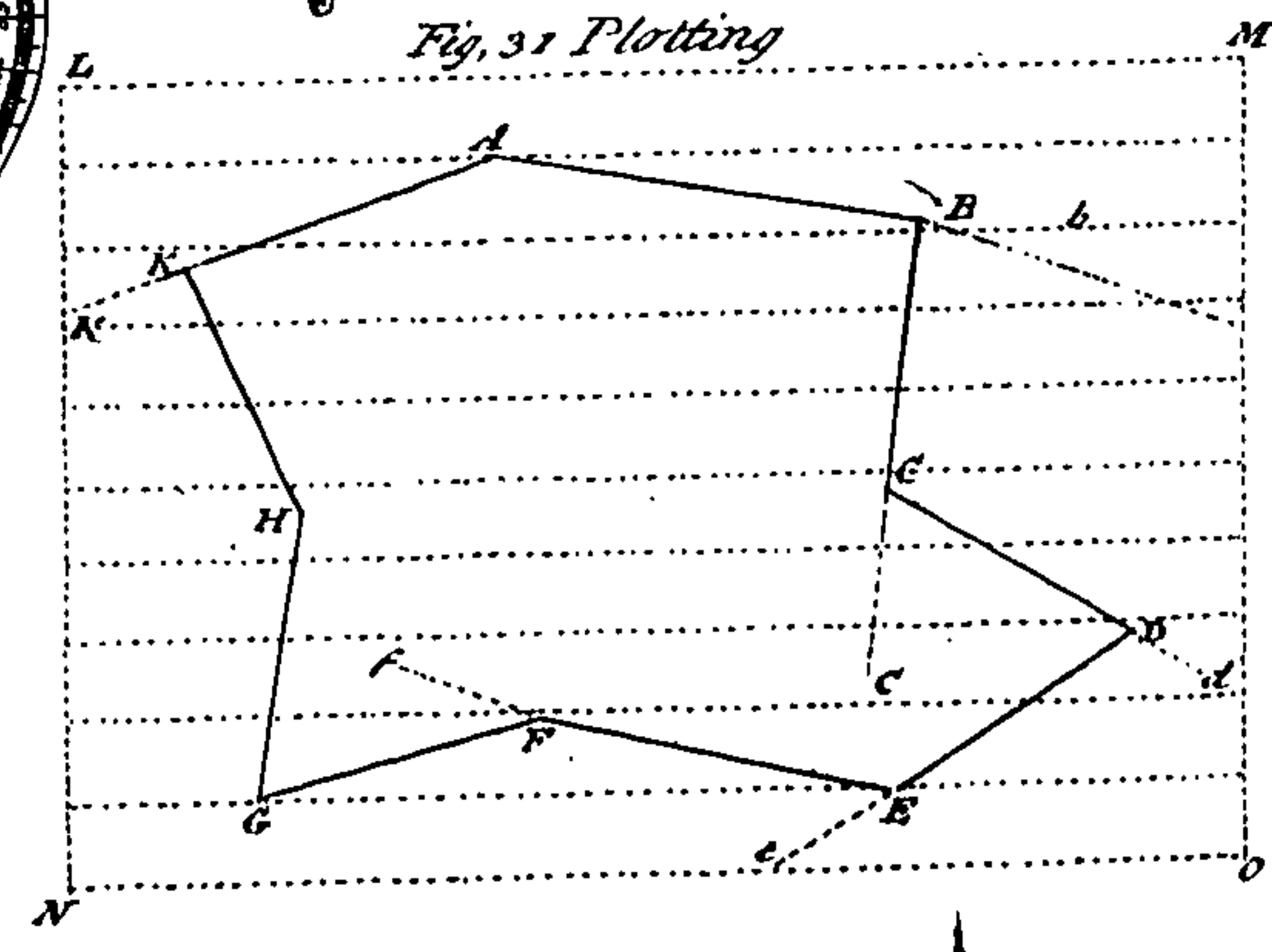
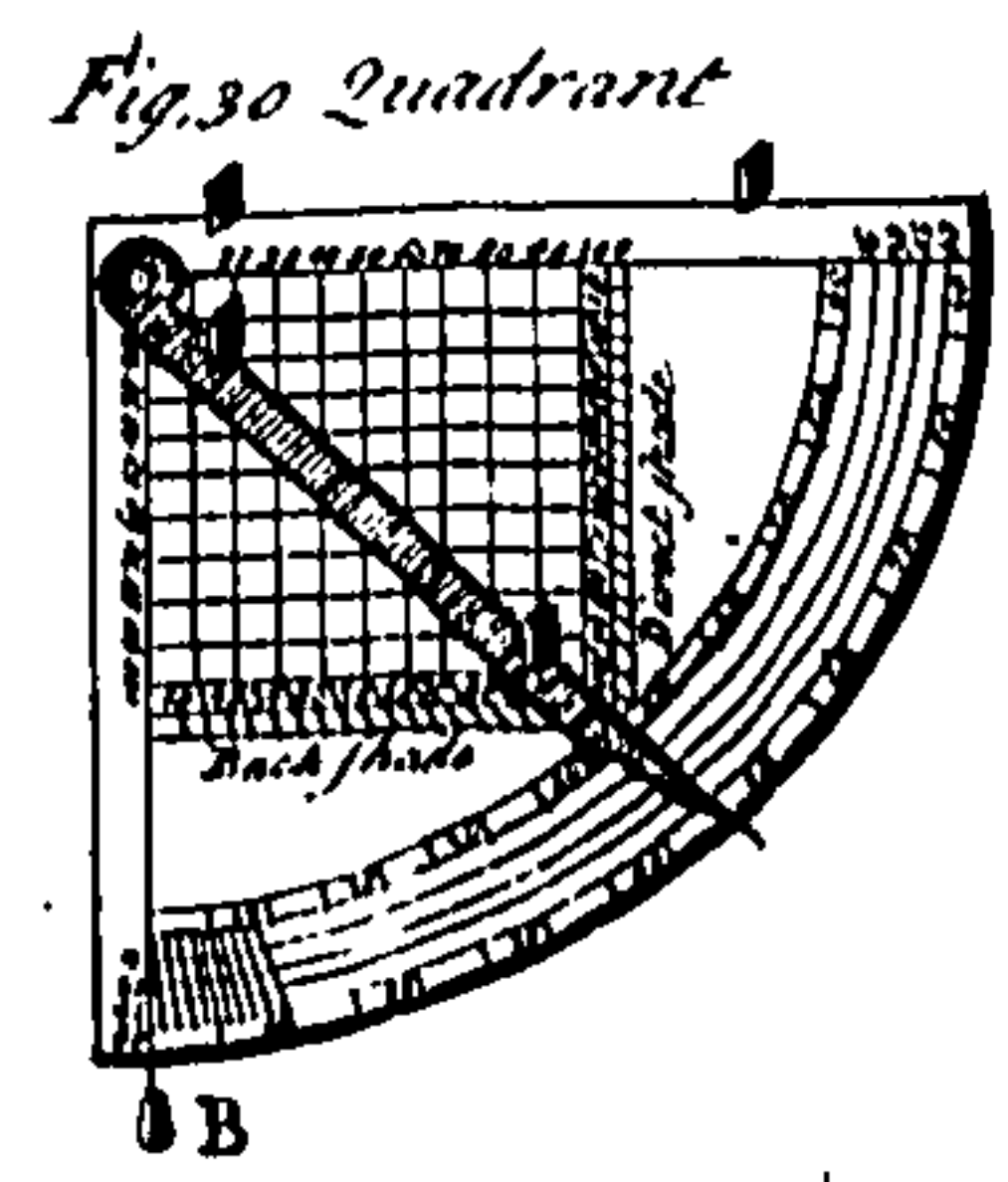
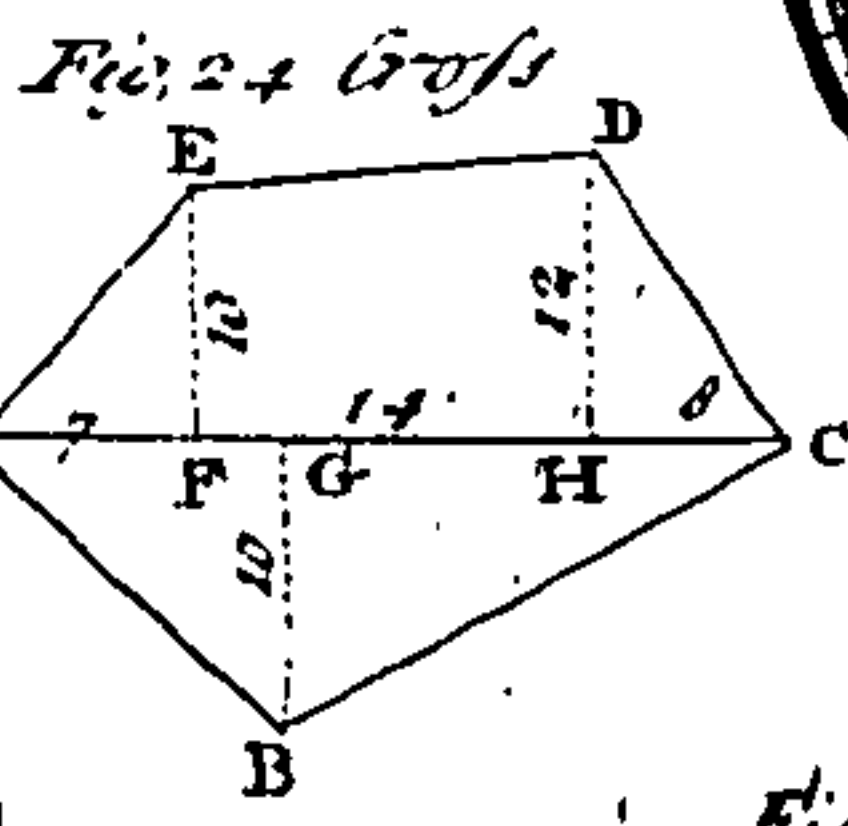
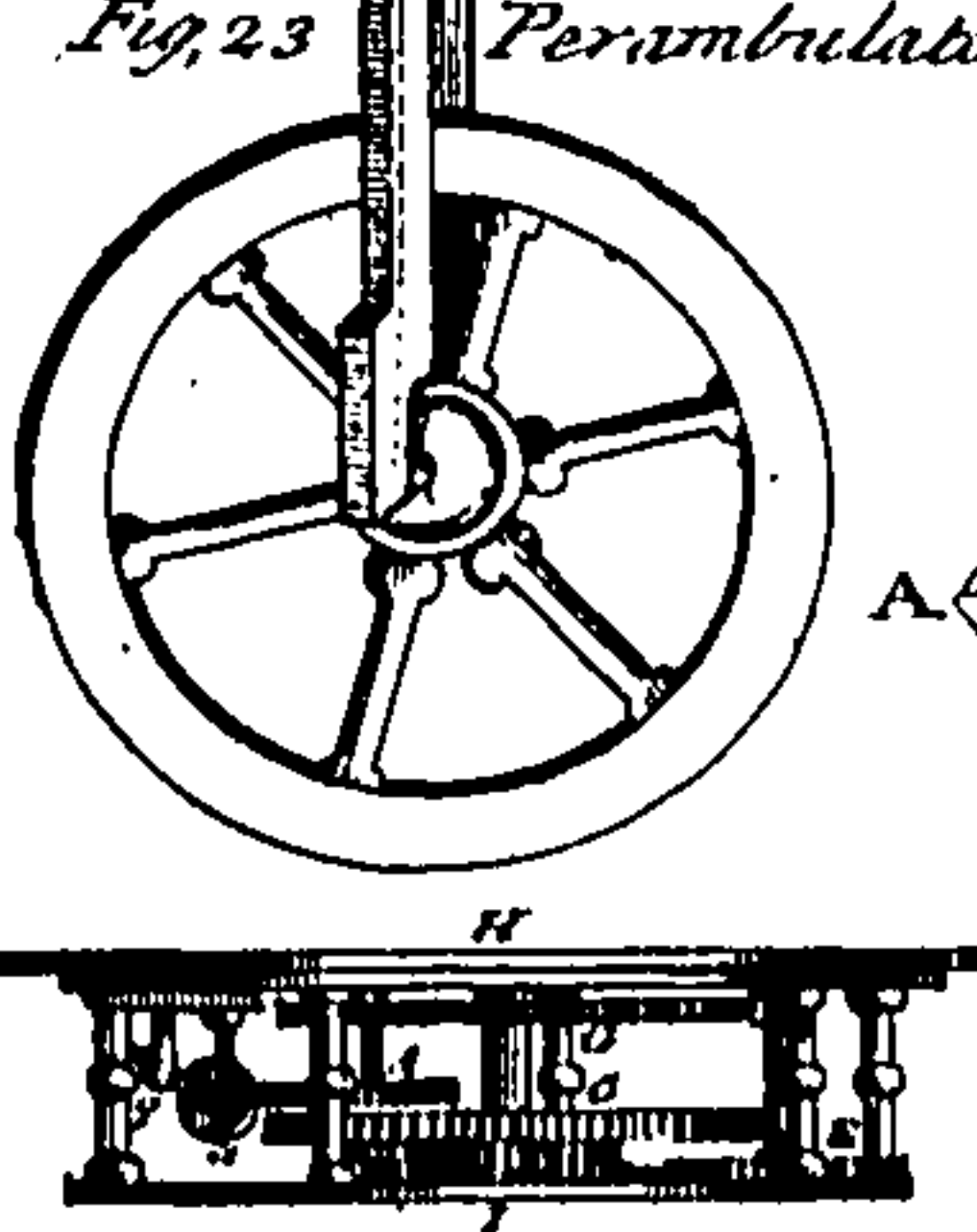
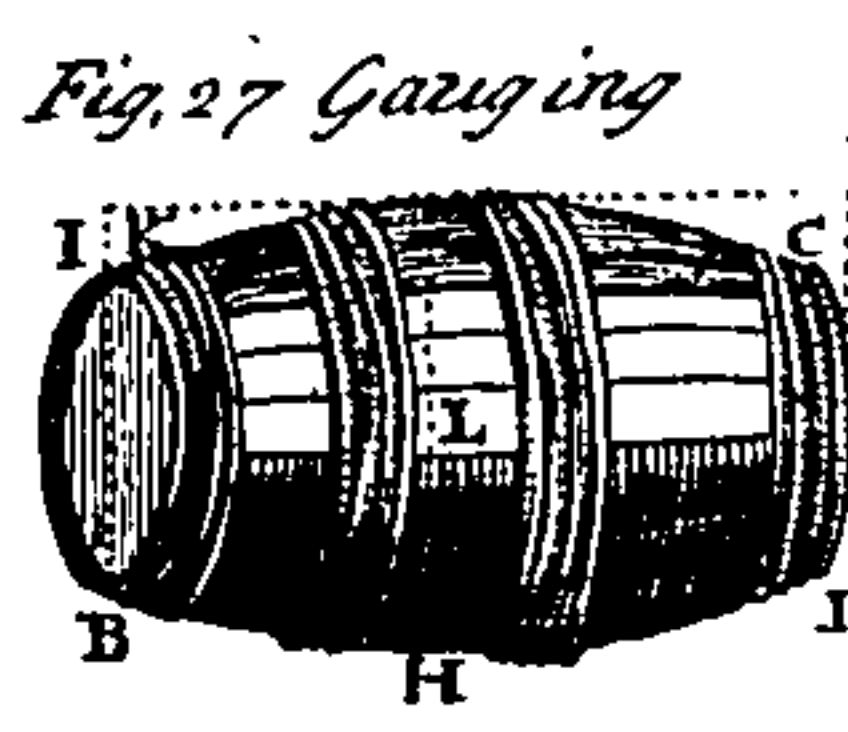
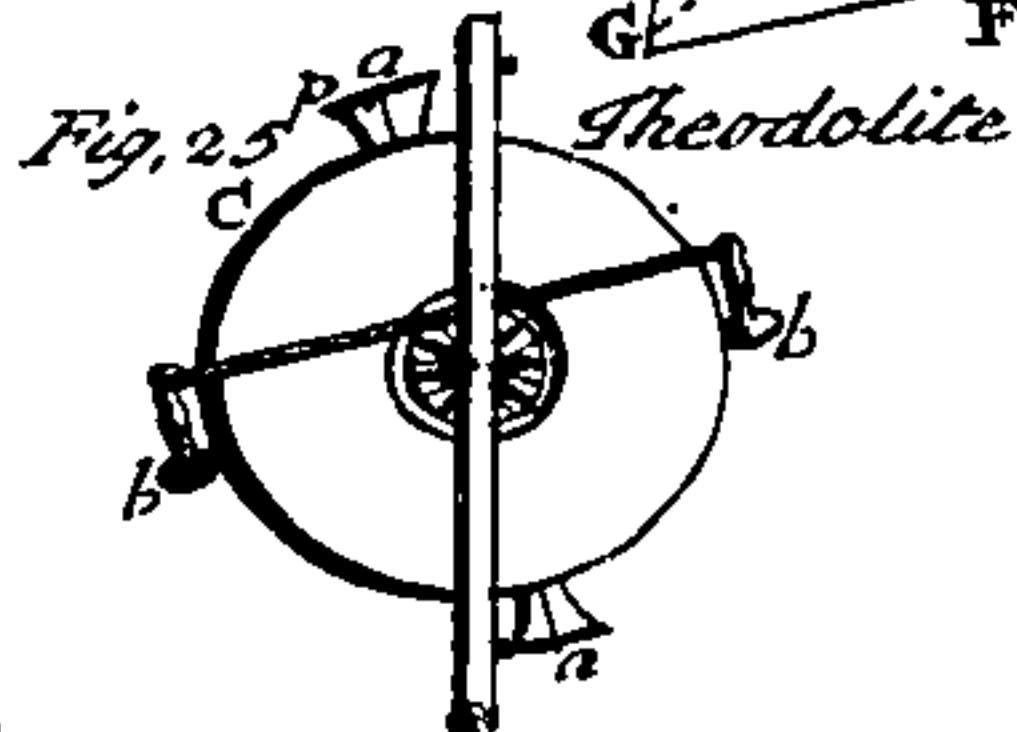
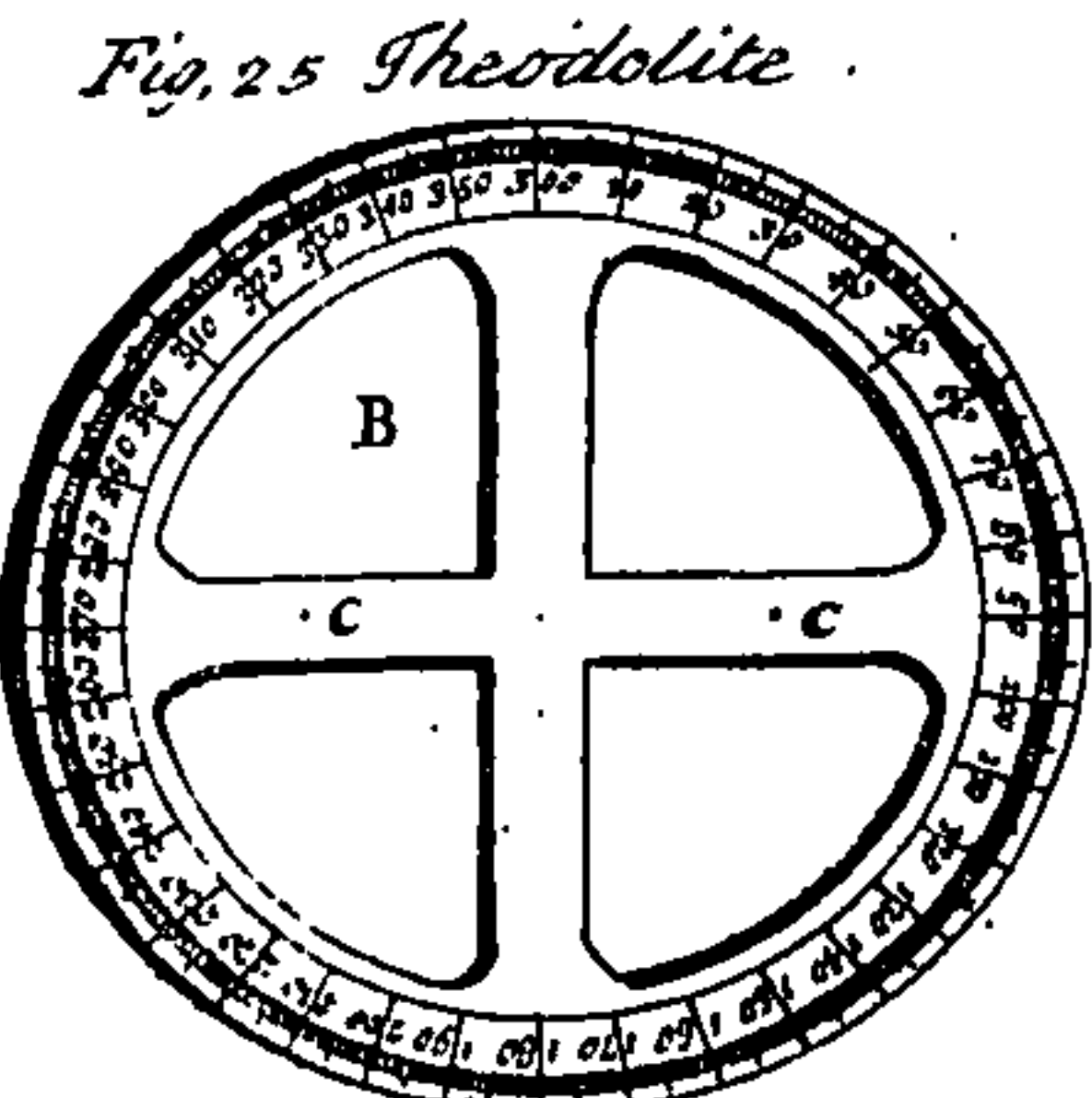
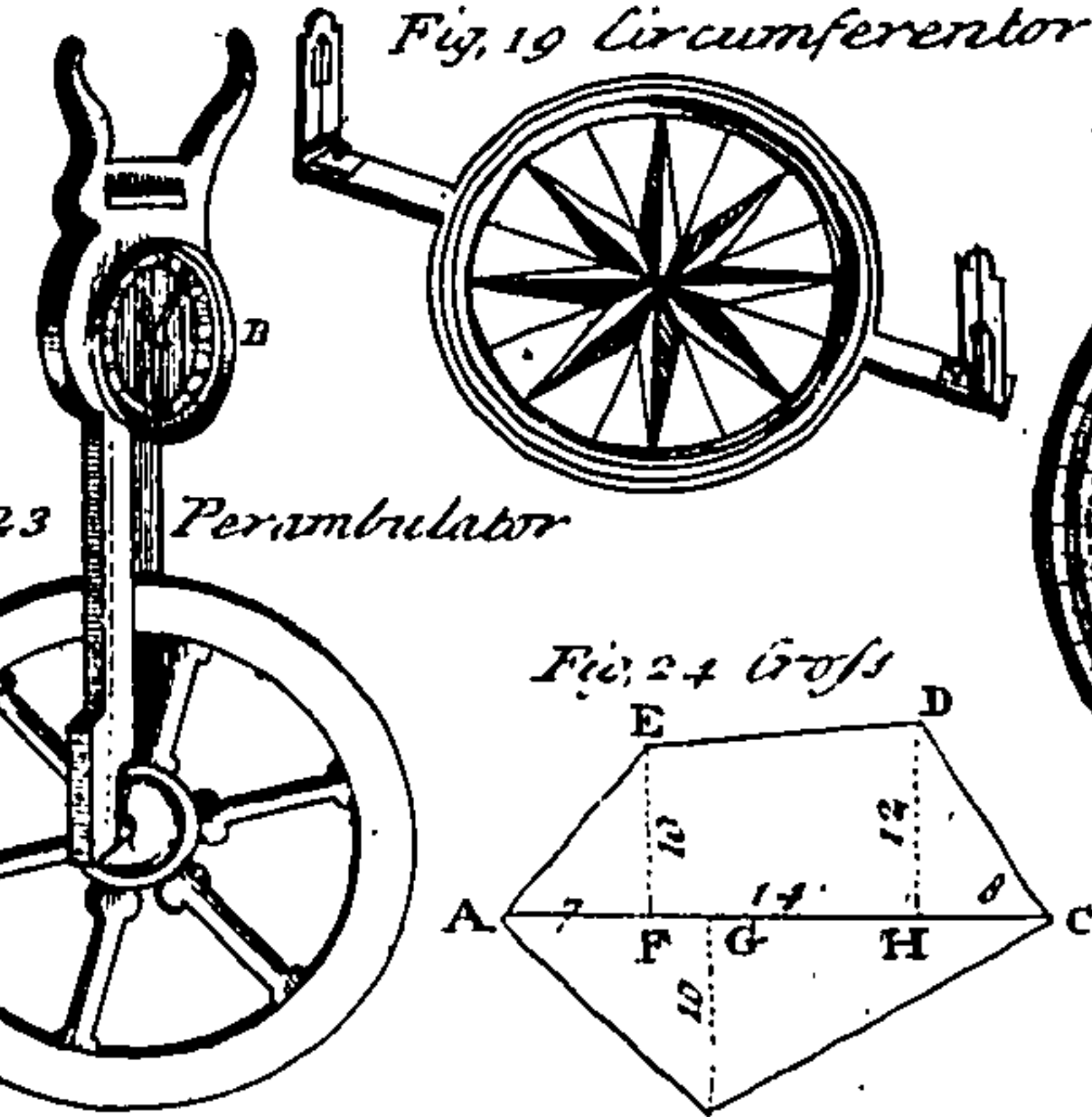
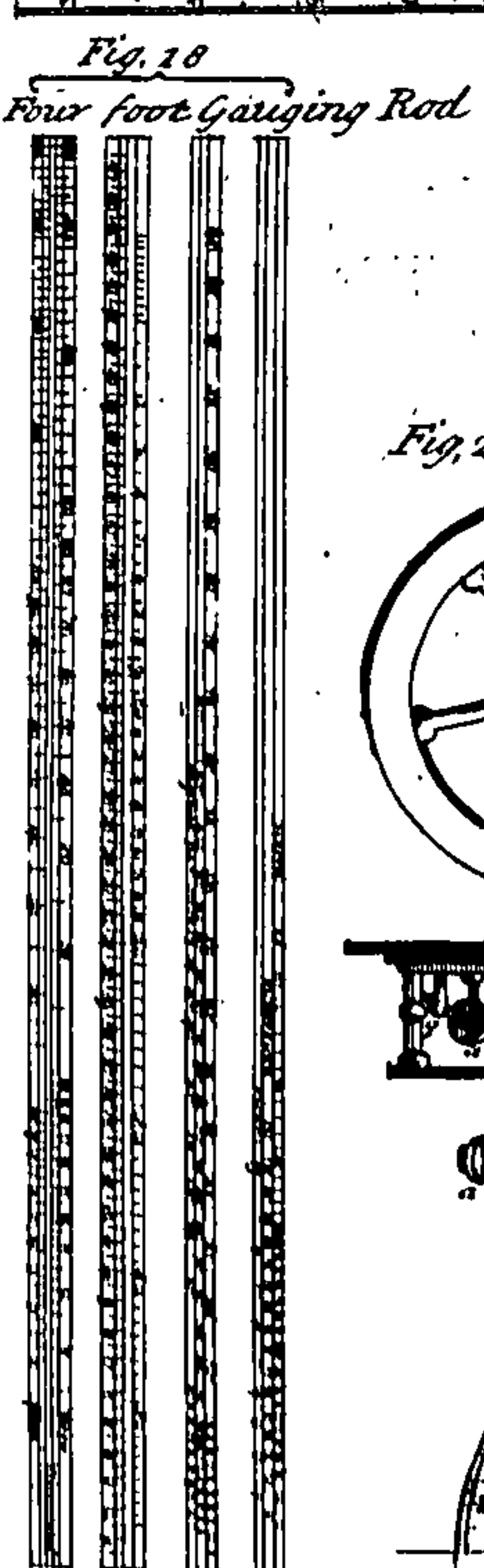
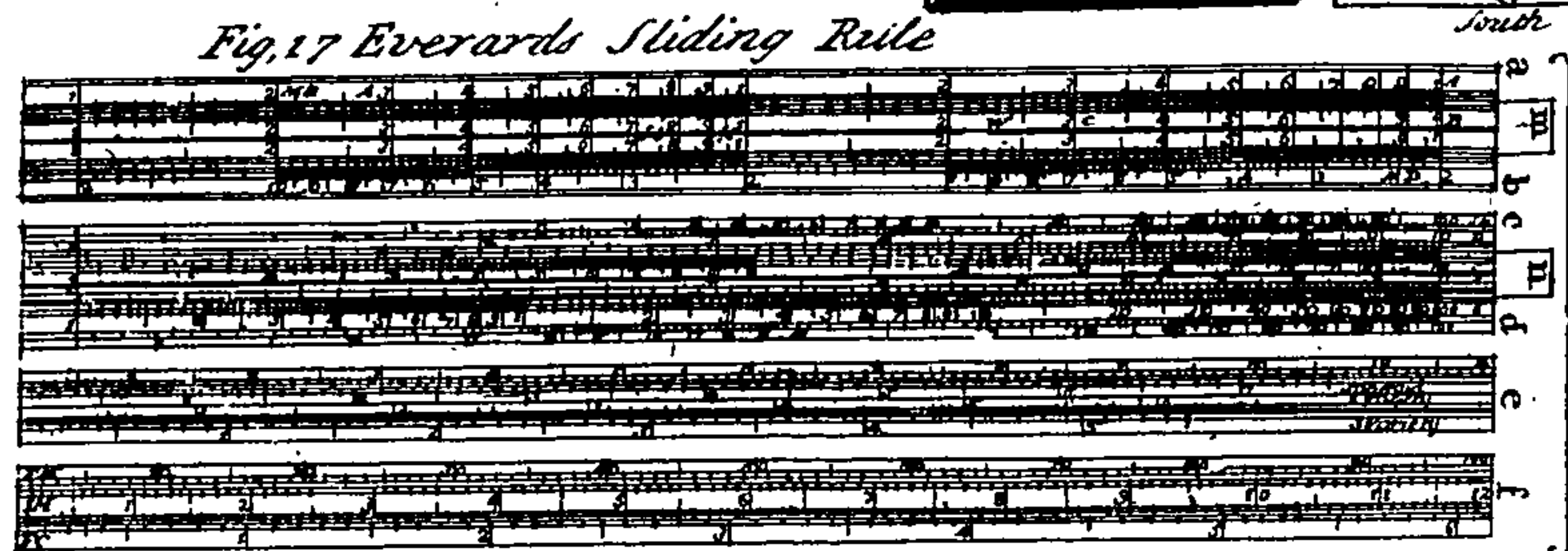
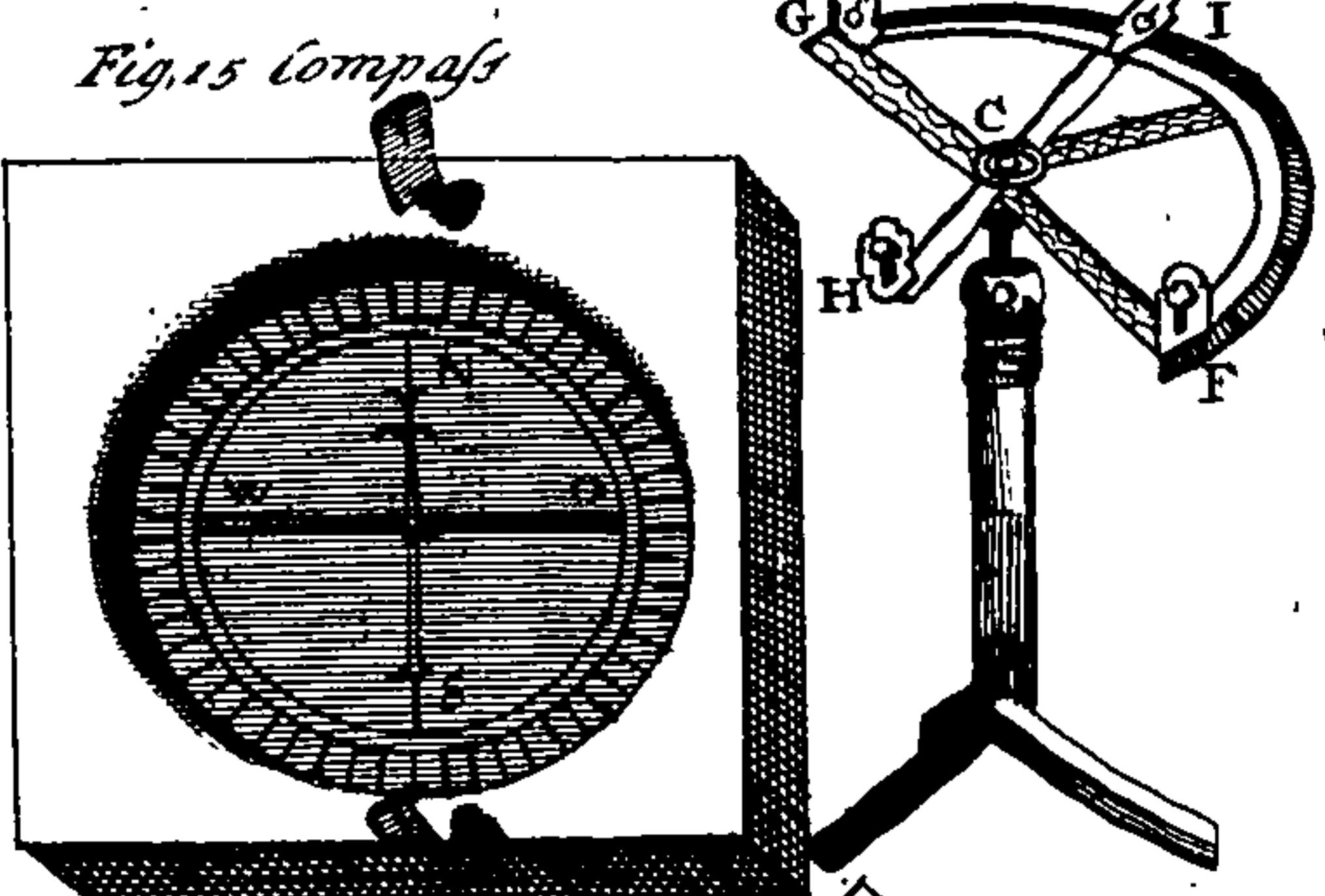
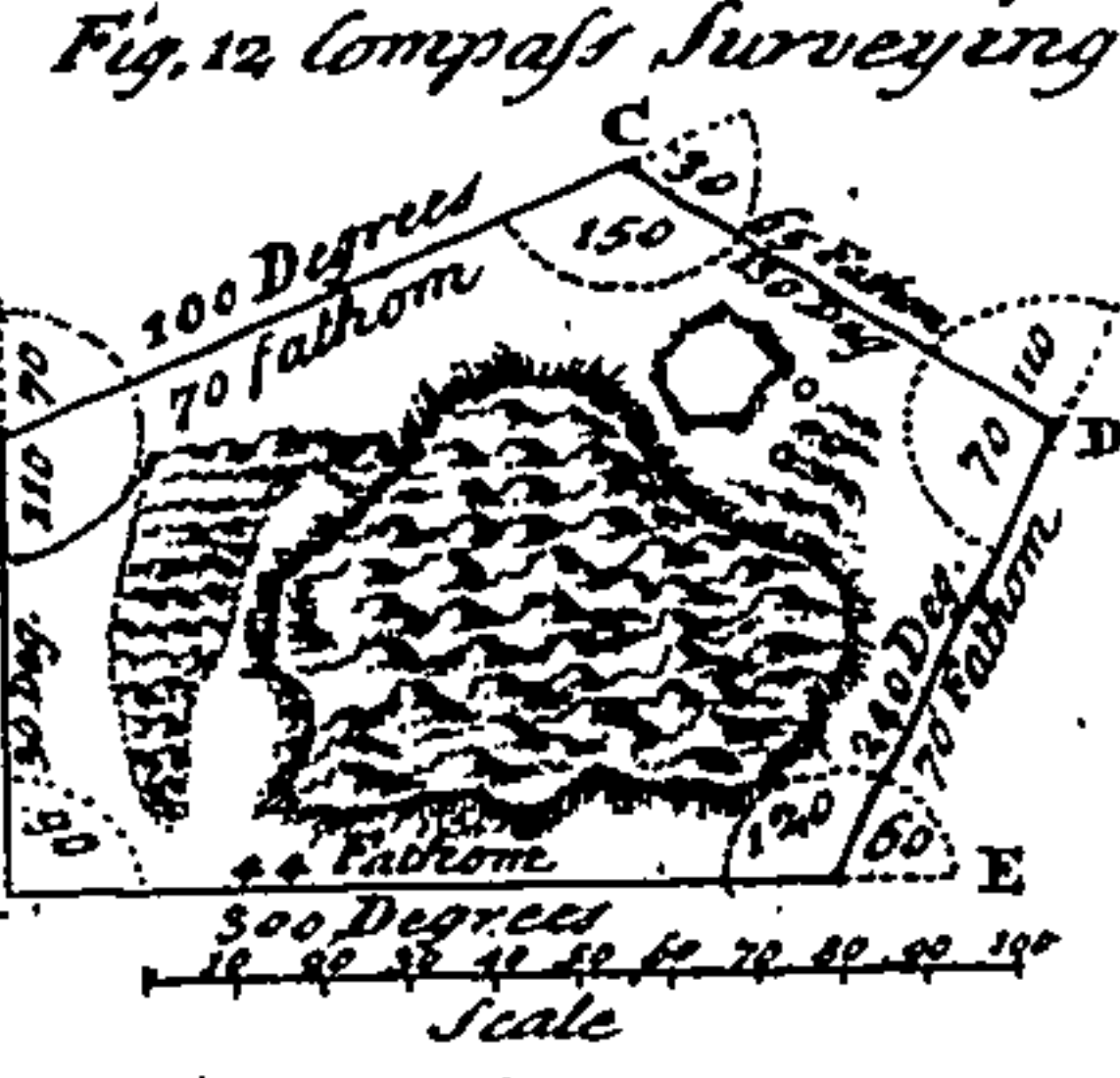
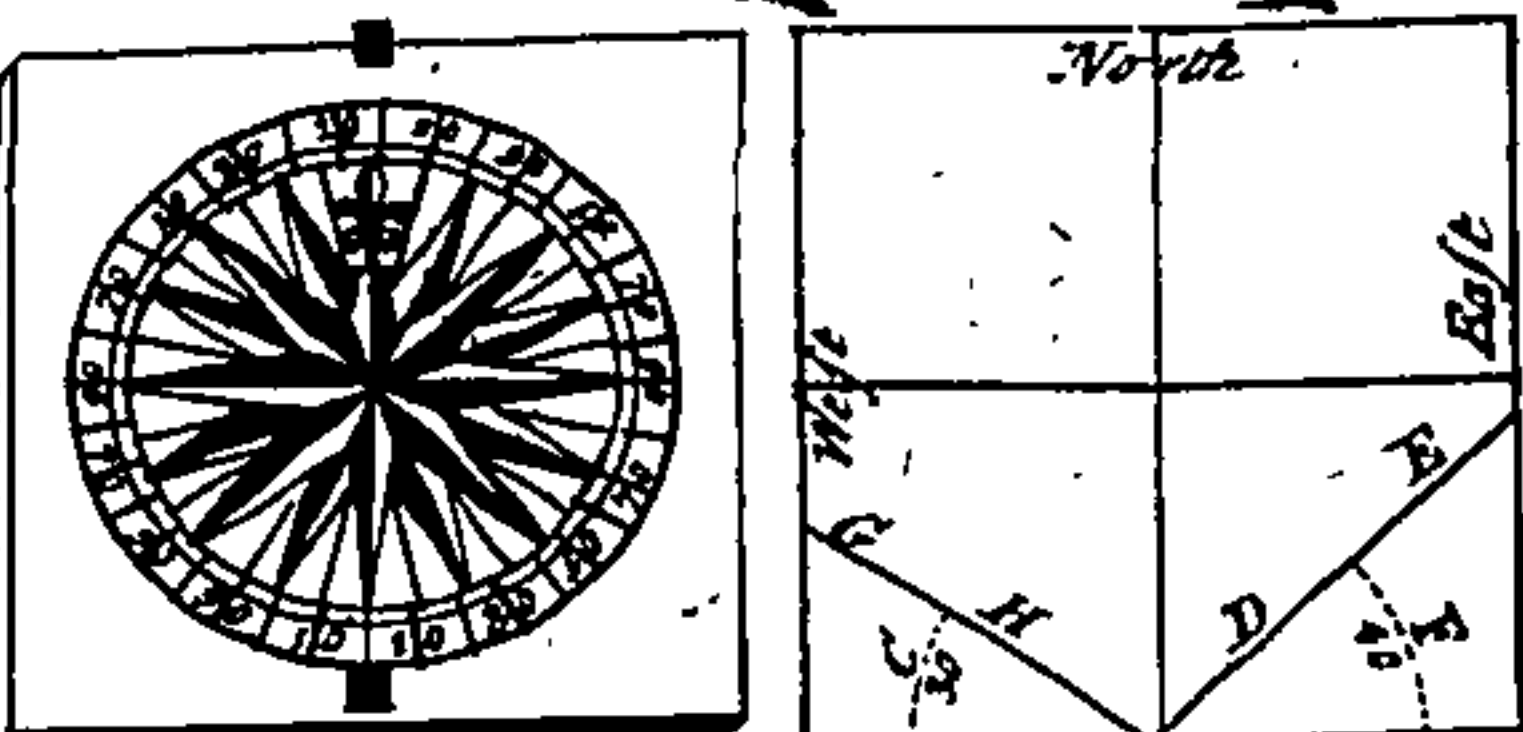
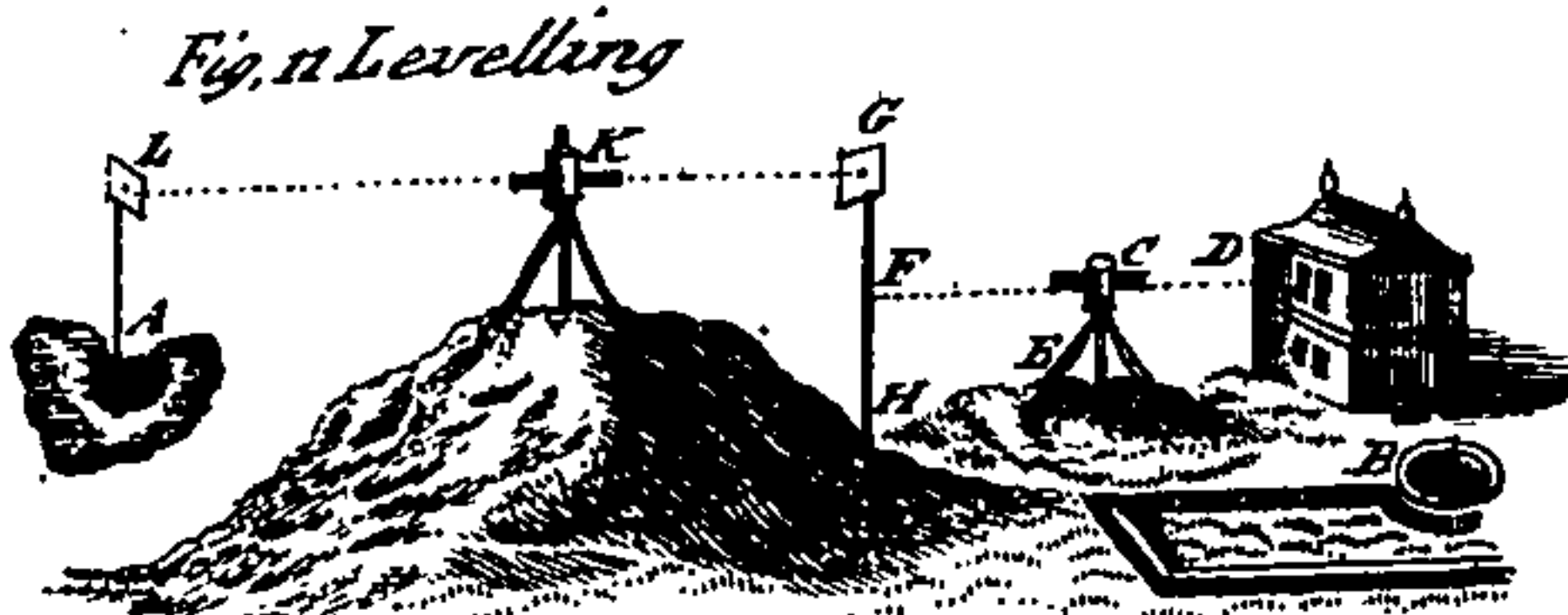
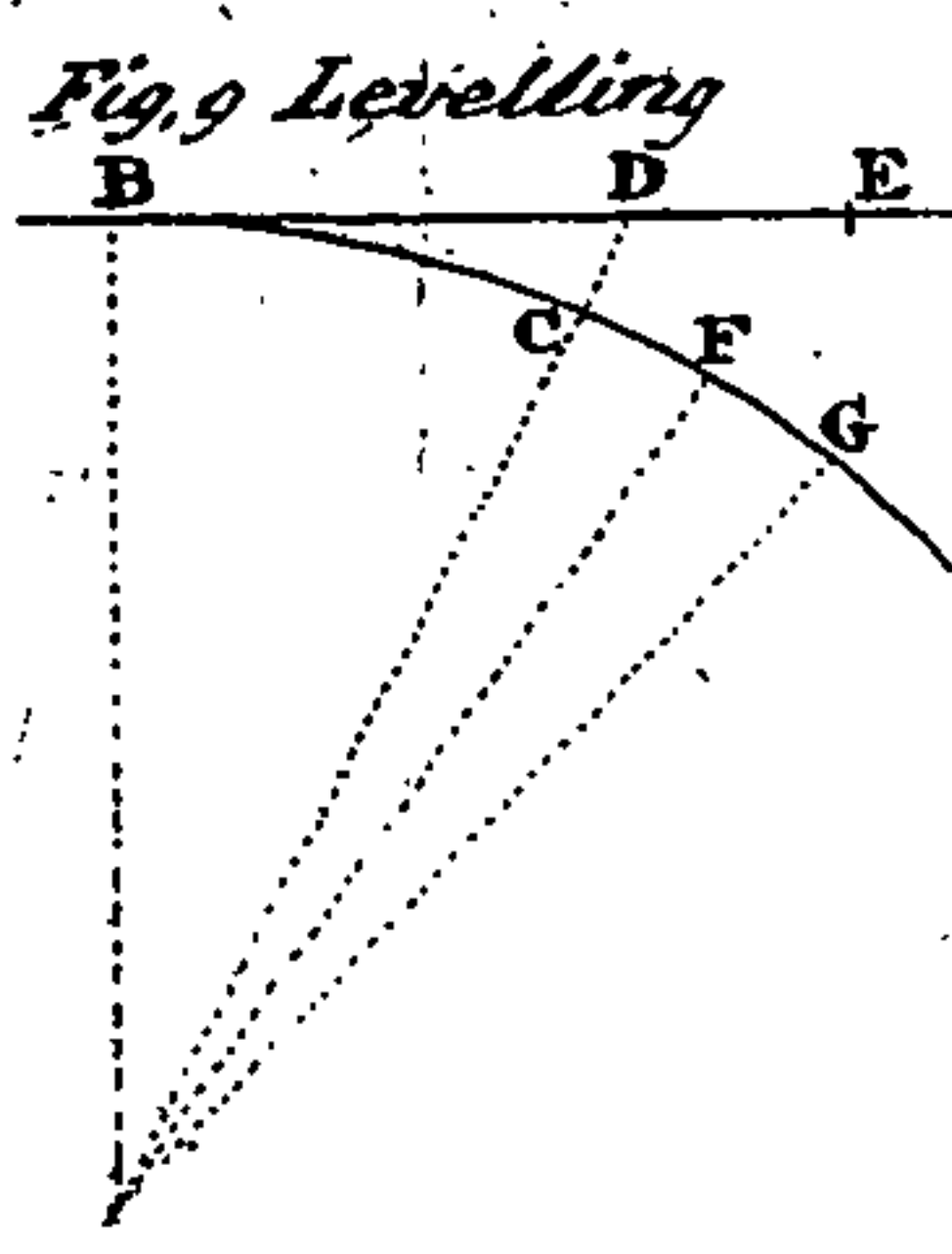
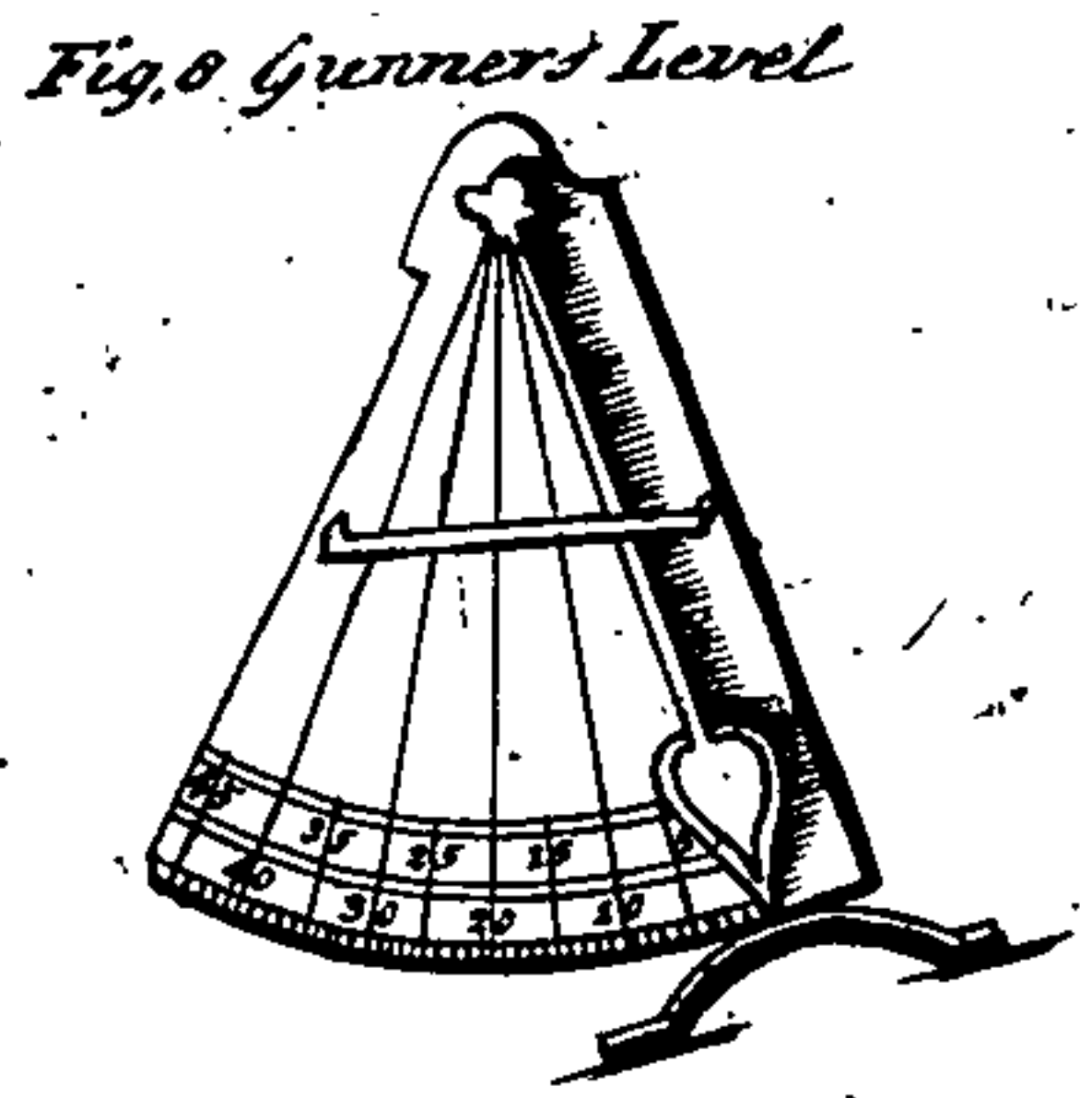
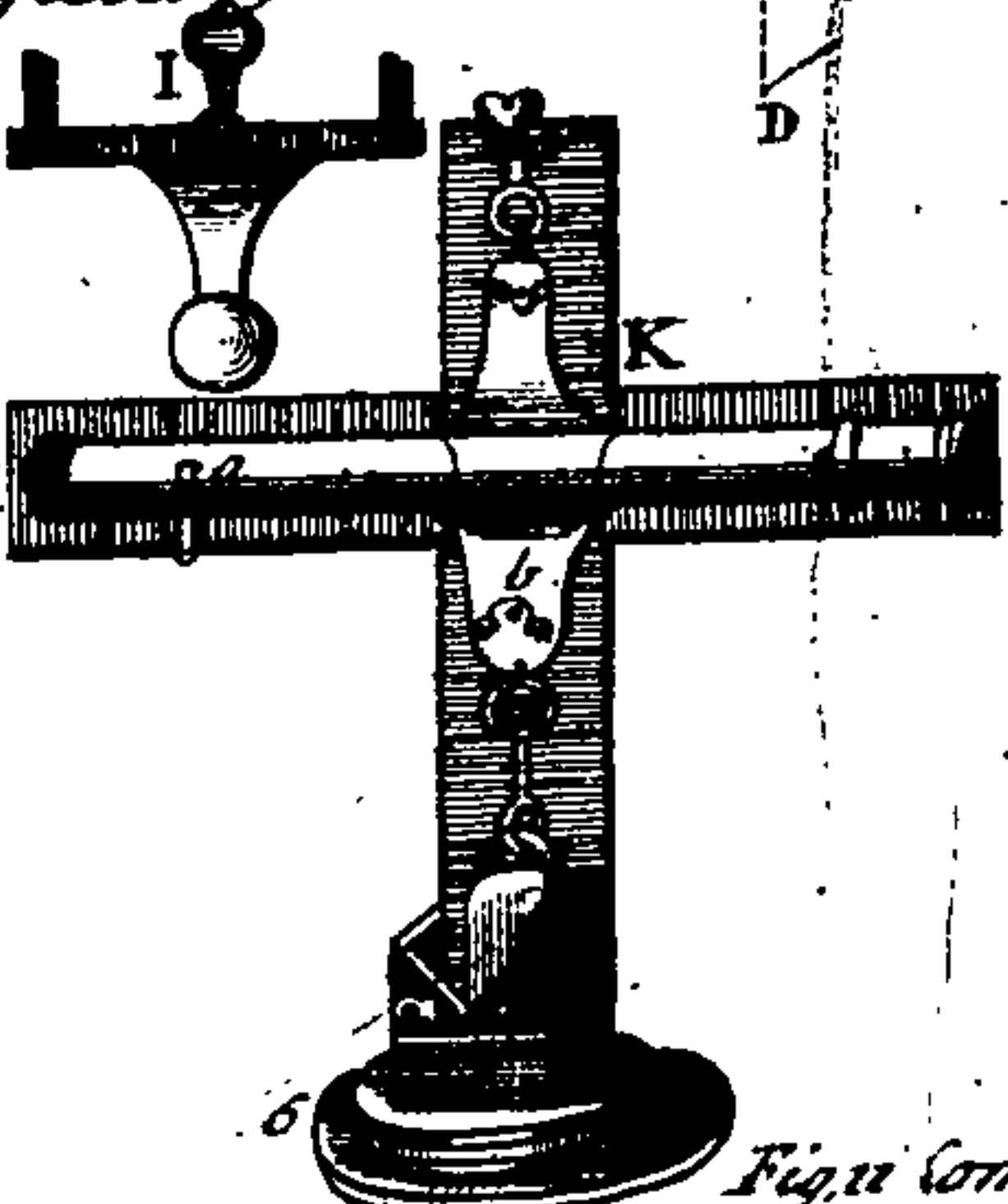
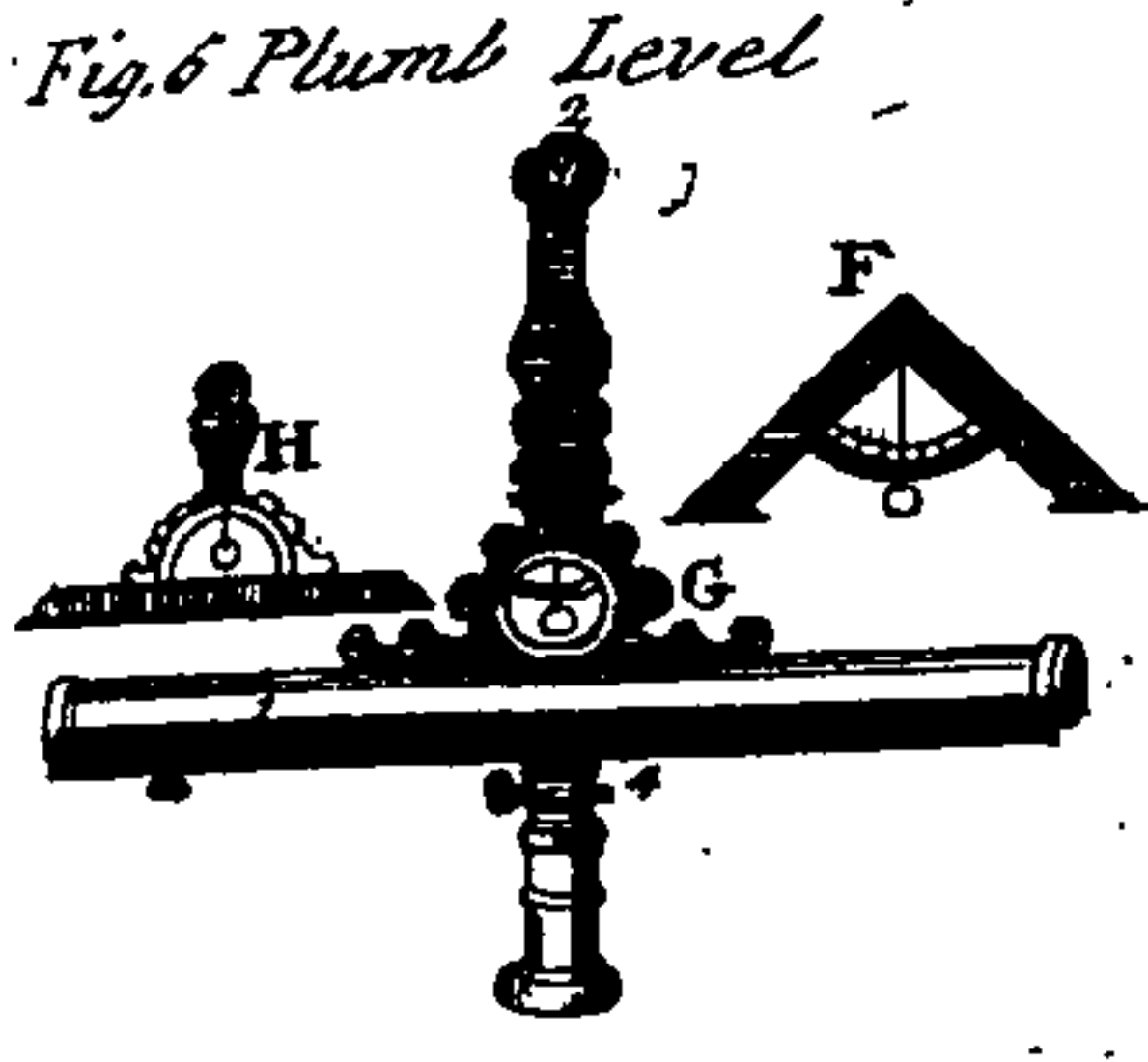
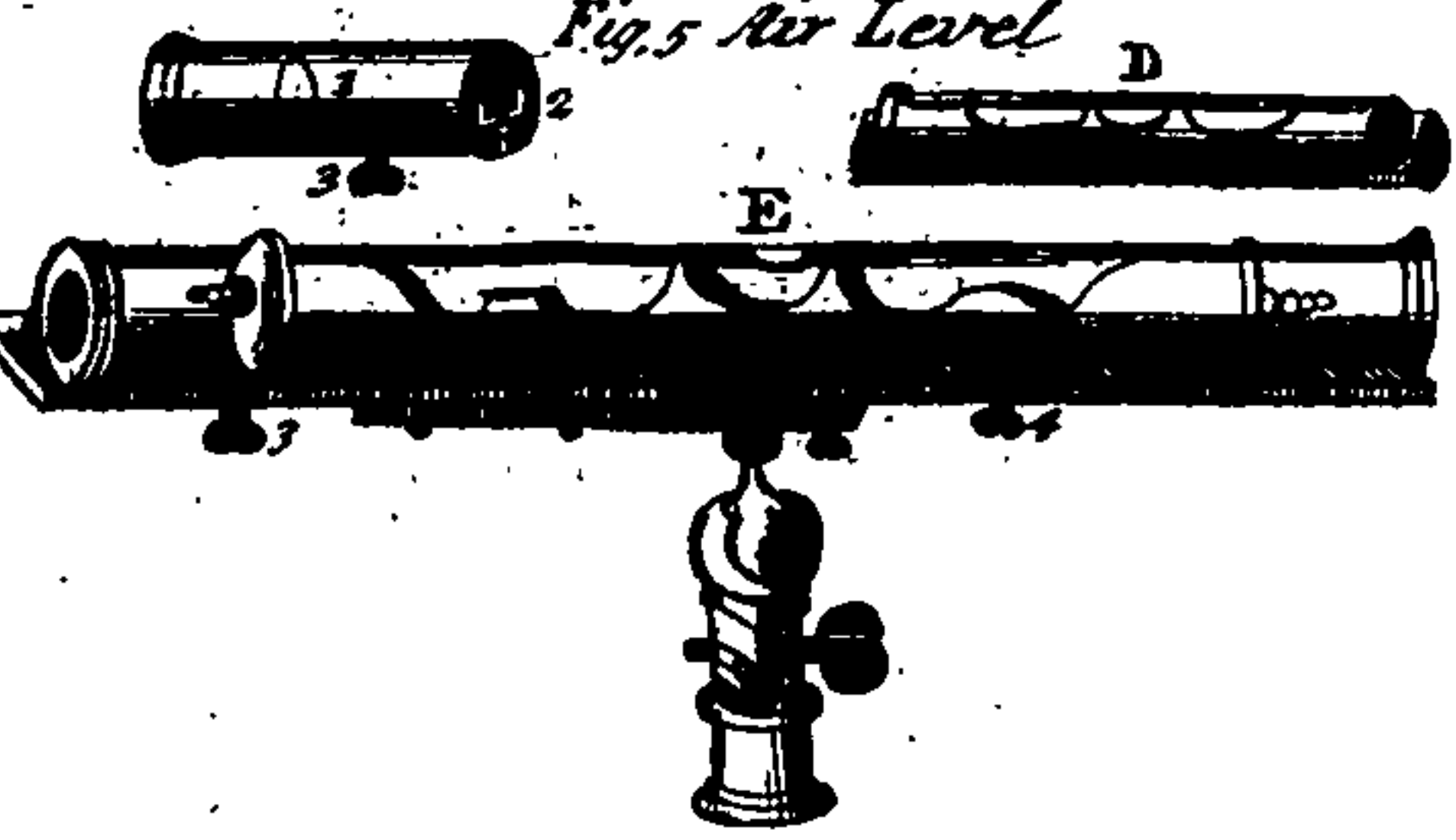
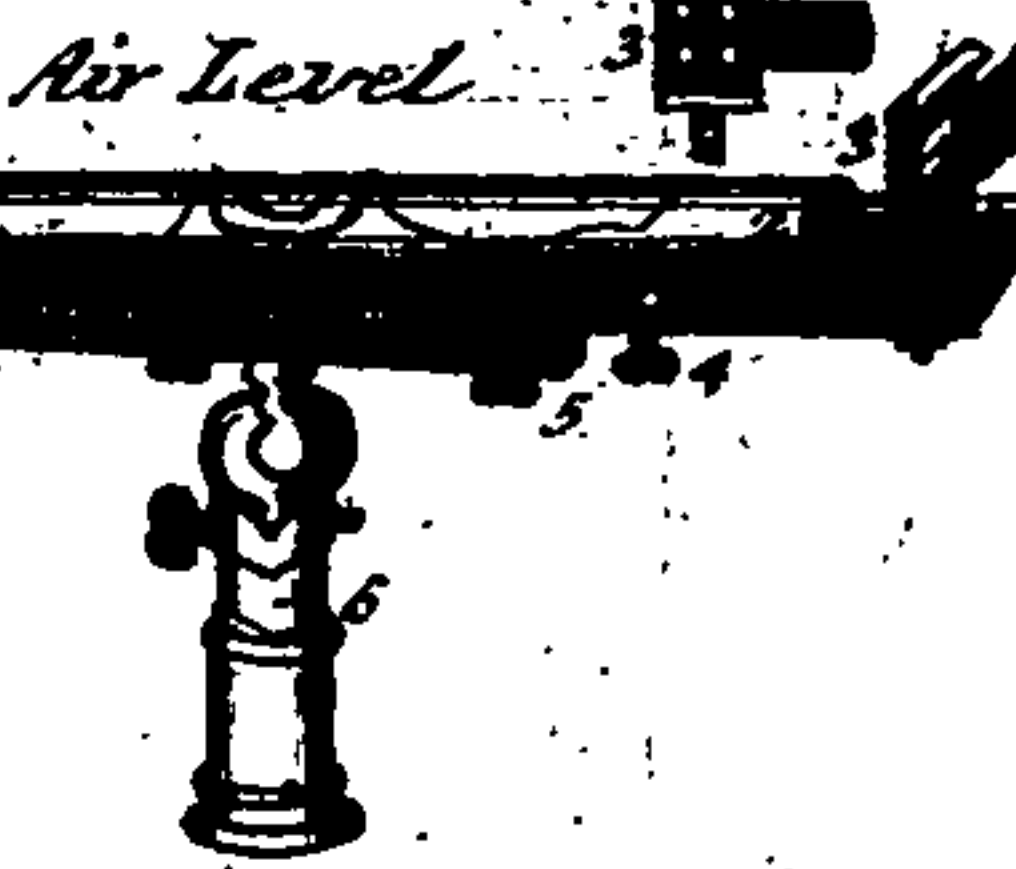
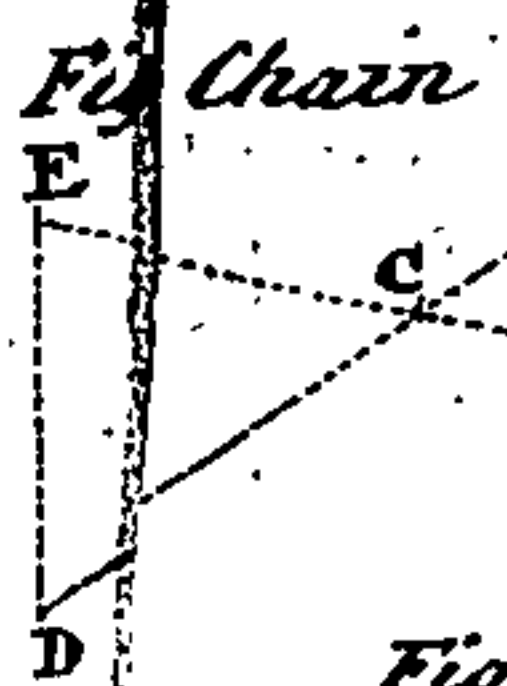
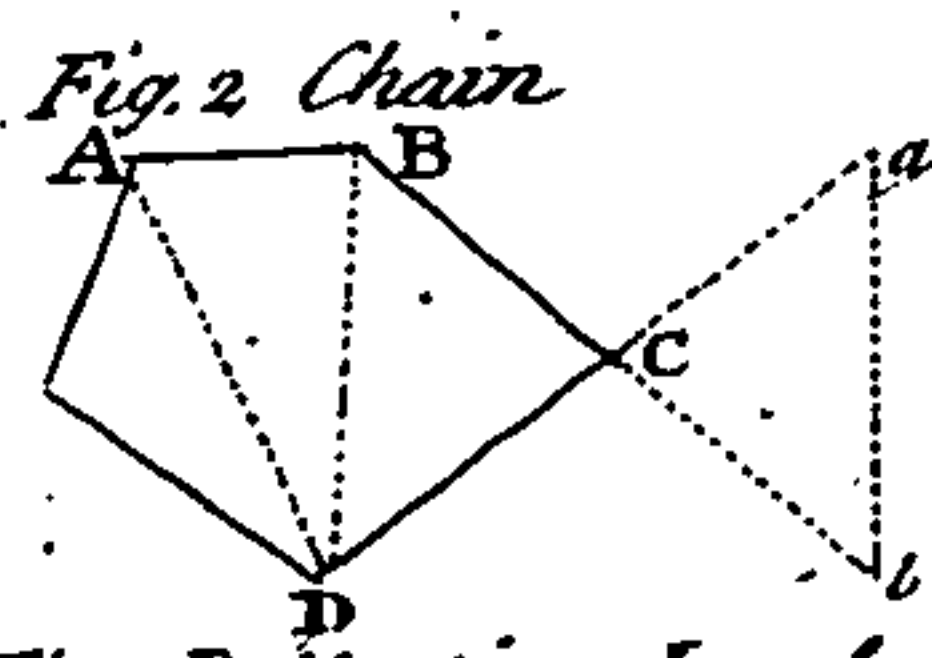
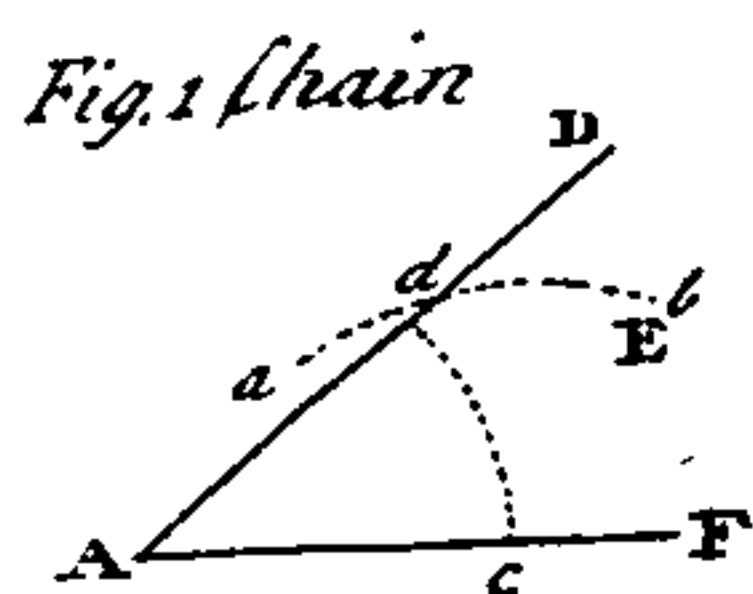
**SURVEYING Cross**, is an Instrument little known, and less used in *England*; though in *France*, &c. it serves in lieu of a *Theodolite* or the like Instrument: It consists of a brass Circle, or rather a circular Limb, graduated, and again divided into Four equal Parts, by two Right Lines cutting each other at right Angles in the Centre. At each of the Four Extremities of the Lines, and in the Centre are fix'd Sights. The whole is mounted on a Staff.

**SURVEYING Wheel**. See **PERAMBULATOR** or **WAY-WISER**.

**SURVEYOR**, one that hath the Over-sight and Care of considerable Works, Lands, &c.



# TA SURVEYING





As, the *Surveyor General of the King's Manors*; *Surveyor of the King's Exchange*; *Surveyor General of the Works*; *Surveyors of the Highways*, &c.

**SURVEYOR of the Melting**, is an Officer of the Mint, whose Business is to see the Bullion cast out; and that it be alter'd after the Delivery of it to the Melter. See **MINT** and **COINAGE**.

**SURVEYOR of the Navy**, is an Officer, whose Business is to know the State of all Stores, and see the Wants supplied; to Survey the Hulls, Masts and Yards of Ships; to Audit the Boatwain's and Carpenter's Accounts. See **NAVY**.

**SURVEYOR of the Ordnance**, is an Officer, whose Charge is to Survey all the King's Ordnance, Stores and Provisions of War, in the Custody of the Store-keeper of the Tower of London; to allow all Bills of Debts, to keep Checks on Labourers and Artificers Works, &c. See **ORDNANCE**.

**Surveyor** is also used for a Gauger; and also for a Person who measures Lands. See **SURVEYING** and **GAUGING**.

**SURVIVOR**, in Law, signifies the longer Liver of two Joint Tenants; or any Two joined in the Right of any thing.

**SUSPENSION** or **SUSPENSE**, in Common Law, is a temporary Stop of a Man's Right.

As, when a Seignior, Rent, &c. by reason of the Unity of Possession thereof, and of the Land out of which they issue, are not *in esse* for a certain Time, and *tunc dormiunt*; it may be revived: and thus it differs from Extinguishment, which dies for ever. See **EXTINGUISHMENT**.

**SUSPENSION**, in the Common Law, is what we otherwise call the *minor Excommunication*, viz. a Censure inflicted by way of Punishment, on an Ecclesiastic, for some considerable Fault. See **CENSURE** and **EXCOMMUNICATION**.

'Tis of two Kinds, viz. *ab Officio*, and *a Beneficio*.

**Suspension ab Officio**, is that whereby a Minister is, for a Time, declared unfit to execute the Office of a Minister. See **OFFICIO**.

**Suspension a Beneficio**, is when a Minister is, for a Time, deprived of the Profits of his Benefices. See **BENEFICIO**.

Where the Fault is more Notorious, the two Kinds of **Suspensions** are sometimes joined; and the Person *suspended ab Officio*, and *a Beneficio* likewise. See **DEPRIVATION**.

**SUSPENSION**, the Act of preventing the Effect, or Course of any thing, for a certain Time.

The principal Point urged in the Philosophy of the *Sceptics* and *Pyrrhonians*, is a *Suspension* of Mind. See **SCPTICS**, **PYRRHONIANS**, &c.

A *Suspension of Arms*, in War, is a short Truce the contending Parties agree on, for the Burial of their Dead, the lifting for Succours, or the Orders of their Masters, &c.

In Rhetorick, *Suspension* is a keeping the Hearer attentive and doubtful; in expectation of what the Speaker will conclude in: as, *O God! Darkness is not more opposite to Light; Impests to Calms; Pain to Pleasure; or Death to Life; than I to thee.*

**SUSPENSION**, in Mechanicks. *Points of Suspension* in a Balance, are those Points in the Axis or Beam wherein the Weights are apply'd; or from which they are *suspended*. See **BALANCE**.

**SUSPENSOR Testiculi**, in Anatomy, a Muscle call'd the *Cremaster*. See **CREMASTER**.

**SUSPIRAL**, a Spring of Water, passing under Ground towards a Conduit or Cistern; also a Breathing-Hole, or Ventilate. See **VENTIDUCT**.

**SUTE**. See **SUITE**.

**SOUTH-DOOR**, in ancient Customs, the South Door of a Church. The *Sub-dure* is mentioned in old Authors, as the usual Place where canonical Purgation was perform'd: that is, when the Fact could not be proved by sufficient Evidence, the Party accused, came to the South Door of the Church; there, in the Presence of the People, made Oath, that he was Innocent. See **PURGATION**.

This was call'd *Judicium Dei*. 'Tis for this Reason, that Churches are built at the South Doors of Churches. See **PORCH**.

**SUTURE**, **SUTURA**, in Anatomy, a particular Kind of Suture, or Articulation, of certain Bones in the Animal Body; thus call'd, as resembling a Seam. See **ARTICULATION**.

There are two Kinds of *Sutures*; the one call'd the *true* or *line Suture*; wherein the Bones are indented like Saws, reciprocally receiv'd into each other.

The other, call'd the *false*, or *spurious*, or *squamous Suture*; wherein the Bones are laid over each other, like the Scales of Fishes.

The Bones of the Cranium are usually join'd by three *line Sutures*; the *Coronal*, reaching across from one Temple to the other. See **CORONAL**.

The *Sagittal*, joining the *Osseum Parietalia*. See **SAGITTAL**. And the *Lambdoidal*; thus call'd from its resembling the Greek  $\Lambda$ , Lambda.

Besides these, is a fourth *Suture*, of the spurious or squamous Kind, suppos'd, tho' falsely, to have no Indentures: It joins the *Osseum Temporale* to the *Osseum Sphenoides*, *Occipitis*, &c. and is also call'd the *Temporal Suture*. See **SQUAMOUS**.

Natural Historians tell us, That in *Persia* 'tis frequent to have People without any *Sutures* at all in the Skull; but the whole one solid Bone; yet without any apparent Inconvenience: And M. *Flecher*, in his Life of Cardinal *Ximenes*, affirms the same of that Cardinal; yet it should seem that great Disorders should arise therefrom; as the Perspiration could be but very imperfectly effected; whence Heaviness and Swimming in the Head. See **CRANIUM**.

**SUTURE**, in Chirurgery, a Seam made to close the Lips of a Wound, in order to its healing. See **WOUND**.

The Ancients invented a great Variety of *Sutures*, which they reduced to three Kinds; *Incarnatives*, *Restrictives* and *Conservatives*.

*Incarnative SUTURE*, is thus call'd, because, by rejoining the Edges of a Wound, and keeping them together by the means of a Thread run across them with a Needle; they grow together, and incarnate as before. See **INCARNATIVE**.

This, they sub-divided into five Kinds, viz. the *Interrupted*, *Intertwisted*, *Pinn'd* or *Feather'd*, *with Clasps*, and the *Dry Suture*.

Of these Five, two are perfectly disused, viz. the *feather'd Suture* and the *Suture with Clasps*, as being too barbarous, and at the same Time unnecessary. The first was call'd *Pinn'd*, when little Pins were made use of; and *feather'd*, when the Barrels of Feathers or Quills.

To perform it, two or three Needles, threaded with a double Thread, were pass'd through the Lips of the Wound, at a Finger's breadth from each other, and a Pin or Feather put in the Stitch; and another Pin or Feather bound with the Ends of the same Thread; that the Feathers might keep the Lips of the Wound close together.

To perform the Second, they had large, crooked Clasps, pointed at each End; one of which they thrust into the upper Part of the Wound, the other into the lower, to bring the Lips together.

These *Sutures*, cruel as they were, are yet known to be useless; for in the only Cases where they should seem serviceable, viz. in deep Wounds, where the Contraction of the fleshy Parts keeps the Lips far asunder, and in Wounds of Tendons; they expose the Patient to terrible Convulsions and Shudderings, which are avoided, by diminishing the Dilatation of the Wounds, by moderate Compressions, and waiting till the Fibres relax.

*Restrictive SUTURE*, were those wherewith they endeavour'd to stop the Flux of Blood from large Wounds, where any considerable Vessels were cut.

To this End they invented several Kinds, in the Number whereof, were the *Shoe-maker's*, *Taylor's*, *Skinner's* and other Seams; all more impertinent than each other. 'Tis evident, the very Design of such a *Suture* is blameable: For supposing the Wound so exactly sew'd up, that no Blood could escape through the Lips thereof; yet will it still flow out of the Vessels; and will thus be forced to make its Way within the Intestines of the Muscles, by which means the Part will swell, rot and gangrene. Yet the *Skinner's Suture*, *Sutura Pellionum*, is still preserved for Wounds of the Intestines: 'Tis thus call'd, because the Skinners use the same, in sewing up the Holes made by the Butchers, in flaying off the Skin.

*Conservative SUTURE*, is that kind of ancient *Suture*, whereby the Lips of large Wounds, wherein there was a Loss of Substance, were prevented from receding too far. But a Bandage, now, suffices.

The *Intertwisted SUTURE*, is thus call'd, because the Needles being left sticking in the Wound, the Thread is wound around them; much after the same Manner as the Taylors do the threaded Needles they keep in their Sleeves, &c. This *Suture* is perform'd two Ways; for either the Needles are pass'd across the Wound, or they are stuck on the Sides thereof.

All the *Sutures* hitherto mention'd, are made with Needle and Thread: Beside which, there is another Kind, call'd *dry Sutures*, which are perform'd with Glue or Size; or other proper viscid Matter.

The *dry Suture* is ordinarily made with small Pieces of Leather, or Linnen Cloth, indented like a Saw, so that the Teeth may fall between each other, and the whole Row may be clos'd. The Cloth, before it is cut into this Form, is spread with some proper Emplaster, in order to its firm Adhesion.

The Plaisters thus prepar'd, being cut into the proper Form, are apply'd on the firm Flesh, according to the Length of the Wound, reaching from it to the Distance of some Inches; and after they are dry'd, or well fasten'd to the Part, the Lips of the Wound being approach'd, they may conveniently be held together by the *Suture* in that Posture.



This kind of *Suture* is principally used to Wounds in the Face, to prevent unsightly Scars: 'Tis likewise convenient when the Fibres of the Muscles are cut a-cross; and where 'tis difficult or impossible to apply a Bandage.

In the other Kinds of *Sutures*, the Stitches ought always to be taken at a Depth proportionable to that of the Wound; Care being had to avoid the Nerves as much as possible. In long Wounds they are best begun at the Ends; but in short ones at the Middle.

**SWABBER**, the Title of an inferior Officer on Board a Man of War, whose Office is to see, that the Ship be kept neat and clean.

In order to this, he is to see her wash'd well once or twice a Week at least; especially about the Gun-Walls and Chains. He ought to burn Pitch, or some such Thing, now and then between Decks, to prevent Infection; and to acquaint the Captain of such as are nasty and offensive.

**SWALLOWING**. See **DEGLUTITION**.

"Some People," (says Dr. Sloan, from an Instance of an unhappy Person who had swallow'd great Quantities of Pebbles to ease him of the Wind, and which remaining in his Stomach to the Number of 200, had brought him into a very sad Condition,) "from their seeing Birds languish, unless they swallow Gravel, or small Stones, take up an Opinion, that the swallowing of Stones helps the Stomach to digest its Food; but I have been always against that Practice: For tho' the Stomachs, or Gizzards of Birds (they wanting Teeth to grind their Food) are made very strong, muscular, and defended on the Inside with a Coat, by the Help whereof, and these Stones, their Victuals are ground; yet the Stomachs of Men being very different, 'tis not reasonable to think they should be of Use (or even inoffensive) to them."

"I knew, adds he, one Mr. K——, who for many Years swallow'd nine or ten every Day, nearly as large as Walnuts, and without any apparent Harm, as they always pass'd; but he afterwards dy'd suddenly." — A Lady, mention'd by Mr. Greenhill in the *Philosophical Transactions*, got a large and painful Tumor in the Umbilicus, with swallowing Prune-Stones; which, upon the Tumor's breaking of itself, came out in great Quantity: Notwithstanding all imaginable Care she dy'd of it. — A Lad, 16 Years of Age, near Hall in Saxony, playing with a Knife six Inches and half long, accidentally swallow'd it. The Curiosity of the Case led Wolfgang Christ. Wesenon, Physician of the Elector of Brandenburg, to take Care of him. The Knife was felt to have chang'd its Position several Times, and in a few Months ceas'd to be very troublesome; and in a Year was so much diminish'd, as scarce to be felt from without. At length it was drawn out (exceedingly diminish'd every way) thro' an Abscess which its Point occasion'd, three Fingers Breadth below the Pit of the Stomach, and the Boy was perfectly well; *Philosophical Transactions*, No 219. Among the Rarities in the Anatomy Hall at Leyden, is preserv'd a Knife ten Inches long, swallow'd by a Peasant, and cut out of his Stomach; after which he liv'd Eight Years.

**SWALLOW-tail**, in Fortification, is a single Tenaille, narrower towards the fortify'd Place, than towards the Country. See **QUEVE d' HIRONDE**.

**SWALLOW-tail**, in Joinery and Carpentry, a particular Way of fastening together two Pieces of Timber; so as that they can't fall asunder. See **DOVE-tail**.

**SWAN-herd**. See **KING'S Swan-herd**.

**SWANIMOTE**, or **SWAINMOTE**, (from the Saxon *Swang*, Swain, Rustic, and *Gemore*, Meeting) a Court touching Matters of the Forest; kept by the Charter of the Forest thrice in every Year, before the Verdurers, as Judges. See **FOREST**.

This Court is as incident to a Forest, as a Court of Piepowder to a Fair. See **COURT**.

**SWATH**, among Surgeons, a long and broad Band to bind up any diseas'd Member, or Part. See **BANDAGE**.

**SWEAT**, a Moisture issuing out of the Pores of the Skins of Animals; thro' too much Heat, Exercise, or Weakness; or through the Action of certain Medicines call'd *Sudorificks*.

*Sweat* is either the Consequence of an Acceleration of the Blood's Motion, by Stimuli, or Exercise; or of a Relaxation of the Pores of the Cutis; by means of either whereof, the Matter which before perspir'd insensibly, is now render'd sensible. See **PERSPIRATION**.

The former is the Case in Natural and Medicinal *Sweats*, and the latter in morbid, fainting, and cold *Sweats*.

The principal Organ of *Sweat* are the milliary Glands; which are spread over the whole Ambit of the Body; and furnish'd, each, with a Vein, Artery, and Nerve, besides an excretory Duct, thro' the Orifice whereof the *Sweat* is cast out under the Cuticle. This Duct is cover'd with a little round Valve, lying immediately under the Cuticle, whereby the *Sweat* is occasionally either retain'd or transmitted. See **MILLIARY Gland**.

The *Sweat* thus secreted, is various, according to the Variety of the Weather, Soil, Sex, Age, Temperament, Emunctories, Diet, Time of Digestion, &c. as in the Urine. See **URINE**.

In a sound Body, *Sweat* is scarce ever found, but from a Fault in some of the six Non-naturals: Its immediate Effect is always hurtful; By Accident it sometimes does good.

The Physicians order *Sweats* in cold and inveterate Diseases, as the Palsy, Rheumatism, Sciatica, and many other Diseases. Diseases frequently have their Crises in *Sweats*.

*Sweating* is indicated by the Beginning of a critical *Sweat*, to carry off the Disease; by the Tenuity of the morbid Matter dispers'd thro' all the Vessels, as in the Plague, a venomous Bite, the French Disease, e'er yet fix'd; by the particular Temperature of the Patient, and by various Obstructions to be remov'd in the several Parts of the Body; particularly in subcutaneous Diseases, the Itch, Pfora, Leprosy, &c.

Matthiolus tells us, That the *Sweat* of all Quadrupeds, as Horses, Asses, &c. is venomous; and that that of other Beasts is unwholesome. Tackenius adds, that the *Sweat* of Horses, particularly, is so acid, that it pierces the strongest and firmest Boots, that are Proof against all Water. Some Naturalists affirm, that Dogs and Cats never sweat, how hot soever they be, because they are not found to have any Pores in the Cuticle. See **PORE**.

**English SWEAT**. See **SUDOR Anglicanus**.

**SWEET**, among Refiners, the Almond Furnace. See **FURNACE**.

**SWEET**: The Seamen call the Mold of a Ship, when she begins to compass in at the Rungheds, the *Sweep* of her, or the *Sweep* of the Futtock.

*Sweeping at Sea*, signifies dragging along the Ground, at the Bottom of the Sea, or Channel, with a Tree-fluk'd Grapnel, to find some Hawser or Cable which is slipped from an Anchor.

**SWIMMING**, the Act or Art of sustaining the Body in Water, and of advancing therein by the Motion of the Arms, Legs, &c.

Man alone learns to swim; all other Animals have it naturally.

Among the ancient Greeks and Romans, *Swimming* made so essential a Part of the Discipline of their Youth, that to represent a Man perfectly rude and uneducated, they used to say proverbially, he had neither learned to read nor to swim.

In Fishes, 'tis the Tail is the grand Instrument of *Swimming*, not the Fins, as is generally imagin'd: For this Reason Fishes are more strong and muscular in that Part, than in all the rest of the Body; according as we find it in all other Animals; the motive Parts whereof are still the strongest, as the Thighs of Men for walking, the Pectoral Muscles of Birds for Flight, &c. See **FLYING**, &c.

The Manner wherein Fishes row themselves forwards by the Tail, is well explain'd by Borelli de *Motu Animal*. Pars 1. cap. 23. The Fins of Fishes only serve to keep the Body well pois'd and ballanc'd, and prevent Vacillation. See **FIN**.

M. Thevenot has publish'd a curious Piece in French, call'd *L'Art de Nager*, the Art of *Swimming*, demonstrated by Figures. Before him, Everard Digby, an Englishman and Nicholas Winman, had laid down the Rules of this Art: Thevenot has done little more than copy from them.

Indeed, had he but read, with half that Application, Borelli's *Treatise de Motu Animalium*, he would scarce have maintain'd, as he has done, that Men would swim naturally, like other Animals, were they not prevented by Fear, which magnifies their Danger.

We have abundant Experience against this: Throw any Brute, newly born, into a River, and it swims: Throw an Infant in, e'er yet capable of Fear, and it swims not, but is drown'd.

The Reason is, that the human Machine differs very notably in its Structure and Configuration from that of Brutes; and particularly, which is very extraordinary, in the Situation of its Centre of Gravity. In Man, the Head is exceedingly heavy, with regard to the Weight of the rest of the Body; by reason the Head is furnish'd with a very great Quantity of Brain, and has, besides, a deal of Flesh and Bones, and no Cavities to be fill'd with Air; so that the Head immersing under Water by its own Gravity, the Nose and Ears are soon fill'd: Thus the Strong carrying down the Weak, the Man soon drowns, and is lost.

But in Brutes 'tis otherwise: For the Head having but little Brain, and there being abundance of Sinus's therein, its Weight, with regard to the rest of the Body, is much less considerable; so that they are easily able to keep their Nose up in the Air, and thus respiring freely, are out of Danger of drowning, on the Principles of Statics.

In effect, the Art of *Swimming*, which is no otherwise to be acquir'd but by Exercise, consists principally in keeping the Head above Water, so, that the Nose and Mouth be at Liberty, Respiration may be carry'd on: For, as to the Feet and



and Hands, 'tis enough to stir them, and to use them as Oars to conduct the Vessel.

**SWIMMING Bladder**, a Vesicle of Air, inclos'd in the Bodies of Fishes, by means whereof they are enabled to sustain themselves at any Depth of Water. See **FISHES**.

For the Air in that Bladder being more or less compress'd, according to the Depth the Fish swims at; takes up more or less Space; and consequently the Body of the Fish, Part of whose Bulk this Bladder is, is greater or lesser, according to the several Depths; and yet retains the same absolute Weight. Now the Rule de *Insidentibus humido*, is, that a Body heavier than so much Water as is equal in Quantity to the Bulk of it, will necessarily sink; a Body that is lighter, will swim; and a Body of equal Weight, will rest in any Part of the Water.

By this Rule, if the Fish in the middle Region of the Water be of equal Weight with Water, Bulk for Bulk; the Fish will rest there without any natural Tendency upwards or downwards.

And if the Fish be deeper in the Water, its Bulk becoming less by the greater Compression of the *Bladder*; it will still remain commensurate to the Gravity of the Water in that Part.

If the Fish be higher than the middle Region; the Air dilating itself, and the Bulk of the Fish consequently increasing, but not the Weight; the Fish will rise upwards, and rest a-top of the Water.

'Tis probable the Fish, by some Action, can emit Air out of its *Bladder*, and take fresh in: Mr. Ray observes, that in most Fishes, there is a manifest Channel leading from the Gullet to the *swimming Bladder*, which doubtless serves for the Conveyance; and that there is a musculous Power in the Coat of the *Bladder*, whereby the Fish can contract it when it lists. The same Author adds, in Confirmation of this Doctrine, that 'tis found, if the *swimming Bladder* of any Fish be prick'd or broke, the Fish immediately sinks to the Bottom, and can neither support nor raise itself. And that in flat Fishes, as Soles, Plaice, &c. which lie always groveling at the Bottom, there is no *swimming Bladder* at all.

**SWINE-Pox**. See **Pox**.

**SWOONING**, a Kind of Syncope, or Fainting, wherein the Patient loses all his Strength, and his Understanding.

*Swooning* may be occasion'd by any thing that alters, corrupts, or dissipates the Vital Spirits; as, long Watching, violent Pains, great and sudden Evacuations, putrid Vapours arising from Abscesses in the noble Parts. See **SYNCOPE**.

**SWORD**, an offensive Weapon, wore at the Side, serving either to prick, or cut, or both. See **FENCING**.

Its Parts are the *Blade*, *Guard*, *Hand* or *Grasp*, and *Pommel*; to which may be added, the *Bow* and *Scabbard*. The Masters of Defence divide the *Sword* into the upper, middle, and lower Part; or the strong, middle, and small or weak Part.

Anciently there were a kind of two-handed *Swords*, call'd *Spado's*, which were to be manag'd with both Hands; which in those Days they could brandish so nimbly, as to cover the whole Body therewith.

The Savages of *Mexico*, when first visited by the *Spaniards*, had a kind of Wooden *Swords*, which would do as much Execution as ours. In *Spain*, *Swords* are only allow'd of such a Length, determin'd by Authority. The ancient Cavaliers gave Names to their *Swords*; *Joyeuse* was that of *Charlemain*; *Durandal* that of *Orlando*, &c.

**SWORD-Blade Company**. See **COMPANY**.

**SYCOPHANT**, a Greek Term, originally used at *Athens*, for Persons who made it their Business to inform against those who stole Figs, to the Owners; or against those, who, contrary to the Law, which prohibited the Exportation of Figs, yet practis'd the Thing; and deceiv'd the Officers, the Inspectors of the Ports, &c.

At length, the Term became used in the general for all Informers, Tale-bearers, Parasites, &c. especially those in the Courts of Princes: And, at last, for a Lyer, Imposter, &c.

The Word is form'd from *συκκη*, a Fig, and *φημι*, I say.

**SYCOPHANTIC Plants**. See **PARASITES**.

**SYLLABIC**, in the Greek Grammar. There are two Kinds of Augmentations in the Greek: The first call'd *Syllabic*, which is when the Word is increas'd by a Syllable; and the other *Temporal*, which is when a short Syllable becomes long. See **AUGMENTATIVE**.

**SYLLABLE**, in Grammar, a Part of a Word, consisting of one or more Letters pronounc'd together. See **LETTER**.

Or, a Syllable is a compleat Sound, utter'd in one Breath, consisting either of a Vowel alone, or of a Vowel and one or more Consonants, not exceeding seven. See **VOWEL**, **CONSONANT**, &c.

*Scaliger* defines a *Syllable* to be an Element under one Accent; that is, what can be pronounc'd at once.

*Priscian*, more intelligibly, calls it a Comprehension of several Letters falling under one Accent, and produc'd at one Motion of the Breath: But some Grammarians reject this Definition, as excluding all *Syllables* of one Letter.

Another defines *Syllable* a literal, or articulate Voice, of an individual Sound. See **VOICE**.

In every Word, therefore, there are as many *Syllables* as there are vocal Sounds; and as many vocal Sounds, as there are simple or compound Vowels; each whereof requires a distinct Motion of the pectoral Muscles: Thus, *a, a, a*, make three *Syllables*, form'd by so many Motions, distinguish'd by small Stops betwixt each Expiration.

In the *Hebrew*, all the *Syllables* begin with Consonants; allowing *Aleph* to be one; nor has any *Syllable* more than a single Vowel. See **VOWEL**.

From the Number of *Syllables* in Words they become denominat'd *Monosyllables*, *Bissyllables*, *Trissyllables*, and *Poly-syllables*, q. d. Words of one *Syllable*, two *Syllables*, three *Syllables*, and many *Syllables*. See **WORD**, **MONOSYLLABLE**, &c.

The Word is deriv'd from the Greek *συναβη*, Assemblage.

As 'tis the Number of *Syllables* that makes the Measure of *English Verse*; it were to be wish'd, we had fix'd and settled Rules to determine the precise Number of *Syllables* in each Word: for we have Words very dubious in that respect: And there are even some which have more *Syllables* in Verse, than in Prose. Many of the Words ending in *cious*, give a deal of Embarrass to such as pique themselves on Exactness; as *odious*, *precious*, &c. See **FOOT**, **QUALITY**, **MEASURE**, &c.

**SYLLABUB**, a kind of compound Drink, most affected in the Summer Season; ordinarily made of White-Wine and Sugar, into which is squirted new Milk with a Syringe, or Wooden Cow.

Sometimes 'tis made of Canary, in lieu of White Wine: in which Case the Sugar is spar'd, and a little Lemon and Nutmeg used in lieu of it.

To prepare it the best Way, the Wine and other Ingredients, excepting the Milk, are mix'd over Night, and the Milk or Cream added in the Morning. The Proportion is, a Pint of Wine to three of Milk. For

*Whipt Syllabub*, to half a Pint of White Wine, or Rhenish, is put a Pint of Cream, with the Whites of three Eggs. This they season with Sugar, and beat with Birchen Rods. The Froth is taken off as it rises, and put into a Pot; where, after standing to settle two or three Hours, 'tis fit to eat.

**SYLLEPSIS**, in Grammar, call'd also *Conceptio*, is a Figure whereby we conceive the Sense otherwise than the Words import; and thus make our Construction, not according to the Words, but to the Sense. See **CONCEPTIO**.

The *Syllepsis*, says an ingenious Author, is a Figurative Construction, which agrees more with our Ideas, than with the Words; and which expresses more of the Sense or Ideas in the Mind, than the Terms themselves.

Other Authors make it a Disproportion, or Unsuitableness in the Parts of the Discourse.

*Vossius* will have it the Agreement of a Verb, or Adjective, not with that Word next it, but with the most worthy in the Sentence; as *Rex & Regina beati*.

Some Authors call the *Syllepsis*, *Synthesis*. See **SYNTHESIS**.

'Tis a Figure of very considerable Use for the well understanding of Authors: Accordingly, *Scioppius* divides it into two Kinds, simple and relative. The *simple Syllepsis* is when the Words of a Discourse either differ in Gender, or Number, or both: The *relative Syllepsis*, is when the Relative is referr'd to an Antecedent, which is not express'd; but which we conceive by the Sense of the whole Period.

**SYLLOGISM**, in Logic, an Argument, or Form of Reasoning, consisting of three Propositions; having this Property, that the Conclusion necessarily follows from the two Premises; so that if the first and second Proposition be granted, the Conclusion must be granted in like Manner; and the whole allow'd Demonstration.

If the Premises be only probable, or contingent, the *Syllogism* is said to be *Dialectical*; if they be certain, *Apodictical*; if false, under an Appearance of Truth, *Sophistic*, or *Paralogistic*. See **DIALECTICAL**, **APODICTICAL**, and **SOPHISTICAL**.

As often as the Mind observes any two Notions to agree to a third; which is done in two Propositions; it immediately concludes that they agree to each other: Or if it find that one of them agrees, and the other disagrees; which is likewise done in two Propositions; it immediately pronounces that they disagree to each other. And such is a *Syllogism*; which, it hence appears, is nothing but an inward Discourse, or Thought, whereby, from any two Propositions granted, a third is necessarily deduc'd. See **PROPOSITION**.

Hence, as the *Greeks* call it *Syllogism*, the *Latins* call it *Collectio*, or *Ratiocinatio*, as being a kind of Computation, which, either by adding or subtracting, gathers either the Sum or the Remainder: For, as if we add two to three, we thence collect five; so, if to this Proposition, *Man is an Animal*, you add this, *every Animal thinks*; you thence deduce this, *therefore Man thinks*.

Of the three Propositions whereof a *Syllogism* consists; the first is by way of Eminence, call'd the *Proposition*, as being propos'd for the Basis of the whole Argument; the second is call'd the *Assumption*, as being assum'd to assist in inferring



inferring the third: Tho' they are both call'd *Sumptiones*, because assum'd for the Sake of the third; and both *Premises*, as being premis'd to it; and for the same Reason both are call'd *Antecedents*, only the first the *Major*, and the latter the *Minor*. See ASSUMPTION, PREMISES, MAJOR, MINOR, &c.

The third is call'd the *Conclusion*, as being the Close of the whole Argumentation; and sometimes *Complexio*, as including the two Notions, before separately compar'd; and *Consequens*, because it follows from the Antecedents; and lastly, *Illatio*, because inferr'd from the Premises by Means of the illative Particle *Ergo*, therefore, &c. See CONCLUSION, COMPLEXIO, &c.

As the Conclusion is the principal Part of a *Syllogism*, it thence arises, that tho' both the Proposition and Assumption consist each of its Subject and Attribute; yet the Subject and Attribute of a *Syllogism*, are properly understood of those of the Conclusion. See SUBJECT and ATTRIBUTE.

Again, in the Instance above mention'd, *Animal* being used both as Subject and Attribute, 'tis held a kind of Intermediate between the Two, and frequently call'd *Medium*; in respect to which, both the Subject and Attribute, *Man* and *Thinks*, are call'd *Extremes*, or *Terms*; only the Subject the greater *Extreme*, and the Attribute the less. See MEDIUM and EXTREME.

A *Syllogism*, whether Simple or Compound; may either be *Categorical*, as that already instanced; wherein both Premises are Positive. See CATEGORICAL.

Or, *Hypothetical*, wherein one or both of the Premises are suppos'd; as, *As if the Sun shines, 'tis Day, but the Sun does shine; therefore 'tis Day*. See HYPOTHETICAL.

Or, *Analogical*, as, *As the Base is to the Column; so is Justice to the Commonwealth; but if the Base be withdrawn, the Column is overturn'd; therefore if Justice be taken away, the Commonwealth is over-turn'd*. See ANALOGICAL.

Or *Disjunctive*, or *Disjunctive*; as, *Either they mean to Please or to Profit; but they don't aim to Please; therefore they don't aim to Profit*. See DIEZEUTIC.

The most convenient Form of a perfect *Syllogism*, is to have the Medium in the Middle, placed between the Subject and the Attribute; as in the Instance above-mentioned.

Of this Form, there are two Figures; the one *Coherent*, or *Conjunct* and *Affirmative*, founded on this Canon, That what agrees with any thing, likewise agrees with that, wherewith this necessarily agrees.

The other *Incoherent* or *Disjunct* and *Negative*, founded on this Canon, That what agrees with any thing, disagrees with that wherewith this disagrees. Of each of these Figures there are three Modes, viz. *General*, *Particular* and *Mix'd*. See MOOD and FIGURE.

A *Syllogism*, wherein one of the Premises is suppress'd; but so as to be understood, is call'd an *Enthymeme*; e. gr. *Every Animal Thinks, therefore Man Thinks*; wherein the Proposition, *Man is an Animal*, is understood. See ENTHYMEME.

The Demonstrations of Mathematicians, 'tis observed, are only certain Series's of Enthymemes; so that every thing in Mathematicks, is concluded by *Syllogism*; only omitting such Premises as occur of their own accord, or as are referr'd to by the Citations. See DEMONSTRATION.

For the Use *Syllogism* is of to Reason, Mr. *Lock* observes, That of four Things, which Reason is employ'd about, viz. the finding out of Proofs; the regular Disposition of them, so as their Connexion may appear; the perceiving their Connexion; and the making a right Conclusion: *Syllogism* only assists in one, viz. the shewing the Connexion of the Proofs of any Instance.

Nor is it of any great Use even here; since the Mind can perceive such Connexion, where it really is, as easily, nay, perhaps, better, without. We see Men reason very strongly, who don't know how to make a *Syllogism*.

Indeed, *Syllogism*, the same Author adds, may serve to discover a Fallacy in a rhetorical Flourish; or, by stripping an Absurdity of the Cover of Wit and good Language, shew it in its natural Deformity. But it only shews the Weakness or Fallacy of such a Discourse, by the artificial Form it is put into, to those who have thoroughly studied Mode, and Figure, and have so examined the many Ways three Propositions may be put together in, as to know which of them does certainly conclude right, and which not, and upon what Ground they do so.

The Mind is not taught to reason by these Rules: It has a native Faculty, of perceiving the Coherence or Incoherence of its Ideas, and can range them right, without such perplexing Reperitions. Add, that to shew the Weakness of an Argument, there needs no more, than to strip it of the superfluous Ideas, which, blended and confounded with those on which the Inference depends, seems to shew a Connexion where there is none; or at least hinders the Discovery of the Want of it: And then to lay the naked Ideas, on which the Force of the Argumentation depends, in their due Order. In this Position, the Mind taking a View of them, sees what

Connexion they have, and so is able to judge of their Inference, without any need of *Syllogism* at all. Nor must it be omitted, that *Syllogisms* are as liable to Fallacies, as the plainer Ways of Argumentation; for which one might appeal to common Observation, which has always esteem'd these artificial Methods of Reasoning, more adapted to catch and entangle the Mind, than to instruct and inform the Understanding. And if it be certain that Fallacy can be couch'd in a *Syllogism*, as no Body will deny but it may; it must be something else, and not a *Syllogism*, that must discover it.

The same Author proceeds to shew, that this Way of Reasoning, discovers no new Proofs, nor makes any Discoveries; but is wholly conversant in the Marshalling and Ranging those we already have: A Man must know, e'er he be able to prove *syllogistically*; so that the *Syllogism* comes after Knowledge, when we have but little need of it. See REASON.

SYLVA, in Poetry, a poetical Piece; composed, as it were, at a Start; in a kind of Rapture or Transport, without much Thought or Meditation.

Such are the *Sylvæ* of *Statius*, which, he assures us, were all composed after this Manner.

*Quintilian* extends the Use of the Word to any Writing done in haste, and on the Spot.

The Word is *Latin*, and literally signifies *Forest*; whence its chief Use, in our Language is, metaphorically, to express certain Collections of poetical Pieces, of various Kinds, and on various Subjects; as a Forest is an Assemblage of Trees of different Kinds.

SYMBOL, a Sign, Type, Emblem or Representation of any moral Thing, by the Images or Properties of natural Things. See SIGN, TYPE, &c.

Thus we say, the Lion is the *Symbol* of Courage; the Pellican of paternal Love, &c.

*Symbols* were in great Repute among the ancient *Hebrews*, and especially among the *Egyptians*; and served to cover a great Part of their moral Mysteries; being used not only to represent Moral Things by Natural; but even Natural by Natural.

*Symbols* are of various Kinds; as *Types*, *Enigmas*, *Parables*, *Fables*, *Allegories*, *Emblems*, *Hieroglyphicks*, &c. each whereof see under its respective Article ENIGMA, PARABLE, FABLE, &c.

The Word is form'd from the *Greek*, *συμβολον*, a Mark, Sign, or Badge, and that from the Verb *συμβαλλεν*, *Conjunct*.

The *Chinese* Letters are most of them *Symbols*, or Significative. See LETTER.

The *Symbols* in Algebra, &c. are various. See CHARACTER.

Medallists apply the Term *Symbol* to certain Marks or Attributes peculiar to certain Persons, or certain Deities. The Thunder-bolt, for Instance, accompanying the Heads of certain Emperors, is a Sign or *Symbol* of the Sovereign Authority, and of a Power equal to that of the Gods. The Trident is the *Symbol* of *Jupiter*; the Peacocks of *Juno*; a Figure seated on an Urn, of a River.

SYMBOL, among Christians, is particularly used for the *Creed*, or the Articles every Christian is to know, and believe. See CREED.

*Fleury* observes, That till the Time of St. Gregory, the *Symbol* was never used to be rehearsed in the Office of the *Roman Church*; in regard that Church, having never been infected with any Heresy, did not need to make any Profession of Faith.

*Suicer* notes, That several Words and Points have been occasionally added to the *Symbols*, upon the rising of new Heresies.

Though it be a common Opinion, that the *Symbol* is the Work of the Apostles; and though, on the footing of such Opinion, we call it the *Apostles Creed*; yet, as *Pin* observes, there are several very cogent Arguments to render the Opinion highly improbable.

In the Emperor's Library, is a *Greek MS* of the *Symbol* of the Apostles, divided into 12 Articles, with the Names of the respective Apostles, who are said to have composed each Article: The First is attributed to St. Peter, and the rest successively to Andrew, James Major, John, Thomas, James Minor, Philip, Bartholomew, Matthew, Simon, Thadæus and Matthias.

But the Testimony of that M S, does not much confirm the Opinion, that each Apostle composed an Article of the *Symbol*; yet the Opinion is, at least, as old as St. Leo, who seems to have believed it.

Authors are in doubt, why the Name *Symbol* should be given this Compendium of the Articles of the Christian Faith: Some say, 'tis thus call'd, as being the Mark or Characteristic of a Christian. Others derive it from an Assembly or Conference of the Apostles, where each expressing his Sense of the Faith, and what each had chiefly preach'd, the Creed was fram'd, and call'd by the *Greek Word* *συμβολον*, which signifies Collation or Conference. 'Tis added, that St. *Asaph* is the first who appears to have used the Word *Symbol* in this Sense.



SYMBOLICAL Column } See { COLUMN  
SYMBOLICAL Philosophy } { HIEROGLYPHIC.

*Clemens Alexandrinus, Eusebius, &c.* observe, that the *Egyptians* had two Ways of designing their *Symbolical Mysteries*: One by the Virtues of Animals, Herbs, &c. the other by Geometrical Figures: Thus, the *Sun* and *Moon* were represented, in the first Manner, by the *Beetle* and *Ibis*; and in the latter, by their own Figure. Again, the four Elements they represented, after the first Manner, by four Animals which had Qualities corresponding thereto; and after the second Manner by +. See HIEROGLYPHIC.

SYMMETRY, the Relation of Equality, in the Height, Length and Breadth of the Parts necessary to compose a beautiful Whole.

*Symmetry*, according to *Vitruvius*, consists in the Union and Conformity of Relation, of the Members of a Work, to their Whole, and of each of the separate Parts to the Beauty of the entire Work; Regard being had to some certain Measure: so that the Body is framed with *Symmetry*, by the Relation the Arm, Elbow, Hand, Fingers, &c. have to each other, and to their Whole.

*Symmetry*, arises from that Proportion, which the *Greeks* call *Analogy*, which is the Relation of Conformity of all the Parts of a Building, and of their Whole, to some certain Measure; whereon depends the Nature of *Symmetry*.

In Architecture, we call *Uniform Symmetry*, that where the Ordonnance reigns in the same Manner, throughout the whole Pourtour; and *Respective Symmetry*, that where only the opposite Sides are equal to each other.

The Word is form'd from the *Greek*, *συμ*, with, and *μετρον*, Measure.

SYMPATHETIC, something that has a *Sympathy*, or that acts by *Sympathy*. See SYMPATHY.

SYMPATHETIC, is particularly applied to all Diseases which have two Causes; the one remote, the other near.

In which Sense, the Word is opposed to *Idiopathic*. See IDIOPATHETIC.

Thus, an Epilepsy is said to be *Sympathetic*, when produced by a remote Cause; *i. e.* when the Disorder in the Brain, embarrass'd, and, as it were, mired with Blood, is preceded and produced by some other Disease.

There is a *Sympathetic* Palpitation of the Heart, and an *Idiopathic* one. There is but one *Idiopathic* Cause of the Palpitation; but there are several *Sympathetic* ones. See PALPITATION.

Among Chymists and Alchymists, the Term *Sympathetic* is principally applied to a kind of Powder, and a Sort of Ink.

SYMPATHETIC Inks, are such as can be made to appear and disappear very suddenly, by the Application of something which seems to work by *Sympathy*. See INK.

Of these, we have some very curious Instances and Experiments, given us by *Lemery* and Mr. *Boyle*; to the following Effect.

1° To two or three Parts of unslak'd Lime, put one of yellow Orpiment; powder and mix the Two, adding 15 or 16 times as much Water as there was Orpiment; stop up the Viol with a Cork and Bladder, and set it in warm Embers. Shake the Viol now and then for five Hours, and warily decant the clear Part, or rather filtrate it. In the mean Time, burn a Piece of Cork thoroughly, and when well inflamed, quench it in common Water, or rather in Brandy. Being thus reduced into a friable Coal, grind it with fair Water, wherein Gum Arabic has been dissolved; and it will make a Liquor as black as the common Ink.

While these are doing, dissolve in three Times as much distill'd or strong Vinegar, over warm Embers, a Quantity of Red Lead; or of Saccharum Saturni, in Thrice the Quantity of Water, for three or four Hours; or 'till the Liquor have a sweet Taste. This Liquor will be as clear as common Water.

The Inks thus prepared: Write any thing on Paper with this last Liquor, dry it, and nothing will appear. Over the Place, write what you please with the Second Liquor; it will appear as if written with common Ink: When dry, dip a small Piece of Rag or Sponge in the first Liquor, rub it over the written Place, and the black Writing will vanish; and that wrote with the invisible Ink, appear black and legible.

Again, take a Book four or five Inches thick, and on the first Leaf, write any thing with the last Liquor: Turn to the other End of the Book, and rub there with a Rag, dipt in the first Liquor, on that Part, as near as you can guess, opposite to the Writing; and leave also the Rag there, clapping a Paper over it; then nimbly shutting the Book, strike four or five smart Strokes thereon with your Hand, and turning the other Side uppermost, clap it into a Press, or lay it under a good Weight, for a Quarter of an Hour, or even half that Time: Then will the Writing done with the invisible Ink be found white and legible.

2° Dissolve white or green Vitriol in Water, and writing

with the Solution, nothing will appear. Boil Galls in Water, and dip a Linnen Rag in the Decoction, and with it rub the Place before writ, and it will appear black and legible. Rub it over again with Spirit of Vitriol, or its Oil, and the Writing will disappear again: Rub it over again with Oil of Tartar *per Deliquium*; the Letters will appear again, but of a yellow Colour.

SYMPATHETIC Powder, a Powder once very much fam'd; supposed to have this wonderful Property, That if spread on a Cloth dipt in the Blood of a Wound, the Wound would be cured, though the Patient were any Number of Miles off.

This Powder, M. *Lemery* tells us, is nothing but *Roman* Vitriol, open'd by the Sun-beams penetrating it, and imperfectly calcining it, in the middle of Summer.

But it is now generally allowed a mere Piece of Charlatanery, whatever Sir. *Kenelm Digby* and others before him and after, plead in its Favour.

Sir *Kenelm*, in an express Treatise on the Subject, where he gives Instances of Cures perform'd by it, accounts for the Manner of its Operation thus: The Sun's Rays, says he, attract and draw the Spirits of the Blood, at a great Distance; by which means the Atoms thereof, are driven and dispersed far and near in the Air. Now, the Spirits of Vitriol, incorporated with the Blood, fly along with them, and the Two together form a kind of Train of Corpuscles. On the other Side, there is continually issuing and exhaling from the Wound, abundance of fiery Spirits, which attract the neighbouring Air, and this Air, by a continued Concatenation, attracting, still, the next Air, at length, meets the Atoms, with the Spirits of the Blood and Vitriol. Thus the Spirits of the Blood finding their Source again, re-enter into their primitive Seat, and being joined with the vitriolic Spirits, the Wound is comforted and healed, imperceptibly.

But to the Confusion of all this fine Reasoning; 'tis found by Experience, that the Powder is so far from this Effect at a great Distance, that 'tis scarce perceived, if done in the same Room with the Patient. Though 'tis possible, as the Parts of the Vitriol are in continual Motion, if the Cloth be applied just by the Patient, some of the Effluvia thereof, may enter the Wound, and help to stop the Bleeding. See VITRIOL.

SYMPATHY, an Agreement of Affections and Inclinations; or a Conformity of natural Qualities, Humours, Temperaments, &c. which make two Persons pleas'd and delighted with each other.

The Word is form'd from the *Greek* *σύν*, with, and *πάθος*, Passion, *q. d.* Com-passion, Fellow-feeling.

*Sympathy* is also used with regard to inanimate Things; intimating some Propension they have to unite, or to act on one another.

In this Sense, Naturalists say, there is a *Sympathy* between the Vine and the Elm; between the Load-Stone and Iron; the two Poles of a Load-Stone, &c.

Several Authors have wrote on the *Sympathies* and Antipathies between Animals; but the greatest Part of what they say is fabulous: Such, *e. gr.* is that Antipathy between Chords made of Sheeps and Wolfs Guts; A Lute, they say, being strung with these two Kinds of Chords, they can never be brought into Tune with each other: Such also is that of Eagles Feathers, which mix'd with those of other Birds, devour and consume them. See ANTIPATHY.

The Alchymists talk much of the Powder of *Sympathy*. See SYMPATHETIC Powder.

SYMPATHY, in Medicine, an Indisposition befalling one Part of the Body, thro' the Disorder or Faultiness of another; whether it be thro' the Affluence of some Humour, or Vapour sent from elsewhere; or thro' the Want of the Influence of some Matter necessary to its Action. See CONSENT of Parts.

For the Force and Effect of Sympathy, in the Production of Monsters. See MONSTER.

SYMPHISIS, in Medicine, one of the Manners of articulating or jointing the Bones. See ARTICULATION.

*Symphisis* is a natural Union, whereby two separate Bones are render'd contiguous, and become one, so, as neither has any proper, distinct Motion.

Such are most of the Junctures of the Epiphyses, and many others of Bones which in Children are separate, but with Age grow together; as the Os Ethmoides, the Bones of the Cranium, Os Sacrum, &c. See BONE.

The *Symphisis*, or Natural Union of Bones, is of two Kinds; either with a Medium, or without.

The *Symphisis* without Medium, is where two Bones unite, and grow together of themselves without the Intervention of any third Thing: Such are the *Symphyses* of Epiphyses with the principal Bones; and such those of the lower Jaw. This Union is effected much after the same Manner as that of a Graft and a Tree.

The *Symphisis* with a Medium is of three Kinds, call'd *Synsarcosis*, *Synsarcosis*, and *Synchondrosis*. Each whereof see under its proper Article, SYNECHOSIS, &c.



The Word is Greek, *σύννομις*, and signifies a natural Coherence or Connection.

**SYMPHONY**, in Music, a Consonance, or Consort of several Sounds agreeable to the Ear; whether they be Vocal or Instrumental, or both; call'd also *Harmony*. See **HARMONY** and **CONSONANCE**.

Some Authors restrain *Symphony* to the sole Music of Instruments; In this Sense, say they, the Recitativo's in such an Opera were intolerable, but the *Symphonies* excellent. See **SONG**.

The *Symphony* of the Ancients went no further than to two or more Voices or Instruments set to Unison; for they had no such Thing as Music in Parts; as is very well prov'd by M. *Perrault*; at least, if ever they knew such a Thing, it must be allow'd to have been lost. See **SYNAULIA**.

'Tis to *Guido Aretine* we owe the Invention of Composition: 'Twas he first join'd in one Harmony several distinct Melodies; and brought it even the Length of four Parts, viz. Bass, Tenor, Counter, and Treble. See **HARMONY** and **MELODY**.

The Word is form'd from the Greek *σύν*, with, and *φώνη*, Sound.

**SYMPOSIAC**, an Entertainment, or Conversation of Philosophers at a Banquet. See **BANQUET**.

*Plutarch* has several Treatises which he calls *Symposiaca*; or, The Banquet of the seven Sages, &c.

The Word is form'd from the Greek, *συνπότησιον*, Convivium, Feast.

**SYMPTOM**, in Medicine, is ordinarily confounded with *Sign*, and defin'd an Appearance, or Conjunction of Appearances, in a Disease, which shew or indicate its Nature and Quality, and whence one may judge of the Event thereof. See **SIGN**.

In this Sense, a Delirium is held a *Symptom* of a Fever; and Pain, Waking, Drowsiness, Convulsions, Suppression of Urine, Difficulties of Breathing and Swallowing, Coughs, Disgusts, Nauseas, Thirst, Swoonings, Faintings, Looseness, Costiveness, Dryness and Blackness of the Tongue, are held the principal *Symptoms* of Diseases.

But *Boerhaave* gives us a much more just and accurate Notion of a *Symptom*: Every præternatural Thing, says he, arising from a Disease, as its Cause, in such Manner, however, as that it may be distinguish'd from the Disease itself, and from its next Cause, is call'd a *Symptom* of the Disease. See **DISEASE**.

If it arise, after the same Manner, from the Cause of the Disease, it is call'd a *Symptom of the Cause*. See **CAUSE**.

If it arise from some former *Symptom* as its Cause, it is call'd a *Symptom of a Symptom*.

Whatever happens to a Disease, from any other Causes than those mention'd, is more properly call'd an *Epigenema*.

Hence it appears, that these former *Symptoms* are really Diseases themselves, very different as to Number, Effect, &c. Tho', after the Ancients, they may be conveniently enough reduc'd to Faults in the *Functions*, *Excretions*, and *Retentions*.

Under the first come all Diminutions, Abolitions, Increases, and Depravations of Animal Actions, particularly with regard to *Hunger* and *Thirst*, *Sleeping* and *Waking*. See **HUNGER**, **THIRST**, &c.

Under the second come, *Nauseas*, *Vomitings*, *Lienteries*, *Celiac Affections*, *Diarrheas*, *Dysenteries*, *Iliac Passions*, &c.

Under the third, come the *Jaundice*, *Stone*, *Dropsy*, *Fever*, *Ischuria*, *Strangury*, *Asthma*, *Catarrh*, &c. Each whereof see under its respective Article, **HUNGER**, **NAUSEA**, **LIENTERY**, **DIARRHŒA**, **JAUNDICE**, **DROPSY**, **STONE**, **FEVER**, &c.

**SYMPTOMATICAL**, in Medicine, is a Term often used to denote the Difference between the primary and secondary Causes in Diseases; as, a Fever from Pain is said to be *Symptomatical*, because it arises from Pain only; and therefore the ordinary Means in Fevers are not, in such Cases, to be had recourse to; but to what will remove the Pain; for when that ceases, the Fever will cease, without any direct Means taken for that.

**SYNÆRESIS**, in Grammar, a Figure, whereby two Syllables are united in one; as *veemens* for *Vehemens*.

**SYNAGOGUE**, a particular Assembly of *Jews*, met to perform the Offices of their Religion; also the Place wherein they meet. See **JAWS**.

Some Authors take the Use of *Synagogues* to be of no old standing among the *Jews*; and maintain, that 'twas not till after their Return from the *Babylonish* Captivity, that the Opinion first got footing, that the Worship of God was not so restrain'd to the Temple at *Jerusalem*, that it could not be held any where else. The Consequence of which new Opinion was, that the *Jews* began to build them *Synagogues* in all their Cities.

Others hold, that there were *Synagogues* even in the Time of *David*.

Be this as it will, no Assemblies of the *Jews* appear to

have been call'd *Synagogues* till a little before the Coming of *Jesus Christ*; who is said to have preach'd in the Middle of the *Synagogue*.

There were reckon'd 480 *Synagogues* in the single City of *Jerusalem*.

There are still *Synagogues* subsisting at *London*, *Amsterdam*, *Rotterdam*, *Avignon*, *Metz*, &c.

The Word is Greek, *συναγωγή*, Assembly.

**SYNALÆPHA**, in Grammar, a Contraction, or Shortening of a Syllable, in a *Latin* Verse. See **VERSE**.

It is perform'd various Ways; principally, by the smothering some Vowel or Diphthong at the End of a Word, by Reason of another Vowel or Diphthong at the Beginning of the next; as *Ill' ego*, &c.

**SYNAUCHE**, in Medicine, a kind of Squinancy, where, in the internal Muscles of the Fauces, or Pharynx, are attack'd. See **SQUINANCY**.

When the external Muscles of the same are seiz'd, it is call'd a *Parasynanche*. See **PARASYNANCHE**.

The Word is form'd from the Greek, *σύν*, with, and *ἀγγίζω*, to press, suffocate.

**SYNARTHROSIS**, in Anatomy, a kind of Articulation, or Jointure of the Bones of the Body. See **ARTICULATION**.

The *Synarthrosis* is when the Bones are bound so fast together, that they are render'd immoveable with regard to each other.

'Tis divided into three Kinds: The first, *Sutura*; which is sometimes in Form of two Combs or Saws, the Teeth whereof enter within one another; and sometimes in Form of Scales, one Edge lapping over the other. See **SUTURE**.

The second Kind is call'd *Harmonia*; which is when the Bones meet in an even Line, whether it be right or circular. See **HARMONIA**.

The third, call'd a *Gomphosis*, is when one Bone is fixed into another like a Nail or Peg into a Hole. See **GOMPHOSIS**.

To these three Kinds of *Synarthrosis*, some add several others, as *Symphysis*, *Syntenosis*, and *Synemesis*. See **SYMPHYSIS**, &c.

The Word is form'd from the Greek, *σύν*, with, and *ἄρθρον*, Articulus, Joint.

**SYNAULIA**, in the ancient Music, a Contest of Pipes, performing alternately, without Singing.

Mr. *Malcolm*, who doubts whether the Ancients had properly any such Thing as Instrumental Music, that is, Music composed wholly for Instruments, without any Singing; yet quotes the Practice of the *Synaulia* from *Athenens*. See **SYMPHONY**, **HARMONY**, **MUSIC**, &c.

**SYNCATEGOREGMA**, in Logic, is used for a Word, which signifying little or nothing of itself, yet when joined with others, adds Force thereto; as *all*, *more*, *certain*, &c.

**SYNCELLUS**, an ancient Officer in the Family of the Patriarchs, and other Prelates of the Eastern Church.

The *Syncellus* was an Ecclesiastic, who liv'd with the Patriarch of *Constantinople*, to be a Witness of his Conduct; whence it is, that the *Syncellus* was call'd the *Patriarch's Eye*, because his Business was to observe and watch.

The Word, in the corrupt Greek, signifies a Person who lies in the same Chamber with another.

The other Prelates had also their *Syncelli*, who were Clerks living in the House with them, and even lying in the same Chamber; to be Witnesses of the Purity of their Manners.

At length the Office degenerated into a mere Dignity; and there were made *Syncelli* of Churches. At last it became a Title, and was bestow'd by the Emperor on the Prelates themselves; whom they call'd *Pontifical Syncelli*, and *Syncelli Augustales*.

There were also *Syncelli* in the Western Church, particularly in *France*. The VIth Council of *Paris* speaks with a deal of Indignation of some Bishops who abolish'd the Office of *Syncelli*, and lay alone; and strictly enjoins them, that, for the future, to take away all Occasion of Scandal, they make the Office of *Syncelli* inseparable from that of Bishops.

**SYNCHONDROSIS**, in Anatomy, a kind of Articulation of the Bones of the Body; being a Species of *Symphysis*. See **SYMPHYSIS**.

The *Synchondrosis* signifies the Union of two Bones by Means of a Cartilage; in which Manner the Ribs are join'd to the Sternum, and the Parts of the Os Pubis to one another.

The Word is form'd from the Greek, *σύν*, with, and *χόνδρον*, Cartilage.

**SYNCHRONISM**, the being or happening of several Things in the same Time.

The Word is form'd from the Greek, *σύν* and *χρόνος*, Time.

The happening or performing of several Things in equal Times, as, the Vibrations of Pendulums, &c. is properly call'd



call'd *Isochronism*, tho' some Authors confound the two. See *ISOCHRONISM*.

**SYNCOPE**, in Medicine, a deep and sudden Swooning; wherein the Patient continues without any sensible Heat, Motion, Sense, or Respiration; is seiz'd with a cold Sweat over the whole Body, and all the Parts turn pale and cold, as if dead.

There are several Causes of *Syncope's*: 1<sup>o</sup>. Too great an Exhaustion of Spirits; as after long Diets, excessive Evacu- ations, violent Exercises, long Bathings, &c.

2<sup>o</sup>. The irregular Motion of the Spirits preventing their due Influx into the Parts; as sometimes happens in Fear, Wrath, and other violent Passions.

3<sup>o</sup>. Immoderate Hæmorrhagies.

4<sup>o</sup>. An ill Constitution of Blood; as in Cacochymies, or in Persons who have taken something that either dissolves or coagulates the Blood.

5<sup>o</sup>. Secret Diseases, as Abscesses, or Polypus's of the Heart, Worms, &c.

In very numerous croud'd Assemblies, People sometimes fall into *Synopes*, thro' the hot, thick, impure Air they breathe.

Some Women are liable to them upon the Smell of Musk, Civet, &c.

For *Synopes*, give volatile Spirits and Aromatics. *Heur- nius* recommends Treacle Water, and Cinnamon Water; and *Etmuller* the Volatile Salt of Vipers, Spirit of Sal Ammoniac, Oil of Ambar, and sometimes Bleeding.

The Word is form'd from the *Greek*, *σύν*, with, and *κόπην*, to cut.

**SYNCOPE**, in Grammar, is an Elision, or Retrenchment of one or more Letters, or Syllables from a Word.

As when we say *Virum* for *Virorum*; and *manet alta*, *mente*, *repositum*, for *repositum*.

**SYNCOPE**, in Music, signifies the Division of a Note; used when two or more Notes of one Part answer to a single Note of the other Part: as when a Semibreve of the one answers to two or three Crotchets of the other.

A Note is said to be *Syncope'd* when it has a Point added on the Side of it; which increases its Value by one half.

**SYNDESMUS**, in Anatomy, is sometimes us'd for a Ligament. See *LIGAMENT*.

In Grammar, it is used for a Conjunction. See *CON- JUNCTION*.

The Word in the original *Greek*, *συνδεσμός*, signifies a joining together.

**SYNDIC**, in Government and Commerce, an Officer in France, intrusted with the Affairs of a City, or other Com- munity; who calls Meetings, makes Representations and So- licitations to the Ministry, Magistracy, &c. according to the Exigency of the Case.

The *Syndic* is appointed to answer and account for the Conduct of the Body; makes and receives Proposals for the Advantage thereof; controuls and corrects the Failings of particular Persons of the Body, or, at least, procures their Correction at a publick Meeting.

In effect, the *Syndic* is, at the same Time, both the Agent and Censor of the Community.

Almost all the Companies in *Paris*, &c. as the University, Companies of Arts and Trades, &c. have their *Syndics*; and so have most of the Cities of *Provence* and *Languedoc*.

**SYNDIC** is also us'd for a Person appointed to solicit some common Affair, wherein he himself has a Share; as happens particularly among several Creditors of the same Debtor, who fails, or dies insolvent.

The chief Magistrate of *Geneva* is also call'd *Syndic*. There are four *Syndics* chose every Year; the eldest of which presides in the Council of Twenty-five, which is the chief Council of the City, wherein all Affairs are dispatch'd both Civil and Political: Thus the other three elect cannot all come at the Office till the four Years end; so that the *Syndicate* comes by Turn to sixteen Persons, all chosen out of the Council of Twenty-five.

The Word is form'd from the *Latin*, *Syndicus*, and that from the *Greek*, *σύνδικος*, which signifies the same Thing.

**SYNDROME**, from *σύνδρομον*, Concurfus, a Combina- tion of Diseases.

**SYNECDOCHE**, in Rhetoric, a Figure very frequent among Orators and Poets. See *FIGURE*.

There are three Kinds of *Synecdoches*: By the first, a Part is taken for the Whole; as the *Point* for the *Sword*; the *Roof* for the *House*; the *Sails* for the *Ship*, &c.

By the second, the Whole is used for a Part: And by the third, the Matter whereof the Thing is made, is used for the Thing itself; as *Steel* for *Sword*, *Silver* for *Money*, &c.

To which may be added another Kind, where the Species is used for the Genus, or the Genus for the Species.

The Word is *Greek*, form'd of *συνεπείχομαι*, I take toge- ther.

**SYNEDRIN**, or **SYNEDRION**. See *SANIEDRIN*.

**SYNERPHONESIS**, in Grammar, an Union, or Colli-

sion of Vowels, whereby two Syllables are pronounc'd as one: See *SYLLABLE*.

'Tis much the same Thing as *Synalepha*, or *Syneresis*: See *SYNALÉPHA*, &c.

**SYNEUROSIS**, in Anatomy, a kind of Articulation, or Jointure of the Bones. See *ARTICULATION*.

The *Syneurosis* is reckon'd a Branch of the *Symphisis*; and is, when the Bones are connected together by a Ligament: as is that of the *Os Femoris* to the *Os Ischium*; that of the *Patella* to the *Tibia*. See *SYMPHISIS*.

The Word is form'd from the *Greek*, *σύν*, with, and *νεῦρον*, Nerve.

**SYNOCHA**, and *Synochos*, in Medicine; are Terms bor- rowed from *συνέχω*, *sustineo*, I support, or hold up; or *συνέχω*, *continuo*, I continue. The Practice of Authors, with regard to these two Words, is whimsical enough: Lite- rally they both signify the same Thing; yet is the former used to signify an intermitting, and the latter a continu'd Fever. See *FEVER*.

**SYNOD**, in Astronomy, a Conjunction, or Concourse of two Stars, or Planets in the same optical Place of the Hea- vens. See *CONJUNCTION*.

**SYNOD**, in Church History, a Council, or Meeting, or Assem- bly of Ecclesiasticks, to consult Matters of Religion. See *COUNCIL*.

Of these there are four Kinds, viz. *General*, or *Oecume- nical*, where Bishops, &c. meet from all Nations. See *OECUMENICAL*.

*National*; where those of one Nation only come together.

*Provincial*; where they of one only Province meet. And *Diocesan*; where those of but one Diocese meet. See *CONVOCA- TION*.

The Word is form'd from the *Greek*, *συνόδος*, Assembly.

**SYNODALS**, or **SYNODIES**, were Pecuniary Rents (commonly of two Shillings) paid to the Bishop, at the Time of the Annual Synod, by every Parochial Priest.

For the Bishops used to hold their Diocesan Synods, and to visit all at once; from whence these *Synodals* are ac- counted amongst the Bishop's Procurations at this Time.

**SYNOCALES Testes**; the urban and rural Deans were at first so call'd, from their informing against, and attesting the Disorders of the Clergy and People in the Episcopal Synod. But when they sunk in their Authority, in their stead rose *Synodical* Witnesses, who were a Sort of impanel'd Jury, con- sisting of a Priest, and two or three Laymen for every Parish; though at length two for every Diocese were annually chosen; till at last the Office came to be devolv'd on the Church- Wardens. Some think our Quest-men, who are Assistants to the Church-Wardens, were call'd Sides-men, *quasi* Synod- men. See *SIDES-MEN*.

**SYNOCALE Instrumentum**; was the solemn Oath that these *Synodical* Witnesses took; as our Church-Wardens now are sworn to make their just Presentments.

**SYNODICAL**, something belonging to a *Synod*.

Thus *Synodical Letters*, are Circular Letters wrote by *Synods* to the absent Prelates and Churches; or even those general ones directed to all the Faithful, to inform them of what had pass'd in the *Synod*.

In the Collection of Councils are abundance of these *Sy- nodical Letters*.

**SYNODICAL Month**, is the Period or Interval of Time, wherein the Moon, departing from the Sun at a Synod or Conjunction, returns to him again. See *MOON*.

*Kepler* found the Quantity of the mean *Synodical Month*, 29 Days, 12 Hours, 44 Minutes, 3 Seconds, 11 Thirds. See *MONTH*.

This Period is also call'd a *Lunation*; in Regard, in the Course hereof, the Moon puts on all her Phases or Appear- ances. See *LUNATION*.

**SYNOD's-Men**, or *Testes Synodales*. See *SIDES-MEN*.

**SYNOESIA**, in Antiquity, a Feast celebrated at *Athens*; in Memory of *Theseus's* having united all the petty Com- munities of *Attica*, into one single Commonwealth; the Seat whereof was *Athens*; where all the Assemblies were to be held.

The Feast was dedicated to *Minerva*; and, according to the Scholiast of *Thucydides*, was held in the Month *Meta- girmion*.

**SYNONYMOUS**, an Epithet apply'd to a Word or Term that has the same Import, or Signification with ano- ther; call'd also *Synonyma*. Some severe Criticks condemn all Use of *Synonymous* Terms in the same Period; but this is to condemn all Antiquity. So far is the Use thereof from being vicious, that 'tis frequently necessary; as they contribute both to the Force and Clearness of the Ex- pression. If the first sketch out the Resemblance of the Thing it represents, the *Synonyma* that follows, is, as it were, a second Touch of the Pencil, and finishes the Image.

Indeed they must be used with a deal of Discretion and Oc- eonomy. The Style must be rais'd and brighten'd, not stuff'd or loaded with *Synonymous* Terms. They must be used as Ornaments, and to render the Expression the more forcible, without



without making a Shew of the Riches thereof, or heaping *Synonyma's* on *Synonyma's*.

But, tho' *Synonymous* Words be laudable, *Synonymous* Phrases are inexcusable: The Reason is, that two *Synonymous* Phrases keep the Mind at Rest, and let it flag and languish.

**SYNONYMY**, in Rhetoric, a Figure whereby *Synonyma's*, or *Synonymous* Terms, that is, various Words of the same Signification, are made Use of to amplify the Discourse.

As *abiit, evasit, effugit*, he went off, he escap'd, he run away.

The Word is form'd from the *Greek*, συν, with, and ορον, Name.

**SYNOVIA**, in Medicine, a Term used by some Authors for the nutritious Juice proper to each Part. See **NUTRITION**.

Others use it for the Gout, and other Diseases arising from a Vice in the nutritious Juice.

Others restrain it to the oozing out of the nutritious Juice thro' the wounded Parts.

*Van Helmont* defines it a kind of transparent Mucilage, like Seed, such as issues from the Legs of a Calf upon cutting off the Feet.

**SYNTAGMA**, a disposing, or placing of Things in an orderly Manner.

The Word is *Greek*, συνταγμα.

**SYNTAX**, in Grammar, the Construction or Connection of the Words of a Language into Sentences, or Phrases. See **WORD**, **SENTENCE**, **PHRASE**, &c.

Or, as *F. Bouffier* more accurately defines it, *Syntax* is the Manner of constructing one Word with another, with regard to the different Terminations thereof, prescrib'd by the Rules of Grammar. See **CONSTRUCTION** and **GRAMMAR**.

Some Authors, as *M. Vargelas*, &c. confound it with Style; but there is a real Difference. See **STYLE**.

The Office of *Syntax*, is to consider the natural Suitableness of Words with respect to one another; in order to make them agree in Gender, Number, Person, Mood, &c.

To offend in any of these Points, is call'd to offend against *Syntax*: and such kind of Offence, when gross, is call'd a *Solecism*; and when more slight, a *Barbarism*. See **SOLECISM** and **BARBARISM**.

The several Parts of Speech, are, with regard to Language, what Materials are with regard to a Building. How well prepar'd soever they may be, they will never make a House, unless they be plac'd conformably to the Rules of Architecture. 'Tis the *Syntax*, then, that properly gives the Form to the Language; and 'tis this makes the most essential Part of Grammar.

There are two Kinds of *Syntax*; the one of *Concord*, wherein the Words are to agree in Gender, Number, Case, and Person. See **CONCORD**.

The other, of *Regimen* or *Government*, wherein one Word governs another, and occasions some Variation therein. See **REGIMEN**.

The first, generally speaking, is the same in all Languages, as being the natural Series of what is in Use almost every where, the better to distinguish Discourse. Thus, the Distinction of two Numbers, Singular and Plural, has render'd it necessary to make the Substantive agree with the Adjective in Number; that is, to make the one singular or plural, when the other is so: For, as the Substantive is the Subject confusedly, tho' directly, mark'd by the Adjective; if the Substantive express several, there are several Subjects to be express'd in that Form by the Adjective: And by Consequence it ought to be in the Plural; as *Homines Docti*, learned Men: But there being no Termination in the Adjective in *English* to distinguish the Number, it is only imply'd. See **NUMBER**.

The Distinction of Masculine and Feminine Gender, obliges the Languages, which have distinct Terminations, to have a Concordance or Agreement between the Substantive and Adjective, in Gender as well as Number: And for the same Reason, the Verbs are to agree with the Nouns and Pronouns in Number and Person. If at any Time we meet with any thing that seems to contradict these Rules, 'tis by a Figure of Speech, *i. e.* by having some Word understood, or by considering the Thoughts rather than the Words themselves. See **GENDER**.

The *Syntax* of *Government*, on the contrary, is generally arbitrary; and, on that Account, differs in most Languages. One Language, for Instance, forms their Regimen by *Cases*: as the *Latin* and *Greek*: others use *Particles* in lieu thereof; as the *English*, *French*, *Italian*, *Spanish*, &c. See **CASE** and **PARTICLE**.

One or two general Rules, however, may be here noted, which are of Use in all Languages. 1<sup>o</sup>. That there is no Nominative Case, but has a Relation to some Verb, either express'd or understood; since we never speak merely to express what we conceive, but to express what we think

of what we conceive, which is done by the Verb. See **NOMINATIVE**.

2<sup>o</sup>. That there is no Verb but has its Nominative Case either express'd or understood; for the Office of the Verb being to affirm, there must be something to affirm of; which is the Subject or Nominative Case of the Verb; tho' before an Infinitive 'tis an Accusative; as *Scio Petrum esse doctum*. I know *Peter* to be learned. See **VERB**.

3<sup>o</sup>. That there is no Adjective but has a Relation to some Substantive; in regard the Adjective marks confusedly the Substantive, which is the Subject of the Form or Quality distinctly mark'd by the Adjective. See **ADJECTIVE**.

4<sup>o</sup>. That there never comes any Genitive Case but is govern'd by some other Noun. See **GENITIVE**.

5<sup>o</sup>. The Government of Verbs is frequently taken from various Sorts of References, included in the Cases, according to the Caprice of Custom or Usage; which yet does not change the specific Relation of each Case, but only shews that Custom has made Choice of this or that. Thus, the *Latins* say, *Juvare aliquem & opitulari alicui*; the *French*, *Servir quelqu'un & servir a quelque chose*; and in the *Spanish*, the Generality of Verbs govern indifferently a Dative and an Accusative Case.

**SYNTECTOE**, in Medicine, a kind of Colliquation of the Solids of the Body; such as frequently happens in Inflammations of the Bowels, Colliquative Fevers, &c. wherein a fatty Uliginous is voided with the Excrements by Stool. See **COLLIQUATION**.

**SYNTHESIS**, the *Composition* or putting of several Things together; as the making a compound Medicine of several simple Ingredients, &c.

The Word is form'd from the *Greek* συν, with, and θεσις, positio.

**SYNTHESIS**, in Logic, &c. a Branch of *Method*, opposite to *Analysis*. See **METHOD**.

In the *Synthesis*, or *Synthetic Method*, we pursue the Truth by Reasons drawn from Principles before establish'd or assum'd, and Propositions formerly proved; thus proceeding by a regular Chain, till we come to the Conclusion.

Such is the Method in *Euclid's* Elements, and most Demonstrations of the ancient Mathematicians; which proceed from Definitions and Axioms, to prove Propositions, &c. and from those Propositions proved, to prove others.

This Method we also call *Composition*, in opposition to *Analysis*, which we call *Resolution*. See **COMPOSITION**.

**SYNTHESIS**, in Grammar. See **SYLLEPSIS**.

**SYNTHESIS**, in Chirurgery, an Operation, whereby divided Parts are re-united; as in Wounds, Fractures, &c.

**SYNUSIASTS**, or **SYNOSIASTS**, a Sect of Hereticks, who maintain'd, that there was but one single Nature, and one single Substance in *Jesus Christ*.

The *Synusiasts* denied, that the Word had taken a Body in the Womb of the Virgin; but held, that a Part of the divine Word being detach'd from the rest, was there changed into Flesh and Blood. Thus they taught, that *Jesus Christ* was consubstantial to the Father, not only as to his Divinity, but even as to his Humanity and his Body.

The Word is form'd from the *Greek*, συν, with, and ουσία, Substance.

**SYPHILIS**, is a Term used for the *Lues Venerea*. See **VENEREAL**.

Some will have it from συν, cum, with, and φιλία, Amicitia, Love or Friendship; because it proceeds from the infectious Intercourses of Lovers in Cotton. Others will have it from the Name of a Shepherd so called, who was remarkably afflicted with it.

However, some Authors of Note use the Term; and *Fracastorius* a famous *Italian* Physician, gives it for the Title of a fine Poem, which he wrote upon that Distemper.

**SYPHON**. See **SIPHON**.

**SYRENS**, **SIRENES**, in Antiquity, *Mermaids*, or certain fabulous Beings, represented by *Ovid*, &c. as Sea-monsters, with Womens Faces and Fishes Tails; by others, deck'd with a Plumage of the gayest Colours.

They are supposed to have been the Three Daughters of the River *Achelous*; and call'd *Parthenope*, *Ligeia*, and *Leucosia*.

*Homer* only makes mention of Two *Syrens*; but others reckon Five. *Virgil* places them on Rocks, where Vessels are in danger of splitting. *Pliny* makes them inhabit the Promontory of *Minerva*, near the Island *Caprea*. Others fix them in *Sicily*, near *Cape Pelorus*. *Clauian* says, they inhabited harmonious Rocks; that they were charming Monsters; and that Sailors were wreck'd on their Rocks without Regret, and even expir'd in Raptures: *Dulce malum Pelago Sirena*.

This Description is, doubtless, founded on a literal Explication of the Fable, that they were Women who inhabited the Shores of *Sicily*, and who, by all the Allurements of Pleasure, stopp'd Passengers, and made them forget their Course. Some Explainers of the ancient Fables, will have the Number and the Names of the Three *Syrens*, to have been form'd on the Triple Pleasure of the Senses, Love



Love and Music ; which are the three most powerful Means of seducing Men ; and hence so many Exhortations to avoid the fatal *Syrens* Song.

Probably 'twas hence, that the *Greeks* fetch'd their Etymology of *Syren*, viz. from *σύνεα*, a Chain, as if there was no getting free of their Enticement.

Others, who don't look for so much Mystery in the Fable, maintain, that the *Syrens* were nothing but certain close Places in the Sea, where the Waves whirling furiously around, seiz'd and swallow'd up Vessels that approach'd them too near.

Lastly, others allow them to have been certain Shores and Promontories, where the Winds, by the various Reverberations and Echo's, cause a kind of Harmony, that surprizes and stops Passengers. This, probably, might be the Origin of the *Syrens* Song, and of the giving the Name of *Syrens* to these Rocks. The *Sculptors* and *Painters* usually follow *Ovid's* Description ; but on some Medals, we find them represented with the upper Parts of Women, and the lower, of Birds.

**SYRINGE**, an Instrument serving to imbibe or suck up a Quantity of any Fluid, and to expel the same with violence.

The *Syringe* is made of a hollow Cylinder, as ABCD (Tab. Hydrostaticks, Fig. 26.) furnished with a little Tube at bottom, EF. In this Cylinder, is an Embolus, K, made or at least cover'd with Leather, or other Matter, that easily takes Moisture ; and so filling the Cavity of the Cylinder, as that no Air or Water may pass between the one and the other.

If, then, the little Tube F be put in Water, and the Embolus drawn out ; the Water will ascend into the Cavity left by the Embolus : And upon thrusting back the Embolus, it will be violently expell'd again through the Tube EF : And still, the greater Impetus will the Water be expell'd withal, and to the greater Distance, as the Embolus is thrust down with the greater Force, or the greater Velocity.

This Ascent of the Water, the Ancients, who supposed a Plenum, attributed to Nature's Abhorrence of a Vacuum : But the Moderns, more reasonably, as well as more intelligibly, attribute it to the Pressure of the Atmosphere on the Surface of the Fluid. See AIR and VACUUM.

For, by drawing up the Embolus, the Air left in the Cavity of the Cylinder must be exceedingly rarified ; so that being no longer a Counter-balance to the Air incumbent on the Surface of the Fluid ; that prevails, and forces the Water through the little Tube, up into the Body of the *Syringe*.

In effect, a *Syringe* is only a simple Pump, and the Water ascends in it on the same Principle, as in the common sucking Pump ; whence it follows, that Water will not be rais'd in a *Syringe*, to a Height exceeding 31 Feet. See PUMP and SUCTION.

**SYRINGES** are of considerable Use in Medicine and Chirurgery. By them Clysters are administered : Injections of medicinal Waters, &c. made into Wounds, &c. They also serve to inject colour'd Liquors, melted Wax, &c. into the dried Vessels of the Parts of Animals, to shew the Disposition, Texture, Ramifications, &c. thereof. See INJECTION.

The Word is form'd from the *Latin*, *Syrinx*, Pipe.

**SYROP**, in Pharmacy, an agreeable Liquor, or Composition, of a moderately thick Consistence, extracted from Juices, Tinctures, or Waters of Fruits, Flowers, or Herbs boil'd, and season'd with Sugar, or Honey ; and taken either for Health or Pleasure.

There are various Kinds of *Syrops*, denominated from the various Fruits, &c. they are extracted from ; as *Syrop* of Violets, of Elder, of Wormwood, of Poppies, &c. *Emetic Syrops*, *Lienteric* and *Antinephritic Syrops*, &c. *Chologogue*, *Phlegmagogue Syrops*, &c.

The *Syrop* of Sapor is a *Syrop*, the Base whereof is Apples, with Juices of Bugles, Annis, Saffron, &c. thus call'd from *Sapor* King of Persia, who overcame the Emperor *Valerian*, suppos'd to be the Inventer thereof.

The Word, *Ménage* derives from the *Latin* *Syropus*, of the *Arab* *Schirab*, which signifies *Potion*. Others derive it from the *Greek*, *σύνεα*, I draw, and *σύνεα*, Juice. *Skinner* thinks the Word might come from the *Greek* *Συρία*, *Syria*, in regard these Kinds of Liquors were much in Use among the *Syrians*, a very delicate People ; tho' he thinks it should rather be deriv'd from the *Arabic* *Siruph*, which signifies the same Thing as *Syrop*, or from *Sark* or *Sirab*, a *Potion*, or Medicinal Drink.

*D. Herbelot* observes, that the Words *Syrop*, and *Sherbet*, or *Sorbet*, all come from the *Arabic*, *Scharab*, which signifies any Kind of Drink in the general. See *SHERBET*.

|                             |         |              |
|-----------------------------|---------|--------------|
| SYROP of <i>Alkemes</i>     | } See { | SCARLET.     |
| SYROP of <i>Diacodium</i>   |         | DIACODIUM.   |
| SYROP of <i>Capillaries</i> |         | CAPILLARIES. |
| SYROP of <i>Lemon</i>       |         | CITRON.      |
| SYROP of <i>Sugar</i>       |         | MOLOSSES.    |
| SYROP of <i>Violets</i>     |         | VIOLETS.     |

**SYSSARCOSIS**, in Anatomy, a particular Species of the Kind of Articulation call'd *Symphisis*. See *SYM- PHISIS*.

The *Syssarcosis* is a natural Union of two Bones, by Means of Flesh or Muscles : Such is that of the Os Hyoides, and Omoplate.

The Word is *Greek*, compounded of *σύν*, with, and *σάρξ*, Flesh.

**SYSTEM**, in the general, a certain Assemblage, or Chain of Principles and Conclusions : Or the Whole of any Doctrine, the several Parts whereof are bound together, and follow or depend on each other.

The Word is form'd of the *Greek*, *Σύστημα*, Composition.

In this Sense, we say, a *System* of *Philosophy* ; a *System* of *Motion* ; a *System* of *Fever*, &c. The Divines have fram'd abundance of *Systems* of *Grace* : The *Systems* of *intermediate Science*, and *Prædetermination*, are invented to explain that of *Grace*. See *GRACE*, &c.

Among Physicians, some follow the *System* of *Alkali* and *Acid* ; others that of the four Qualities, &c. Dr. *Woodward* accounts for most Things on his *System* of the Bile.

*Des Cartes's* *System* is held very destructive to Religion. See *CARTESIANISM*, *CAUSE*, &c.

*Gassendi* renew'd the ancient *System* of *Atoms* ; which was that of *Democritus*, followed by *Epicurus*, *Lucretius*, &c. See *CORPUSCULAR*.

Sir *Isaac Newton's* Doctrine of Colours ; M. *Leibniz's* *Protegea*, and some Discourses of M. *Jussieu*, to the Academy of Sciences, to shew that there are Bodies, whose Parts are not to be destroy'd by any natural Agents ; are very favourable to the *System* of *Gassendi*. See *ATOM*.

Experiments are the Materials of *Systems* : An Infinity are required to build one. See *EXPERIMENT*.

**SYSTEM**, in Astronomy, an Hypothesis or Supposition of a certain Order, and Arrangement of the several Parts of the Universe ; whereby Astronomers explain all the Phenomena, or Appearances of the heavenly Bodies, their Motions, Changes, &c. call'd, also, the *System* of the World, and the *Solar System*. See *WORLD*.

*System* and *Hypothesis*, have the same Signification ; unless, perhaps, *Hypothesis* be a more particular *System* ; and *System* a more general *Hypothesis*. See *HYPOTHESIS*.

Some late Authors, indeed, furnish a fresher Distinction : An Hypothesis, say they, is a mere Supposition, or Fiction ; founded rather on Imagination, than Reason : A *System* is only built on the firmest Ground, and rais'd by the severest Rules : 'Tis founded on Astronomical Observations, and Physical Causes, and confirm'd by Geometrical Demonstrations.

The most celebrated *Systems* of the World, are the *Ptolemaic*, and the *Copernican* ; to which may be added, the *Tychonic* : The Oeconomy of each whereof, is as follows ;

*Ptolemaic* **SYSTEM** places the Earth at Rest, in the Centre of the Universe ; and makes the Heavens revolve round the same from East to West, and carry all the heavenly Bodies, Stars and Planets along with them. See *PTOLOMAIC*.

For the Order, Distances, &c. of the several Bodies in this System, see *Plate Astronomy*, Fig. 43.

The principal Asserters of this *System*, are *Aristotle*, *Hipparchus*, *Ptolemy*, and many of the old Philosophers, followed by the whole World, for a great Number of Ages ; and still adhered to in some of our Universities, and other Places, where free Philosophizing is excluded : But the late Improvements have put it out of all Countenance ; and we don't even want Demonstration against it. See *EARTH*, &c.

*Copernican* **SYSTEM**, places the Sun at rest, nearly in the Centre of the System ; excepting for a vertiginous Motion about his own Axis. See *SUN*.

Around him, move from West to East, in several Orbits, first *Mercury*, then *Venus*, the *Earth*, *Mars*, *Jupiter* and *Saturn*. See *PLANET*.

About the Earth, in a peculiar Orbit, moves the Moon ; accompanying the Earth, in its whole Progress round the Sun. See *MOON*.

And after the same Manner, do four Satellites move round *Jupiter* ; and Five round *Saturn*. See *SATELLITES*.

Athwart the planetary Space do the Comets move round the Sun ; only in very excentrick Orbits, probably Parabola's, in one of whose Foci is the Sun. See *COMET*.

At an immense Distance beyond the Planetary and Cometary Spaces, are the fix'd Stars, which have all a proper Motion from West to East. See *STAR*.

The *Solar* or *Planetary System*, is usually confined to narrower Bounds : The Stars, by their immense Distance, and the little Relation they appear to bear to us, being reputed no Part thereof. 'Tis highly probable, that each Star, is, itself, a Sun ; and the Centre of a particular *System*, surrounded with a Company of Planets, &c. which, in different Periods, and at different Distances, perform their Courses round their respective Sun ; and are enlighten'd, warm'd and cherish'd, &c. thereby : Hence we have a very magnificent Idea of the World,



World, and the Immensity thereof: Hence arises a *System* of *Systems*. See **UNIVERSE**.

The *planetary System*, here described, is the most ancient in the World. 'Twas the first that we know of, introduced into Greece and Italy by *Pythagoras*; whence, for many Ages, it was call'd the *Pythagorean System*. It was followed by *Plato*, *Archimedes*, &c. but lost under the Reign of the *Peripatetic Philosophy*; till happily retrieved above 200 Years ago by *Nic. Copernicus*; whence its new Appellation, of *Copernican System*. See **COPERNICAN**.

For the *Oeconomy* of the *Copernican System*; see the Scheme thereof, Tab. Astronomy, Fig. 44.

*Tychonic System*, in most respects, coincides with the *Copernican*; except in this, that, supposing the Earth to be fix'd, its Orbit is omitted, and in lieu thereof, the Sun's Orbit is drawn round the Earth, and made to intersect the Orbit of *Mars*; that *Mars* may be nearer the Earth than the Sun. But as there is not any Reason, or Foundation in Nature, for such a manifest Shift; and as the Author was only led thereto, from a superstitious Persuasion, that to suppose the Sun at Rest, and the Earth to move, is contrary to Scripture; the true *System* is not much prejudiced hereby. See **EARTH**.

For the Order and *Oeconomy* of the *Tychonic System*; see the Scheme in Tab. Astronomy, Fig. 45.

**SYSTEM**, in Poetry, is a certain Hypothesis, from which the Poet is never to recede; e.g. Having made his Choice either in the Fables of the Heathens, or in Christianity; he must always distinguish between the Two; and never mix such different Ideas in the same Poem. Thus, after invoking *Apollo* and the Muses, he must bid adieu to the Language of Christianity, and not confound the two *Systems*. The Fabulous Stile, indeed, is the Gayer and more Figurative; but a Pagan God makes but a miserable Figure in a Christian Poem. The *System* of Poetry, *Bouhours* observes, is, itself, wholly Fabulous and Pagan.

**SYSTEM**, in Music, a compound Interval; or an Interval composed, or conceived to be composed, of several lesser; such is the Octave, &c. See **INTERVAL**.

The Word is borrowed from the Ancients, who call a simple Interval, *Diastem*, and a Compound one *System*.

As there is not any Interval in the Nature of Things; so we can conceive any given Interval, as composed of, or equal to the Sum of several others. This Division of Intervals, therefore, only relates to Practice; so that a *System* is properly an Interval, which is actually divided in Practice, and where, along with the Extremes, we conceive always some intermediate Terms. The Nature of a *System* will be very plain, by conceiving it an Interval, whose Terms are in Practice, taken either in immediate Succession; or the Sound is made to rise and fall, from the one to the other, by touching some intermediate Degrees; so that the whole is a *System* or Composition of all the Intervals, between one Extreme and the other. *Systems* of the same Magnitude, and consequently of the same Degree of Concord and Discord, may yet differ in respect of their Composition; as containing and being actually divided into more or fewer Intervals: And when they are equal in that respect, the Parts may differ in Magnitude. Lastly, when they consist of the same Parts, or lesser Intervals, they may differ as to the Order and Disposition thereof between the two Extremes.

There are several Distinctions of *Systems*; the most remarkable is, into *Concinnous* and *Inconcinnous*.

*Concinnous Systems*, are those consisting of such Parts, as are fit for Music, and those Parts, placed in such an Order between the Extremes, as that the Succession of Sounds, from one Extreme to the other, may have a good Effect. See **CONCINNOUS**.

*Inconcinnous Systems*, are those, where the simple Intervals are *Inconcinnous*, or ill disposed betwixt the Extremes.

A *System*, again, is either *Particular* or *Universal*. An *universal System*, is that which contains all the particular *Systems* belonging to Music; and makes what the Ancients call the *Diagramma*, and we the *Scale of Music*. See **SCALE**.

The Ancients also distinguish *Systems* into *Perfect* and *Imperfect*. The *Disdiapason*, or double Octave, was reckon'd the *perfect System*, because within its Extremes, are contained Examples of all the simple and original Concords, and in all the Variety of Order wherein their concinnous Part ought to be taken; which Variety constitutes what they call the *Species* or *Figures of Consonances*.

All the *Systems*, less than the *Disdiapason*, were reckon'd *Imperfect*.

The double Octave was also called the *Systema Maximum*, and *Immutatum*; because they took it to be the greatest Extent or Difference of Time that we could go in making Melody; though some added a Fifth to it, for the greatest *System*: But the *Diapason*, or simple Octave, was reckon'd the most perfect, with respect to the Agreement of its Extremes; so that how many Octaves soever were put into the greatest *System*, they were

all to be constituted or sub-divided the same Way as the First: So that when we know how the Octave is divided, we know the Nature of the *Diagramma* or *Scale*: The Varieties whereof, constituted the *Genera Melodie*, which were sub-divided into Species. See **GENERA** and **SPECIES**.

**SYSTOLE**, in Medicine, the Contraction of the Heart and Arteries of an Animal. See **HEART** and **ARTERY**.

The *Systole* of the Heart is well accounted for by Dr. *Lower*, who shews, that the Heart is a true Muscle, the Fibres whereof are acted on like those of other Muscle, the by Means of certain Branches of the eighth Pair of Nerves, inserted into it, which bring the Animal Spirits from the Brain hither. By a Flux of these Spirits from the Fibres of the Heart are inflated, and thus shorten'd; the Length of the Heart diminish'd, its Breadth or Thickness increas'd, the Capacity of the Ventricles clos'd, the tendinous Mouths of the Arteries dilated, those of the Veins shut up by means of their Valves, and the contain'd Juices forcibly express'd into the Orifices of the Arteries. See **MUSCLE**.

And this we call the *Συστολή*, or Contraction of the Heart; the opposite State to which is call'd the *Diastole*, or Dilatation of the Heart. See **DIASTOLE**.

Dr. *Drake* adds to Dr. *Lower's* Account, that the intercostal Muscles and Diaphragm, contribute to the *Systole*, by opening the Blood a Passage from the right Ventricle of the Heart, to the left thro' the Lungs, to which it could not otherwise pass: By which Means, the Opposition the Blood contain'd in that Ventricle must necessarily have made to its Construction, is taken off. See **CONTRACTION**.

*Lower* and *Drake* make the *Systole* the natural State or Action of the Heart, and the *Diastole* the violent one: *Boerhaave*, on the contrary, makes the *Systole* the violent, and the *Diastole* the natural State.

**SYXHINDEMEN**, a Term purely *Saxon*, literally signifying 600 Men, or Men worth 600 Shillings.

In the Time of our *Saxon* Ancestors, all Men were rank'd into three Classes; the *lowest*, the *middle*, and the *highest*; and were valu'd according to their Class: that if any Injury were done, Satisfaction might be made to the Value or Worth of the Man it was done to.

The *lowest* were call'd *Twykindemen*, q. d. valued at 200 Shillings; the *middle*, *Syxbindemen*, q. d. valued at 600 Shillings; and the *highest*, *Twelfkindemen*, i. e. valued at 1200 Shillings.

**SYZYG**, in Astronomy, a Term equally used for the Conjunction and Opposition of a Planet with the Sun. See **CONJUNCTION** and **OPPOSITION**.

The Word is form'd from the Greek, *σύνζυγία*, *Conjunctio*.

On the Phenomena and Circumstances of the *Syzygies*, a great Part of the Lunar Theory depends. See **MOON**.

For, 1°. It is shewn in the Physical Astronomy, that the Force which diminishes the Gravity of the Moon in the *Syzygies*, is double that which increases it in the Quadrature: So that in the *Syzygies* the Gravity of the Moon from the Action of the Sun is diminish'd by a Part, which is to the whole Gravity as 1 to 89,36; for in the Quadratures, the Addition of Gravity is to the whole Gravity as 1 to 178,73. See **QUADRATURE**.

2°. In the *Syzygies*, the disturbing Force is directly as the Distance of the Moon from the Earth, and inversely as the Cube of the Distance of the Earth from the Sun. And at the *Syzygies*, the Gravity of the Moon towards the Earth, receding from its Centre, is more diminish'd, than according to the inverse Ratio of the Square of the Distance from that Centre. Hence, in the Motion of the Moon from the *Syzygy* to the Quadrature, the Gravity of the Moon towards the Earth is continually increas'd, and the Moon is continually retarded in its Motion; and in the Motion from the Quadratures to the *Syzygies*, the Moon's Gravity is continually diminish'd, and its Motion in its Orbit accelerated. See **GRAVITY**.

3°. Further, in the *Syzygies* the Moon's Orbit or Circle round the Earth, is more convex than in the Quadratures; for which Reason the Moon is less distant from the Earth at the former than the latter. When the Moon is in the *Syzygies*, her Apides go backwards, or are retrograde. See **ORBIT**, **APIDES** and **RETROGRADATION**.

When the Moon is in the *Syzygies*, the Nodes move in Antecedentia fastest; then slower and slower, till they become at rest when the Moon is in the Quadratures. See **NODE**.

Lastly, When the Nodes are come to the *Syzygies*, the Inclination of the Plane of the Orbit is least of all. See **INCLINATION**.

Add, that these several Irregularities are not equal in each *Syzygy*, but all somewhat greater in the Conjunction than the Opposition. See **DISTURBING FORCE**, &c.



## T.

**T** A Consonant, and the nineteenth Letter in the Alphabet. See LETTER.

The *T*, in Sound, bears a near Resemblance to the *D*, for which Reason they are often put for each other; and *Quintilian* even rallies those who scrupled to write the one indifferently for the other; as *at* for *ad*, *set* for *sed*, *haut* for *haut*, &c.

The *T* is one of the five Consonants which the Abbot *de Dangeau* calls *Palatal*, and which are *D-T*, *G-K*, and *N*: The four first whereof have the same Relation to each other, as the Labials *B-P* and *V-F* have. *D*, for Instance, having the same Relation to *T*, that *B* has to *P*, or *V* to *F*. See PALATAL.

The *T*, the same Author observes, is a Letter of a strong Sound; so that a feeble one cannot be pronounc'd before it: Thus to form the Supine of *rego*, the *T* of *tum* changes the *b*, and strengthens it to the Sound of a *c*; so that we say *rectum*; as in the preterperfect Tense *rexi*, which we pronounce *rekst*.

*T* among the Ancients was used as a Numeral Letter, signifying 160; according to the Verse,

*T quoque centenos & Sexaginta tenebit.*

When a Dash was added a-top, thus, *T*, it signify'd 160,000. When the Tribunes approv'd of the Decrees of the Senate, they testify'd their Consent by subscribing a *T*.

*T*, in Music, is sometimes used to mark the Tenor. See TENOR.

*T* is also a Mark, or Brand, which by Statute 4 Hen. 7. every Person convicted of any Felony, save Murther, and admitted to the Benefit of the Clergy, shall be mark'd withal, on the Brawn of the left Thumb. See STIGMA.

*T*, or *Tau*, in Heraldry, is a kind of Cross potent, or truncated; found in all the Armories of the Commanders of the Order of St. *Anthony*. See CROSS.

The *T*, *Tau*, azure, is seen in Arms above 400 Years old: Its Origin, according to some Authors, is taken from the Apocalypse; where the same is a Mark that the Angel impresses on the Foreheads of the Elect. Others take it to represent a Crutch; a Symbol proper enough for this Order, which was sworn to Hospitality. But the Truth, *F. Menevrius* observes, is, that 'tis the Top of a Greek Cross.

The Bishops and Abbots of the Greek Church wear it still; and if it be found on the Habit of St. *Anthony*, 'tis only to shew that he was an Abbot.

TABACCO. See TOBACCO.

TABBY, in Commerce, a kind of coarse Taffaty, water'd. It is manufactured like the common Taffaty, excepting that 'tis stronger and thicker both in the Woof and Warp. See TAFFATY.

The Watering is given it by means of a Calender, the Rolls whereof are of Iron or Copper, variously engraven, which bearing unequally on the Stuff, render the Surface thereof unequal, so as to reflect the Rays of Light differently. See CALENDER.

TABBYING, the passing a Stuff under the Calender, to make a Representation of Waves thereon, as on a Tabby. See CALENDER.

'Tis usual to *tabby* Mohairs, Ribbons, &c.

*Tabbying* is perform'd without the Addition of any Water or Dye; and furnishes the modern Philosophers with a strong Proof, that Colours are only Appearances. See COLOUR.

TABELLA, or TABLETTE, in Pharmacy, a solid Electuary, or Composition of several Drugs, made up dry, and form'd into little Squares; more usually call'd *Lozenges*. See LOZENGE.

Powders, Confections, Fruits, Salts, &c. are dissolv'd, in Sugar, and made into *Tabule*; as those of the Juice of Liquorice for Colds, &c.

We have Cordial, Stomachic, Aperitive, Hepatic, &c. *Tablettes*. Jellies and Broths are sometimes reduc'd into *Tablettes*, to be carry'd in the Pocket. There are *Tablettes* of *Mannus Christi*, or Sugar of Roses pearled. *Tablette Magnanimitatis*, are those taken by feeble old Men, when match'd with young Wives, to assist and bear them out in the Affair of Generation.

TABELLION, TABELLIO, TABULARIUS, in the Roman Law, a kind of Officer often confounded with *Notary*, *Notarius*.

Yet did the two differ in this; that the Notaries only drew up, and kept the Minutes of Acts and Instruments on Paper, and in Notes, or Short-hand; whereas the *Tabelliones* deliver'd them engross'd on Parchment, in full executory Form. The same put the Seals to Contracts, and render'd them authentic.

The Domestic Clerks of these *Tabelliones*, who, at first, wrote under them, in Process of Time came to be call'd Notaries. See NOTARY.

*Pasquier* observes, that the *Tabelliones* at Rome were publick Slaves, appointed for the keeping of Contracts made between private Persons. According to *Loyseau*, a Contract wrote by a Notary, was not perfect or obligatory, till the *Tabellio* had wrote it fair; after which the Parties subscrib'd it, i. e. they wrote at Bottom that they approv'd the Contents; for Signatures were not then in Use. See SIGNATURE.

— *Quoniam Tabellionum usus in regno Anglie non habetur, propter quod magis ad Sigilla Authentica credi est necesse, ut eorum Copia facilius habeatur, statuimus ut Sigillum habeant non solum Archiepiscopi, & episcopi sed eorum Officiales.* See SEAL.

TABERNACLE, among the *Jews*, the Place where in the Ark of the Covenant was lodg'd; both while they were in Tents, during their Journey from *Aegypt*; and when fix'd in *Jerusalem*, and the Ark kept in the Temple.

*Philo* describes the *Jewish Tabernacle* thus: It was a Building compos'd of 48 Cedar Boards, lined with massive Gold; under each whereof was a Silver Stand, or Foot, and at the Top a Capital of Gold: It was encompass'd with ten Pieces of rich Tapistry, of different Colours, Purple, Scarlet, Hyacinth, &c. The Length of the *Tabernacle* was 30 Cubits; its Breadth 10, *Josephus* says 12. See ARK.

The Ark was placed in a secret Oratory, in the Middle of this *Tabernacle*; and was gilt both within-side and without: the Top whereof, being a Kind of Lid, was call'd *Propitiatory*, because it appeas'd the Wrath of God.

It was encompass'd with several Veils, stretch'd over it, with Hooks, and Buckles of Gold.

The Word is form'd from the *Latin Tabernaculum*, a Tent: Feast of TABERNACLES. See SCENOPEGIA.

TABERNACLE has also been used of late for a sort of temporary Church, or Chapel, contriv'd to serve the immediate Purposes of the Parishioners, &c. while their proper Church is Repairing, Rebuilding, or the like.

TABES, in Medicine, a general Name for Consumptions of all Kinds. See CONSUMPTION, PHTHISIS, ATROPHY, &c.

TABES *Dorsalis*, is a kind, or rather a Degree of Consumption: proceeding sometimes from an excessive Application to Venery.

The Patient has neither a Fever, nor Loss of Appetite; but a Sensation, as if there were a Number of Pismires running from the Head, down the Spinal Marrow; and when he evacuates, either by Urine, or Stool, there flows a liquid Matter like Semen.

After any violent Exercise his Head is heavy; and his Ears tingle; and at length he dies of a *Lipyria*, i. e. a Fever; where the external Parts are cold, and the internal burn at the same time. See LIPYRIA.

TABLATURE, in Anatomy, a Division or parting of the Scull into two Tables. See CRANIUM.

TABLATURE, in Music, in the general, is, when, to express the Sounds, or Notes of a Composition, we use Letters of the Alphabet, or Cyphers, or any other Characters, not usual in the modern Music. See SCORE.

But in its stricter Sense, *Tablature* is the Manner of Writing a Piece for a Lute, Theorba, Guitarre, Bass-Viol, or the like; which is done by Writing on several parallel Lines (each whereof represents a String of the Instrument) certain Letters of the Alphabet; whereof, A marks that the String is to be struck open, i. e. without putting the Finger of the left Hand on the Head; B shews, that one of the Fingers is to be put on the first Stop; C on the second; D on the third, &c. See WRITING of MUSIC.

The *Tablature* of the Lute is wrote in Letters of the Alphabet; that of the Harpsichord in the common Notes. See LUTE, HARPSICHORD, &c.

TABLE, *Tabula*, a Moveable, usually made of Wood, or Stone, supported on Pillars, or the like; for the commodious Reception of Things placed thereon.

*Moses* made a Table in the *Tabernacle* for the laying of the Shew-Bread upon; describ'd by *Philo Judens* as two Cubits long, one broad, and one and half high. Among Christians, the Table, or Lord's Table, signifies the Sacrament of the Eucharist. See EUCHARIST.

Round TABLE: Knights of the Round Table, a military Order, suppos'd to have been instituted by *Arthur* first King of the *Britons*, in the Year 516. See KNIGHT.

They are said to have been 24 in Number; all pick'd from among the bravest of the Nation.

The Round Table, which gave them their Title, was an Invention of that Prince, to avoid Disputes about the upper and lower End; and to take away all Emulation as to Places.



*Lefty* assures us, he has seen the *Table* at *Winchester*; At least, says he, if we may believe the Keepers thereof, who still shew it with a deal of Solemnity. He adds, that the Names of a great Number of Knights wrote around it, seem to confirm the Truth of the Tradition.

*Larrey*, and several other Authors, make no Scruple to relate this Fable, as Matter of History: but that 'tis Fable is certain; *F. Papenbroch* having shewn, that there was no such Thing as an Order of Knights before the VIth Century.

*Cambden* observes, that the *Table* at *Winchester* is of a Structure much more modern than the VIth Century. 'Tis added, that *Arthur* himself is no more than a fabulous Prince.

In effect, the *Round Table* does not appear to have been any military Order, but rather a kind of Just, or military Exercise, between two Persons, arm'd with Lances. Several Authors say, that *Arthur*, Duke of *Bretagne*, renew'd it. See *Matthew Paris*, the Abbot *Justiniani*, and *F. Helyot*.

*Paulus Jovius* says, 'twas under the Empire of *Frederic Barberossa*, that the Knights of the *Round Table* first began to be talk'd of: Others attribute their Origin to the Factions of the *Guelphs* and *Gibellins*. *K. Edward* built a House call'd the *Round Table*, the Court whereof was 200 Foot in Diameter.

**TABLE**, in *Architecture*, a smooth simple Member, or Ornament, of various Forms; but most usually in that of a long Square.

A *Projecting Table*, is such a one as stands out from the Naked of the Wall, Pedestal, or other Matter it adorns.

----- *Raked Table*, is that which is hollow'd in the Die of a Pedestal, or elsewhere, and which is usually encompass'd with a Moulding. ----- *Razed Table*, an Embossment in a Frontispiece, for the putting an Inscription or other Ornament in Sculpture. This is what *M. Perrault* understands by *Abacus* in *Vitruvius*. ----- *Crown'd Table*, that cover'd with a Cornice, and wherein is cut a Basso Relievo, or a Piece of black Marble incrustated for an Inscription. ----- *Rusticated Table*, that which is pick'd, and whose Surface seems rough, as in Grotto's, &c.

**PLAIN TABLE**, a Surveying Instrument. See **PLAIN TABLE**.

**TABLE**, in *Perspective*, is a plain Surface, suppos'd to be transparent, and perpendicular to the Horizon. See **PERSPECTIVE**.

'Tis always imagin'd to be plac'd at a certain Distance between the Eye and Objects, for the Objects to be represented thereon by means of visual Rays passing from every Point thereof, thro' the Table to the Eye.

Whence it is also call'd *Perspective Plane*. See **PLANE**.

**TABLE**, in *Anatomy*. The Cranium is said to be compos'd of two *Tables*, or Laminæ, i. e. 'tis double; as if it consisted of two Bones, laid one over another. See **CRAanium**.

**TABLE** of *Pythagoras*, call'd also *Multiplication TABLE*, is a Square, form'd of an hundred lesser Squares, or Cells, containing the Products of the several Digits, or simple Numbers, multiply'd by each other. See **MULTIPLICATION**.

As 'tis absolutely necessary, those who learn Arithmetic have the several Multiplications contain'd in this Table, off by Heart; we have thought fit to subjoin it here: with an Example, to shew the Manner of using it.

**TABLE** of *Pythagoras*, or *Multiplication TABLE*.

|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
| 2  | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18 | 20  |
| 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27 | 30  |
| 4  | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40  |
| 5  | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50  |
| 6  | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60  |
| 7  | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70  |
| 8  | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80  |
| 9  | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90  |
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

**Example**: Suppose it were requir'd to know the Product of 6 multiply'd by 8: Look for 6 in the first horizontal Column, beginning with 1; then look for 8 in the first perpendicular Column, beginning likewise with 1; the Square or Cell wherein the perpendicular Column from 6, meets with the horizontal one from 8, contains the Product requir'd, viz. 48.

*Laws of the Twelve TABLES*, were the first Set of Laws

of the *Romans*; thus call'd, either by reason the *Romans* then wrote with a Style on thin, wooden *Tables*, cover'd with Wax; or rather, because they were engraven on *Tables* or Plates of Copper, to be expos'd in the most noted Part of the public Forum. See **LAW**.

After the Expulsion of the Kings, as the *Romans* were then without any fix'd, certain System of Law; at least had none ample enough to take in the various Cases that might fall between particular Persons; 'twas resolv'd to adopt the best and wisest Laws of the *Greeks*.

One *Hermodorus* was first appointed to Translate them; and the *Decemviri* afterwards compiled and reduced them into Ten *Tables*. After a world of Care and Application, they were at length enacted and confirm'd by the Senate, and an Assembly of the People, in the Year of *Rome* 303.

The following Year, they found some Things wanting therein, which they supplied from the Laws of the former Kings of *Rome*, and from certain Customs, which long Use had authoriz'd; these being engraven on Two other *Tables*, made the *Law of the Twelve Tables*, so famous in the *Roman Jurisprudence*; the Source and Foundation of the Civil or *Roman Law*. See **CIVIL LAW**.

The Laws of the Twelve *Tables*, were also call'd *Decemviral Laws*, from the Officers entrusted with the Composing them. See **DECEMVIR**.

'Tis great Pity, this System of Law should have perished thro' the Injuries of Time: We have, now, nothing of it, but a few Fragments dispersed in divers Authors. *J. Gorbefris* has collected them together, and we have them in *Rosinus* and some other Authors. The *Latin* is very old and barbarous, and remarkably obscure.

*New TABLES*, *Tabulae Novæ*, an Edict occasionally publish'd in the *Roman Commonwealth*, for the abolishing all Kinds of Debts, and annulling all Obligations.

It was thus call'd, in regard all antecedent Acts being destroy'd, there were nothing but new ones to take Place.

**TABLE**, among *Jewellers*. A *Table Diamond*, or other precious Stone, is that whose upper Surface is quite flat; and only the Sides cut in Angles: In which Sense, a Diamond cut *Table-wise* is used in opposition to a Diamond cut *Facetwise*. See **DIAMOND**.

**TABLE** of *Glass*. See **CASE** of *Glass*.

**TABLE** is also an Index or Repertory, put at the Beginning or End of a Book, to direct the Reader to any Passages he may have occasion for. See **INDEX**.

Thus we say, *Table of Matters*: *Table of Authors* quoted; *Table of Chapters*, &c. *Tables*, of themselves, sometimes, make large Volumes; as that of *Daviz* on the Civil and Canon Laws. *Tables of the Bible*, are call'd *Concordances*. See **CONCORDANCE**.

**TABLE** *Rents*. See **BORD** *Lands*.

**TABLE** of *Houses*, among *Astrologers*, are certain *Tables* ready drawn up for the Assistance of Practitioners in that Art, for the erecting or drawing of Figures or Schemes.

**TABLES**, in *Mathematicks*, are certain Systems of Numbers, calculated to be ready at Hand for the expediting *Astronomical*, *Geometrical*, &c. Operations.

*Astronomical TABLES*, are Computations of the Motions, Places and other Phenomena of the Planets, both Primary and Secondary. See **PLANET**, **SATELLITE** and **MOON**.

The oldest *Astronomical Tables*, are the *Ptolemaic*, found in *Ptolomy's Almagest*; but these no longer agree with the Heavens. See **ALMAGEST**.

In 1252, *Alphonfus XI*. King of *Castile*, undertook the Correcting them, chiefly by the Assistance of *Isaac Hebraeus*, a Jew; and spent 400000 Crowns therein. Thus arose the *Alphonfine Tables*, to which that Prince himself prefix'd a Preface.

But the Deficiency of these was soon perceiv'd by *Purbachius* and *Regiomontanus*; upon which *Regiomontanus*, and after him *Waltherus* and *Wannerus*, applied themselves to celestial Observation, for the further amending them; but Death prevented any Progress therein.

*Copernicus*, in his Books of the Celestial Revolutions, instead of the *Alphonfine Tables*, gives others of his own Calculation from the later, and partly from his own, Observations.

From *Copernicus's* Observations, and Theories, *Erasmus Reinholdus* afterwards compiled the *Prutenic Tables*, which have been printed several Times, and in several Places.

*Tycho de Brahe*, even in his Youth, became sensible of the Deficiency of the *Prutenic Tables*; which was what determin'd him to apply himself with so much Vigour to Celestial Observation. Yet all he did thereby, was to adjust the Motions of the Sun and Moon; though *Longomontanus*, from the same, to the Theories of the several Planets publish'd in his *Astronomia Danica*, added *Tables* of their Motions; now call'd the *Danish Tables*; and *Kepler*, likewise, from the same, in 1627, publish'd the *Rudolphine Tables*, which are now much esteem'd.



These were afterwards, *Anno 1650*, turned into another form, by *Maria Cunitia*, whose *Astronomical Tables*, comprehending the Effect of *Kepler's* Physical Hypothesis, are exceedingly easy, and satisfy all the Phenomena, without exceeding of Calculation, or any Mention of Logarithm; so that the *Rudolphin Calculus* is here greatly improved.

*Mercator* made a like Attempt in his *Astronomical Institution*, publish'd in 1676; and the like did *J. Bap. Morini*, whose Abridgment of the *Rudolphin Tables* was prefix'd to a Latin Version of *Street's Astronomia Carolina*, publish'd in 1705.

*Lensbergius*, indeed, endeavour'd to discredit the *Rudolphin Tables*, and fram'd perpetual Tables, as he calls them, of the heavenly Motions; but his Attempt was never much regarded by the Astronomers; and our Country-man *Horrox*, gave an abundant Check to his Arrogance, in his Defence of the *Keplerian Astronomy*.

Nor was the Authority of the *Rudolphin Tables* impaired by the *Philolaic Tables* of *Bullialdus*, the *Britannic Tables* of *Vincent Wing*, calculated on *Bullialdus's* Hypothesis; or the *Britannic Tables* of *Newton*; or the *French* ones of the *Count de Pagan*, or the *Caroline Tables* of *Street*, all calculated on *Dr. Ward's* Hypothesis; or the *Novalmagistic Tables* of *Ricciolus*.

Among these, however, the *Philolaic* and *Caroline Tables* are esteem'd the best; inasmuch that *Mr. Whiston*, by the Advice of *Mr. Flamsteed* (a Person of undoubted Authority in such Cases) thought fit to subjoin the *Caroline Tables* to his *Astronomical Lectures*.

The latest Tables, are the *Lindovician*, publish'd in 1702, by *M. de la Hire*, wholly from his own Observations, and without the Assistance of any Hypothesis; which before the Invention of the Micrometer, Telescope, and the Pendulum Clock, was held impossible.

Another Set of Tables, the *Astronomical World* is in daily Expectation of from *Dr. Halley*, Astronomer Royal, &c. 'Twere needless to prepossess the Public in their Favour: The Author's Name, and the present State of Astronomy, will leave no Doubt on any Body but that they will have the last Degree of Justness and Precision; and such as Posterity itself shall scarce be able to amend. They have been in the Press several Years, and what it is retards their Publication, is not known, unless it be the rendering them more ample.

For TABLES of the fix'd Stars; see CATALOGUE.

TABLES of Sines, Tangents, Secants, &c. used in Trigonometrical Operations, are usually call'd *Canons*. See CANON. See also SINE, TANGENT, &c.

TABLES of Logarithms, Rhumbs, &c. used in Geometry, Navigation, &c. See LOGARITHM, RHUMB, SAILING, &c.

*Loxotromick* TABLES, Tables of Traverses, used in Navigation for the easy and ready Solution of Problems, and Cases therein. See TRAVERSE.

TABLE, in Heraldry. Coats, or Escutcheons, containing nothing but the mere Colour of the Field, and not charged with any Bearing, Figure, Moveable, &c. are call'd *Tables d'Attente*: *Tables of Expectation*, or *Tabulae rase*.

TABLET, in Pharmacy, &c. See TABLET.

TABLING of Fines, is the making a Table for every County, where his Majesty's Writs run; containing the Contents of every Fine pass'd each Term. See FINE.

'Tis to be done by the Chirographer of the Fines of the Common Pleas, who every Day of the next Term, after engrossing any such Fine, fixes each of the said Tables in some open Place of the said Court, during its Sitting; and likewise delivers to the Sheriff of each County, a Content of the said Tables, made for that respective County, the Term before the Assizes, to be affix'd in some Place in the open Court, while the Justices sit, &c.

TABOR, *Tabourin*, a small Drum. See DRUM.

Privilege of the *Tabouret*, in France, is a Privilege some great Ladies enjoy, to sit or have a Stool in the Queen's Presence.

TACAMACHA or TACAMAHACA, a kind of resinous Gum, distilling from the Trunk of a very large Tree, growing in *New Spain*; but, in greatest Abundance, in the Island of *Madagascar*. See GUM.

'Tis not unlike our Poplar Tree, only bigger and taller, its Leaves small and green, its Fruit red, of the Size of our Walnuts, exceedingly Resinous, and containing a Stone like our Peaches.

The Wood of the Tree makes good Timber for Ships, and the Gum it yields, serves for their Caulking; though its chief Use is in Medicine.

There are three Kinds of *Tacamacha*; the *Sublime*, call'd also *Tacamacha* in the Pod; *Tacamacha* in the Mass; and *Tacamacha* in Tears.

The First, is the natural Resin, as it falls of itself, without any Incision made in the Tree: The Good is dry, reddish, transparent, of a bitter Taste and a strong Smell, resembling that of Lavender. The Islanders gather it in little Gourds cut in two, and cover'd with a Palm Leaf.

The *Tacamachas* in Tears, and in the Mass, are those which flow from the Tree through Incisions: They must be chosen dry and clear, and their Smell resembling that of the first Kind.

Gum *Tacamacha* is found good for digesting and resolving of Tumors, and assuaging Pains. Burnt upon Coals, 'tis reckon'd good for Hysteric Fits in Women, and likewise applied to the Belly in form of a Plaister. Some apply it to the Temples in the same Manner, and to the Nape of the Neck for Pains in the Head, Defluxions of Rheum upon the Throat, and Inflammations of the Eyes, as also in the Tooth-ach. It is of so subtle and penetrating a Nature, that it is greatly used in external Applications, to suppurate and disperse Tumours; and is accounted effectual, even in those which are Scrophulous.

It is likewise used externally in Arthritical Pains, with Success; in effect, the *Indians* use it for all Kinds of Pains. *Schroder* affirms, That he has seen intolerable Pains in the Leg removed by it.

TACHEOGRAPHY, or TACHYGRAPHY, the Art of fast or short writing.

There have been various Kinds of *Tacheography* invented: Among the *Romans*, there were certain Notes used, each whereof signified a Word. See NOTE.

The Rabbins have a kind of *Tacheography* form'd by Abbreviations, which make a kind of Technical Words; wherein each Consonant stands for a whole Word, as רמבם *Ramban*, which expresses *Rabbi Moses, Son of Maiemon*; ראשי, *Raschi*, *Ra'li*, *Schelomoh*, *Jarrki*. See ABBREVIATION.

In France, &c. the only *Tacheography* used is the retrenching of Letters, or even whole Syllables of Words; as in *fin* for *secundum*, *aut* for *autem*, *d* for *sed*, *o* for *non*, *Participaon* for *Participation*, &c.

The first Printers imitated these Abbreviations: At present they are almost laid aside, except among Scriveners, &c.

In England we have great Variety of Methods of *Tachygraphy*, or Short-hand; more by far, and those too, much better, easier, speedier, and more commodious, than are known in any other Part of the World. Witness *Wilkins's*, *Shelton's*, *Wallis's*, *Webster's* and *Heslop's* Short-hands.

The Word is form'd from the *Greek*, ταχὺς, swift, and γραφειν, writing.

TACK about, in Navigation, a Term used at Sea when a Ship's Head is brought about, so as to lie the contrary Way.

To effect this, they first make her *stay*; which done, she is said to be *paid*. They then let *rise* and *hale*, i. e. let the Lee Tack rise, and hale aft the Sheets, and so trim all the Sails by a Wind as they were before.

TACKLE, or TACKLING, in Navigation, includes all the Ropes or Cordage of a Ship, with their Furniture, whereby the Sails are manag'd. See CORDAGE and ROPE.

TACKLES in a Ship, are small Ropes running in three Parts, having at one End a Pendant, with a Block fasten'd to them, or else a Lannier; and at the other End, a Block and an Hook to hang Goods upon, that are to be heav'd into the Ship, or out of it.

There are several Kinds of these *Tackles*, as the *Boat Tackles*, serving to hoist the Boat, &c. in and out: The *Tackles* belonging to the Masts, serving as Shrouds to keep the Masts from straining: The *Gunner's Tackles*, with which the Ordnance are hoisted in and out: For the *Winding Tackle*, and the *Burnett*. See BURNETT.

TACTICKS, the Art of disposing Forces in Form of Battle, and of performing the military Motions and Evolutions. See EVOLUTION.

The *Greeks* were very skillful in this Part of the military Art, having publick Professors of it, call'd *Tactici*, who taught and instructed their Youth therein. *Aelian* hath a particular Book on this Subject; and there is a great deal of it in *Arrian*, in his History of *Alex. M.* and in *Mauritius*, and *Ico Imperator*.

*Vossius de scient. Mathemat.* mentions 24 ancient Authors on the Subject of *Tacticks*.

The Word is form'd from the *Greek* ταξις, Order.

TACTICKS is also used for the Art of inventing and making the Machines of the Ancients for throwing of Darts, Arrows, Stones, Fire-balls, &c. by means of Slings, Bows, and Counter-poises. See MACHINE.

*Vegorius*, *Hera.* &c. have wrote on these Machines; and we have them describ'd and design'd by *Lipfius*.

TACTIL, or TANGIBLE, in the Schools, something that may fall under the Sense of Feeling. See FEELING.

'Tho' Atoms be corporeal, yet are they not either *tactil* or visible, by reason of their Smallness. See CORPUSCLE.

The principal *tactil* Qualities are Heat, Cold, Dryness, Hardness, and Humidity. See each under its proper Article, HEAT, COLD, HARDNESS.

TACTION in the Schools } See { FEELING.  
TACTION in Geometry } { TOUCHING.



**TÆNIA**, or **TENIA**, in Architecture (from the Greek *ταβία*, a Bandelet, or little Band, call'd by the *Latins* *Vitta*, *Fascia*, *Zona*, and *Corona*;) a Member of the Doric Architrave, resembling a square Fillet, or Ruler, and serving in lieu of a Cymatium. See **DORIC** and **CYMATIUM**.

*Barbaro* calls it *Listel*; but *Palladio* uses the old Name *Tenia*. See **LISTEL**.

*Philander* says, there are two Kinds, viz. the above-mention'd, which he calls the *lower*; and another, which serves as a Capital to the Triglyphs. *Leon Baptist. Alberti* calls the *Tenia*, *Regule* and *Fasciole*; and *Daviler*, *Bandelettes*. See each under its proper Article.

**TAFFAREL**, in a Ship, the uppermost Part, Frame, or Rail, abaft, near the Poop. See **SHIP**.

**TAFFETY**, or **TAFFETAS**, in Commerce, a kind of fine, smooth Silk Stuff; having, usually, a remarkable Lustre. See **SILK** and **STUFF**.

There are *Taffeties* of all Colours; and striped with all Kinds of Stuffs, as Gold, Silver, Silk, &c. others checquer'd, others flower'd, others in the *Chinese* Point, others the *Hungarian*; with various others, to which the Mode, or the Caprice of the Workmen give such whimsical Names, that it would be as difficult, as 'tis useless, to rehearse them: besides that, they seldom hold beyond the Year wherein they first rose.

The old Names of *Taffeties*, and which still subsist, are *Taffeties* of *Lyons*, of *Spain*, of *England*, of *Florence*, of *Avignon*, &c.

The chief Consumption of *Taffeties* is in Summer Dresses for Women, in Linings, Scarves, Coifs, Window-Curtains, &c.

There are three Things which contribute chiefly to the Perfection of *Taffeties*, viz. the Silk, the Water, and the Fire.

The Silk is not only to be of the finest Kind, but it must be work'd a long time, and very much, e'er it be used. The Watering, beside that it is only to be given very lightly, seems only intended to give that fine Lustre, by a peculiar Property not found in all Waters. Lastly, the Fire, which is pass'd under it to dry the Water, has its particular Manner of Application, whereon the Perfection of the Stuff depends very much.

*Octavio May*, of *Lyons*, is held the first Author of the Manufacture of glossy *Taffeties*; and Tradition tells us the Occasion of it. *Octavio*, it seems, going backwards in the World, and not able to retrieve himself by the Manufacture of *Taffeties*, such as were then made, was one Day musing on his Misfortunes, and, in musing, chanced to chew a few Hairs of Silk which he had in his Mouth. His Reverie being over the Silk he spit out, seem'd to shine, and on that Account engag'd his Attention. He was soon led to reflect on the Reason; and, after a good deal of Thought, concluded, that the Lustre of that Silk must come, 1°. From his having press'd it between his Teeth. 2°. From his having wet it with his Saliva, which had something glutinous in it: And 3°. From its having been heated by the natural Warmth of his Mouth. All this he executed upon the next *Taffeties* he made; and immediately acquir'd immense Riches to himself; and to the City of *Lyons* the Reputation it still maintains, of giving the Gloss to *Taffeties* better than any other City in the World.

'Twill not, we conceive, be less useful than curious, to give here the Description of the Engine contriv'd by *Octavio* to give the Gloss to *Taffety*; to add the Manner of applying it, and the Composition of the Water used therein.

The Machine is much like a Silk Loom, except that instead of Iron-Points, here are used a kind of crooked Needles, to prevent the *Taffety* from slipping: At the two Extremities, are two Beams; on one of which is roll'd the *Taffety* to take the Gloss; and on the other, the same *Taffety* as fast as it has receiv'd it. The first Beam is kept firm by a Weight of about 200 Pounds; and the other turn'd by means of a little Lever passing thro' Mortises at each End. The more the *Taffety* is stretch'd, the greater Lustre it takes; Care, however, is to be used it be not over-stretch'd.

Besides this Instrument for keeping the Stuff stretch'd, there is another to give it the Fire: This is a kind of Carriage, in Form of a long Square, and the Breadth of the *Taffeties*. It moves on Trundles, and carries a Charcoal Fire under the *Taffety*, at the Distance of about half a Foot.

The two Machines prepar'd, and the *Taffety* mounted, the Lustre is given it by rubbing it gently with a Pelatoon, or Handful of Lists of fine Cloth, as it rolls from one Beam to t'other; the Fire, at the same Time, being carry'd underneath it to dry it. As soon as the Piece has its Lustre, 'tis put on new Beams to be stretch'd, a Day or two; and the oftner this last Preparation is repeated, the more it increases the Lustre.

For black *Taffeties*, the Lustre is given with double Beer, and Orange or Lemon Juice; but this last is the least proper,

as being apt to whiten. The Proportion of the two Liquors, is a Gallon of Orange Juice to a Pint of Beer, to be boil'd together to the Consistence of a Broth. For colour'd *Taffeties*, they use Gourd-Water, distill'd in an Alembic.

**TAFTOLOGY**. See **TAUTOLOGY**.

**TAIL**, that Part of an Animal which terminates its Body behind.

The *Tail* is different both in Figure and Use in the various Species: In Land Animals, it serves to rid them of Flies, and is usually cover'd with Hair, and strengthen'd with Bones: In Fishes it is Cartilaginous, and serves them as a Helm to steer their Course withal in swimming. See **SWIMMING**.

In Birds it is cover'd with Feathers, and greatly assists in all Ascents, and Descents in the Air; as also to render their Flight steady, by keeping the Body upright in that subtle and yielding Medium, by its readily turning and answering to every Vacillation of the Body. See **FLYING**.

In Anatomy, **TAIL** is used for that Tendon of a Muscle, which is fix'd to the moveable Part: In Opposition to which, the Tendon fix'd to the immoveable Part is call'd the *Head*. See **MUSCLE**.

Among Botanists, the *Pedicle* is sometimes call'd the *Tail*. The Way to preserve Fruits in Winter, is to seal up their *Tails* or *Pedicles* with Wax. See **PEDICLE**.

**Dove-TAIL**, or **Swallows-TAIL**, among Carpenters, is one of the strongest Manners of Jointing; wherein, a Piece of Wood that grows larger towards the End, is inserted into another Piece; so that it cannot stir out, by Reason the Hole in the one, is narrower than the lower End of the other. As in the Figure of a *Dove's Tail*. See *QUEUE d'Aronde*, and *SWALLOWS-Tail*.

**Peacock's-TAIL**, a Term apply'd to all circular Compartments, which go enlarging from the Centre to the Circumference; imitating, in some measure, the Feathers of a Peacock's *Tail*.

**Dragon's TAIL**, *Cauda Draconis*, in Astronomy, the descending Node of a Planet; thus characterized ☾. See **NODE**.

The Astrologers take Care to put it in all their Horoscopes. See **HOROSCOPE**.

**Horse's TAIL**, among the *Tartars* and *Chinese*, is the Ensign or Flag under which they make War. See **ENSIGN**.

Among the *Turks*, it is the Standard bore before the Grand Vizier, the Bashaws, and Sangiacs; in order to which, it is fitted on the End of a half Pike, with a Gold Button, and is call'd *Torg*.

There are Viziers of one, others of two, others of three *Horses Tails*. The *Horse's Tail* plac'd on a General's Tent, is a Signal of Battel.

For the Original of this Custom, it is related, that in a certain Battel, the Standard being taken by the Enemy, the General of the Army, or, as others say, a private Horseman, cut off the *Tail* of his Horse, and fastening it to the End of a half Pike, encourag'd the Troops, and gain'd the Victory. In Memory of which noble Action, the Grand Signor appointed that Standard to be bore for the future, as a Symbol of Honour. *Ricaut*.

**TAIL of a Comet**. When a Comet darts his Rays forwards, or towards that Part of the Heavens, whither his proper Motion seems to be carrying him; those Rays are call'd its *Beard*: On the contrary, when its Rays are shot behind, towards that Part from whence it appears to move, the Rays are call'd the *Tail of the Comet*.

The various Phenomena whereof, with their Physical Causes, see under the Article **COMET**.

**TAIL of the Trenches**, in the military Art, is the first Work which the Besiegers make at the Opening of the Trenches, as the Head of the Attack is carry'd on toward the Place. See **TRENCH**.

**TAIL**, or **TAILE**, *Seclura*, in Common Law, signifies two several Things; both grounded upon one Reason.

First, It is used for that Kind of Fee, which is opposite to the Fee-simple; such Fee being so minced, or parcel'd as it were, that it is not in the Owners free Power to dispose of; but is by the first Giver cut, *taille*, and divided from all others, and tied to the Issue of the Donee. See **FEF**.

This Limitation of *Taille* is either General or Special.

**Taille General**, is that whereby Lands and Tenements are limited to a Man, and to the Heirs of his Body begotten: It is call'd *General*, because how many Wives soever the Tenant holding by this Title shall have, one after another, a lawful Marriage, his Issue by them all have a Possibility to inherit one after another.

**Taille Special**, is when Lands or Tenements are limited to a Man and his Wife, and the Heirs of their two Bodies begotten: It is call'd *Special*, because if the Man buy his Wife before Issue, and take another; the Issue by his second Wife cannot inherit the Land, &c.

Also, if the Land be given to a Man and his Wife, and their Son *R*, for ever; this is *Taille Special*.



*Taile, after Possibility of Issue, extinct*; is where Land being given to a Man, and his Wife, and the Heirs of their two Bodies; the one over-lives the other, without Issue between them begotten; upon which the Survivor shall hold the Land for Term of his own Life in quality of Tenant in *Taile, after the Possibility of Issue, extinct*; and notwithstanding that he does Waste, he shall never be impeached of it: And when he dies, he in the Reversion shall not have a Writ of Entry, in *Consimili Casu*, but may enter, and his Entry is lawful.

Secondly, *Tail*, or *Taile* is used for what we vulgarly call a *Talley, une Taille de Bois*, for a Cloven Piece of Wood to nick up an Account on. See TALLY.

TAILLOIR, in Architecture, a Term some of our Writers, after the *French*, use for *Abacus*. See ABACUS.

TAINT, in Law, signifies, either, substantively, a Conviction; or, adjectively, a Person convicted of Felony, Treason, &c. See ATTAINT.

TAKE and Leave, in the Sea Language. The Sailors say, a Ship can take and leave upon her when she will; when she sails so well that she can come up with another, or out-sail her at Pleasure.

TALBOT, a Sort of Dog, frequent in Coat Armour, noted for its quick Scent, finding out the Tracks, Lodgings, and Forms of Beasts, and pursuing them with open Mouth, and continual Cry, with such Eagerness, that if not taken off by the Huntsmen, they are often spoil'd.

TALC, or TALK, in Natural History, a shining, squamous, fissile Stone, easily separable into thin transparent Scales, or Leaves. See STONE.

Anciently, *Talc* was only found in *Spain*; but since, Mines thereof have been found in *Cyprus, Cappadocia*, and since that, in *Arabia* and *Africa*; at present, they dig it in the *Alps* and *Apennines*, several Mountains in *Germany*, and even in *England*, particularly in *Northamptonshire*.

We usually distinguish two Kinds of *Talc*, viz. *White Talc of Venice*, and *Red of Muscovy*.

That from *Venice* is the most esteem'd: 'Tis brought in large shining greenish Stones; but becomes white, and exceedingly transparent when wrought. It appears fatty to the Touch, tho' there is scarce any Stone dryer; yet in Spight of its Dryness, it pulverizes with Difficulty; nor is it easily calcined.

Its chief Use is as a Screen or Cover for Paintings in Miniature and Craions; to which Purpose thin Slices thereof are used: 'Tis sometimes also used for a Fucus; in order to which, by Reason of the Difficulty of pulverizing it, &c. they content themselves to rasp it with the Skin of a Sea-Dog, and to pass the Rasping thro' a Sieve.

*Pliny*, in his Natural History, lib. 36. cap. 22. observes, that the *Romans* built Temples, and Places therewith, and paved the Coliseum of the same.

The *Talc* brought from *Muscovy* is reddish when in the Stone; but it seldom comes to us otherwise than in Leaves, which are very hard, smooth, polish'd, and exceedingly transparent: 'Tis found in Quarries in *Muscovy* and *Persia*, and is used to make Lanthorns, to cover Paintings, &c.

The Word is *German*, where it signifies the same Thing.

Some Chymists, and other Empiricks, have held, that *Talc* might be used for many more important Purposes; and pretend to draw from it that precious Oil, so much boasted of by the Ancients, particularly the *Arabs*, call'd *Oil of Talc*, which is suppos'd a wonderful Cosmectick, and Preserver of the Complexion: But the Truth is, the Word *Talc*, among them, signify'd no more than an equal Disposition of the Humours, which kept the Body in good Temperament, and perfect Health. Now, as nothing contributes more than Health to the preserving of Beauty, this has given Occasion to the Chymists to search this *Oil of Talc*, which is to maintain the Body in this Disposition, and to engage the Ladies to be at the Expence of the Search.

Some have also pretended, that yellow or ruddy *Talc* contain'd the Seeds of Gold; and that a Menstruum might be drawn from it, to transmute Metals into Gold and Silver, to fix Mercury, &c.; but this is mere Charletanery.

TALENT, *Talentum*, a Weight and a Coin, both very famous among the Antients; but very different in different Countries. See COIN and WEIGHT.

The Value of the *Talent* is very hard to assign in *English* Money; as being used among all the People throughout the East; and its Value, and the Manner of Computation, different among each. A Difficulty abundantly shewn by *Zachary*, in his learned Treatise de *Essé*.

There were various Kinds of *Talents*, both with regard to Weight, and to Species; the Value of these last still increasing, as the Metal whereof it consisted was higher: tho' the *Talent* Weights did all contain the same Number of Pounds and Drachms.

For as the *French* have a Pound *Paris*, and a Pound *Tournes*, each whereof contains alike 20 Sols; yet the one compar'd together, the *Paris* Pound contains 25 Sols of the *Tournes* Pound, the *Paris* Sol exceeding that of *Tours* by

one quarter; so all *Talent* Weights were equally 60 Minæ, and the Mina 100 Drachmæ; but the Drachma of one Place exceeding that of another, there hence arose a Difference in the *Talents*. See MINA.

The *Attic* Drachma, for Instance, was 6 *Attic* Oboli, and that of *Aegina* 10 of the same Oboli; whence the *Aeginian* *Talent*, computed on the Foot of the *Attic* Weight, was 100 Minæ; whereas reckon'd on the Foot of its own Drachma, it was no more than 60. See DRACHMA.

The common *Attic* *Talent* then (the *Talent* Weight we mean) contain'd 60 *Attic* Minæ, or 62 and half *Attic* Pounds, or 6000 *Attic* Drachmæ; equal, according to Dr. *Arbutnot's* Reduction, to 56 Pounds 11 Ounces *English* Troy Weight. Some Authors, as *Priscian*, mention another *Attic* *Talent* of 100 Minæ; but this is to be understood of ancient Minæ, as they stood before *Solon*; each only worth 75 Drachmæ.

The *Syrian* *Talent* contained 15 *Attic* Minæ; That of *Alexandria* 96 *Attic* Minæ, or 91 Lib. Troy. The *Babylonian*, *Persian* and *Antiochic* *Talents* were the same with the *Aegyptian*.

Among the *Romans*, there were two Kinds of *Talents*, the little and the great *Talent*: The little was the common *Talent*; and whenever they say, simply, *Talent*, they are to be understood of this: The little *Talent* was 60 Minæ or *Roman* Pounds, the Mina or Pound estimated at 100 Drachmæ or Denarii: It was also estimated at 24 great Sesterces, which amounted to 60 Pounds.

The great *Talent* exceeded the less by one third Part. *Bulens* computes, that the little *Talent* of Silver was worth 75 Pounds Sterling; and the greater 99 l. 6 s. 8 d. Sterling. The greater *Talent* of Silver he makes worth 75 Pounds Sterling; the greater of Gold worth 1125 Lib. Sterling.

*Talent*, as a Species, or Money, among the *Hebrews*, was a Gold Coin, the same with the Shekel of Gold, call'd also *Stater*, and weigh'd only 4 Drachms. See SHEKEL.

In the Scripture it is also call'd *Solidus*, Shilling. The *Hebrews* reckon'd by these *Talents* as we do by Pounds, &c. Thus a Million of Gold, or Million of *Talents* of Gold, among them, was a Million of Shekels, or Nummi; the Nummus of Gold being the same Weight with the Shekel, viz. 4 Drachms.

TALES, in Law, a Supply or Addition of Men impannell'd on a Jury of Inquest, and not appearing, or at their Appearance, challeng'd by either Party as not indifferent. See JURY.

In such Case, the Judge, upon Motion, grants a Supply to be made by the Sheriff, of one, or more *Tales*, such there present, equal in Reputation to those impannell'd.

This Act of supplying is call'd a *Tales de Circumstantibus*.

He that has had one such *Tales*, either upon Default, or Challenge, may not have another containing so many as the former: For the first *Tales* must be less than the principal Pannel, except in a Cause of Appeal; and so every *Tales* less than other, till the Number be made up of such as are unexceptionable.

These, call'd *Tales*, or *Talesmen*, and corruptly *Tallymen*, are, on some Occasions, call'd *Meliores*.

TALIO, *Lex Talionis*, or *Pœna Talionis*, a Retribution, or Punishment, whereby an Evil is return'd perfectly like that committed against us, by another; which is what we usually express by the Words *Eye for Eye, Tooth for Tooth*.

The *Pœna Talionis* was enjoin'd by the Law of *Moses*, just as 'tis in the Gospel: It was esteem'd a natural Piece of Justice; and yet the *Romans* set it aside; inasmuch as such a Parity or Equality of Punishment could not always be observed. For this Reason, the Prætor allowed such as had suffer'd any Injury, to make an Estimate thereof in Money, that Justice might be done him that way; only reserving to himself the Power of moderating the same.

And this was what was constantly practis'd, and thus the *Pœna Talionis*, became quite disus'd.

The *Lex Talionis*, is never observed in the Civil Justice, but with regard to false Witnesses.

TALISMANS, certain Figures engraven, or cut, under several superstitious Observations of the Characters and Dispositions of the Heavens; to which some Astrologers, hermetical Philosophers, and other Adepts, attribute marvellous Virtues, particularly that of calling down Cœlestial Influences.

The Author of a Book, intitled, *Talismans Justifiez*, says a *Talisman* is the Seal, Figure, Character or Image of a heavenly Sign, Constellation or Planet, engraven on a Sympathetic Stone, or on a Metal corresponding to the Star, &c. in order to receive its Influences. The *Talismans* of the *Samaritians*, so famous of old, were Pieces of Iron, form'd into certain Images, and set in Rings, &c.

They were held Preservatives against all Kinds of Evils; there were other *Talismans* taken from Vegetables, and others from Minerals. In the general, we use to distinguish three Kinds



**Kinds of Talismans.** The *Astronomical*, which are known by the Signs, or Constellations of the Heavens engraven thereon, with other Figures, and some unintelligible Characters. The *Magical*, which bear very extraordinary Figures, with superstitious Words and Names of Angels unheard of. And the *Mixt*, which consist of Signs and barbarous Words, but have no superstitious ones, or Names of Angels.

Some Rabbins have maintained, that the Brazen Serpent, rais'd by *Moses* in the *Wilderness*, for the Destruction of the Serpents that annoy'd the *Israelites*, was a *Talisman*.

All the miraculous Things wrought by *Apollonius Tyaneus*, are attributed to the Virtue and Influence of *Talismans*: That Wizard is even said to have been the Inventor of *Talismans*.

Some Authors take several *Runic* Medals, at least Medals whose Inscriptions are in *Runic* Characters, for *Talismans*; it being notorious, that the Northern Nations, in their heathen State, were much devoted thereto.

M. *Keder*, however, has shewn, that the Medals here spoke of are quite otherguise Things than *Talismans*. See **RUNIC**.

The Word is pure *Arabic*; though *Menage* thinks it may come from the Greek *ταξομα*, Conservation: *Borel* says, 'tis *Persian*, and signifies, literally an engraven Constellation. *Du Cange* derives it a *Talamacis literis*, which are mysterious Characters, or Cyphers used by Sorcerers; thus call'd from *Talamasca*, a Fantom, or Illusion.

**TALKING.** See **SPEAKING**, **SPEECH** and **VOICE**.

**TALLAGE**, a certain Rate, according to which, Barons and Knights were anciently tax'd by the King towards the Expences of the State; and inferior Tenants by their Lords, on certain Occasions. See **TAX**.

This latter *Tallage* of the customary Tenants, was sometimes fix'd, and certain; and sometimes at the Pleasure of the Lord; and was also sometimes compounded for. See **SUBSIDY**.

*Tallages* were anciently call'd *Cuttings*; which Name is still retain'd in *Ireland*, tho' in a different Signification.

*Tallage*, says Sir *Ed. Coke*, is a general Name including all Taxes. See **TAX**.

**TALLY**, or **TAIL**, (from the *French*, *tailler*, to cut,) a Piece of Wood, whereon retail Traders use to score or mark, by Notches or Incisions, the several Quantities of Goods they deliver out on Credit; to save the Trouble of Writing down so many little Articles in Books. See **TAIL**.

Each Score consists of two Pieces of Wood, or rather of a single Piece cleft length-wise, the Parts whereof falling in with one another, the Things deliver'd are scored on both at the same time; the Seller keeping one, and the Buyer the other. *Tallies* are taken as Evidences in Courts of Justice, as much as Books.

The ancient Way of keeping all Accounts was by *Tallies*; the Debtor still keeping one Part, and the Creditor the other.

There are three Kinds of *Tallies*, mention'd in our Statutes, and long used in the *Exchequer*.

The first, *TALLIES of Loans*; one Part whereof is kept in the *Exchequer*, and the other Part given to particular Persons, in lieu of an Obligation for the Monies they have lent to the Government on Acts of Parliament. See **LOAN**.

This last Part is call'd the *Stock*, and the former the *Counter-stock*, or *Counter-tail*.

The *Tallies* are number'd, bear the Person's Name, and the Sum lent: Thus we say, The *Tallies*, N<sup>o</sup> have been paid, discharg'd: *Tallies* are risen, fallen 4, 5, &c.

The second are, *TALLIES, or TAILERS of Debt*; which are a kind of Acquittances for Debts paid the King.

*E. gr.* the University of *Cambridge* pays yearly 10 Lib. for such Things as are by Charter granted them in Fee-Farm. He that pays this, receives a *Tail*, or *Tally* for his Discharge, with which, or a Note of it, he repairs to the Clerk of the Pipe; and there for the *Tally* receives a full Discharge on Parchment.

The other are, *TALLIES of Reward*, or Allowance, made to Sheriffs, for such Matters as (to their Charge) they have perform'd in their Office, or such Money as is by Course cast on them in their Accounts, but which they cannot levy.

**TALLOW**, a Sort of Fat of Animals, melted down, and clarify'd. See **FAT**.

There are scarce any Animals, but a Sort of *Tallow* may be prepar'd from: but those which yield the most, and whereof the most Use is made, are the Horse, Bullock, Sheep, Hog, Goat, Deer, Bear, and Viper. Some of which *Tallows*, or Fats, are only used in Medicine. See **ARUNGA**.

Most of the rest are used in the making of Soap; the dressing of Leather; but chiefly in the making of Candles. See **SOAP**, **CURRYING**, &c.

For Candles, the best Composition is half Sheeps *Tallow*, and half Cows or Bulls *Tallow*, without any Mixture of other kinds of Fat, which only serve to turn the Candles yellow, make them run, and spoil the Clearness of their Light. See **CANDLER**.

**TALLOW-tree**, in *China*, is a Tree growing in great Plenty in that Country, which produces a Substance like our *Tallow*, and serving for the same Purpose.

'Tis about the Height of a Cherry-Tree; its Leaves in Form of a Heart, of a deep, shining, red Colour, and its Bark very smooth. Its Fruit is inclos'd in a kind of Pod, or Cover, like a Chestnut, and consists of three round white Grains, of the Size and Form of a small Nut, each having its peculiar Capsula, and within, a little Stone.

This Stone is encompass'd with a white Pulp, which has all the Properties of true *Tallow*, both as to Consistence, Colour, and even Smell: And accordingly the *Chinese* make their Candles of it; which would, doubtless, be as good as those in *Europe*, if they knew how to purify their *Vegetable Tallow*, as well as we do our *Animal Tallow*.

All the Preparation they give it, is to mix a little Oil with it, to make it softer, and more pliant. 'Tis true their Candles made of it yield a thicker Smoak, and a dimmer Light, than ours; but those Defects are owing, in great measure, to the Wicks, which are not of Cotton, but only a little Rod, or Switch of dry light Wood, cover'd with the Pith of a Rush, wound round it; which being very porous, serves to filtrate the insensible Parts of the *Tallow*, attracted by the burning Stick, which by this Means is kept alive.

**TALMUD**, or, rather, **THALMUD**, a Book, wherein the *Jews* have collected what relates to the Explication of their Law.

The *Thalmud*, is the Body of the *Hebrew* Law, and of Expositions of the Duties impos'd on that People, either in Scripture, or by Tradition, or by Authority of their Doctors, or by Custom, or even by Superstition; and, to speak more plainly still, the Course of Cases of Conscience, or of moral Theology, wherein the Duties are explain'd, and the Doubts clear'd, not by Reasoning, but generally by Authority, by the Custom of the Nation, and by the Decisions of the most approv'd of ancient Doctors.

This *Thalmud* consists of two general Parts; the one call'd the *Mischna*, the other the *Gemara*; which second Part is also frequently call'd absolutely the *Thalmud*, the general Name of the whole Work. See **MISCHNA** and **GEMARA**.

The *Jews* divide their Law into *Written*, which is that contain'd in the Books of *Moses*; and *Unwritten*, which is that convey'd by Tradition. This latter is, in Effect, no other than a Gloss or Interpretation of the former, given by the ancient Rabbins. See **TRADITION** and **RABBIN**.

The *Thalmud*, then, contains the Traditions of the *Jews*, their Polity, their Doctrine, and their Ceremonies; which they observe as religiously as the Law of God itself: They would never put it in Writing till they were compell'd to it by the Destruction of *Jerusalem*, and till they saw themselves dispers'd throughout the World.

They had two famous Schools; the one at *Babylon*, and the other at *Jerusalem*: In these they made two several Collections of those Traditions, the first at *Jerusalem*, the latter at *Babylon*; but both call'd *Thalmud*, and both exceedingly reverenc'd, especially the *Babylonian*, tho' full of Extravagances.

It was compiled by the *Jews* of *Mesopotamia*, about 500 Years after *Christ*.

The *Thalmud* of *Jerusalem* is the least esteem'd. It was compiled by the *Jews* of that City 300 Years after *Christ*.

The *Babylonian Thalmud* consists of two Parts, the one the Text, the other the Comment: The Comment, call'd the *Gemara*, contains the Decisions of the *Jewish* Doctors, and their Expositions of the Text. This we find stuffed with Dreams and Chimera's; a deal of Ignorance, and a world of impertinent Disputations: The Style very coarse. On the contrary, the Text, call'd the *Mischna*, is wrote in a pretty pure Style, and the Reasonings generally much more solid.

The *Jews* pretend it was compos'd by *Rabbi Juda*, surnam'd the *Saint*; and that God reveal'd to him the Doctrine and the chief Mysteries thereof. But this is only to be understood of the *Mischna*, not of the *Gemara*, the Compilation whereof was not begun till the VIth Century after the Destruction of the second Temple.

*Rabbi Juda* is said to have compos'd the *Mischna* under the Empire of *Antoninus*, in the II<sup>d</sup> Century; but they don't all agree about this Antiquity, some carrying it back much further.

'Tis the *Thalmud* of *Babylon* that is usually read, and that is the most consult'd among the *Jews*; so that when they say simply the *Thalmud*, they always mean this; never quoting the other without the Addition of *Jerusalem*.

*Rabbi Moses, Son of Maïmon*, has made an Abridgement of the *Thalmud*, which *Scaliger* prefers to the *Thalmud* itself; as being purg'd of many of the Fables wherewith the other is full. 'Tis a System of the Laws and Customs of the *Jews*, both their Civil and their Canon Law, and the best of their Traditions.



About the Year 1236, a Jew of *Rochel*, well vers'd in the Hebrew, becoming Christian, made a Journey to Pope Gregory IX. and discover'd to him a Number of Errors in the *Talmud*: These the Pope sends, in 39 Articles, to the Archbishops of *France*, with a Letter, appointing them to seize the Books of the Jews, and to burn all such as should contain those Errors; in Consequence of which Order, above 20 Cart Loads of Hebrew Books were burnt. He wrote to the same Effect to the Kings of *England*, *France*, *Aragon*, *Castile*, &c.

His Successor, *Innocent IV.* giving Commission to his Legate *Eudes de Chateauroux*, to examine the *Talmud*, and other Jewish Books more carefully, and to tolerate such Errors as were not contrary to the Christian Religion; the Legate wrote to the Pope, that to tolerate them was to approve them; and the 15th of May, 1248, he condemn'd them Juridically.

**TALON**, in Architecture, a kind of Astragal; or Moulding consisting of a square Fillet, crowning a Cymatium; frequently found to terminate Ornaments of Joiners-Work, as those of Doors, &c. See **CYMATIUM**.

The *Talon* is a Moulding concave at the Bottom, and convex a-top; having an Effect just opposite to the *Doucine*. See **DOUCINE**.

When the concave Part is a-top, 'tis call'd an *Inverted Talon*. The *Talon* is usually call'd by our English Workmen *Ogee*, or *O. G.*; and by Authors an *upright* or *inverted Cymatium*. See **OGEE**.

The Word is *French*, and literally signifies *Heel*.

**TALPA**, in Medicine and Chirurgery, a Tumour thus call'd, of the Oedematous Kind. See **OEDEMATOUS**.

The *Talpa*, and Nates, chiefly arise about the Head, as the Consequence of some Venereal Disorder. See **NATES**.

The *Talpe* elevate the Skin from the Pericranium; and generally denote a Foulness in the subjacent Bone of the Skull.

**TALUS**, in Anatomy, a Bone, call'd also *Astragalus*. See **ASTRAGAL**.

In its upper Part, it has a Convex Head, which is articulated with the two Fociles of the Leg, by *Ginglymus*, it being divided by a little Sinus, which receives the small Protuberance in the Middle of the Sinus of the Tibia: Without this Articulation, we must always, in going, have trod on the Heel with our Fore-foot, and our Toes with the Hind-foot. See **TIBIA**.

The fore Part of the *Talus*, which is also convex, is receiv'd into the Sinus of the Os Naviculare. See **NAVICULARE**.

Below, towards the hind Part of its under Side, it has a pretty large Sinus, which receives the upper and hind Part of the Os Calcis: And towards the fore Part of the same Side it has a Protuberance, which is receiv'd into the upper and fore Part of the same Bone. Betwixt this Sinus, and this Protuberance, there is a Cavity, which answers to another in the Os Calcis; in which is contain'd an oily and mucous Sort of Substance, for moistening the Ligaments, and facilitating the obscure Motion of these Bones when we go.

**TALUS**, or **TALUT**, in Architecture, the sensible Inclination or Slope of a Work; as of the Outside of a Wall, when its Thickness is diminish'd by Degrees, as it rises in Height, to make it the firmer. See **WALL**.

**TALUS**, in Fortification: The *Talus* of a *Bastion*, or *Rampart*, is the Slope allow'd to such a Work, whether it be of Earth or Stone, the better to support its Weight. See **RAMPART**.

The *Talus exterior* of a Work, is its Steepness on the Side of the Field, which is always made as little as possible, to prevent the Enemies Scalado; unless the Earth be bad, and then it is absolutely necessary to allow a considerable *Talus* for its Parapet.

The *Talus interior* of a Work, is its Steepness on the Inside towards the Place.

**TAMARINS**, or **TAMARINDS**, a kind of Medicinal Fruit, of a tart, agreeable Taste; brought from the *East Indies*, and call'd by some *Indian Dates*, and by others the *Indian Acacia*.

The Tree which yields it, call'd by the *Indians Tamarinds*, and the *Portuguese Tamarindos*, is not unlike our Ash, or Walnut Tree; its Leaves resemble those of Female Fern; its Flowers are join'd eight or ten together, like those of the Orange Tree.

Its Fruit is in a Pod, the Length of a Finger, and the Thickness of the Thumb; cover'd at first with a green Rind, which afterwards becomes brown, and contains a blackish Pulp, among which are found Seeds resembling Lupines: 'Tis this Pulp alone that is brought to us, and us'd in Medicines.

The *Tamarinds* must be chosen big, of a Jet Colour, a brisk Taste, not too dry, and such as have not been laid in the Cellar, nor falsify'd with Molasses of Sugar and Vinegar. They are found laxative, cooling, and good to quench

Thirst. In burning Fevers they are prescrib'd to moisten and cool the Mouth.

**TAMBAC**, or **TAMBAQUA**, a Mixture of Gold and Copper, which the People of *Siam* hold more beautiful, and set a greater Value on, than Gold itself.

Some Travellers speak of it as a Metal found in its peculiar Mines; but upon what Authority we don't know. The Abbe de Choisy, in his *Journal of Siam*, doubts whether it mayn't be the Electrum, Amber, of *Solomon*.

The Embassadors of *Siam* brought several Works in *Tambac* to *Paris*, in the Reign of *Louis XIV.*; which were not found so beautiful as was expected.

**TAMBOUR**, in Architecture, a Term apply'd to the *Corinthian* and Composite Capitals; as bearing some Resemblance to a Drum; which the *French* call *Tambour*. See **CAPITAL**.

Some chuse to call it the *Vase*, and others the *Campana*, Bell. See **VASE**, &c.

**TAMBOUR** is also us'd for a little Box of Timber-Work, cover'd with a Ceiling, within-side the Porch of certain Churches; both to prevent the View of Persons passing by, and to keep off the Wind, &c. by means of folding Doors, &c.

**TAMBOUR** is also a round Stone, or Course of Stones, several whereof form a Section of the Shaft of a Column, not so high as a Diameter.

**TAMPION**, **TAMKIN** or **TOMKIN**, a kind of Plug or Stopple, serving to close a Vessel; particularly to keep down the Powder in a Fire-Arm, &c.

In charging a Mortar, or the like, over the Powder is usually put a thin round Piece of Wood to keep the Shot, Ball, Shell, or the like from the Gun-powder. This Piece is call'd a *Tampion*, and by means hereof, the Shot is exploded with the greater Vehemence. See **CHARGE**, &c.

The Word is form'd from the *French*, *Tampon*, a Bung, Stopple, &c. Some derive it from the *English* Tap.

**TAN**, the Bark of the Oak; chopp'd, and ground, by a *Tanning* Mill, into a coarse Powder; to be used in the *Tanning* or Dressing of Skins. See **BARK** and **TANNING**.

*New Tan* is the most esteem'd; when Old and Stale, it loses a deal of its Effect, which consists in the condensing or closing the Pores of the Skins; so that the longer the Skins are kept in *Tan*, the greater Force and Firmness they acquire.

In effect, not only the Bark, but every Part of the Oak Tree, of what Age or Growth soever, all oaken Coppice, &c. cut in Barking Time, makes good *Tan*; as good at least, as the best Bark.

This, when got, is to be well dried in the Sun, hous'd dry, and kept so. To use it, the greater Wood may be shaved small, or cleft, fit to be cut small by a *Tanning* Engine for the Purpose; which done, 'tis well dried again on a Kiln, and then ground by the Mill.

Where Oak is scarce, Thorns may supply the Defect.

**TANGENT**, in Geometry, a right Line, which touches a Circle, that is, which meets it in such Manner, as that though infinitely produced, it would never cut the same; that is, never come within the Circumference. See **CIRCLE**, &c.

Thus the Line AD (Tab. Geometry Fig. 50) is a *Tangent* to the Circle, in D.

'Tis demonstr'd in Geometry, 1<sup>o</sup> That if a *Tangent* AD, and a Secant AB, be both drawn from the same Point A; the Square of the *Tangent* will be equal to the Rectangle, under the whole Secant AB, and that Portion thereof AC, which falls without the Circle. See **SECANT**.

2<sup>o</sup> That if two *Tangents*, as AD AE be drawn to the same Circle from the same Point A, they will be equal to each other.

**TANGENT**, in Trigonometry. A *TANGENT* of an Arch, is a right Line, rais'd perpendicularly on the Extreme of the Diameter, and continued to a Point, where it is cut by a *Secant*, that is by a Line, drawn from the Centre through the Extremity of the Arch whereof it is a *Tangent*.

Or thus; A *Tangent* of an Arch EA (Tab. Trigonometry Fig. 26) is a Part of a *Tangent* of a Circle (that is, of a right Line which touches a Circle without cutting it) intercepted between two right Lines, drawn from the Centre C, through the Extremes of the Arch E and A. See **ARCH**.

Hence, the *Tangent* FE is perpendicular to the Radius EC.

And hence the *Tangent* FE is the *Tangent* of the Circle ACE, as also of that ACI; so that Two adjacent Angles have only the same common *Tangent*.

**Co-TANGENT**, or **TANGENT** of a Complement, is the *Tangent* of an Arch which is the Complement of another Arch to a Quadrant. See **COMPLEMENT**.

Thus, a *Tangent* of the Arch AH, is the *Co-tangent* of the Arch AE, or the *Tangent* of the Complement of the Arch AE.

To find the Length of the *TANGENT* of any Arch; The Sine of the Arch being given: Suppose the Arch, AE; the



the given Sine, A D; and the *Tangent* required, E F. Since both the Sine and *Tangent* are perpendicular to the Radius E C, they are parallel to each other. Wherefore, as the Cosine D C is to the Sine A D, so is the whole Sine, to the *Tangent* E F. See SINE.

Hence, a Canon of Sines being had; a *Canon of Tangents* is easily constructed therefrom. See CANON.

*Artificial TANGENTS*, are the Logarithms of the *Tangents* of Arches. See LOGARITHM.

*Line of TANGENTS*, is a Line usually placed on the Sector and Gunter's Scale; the Description and Uses whereof, see under the Articles SECTOR and GUNTER'S Scale.

*TANGENT of a Conic Section*, as of a Parabola, or other algebraic Curve, is a right Line, drawn, cutting the Axis. See CURVE, CONIC, &c.

*Method of TANGENTS*, a Method of determining the Quantity of the *Tangent* of any algebraic Curve; the Equation defining that Curve, being given.

This Method is one of the great Results of the *Calculus Differentialis*. See DIFFERENTIAL.

Its Use is very great in Geometry; because in determining the *Tangents* of Curves, we determine at the same Time, the Quadratures of the Curvilinear Spaces: on which account it well deserves to be here particularly insisted on. See QUADRATURE.

To find the Sub-tangent in any Algebraic Curve.

Let the Semiordinate  $pm$  be infinitely near another  $PM$  (Tab. Analysis Fig. 13) then will  $Pp$  be the Differential of the Absciss; and letting fall the Perpendicular  $MR = Pp$ ;  $Rm$  will be the Differential of the Semiordinate. Draw, therefore, the *Tangent*  $TM$ : The infinitely little Arch  $Mm$ , will not differ from a Right Line; and therefore  $MmR$  will be a right-lined, right-angled Triangle, usually call'd the *Characteristic Triangle of the Curve*, in regard Curve Lines are distinguish'd from each other hereby. See CHARACTERISTIC.

Now, by reason of the Parallelism of the Right Lines  $PM$  and  $pm$ ; the Angle  $MmR = TMP$ . Wherefore the Triangle  $MmR$  is Similar to the Triangle  $TMP$ . Let, therefore  $AP = x$ ,  $PM = y$ , then will  $Pp = MR = dx$ , and  $Rm = dy$ . Consequently,

$$\begin{aligned} Rm : MR :: PM : PT \\ dy : dx :: y : \frac{y dx}{dy} \end{aligned}$$

If, then, from the given Equation of any Curve, you substitute the Value of  $dx$  to  $y dx : dy$ , in the general Expression of the *Sub-tangent*,  $PT$ ; the differential Quantities will vanish, and the Value of the *Sub-tangent* come out in common Quantities; whence the *Tangent* itself is easily determined. This we shall illustrate in a few Examples:

1° The Equation defining the common Parabola, is,

$$\begin{aligned} ax = y^2 \\ \text{Hence, } \frac{a dx = 2y dy}{dx = 2y dy : a} \end{aligned}$$

$PT = y dx : dy = 2y^2 dy : a dy = 2y^2 : a = 2ax : a = 2x$ . That is, the *Sub-tangent* is double the Abscisse.

2° The Equation defining a Circle is,

$$\begin{aligned} ax - xx = y^2 \\ \frac{a dx - 2x dx = 2y dy}{dx = 2y dy : (a - 2x)} \end{aligned}$$

$PT = dx : y dy = 2y^2 dy : (a - 2x) dy = 2y^2 : (a - 2x) = (2ax - 2xx) : (a - 2x) = (ax - xx) : (\frac{1}{2}a - x)$  that is,  $PC : PB :: AP : PT$ .

Therefore  $AT = (ax - xx) : (\frac{1}{2}a - x) - x = (ax - xx - \frac{1}{2}ax + xx) : (\frac{1}{2}a - x) = \frac{1}{2}ax : (\frac{1}{2}a - x)$  that is,  $PC : PA :: CA : AT$ .

3° The Equation defining an Ellipsis, is;

$$\begin{aligned} ay^2 = abx - bx^2 \\ \text{Hence } \frac{2ay dy = ab dx - 2bx dx}{2ay dy : (ab - 2bx) = dx} \end{aligned}$$

$PT = y dx : dy = 2ay^2 : (ab - 2bx) = (2abx - 2bx^2) : (ab - 2bx) = (2ax - 2ax^2) : (a - 2x)$  that is, as the Distance of the Semiordinate from the Centre, is to the Half Axis, so is the Absciss to the Portion of the *Sub-tangent* intercepted between the Vertex of the Ellipsis and the *Tangent*.

Lastly, for all Algebraic Curves, the Equation is,

$$\begin{aligned} ay^m + bx^n + cy^r x^s + df = 0 \\ m ay^{m-1} dy + n bx^{n-1} dx + r cy^{r-1} x^s dx + s cy^r x^{s-1} dx + f dx = 0 \\ \frac{n bx^{n-1} + r cy^{r-1} x^s + f}{2ay dy : (ab - 2bx) = dx} \\ PT = y dx : dy = \frac{n bx^{n-1} + r cy^{r-1} x^s + f}{2ay dy : (ab - 2bx) = dx} \end{aligned}$$

Suppose, e. gr.  $y^2 - ax = 0$ ; then, by comparing with the general Formula;

$$\begin{aligned} ay^m = y^2 & \quad bx^n = -ax \\ a = 1 \quad m = 2 & \quad b = -a \quad n = 1 \\ c y^r x^s = 0 & \quad f = 0 \\ c = 0 \quad r = 0 \quad f = 0 \end{aligned}$$

These Values being substituted in the most general Formula of the *Sub-tangent*; we have the *Sub-tangent* of the Parabola of the first Kind,  $(-2 \cdot 1 y^2 - 0 \cdot 0 y^0 x^0) : (1 - ax \cdot 1 - 1 + 0 \cdot 0 y^0 x^0) = -2y^2 : a = 2y^2 : a$ , Suppose  $y^2 - ax = 0$ , then will

$$\begin{aligned} ay^m = y^3 \quad bx^n = -x^3 \\ a = 1 \quad m = 3 \quad b = 1 \quad n = 3 \\ c y^r x^s = -ax y \quad f = 0 \\ c = -a \quad r = 1 \quad f = 1 \end{aligned}$$

These Values being substituted in the general Formula of the *Sub-tangent*; we have the *Sub-tangent* of the Curve, whose Equation is given,  $PT = (-3 \cdot 1 y^3 - 1 \cdot -ax y) : (3 \cdot -1 x^3 - 1 + 1 \cdot -ax y x^1 - 1) = (-3y^3 + ax y) : (-3x^3 + ax y)$  Consequently,  $AT = (3y^3 - ax y) : (3x^3 + ax y) - x = (3y^3 - ax y) - (3x^3 - ax y) : (3x^3 + ax y) = (3y^3 - 2ax y) : (3x^3 + ax y)$ . The Value of  $y^3 - x^3$ , that is,  $ax y : (3x^3 + ax y)$  being substituted from the Equation to the Curve.

In the *Philosophical Transactions*, we have the following Method of drawing *Tangents* to all Geometrical Curves, without any Labour, or Calculation, by M. Slusius.

Suppose a Curve, as DQ (Fig. 14) whose Points are all referable to any Right Line given, as EAB, whether the Right Line be the Diameter or not; or whether there be more given Right Lines than one, provided their Powers do but come into the Equation. In all his Equations he puts  $v$  for the Line DA,  $y$  for BA; and for EB, and the other given Lines, he puts  $b, d$ , &c. that is, always Consonants.

Then, supposing DC to be drawn touching the Curve in D, and meeting with EB produced in C; he calls the sought Line CA, by the Name of  $a$ .

To find which, he gives this general Method: 1. Rejected out of the Equation all Members, which have not either  $v$  or  $y$  with them: Then put all those that have  $y$ , on one Side; and all those which have  $v$ , on the other; with their Signs  $+$  or  $-$ ; and the latter, for Distinction and Difference, he calls the Right, the former, the Left Side. 2. On the Right Side, let there be prefix'd to each Member, the Exponent of the Power, which  $v$  hath there; or which is all one, let that Exponent be multiplied into all the Members. 3. Let the same be done also on the Left Side, multiplying each Member there by the Power of the Exponent of  $y$ . Adding this moreover, that one  $y$  must, in each Member, be always changed into  $a$ . This done, the Equation thus reformed, will shew the Method of drawing the required *Tangent* to the Point D: For, that being given; as also  $y, v$ , and the other Quantities expressed by Consonants,  $a$  cannot be unknown. Suppose an Equation  $by - yy = vv$ , in which EB is called  $b$ ; BA =  $y$ , DA =  $v$ , and let  $a$ , or AC be required so as to find the Point C, from whence CD being drawn, shall be a true *Tangent* to that Curve QD in D. In this Example, nothing is to be rejected out of the Equation, because  $y$  or  $v$  are in each Member: It is also disposed, as required by the Rule 1; to each Part therefore, there must be prefix'd the Exponent of the Powers of  $y$  or  $v$ , as in Rule 2; and on the Left Side, let one  $y$  be changed into  $a$ , and then the Equation will be in this Form  $ba - 2ya = 2vv$ , which Equation reduced, gives easily the Value of  $a = \frac{2vv}{b - 2y} = AC$ . And so the Point C is found, from whence the *Tangent* DC may be drawn.

To determine which Way the *Tangent* is to be drawn, whether towards B or E, he directs to consider the Numerator and Denominator of the Fraction. For, 1. If in both Parts of the Fraction, all the Signs are Affirmative; or if the Affirmative ones are more in Number; then the *Tangent* is to run towards B. 2. If the Affirmative Quantities are greater than the Negative in the Numerator; but equal to them in the Denominator; the Right Line drawn through D, and touching the Curve in that Point, will be parallel to AB: For in this Case,  $a$  is of an infinite Length. 3. If in both Parts of the Fraction, the Affirmative Quantities are less than the Negative, changing all the Signs, the *Tangent* must be drawn now also towards B: For this Case, and the Change, comes to be the same as the first. 4. If in the Affirmative Quantities are greater than the Negative in the Denominator; but in the Numerator are less; or vice versa, then changing the Signs in that Part of the Fraction where they are less, the *Tangent* must be drawn a contrary Way.



that is, AC must be taken towards E. 5. But whenever the Affirmative and Negative Quantities are equal in the Numerator, let them be how they will in the Denominator,  $a$  will vanish into nothing: And, consequently, the *Tangent* is either AD itself, or EA, or parallel thereto; as will easily be found by the Data. This he gives plain Examples of, in reference to the Circle; thus: Let there be a Semicircle, whose Diameter is EB; in which there is given any Point; as D, (Fig. 15.) from which the Perpendicular DA is let fall to the Diameter. Let  $DA = v$ ,  $BA = y$ ,  $BE = b$ : Then the Equation will be  $by - yy = vv$ , and drawing the *Tangent* JC, AC, or  $a = \frac{2vv}{b-2y}$ . Now, if  $b$  be greater than  $2y$ ,

the *Tangent* must be drawn towards B; if less, towards E; if equal to it, it will be parallel to EB, as was said in the first, second and fourth Rules.

Let there be another Semi-circle inverted; as NDD, (Fig. 16.) the Points of whose Periphery, are referr'd to the Right Line BB, parallel and = to the Diameter. Let NB be called  $d$ ; and all Things else as befo e; then the Equation will be  $by - yy = dd + vv - 2dv$ ; which being managed according to his Rules, you have  $a = \frac{2vv - 2dv}{b - 2y}$ .

Now since  $v$  here is supposed to be always less than  $d$ ; if  $b$  be greater than  $2y$ , then the *Tangent* must be drawn towards E; if equal, it will be parallel to BB; if less, changing all the Sines, the *Tangent* must be drawn towards B, as by Rules Fourth, Fifth and Third. But there could be no *Tangent* drawn, or at least, EB would be it, if NB had been taken equal to the Diameter. Let there be another Semi-circle, whose Diameter NB, (Fig. 17.) is perpendicular to EB, and to which its Points are supposed to be referr'd. Let NB be called  $B$ , and all Things else as above; the Equation will be  $yy = bv - vv$ , and  $a = \frac{bv - 2vv}{2y}$ . If, now,  $b$  be greater than  $2v$ , the *Tangent* must be drawn towards B, if lesser, towards E, if equal, DA will be the *Tangent*, as by Rules 1, 4 and 5, appears.

*Inverse Method of TANGENTS*, is a Method of finding the Equation, or the Construction, of any Curve; from the *Tangent* or any other Line whose Determination depends on the *Tangent*, given.

This Method is one of the great Results of the New *Calculus Integralis*. See CALCULUS.

Its Application we shall give in what follows.

The differential Expressions of the *Tangent*, *Sub-tangent*, &c. being delivered under the last Article: If you make the given Value equal to the differential Expression, and either sum up the differential Equation, or, if that can't be, construct it, the Curve required, is had. For Example:

1° To find the Curve Line, whose Sub-tangent =  $2yy : a$

Since the Sub-tangent of an algebraic Line is  $= y dx$ , we have

$$\begin{aligned} y dx : dy &= 2yy : a \\ a y dx &= 2y^2 dy \\ a dx &= 2y dy \\ a x &= y^2 \end{aligned}$$

The Curve sought, therefore, is a Parabola; whose Construction is shewn under the Article PARABOLA.

2° To find the Curve, whose Sub-tangent is a Third Proportional to  $r - x$  and  $y$ .

Since  $r - x : y = y : y dx$

We have  $r - x : y = dy : dx$

$$\begin{aligned} r dx - x dx &= y dy \\ r x - 2^1 x^2 &= 2^1 y^2 \\ 2 r x - x x &= y^2 \end{aligned}$$

The Curve sought therefore, is a Circle.

3° To find the Line wherein the Sub-tangent is equal to the Semiordinate.

Since,  $y dx : dy = y$

$$\begin{aligned} y dx &= y dy \\ dx &= dy \\ x &= y \end{aligned}$$

Hence it appears, that the Line sought, is a right Line, that refers to the Cathetus of an Equicrural Triangle, as to an Axis or the Hypothenuse of an Equicrural, rectangled Triangle. If  $x$  had been taken for the Arch of a Circle, the sought Line had been a Cycloid. See CYCLOID.

TANGIBLE. See TACTILE.

TANISTRY, or TANISTRI, in our ancient Customs, an Heir presumptive, or second Possessor. See HEIR, &c.

Hence the Law, or Tenure, *Tanistry*, or *Tanistria*, an ancient municipal Law, or Tenure of *England*, which allotted the Inheritance of Lands, Castles, &c. held by this Tenure, to the oldest and most worthy and capable Person of the Deceased's Name and Blood; without any Regard to Proximity.

This, in reality, was giving it to the strongest; which naturally occasion'd bloody Wars in Families: for which Reason it was abolish'd under K. James I. Sir John Davis describes it thus; *Quant ascum Person morust seisse des Ascens Castles, Manors, Terres ou Tenements del Nature & Tenure de Tanistry; que donques mesme les Castles, &c. doent descendre, & de temps dont Memory ne Court out use de descendre Seniori & dignissimo Viro Sanguinis & Cognominis de tiel Person, &c.* The Word is suppos'd form'd from *Tanis*.

TANNING, the preparing of Skins or Hides in a Pit, with *Tan* and Water, after having first taken off the Hair, by steeping them in Lime Water. See TAN and LEATHER.

Method of TANNING Cows, Calves, and Horses Hides.

The Skin being flead off the Carcass, if 'tis intended to be kept, 'tis salted with Sea Salt and Alum, or with a kind of Saltpetre, call'd *Natron*; if 'tis not for keeping, the Salting is sav'd, as being of no use, but to prevent the Hide from corrupting e'er it can be conveniently carry'd to the *Tan-house*.

Whether the Hide have been salted or not, the *Tanner* begins with taking off the Horns, the Ears, and the Tail; after which 'tis thrown into a running Water for about 30 Hours, to wash off the Blood, and other Impurities adhering to the Inside.

This done, 'tis laid over Night in a Lime Pit, already used; whence it is taken, and left to drain three or four Days on the Edge of the Pit.

This first and slightest Preparation over, it is return'd into a strong Lime-Pit for two Days; then taken out for four more; and thus for six Weeks alternately, taken out and put in, twice a Week.

At the six Weeks End, it is put into a fresh Pit, where it continues eight Days, and is taken out for so many; and this alternately for a Year or eighteen Months, according to the Strength of the Leather, or the Weather: for in great Heats, they put in fresh Lime twice a Week; and in Frost they sometimes don't touch them for three Months. Every fresh Lime-Pit they throw them into, is stronger and stronger.

At four, five, or six Weeks end, the *Tanner* scrapes off the Hair, on a Wooden Leg, or Horse, with a kind of Knife for that Purpose. And after a Year or eighteen Months, when the Hair is perfectly gone, he carries it to a River to wash, pares off the Flesh on the Leg, with a kind of cutting Knife, and rubs it briskly with a kind of Whet-stone, to take off any Remains of Flesh or Filth on the Side of the Hair.

The Skin is now put into *Tan*; that is, cover'd over with *Tan*, as 'tis stretch'd in the Pit, and Water let in upon it: If the Skin be strong, five Coverings of *Tan* will be requir'd; for weaker, three or four may suffice. When the Skin has not been kept long enough in Lime, or the *Tan*-Pit; upon cleaving it, in the Middle is seen a whitish Streak, call'd the Horn, or Crudity of the Skin; and 'tis this is the Reason why the Soals of Shoes, Boots, &c. stretch so easily, and take Water.

When the Hides are sufficiently *tann'd*, they are taken out of the Pit, to be dry'd, by hanging in the Air: Then the *Tan* is clean'd off them, and they are put in a Place neither too dry, nor too moist; they are well stretch'd over one another, with Weights a-top, to keep them tight and straight; and in this Condition are sold, under the Denomination of *Bend Leather*. This is the Method of *tanning* Bullocks or Oxes Hides.

Cows, Calves, and Horses Skins are *tann'd* much after the same Manner as those of Oxen, except that the former are only kept four Months, in the Lime-Pit; and that before they be put in the *Tan*, there is a Preparation requir'd, thus: Cold Water is pour'd into a Wooden Fat or Tub, wherein the Skins are put, which are kept stirring while some other Water is warming in a Kettle; and as soon as that Water is a little more than lukewarm, 'tis pour'd gently into the Fat, and upon this is cast a Basket of *Tan*; during which Time, the Skins are still kept turning, that the Water and *Tan* mayn't burn them.

After an Hour, they are taken out, and cast for a Day in cold Water, then return'd into the former Fat, and the same



same Water they had been in before ; and here they are left eight Days ; which expir'd, they are put in the *Tan*-Pit, and three Coverings of *Tan* given them, the first of which lasts five Weeks, the 2d six, and the 3d two Months.

The rest of the Process is in all respects the same as that above deliver'd. In some Countries, as in *Champagne*, &c. the *Tanners* give the first Preparation with Barley instead of Lime.

**TANTAMOUNT**, (of the *French tant* and *Montant*, or *Monter*,) something that amounts to, or is equivalent to so much.

**TAP**, among Hunters : A Hair is said to *tap*, or beat, when she makes a Noise.

**TAPASSANT**, denotes *lurking* or *squatting*, and is a Term us'd in Hunting : Hence, to *tappy*, is to be hid, as a Deer may be.

**TAPER**, *Tapering*, is understood of a Piece of Timber, or the like, when broad beneath, and sharp towards the Top ; as is the Case in Pyramids, Cones, &c. See **PYRAMID**.

To measure *taper* Timber, &c. See **TIMBER**, **SLIDING-Rule**, &c.

**TAPER-bored**, is apply'd to a Piece of Ordnance, when it is wider at the Mouth than towards the Breech. See **ORDNANCE**.

**TAPER**, a kind of tall waxen Candle, placed in a Candlestick, and burnt at Funeral Processions, and in other Church Solemnities. See **CANDLE**.

They are made of different Sizes : In some Places, as *Italy*, &c. they are Cylindrical ; but in most other Countries, as *England*, *France*, &c. they are Conical, or *taper*, whence the Name.

Both Kinds are pierced at Bottom, for a Pin in the Candlestick to enter.

The Use of Lights in religious Ceremonies, is of a long standing : The Ancients, we know, used *Flambeaux* in their Sacrifices, and particularly in the Mysteries of *Ceres* ; and they had *Tapers* placed before the Statues of their Gods.

Some suppose, that it was in Imitation of this Heathen Ceremony, that Lights were first introduc'd into the Christian Church ; others take it, that the Christians borrow'd the Practice from the *Jews* : But Recourse need not be had to the one or the other.

Doubtless, as in the first Days of Christianity they had their Meetings in obscure subterraneous Vaults, there was a Necessity for *Tapers*, &c. and there was even Occasion for them after they had the Liberty of building Churches ; those being contriv'd in such Manner, as only to receive very little Light, that they might inspire the greater Awe and Respect by the Obscurity.

This Original of *Tapers* in Churches is the most natural ; but 'tis now a long Time since the Use of *Tapers*, which Necessity at first introduc'd, is become a mere Ceremony. *S. Paulinus*, who liv'd at the Beginning of the Vth Century, observes, that the Christians of his Days were so fond of *Tapers*, that they even painted them in their Churches. See **LUMINARY**.

#### Manner of making TAPERS.

There are two ways of making *Tapers* : The first with the *Ladle*, the second by *Hand*.

In the first, after the Wicks (which are usually half Cotton half Flax) have been well twisted, and cut of the due Length ; a Dozen of them are hung, at equal Distances, around an Iron Hoop, directly over a large Copper Basin full of melted Wax.

Then taking an Iron Ladle full of the Wax, they pour it gently over the Wicks, a little below the Tops thereof, one after another ; so that the Wax running down them, they become quite cover'd therewith, and the Surplus returns into the Basin, under which is a Pan of Coals to keep it in Fusion.

Thus they continue to cast on more and more Wax for ten or twelve times, till the *Tapers* be brought to the requir'd Dimensions. The first Cast only soaks the Wick, the second begins to cover it, and the rest give it the Form and Thickness ; in order to which, they take Care that every Cast, after the fourth, be made lower and lower below the Wicks, to make them *taper*.

The *Tapers* thus form'd, are laid, while yet hot, one against another, in a Feather Bed, folded double to preserve them soft ; and taken out thence, one after another, to be rolled on a long smooth Table, with an oblong Instrument of Box, polish'd at Bottom, and furnish'd with a Handle above.

The *Taper* thus roll'd and polish'd, a Piece of its big End is cut off, and a Conical Hole bored therein, with a Boxen Instrument, into which the Pin, or Point of the Candlestick is to be receiv'd.

While the Broach is yet in the Hole, they use to stamp

the Maker's Name, and the Weight of the *Taper*, with a Boxen Ruler, whereon the Characters are cut. The *Taper* is then hung up to dry and harden ; after which it is fit for Use.

#### Making of TAPERS by Hand.

The Wicks being dispos'd, as in the former Manner ; they begin to soften the Wax by working it in hot Water, in a narrow, deep Copper Vessel. They then take a Quantity of this Wax out with the Hand, and lay it gradually on the Wick, which is fasten'd to a Hook in the Wall by the End opposite to the Wick ; so that they begin to form the *Taper* by the big End ; and proceed, still lessening the Thickness to the Neck or Coller.

The rest is perform'd after the same Manner as in *Tapers* made with the Ladle, except that they don't lay them in the Feather-Bed, but roll them on the Table as fast as form'd.

Two Things there are to be observ'd in the two Kinds of *Tapers* : The first, that in the whole Process of *Tapers* with the Ladle, they use Water to moisten the Table, and other Instruments used therein, that the Wax may not stick ; and that in the other, they use Oil of Olives or Lard for the same End.

**Paschal TAPER**, among the *Romanists*, is a large *Taper*, whereon the Deacon applies five Grains of Frankincense, in Holes made for the Purpose, in Form of a Cross ; and which he lights with new Fire in the Ceremony of *Easter* Saturday.

The Pontifical makes Pope *Zosimus* the Author thereof ; but *Baronius* will have the Usage more ancient, and quotes a Hymn of *Prudentius* to prove it.

The Pope he supposes to have only establish'd the Use thereof in Parish Churches ; which, till that Time, had been restrain'd to the greater Churches. *F. Papebrock* explains the Origin of the Paschal Torch more distinctly in his *Conatus Chronico Historicus*, &c. It seems, tho' the Council of *Nice* regulated the Day whereon *Easter* was to be celebrated, it laid it on the Patriarch of *Alexandria* to make a yearly Canon thereof, and to send it to the Pope. As all the other moveable Feasts were to be regulated on that of *Easter*, a Catalogue of them was made every Year, and wrote on a *Taper*, *Cereus*, which was bless'd in the Church with much Solemnity.

This *Taper*, according to the Abbot *Chastelain*, was not a Wax Candle, made to be burnt : It had no Wick ; nor was it any thing more than a kind of Column of Wax, made on purpose to write the List of moveable Feasts on, and which would suffice to hold it for the Space of a Year.

For among the Ancients, when any thing was to be wrote to last for ever, they engrav'd it on Marble or Steel ; when it was to last a long while, they wrote it on *Aegyptian* Paper ; and when it was only to last a short Time, they contented themselves to write it on Wax.

In Process of Time, they came to write the List of moveable Feasts on Paper, but they still fasten'd it to the Paschal *Taper* ; which Practice is observ'd to this Day at *Nice* *Dame* in *Rouen*, and throughout the Order of *China*.

Such is the Original of the Benediction of the *Paschal Taper*.

**TAPESTRY**, or **TAPISTRY**, a curious Kind of Manufacture, serving to adorn a Chamber, or other Apartment, by hanging, or covering the Walls thereof. See **HANGING**.

Some use *Tapestry* as a general Name for all Kinds of *Hangings*, whether wove, or wrought with the Needle, and whether Silken, Woollen, Linnen, Leather, or Paper ; (in which they are countenanc'd by the Etymology of the Word, form'd from the *French* *Tapisser*, to line, of the *Latin* *Tapes*, a Cover of a Bed, &c.) But in the common Use of our Language, the Term is now appropriated to a Kind of woven *Hangings*, of Wooll and Silk, frequently rais'd, and enrich'd with Gold and Silver, representing Figures of Men, Animals, Landskips, &c.

The Invention of *Tapestry* seems to have come from the *Levant* ; and what makes this the more probable is, that formerly the Workmen concern'd herein, were call'd, at least in *France*, *Sarrazins*, or *Sarrasinois*.

'Tis suppos'd that the *English* and *Flemish*, who were the first that excell'd therein, might bring the Art with them from some of the *Croisades*, or Expeditions against the *Sarrazens*. See **CROISADE**.

Be this as it will, 'tis certain those two Nations, particularly the *English*, were the first who set on Foot this noble and rich Manufacture in *Europe* ; now one of the finest Ornaments of Palaces, Basilicks, Churches, &c.

Hence, if they hen't allow'd the Inventors, they have, at least, the Glory of being the Restorers of so curious and admirable an Art, as gives a kind of Life to Woolls and Silks, in no Respect inferior to the Paintings of the best Masters.



'Twas late e'er the *French* apply'd themselves to *Tapistry*: The first Establishment of that Kind, was under *Henry IV.* in the Year 1607, in the *Fauxbourg, S. Michael.* But this fell with the Death of that Prince. Under *Lewis XIV.* the Manufacture was retriev'd by the Care and Address of the great *M. Colbert*, to whom the Establishment of the Gobelins is owing, a Royal *Tapistry* Manufacture, which has produced Works in this Kind, scarce inferior to the finest *English* or *Flemish Tapistry*, either with regard to the Designs, the Colours, or the Firmness. See *GOBELIN.*

The *Tapistry-men* distinguish two Kinds of Work, viz. *Tapistry* of the *high* and *low Warp*; tho' the Difference is rather in the Manner of working, than in the Work itself, which is, in effect, the same in both; only the Looms, and consequently the Warps, are differently situate: Those of the *low Warp* being placed flat, and parallel to the Horizon; and those, on the contrary, of the *high Warp*, erected perpendicularly.

The *English* anciently excell'd all the World in their *Tapistry* of the *high Warp*; and they still retain their former Reputation, tho' with some little Change: Their *low Warps* are still admir'd; but as for the *high ones*, they are quite laid aside in our Nation. See *COMMERCE, WOOLLEN Manufacture, &c.*

The *French* have three considerable *Tapistry* Manufactures besides that of the Gobelins; the first at *Aubusson* in *Auvergne*, the second at *Fellerin* in the *Upper Marche*, and the third at *Beauvois*: They were all equally establish'd for the *high* and the *low Warp*, but have all laid aside the former, excepting the Gobelins.

There are admirable *low Warps* in *Flanders*, generally exceeding those of *France*; the chief, and almost only *Flemish* Manufactories, are at *Brussels, Antwerp, Oudenard, Lisse, Tournay, Bruges, and Valenciennes.*

At *Brussels* and *Antwerp* they succeed both in human Figures, in Animals, and Landscips; and that both with regard to the Designs and the Workmanship. At *Oudenard* their Landscips and Animals are good, but their human Figures naught. *Lisse*, and the other Cities nam'd, come behind *Oudenard*. The *French* Manufacture of *Fellerin* does tolerably well in Landscips, *Aubusson* in Figures, and *Beauvois* in both.

The usual Widths of *Tapistries*, are from two Ells to three Ells and half, *Paris Measure.*

The Manufacture of *Tapistry* of each Kind, is too curious to be here pass'd over, without a short Description. We shall give each under its separate Article.

#### Manufacture of *TAPISTRY* of the *high Warp*.

The Loom whereon tis wrought, is placed perpendicularly: It consists of four principal Pieces; two long Planks or Cheeks of Wood, and two thick Rollers or Beams. The Planks are set upright, and the Beams across them, one atop, and t'other at Bottom, a Foot's Distance from the Ground. They have each their Trunnions, by which they are suspended on the Planks, and are turn'd with Bars. In each Roller is a Groove, from one End to t'other, capable of containing a long round Piece of Wood, fasten'd therein with Hooks. Its Use is to tie the Ends of the Warp to. The Warp, which is a kind of worsted, or twisted Woollen Thread, is wound on the upper Roller; and the Work, as fast as wove, is wound on the lower.

Within-side the Planks, which are seven or eight Foot high, fourteen or fifteen Inches broad, and three or four thick, are Holes pierc'd, from Top to Bottom, in which are put thick Pieces of Iron, with Hooks at one End, serving to sustain the Coat-stave: These Pieces of Iron have also Holes pierc'd; by putting a Pin in which, the Stave is drawn nearer, or set further off; and thus the Coats, or Threads, are stretch'd or loosen'd at Pleasure.

The Coat-stave is about three Inches Diameter, and runs all the Length of the Loom: On this are fix'd the Coats, or Threads, which make the Threads of the Warp cross each other. It has much the same Effect here, as the Spring-stave and Treadles have in the common Looms. The Coats are little Threads fasten'd to each Thread of the Warp, with a kind of sliding Knot, which forms a Sort of Mash, or Ring. They serve to keep the Warp open, for the Passage of Broaches wound with Silks, Woollens, or other Matters used in the Piece of *Tapistry*.

Lastly, there are a Number of little Sticks, of different Lengths, but all about an Inch Diameter, which the Workman keeps by him in Baskets, to serve to make the Threads of the Warp cross each other, by passing them across: And that the Threads thus cross'd may retain their proper Situation, a Packthread is run among the Threads, above the Stick.

The Loom thus form'd, and mounted with its Warp, the first Thing the Workman does, is to draw, on the Threads of this Warp, the principal Lines and Strokes of the Design to be represented on the Piece of *Tapistry*, which is

done by applying Cartoons made from the Painting he intends to copy, to the Side that is to be the wrong Side of the Piece; and then with a Black-lead Pencil following and tracing out the Contours thereof on the Thread of the right Side; so that the Strokes appear equally both before and behind. As to the original Design the Work is to be finish'd by, tis hung up behind the Workman, and wound on a long Staff; from which a Piece is unroll'd from Time to Time, as the Work proceeds.

Besides the Loom, &c. here described; there are Three other principal Instruments required for the working the Silk, or Wooll of the Woof within the Threads of the Warp. These are a Broach, a Reed, and an Iron Needle.

The Broach is of hard Wood, 7 or 8 Inches long, and two Thirds of an Inch thick, ending in a Point with a little Handle. It serves as a Shuttle, the Silks, Woollens, Gold or Silver to be used in the Work, being wound on it. The Reed or Comb is also of Wood, Eight or Nine Inches long, and an Inch thick at the Back; whence it usually grows less and less, to the Extremity of the Teeth, which are more or less apart, according to the greater or less Degree of Fineness of the intended Work. Lastly, the Needle is in Form of the common Needle, only bigger and longer. Its Use is to press close the Wooll and Silks, when there is any Line or Colour that does not fit well.

All Things being prepared for the Work; and the Workman ready to begin, he places himself on the wrong Side the Piece, with his Back towards the Design; so that he works, as it were, blind-fold, seeing nothing of what he does, and being obliged to quit his Post, and go to the other Side the Loom, whenever he would view and examine the Piece, to correct it with his Pressing Needle.

To put any Silk, &c. in the Warp, he first turns, and looks at his Design: Then taking a Broach full of the proper Colour, he places it among the Threads of the Warp, which he brings across each other with his Fingers, by means of the Coats or Threads fasten'd to the Staff: This he repeats every time he is to change his Colour.

The Silk or Wooll being placed, he beats it with his Reed or Comb; and when he has thus wrought in several Rows over each other, he goes to see the Effect they have; in order to reform the Contours with his Needle, if there be occasion.

As the Work advances, they roll it up on the lower Beam, and unroll as much Warp from the upper Beam, as suffices them to continue the Piece: The like they do of the Design behind them.

When the Pieces are wide, several Workmen may be employ'd at once.

We have but two Things to add: The first, that this *high Warp Tapistry* goes on much more slowly than the *low Warp*, and takes almost double the Time and Trouble. The second, that all the Difference the Eye can observe between the two Kinds, consists in this, that in the *low Warp* there is a red Filler, about one Twelfth of an Inch broad, running on each Side, from Top to Bottom; which is wanting in the *high Warp*.

#### Manufacture of *TAPISTRY* of the *low Warp*.

The Loom or Frame wherein the *low Warp* is wrought, is much like that of the Weavers: The principal Parts thereof are two strong Pieces of Wood forming the Sides of the Loom, and bearing a Beam or Roller at each End: They are sustain'd at Bottom with other strong Pieces of Wood in Manner of Trestles; and, to keep them the firmer, are likewise fasten'd to the Floor with a kind of Buttresses, which prevent any shaking, tho' there are sometimes four or five Workmen leaning on the fore Beam at once.

The Rollers have each their Trunnions, by which they are sustain'd: They are turn'd by large Iron Pins, three Foot long. Along each Beam runs a Groove, wherein is placed the *Wick*, a Piece of Wood of above two Inches Diameter, and almost the Length of the Roller: This Piece fills the Groove entirely, and is fasten'd therein, from Space to Space, by wooden Pins. To the two Wickes are fasten'd the two Extremities of the Warp, which is wound on the further Roller; and the Work, as it advances, on the nearer.

A cross the two Sides, almost in the Middle of the Loom, passes a wooden Bar, which sustains little Pieces of Wood, not unlike the Beam of a Balance: To these Pieces are fasten'd Strings, which bear certain Spring-staves, wherewith the Workman, by means of two Treadles under the Loom whereon he sets his Feet, gives a Motion to the Coats, and makes the Threads of the Warp rise and fall alternately. Each Loom has more or fewer of these Spring-staves, and each Stave more or fewer Coats, as the *Tapistry* consists of more or fewer Threads. See *LOOM.*

The Design or Painting the *Tapistry-man* is to follow, is placed underneath the Warp; where it is sustain'd from Space to Space with Strings, by which the Design is brought nearer the Warp.



The Loom being mounted, there are two Instruments used in working of it, *viz.* the Reed and the Flute. The Flute does the Office of the Weavers Shuttle: 'Tis made of a hard, polish'd Wood, three or four Lines thick at the Ends, and somewhat more in the Middle, and three or four Inches long. On it are wound the Silks, or other Matters to be used as the Woof of the *Tapisstry*. The Comb or Reed is of Wood, or Ivory; it has usually Teeth on both Sides; 'tis about an Inch thick in the Middle, but diminishes each Way to the Extremity of the Teeth: It serves to beat the Threads of the Woof close to each other, as fast as the Workman has pass'd and placed them with his Flute among the Threads of the Warp.

The Workman is seated on a Bench before the Loom, with his Breast against the Beam, only a Cushion or Pillow between them; and in this Posture, separating, with his Fingers, the Threads of the Warp, that he may see the Design underneath, and taking a Flute, wound with the proper Colour, he passes it among the Threads; after having rais'd or lower'd them, by means of the Treadles moving the Spring-slaves and Coats.

Lastly, to press and close the Threads of the Silk or Yarn, &c. thus placed, he strikes each Course (*i. e.* what the Flute leaves in its passing and coming back again) with the Reed.

What is very remarkable in the Manufacture of the low Warp, and which is common to it with the high, is, that 'tis all wrought on the wrong Side; so that the Workman cannot see the right Side of his *Tapisstry*, till the Piece be finish'd and taken off the Loom.

**TAPPING**, the Act of piercing a Hole in a Vessel, and applying a Tube or Cannula in the Aperture, for the commodious drawing off the Liquors contain'd therein.

**TAPPING**, in Agriculture, is the making an Incision in the Bark of a Tree, and letting out the Juice. See **BARK**.

To *Tap* a Tree at the Root, is to open it round about the Root.

*Rattray*, the learned *Scot*, affirms, that he has found by Experiment, that the Liquor which may be drawn from the Birch in the Spring-time, is equal to the whole Weight of the Tree, Branches, Roots and all together.

In the *Tapping* of Trees, the Juice certainly ascends from the Root, and after it is Concocted and Assimilated in the Branches, &c. descends like a Liquor in an Alembic, to the Orifice or Incision where it issues out.

One of the most effectual Ways of *Tapping*, so as to obtain the greatest Store of Sap in the shortest Time, is, not only to pierce the Bark, nor yet to cut the Body of the Tree almost to the Pith, with a Chissel (as some have directed) but quite through all the Circles, and the inner Rind itself, on both Sides the Pith; leaving only the Outermost Circle, and the Bark on the North-East Side unpierced.

But this Hole is to be bored sloping upwards, as large as the largest Augre you can get, will make; and that also through and under a large Arm, near the Ground. So will it not need any Stone to keep open the Orifice, nor Tap to direct the Sap into the Receiver.

This Way, the Tree will, in short Time, afford Liquor enough to Brew withal; and with some of this sweet Sap, one Bushel of Malt, will make as good Ale as Four Bushels of Malt with ordinary Water. Sycamore I take to yield the best brewing Sap, being very sweet and wholesome.

#### *To preserve the Sap for Brewing.*

Infolate it by a constant Exposure to the Sun in Glasses or other Vessels, till the rest be gather'd and ready; otherwise it will contract an Acidity: when you have enough, put into it as much very thin cut, and hard roasted Rye-bread, as will serve to ferment it; and when it works, take out the Bread, and bottle up the Liquor. A few Cloves in each Vessel that receives the Sap, as it oozes from the Tree, will certainly preserve it a Twelve-month. Dr. *Tonge* in the *Philosophical Transactions*.

**TAPPING**, in Chirurgery. See **PARENTHESIS**, **DROPSY**, &c.

**TAPPING**, in Heraldry. See **BEATING**.

**TAR**, a gross, fatty Liquor, issuing from the Trunks of old Pines.

When these Trees are on the Return, and only fit for burning, they cut off the Bark all around towards the Root, and through these Incisions, there continues flowing, for a considerable Time, a blackish Liquor, which is the *Tar*. When this ceases, 'tis a sure Indication the Pine is quite dead, and only fit for the Fire.

The chief Use of *Tar*, is for the Coating and Caulking of Ships. See **CAULKING**, &c.

Of *Tar*, boil'd to a sufficient Consistence, Pitch is made. See **PITCH**.

**TARANTISMUS**, in Medicine, the Disease or Affection of those bit by the *Tarantula*. See **TARANTULA**.

Dr. *Cornelio*, in the *Philosophical Transactions* represents this as an imaginary Disease; and tells us, that all those who think themselves seized with it (excepting such as for particular Ends feign themselves so) are most of them young wanton Girls, whom the *Italian* Writers call *Donne ai salti*, who falling, from some particular Indisposition, into a melancholy Madness, persuade themselves, according to the vulgar Prejudice, that they have been stung by a *Tarantula*. But the Evidence on the other Side the Question, is too strong to be thus overturned; as will appear from the following Article.

**TARANTULA**, or **TARENTULA**, in Natural History, a venomous Insect, whose Bite gives Name to a new Disease. See **TARANTISMUS**.

The *Tarentula* is a kind of Spider, denominated from the City *Tarentum*, in *Apulia*, where it is chiefly found: 'Tis about the Size of an Acorn; and is furnish'd with eight Feet, and as many Eyes; its Colour various; but it is still hairy: From its Mouth arise two Sorts of Horns, or Trunks, made a little hooked, with the Tips exceedingly sharp; thro' which it conveys its Poison.

These Horns, M. *Geoffroy* observes, are in continual Motion, especially when the Animal is seeking for Food; whence he conjectures they may be a kind of moveable Nostrils.

The *Tarantula* is found in several other Parts of *Italy*, and even in the Isle of *Corfica*; but those of *Apulia* alone are dangerous: Even these, when remov'd thence, are said to become harmless: 'Tis added, that even in *Apulia*, none but those found on the Plains are much to be fear'd; the Air being hotter there, than on the Mountains.

M. *Geoffroy* adds it as an Opinion of some, that the *Tarantula* is never venomous but in the coupling Season; and *Bagliani*, that 'tis never so, but in the Heat of Summer, particularly in the Dog-Days, when, becoming enrag'd, it flies on all that pass by.

The Bite occasions a Pain, which at first appears much like that felt on the Stinging of a Bee, or an Ant: In a few Hours, the Patient feels a kind of Numbness; and the Part affected becomes mark'd with a little livid Circle, which soon after rises into a very painful Tumour: A little longer, and he falls into a profound Sadness, breathes with much Difficulty, his Pulse grows feeble, his Sight fails; at length he loses all Sense and Motion, and dies, unless reliev'd. But these Symptoms come somewhat differently, according to the Nature of the *Tarantula*, and the Disposition of the Patient. An Aversion for Black and Blue; and, on the contrary, an Affection for White, Red, and Green, are other unaccountable Symptoms of this Disease.

All the Assistance Medicine has been able to discover by Reasoning, consists in some chirurgical Applications on the Wound, in Cordials and Sudorificks; but these are of little Efficacy: A Thing that avails infinitely more, is, what Reason could never have thought of, Music. See **MUSIC**.

As soon as the Patient has lost his Sense, and Motion, a Musician tries several Tunes on an Instrument; and when he has hit on that, the Tones and Modulation whereof agree to the Patient, he is immediately seen to make a faint Motion: His Fingers first begin to move in Cadence, then his Arms, then his Legs; by Degrees his whole Body: at length he rises on his Feet, and begins to dance; his Strength and Activity still increasing. Some will continue the Dance for six Hours without Intermision.

After this, he is put to Bed; and when he is judg'd sufficiently recruited of his first Dance, he is call'd out of Bed, by the same Tune, for a Second.

This Exercise is continu'd for several Days, six or seven at most; in which time the Patient finds himself exceedingly fatigu'd, and unable to dance any longer; which is the Characteristic of his being cured: For as long as the Poison acts on him, he would dance, if one pleas'd, without any Discontinuation, till he died of the mere Loss of Strength.

The Patient perceiving himself weary, begins to come to himself; and awakes, as out of a profound Sleep, without any Remembrance of what had pass'd in his Paroxysm, not even of his Dance.

Sometimes the Patient, thus recovering from his first Access, is quite cured; if he ben't, he finds a melancholy Gloom hanging on him; he shuns the Sight of Men, and seeks Water; and if he ben't carefully look'd to, throws himself into some River. If he don't die, the Fit returns at that Time Twelvemonth, and he is driven to dancing again. Some have had these Returns regularly for 20 or 30 Years.

Every *Tarantulus*, or Patient in this Disease, has his particular and specific Tune; but, in the general, they are all very brisk, sprightly Tunes. See **TUNE**.

This Account was given into the Royal Academy of Sciences, by M. *Geoffroy*, at his Return from *Italy*, in 1701; and confirm'd by Letters from F. *Gouye*. The like History



is given us by *Bagliivi*, in an express Dissertation on the *Tarantula*, publish'd in 1696.

To such extraordinary Facts, 'tis no Wonder a few Fables should be added; as, for Instance, that the Patient is no longer affected than while the Insect lives; and that the *Tarantula* itself dances, all the while, the same Air with the Person bitten.

*Theory of the Effects of the Tarantula's Bite, by M. Geoffroy.*

The poisonous Juice injected by the *Tarantula*, *M. Geoffroy* conceives, may give the Nerves a Degree of Tension, greater than is natural to them, or than is proportionate to their Functions: And hence arises a Privation of Knowledge and Motion. But, at the same time, this Tension, equal to that of some Strings of an Instrument, puts the Nerves in Unison to certain Tones, and obliges them to shake, after being agitated by the Undulations, and Vibrations of the Air proper to those Tones. And hence this wonderful Cure by Music: The Nerves thus restor'd to their Motion, call back the Spirits thither, which before had abandon'd them. See UNISON.

It may be added, with some Probability, and on the same Principles, that the Patient's Aversion for some Colours arises hence, that the Tension of his Nerves, even out of the Paroxysm, being still different from what it is in the natural State, the Vibrations those Colours occasion in the Fibres of the Brain, are contrary to their Disposition, and occasion a kind of Dissonance, which is Pain.

*Theory of the Effects of the Tarantula's Bite, by Dr. Mead.*

The Malignity of the Poison of the *Tarantula* seems to consist in its great Force and Energy, whereby it immediately raises an extraordinary Fermentation in the whole Arterial Fluid; by which its Texture and Crasis is considerably alter'd: The Consequence of which Alteration, when the Ebullition is over, must necessarily be a Change in the Cohesion of its Parts, by which the Globules, which did before with equal Force press each other, have now a very differing and irregular Nisus, or Action; so that some of them do so firmly cohere together, as to compose Molecularæ, or small Clusters: Upon this Account, as there is now a greater Number of Globules contain'd in the same Space, than before, and the Impulse of many of these, when united together, differing according to the Conditions of their Cohesion, as to Magnitude, Figure, &c. the Impetus, with which this Fluid is drove towards the Parts, will not only be at some Strokes greater than ordinary, but the Pressure upon the Blood-Vessels must be very unequal, and irregular; and this will be particularly felt in those which are most easily distended, as those of the Brain, &c.

Upon this the nervous Fluid must necessarily be put into various undulatory Motions, some of which will be like those, which different Objects acting upon the Organs or Passions of the Mind do naturally excite in it; whereupon such Actions must follow in the Body, as are usually the Consequences of the several Species of Sadness, Joy, Despair, or the like Determinations of Thought.

This, in some Degree, is a Coagulation of the Blood, which will the more certainly, when attended with uncommon Heat, as is the Case in those Countries where these Creatures abound, produce such like Effects as these; because the Spirits separated from the Blood thus inflamed, and compounded of hard, fixed and dry Particles, must unavoidably share in this Alteration; that is, whereas their Fluid consists of two Parts, one more active and volatile, the other more viscid and glutinous, which is a kind of Vehicle to the former; their active Part will bear too great a Proportion to the Viscid; consequently they must have more than ordinary Volatility and Force, and will therefore, upon the least Occasion imaginable, be irregularly determined to every Part.

Whereupon will follow, Tumblings, Anger or Fear upon a light Cause, extreme Pleasure at what is trivial, as particular Colours, or the like; And on the other hand, Sadness at what is not agreeable to the Sight; nay, Laughter, obscene Talk and Actions, and such like Symptoms as attend Persons bit; because in this Constitution of the nervous Fluid, the most light Occasion will make as real a Reflux and Undulation of it to the Brain, and present as lively Species there, as the strongest Cause and Impression can produce in its natural State and Condition; nay, in such a Confusion, the Spirits cannot but sometimes, without any manifest Cause at all, be hurried towards those Organs, to which at other Times they have been most frequently determined; and every one knows which these are in hot Countries.

The Effects of Music on Persons touch'd with this Poison, confirms the Doctrine above delivered.

For muscular Motion, we know, is no other than a Contraction of the Fibres, from the arterial Fluid's making an

Effervescence with the nervous Juice, which, by the light Vibration and Tremor of the Nerve, is derived into the Muscle.

Thus there is a two-fold Effect and Operation of the Music, that is, upon the Body and the Mind: A brisk Harmony excites lively Species of Joy and Gladness, which are always accompanied with a more frequent and stronger Pulse, or an increased Influx of the Liquor of the Nerves into the Muscles; upon which suitable Actions must immediately follow.

As for the Body, since it was sufficient to put the Muscles into Action, to cause those Tremors of the Nerves by which their Fluid is alternately dropp'd into the moving Fibres, it is all one whether it be done by the Determination of the Will, or the outward Impressions of an Elastick Fluid.

Such is the Air; and that Sounds are the Vibrations of it, is beyond Dispute: These, therefore, rightly modulated, may shake the Nerves as really, as the *Imperium Voluntatis* can do, and consequently, produce the like Effects.

The Benefit of Music arises not only from their dancing to it, and so evacuating, by Sweat, a great Part of the inflammatory Fluid; but besides this, the repeated Percussions of the Air hereby made, by immediate Contact shaking the contractile Fibres of the Membranes of the Body, especially those of the Ear which being continuous to the Brain, communicate their Tremblings to its Membranes and Vessels; by these continued Succussions and Vibrations, the Cohesion of the Parts of the Blood is perfectly broken, and the Coagulation prevented: So that the Heat being removed by Sweating, and the Coagulation by the Contraction of the muscular Fibrillæ, the wounded Person is restored to his former Condition.

If any one doubts of this Force in the Air, he may consider, that it is demonstrated in Mechanicks, that the smallest Percussion of the smallest Body, may overcome the Resistance of any the greatest Weight, which is at rest; and that the languid Tremor of the Air, which is made by the Sound of a Drum, may shake the vastest Edifices.

But besides this, we must allow a great deal to the determinate Force, and particular Modulation of the trembling Percussions; for contractile Bodies may be acted upon by one certain Degree of Motion in the ambient Fluid, though a greater Degree of it differently qualified, may produce nothing at all of the like Effect: This is not only apparent in two common-stringed musical Instruments tuned both to the same Height; but also in the Trick which many have of finding the Tone or Note peculiarly belonging to any Wine-Glass, and, by accommodating their Voice exactly to that Tone, and yet making it loud and lasting, make the Vessel, though not touched, first to tremble, and then to burst; which it will not do, if the Voice be too low, or too high. See SOUND.

This makes it no difficult Matter to conceive, why different Persons infected with this sort of Venom, do require a different Sort of Music, in order to their Cure; inasmuch as the Nerves and distractile Membranes have different Tensions, and consequently are not in like Manner to be acted upon by the same Vibrations.

TARE, in Commerce, any Defect, Waste or Diminution in the Weight, the Quantity, or the Quality of Goods. The Seller is usually to account to the Buyer for the *Tare* and Tret. See TRET.

TARE is particularly used for an Abatement, or Deduction in the Price of a Commodity, on account of the Weight of Chests, Casks, Bags, Frails, &c.

The *Tare* is very different, in different Merchandizes; in some, there is none at all allowed.

'Tis a Thing much more regarded in *Holland* than in *England* or elsewhere: A Modern Author, *M. Ricard*, treating of the Commerce of *Amsterdam*, observes, that the *Tares* are one of the most considerable Articles a Merchant is to be acquainted withal, if he would trade with Security.

Sometimes, the *Tare* is, as it were, regulated by Custom; but generally, to avoid all Dispute, the Buyer and Seller make a particular Agreement about it. We shall here add, from the fore-mentioned Author, some Instances of *Tares* allowed at *Amsterdam*, referring the Reader for a more ample Account to his *Negoce d'Amsterdam*, Edit. 1722.

*Spanish* Wools are subject to a kind of double *Tare*: For, First, they deduct the *Tare* mark'd on the Bales; and after that, 24 Pounds *Tare* for every 175 Pound weight, besides the Rebate for prompt Payment. Indeed, for the common Wools, the Seller will seldom allow above 14 per Cent. for the whole *Tare*; for which Reason, the Bargain is to be agreed on before.

TARE of *Roman* Alum is 4 lib. per Sack.  
of *Irish*, &c. Butter, 20 per Cent.  
of crude Borax, 15 lib. per Cent.  
of Cinnamon 17 lib. the Burthen.  
of Capers 33 per Cent.  
of White Pepper 40 lib. per Barrel.  
of Black Pepper 5 lib. &c.

TARGET,



**TARGET**, a *Shield*; thus call'd from the *Latin*, *Tergum*, Back, because originally made of Leather, wrought out of the Back of an Ox's Hide. See **SHIELD** and **BUCKLER**.

**TARGUM**, in the sacred Literature, a Name the *Jews* give their *Chaldee* Glosses, and Paraphrases on the Scripture. See **PARAPHRASE**.

As the *Jews*, during their long Captivity in *Babylon*, had forgot their ancient Language, the *Hebrew*; and now understood nothing but the Language of their Masters, the *Chaldeans*: There was a Necessity of explaining the Prophets in that Language; and to this Necessity, is owing the first beginning of the *Chaldee* Paraphrase to make the Sense of the Text understood. See **CHALDEE**.

Each Doctor made a Paraphrase of some Part thereof in the vulgar Tongue; and as these several Interpretations in Time, became very Voluminous, certain Rabbins undertook to collect them together; and this Collection they call'd the *Targum*.

The *Jewish* Doctors don't agree about the Antiquity of the *Targum*; for the more modern *Jews* having blended their own Comments with those of the Ancients; no certain Age or *Æra* can be fix'd for the whole Work.

'Tis commonly believed, that *R. Jonathan*, who lived under the Reign of *Herod the Great*, made the first *Chaldee* Version of the Prophets; and with this Version mix'd the Interpretations of Tradition. *Onkelos*, 'tis certain, translated the Pentateuch almost Word for Word; and without any Paraphrase; and another Version of the Pentateuch is ascrib'd to *Jonathan*, but without much Certainty. See **PENTATEUCH**.

For the *Targum* or Paraphrase on the other Books; we know little of the Authors, no more than of those of the *Targum of Jerusalem*, which is another imperfect Paraphrase on the Five Books of *Moses*: So that in Strictness, the *Targum of Jonathan* and *Onkelos*, is the only Paraphrase of any Authority. See **PARAPHRASE**.

The Account ascribed to *Scaliger*, is this: The *Hebrew* was translated under the Reign of *Tiberius* into *Chaldee*, by *Jonathan*; the Prophets by *Onkelos*; and the Book of *Moses* into good old Hierosolymitan, which was then used at *Jerusalem*, much as *Latin* is among us.

'Tis certain, there was a *Targum Hierosolymitanum* still extant: It was wrote in the vulgar Tongue; but that being then greatly corrupted, we have now much ado to understand it.

Those *Targumists* might have seen *Jesus Christ*; 'tis sure they lived long before the taking of *Jerusalem*. See *Scaligerana*.

**TARIF** or **TARIFF**, a Book of Rates; a Table, or Catalogue, drawn, usually, in Alphabetical Order, containing the Names of several Kinds of Merchandize, with the Duties or Customs to be paid for the same, as settled by Authority, and agreed on between the several Princes and States, that hold Commerce together. See **DUTIES**.

**TARNISHING**, a Diminution of the natural Lustre of any Thing, especially a Metal. See **LUSTRE**.

Gold and Silver, when *Tarnish'd*, resume their Brightness, by setting them over the Fire with certain Lies. Copper, Pewter, &c. that are *Tarnish'd*, recover their Lustre with Tripoli and Por-ashes.

The Breath of Women, under their monthly Purgations, *Aristotle* asserts, tarnishes all Mirrors, &c. See **MENSES**.

**TAR-PAWLING**, of the *Saxon*, *Tare*, and the *Latin*, *Pallium*, Cloak, *q. d.* a tarred Garment; is a Piece of Canvas, well tarred over, to keep off the Rain from any Place.

The Term is also used in Derision for a Person bred at Sea, and educated in the Mariner's Art. See **MARINER**.

**TARPEIAN**, in Antiquity, an Epithet given to a Rock in ancient *Rome*, of surprizing Height; whence, by the Law of the Twelve Tables, those guilty of certain Crimes, were precipitated.

'Twas on this Rock the Capitol was built. See **CAPITOL**.

It took its Name from a Vestal, call'd *Tarpeia*, who betray'd the Capitol, whereof her Father was Governor, to the *Sabines*; on Condition they would give her all they bore on their Left Arms, meaning their Bracelets. But instead of Bracelets, they threw their Bucklers (which were likewise borne on their Left Arm) upon her Head, and crush'd her to Death.

Others ascribe the Delivery of the Capitol to her Father *Spurius Tarpeius*; and add, That he was precipitated down this Rock by *Romulus's* Order; and that this, henceforward, became the Punishment of all Criminals of the like Kind.

The *Tarpeian Games*, were Games instituted by *Romulus*, in Honour of *Jupiter Feretrius*; call'd also *Capitolini Ludi*. See **CAPITOLINI**.

**TARRASS**, or **TERRASS**, a Sort of Plaster, or strong Mortar, chiefly used to line Basons, Cisterns, Wells and other Reservoirs of Water. See **MORTAR**, **CISTERN**, &c.

**TARSUS**, in Anatomy, is what we vulgarly call the *Instep*; being the Beginning of the Foot, or the Space between the Ankle and the Body of the Foot which is call'd *Metatarsus*. See **FOOT**.

The *Tarsus* consists of seven Bones: The first whereof is call'd *Astragalus*, and by the *Latins* *Talus*, and *Os Baliste*. See **ASTRAGALUS**.

The second call'd the *Calx*, or *Calcar pedis*, or *Calcaneum*; the third *Naviculare*, and by the *Greeks* *Scaphoidei*; the fourth, fifth, and sixth are generally call'd *Innominata*, but by *Fallopian*, from their Figure, *Cuneiformia*: Lastly, the 7th, the *Cuboeides*. See each describ'd under its proper Article, **CALX**, **NAVICULARE**, **INNOMINATA**, &c.

**TARSUS** is also a Name given by some Anatomists to the Cartilages which terminate the Palpebræ or Eye-lids. See **PALPEBRA**.

They are exceedingly thin and fine, which makes them light and flexible.

Their Form is Semicircular: That of the upper Eye-lid, is somewhat longer than that of the under: They serve alike to close the Eyes. See **CILIA**.

**TARTANE**, a kind of Bark used for Fishing and Carriage; having neither a rais'd Poop, nor Prow; and also using Oars.

*Tartanes* are common in the *Mediterranean*: They have only a Main-mast, and a Mizzen: Their Sails are triangular. When they put up a square Sail, 'tis call'd a *Sail of Fortune*.

**TARTAR**, in Chymistry, &c. a Kind of Salt, which rises from fumous Wines, and sticking to the Top and Sides of the Casks, forms a greyish Crust, which hardens to the Consistence of a Stone. See **SALT**.

*Tartar*, says an ingenious Author, has the Juice of the Grape for its Father, Fermentation for its Mother, and the Cask for its Matrix. See **WINE**, &c.

Its Goodness rather depends on the Number of repeated Fermentations, which a Succession of new Wines in the same Cask for several Years, makes, than on the Soil or Climate where the Wine is produc'd.

*Tartar* is either *white*, or *red*, according to the Colour of the Wine it is rais'd from.

That brought from *Germany* is the best, as being taken out of those monstrous Tuns, some whereof hold a thousand Pipes of Wine; so that the Salt has Time to come to its Consistence, one of the chief Qualities to be regarded in *Tartar*.

That of *Montpellier* is the next in Order; then that of *Lyons*, *Paris*, &c.

*White Tartar* is preferr'd to red, and is really better: The Marks of good *Tartar* of either Kind, are, its being thick, brittle, brilliant, and very little Earthy.

*Tartar* is of considerable Use among the Dyers; as serving to dispose the Stuffs to take the Colours the better. See **DYING**.

The Chymists make abundance of Preparations from *Tartar*; as *Cream*, or *Crystal of Tartar*, which is nothing but *Tartar* powder'd, and reduc'd by means of boiling Water, a straining Bag, and a Cellar, into little Crystals. See **CREAM of Tartar**.

*Salt of TARTAR* is made of *Tartar* wash'd, ground, purify'd, and calcin'd in Paper, by a reverberatory Fire; or 'tis made by pulverizing what remains in the Retort after the Distillation of *Tartar*. On the one or the other of these Preparations, they pour a great Quantity of hot Water, to make a Lye of it; this they filtrate, and evaporate the Liquor by a Sand Heat, till the fix'd Salt be found at the Bottom of the Vessel. This is the Alkali, or fix'd Salt of *Tartar*. See **SALT**.

*Oil of TARTAR*, is the Salt of *Tartar* expos'd to the Air for some Days, in an open Vessel, in a moist Place, till it dissolve into an Oil; tho' 'tis improperly so call'd, being no more than a dissolv'd Oil. See **DELIQUIMUM**.

*Oil of Tartar per deliquium*, is held the best Remedy against corrosive Sublimate.

*TARTAR Vitriolated*, which some call *Magistery of Tartar*, is Oil of *Tartar* mix'd with rectify'd Spirit of Vitriol: Upon mixing the two, there arises a great Ebullition; by means whereof, of Liquids they become Solids.

*TARTAR foliated*, is a Preparation of *Tartar* with distill'd Vinegar, which reduces it into white Leaves.

**TARTAR Emetic** } See **EMETIC**.  
**TARTAR Soluble** } See **SOLUBLE**.

**TARTARIZING**, a Term used by some Writers, for the Act of Refining or Purifying, by means of Salt of *Tartar*. See **TARTAR**.

**TASSEL**, a Sort of pendant Handle, hanging down from a Cushion, or such like Thing: Also a small Ribbon or Silk sew'd to a Book, to be put between the Leaves.

**TASSELS**, in a Building, are those Pieces of Boards that lie under the Ends of the Mantle-Trees. See **MANTLE**.

**TASSEL**, or **TRENCELET**, is also us'd in Falconry for a *Male Hawk*. See **HAWK** and **FALCON**.

**TASSELS** are also a kind of hard Burr, used by Cloth-workers in dressing Cloth.

**TASTE**.



**TASTE**, or *Savour*, a Sensation, excited in the Soul by means of the Organ of *Taste*; viz. the Papillæ of the Tongue, &c. See SENSATION and TASTING.

Dr. Grew, in a Lecture on the Diversity of *Tastes*, before the Royal Society, distinguishes them into *Simple* and *Compound*.

By the former, he understands such as are *Simple Modes of Taste*, although mingled with others in the same; thus the *Taste* of a Pippin is *Acid-dulcis*; of Rhubarb, *Amara-stringent*, and therefore compounded, in both; but yet in the Pippin the Acid is one simple *Taste*, and the Sweet another; as distinct as the Bitter and Astringent are in the Rhubarb.

Two Faults, he observes, have here been committed: The first, a defective enumerating of simple *Tastes*, and reckoning them, indistinctly, among such as are compounded.

*Simple Tastes*, of which we usually only reckon six or seven Sorts, are at least sixteen; 1. *Bitter*, as in Wormwood; whose contrary is, 2. *Sweet*, as in Sugar. 3. *Sour*, as in Vinegar; whose contrary is, 4. *Salt*. 5. *Hot*, as in Cloves; to which is opposite, 6. *Cold*, as in Sal Prunella; for we may as properly say a cold *Taste*, as an hot one, since there are some Bodies which do manifestly impress the Sense of Cold upon the Tongue, tho' not to the Touch. 7. *Aromatick*; to which is contrary, 8. *Nauseous*, or malignant.

He thinks also that *Tastes* may be distinguish'd into such as are, 9. *soft*, which are either Vappid, as in Water, Starch, Whires of Eggs, &c. or *Unctuous*, as in Oils, Fat, &c. 10. Or such as are *hard*; of which he reckons four Kinds, as, 11. *Penetrant*, which worketh itself into the Tongue without any Pungency; as is found in the Root and Leaves of wild Cucumber. 12. *Stupefacient*, as in the Root of black Hellebore; which being chew'd, and for some time remain'd upon the Tongue, affects that Organ with a Numbness, or Paralytic Stupor. 13. *Astringent*, as in Galls: And, 14. *Pungent*, as in Spirit of Sal Armoniac; which two last *Tastes* he makes contrary to the Unctuous, as Penetrant and Stupefacient are contrary to the Vappid one.

The *Compound Tastes* are very numerous; but we have Words to express but six of them, 1. *Austere*, which is astringent and bitter, as in the green and soft Stones of Grapes. 2. *Acerb*, properly so call'd, which is astringent and acid, as in the Juice of unripe Grapes. 3. *Acrid*, which is pungent and hot. 4. *Muriatick*, which is salt and pungent, as in common Salt. 5. *Lixivious*, which is Saltness join'd with some Pungency and Heat. 6. *Nitrous*, which is Saltness join'd with Pungency and Cold.

**TASTE**, in a Figurative Sense, is apply'd to the Judgment and Discernment of the Mind.

We talk, and we hear Talk, every Day, of *Taste*, of good *Taste*, and of bad *Taste*; and yet without well understanding what we mean by the Word: In Effect, a good *Taste* seems to be little else but right Reason, which we otherwise express by the Word *Judgment*. See REASON.

To have a *Taste*, is to give Things their real Value, to be touch'd with the Good, to be shock'd with the Ill; not to be dazzled with false Lustres; but, in spite of all Colours, and of every Thing that might deceive or amuse, to judge soundly.

*Taste* and Judgment then should be the same Thing; and yet 'tis easy to discern a Difference: The Judgment forms its Opinions from Reflection; The Reason, on this Occasion, fetches a kind of Circuit to arrive at its End: It supposes Principles; it draws Consequences; and it judges; but not without a thorough Knowledge of the Case: So that after it has pronounc'd, it is ready to render a Reason of its Decrees. Good *Taste* observes none of these Formalities; e'er it has time to consult, it has taken its Side: As soon as ever an Object is presented it, the Impression is made; the Sentiment form'd; ask no more of it.

As the Ear is wounded with a harsh Sound; as the Smell is sooth'd with an agreeable Odor, before ever the Reason have meddled with those Objects, to judge of them; so the *Taste* opens itself at once, and prevents all Reflection.

They may come afterwards to confirm it, and discover the secret Reasons of its Conduct; but it was not in its Power to wait for them. Frequently, it happens not to know them at all; and what Pains soever it use, cannot discover what it was determin'd it to think as it did.

This Conduct is very different from that the Judgment observes in its Decisions; unless we chuse to say that Good *Taste* is, as it were, a first Motion, or a kind of Instinct of right Reason, which hurries us on with Rapidity, and conducts more securely than all the Reasonings she could make. 'Tis a first Glance of the Eye, which discovers to us the Nature and Relations of Things in a Moment.

In Effect, *Taste* and Judgment are one and the same Thing, one and the same Disposition, and Habitude of the Soul, which we call by different Names, according to the different Manners wherein it acts: When it acts by Sensation,

by the first Impression of Objects, we call it *Taste*; and when by Reasoning, after having examin'd the Thing by all the Rules of Art, &c. we call it Judgment: So that one may say, *Taste* is the Judgment of Nature, and Judgment the *Taste* of Reason. See JUDGMENT.

Good *Taste*, as defin'd by Mad. *Scudery*, and Mad. *Dacier*, in an express Treatise of the Corruption of *Taste*, is a Harmony between the Mind and Reason; and a Person has more or less of this *Taste*, as that Harmony is more or less just.

One might perhaps improve on this Idea; and say, that Good *Taste* is nothing else but a certain Relation between the Mind, and the Objects presented to it.

A right Reason cannot but be mov'd and affected with Things conformable thereto, and wounded by those contrary: There is, then, a kind of Sympathy which unites them as soon as ever they meet; and their Union, their good Understanding, discover each other. Make a fine Discourse; use only the richest and noblest Expressions; if they contain an unhappy Thought, or an incoherent Reasoning; that Thought, this Reasoning, will immediately be felt by a Person of *Taste*: The Antipathy shews itself by a Movement of Aversion, as sudden, as lively, and as natural, as that which Nature inspires us withal for Toads or Spiders. See BEAUTY.

**TASTING**, the Sense whereby we distinguish Savours; or the Perception the Soul has of external Objects, by means of the Organ of *Taste*. See SENSE and TASTE.

Authors have differ'd much as to the Organ of *Tasting*. *Baubin*, *Bartholin*, *Veslingius*, &c. place it in the laxer fleshy Parts of the Tongue: Dr. *Wharton* in the Gland at the Root of the Tongue: *Laurentius*, in the thin Tunic covering the Tongue; others in the Palate, &c. But the great *Malpighi*, and, after him, all the latest Writers, place it in the Papillæ, chiefly lying about the Tip and Sides of the Tongue. See TONGUE.

These Papillæ arise from the Corpus Nervosum that covers the muscular Flesh of the Tongue; whence, passing thro' the Corpus Reticulare, they stand up under the external Membrane of the Tongue, erect, cover'd with Vaginæ, or Sheaths of the said Membrane, to defend them from Objects too violent. See PAPILLA.

These Vaginæ are porous; and stick out so far, that when the Aliment is squeez'd, they enter within the same, to receive the Object, or the Matter of *Taste*.

These Papillæ, *Boerhaave* conjectures, to arise from the ninth Pair of Nerves: And these he asserts, are the only Organ of *Taste*: Those others of the Tongue, Palate, Jaws, &c. he observes, contribute nothing thereto, tho' probably those of the Cheeks, next the Dentes Molares, may. See PAPILLÆ, PALATE, &c.

The Object of *Tasting*, is any Thing either in Animals, Vegetables, or Minerals, from which Salt or Oil may be extracted. See SALT.

*Tasting*, then, is perform'd by the Objects being attenuated, and mix'd with Saliva, warm'd in the Mouth, and apply'd to the Tongue; where, insinuating into the Pores of the membranous Vaginæ of the nervous Papillæ, and penetrating to the Surface of the Papillæ themselves, it affects and moves them; by which Means a Motion is communicated along the Capillament of the Nerve to the common Sensory, and an Idea excited in the Mind, of Salt, Acid, Sweet, Bitter, Hot, Aromatic, Austere, or the like; according to the Figure of the Particles that strike the Papillæ, or the Disposition of the Papillæ to receive the Impulse. See SENSATION.

**TATIANITES**, a Sect of ancient Hereticks; thus call'd from *Tatian*, a Disciple of *Justin Martyr*.

This *Tatian*, who has the Character of one of the most learned Men of all Antiquity, was perfectly Orthodox during the Life of his Master. He was, like him, a *Samaritan*, by Nation, not by Religion, as *Ispiphanus* seems to insinuate. They both belong'd to those Greek Colonies spread throughout the Country of the *Samaritans*.

*Justin* being dead, *Tatian* gave into the Errors of the *Valentinians*; and form'd a Sect call'd sometimes *Tatianites*, and sometimes *Encratites*. See ENCRATITES.

**TATH**, in old Law, a Privilege which some Lords of a Manor have, of having their Tenants Sheep folded at Night upon their own Ground.

**TAT-TOO**, *q. d. tap-to*, a Beat of a Drum, at Night, to advertise the Soldiers to repair to their Quarters in a Garrison, or to their Tents in a Camp. See DRUM.

**TAU**, in our ancient Customs, signifies a Cross: — *Tra-dendo dicto Comiti Thau choreum*. So Mr. *Selden*, in his Notes upon *Isidorus*, p. 159. *Ego Eadgifu predicti Regis Ava hoc opus egregium Crucis Tauinate consolidavi*. See MON. 3. Tom. pag. 121.

**TAU**, or **TAW**, in Heraldry, an Ordinary, in Figure of a T, suppos'd to represent a Cross potent, the top Part cut off. It is thus call'd from the Name of the *Tau*. See T.







**TAUTOLOGICAL** *Echo's*, are such *Echo's* as repeat the same Sound or Syllable many Times. See **ECHO**.

**TAWING**, call'd also by some *Skinning*, the Art or Manner of preparing or dressing Skins in white; to fit them for Use in divers Manufactures, particularly Gloves, Purfes, &c. See **LEATHER**, &c.

All Kinds of Skins may be *taw'd*; but 'tis chiefly those of Sheep, Lambs, Kids, and Goats, that are used to be dress'd this Way; as being those fittest for Gloves.

*Method of TAWING, or of dressing Skins in white.*

The Wooll or Hair being well got off the Skins, by means of Lime, &c. (as describ'd under the Article **CHAMOIS**) they are laid in a large Vat of Wood or Stone set in the Ground, full of Water, wherein quick Lime has been slaked; where they continue a Month or six Weeks, as the Weather is more or less hot, or as the Skins are requir'd to be more or less soft and pliant.

While in the Vat, the Water and Lime is chang'd twice, and they are taken out and put in again every Day. When taken out for the last Time, they are laid all Night to soak in a running Water, to get out the greatest Part of the Lime; and, in the Morning, are laid, six together, on the wooden Leg, to get off the Flesh, by scraping them stoutly, one after another, on the Flesh Side, with a cutting two-handed Instrument, call'd a Knife; and while this is in Hand, they cut off the Legs, and other superfluous Parts about the Extremes.

This done, they are laid in a Vat or Pit with a little Water; where being well full'd with wooden Pestles for a quarter of an Hour, the Vat is fill'd up with Water, and the Skins rinsed therein.

They are next thrown on a clean Pavement to drain; which done, they are cast into a fresh Pit of Water, where being well rinsed, they are taken out, and laid on the wooden Leg, six at once, with the Hair Side outmost, over which they rub a kind of Whetstone very briskly, to soften, and fit them to receive four or five more Preparations given them on the Leg, both on the Flesh Side and the Hair Side, with the Knife, after the Manner above mention'd.

These over, they are put in a Pit with Water and Wheat Bran, and stirr'd about therein, with wooden Poles, till the Bran is perceiv'd to stick to them; and then they are left: As they rise of themselves to the Top of the Water by a kind of Fermentation, they are plung'd down again to the Bottom; and, at the same Time, Fire is set to the Liquor, which takes as easily as if it were Brandy, but goes out the Moment the Skins are all cover'd.

This Operation is repeated as often as the Skins rise above Water; and when they rise no more, they are taken out; laid on the wooden Leg, the Flesh Side outmost; and the Knife pass'd over it to scrape off the Bran. The Bran thus clear'd, the Skins are laid in a large Basket, where they are laden with huge Stones to promote their draining; and when sufficiently drain'd, their Feeding is given them, which is perform'd after the following Manner.

For a hundred large Sheep Skins, and for smaller in Proportion, they take eight Pounds of Alum, and three of Sea Salt, and melt the whole with Water in a Vessel over the Fire; pouring the Dissolution out while yet lukewarm into a kind of Trough, wherein is twenty Pounds of the finest Wheat Flower, with eight Dozen Yolks of Eggs; of all which is form'd a kind of Paste, a little thicker than Childrens Pap; which, when done, is put into another Vessel, to be used in Manner following.

A Quantity of hot Water being pour'd into the Trough wherein the Paste was prepar'd; two Spoonfuls of the Paste is mix'd therewith; in order to which, they use a wooden Spoon, which contains just what is requir'd for a Dozen Skins: And when the whole is well diluted, two Dozen of the Skins are plung'd therein: Care being taken, by the Way, that the Water be'n't too hot, which would spoil the Paste, and burn the Skins.

Having staid some time in the Trough, they are taken out, one after another, with the Hand; and stretch'd out; which is repeated twice: When they have all had their Paste, they are put in Tubs, where they are full'd afresh with wooden Pestles.

Then they are put in a Vat, where they remain five or six Days, or more; and are at last taken out in fair Weather, and hung out to dry on Cords or Racks: The quicker they dry the better; for if they be too long a drying, the Salt and Alum within them, are apt to make them rise in a Grain, which is an essential Fault in this Kind of Dressing.

When the Skins are dry, they are put up in Bundles, and just dip't in fair Water; from which being taken out and drain'd, they are thrown into an empty Tub; and, after some Time, are taken out, and trampled under Foot.

They are then drawn over a flat Iron Instrument, the Top whereof is round like a Battledore, and the Bottom fix'd into a wooden Block; to stretch and open them: When open'd,

they are hung in the Air upon Cords to dry; and when dry, are open'd a second Time by repassing them over the same Instrument.

Lastly, they are laid on a Table, pull'd out, and laid smooth; and are thus in a Condition for Sale and Use.

After the same Manner are dress'd Horses, Cows, Calves Skins, &c. for the Sadlers, Harness-makers, &c. as also Dogs, Wolves, Bears Skins, &c. excepting that in these the Use of the Paste is omitted, Salt and Alum Water being sufficient.

**TAWNY**, in Heraldry. See **TENNE**.

**TAX**, a Tribute settled on every Town, after a certain Rate; and paid yearly towards the Expences of the Government. See **TRIBUTE** and **IMPOST**.

The ancient *Tax* was what the *Subsidy* now is; excepting that the *Tax* was fix'd to a certain Sum, viz. the *Fifteenth* Part of what the Place was anciently valu'd at, whereas the *Subsidy* is variable according to Occasion; and that the *Tax* was levy'd on Cities and Towns, but the *Subsidy* on Persons. See **SUBSIDY**.

Anciently, the *Tax* was impos'd by the King at his Pleasure; but *Edward I.* bound himself, and his Successors, from that Time forward, not to levy it but by Consent of the Realm. See **FIFTEENTH**; see also **GILD** and **WITERDEN**.

The Word *Tax* is form'd from the Greek *ταξις*, Order. See **TAXIS**.

The Rate, &c. of the *Tax* was anciently call'd *Tallage*, from the French *taille*, *Tax*. See **TAILLE**.

The People of *France* were Strangers to *Tailles*, or *Taxes*, till the Time of *S. Louis*, when they were first impos'd in Form of Subsidies, necessary for the Support of the War in the Holy Land.

They were then extraordinary Levies, and were rais'd by Capitation; but were afterwards made perpetual under *Charles VII.* *Philip the Fair*, to raise Money without disturbing the People, call'd the People, as a third Estate, into the general Councils of the Realm. See **ESTATE**.

The Name *Taille* is deriv'd from the Tally of petty Tradesmen; in regard the Country People appointed to collect it, not being able to write, scored down what they receiv'd on Tallies. See **TALLY**.

*Tax* is also the Tribute which Tenants were occasionally to pay their Lord. See **LORD** and **TENANT**.

Most Lords had a Right of *taxing* on four Occasions, viz. when the Lord was taken Prisoner in a just War; when he made his eldest Son a Knight; when he marry'd his eldest Daughter to a Gentleman; and when he made the Voyage of the Holy Land. See **CROISADE**.

*Nauda* shews the extravagant Rise of this Kind of *Taxes*: Those, he observes, which under *Charles VI.* only amounted to the Sum of 40000 Livres, were increas'd, under *Charles VII.* to the Sum of 1800000 Livres; under *Louis XI.* to 4740000 Livres; under *Charles VIII.* to 6000000; under *Louis XII.* to 7640000 Livres.

*Taxes* were distinguish'd into *free*, which were those due, in the four Cases, by Freemen, or those who held free Lands; and *servile* and *base*, which were those due from Persons of base Condition.

They were also distinguish'd into *real* and *personal*. The *personal* were impos'd on the Head of the Servant or Man in Main-morte, and so follow'd him where-ever he went.

**TAXERS**, two Officers yearly chosen in *Cambridge*, to see the true Gauge of all Weights and Measures.

The Name took beginning from Taxing and Rating the Rents of Houses, which was anciently the Duty of their Office.

**TAXIS**, in the ancient Architecture, the same with *Ordonnance* in the new, is describ'd by *Vitruvius* to be that which gives every Part of a Building its just Dimensions, with regard to its Uses. See **ORDONNANCE**.

**TAYL**, in Heraldry, &c. is particularly used for the Tail of an Hart; those of several other Creatures having peculiar and distinct Names.

As that of a Buck, Roe, or any other Deer, is call'd the *Single*; of a Boar, the *Wreath*; of a Fox, the *Ruff*; of a Wolf, the *Stern*; and of a Hare and Coney, the *Scut*.

**TCHILMINAR**, or **TCHILMINAR**, or, as we pronounce it, *Chelminar*, one of the most celebrated Ruins in the World. See **RUINS**.

*Tchelminar* is the Remains of a Palace, suppos'd by some to have stood in the Middle of the City *Ispahan*, built by Queen *Homai*; others will have it the Palace of the Kings of *Persia* in the ancient *Persopolis*, the Capital of that Kingdom.

The Word in the *Persian* signifies 40 Towers, or 40 Columns. See **CHILMINAR**.

**TIA**, or, as the *Chinese* call it, *TCHA*, the Leaf of a Tree or Shrub, growing in several Provinces of *China*, *Japan*, and *Siam*.

The *Tia* Plant affects Valleys, and the Feet of Mountains, and a stony Soil. Its Seed is usually sown in Places expos'd to the South; and bears three Years after sown. The Root resembles



resembles that of the Peach Tree: The Leaves are green, longish at the Point, and pretty narrow, an Inch and half long, and jagged all around. The Flower is much like that of the wild Rose. The Fruit is of different Forms, sometimes round, sometimes long, sometimes triangular; of the ordinary Size of a Bean; containing two or three Peas, of a Mouse Colour, including each a Kernel. These Peas are the Seeds by which the Plant is propagated.

The Tree is of various Heights, from one Foot to an hundred: Some there are which two Men can't fathom, while others scarce exceed the feeblest Shrub in a Garden.

The best Time to gather the Leaves of *Tea*, is while they are yet small, young, and juicy: When gather'd, they are pass'd over the Smoak of boiling Water to moisten them; then they are laid on Copper Plates, which are heated; and thus, the Leaves drying, they curl up in the Manner they are brought to us.

'Tis very rare to find *Tea* perfectly pure; the *Chinese* always mixing other Herbs with it, to increase the Quantity. Indeed, the Price 'tis sold for among them is moderate enough; usually 'tis about Three-Pence a Pound Sterling, never more than Nine-Pence.

The *Chinese* know nothing of *Imperial Tea*, *Flower of Tea*, and many other Names, which in *Europe* serve to distinguish the Goodness, and the Price of this fashionable Commodity; and yet beside the common *Tea*, they distinguish two other Kinds, viz. the *Voui* and *Soumlo*, which are reserv'd for People of the first Quality, and sick Folks.

We have three Kinds of *Tea* in *Europe*, viz. *Green Tea*; which is the common *Tea* of the *Chinese*, &c. *F. le Compté* calls it *Bing Tea*, and says 'tis gather'd from the Plant in April.

'Tis held very digestive, and a little corrosive: It gives a pale greenish Tincture to Water; and its Leaves are much twisted.

The second is *Bohea Tea*, which is the *Voui Tea*, or *Bou Tea* of the *Chinese*. *F. le Compté* makes this only to differ from the *Green Tea*, by its being gather'd a Month before it, viz. in March, while in the Bud; and hence the Smallness of the Leaves, as well as the Depth of the Tincture it gives Water. But 'tis much more probably the *Tea* of some particular Province; the Soil being found to make an Alteration in the Properties of the *Tea*, as much as the Season of gathering it.

'Tis all bought at *Nanquin*; and it is but lately that the *Dutch* have introduced it into *Europe*, where it begins to be much in Vogue.

The third is *Red Tea*, or *Tartar Tea*, or *Honan Tcha*, which tinges the Water with a pale Red, and which is said to be extremely digestive: By means hereof, it is that the *Tartars* are said to be able to feed on raw Flesh. Its Taste is Earthy; and much the least agreeable of them all; but little known in *England*.

*Tea* is to be chosen Green, of the briskest Smell, as whole as possible; and the greatest Care taken that it han't been expos'd to the Air to pall, and evaporate.

The Drink, *Tea*, is made in *China*, and throughout the greatest Part of the East, after the same Manner as in *Europe*; viz. by infusing the Leaves in boiling Water, and drinking the Infusion hot. Indeed, among us, 'tis usual to temper its Bitterness with Sugar, which the Orientals use little or none of.

However, the *Japanese* are said to prepare their Liquor a somewhat different Way, viz. by pulverizing it; stirring the Powder in hot Water, and drinking it as we do Coffee.

The *Chinese* are always taking *Tea*, especially at Meals: 'Tis the chief Treat wherewith they regale their Friends. The most moderate take it at least thrice a Day; others, ten times, or more: And yet 'tis computed, the Consumption of *Tea* among the *English* and *Dutch* is as great in Proportion as among the Orientals. In *France*, the Use of *Tea* is much declin'd, and Coffee is now become the prevailing Liquor. See COFFEE.

As to the Properties of *Tea*, they are strangely controverted: The Eastern Nations are at least as much possess'd with them as the *Europeans*; but 'tis, perhaps, because Imagination bears as great a Sway there as here. The Reason why the Gout and Stone are unknown in *China*, is ascrib'd to the Use of this Plant; which is said further to cure Indigestions of the Stomach, to carry off a Debauch, and to give new Strength for Drinking, to dispel Wind, to cure the Vapours, &c.

*Sim. Paulli*, Physician of the King of *Denmark*, in an express Treatise on this Plant, endeavours to shew, that these Virtues ascrib'd to it in the East, are local, and don't hold with the Inhabitants of *Europe*. He holds, that those past their 40th Year should never use it, as being too desiccative: That *Tea* has no other Virtues but those of Betony: And adds, with *Bauhin*, that 'tis only a Species of Myrtle found in *Europe* as well as the *Indies*.

But this Opinion is refuted by *Pechlin*, in a Treatise of *Tea*, intitled, *Theophilus Bibaculus, sive de Potu Theæ*

*Dialogus*; Where he maintains, That 'tis good to prevent Scorbatic Diseases; that its gentle astringent Virtues strengthen the Tonic Motion of the Intestines, &c. But he blames the Drinking it with Milk; and especially after a full Meal, or after much Wine.

TEAM and THEAME, or TEM and THEME, in our ancient Customs, signifies a Royalty granted by the King's Charter to the Lord of a Manor, for the having, restraining, and judging Bondmen, Neifs, and Villains, with their Children, Goods, and Chattels, in his Court.

TEARS, *Lachrymæ*, a watry Humour, issuing out at the Corner of the Eye, by the Compression of the Muscles serving to moisten the Cornea, to express our Grief, and even to alleviate it. See LACHRYMÆ and LACRYMALIA PUNCTA.

The Ancients had an Opinion, that the Tears of the Living were of use, at least of Pleasure, to the Dead; to which Reason they took great Care to procure them abundance at their Funerals; so much, as to institute a Profession or Trade of Weepers, as judging those of their own Family insufficient. See LACHRYMATORY and FUNERAL.

Deer, when at Bay, are commonly said to shed Tears. Indeed, they ordinarily do yield a Sort of Tears, which owing into the two Clefts underneath, call'd Lachrymatories, at there condens'd into a kind of yellow Liquor, or Gum which diluted in white Wine or Carduus Water, is reputed a Sovereign Remedy for Fits of the Mother, and the Falling Sickness.

*Virgil* makes the Horse of *Pallas* shed Tears at the Funeral Pomp of his Master: This is one of the Passages which the modern Criticks censure as a Breach of Probability. See PROBABILITY.

TEAZEL, or TEASEL, the *Fullers Thistle*, a kind of Plant much used by the Fullers, Cloth-workers, and Stocking-Weavers, to card, or draw out the Wooll or Nap from the Thread or Ground of several Kinds of Cloths, Stuffs, Stockings, &c. in order to render them closer and warmer. See FULLING, &c.

This Plant is cultivated with great Care in several Parts of *France*, particularly *Normandy*; and the Exportation thereof prohibited, by Reason of the vast Use thereof in the Woollen Manufacture. See CARDUUS.

The Stem of the Plant is very high; and its Extremity as also those of its Branches, bear a little round prickly yellowish Ball or Bur, which is the Part used.

The largest Burs, and those most pointed, are esteem'd the best; and are now call'd *Male Teazles*, mostly used in the dressing and preparing of Stockings and Coverlets the smaller Kind, properly call'd the *Fullers* or *Drapers*, and sometimes the *Female Teazle*, are us'd in the Preparation of the finer Stuffs, as Cloths, Rateens, &c.

The smallest Kind sometimes, call'd *Linners Heads*, are us'd to draw out the Nap from the coarser Stuffs, as Bayes, &c.

TECHNICAL, something that relates to an Art. See ART.

In this Sense we see *Technical Words*, *Technical Verses*, &c. And in this Sense Dr. *Harris* intitles his Dictionary of Arts and Sciences, *Lexicon Technicum*.

The Word is form'd of the Greek, τεχνικόν, Artificial, or Art.

TECHNICAL, is a Term particularly apply'd to a kind of Verses, wherein are contain'd the Rules or Precepts of any Art; thus digested to help the Memory to retain them.

*Technical Verses* are usual in Chronology, &c. Such are those expressing the Order and Measures of the Calendars Nones, &c. See CALENDARS.

Those expressing the Seasons; See under AUGUST.

Those expressing the Order, &c. of the Signs; See under SIGN.

*F. Labbe* has compos'd *Latin Verses*, including all the Epochas in Chronology; and *F. Buffier*, after his Example, has put both Chronology and History in French Verse; and since, Geography too.

*Technical Verses* are commonly compos'd in Latin: They are generally wretched ones, and often barbarous; but 'tis Utility is all aim'd at. To give some Idea hereof, we will here add a few Instances. The Caluists include all the Circumstances which make us share with another in a Theft, or other Crime, in these two *Technical Verses*.

*Iussio, Concilium, Consensus, Palpo, Recursus, Participans, Mutus, non Obstant, non Manifestus*

The first of *Father Buffier's Technical Verses* of the History of *France*, are these:

*Ses Loix en quatre Cents Pharamond Introduit,  
Clodion Chevelu, qu'Actius vainquit,  
Alerovec, avec lui Combatit Artus;  
Childeric fut chassé, mais on le rapalla.*



**TECHNICAL Words**, are what we otherwise call *Terms of Art*. See **TERM**.

**TEDEUM**, a kind of Hymn, or Song of Thanksgiving, used in the Church, beginning with the Words *Te Deum Laudamus, We praise thee, O God*.

'Tis used to be sung in the *Romish Church* with extraordinary Pomp and Solemnity, upon the gaining a Battle, or other happy Event. The *Te Deum* is usually ascrib'd to St. Ambrose, and St. Augustin.

**TEETH**, *Dentes*, in Anatomy, little hard smooth Bones, set in the Gums, and serving to masticate or chew the Food, to bite, &c. See **FOOD**, **MASTICATION**, &c.

Men, and most terrestrial Animals, as also some Fishes, have two Rows of Teeth, the one in the upper Jaw, and the other in the lower. See **GUM** and **JAW**.

In Men, the ordinary Number of *Teeth* is 32, sixteen in each Jaw; all fix'd in peculiar Sockets, call'd *Alveoli*; by the Juncture or Articulation, call'd *Gomphosis*, and by the Joiners, *Pegging*. See **GOMPHOSIS**.

They are of three Sorts: Those in the fore Part of each Jaw are call'd *Incisores*, *Cutters*; and are four in Number in each Jaw, broad, thin, and flat: Some call them the *Primaries*, because they appear the first; others the *Adversis*; and others the *Ridentes*, *Laughers*, because they shew themselves first in Laughing. See **INCISORES**.

Behind these, on each Side of each Jaw, stand two which are a little more prominent, and pointed, call'd *Canini*, by the People *Eye-Teeth*, because Part of the Nerve which moves the Eyes is inserted into them; whence the Danger of pulling them out. See **CANINI**.

Behind these are five in each Jaw, call'd the *Molares* or *Grinders*, being those which in Men serve chiefly for Mastication. See **MOLARES**.

The *Incisores* have generally only a single Root, or Twang; the *Canini* sometimes two; and the *Molares* three or four, especially the hind ones, which are put to the greatest Stress.

The *Teeth*, according to *Peyer*, are form'd of convolv'd Skins, harden'd and bound together by a viscid Mucus: And if we view the Grinders of Deer, Horses, and Sheep, &c. we shall find great Reason to be of his Mind.

Others speak of their Formation otherwise. The Sockets, Dr. Quincy observes, are lin'd with a thin Membrane, upon which are several Vessels, thro' which there passes a thick transparent Humour, that, as it increases, hardens in form of Teeth; and about the seventh or eighth Month after Birth, they begin to pierce the Edge of the Jaw, tear the Periosteum and Gums, which being very sensible, create a violent Pain, and other Symptoms incident to Children in the Time of Dentition. See **DENTITION**.

The *Teeth* begin not to appear all at a Time; but first the *Dentes incisivi* of the upper, and then those of the lower Jaw appear, because the thinnest and sharpest; after them come out the *Canini*, because they are sharper than the *Molares*, but thicker than the *Incisivi*; and last of all the *Molares*, because they are thickest and bluntest.

Of this viscous transparent Liquor, which is indurated into the Substance of the *Teeth*, there are two Lays, one below the other, divided by the same Membrane which covers all the Cavity of the Jaw: The uppermost Lay forms the *Teeth* which come out first; but about the seventh Year of Age they are thrust out by the *Teeth* made of the undermost Lay, which then begin to sprout; and if these *Teeth* be lost, they never grow again.

If some have been observ'd to shed their *Teeth* twice, they have had three Lays of this viscous Humour, which hardly ever happens.

About the one and twentieth Year, the two last of the *Molares* spring up, and are call'd *Dentes Sapientie*, because they arise when the Person is at Years of Discretion.

The *Teeth*, M. de la Hire the younger, has found to have all that Part which stands out beyond the Jaw, cover'd with a peculiar Substance quite different from the Bone, which he calls *Email*, or Polish.

This *Email*, by some others call'd the *Periosteum*, is compos'd of an Infinity of little Fibres, which grow to the Bone by their Roots, much like Nails or Horns. See **NAIL**.

This Composition is very discernable in a broken Tooth, where the Origin and Situation of the Fibres are apparent. M. de la Hire is perswaded, that the Growth of these Fibres is perform'd much like that of Nails. If by any Accident a little Part of this *Email* be broke off, so that the Bone is left bare, that is, if the very Roots of the Fibres be taken away, the Bone, in that Part, will grow carious, and the *Tooth* inevitably perish; there being no Bone in the Body that can bear the Air. See **BONE**.

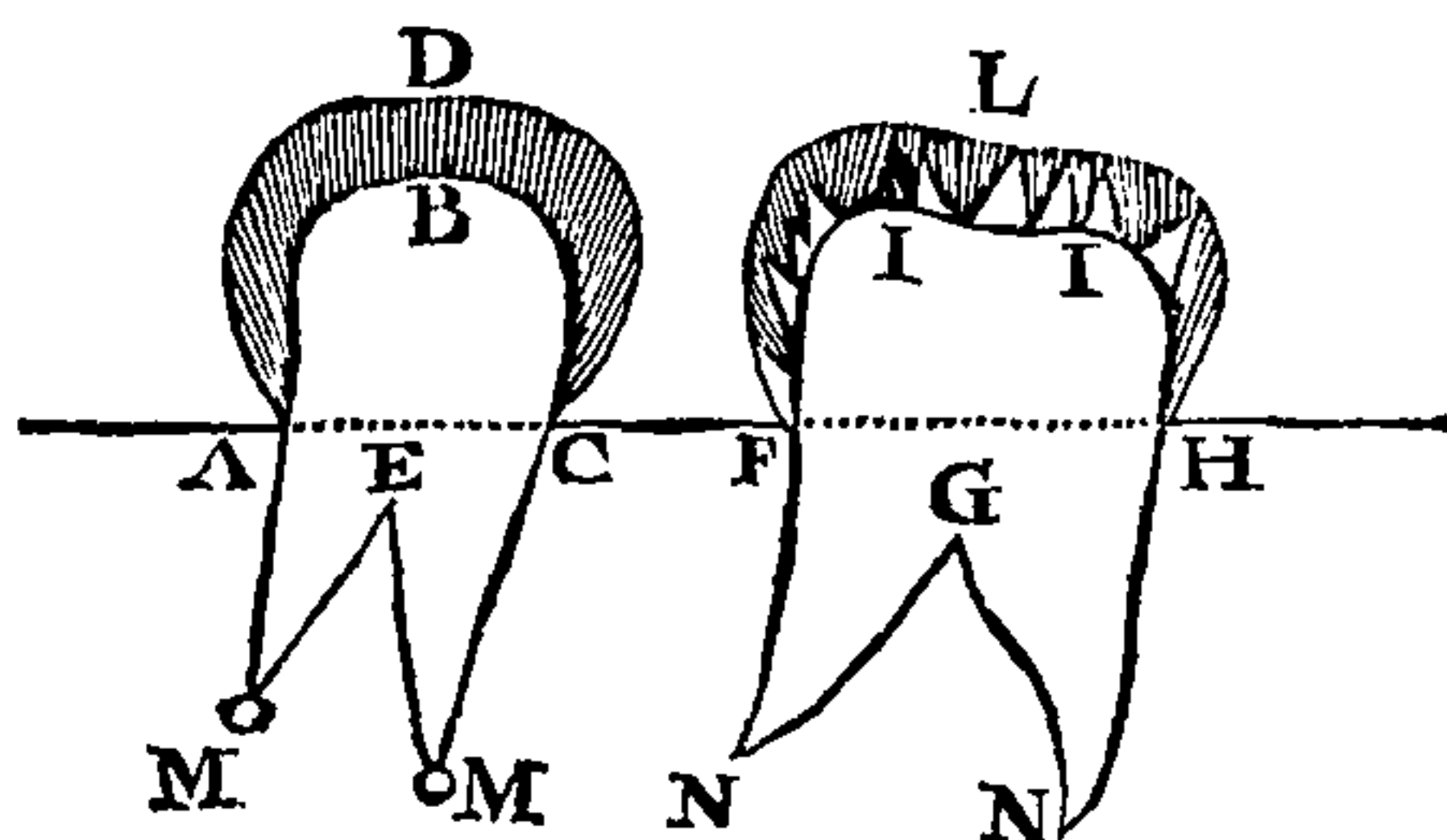
Indeed, in some Persons the *Email* is very much wore and shatter'd, by rubbing them much with Dentrifices, &c. so that the Bone appears thro', and yet the *Tooth* keeps sound; but the Reason is, that the Bone is not quite bare, but there is still a thin Lay of the *Email* which preserves it;

but this Lay being thin enough to be transparent, the yellow Bone is seen thro' it.

Sometimes also a *Tooth* breaks, and the Bone is left bare, yet the Person does not find any Pain or aking from it: The Reason is, that the Hole in the Root or Twang of the *Tooth* thro' which a little Branch of a Nerve enters that renders the *Tooth* sensible, being quite stopp'd up by Age, or the like, has pinch'd off the Nerve, and taken away all Communication between the *Tooth* and the Origin of the Nerves, and, by Consequence, all Sensibility.

It also happens in some *Teeth*, that the Fibres are only in little Sheaves or Bundles, whose upper Extremities meet, but not their lower; as is the Case in most of the Grinders, where the Separation of the Bundles is apparent. Here, if the upper Extreme of the Fibres chance to be broken, or wore off, the Separation between two of the Bundles often enlarges itself, so as to admit some hard Particle of the Food, by which Means a little Aperture being made thro' the *Email*, the Bone is laid bare, and the *Tooth* soon rots. This Inconvenience is remedy'd a little by stopping up the Hole with Lead, which prevents the sharp pungent Parts of the Food from penetrating to the Bone, and there occasioning Pain. See **ODONTALGY**.

What we have said is illustrated by the adjoining Figures, where A C F H expresses the Extremity of the Jaw the *Teeth* are set in; A F C and F G H the Roots or Twangs of the *Teeth* inclos'd in the Jaw; A D C B and F L H I L the *Email*, compos'd of little Fibres ranged aside of each other, which cover all that Part of the *Tooth* without Side the Jaw; I I several Threads join'd at the upper Extremity, but apart at the lower; M M Holes thro' which the Nerves enter the Roots of the *Teeth*; N N a *Tooth* closed up.



The *Teeth*, Mr. Derham observes, furnish us with a notable Instance of the Wisdom and Goodness of the Creator: Their peculiar Hardness is very remarkable, considering the tender Substance they are form'd of. See **BONE**.

The Ancients, and even *Riolanus*, among the Moderns, have held them to be incombustible, and the only Part of the Body that was so; on which Account they were placed with great Care in the Urns among the Ashes of the Deceas'd: But the Opinion is false, there having only been two found in the Tombs of *Westphalia*, one of which was half calcin'd.

Another popular Error is, that the *Teeth* continue growing for ever, even in old People, to the Hour of their Death. M. de la Hire observes, 'tis only the *Email* or Polish that grows, which is a Substance very different from the *Teeth*.

The Form, Disposition, and Order of the *Teeth* are admirable: The foremost weak and far from the Centre, as being only Preparers to the rest; the others being to grind and mince, are accordingly stronger, and placed near the Centre of Motion.

*Galen* puts the Case, that the Order of the *Teeth* should have been inverted, and the Grinders, e. gr. put in the Place of the Incisors; and asks, what Use the *Teeth* had then been of, and what Confusion would not there have arose by such a slight Oversight in the Disposal only? Upon which he argues, that if any Person should dispose a Company of 32 Men, the Number of the *Teeth*, in a just Order, we should judge him an intelligent Person: Why then should we not judge the same of the Creator, &c. ? *De usu Partium*.

Again, their various Forms in various Animals is no less considerable, being all curiously adapted to the peculiar Food and Occasions of the several Species of Animals: Thus in the Rapacious they are fitted for the catching, holding, and tearing the Prey; in Herbaceous for the Gathering and Communion of Vegetables; and in such as have no *Teeth*, as Birds, the Bill supplies the Defect. See **BILL**.

Add, that the temporary Defect of them is no less observable in some: That Children, for Instance, should have none while they are not able to use them, but to hurt themselves, or the Mother; and that at the very Age when they can take in the more substantial Food, and live without the Breast, and begin to need *Teeth* for the Sake of Speech; that then, we say, their *Teeth* should begin to appear,



appear, and gradually grow as they more and more stand in need of them.

Some Persons are born with all their *Teeth*, as *Marcus Curius Dentatus*, and *Cneius Pampirius Carbo*: Others have only had one continu'd *Tooth*, reaching the whole Length of the Jaw, as *Pyrrhus*, King of *Epirus*, and *Prusias*, Son of the King of *Bithynia*: Others are said to have had two or three Rows on the same Jaw, as *Hercules*.

*Mentzelius*, a German Physician, assures us, that he saw an old Man at *Cleves*, in 1666, aged 120 Years, who had a new Set of *Teeth* two Years before, which cut with great Pain; and he saw an *Englishman* at the *Hague*, who cut a new Set of *Teeth* in his 118th Year.

A Danish Physician, named *Hagerup*, maintains in certain *Theses*, that one may hear with the *Teeth*. See *HEARING*.

As to Animals, there are some Fishes have *Teeth* on their Tongues, as *Trouts*; others have them at the Bottom of the Gullet, as the *Cod Fish*; some, as the great Sea-Dog, call'd *Canis Carcharius*, have three, four, or five Rows of *Teeth* on the same Jaw; the *Requiem* and *Crocodile* have each three, and those all Incisors; *Vipers* and *Sea Frogs* have two large crooked Canine *Teeth*, which are moveable, and ordinarily lie flat, only rais'd when they would bite. See *VIPER*, &c.

The *Load* and *Cuttle Fish* have no *Teeth*, and yet bite. See *BITE*.

*Artificial TEETH*, are those set in lieu of natural ones which are wanting.

They are usually made of *Ivory*; but in regard *Ivory*, in a little Time, grows yellow in the Mouth, *Fabricius* advises them to be made of the Shin-bone of a *Bullock*, which preserves its Colour.

The Custom of wearing *Ivory Teeth*, and of binding them in with a Gold Wire, is very ancient: *Lucian* and *Martial* speak of it as practis'd among the *Romans*.

*Guilleman* gives us the Composition of a Paste for making artificial *Teeth*, which shall never grow yellow: The Composition is white Wax granulated, and melted with a little Gum Elemi, adding Powder of white Mastic, Coral, and Pearl.

*TEETH* in the Manage. 'Tis by a Horse's *Teeth*, chiefly, that his Age is known.

The *Teeth* of a Horse are of four Kinds, viz. 24 Jaw *Teeth*, or *Grinders* at the Bottom of the Mouth, beyond the Bars; 12 on each Side the Canal, ranged 6 above, and as many below: These never fall, nor are they used for the Distinction of Age.

12 *Foal-Teeth*, which come in the fore Part of the Mouth at three Months old, and are usually cast at two Years and half.

4 *Tushes* placed alone in the Bars between the fore *Teeth* and *Grinders*, one on each Side below, and as many above. Mares seldom have *Tushes*, and when they have, they are small, and are reckon'd an Imperfection.

12 *Gatherers* growing before in the Place of the *Foal-Teeth* and *Grinders*, and with which Horses draw their Fother, cut Grass, &c. These are divided into

*Nippers*, which are the two foremost *Teeth* above and below, which a Horse first changes.

*Middle Teeth*, or *Separators*, parting the *Nippers* from the Corner *Teeth*, are the two next the *Nippers*, one on each Side of 'em both above and below, and are those which change next.

*Outward* or *Corner Teeth*, are those next the *Tushes* above and below, and which are cast last. 'Tis by these that the Horse's Age is known. They shoot forth from the Gum at five Years of Age, and have a Hollow, wherein is a black Speck, resembling a Bean, call'd the *Mark*, which continues till seven or eight Years of Age, and then begins to fill up. See *MARK*.

*TEGUMENT*. See *INTEGUMENT*.

*TEINTS*, and *Semi-TEINTS*, in Painting, the several Colours us'd in a Picture, consider'd as more or less high, or bright, or deep, or thin, or weaken'd, or diminish'd, &c. to give the proper Relievo, or Softness, or Distance, &c. of the several Objects. See *COLOURING*.

The Word is pure *French*, where it signifies the same Thing.

*TEIRS*, the third Part of a Pipe, or the Measure of forty-two Gallons. See *TIERCE*, MEASURE, &c.

*TEKUPHÆ*, in the Jewish Chronology, are the Times wherein the Sun proceeds from one Cardinal Point to the next. See *CARDINAL Point*.

The Term is also apply'd to the Moments wherein the Sun enters a Cardinal Point: These four Terms, or *Tekuphae*, are observ'd among the *Jews* with a World of Ceremony: The Reason, as we are inform'd by *Munster*, is this:

That People have a Notion, that in each *Tekupha* the Sun has a several Angel appointed to guard and direct it; and that in the very Point wherein the Sun finishes one *Tekupha*, and enters upon another, before the one Director

has taken Place of the other, the Devils have a Power to exercise all Kinds of Tyranny in the Water.

And hence, they say, that if any body drinks the smallest Quantity of Water at that Time, he'll infallibly have a *Dropsy*, or some other grievous Distemper.

*TELAMONES*: The *Romans* call'd by this Name, what the *Greeks* named *Atlantes*; viz. the Figures of Men supporting the Out-jettings of Cornices, &c. in Architecture. See *ATLANTES*.

A late Author thinks, that the Word *Telemon*, which is *Greek* is *τῆμον*, a Wretch that bears Misfortunes with Patience, does not disagree with those Statues, which, in Architecture, sustain such Loads.

*TELESCOPE*, an Optical Instrument, consisting of several Glasses or Lens's, fitted into a Tube; thro' which remote Subjects are seen as if nigh at Hand. See *LENS* and *OPTIC Glass*.

In *Telescopes*, the Lens or Glass turn'd towards the Object, is call'd the *Object Glass*; and that next the Eye, the *Eye-glass*; and if the *Telescope* consists of more than two Lens's, all but that next the Objects, are call'd *Eye-glasses*. See *OBJECT-glass*, &c.

The Invention of the *Telescope* is one of the noblest, and most useful these Ages have to boast of: By means hereof the Wonders of the Heavens are discover'd to us, and Astronomy brought to a Degree of Perfection, which former Age could have no Notion of. See *ASTRONOMY*.

Indeed, the Discovery is owing rather to Chance, than to Thought; so that 'tis the good Fortune of the Discoverer, not his Skill or Ability, we are indebted to: On this Account it concerns us the less to know, who it was first he on this admirable Invention. 'Tis certain it must be casual, since the Theory it depends on was not then known.

*Johannes Baptista Porta*, a noble *Neapolitan*, is ascribed by *Wolffius* to be undoubtedly the first that made a *Telescope* from this Passage in his *Magia Naturalis*, printed in 1549: "If you do but know how to join the two (viz. the Concave and Convex Glasses) rightly together, you will see both remote and near Objects, much larger than they otherwise appear, and withal very distinct. In this Way we have been of good Help to many of our Friends, who either saw remote Things dimly, or near ones confusedly; and have made them see every thing perfectly."

But 'tis certain *Porta* did not understand his own Invention, and therefore neither troubled himself to bring it to greater Perfection, nor ever apply'd it to *Cœlestial* Observation. What is more, the Account *Porta* gives of his Concave and Convex Lens's is so dark and indistinct, that *Kepler*, who examin'd it, by particular Command of the Emperor *Rudolphus*, declar'd to that Prince, that it was perfectly unintelligible.

Fifty Years afterwards, a *Telescope*, 12 Inches long, was made and presented to Prince *Maurice* of *Nassau*, by a Spectacle-maker of *Middlebourg*; but Authors are divided about his Name. *Sirturus*, in a Treatise of the *Telescope*, printed Anno 1618, will have it to be *John Lippersum*; And *Borel*, in an express Volume on the Inventor of the *Telescope*, publish'd in 1655, shews it to be *Zacharias Jansen*, or, as *Wolffius* has it, *Hansen*.

*Joh. Lapreus*, another Workman of the same Town, passes for a third Inventor; having made one in 1610, on the mere Relation given him of that of *Zachary*.

In 1620, *James Metius*, Brother of *Adrian Metius*, Professor of Mathematicks at *Franker*, came with *Drebel* to *Middlebourg*, and there bought *Telescopes* of *Zachary's* Children, who had made them publick; and yet *Hadr. Metius* has given his Brother the Honour of the Invention; in which he is mistakenly follow'd by *Des Cartes*.

But none of these Artificers made *Telescopes* of above a Foot and half: *Simon Marius* in *Germany*, and *Galileo* in *Italy*, first made long ones, fit for *Cœlestial* Observations.

*Le Rossi* relates, that *Galileo* being then at *Venice*, was told of a Sort of *Optic Glass* made in *Holland*, which brought Objects nearer: Upon which, setting himself to think how it should be, he ground two Pieces of Glass into Form as well as he could, and fitted them to the two Ends of an Organ Pipe, and shew'd, at once, all the Wonders of the Invention to the *Venetian* Noblesse on the Top of the Tower of *St. Mark*. That Author adds, that from this Time *Galileo* devoted himself wholly to the improving and perfecting of the *Telescope*; and that he thereby almost deserved all the Honour usually done him, of being reputed the Inventor of the Instrument, and of its being denominated from him *Galileo's Tube*.

*F. Mabilion*, indeed, relates, in his Travels thro' *Italy*, that in a Monastery of his own Order, he saw a Manuscript Copy of the Works of *Commesor*, written by one *Cornelius*, who liv'd in the 13th Century; in the third Page whereof was seen a Portrait of *Ptolomy* viewing the Stars thro' a Tube of four Draws: But that Father does not say that the Tube had Glasses in it. In effect, 'tis more than probable, that such Tubes were then used for no other Purpose but to



preserve and direct the Sight, or to render it more distinct, by singling out the particular Object look'd at, and shutting out all the foreign Rays reflected from others, whose Proximity might have render'd the Image less precise.

This Conjecture is verify'd by Experience; we having often observ'd, that without a Tube, by only looking thro' the Hand, or even the Fingers, or a Pin-Hole in a Paper, Objects shall appear more clear and distinct than otherwise.

Be this as it will, 'tis certain the Optic Principles, whereon *Telescopes* are founded, are contain'd in *Euclid*, and were well known to the ancient Geometricians; and 'tis for want of Attention thereto, that the World was so long without that admirable Invention; as, no doubt, there are numerous others lying hid in the same Principles, only waiting for Reflection or Accident to bring them forth.

*Telescopes* are of several Kinds, distinguish'd by the Number and Form of their Lens's or Glasses, and denominated from their particular Uses, &c. such are the *Terrestrial* or *Land Telescope*, the *Celestial* or *Astronomical Telescope*: To which may be added, the *Galilean* or *Dutch Telescope*, the *Reflecting Telescope*, and the *Aerial Telescope*.

*Galileo's*, or the *Dutch Telescope*, is a *Telescope* consisting of a Convex Object-glass, and a Concave Eye-glass. See CONCAVE and CONVEX.

This, of all others, is the most ancient Form, being the only Kind made by the Inventors, *Galileo*, &c. or known, before *Huygens*: Whence its Name. Its Construction, Perfections, Imperfections, &c. are deliver'd in what follows.

#### Construction of Galileo's or the Dutch TELESCOPE.

In a Tube prepar'd for the Purpose, (the Structure whereof see under the Article TUBE) at one End is fitted a Convex Object Lens, either a plain Convex, or Convex on both Sides, but a Segment of a very large Sphere: At the other End is fitted an Eye-glass, concave on both Sides, and the Segment of a less Sphere; so dispos'd, as to be the Distance of the Virtual Focus before the Image of the Convex Lens. See FOCUS.

#### Theory of Galileo's TELESCOPE.

Now, in an Instrument thus framed, all People, except *Myopes*, or those short-sighted, must see Objects distinctly, in an erect Situation; and increased in the Ratio of the Distance of the Virtual Focus of the Eye Glass, to the Distance of the Focus of the Object Glass.

But, for *Myopes* to see Objects distinctly thro' such an Instrument, the Eye-glass must be set nearer the Object-glass. The Reason of these Effects will appear from what follows:

For, 1<sup>o</sup>, Since 'tis far distant Objects that are to be viewed with a *Telescope*, the Rays proceeding from the same Point of the Object, will fall on the Object-glass, parallel; and, consequently, by their Refraction thro' the Convexity will be thrown Converging on the Eye-glass. But by their Refraction thro' the Concavity hereof, they will be again render'd parallel; and in such Disposition will enter the Eye. See RAY, CONCAVITY, CONVEXITY, and CONVERGING.

But all, excepting *Myopes*, see Objects distinctly by parallel Rays. See VISION and PARALLEL. Therefore the first Point is clear.

2<sup>o</sup> Suppose A (Tab. Opticks, Fig. 41.) to be the Focus of the Object-glass; and suppose AC the furthest Ray on the right Hand of the Object that passes through the Tube: After Refraction, it will become parallel to the Axis BI, and, consequently, after a second Refraction through the concave Lens, will diverge from the virtual Focus. Wherefore, since all the Rays coming from the same Extreme of the Eye placed behind the concave Lens, are parallel to LE; and those from the middle of the Object, parallel to EG (as shewn under the former Article) the middle Point of the Object will be seen in the Axis GA; and the right Extreme, on the right Side, viz. in the Line LN, or parallel thereto: that is, the Object will be erect; Which is the second Point.

3<sup>o</sup> Since all Right Lines parallel to LE cut the Axis under the same Angle; the Semi-diameter of the Object will be seen through the *Telescope*, under the Angle EFL; the Rays LE and GI entering the Eye in the same Manner, as if the Pupil were placed in F. If, now, the naked Eye were in A, it would see the Semi-diameter of the Object under the Angle cAb or CAB. But since the Object is supposed very remote, the Distance AF in respect hereto is nothing, and therefore the naked Eye, even in F, would see the Semi-diameter of the Object under an Angle, equal to A.

The Semi-diameter of the Object, therefore, seen with the naked Eye, is to that seen through the *Telescope* as IM to IE. But 'tis demonstrated, that IM:IE::IE:AB; that is, the Semi-diameter seen with the naked Eye, is to that viewed through the *Telescope*; in the Ratio of the Distance of the Virtual Focus of the Eye-glass FI, to the Distance of the Focus of the Object-glass, AB; Which was the third Point.

Lastly, *Myopes* have their Retina too far from the crystallin Humour; and diverging Rays, concur at a greater Distance than parallel ones; and those that were parallel become diverging by bringing the Eye-glass nearer the Object-glass; by means of such Approach, *Myopes* will see Objects distinctly through a *Telescope*; Which is the fourth Point.

Hence, 1<sup>o</sup>, To have the whole Object visible, the Semi-diameter of the Pupil must not be less than the Distance of the Rays LE and GI; and, therefore, the more the Pupil is dilated, the greater Field or Compass will be taken in by the *Telescope*, and vice versa; so that coming out of a dark Place, or shutting the Eye for some time e'er you apply it to the Glass, you will take in a greater Field at first Glance, than afterwards, when the Pupil is again contracted by the Increase of Light. See PUPIL.

2<sup>o</sup> Since the Distance of the Rays EL and IK is greater, at a greater Distance from the Lens; the Compass taken in by the Eye at one View, will be greater as the Eye is nearer the Concave Lens.

3<sup>o</sup> Since the Focus of a Plano Convex Object Lens, and the Focus of a Plano Concave Eye Lens, is at the Distance of the Diameter; and the Focus of an Object-glass, convex on both Sides, and the virtual Focus of an Eye-glass concave on both Sides, is at the Distance of a Semi-diameter; if the Object-glass be Plano Convex, and the Eye-glass Plano Concave, the *Telescope* will increase the Diameter of the Object, in the Ratio of the Diameter of the Concavity to that of the Convexity: If the Object-glass be Convex on both Sides, and the Eye-glass Concave on both Sides, it will magnify in the Ratio of the Semi-diameter of the Concavity to that of the Convexity; if the Object-glass be Plano Convex, and the Eye-glass Concave on both Sides, the Semi-diameter of the Object will be increased in the Ratio of the Diameter of the Convexity to the Semi diameter of the Concavity: And, Lastly, if the Object-glass be Convex on both Sides, and the Eye-glass Plano Concave, the Increase will be in the Ratio of the Diameter of the Concavity, to the Semi-diameter of the Convexity.

4<sup>o</sup> Since the Ratio of the Semi-diameters is the same as that of the Diameters: *Telescopes* magnify the Object in the same Manner, whether the Object-glass be Plano Convex, and the Eye-glass Plano Concave, or whether the one be Convex on both Sides, and the other Concave on both.

5<sup>o</sup> Since the Semi-diameter of the Concavity, has a less Ratio to the Diameter of the Convexity, than its Diameter has; a *Telescope* magnifies more, if the Object-glass be Plano Convex, than if it be Convex on both Sides.

6<sup>o</sup> The greater the Diameter of the Object-glass, and the less that of the Eye glass; the less Ratio has the Diameter of the Object viewed with the naked Eye, to its Semi-diameter viewed with a *Telescope*; and, consequently, the more is the Object magnified by the *Telescope*.

7<sup>o</sup> Since the Semi-diameter of the Object is increased in the Ratio of the Angle EFL; and the greater the Angle EFL is, the less Part of the Object does it take in at one View; the *Telescope* exhibits so much a less Part of the Object, as it increases its Diameter more.

And this is the Reason that determined the Mathematicians to look out for another *Telescope*, after having clearly found the Imperfection of the first, discover'd by Chance. Nor were their Endeavours vain; as appears from the Astronomical *Telescope* hereafter to be described.

If the Semi-diameter of the Eye-glass, have too small a Ratio to that of the Object-glass, an Object through the *Telescope*, will not appear sufficiently clear, by reason the great Divergency of the Rays will occasion the several Pencils representing the several Points of the Object on the Retina, to consist of too few Rays. This, too, is found, that equal Object Lens's won't bear the same Eye Lens, if they be differently transparent, or there be a Difference in their Polish. A less transparent Object-glass, or one less accurately ground, requires a more spherical Eye glass, than another more transparent, &c.

Hence, though it be found by Experience, that a *Telescope* is good, if the Distance of the Focus of the Object-glass be six Inches, and the Diameter of the Plano Concave Eye-glass be one Inch and one Line, or of one equally Concave on both Sides, one Inch and a Half; yet is it by no means expedient to recommend to the Artificer, either this or any particular Combination; but to try several Eye-glasses, both greater and smaller, with the same Object-glass; and take that through which Objects appear most clear and distinct.

*Hewelins* recommends an Object-glass Convex on both Sides, whose Diameter is four *Dutch* Feet; and an Eye-glass Concave on both Sides, whose Diameter is 4  $\frac{1}{2}$  Digits or Tenths of a Foot. An Object-glass, equally Convex on both Sides, whose Diameter is five Feet, he observes, will require an Eye-glass of 5  $\frac{1}{2}$  Digits; and adds, that the same Eye-glass will also serve an Object-glass of eight or ten Feet.

Hence, as the Distance of the Object-glass and Eye glass is the Difference between the Distance of the virtual Focus of the Eye-



Eye-glass, and the Distance of the Focus of the Object-glass; the Length of the *Telescope* is had by subtracting that from this. That is, the Length of the *Telescope* is the Difference between the Diameters of the Object-glass and Eye-glass, if that be Plano Convex and this Plano Concave; or the Difference between the Semi-diameters of the Object-glass, and Eye-glass, if that be Convex on both Sides, and this Concave on both; or the Difference between the Semi-diameter of the Object-glass and Eye-glass, if that be Convex on both Sides, and this Concave on both; or the Difference between the Semi-diameter of the Object-glass, and the Diameter of the Eye-glass, if that be Convex on both Sides, and this, Plano Concave; or the Difference between the Diameter of the Object-glass, and the Semi-diameter of the Eye-glass if that be Plano Convex, and this Concave on both Sides.

Thus, *e. gr.* If the Diameter of an Object-glass on both Sides, be four Foot, and that of an Eye-glass Concave on both Sides, be Four and a Half Digits or Tenths of a Foot; the Length of the *Telescope* will be one Foot eight Digits.

*Astronomical Telescope*, is a *Telescope* consisting of an Object-glass and an Eye-glass, both Convex. See CON-  
VEXITY.

It has its Name, from its being wholly used in Astronomical Observations.

#### Construction of the Astronomical TELESCOPE.

The Tube being prepared, an Object-glass, either Plano Convex, or Convex on both Sides, but to be a Segment of a large Sphere, is fitted in at one End. At the other End, an Eye-glass Convex on both Sides, which is the Segment of a small Sphere, is fitted into the other End, at the common Distance of the Foci.

#### Theory of the Astronomical TELESCOPE.

Now, an Eye placed near the Focus of the Eye-glass, will see Objects distinctly, but inverted; and magnify'd in the Ratio of the Distance of the Focus of the Eye-glass to the Distance of the Focus of the Object-glass.

For 1<sup>o</sup> Since 'tis very remote Objects are viewed through *Telescopes*, the Rays from any Point of the Object, fall parallel on the Object-glass; and, consequently, after Refraction, will meet in a Point behind the Glass, which Point is the Focus of the Eye-glass. From this Point they begin to diverge, and fall diverging on the Eye-glass, where being refracted, they enter the Eye parallel.

Hence, as all but Myopes see distinctly by parallel Rays, a *Telescope*, thus dispos'd, will exhibit remote Objects distinctly.

Suppose the common Focus of the Lens's in F, (Fig. 42.) and make AB = BF. Since one of the Rays AC, proceeding from the Right Side of the Object, passes thro' A; the Ray CE will be parallel to the Axis AI, and therefore after Refraction in the Eye-glass, will fall in with it in its Focus G. Since then, the Eye is placed near it; and all the other Rays proceeding from the same Point of the Object with EG, are refracted parallel thereto; the Point in the Right Side of the Object, will be seen in the Right Line EG.

After the like Manner it appears, that the middle Point of the Object is seen in the Axis GB so that the Object appears Inverted.

3<sup>o</sup> From what has been already shewn, it appears that the Semi-diameter of the Object will be seen through the *Telescope*, under the Angle EGI, which to the naked Eye placed in A, is seen under the Angle bAc. Suppose, now, IF equal to the Distance of the Focus IG; since the Right Angles at I are equal; EGF = EFI. Therefore drawing FM parallel to AC, we shall have IFM = BAC. The Semi-diameter, therefore, viewed with the naked Eye, is to that viewed through the *Telescope*, as IM to IE. Draw KE parallel to FM; we shall have IM : IE :: IF : IK. But by reason of the Parallelism of the Lens's; CE = BI = BF + FI = AB + FI; and by reason of the Parallelism of the Right Lines CA, and EK; CE = AK, therefore BI = AK, consequently, AB = IK. And, therefore, IM : IE :: IF : AB; that is, the Semi-diameter seen with the naked Eye, is to the Semi-diameter view'd through the *Telescope*, in the Ratio of the Distance of the Focus of the Eye-Lens IF, to the Distance of the Focus of the Object-glass AB. Q. e. d.

Hence, 1<sup>o</sup>, As the *Astronomical Telescope* exhibits Objects Inverted; it serves, commodiously enough for observing the Stars (it mattering little, whether they be seen Erect or Inverted) but for Terrestrial Objects, 'tis much less proper, as the Inverting mutually prevents their being known.

2<sup>o</sup> If between the Eye-glass, and its Focus G, be a plain well polish'd Metal Speculum LN, of the Length of an Inch, and of an Oval Figure, inclined to the Axis under an Angle of 45°, the Rays EP and MQ will be reflected in such Manner, as that concurring in g, they make an Angle P g Q,

equal to PGQ. And therefore the Eye being placed in g, will see the Object of the same Magnitude as before, only in an erect Situation. By the Addition, therefore, of such a Speculum, the *Astronomical Telescope*, is render'd fit to observe Terrestrial Objects. See MIRROR.

3<sup>o</sup> Since the Focus of a Glass Convex on both Sides, is distant from the Glass itself, a Semi-diameter; and that of a Plano Convex Glass, a Diameter; if the Object-glass be Convex on both Sides, the *Telescope* will magnify the Semi-diameter of the Object, in the Ratio of the Semi-diameter of the Eye-glass to the Semi-diameter of the Object-glass; but if the Object-glass be a Plano Convex, in the Ratio of the Semi-diameter of the Eye-glass, to that of the Object-glass.

4<sup>o</sup> Wherefore, since the Semi-diameter of the Eye-glass has a greater Ratio to the Semi-diameter of the Object-glass, than to its Diameter; a *Telescope* magnifies the Semi-diameter of the Object more, if the Object-glass be a Plano Convex, than if Convex on both Sides.

5<sup>o</sup> The Ratio of the Semi-diameter of the Eye-glass, to the Diameter or Semi-diameter of the Object-glass, is the less, as the Eye-glass is a Segment of a less Sphere, and the Object-glass of a greater. A *Telescope*, therefore, magnifies the Diameter of the Object more, as the Object-glass is a Segment of a greater, and the Eye-glass of a lesser Sphere. And yet the Ratio of the Semi-diameter of the Eye-glass to the Object-glass must not be too small: If it be, it will not refract Rays enough to the Eye from each Point of the Object; nor will it separate those coming from different Points sufficiently: by which means the Vision will be render'd obscure, and confused. To this may be added, what we have shewn, of the Ratio of the Object-glass to the Eye-glass in the *Dutch Telescope*.

De Chales observes, that an Object Lens of 2 1/2 Feet will require an Eye-glass of 1 1/2 Digit or Tenth of a Foot; and an Object-glass of eight or ten Feet, an Eye-glass of four Digits; in which he is confirm'd by Eustachio de Divinis.

Huygens's great *Telescope*, wherewith Saturn's true Face, and one of his Satellites were first discovered, consists of an Object-glass of 12 Feet, and an Eye-glass of a little more than Three Digits. Though he frequently used a *Telescope* 23 Feet long, with two Eye-glasses joined together, each in Diameter 1 1/2 a Digit; so that the Two were equal to One of Three Digits. The same Author observes, that an Object-glass of 30 Feet, requires an Eye-glass of 3 1/2 Digits; and gives us a Table of Proportions, for the Constructing of *Astronomical Telescopes*; an Abridgment whereof, we shall here give the Reader.

| Dist. of Foc. of Obj. Glass. | Diam. of Aperture. | Dist. of F. of E. Glass. | Magn. Di. m. | Dist. of Foc. of Obj. Glass. | Diam. of Aperture. | Dist. of F. of E. Glass. | Magn. Di. m. |
|------------------------------|--------------------|--------------------------|--------------|------------------------------|--------------------|--------------------------|--------------|
| Rhinland Feet.               | Digits & Dec.      | Digit and Dec.           |              | 15                           | 2                  | 12                       | 33           |
| 1                            | 0 55               | 0 61                     | 20           | 20                           | 2                  | 45                       | 70           |
| 2                            | 0 77               | 0 85                     | 28           | 25                           | 2                  | 74                       | 101          |
| 3                            | 6 95               | 1 05                     | 34           | 30                           | 3                  | 00                       | 30           |
| 4                            | 1 09               | 1 20                     | 40           | 40                           | 3                  | 46                       | 56           |
| 5                            | 1 23               | 1 35                     | 44           | 50                           | 4                  | 87                       | 26           |
| 6                            | 1 34               | 1 47                     | 49           | 60                           | 4                  | 24                       | 4            |
| 7                            | 1 45               | 1 60                     | 53           | 70                           | 4                  | 58                       | 5            |
| 8                            | 1 55               | 1 71                     | 56           | 80                           | 5                  | 90                       | 5            |
| 9                            | 1 64               | 1 80                     | 60           | 90                           | 5                  | 05                       | 5            |
| 10                           | 1 73               | 1 90                     | 63           | 100                          | 5                  | 48                       | 9            |

If in Two or more *Telescopes*, the Ratio between the Object and Eye-glass be the same; the Object will be magnified the same in both.

Hence some may conclude, the making of large *Telescopes* a needless Trouble. But it must be remembered, what we have already laid down: An Eye-glass may be in a less Ratio to a greater Object-glass, than to a smaller: Thus, *e. gr.* in Huygens's *Telescope* of 25 Feet, the Eye glass is Three Digits. Now, keeping this Proportion, in a *Telescope* of 50 Feet, the Eye-glass should be Six Digits; but the Table shews, Four and a Half are sufficient. Hence, from the same Table it appears, that a *Telescope* of 50 Feet magnifies in the Ratio of 1 : 141; whereas that of 25 Feet, only magnifies in the Ratio of 1 : 100.

Since the Distance of the Lens's is equal to the Aggregate of the Distance of the Foci of the Object and Eye-glasses; and the Focus of a Glass Convex on each Side is a Semi-diameter's Distance, and that of a Plano Convex, a Diameter's Distance from the Lens; the Length of a *Telescope* is equal to the Aggregate of the Semi-diameters of the Lens's, if the Object-glass be Convex on both Sides; and to the Sum of the Semi-diameter of the Eye-glass, and of the Diameter of the Object-glass, if the Object glass be a Plano Convex.

But as the Semi-diameter of the Eye-glass is very small, in respect of that of the Object-glass, the Length of the *Telescope* is usually estimated from the Distance of the Object-glass, *i. e.* from its Semi-diameter, if it be a Convex on both Sides; or its Diameter if Plano Convex. Thus, a



*Telescope* is said to be 12 Feet, if the Semi-diameter of the Object-glass, Convex on both Sides, be 12 Feet, &c.

Since Myopes see near Objects best; for them the Eye-glass is to be remov'd nearer the Object-glass, that the Rays refracted thro' it may be the more diverging.

To take in the larger Field at one View, some use two Eye-glasses; the foremost whereof is a Segment of a larger Sphere than that behind: To this it must be added, that if two Lens's be join'd immediately together, so as one touch the other, the Focus is remov'd to double the Distance which that of one of them would reach to.

To shorten the Astronomical Telescope, i. e. to construct a Telescope so, as that tho' shorter than the common one, it shall magnify as much.

10. Having provided a drawing Tube, fit in an Object Lens EG (Fig. 43.) which is a Segment of a moderate Sphere; let the first Eye-glass BD be Concave on both Sides; and so placed in the Tube, as that the Focus of the Object-glass A may be behind it, but nearer than the Centre of the Concavity G. Then will the Image be thrown in Q, so that  $GA:GI::AB:QI$ . Lastly, fit in another Object-glass, Convex on both Sides, and a Segment of a lesser Sphere, so as that its Focus may be in Q.

This Telescope will magnify the Diameter of the Object, more than if the Object-glass were to represent its Image at the same Distance EQ; and consequently a shorter Telescope constructed this Way, is equivalent to a longer in the common Way. The Demonstration may be seen in *Wolffius*.

Sir *J. Newton* furnishes us with another Method of constructing the Telescope, in his Catoptrical or Reflecting Telescope; the Construction whereof see hereafter.

*Land Telescope*, or *Day Telescope*; a Telescope consisting of more than two Lens's, commonly of a Convex Object-glass, and three Convex Eye-glasses: or, a Telescope that exhibits Objects erect, yet different from that of *Galileo*.

It has its Name from its being used to view Objects in the Day-time, or on the Earth, or from its being used by Day.

To construct a Land or Day Telescope.

A Tube being provided, fit in an Object-glass, which is either Convex on both Sides, or Plano Convex, and a Segment of a large Sphere: To this add three Eye-glasses, all Convex on both Sides, and Segments of equal Spheres; disposing them in such Manner, as that the Distance of any two may be the Aggregate of the Distance of their Foci.

Theory of a Land Telescope.

Then will an Eye apply'd to the last Lens, at the Distance of its Focus, see Objects very distinctly, erect, and magnify'd in the Ratio of the Distance of the Focus of one Eye-glass LK (Fig. 44.) to the Distance of the Focus of the Object-glass AB.

For, 10. the Rays, from what has been already said, falling on the Object parallel; the Image of the Object will be represented invertedly at the Distance of the principal Focus: Wherefore, since this Image is in the Focus of the first Eye-glass, the Rays after a second Refraction will become parallel, and thus falling on the third Lens, after a third Refraction they exhibit the inverted Image invertedly; that is, a direct Image of the Object. Since then this Image is in the Focus of the third Eye-glass, the Rays after a fourth Refraction will become parallel: And in this Disposition the Eye will receive them, and consequently there will be distinct Vision, and the Object will appear erect.

20. If  $IQ=IK$ , that is, equal to the Distance of the Focus of the Object-glass; the Eye placed in M, will see the Semi-diameter of the Object increas'd in the Ratio of LM to KI; but the Ray AQ, proceeding from the Focus Q of the Object Lens AB, after Refraction becomes parallel to the Axis IL; consequently the first Eye Lens CD joins it to the Axis in M, the Distance of a Semi-diameter.

And since the Focus of the second Eye-glass EF, is also in M; the Ray FH, after Refraction, will be parallel to the Axis NO; and therefore the third Eye-glass will join it at the Axis in P; but the Semi-diameters of the Lens's GH and CD are suppos'd equal; therefore  $PO=LM$ . Wherefore since the right Angles at O and L are equal, as also  $HO=EL$ , the Angle OPH is equal to CML. The Semi-diameter of the Object, therefore, appears the same in P as in M; and is consequently magnify'd in the Ratio of LM, or PO to KI.

Hence, 30. An Astronomical Telescope is easily converted into a Land Telescope, by using three Eye-glasses for one; and the Land Telescope, on the contrary, into an Astronomical one, by taking away two Eye-glasses; the Faculty of magnifying still remaining the same.

2. Since the Distance of the Eye-glasses is very small, the Length of the Telescope is much the same as if you only used one.

30. From the Construction, 'tis evident that the Length of the Telescope is had by adding five times the Semi-diameter of the Eye-glasses to the Diameter of the Object-glass, if a Plano Convex; or its Semi-diameter, if Convex on both Sides.

*Huygens* first observ'd, both in the Astronomical and Land Telescope, that it contributes considerably to the Perfection of the Instrument, to have a Ring of Wood or Metal, with an Aperture, a little less than the Breadth of the Eye-glass, fix'd in the Place where the Image is found to radiate upon the Lens next the Eye: By Means hereof the Colours, which are apt to disturb the Clearness and Distinctness of the Object, are prevented, and the whole Compass taken in at a View, perfectly defin'd.

Some make Land Telescopes of three Lens's, which yet represent Objects erect and magnify'd as much as the former. But such Telescopes labour under very great Inconveniencies, both as the Objects herein are tinged with false Colours, and as they are distorted about the Margin.

Some again use four Lens's, and even more; but since some Part of the Rays is intercepted in passing every Lens, Objects are hereby exhibited dim and feeble.

*Reflecting*, or *Catoptric*, or *Cata-dioptric* TELESCOPE, is a Telescope, which, instead of Lens's, consists chiefly of Mirrors, and exhibits remote Objects by Reflection, instead of Refraction. See CATOPTRICKS, &c.

This Instrument is the Invention of the great Sir *J. Newton*: What determin'd him to apply his Thoughts this Way, was the different Refrangibility, which in his new Doctrine of Light and Colours, he found the Rays of Light were of. In effect, as he found the Ratio between the greatest and least Refractions of the different Rays, to be nearly as 28 to 27, it easily follow'd, that the Rays could never be all refracted parallel from any Lens, but would some of them divaricate more, some less; beside that, the Foci would be disturb'd; the Focus of the most refrangible Rays, being nearer the Lens than that of the least refrangible ones, by a Distance which is the 27th Part of the Distance between the Object-glass, and the Focus of the least refrangible ones. See RAY and REFRAINGIBILITY.

Hence he concluded, that Refraction was too unequal a Principle; and that Lens's, of whatever Figures, whether Spherical, Parabolical, or any of the other Conic Sections, and how truly soever ground, would never suffice for the Perfection of Telescopes.

Upon this he had Recourse to another more equable Principle, viz. Reflection; and made a Telescope, consisting of Specula, or Mirrors: The first Hint whereof he owns he took from Dr. Gregory's Opticks.

Construction of a Reflecting Telescope.

Provide a Tube ABCD, (Fig. 45.) open in AD, and clos'd in BC, well black'd within-side, and of a Length equal to the Distance of the Focus from the Concave Speculum EF. To the Bottom BC, is to be fitted a Concave metallic Speculum *ab*, polish'd to the greatest possible Perfection; or rather, to have the Objects clearer, and more distinct, let it be a Glass Speculum, Concave on its fore Side, and equally Convex on the hind Side; for unless it be of the same Thickness every where, it will reflect the Images of Objects tinged with a spurious Colour, and indistinct. Towards the other End of the Tube is fix'd an Iron Piece HL, to which is cemented a plain metallic Speculum; or, which is better, a triangular Prism of Glass or Crystal G, whose upper Angle G is a right Angle, the two others half right. The Faces or Planes that meet in the Angle G, to be square, and the third a Parallelogram. This Prism is to be so dispos'd, as that a Ray reflected from the Speculum, passing thro' the Middle of the Face GM, may cut it at right Angles; but be inclin'd to the Rectangle MN in an Angle of  $45^\circ$ . Its Distance from the Concave Speculum EF, is to be such, as that the Rays *ac* and *bd* reflected from the Concave Speculum, may, after a second Reflection from the Base of the Prism, concur in the Point *e*; that is, the Distance of the Focus *e* from the reflecting Surface of the Prism, and the Distance of that from the Concave Speculum, is to be equal to the Distance of the Focus from the Concave Speculum. In I is placed a Plano Convex Lens, whose Focus is in *e*, that the reflected Rays may enter the Eye parallel. Lastly, this Lens is cover'd with a thin Brass or Lead Plate, having a little round Perforation therein, for the Eye to look thro', by which means all foreign Rays are excluded, which would otherwise occasion Confusion.

In the first Telescope of this Kind which the Inventor made, the Semi-diameter of the Concave Metallic Speculum was 12 Digits, or Tenths of an Inch; from which, therefore, the Focus was 6 Digits distant. The Diameter of the Eye-glass was  $\frac{1}{2}$  of a Digit; so that it magnify'd the Diameter of the Object in the Ratio of 1 to 38: But he found that Objects were shewn somewhat obscure hereby; on which Account, he afterwards recommended Glass Specula instead



of Metallic ones; adding, that there is nothing more requir'd to the Perfection of this *Telescope*, but that the Art of polishing Glafs be brought to greater Perfection; for that some Inequalities which don't hurt Lens's, are found to affect Specula, and prevent Objects being seen distinctly.

The same Author observes, that if the Length of the Instrument be 6 Feet, and consequently the Semi-diameter of the Concave Speculum 12, the Aperture of the Speculum is to be 6 Inches; by which Means the Object will be increas'd in the Ratio of 1 to 200 or 300.

If it be longer, or shorter, the Aperture must be as the Cube of the Quadrato-quadrato Root of the Length, and its magnifying Power as its Aperture. The Speculum he orders to be an Inch or two broader than the Aperture.

*Aerial Telescope*, a kind of *Astronomical Telescope*, the Lens's whereof are us'd without a Tube.

In Strictness, however, the *Aerial Telescope*, is rather a particular Manner of mounting and managing long *Telescopes*, for Cœlestial Observations in the Night Time, whereby the Trouble of long unweildy Tubes is sav'd, than a particular Kind of *Telescope*. The Contrivance we owe to the noble *Huygens*.

#### Construction of the Aerial TELESCOPE.

1° A tall Pole or Mast, AB (Fig. 46.) the Length the Tube should be of, is fix'd perpendicularly in the Ground. Before the erecting it, one Side is planed smooth, and upon it two Rulers fix'd parallel to each other, an Inch and Half apart, including a kind of Groove or Channel between them, reaching from top almost to bottom. At the Top of the Pole is fitted a little Truckle A, moveable on its Axis, and over it is drawn a Cord Gg, double the Length of the Pole, and the Thickness of the little Finger, returning into itself, and furnish'd with a piece of Lead, H, equal in Weight to the Lens and a moveable Arm to be sustained thereby.

Then, a wooden Lath, CD, two Foot long, is framed so as that it may slide freely in the Channel; and in the Middle thereof, is affix'd a wooden Arm E, standing out a Foot from the Pole, and on its Extremity bearing another, Ff, a Foot and Half long, fix'd to it at Right Angles; both of them parallel to the Horizon.

2° An Object-glass is included in a hollow Cylinder I K, three Inches long: To this Cylinder is fix'd a Staff, K L, near an Inch thick, and a Foot long, which rests on a brass Ball M, that moves freely in its Cup or Socket underneath: Only, on Occasion, the Ball and Socket are fix'd by a Screw. That the Lens thus equally balanced, may be moved with a small Force, a Weight NI of about a Pound, is suspended, by a strong Wire NF, by bending which, the common Centre of Gravity of the Weight, the Lens is easily made to coincide with that of the Ball. To the Staff K L, is fix'd a brass Style L, which is bent downwards, till its Point be as much below the Centre of the Staff, as the Centre of the Ball is. To the Point is tied a fine silken Thread L V, which, of Consequence, will be parallel to the Staff K L.

3° An Eye-glass O, is included in a short Cylinder; and the Staff P V, fix'd to the same. To this is hung a little Weight S, sufficient to make a Balance. In Q is fix'd a Handle, R, which carries a transverse Axis, to be held in the Observer's Hand, and the Staff P V directed towards the Object-glass, is tied to the Thread L V. The Thread pass'd through a Hole, V, is wound about a little Peg T, fix'd in the middle of the Staff; by the turning whereof, the Length of the Thread is shorten'd or prolong'd at Pleasure.

4° That the Observer may be able to hold the Eye-glass steady; he has a Fulcrum or Prop under his Arm, the Structure whereof appears from Inspection of the Figure. Lastly, to keep off the feeble Light flowing from the Air upon the Eye, it is conveniently cover'd with a Circle, Y, perforated in the Middle, fitted on to a moveable and flexible Arm.

*TELESCOPICAL Stars*, are such as are not visible to the naked Eye; but discoverable only by the Help of a *Telescope*. See STAR.

All Stars less than the 6th Magnitude, are *Telescopic* to a moderate Eye.

*TELLER*, an Officer in the Exchequer, of which there are Four. See EXCHEQUER.

Their Business is to receive all Monies due to the Crown, and thereupon to throw down a Bill through a Pipe, into the Tally-Court, where it is received by the Auditor's Clerks, who attend there to write the Words of the said Bill upon a Tally; and then deliver it to be enter'd by the Clerk of the Pells, or his Clerk. See TALLY and PELL.

The Tally is then split or cloven by the two Deputy Chamberlains, who have their Seals, and whilst the Senior Deputy reads the one Part, the Junior examines the other Part, with the other two Clerks.

Their Places are in the King's Gift, and they have, besides their chief Clerk or Deputy, four other Clerks, for the Dispatch of Business.

*TELLUS*, *Terra*, ☿, in Astronomy. See EARTH.

*TEMPER* in a { Physical  
Musical  
Mechanical } Sense. See { TEMPERAMENT  
TEMPERAMENT  
in Music.  
TEMPERING.

*TEMPERAMENT*, *TEMPERAMENTUM*, *TEMPERATURE*, in Physicks, that Habitude or Disposition of a Body arising from the Proportion of the several prime or elementary Qualities it is composed of. See QUALITY and ELEMENT.

The Notion of *Temperament*, arises from that of Mixture; where different Elements, as Earth, Water, Air and Fire (or, to speak more justly, in the Peripatetic Way, hot, cold, moist and dry) are blended together; by their Opposition, they tend mutually to weaken and inroach on each other: and from the whole, arises a sort of temperate Crasis, or Coalition of them all, in this, or that Proportion; whence, according to the Quality that prevails or predominates, we say a *hot* or *cold*, a *moist* or *dry* *Temperament*.

It is controverted among the School-men, Whether the *Temperament* properly comprehends all the Four primary Qualities? or, Whether those do not all cease, and a new one, a Fifth, simple Quality, result from the total Alteration made in the other Four, by their mutual Action on each other?

Authors distinguish two Kinds of *Temperaments*, viz. *Uniform* and *Difform*: The First, wherein all the Qualities are mix'd in an equal Degree: The Second, where in an unequal one.

The *Uniform Temperament*, can only be one; the *Difform* admits of Eight different Combinations, since either any one, or any two of the Qualities may prevail; whence *hot* and *moist*, *cold* and *moist*, &c. Further, some considering that the Qualities which do prevail, may not be in equal Degree; and the like of those which do not prevail; make several other Combinations or *Temperaments*; and add 12 more to the Number. In effect, as there are infinite Degrees between the highest and lowest Pitch of any one of the Elements, the different *Temperatures* may be said to be Infinite.

*TEMPERAMENT*, in Medicine, is particularly understood of the natural Habitude and Constitution of the Body of Man; or the Disposition of the Animal Humours. See CONSTITUTION and HUMOUR.

The Notion of this *Temperament* arises hence, that the Blood flowing in the Veins and Arteries, is not conceived to be a simple Fluid; but a sort of imperfect Mixt, or an Assemblage of several other Fluids. For it does not only consist of the Four simple, or primary Qualities; but of Four other secondary Ingredients compounded thereof, into which it is supposed to be resolvable, viz. *Choler*, *Phlegm*, *Melancholly* and *Blood*, properly so called. See BLOOD, CHOLER, BILE, PHLEGM, &c.

Hence, as this, or that Ingredient Humour prevails in a Person, he is said to be of a *Choleric*, *Phlegmatic*, *Melancholic*, *Sanguine*, &c. *Temperament*. See SANGUINE, MELANCHOLLY, CHOLERIC, &c.

The ancient Physicians brought these Animal *Temperaments* to correspond with the universal *Temperaments* above described: Thus the *Sanguine Temperament* was supposed to coincide with *hot* and *moist*; the *Phlegmatic* with *cold* and *moist*, the *Melancholic* with *dry* and *cold*, &c.

*Galen* introduced the Doctrine of *Temperaments* into Physic, from the Peripatetic School; and made it, as it were, the Basis of all Medicine. The whole of curing Diseases, consisted in *tempering* the Degrees of the Qualities, Humours, &c. See GALENICAL, DEGREE, &c.

On the Footing Medicine now stands, the *Temperaments* are much less consider'd. Dr. *Quincy* and other Mechanical Writers, pare away the greatest Part of the Galenic Notion, as useless and uncertain; and consider the *Temperaments* as no other but those Diversities in the Blood of different Persons, whereby it becomes more apt to fall into certain Combinations in one Body than another, whether into *Choler*, *Phlegm*, &c. whence, according to them, People are denominated *Choleric*, *Phlegmatic*, &c.

The Ancients distinguish'd two Kinds of *Temperaments* in the same Body; the one *ad Pondus*, in Weight; the other, *ad Justitiam*.

The *Temperamentum ad Pondus*, is, where the elementary Qualities are found in equal Quantities, and in equal Proportions; such is supposed to be in the Skin of the Fingers; without which they would want Power of distinguishing Objects, with sufficient Accuracy.

The *Temperamentum ad Justitiam*, is that which contains unequal Portions of those Qualities, but yet in such Proportion as is necessary for the Discharge of the Functions proper to the Part: Such is the *Temperamentum* in a Bone, which contains more earthy than aqueous Parts, to make it more hard and solid, for its Office of sustaining.



*Galen* observes, that the *Temperament ad Pondus*, is only imaginary; and that though it were real, it could not subsist above one Moment.

*Dr. Pitcairn* looks on the *Temperaments* or Constitutions, as native Diseases; According to him, any one indued with whatever *Temperament*, hath the Seeds of a real Disease within him: A particular *Temperament*, supposing that some Secretions are in greater Proportion than is proper for Life indefinitely long.

As the Diversities of *Temperaments* are no other than Diversities of Proportions in the Liquids, which may be diversified infinite Ways; so there may be an infinite Number of *Temperaments*; though Authors have only suppos'd Four. The *Sanguin*, which is reckon'd a *Temperament*, *Pitcairn* says, is no other than a Plethora. See PLETHORA.

TEMPERAMENT, or tempering, in Musick, a rectifying or mending the false or imperfect Concords, by transferring to them part of the Beauty of the perfect ones. See CONCORD.

The Degrees of the Octave, which may be call'd its Elements, as being the smallest Intervals it is resolvable into; are two greater Semitones, two lesser Tones, and three greater Tones. See TONE and OCTAVE.

Now the different Situation of these Elements, with respect to each other, occasions that Intervals or Concords of the same Name, as *Thirds*, *Fourth*s, &c. don't consist of the same Degrees or Elements, tho' there be always the same Number of them; but one Fourth, for Instance, is agreeable and perfect, and another not.

To mend these imperfect Concords, the Musicians have bethought themselves to temper, i. e. give them part of the Agreeableness of perfect ones. In order to this, they take a Medium between the two, and this they call a *Temperament*, which necessarily produces a new Division of the Octave, or which amounts to the same new Elements.

For Instance, whereas naturally its Elements are the greater Semitone, and the greater and lesser Tone; they take a middle Tone form'd of the greater and the less: And the only Elements now, are the greater Semitone, and this mean Tone, which renders the five Intervals that are Tones equal, and those that are Semitones less unequal to these.

One might also divide each of the five Tones of the Octave into Semitones, which, join'd to the two it naturally has, make twelve: In which Case, the whole Octave would be divided into twelve equal Parts, which would be mean Semitones.

'Tis easy to form various other Kinds of *Temperaments*: All the Difficulty is to find such as are free from two great Inconveniences, i. e. which don't alter either all the Concords too much, or, at least, some of them.

All such Divisions of the Octave are call'd *temper'd*, or *temperative Systems*. See SYSTEM and SCALE of Musick.

TEMPERATE Zone. See ZONE.

TEMPERING, in the Mechanic Arts, the preparing of Steel and Iron, so as to render them more compact, hard, and firm; or even more soft and pliant; according to the respective Occasions. See IRON and STEEL.

These Metals are *temper'd* by plunging them, while red hot, in some Liquor prepar'd for the Purpose: Sometimes pure Water is us'd for that Purpose; and, in effect, Locksmiths, &c. scarce use any other.

Sometimes a Composition of divers Juices, Liquors, &c. is us'd; which is various, according to the Manner and Experience of the Workman; as Vinegar, Mousse-Ear-Water, the Water oozing from broken Glasses, Soot, Salt, Oil, &c.

To harden and temper *English*, *Flemish*, and *Swedish* Steel, you must give them a pretty high Heat, then suddenly quench them in Water to make them hard: But *Spanish* and *Venice* Steel will need but a Blood-red Heat e'er it be quench'd. See HEAT.

If the Steel be too hard, or brittle for an Edge Tool, &c. let it down by rubbing a Piece of Grindstone or Whetstone hard upon the Work, to take off the black Scurf: Then brighten, or heat it in the Fire; and as it grows hotter, you will see the Colour change by Degrees, coming first to a Straw, or light goldish Colour, then to a darker Goldish Colour, and at last to a Blue Colour. Chuse such of these Colours as the Work requires, then quench it suddenly in Water.

The light Gold Colour is for Files, cold Chissels, and Punches, that punch Iron and Steel: The dark Goldish Colour for Punches to use on Brass, &c. The Blue Colour gives the Temper for Springs, &c.

The *Tempering* of Files and Needles is perform'd in a peculiar Manner. See FILE and NEEDLE.

The Ancients appear to have had some better Method of *Tempering*, than any of the Moderns are acquainted withal; witness their Works in Porphyry; a Stone so hard, that none of our Tools make any Impression upon it. See PORPHYRY.

TEMPEST, a Storm, or violent Commotion of the Air, with or without Rain, Hail, Snow, &c. See WIND, HURRICANE, WHIRLWIND, WATER-SPOUT, EARTHQUAKE, &c.

TEMPLARS, or Knights-TEMPLARS, or Knights of the TEMPLE, a Religious-Military Order, first establish'd at Jerusalem, in Favour of Pilgrims travelling to the Holy Land. See KNIGHT.

The Original of this Order, the first Military Order in the World, is this: In 1118, some pious noble Persons devoted themselves to the Service of God, in the Presence of the Patriarch of Jerusalem; promising to live in perpetual Chastity, Obedience, and Poverty, after the manner of Canons.

The two principal Persons were *Hugo de Paganis*, and *Geoffroy of S. Omers*. *Baldwin II.* then King of Jerusalem, gave them an Apartment in his Palace, near the Temple, at Jerusalem, not far from the Sepulchre of our Saviour; whence their Denomination *Templars*.

Soon afterwards, the Canons of the Temple gave them a Piece of Ground hard by the said Temple, to build them regular Houses on; and the King, the Lords, the Patriarch, and the Prelates, each gave them somewhat out of their Revenue, for Food and Cloaths. Their first Undertaking, and what they had first in View at their Institution, was to guard the Highways against Robbers, &c. chiefly for the Safety of Pilgrims and Croises. See CROISE.

The principal Articles of their Rule, were: That they should hear the holy Office throughout every Day; or, that when their Military Duties should prevent this, they would supply it by a certain Number of Pater Nosters: That they would abstain from Flesh four Days in the Week; and on Fridays from Eggs and Milk-meats: That each Knight might have three Horses, and one Esquire; and that they should neither hunt, nor fowl.

Their first Rule was that of St. Bernard. Nine Years after their Foundation, a particular Rule was prescrib'd them in the Council of Troyes.

In every Nation they had a particular Governor, call'd *Master of the Temple*, or of the *Militia of the Temple*. Their *Grand Master* had his Residence at Paris.

The Order of *Templars* was abolish'd at the Beginning of the XIVth Century, under *Clement V.* *Edward II.* of England, and *Philip the Fair* of France. In 1607 those in England were all arrested, and seven burnt alive. And in 1312, the Order was quite suppress'd in the Council of Vienna, and 50 burnt alive.

The Crimes they were charg'd withal, were apostatizing to the *Sarazens*, and holding Correspondence with them. Some Authors will have it, these Crimes were only pretended; and that the true Reason of the Suppression of the Order, was the immense Riches they were possess'd of. But tho' this might be some Reason for their Suppression, it could be none for burning them alive: Add to this, that their Effects were given to the Hospitallers, or Knights of St. John. What then did the Kings of England, &c. get by their Suppression? And what was it to them, which of those Orders had the Effects?

TEMPLE, a publick Building, erected in Honour of some Deity, either true, or false; and wherein the People meet to pay religious Worship to the same. See CON.

*Clemens Alexandrinus* and *Eusebius*, refer the Origin of Temples to the Sepulchres built for the Dead. *Herodorus* and *Strabo* will have the *Aegyptians* to be the first who built Temples to the Gods. The first, built in Greece, is ascrib'd to *Deucalion*, by *Apollonius Argonaut.* Lib. III.

In Antiquity we meet with many People who would not build any Temples to their Gods, for fear of confining them to too narrow Bounds. They perform'd their Sacrifices in all Places indifferently, from a Persuasion, that the whole World is the Temple of God, and that he requires no other. This was the Doctrine of the *Magi*, follow'd by the *Persians*, the *Scythians*, the *Numidians*, and many other Nations mention'd by *Herodorus*, Lib. I. *Strabo* Lib. XV. and *Cicero* in his 2d Oration against *Verres*.

The *Persians*, who worshipp'd the Sun, believ'd it would wrong his Power, to inclose Him in the Walls of a Temple, who had the whole World for his Habitation: And hence, when *Nerxes* ravag'd Greece, the *Magi* exhorted him to destroy all the Temples he met with.

The *Sicyonians* would build no Temple to their Goddess *Coronis*: Nor the *Athenians*, for the like Reason, erect any Statue to Clemency, who, they said, was to live in the Hearts of Men, not within Walls.

The *Bithynians* had no Temples, but the Mountains to worship on; nor the ancient *Germans* any other but the Woods.

Even some Philosophers have blamed the Use and Building of Temples, particularly *Diogenes*, *Zeno*, and his Followers the *Stoicks*: But, it may be said, That if God have no Need of Temples, Men have Need of Places to meet in for the publick Offices of Religion: Accordingly, Temples may be traced



traced back even into the remotest Antiquity. See *Hospinianus de Origine Templorum*.

The *Romans* had several Kinds of *Temples*; whereof those built by the Kings, &c. consecrated by the Augurs, and wherein the Exercise of Religion was regularly perform'd, were call'd, by Way of Eminence, *Templa*, *Temples*.

Those that were not consecrated, were call'd *Ædes*.

The little *Temples*, that were cover'd or roof'd, they call'd *Ædiculæ*.

Those open, *Sacella*.

Some other Edifices consecrated to particular Mysteries of Religion, they call'd *Fana* and *Delubra*.

All which Kinds of *Temples*, *Vitruvius* tells us, had other particular Denominations, according to the Form and Manner of their Construction; as hereafter related.

Indeed, the *Romans* out-did all Nations in the Point of *Temples*; they not only built *Temples* to their Gods, to their Virtues, to their Diseases, &c. but also to their Emperors, and that in their Life-time; Instances whereof we meet withal in Medals, Inscriptions, and other Monuments. *Horace* compliments *Augustus* hereupon, and sets him above *Hercules*, and all the Hero's of Fable; in that those were only admitted into *Temples* after their Death, whereas *Augustus* had his *Temples* and Altars while living.

*Viventi tibi maturos largimur honores;  
Jurandasq; tui per nomen ponimus Aras.* Epist. ad August.

TEMPLE, in Architecture. The ancient *Temples* were distinguish'd, with regard to their Construction, into various Kinds; as,

TEMPLES of *Antæ*, or simply *Antæ*: These, according to *Vitruvius*, were the most simple of all *Temples*; having only angular Pilasters, call'd *Antæ*, or *Parastatæ*, at the Corners, and two Tuscan Columns on each Side the Doors. See *ANTA*.

*Tetrastyle*-TEMPLE, or simply *Tetrastyle*, was a *Temple* that had four Columns in Front and as many behind; as that of *Fortuna Virilis* at Rome. See *TETRASTYLE*.

*Prostyle*-TEMPLE, that which had only Columns in its Front, or Fore-side; as that of *Ceres* in *Eleusis*, in Greece. See *PROSTYLE*.

*Amphiprostyle*, or double *Prostyle*, that which had Columns both before and behind, and which was also *Tetrastyle*. See *AMPHIPROSTYLE*.

*Periptere*-TEMPLE, that which had four Rows of isolated Columns around, and was *Hexastyle*, i. e. had six Columns in Front; as the *Temple* of Honour at Rome. See *PERIPTERE*.

*Diptere*-TEMPLE, that which had eight Rows of Columns around, and was also *Ocostyle*: Or had eight Columns in Front; as that of *Diana* at *Ephesus*. See *DIPTERE*.

|   |       |                         |
|---|-------|-------------------------|
| PSEUDO <i>diptere</i> , or imperfect <i>diptere</i> | } See | PSEUDO <i>diptere</i> . |
| HYPETRE - - - - -                                   |       | HYPETRE.                |
| MONOPTERE - - - - -                                 |       | MONOPTERE.              |

The Word *Temple* is form'd from the *Latin Templum*, which some derive from the *Greek* *πλευρος*, signifying the same Thing; and others from *πρωω*, *abscindo*, I cut off, I separate, in Regard a *Temple* is a Place separated from common Uses; others derive it from the old *Latin* Word *templare*, to contemplate.

The ancient Augurs gave the Name *Temples* to those Parts of the Heavens, which they mark'd out for the observing of the Flight of Birds. Their Formula was this: *Templa resqua sumo*.

TEMPLES, among us, are two Inns of Court; thus call'd, because anciently the Dwelling-House of the Knights *Templars*. See *TEMPLAR*.

At the Suppression of that Order, they were purchas'd by some Professors of the Common Law, and converted into Hospitia, or Inns. See *INN*.

They are call'd the *Inner* and *Middle Temple*, in relation to *Essex House*, which was also a Part of the House of the *Templars*, and call'd the *Outer Temple*, because situate without *Temple Bar*.

In the *Middle Temple*, during the Time of the *Templars*, the King's Treasure was kept: As was also that of the Kings of France in the House of the *Templars* at Paris.

The chief Officer was the *Master of the Temple*, who was summon'd to Parliament in 49 Hen. 3. And from him, the chief Minister of the *Temple Church* is still call'd *Master of the Temple*. See *MASTER*.

TEMPLES, *Tempora*, in Anatomy, a double Part of the Head, reaching from the Forehead and Eyes, to both Ears. See *HEAD*.

The *Temples* are form'd of two Bones, call'd *Ossa Temporis*. See *TEMPORIS Ossa*.

*Menage* will have the Word deriv'd from the old *Latin*, *Tempra*, whence *Tempora*, and *Temples*. But the Physi-

ans give another Origin. These Parts, they say, were call'd *Tempora*, from their shewing the Age or Time of Man, by the Colour of the Hair, which turns white in this Part before any other; Which *Homer* seems to have been aware of, by his calling Men *Poliocrotaphos*, q. d. Grey-templed.

TEMPORAL, *Temporalis*, a Term frequently us'd for *Secular*; in which Sense it stands in Opposition to *Ecclesiastical*. See *SECULAR*.

Pope *Boniface* wrote to *Philip* the Fair of France, that he was subject to him both in Spirituals and *Temporals*. At present all the Doctors on this Side the *Alps* own the Supremacy of Kings in *Temporals*. See *SUPREMACY*.

TEMPORALIS, in Anatomy, a Muscle, which arises by a Semi-circular fleshy Beginning, from a Part of the *Oss Frontis*, the lower Part of the *Parietale*, and upper Part of the *Temporale*; from whence going under the *Zygoma*, and gathering together, as in a Centre, it is inserted, by a short and strong Tendon, into the *Processus Coronæ* of the lower Jaw, which it pulls upward.

This Muscle is also call'd *Crotaphites*, and is cover'd with a strong tendonous Fascia. See *CROTAPHITES*.

TEMPORALITIES, the Temporal Revenues of an Ecclesiastic; particularly, such Revenues, Lands, Tenements, or Lay-fees, as have been annexed to Bishops Sees by our Kings, or other Persons of high Rank in the Kingdom. See *BISHOP*.

The Canonists on the other side the *Alps*, anciently gave the Pope a Power over the *Temporalities* of Kings. Yet Pope *Clement V.* owned frankly, that his Predecessor *Boniface VIII.* had exceeded the just Bounds of his Authority, in meddling with the *Temporalities* of the King of France. *Feuvert*.

TEMPORIS *Oss*, Bone of the Temple, a Bone on each Side the Head. See *TEMPLES*.

The Figure of the *Oss Temporis* is nearly Circular. The fore and upper Parts are very thin, consisting only of one Table. The lower and hind Parts are thick, hard, and uneven.

It is joined to the *Oss Sincipitis*, by the Squamous Suture; whence, in that Part, it is call'd *Oss Squamosum*. Its lower Part is joined to the *Oss Occipitis*, and *Sphenoides*: To which latter, as likewise to the Bones of the upper Jaw, it is joined by means of certain Processes, and in that Part, is call'd *Oss Petrosum*. See *PETROSUM*.

Each of the *Ossa Temporum* has two Sinus's; the Exterior whereof, is lined with a Cartilage, and receives the Process of the lower Jaw; the Interior receives the lower Part of the Sinus Laterales of the Dura Mater. Each likewise has four Processes; the *Oss Jugale*, *Processus Mamillaris*, *Styloides*, and *Oss Petrosum*. See each described under its proper Article *JUGALE*, *MAMILLARIS*, &c.

TEMPTATION, in Theology, an Induction, or Solicitation to Evil; whether from the World, the Flesh or the Devil.

Among the Mystic Divines, profitable Temptations, are those Trials the Soul is to pass through, ere it arrive at the unitive Life, and the Peace within.

When it surmounts that Dryness and Darkness it falls into, through a Suspension of the Effects of divine Love, and that it resists the World, and all the Allurements it presents; those Temptations are called *Tentationes Uiles*, and *Fructuose*.

In our ancient Law Books, *Temptation*, *Tentatio*, is us'd for a Trial, Proof or Assay. *Tentatio Panis fit bis*, in *Angl. Chart. Ekv. I.*

TENABLE, in the military Art, something that may be defended, kept and held against Assaults.

The Word is little us'd, but with a Negative: When a Place is open on all Sides, and its Defences all beaten down, It is no longer *Tenable*. When the Enemy has gain'd such an Eminence, This Post is not *Tenable*.

The Word is French, form'd from *Tenir*; as that from the *Latin*, *Tenere*, to hold.

TENAILLE, in Fortification, a kind of Out-work, consisting of Two Parallel Sides, with a Front, where a re-entering Angle,

In Strictness, that Angle, and the Faces that compose the *Tenaille*.

The Word is French, and signifies, literally, Pincers or Nippers.

The *Tenaille* is of two Kinds: *Simple* and *Double*. *Simple* or *single Tenaille*, is a large Out-work, as *DABCE* (Tab. Fortification, Fig. 8.) consisting of two Faces or Sides *AB* and *CB*, including a re-entering Angle *B*.

The great Defects of the *Tenaille* are, that it takes up too much Room, and on that Account is advantageous to the Enemy; that its Angle *B* is undefended; the Height of the Parapet hindering the seeing down into it, so that the Enemy can lodge there under Covert: and that the Sides *AC* and *CD* are not sufficiently defended.



For these Reasons, the *Tenaille* is now excluded out of Fortification by the best Engineers; and never made, but where there wants Time to form a Horn-work.

*Double or Plank'd TENAILLE*, is a large Out-work, consisting of two simple *Tenailles*, or two re-entring Angles FGH and HIK (Fig. 9). This is now, also, excluded out of Fortification for the same Reasons as the former.

*TENAILLE of the Place*, is the Face of the Place, comprehended between the Points of Two neighbouring Bastions; including the Curtain, the two Flanks raised on the Curtain, and the two Sides of the Bastions which face one another. See BASTION, CURTAIN, &c.

So that the *Tenaille* is the same with what is otherwise call'd, the *Face of a Fortress*. See FORTIFIED PLACE.

*TENAILLE of the Ditch*, is a low Work raised before the Curtain, in the Middle of the Foss or Ditch. It is of three Sorts: The First is composed of a Curtain, two Flanks and two Faces. The Rampart of the Curtain, including the Parapet and Talus, is but five Fathom thick, but the Rampart of the Flanks and Faces Seven.

The Second, which *Vauban* saith, he found to be of very good Defence, is composed only of two Faces, made on the Lines of Defence, whose Rampart and Faces are parallel.

The third Sort differs from the Second, only in this, that its Rampart is parallel to the Curtain of the Place.

All three Sorts are good Defences for the Ditch, and lie so low, that they cannot be hurt by the Besiegers Cannon, till they are Masters of the Covert-way, and have planted their Cannon there.

TENANCY, a Habitation or House to live in, or a Tenement, or Possession held of another. See TENEMENT.

TENANT or TENENT, in Law, one that holds or possesses Lands and Tenements, by any kind of Right, either in Fee, for Life, Years, or at Will. See POSSESSION, TENURE, &c.

The Term *Tenant*, is used in Law with divers Additions: Thus, *Tenant in Dower*, is she that possesses Lands by Virtue of her Dower. See DOWER.

*Tenant per Statute-Merchant*, holds Land by Virtue of a Statute, forfeited to him. See STATUTE-MERCHANT.

*Tenant in Frank Marriage*, is he that holds Lands or Tenements by Virtue of a Gift thereof made to him upon Marriage between him and his Wife. See FRANK-MARRIAGE.

*Tenant by Courtesy*, holds for his Life, by reason of a Child begotten by him of his Wife, being an Inheritor and born alive. See COURTESY.

*Tenant by Elegit*, holds by Virtue of the Writ call'd an *Elegit*. See ELEGIT.

*Tenant in Mortgage*, holds by means of a Mortgage. See MORTGAGE.

*Tenant by Verge*, in ancient Demesne, is he who is admitted by the Rod in the Court of an ancient Demesne. See VERGE and DEMESNE.

*Tenant by Copy of Court Roll*, is one admitted *Tenant* of any Lands, &c. within a Manor, which Time out of Mind, have been Demisable according to the Custom of the Manor. See COPYHOLD.

*Tenant paravail*. See PARAVAIL.

*Tenant by Charter*, is he that holdeth by Feoffment in Writing or other Deed. See CHARTER.

*Tenant in Capite or Chief*, holdeth of the King in Right of his Crown. See CAPITE.

*Tenant of the King*, is he that holdeth of the Person of the King.

*Joint Tenants* have equal Right in Lands or Tenements by Virtue of one Title.

*Tenants in common*, have equal Right; but hold by divers Titles. A *Particular Tenant* holds only for this Term. A *Sole Tenant*, is he, who hath no other joined with him; and a *Tenant by Execution*, is he who holds by Virtue of an Execution upon any Statute, Recognizance, &c.

Anciently, there was also *Tenant by Knight-Service*, *Tenant in Burgage*, *Tenant in Socage*, *Tenant in Frank-Fee*, *Tenant in Villenage*; and there is still *Tenant in Fee-simple*, *Tenant in Fee tail*, *Tenant upon Sufferance*, &c. See KNIGHTS SERVICE, BURGAGE, SOCAGE, VILLENAGE, FEE-SIMPLE, TAIL, SUFFERANCE, &c.

TENENT, in Heraldry, is used for something that sustains, or holds up the Shield, or Armory; and is generally synonymous with *Supporter*.

The Difference which some Authors make between them, is, that *Tenents* are single, and *Supporters* double; one placed on each Side the Shield. But the proper Distinction seems to consist in this, that *Tenents* are human Figures, and *Supporters*, Figures of Beasts.

There are various Forms of *Tenents*, as well as of *Supporters*, viz. Angels, Maids, Religious, Savages, Moors, &c.

The first *Tenents*, *P. Menestier* observes, were Trunks or Branches of Trees; to which the Escutcheons were fasten'd by Straps and Buckles. Afterwards, the Knights were represented as holding their own Escutcheons, which were either tied to their Neck, or else they leant on them.

The Origin of *Tenents* and *Supporters* is referr'd to the ancient Tournament, wherein the Cavaliers had their Arms bore by Servants disguis'd like Savages, Moors, fabulous Deities, Bears, Lions, &c. See SUPPORTER.

TENAR, in Anatomy, a Muscle, whose Office is to draw the Thumb from the Fore-finger. See FINGER.

Its Antagonist is call'd *Antitenar*. See ANTITENAR.

TENCH-Fishing. See TENCH-FISHING.

TENDER, in a legal Sense, signifies as much, as carefully to offer, or circumspectly to endeavour the Performance of any Thing: Thus, to *Tender Rents*, is to offer it at the Time and Place, where and when it ought to be paid. To *tender a Person's Law of Summons*, is to offer himself ready to make his Law, whereby to prove that he was not summoned.

TENDER, in the Sea Language, is a Vessel, attending on some other larger, and more considerable one.

TENDING-Penny. See TITHING-Penny.

TENDON, in Anatomy, a hard, white Part of a Muscle, whereby it is fasten'd to the Bone. See MUSCLE.

Most Muscles have, at least, two *Tendons*, one at each Extreme: that fasten'd to the Part toward which the Motion is to be perform'd, is call'd the *Head of the Muscle*; and that fasten'd to the Part drawn towards the other, the *Tail of the Muscle*. See HEAD and TAIL.

The Fibres, whereof the *Tendons* consist, have been supposed to be Nervous; but they are now found to be no other than Productions of the same Fibres, which make the *Belly or Body of the Muscle*. All the Difference between them is, that in the *Belly* of the Muscle they are lax, and at a Distance from each other; whereas in the *Tendon*, they are more closely and firmly connected.

Their Whiteness proceeds wholly from the Blood's being excluded, by the Tightness of their Contexture: In effect, there is the same Difference between them, that there is between a Skin of Thread, and a Cord made of the same Thread.

The Fibres of the *Tendons* undergo no Contraction, or Dilatation, as those of the *Belly* of the Muscle do; they act as mere Cords, to draw the Parts towards each other.

The *Suture of a Tendon*, is a very delicate Operation in Chirurgery. It had been abandon'd a long Time, and was not re-establish'd till the last Century by *J. Bionaise*. See SUTURE.

The *Puncture of a Tendon* is very dangerous. See PUNCTURE.

Mr. *Cowper* in the *Philosophical Transactions*, gives us an Account of a Cure of the *great Tendon* above the Heel, after an intire Division, by Stitching.

TENEbres, TENEBRAE, in the *Romish Church*, a Service perform'd on the *Wednesday, Thursday and Friday* before *Easter*, in Commemoration of the Agony of our Saviour in the Garden. See PASSION, &c.

TENEMENT, TENANCY, in Law, a House or Lands, depending of a Manor or Lordship; or a Fee or Farm, held of a Superior Lord, and which he may re-call, when the Term or Condition is expired. See LORD and TENANT.

*Frank Tenement*, is any Lands, Houses, Offices or the like, wherein a Man has Estate for Life, or in Fee. --- *Base Tenement*, is where a Man holds Lands, &c. at the Will of the Lord.

*Kitchin, Briton, &c.* make *Frank Tenement* and *Base Tenement*, Opposites; so that *Frank Tenement* should be where the Tenant is at liberty to quit it when he pleases.

TENEMENTARY Lands, among our Ancestors, were such Lands as the *Saxon* Thanes or Nobles let out to Tenants under arbitrary Rents and Services. See TENANT.

TENEMENTIS Legatis, in Law, a Writ which lies in *London* and other Places, where the Custom is to devise *Tenements* by last Will, as well as personal Goods and Chattels; for the Hearing of any Cause relating hereto.

TENENTIBUS in *Assa non Onerandis*, a Writ which lies for him to whom a Disfeisor has made over Land, whereof he has disfeis'd of another; that he be not disturb'd for the Damages awarded.

TENESMUS, in Medicine, a continual Inclination to go to Stool; yet without voiding any Thing, unless, sometimes, a little purulent bloody Slime.

The Cause of the *Tenesmus*, is a sharp, pungent Humour, irritating the Intestinum Rectum and exciting those troublesome Endeavours to evacuate. Those affected with the Stone, are also subject to the *Tenesmus*, from the Communication, or Consent between the Bladder and the Rectum.

The Word is form'd from the *Greek*, *τενεν*, *tendere*, to bend, in regard those attack'd with this Disease, feel a continual Tension in the Fundament.

The Cure of a *Tenesmus* depends on proper Evacuations and Astringents; the former always preceding the latter; such are Bleeding, if Plethoric, gentle Cathartics, especially of the Powder of *Rhubarb*, &c. An Emetic of the *Indian Root*, *Ipecacuanha*, has been found of great Service in a long standing *Tenesmus*; for the augmenting one Evacuation, is



the lessening of another, and it becomes so much the more servicable, as they happen to be Contraries.

The Restringtons are such as are of use in other Fluxes. See DIARRHEA, DYSENTERY, &c.

TENET, a particular Opinion, Dogma, or Doctrine, professedly held by some Divine, Philosopher, &c. See DOGMA.

The distinguishing *Tenzers* of the several Sects in Religion and Philosophy, see under the Names of the Sects themselves. See also PHILOSOPHER, SECT, &c.

TENMENTALE, or TEMANTALE, in our ancient Customs, originally signifies the Number of Ten Men; which Number, in the Time of the *English Saxons*, was call'd a *Decennary*; and ten Decennaries made what we call a Hundred. See DECENNA and HUNDRED.

These ten Men were bound for each other to preserve the publick Peace; and if any of them was found guilty of a Breach thereof, the other nine were to make Satisfaction; or to bring the Criminal before the King. See FRIBURG.

The Word was also us'd for a Duty, or Tribute paid to the King, consisting of two Shillings for each Ploughland; which was probably thus call'd, by Reason each Person of the Decennary was bound to see it paid.

TENNY, or TAWNY, in Heraldry, a bright Colour, made of Red and Yellow mix'd; sometimes also call'd *Brusk*, and express'd in Engraving by thwart or diagonal Strokes or Hatches, like Purple, and mark'd with the Letter T. See PURPURE.

In the Coats of all below the Degree of Nobles, it is call'd *Tenny*; but in those of Nobles, it is call'd *Hyacinth*; and in Princes Coats, the *Dragons Head*.

TENON, in Building, &c. the End of a Piece of Wood, or Metal, diminish'd by one Third of its Thickness, to be receiv'd into a Hole in another Piece, call'd the *Mortise*, for the jointing or fastening the two together. See MORTISE.

Among Joiners, &c. the *Tenor* is made in various Forms, square, Dove tail'd, for double Mortises, &c.

*Vitruvius* calls the *Tenons*, *Cardines*; Dove-tail'd *Tenons* he calls *Subscudes*, or *Securiclae*. See DOVE-TAIL.

TENOR, TENOUR, the Purport or Content of a Writing or Instrument in Law, &c. Warrants issu'd for the Confirmation of Sentences, express, that they shall be executed according to their Form and *Tenor*.

It was impossible to retain so long a Speech Word for Word, but the Substance, the *Tenor* is this.

TENOR in *Musick*, the first mean or middle Part; or that which is the ordinary Pitch or *Tenor* of the Voice, when not either rais'd to the Treble, or lower'd to the Base. See PART and MUSIC.

The *Tenor* is frequently mark'd on thorough Basses with the Letter T.

The *Tenor* is a Part which almost all grown Persons can sing. But as some have a greater Compass of Voice upwards, others downwards, others are confin'd to a kind of Medium, and others can go equally either higher or lower; hence many Musicians make a Variety of *Tenors*, as a *low Tenor*, a *mean Tenor*, a *high Tenor*, a *natural Tenor*; to which is also added, a *reacting Tenor*, *Violin Tenor*, &c.

The *Italians* usually distinguish no more than two Kinds of *Tenors*, viz. *Tenore primo*, or P<sup>o</sup> or I<sup>o</sup>, which answers to our upper *Tenor*; and *Tenore secundo*, or 2<sup>o</sup> or II<sup>o</sup>, which is our natural *Tenor*; confounding the others under the Word *Baritono*.

TENOR is also us'd for a Person who sings that Part in Concert; or for an Instrument proper to play it.

TENORE *Indictamenti mittendo*, is a Writ whereby the Record of an Indictment is call'd out of another Court into *Chancery*.

TENSE, *Time*, in Grammar, an Inflection of Verbs, whereby they are made to signify or distinguish the Circumstance of Time of the Thing they affirm, or attribute. See VERB.

The Affirmations made by Verbs, are different as to Point of Time; since we may affirm a Thing *is*, or *was*, or *will be*: Hence, a Necessity of a Set of Inflections, to denote those several Times; which Inflections, our *English* Grammarians call by a barbarous Word *Tenses*, from the *French* *temps*; most other Languages call them simple *Times*.

There are but three simple *Tenses*, the *Present*; as, *I love*, *Amo*: the *Preter*, or *Preterit*, or *Past*; as, *I have lov'd*, *Amavi*: and the *Future*; as, *I will love*, *Amabo*. See PRESENT, &c.

But in regard, in the *Preter* one may either express the Thing as just done, or past, or indefinitely and barely that it was done: Hence, in most Languages, arise two Kinds of *Preterita*; the one *definite*, marking the Thing to be precisely done; as, *I have written*, *I have said*: And the other *indefinite* or *aurist*, denoting a Thing done indeterminately; as, *I wrote*, *I went*. See PRETER.

The future *Tense* admits of the same Variety. See FUTURE.

Beside the three simple *Tenses*, others have been invented, call'd *compound Tenses*; expressing the Relation of the simple ones to each other: The first expresses the Relation of the past to the present, and is call'd the *Preterimperfect Tense*, because it does not mark the Thing simply, and properly as done, but as imperfect and present with respect to another Thing past; as, *I was at Supper when he enter'd*; *Cum intravit cenabam*.

The second compound Time marks the past doubly, and is therefore call'd the *plusquamperfect Tense*; as, *I had supp'd*, *Cenaveram*.

The third compound *Tense* denotes the Future with respect to the Past; as, *I shall have supp'd*, *Cenavero*.

The several *Tenses* or *Times*, it is to be observ'd, are properly denoted in the *Greek* and *Latin* by particular Inflections; in the *English*, *French*, and other modern Tongues, the auxiliary Verbs *to be* and *to have*, *etre* and *avoir*, are call'd in.

As to the *Oriental Languages*, they have only two simple *Tenses*, the *Past* and *Future*, without any Distinctions of imperfect, more than perfect, &c. which renders those Languages subject to abundance of Ambiguities which others are free from.

TENSION, the State of a Thing bent, or the Effort made to bend it.

Animals only sustain and move themselves by the *Tension* of their Muscles, and Nerves. A Chord or String gives an acuter or a deeper Sound, as it is in a greater or less Degree of *Tension*. See CHORD.

TENSOR, in Anatomy. See EXTENSOR.

TENT, *Tabernacle*, a Pavillion, or portable Lodge, under which to shelter in a Campaign, &c. from the Injuries of the Weather. See TABERNACLE.

Armies encamp under *Tents*: Most of the *Tartars* and *Arabs* are wandering People, that lodge under *Tents*. The *Hebrews* lodg'd forty Years under *Tents* in the Desert; which gave Occasion to the Scenopegy or Feast of *Tabernacles*. See SCENOPEGY.

The Word is form'd from the *Latin* *tentorium*, of *tenere*, I stretch; in regard *Tents* are usually made of Canvas stretch'd out, and sustain'd by Poles.

TENT, in Chirurgery, is a Roll of Lint, made in a particular Form, put into Wounds whose Suppuration is not perfect; or where there is a Quantity of Matter contain'd in the Tumor, more than what comes out at the first Dressing, &c. See WOUND, &c.

*Tents* are us'd in order to hinder the closing too soon. But several Chirurgical Writers, and particularly the Author of the *Hospital Surgeon*, gives us numerous Instances, wherein the Use, especially of hard *Tents*, has prov'd prejudicial in protracting the Cure, bringing on Inflammations, Sinus's, Mortifications, &c. in Wounds and Ulcers. To remedy this, he proposes, that the Liniments, &c. be made of a liquid Consistence, either naturally, or by warming them; and that where *Tents* may seem indispensably necessary, as in large Cavities, the Orifice may be enlarg'd, and soft Dossils put in instead of them, which will prevent the Mischiefs commonly attending *Tents*. See ULCER.

TENTATIVE, is sometimes used Adjectively; thus we say, a *Tentative Method*, meaning a kind of unartful or indirect Method, which only proceeds by trying.

*Tentative* is also used Substantively, for an Essay, or Effort, whereby we try our Strength, or sound an Affair, &c. to see whether or no it will succeed.

In the *French* Universities, a *Tentative* is the first Thesis or Act, which a Student in the Theology School, holds to shew his Capacity; if he answers well, the Degree of Bachelor is conferr'd on him.

TENTER, call'd also *Tryer* and *Prover*, a Machine used in the Cloth Manufactory, to stretch out the Cloths, stuffs, &c. or only to make them even, and set them square. See CLOTH.

'Tis usually about Four Feet and a Half high, and for Length, exceeds that of the longest Piece of Cloth.

It consists of several long square Pieces of Wood, plac'd like those which form the Barriers of a Manage, so, however, as that the lower Cross-piece of Wood may be rais'd or lower'd, as is found requisite, to be fix'd at any Height, by means of Pins. Along the Cross-pieces, both the upper and under one, are hooked Nails, call'd *Tenter-looks*, plac'd from Space to Space.

To put a Piece of Cloth on the Tenter: While the Piece is yet quite wet, one End is fasten'd to one of the Ends of the Tenter, then 'tis pull'd by Force of Arms towards the other End, to bring it to the Length required: That other End being fasten'd, the upper List is hook'd on to the upper Cross-piece, and the lowest List to the lower Cross-piece, which is afterwards lower'd by Force, 'till the Piece have its desired Length. Being thus well stretch'd, both as to Length and Breadth; they brush it with a stiff Hair-brush, and then let it dry. Then they take it off; and till they wet it again, it will still retain the Width and Breadth the Tenter gave it.

TENTH.



TENTH, *Decima*. See TITH.

The *Babylonians* and *Egyptians* gave their Kings a *Tenth* of their Revenues: See *Aristotle* in his *Oeconomicks*, lib. 2. *Diodorus Siculus*, lib. 5. and *Strabo*, lib. 15.

Afterwards, the *Romans* exacted of the *Sicilians* a *Tenth* of the Corn they reap'd; and *Appian* tells us, that those who broke up, or till'd any new Grounds, were obliged to carry a *Tenth* of their Produce to the Treasury.

The *Romans* offer'd a *Tenth* of all they took from their Enemies to the Gods, whence the Name of *Jupiter Predator*: The *Gauls* in like Manner, gave a *Tenth* to their God *Mars*, as we learn in the Commentaries of *Cæsar*.

Authors have been strangely perplex'd, to find the Original of a Custom, establish'd among so many People of different Manners and Religion, to give a *Tenth* to their Kings, or their Ministers of Religion. *Grotius* takes it to arise hence, That the Number Ten is the most known and the most common among all Nations; by reason of the Number of Fingers which is Ten. On this Account he thinks it is, that the Commandments of God were reduced to *Ten*, for People to retain them with greater Ease; that the Philosophers establish'd *Ten* Categories, &c.

TENURE, in Law, the Manner or Condition wherein a Tenant holds Lands or Tenements of his Lord; or the Services perform'd to the Lord, in Consideration of the Use and Occupancy of his Lands. See TENANT, LORD, &c.

The Kinds of Service, and consequently of *Tenures*, are almost infinite. See SERVICE.

Those for Lands held of the King, are either *great* or *petty Sergeanty*, in *Capite*, *Knights-Service*, &c. See SERGEANTY, CAPITE, &c.

Those held of other Lords were very various, *Base*, *Frank*, &c. by *Homage*, by *Soccage*, &c. But by Stat. 12 Car. II. all *Tenures*, both of the King and other Lords, are turn'd into free and common *Soccage*. See SOCCAGE.

TERES, in Anatomy, a Name given two Muscles of the Arms, call'd also *Rotundi*; distinguish'd by *major* and *minor*.

The *Teres*, or *Rotundus major*, arises from the lower Angle of the Basis of the Scapula, and ascending obliquely upwards, in a round smooth Body, under the Head of the Longus, is inserted with a short flat Tendon into the Neck of the Os Humeri.

The *Teres*, or *Rotundus minor*, call'd also *Transversalis*, is frequently wanting, or, at least, so confounded with the *Infra-spinatus*, that it is lost therein. It arises from the inferior Angle of the Scapula, and ascending obliquely in a round fleshy Body, passes over the upper Head of the Longus, and is inserted by a short flat Tendon below the Os Humeri.

TERGIFÆTOUS Plants, are such as bear their Seeds on the Backsides of their Leaves. See PLANT and SEED.

Such are the *Capillaries*. See CAPILLARY.

TEREBINTHINA, in Medicine, Natural History, &c. See TURPENTINE.

TERM, *Terminus*, the Extreme of any thing, or that which bounds and limits its Extent. See EXTREME.

TERM, in Geometry, is sometimes us'd for a Point, sometimes for a Line, &c. A Line is the *Term* of a Superficies; and a Superficies of a Solid.

This is what the Schools call *Terminus Quantitatis*.

TERM, in Law, signifies a Boundary or Limitation of Time. In this Sense we say, A Lease for Term of Life, For Term of Years, &c.

TERM, TERMINUS, in Architecture, is a kind of Statue, or Column adorn'd a-top with the Figure of a Man's, Woman's, or Satyr's Head, as a Capital; and the lower Part ending in a kind of Sheath or Scabbord.

*Terms* are sometimes us'd as Consoles, and sustain Entablatures, and sometimes as Statues to adorn Gardens.

Some write the Word *Thermes*, from *Hermes*, a Name the Greeks gave the God *Mercury*; whose Statue, made after this Manner, was placed in several of the Cross-ways in the City of *Athens*, &c.

Others bring the Etymology of the Word from the Roman God *Terminus*, the Protector of Land-marks, whose Statue (made without Hands or Feet, that he might not change his Place) was used to be planted at the Bounds of Lands to separate them.

Of these *Termini*, the Architects make great Variety, viz. *Angelic*, *Rustic*, *Marine*, *Double*, in *Bust*, &c.

*Milliary Terms*, or *Termini Milliaries*, among the ancient Greeks, were the Heads of certain Divinities, placed on square Land-marks of Stone, or on a kind of Sheath, to mark the several *Stadia*, &c. in the Roads. These are what *Plinius* calls *Lares Viales*. See LARÆ.

They were usually dedicated to *Mercury*, whom the Greeks believed to preside over the High-ways. Some of them were represented with four Heads; such as we still see in *Rome*, at the End of the *Fabrician Bridge*, which is hence call'd *Ponte de quattro Capi*.

*Mercury* was thus represented, and also call'd by the *Latins*, *Mercurius Quadriformis*, as being supposed the First, who taught Men the Use of Letters, Music, Wrestling and Geometry. See HERMES.

TERMS are also us'd for the several Times or Seasons of the Year, wherein the Tribunals, or Courts of Judicature, are open to all who think fit to complain of Wrong, or to seek their own by due Course of Law or Action. See COURT, DAY, LAW, FASTUS, &c.

In Contra-distinction to these, the rest of the Year is call'd *Vacation*. See VACATION.

Of these *Terms* there are four in every Year, during which Time Matters of Justice are dispatch'd, viz. *Hillary Term*, which, at *London*, begins the 23d Day of *January*; or if it be *Sunday*, the next Day after, and ends the 12th of *February* following. *Easter Term*, which begins the *Wednesday* Fortnight after *Easter-Day*, and ends the *Monday* next after *Ascension-Day*. *Trinity Term*, beginning the *Friday* next after *Trinity Sunday*, and ending the *Wednesday* Fortnight after. And *Michaelmas Term*, which begins the 23d of *October*, and ends the 28th of *November* following. Each of these *Terms* have their *Returns*. See RETURNS.

*Oxford Terms*. *Hillary* or *Lent Term* begins *January* 14, and ends the *Saturday* before *Palm Sunday*. --- *Easter Term* begins the 10th Day after *Easter*, and ends the *Thursday* before *Whitsunday*. *Trinity Term* begins the *Wednesday* after *Trinity Sunday*, and ends after the *Ast*, sooner or later, as the Vice Chancellor and Convocation please. *Michaelmas Term* begins *October* the 10th, and ends *December* the 17th.

*Cambridge Terms*. *Lent Term* begins *January* the 13th, and ends the *Friday* before *Palm Sunday*. *Easter Term* begins the *Wednesday* after *Easter-week*, and ends the *Week* before *Whitsunday*. *Trinity Term* begins the *Wednesday* after *Trinity Sunday*; and ends the *Friday* after the Commencement. *Michaelmas Term* begins *October* the 10th, and ends *December* the 16th.

*Irish and Scotch Terms*. In *Scotland*, *Candlemas Term* begins *January* the 23d, and ends *February* the 12th. *Whitsuntide Term* begins *May* the 25th, and ends *June* the 15th. *Lammas Term* begins *July* the 20th, and ends *August* the 8th. *Martinmas Term* begins *November* the 3d, and ends *November* the 29th. --- In *Ireland* the *Terms* are the same as at *London*, except the *Michaelmas Term*, which begins *October* the 13th, and adjourns to *November* the 3d, and thence to the 6th.

TERM, in Grammar, a particular Word, Diction, or Expression in a Language. See WORD.

The Word *Term*, *Terminus*, is borrow'd, metaphorically, by the Grammarians and Philosophers, from the Measurers or Surveyors of Lands: As a Field is defin'd and distinguish'd by its *Termini*, or Limits, so is the Thing or Matter spoke of by the Word or *Term* it is denoted by.

Some of our Philosophers complain loudly of the great Use, or rather Abuse of vague and general *Terms*, which have no precise, definitive Signification.

To distinguish these, F. *Mallebranch* observes, that every thing that is (whether it have actual Existence, or not) and of consequence every thing that is intelligible, is either a Being, or a Mode, or Manner of Being: Where, by Being, is meant whatever is absolute, or which may be conceiv'd alone, and without Relation to any other Thing; and by manner of Being, whatever is relative, or which cannot be conceiv'd alone.

Now, there are two Kinds of Manner of Being; the one consisting in the Relation of the Parts of a Whole, to some Part of the same Whole; the other in the Relation of one thing to another: Of the first Kind is the Roundness of a Piece of Wax; and of the second, the Motion or Situation of that same Wax. If then, every thing that is intelligible, be reducible either to Beings, or Manner of Beings, 'tis evident, every *Term* which does not signify either of those Things, signifies nothing; and that every *Term* which does not signify either a Being, or a Manner of Being, is an obscure and confus'd *Term*.

In Metaphysics, the Use of such *Terms* is sometimes necessary and allowable, as in speaking of the Divine Perfections, &c. But in Physicks 'tis always mischievous, and yet nothing more common; e. gr. when we say, that Bodies tend to their Centre, that they fall by their Weight, that they rise by their Levity, that they move by their Nature, that they change successively their *Forms*, that they act by their Virtues, Qualities, Faculties, &c. we use *Terms* which signify nothing; and all these Propositions are absolutely false in the Sense most Philosophers understand them.

There is no Centre in the Sense commonly meant; and the *Terms Weight, Form, Nature, Quality*, and the like, don't awaken any Idea either of a Being, or a Manner of Being: They are *Terms* void of Sense, and which Persons of Understanding should always avoid.



*Scientia insensati inenarrabilia verba.*

**TERM**, in the Arts, or **TERM of Art**, is a Word, which, besides the literal and popular Meaning which it has, or may have, in common Language, bears a further and peculiar Meaning in some Art or Science. See **ART**.

Or, a *Term* is a Word which has one or more Meanings beside its Grammatical one; or which has a peculiar Force or Import in the Language of some particular Science, or Art.

A Word then becomes a *Term*, when its Idea is render'd more complex, consists of more Parts, and includes more special Circumstances on some Occasions than on others.

'Tis this greater Complexness, this Excess of constituent Parts in the Idea, that denominates it a *Term* in the general.

Further, as the Parts of the Idea signify'd by any Word are arbitrary; and as one may not only add new Parts to those contain'd in the literal Meaning, but also super-add others to them, alter them, extend them, and otherwise modify them, at Pleasure: Hence, the same Word becomes a *Term* of this, or that Art, or both, as the Inventors and Improvers of those Arts, have thought fit to adopt it for the common Basis of certain Ideas, and to modify and circumstantiate its Meaning to the Use of their respective Arts.

See the Nature and Office of a *Term* further illustrated in the Preface to this Work. See also the Article **DEFINITION**.

**TERM**, in *Logic*. A Proposition is said to consist of two *Terms*, i. e. two principal and essential Words, the *Subject* and the *Attribute*. See **PROPOSITION**.

A Syllogism consists of three *Terms*, the *Major*, *Minor*, and *Conclusion*. A Syllogism containing four *Terms*, is vicious. See **SYLLOGISM**.

**TERMS of an Equation**, in Algebra, are the several Names or Members of which it is compos'd, and such as have the same unknown Letter, but in different Powers and Degrees; for if the same unknown Letter be found in several Members in the same Degree or Power, they all pass but for one *Term*. See **EQUATION**.

Thus in this Equation  $aa + ab = R$ , the three *Terms* are  $aa$ ,  $ab$ , and  $R$ : And in this,  $aa + ab + ac = R + dc$ , the *Terms* are,  $aa$ ,  $ab + ac$ , and  $R + dc$ ; which are but three, because  $ab + ac$ , having  $a$  in the same Dimension in both Parts, is taken but for one *Term*.

Hence, the *first Term* in any Equation, must be that where the unknown Root hath the highest Dimensions; and that *Term* which hath the Root in it of one Dimension of Power lower, is call'd the *second Term*; and so on.

**TERMS of Proportion** in Mathematicks, are such Numbers, Letters, or Quantities, as are compar'd one with another. See **PROPORTION**.

Thus, if  $4.8 :: 6.12$  then  $a, b, c, d$ , or  $4, 8, 6, 12$ , are call'd the *Terms*; of which  $a$  is call'd the *first Term*,  $b$  the *second Term*, &c.  $a$  and  $c$  are call'd the two *Antecedents*, and  $b$  and  $d$  the two *Consequents*. See **ANTECEDENT** and **CONSEQUENT**.

**TERMS**, or Courses in Medicine, the *Menses* or Woman's monthly Purgations. See **MENSES**.

**TERMINALIA**, in Antiquity, Feasts celebrated by the Romans, in Honour of the God *Terminus*. See **FEAST**.

In Reality, the *Terminalia*, or Feast of Land-Marks, was held in Honour of *Jupiter*, consider'd in the Capacity of Conservator of Land-Marks or Bounds. *Dionysius Halicarnassensis* tells us, that it was *Numa Pompilius* who first consecrated Land-Marks to *Jupiter*; and adds, that the same Prince appointed an Anniversary Day, wherein the Country People assembling together on the Bounds of the Lands, should offer Sacrifices in Honour of the Tutelary Gods thereof.

The *Terminalia* were held on the 7th, or, as *Struvius* will have it, on the 10th of the Calends of *March*. No Animal was to be sacrific'd herein, it being deem'd unlawful to stain the Land-Marks with Blood. They only offer'd Sacrifices of the First-Fruits of the Earth; and this in the open Air, and on the Spot where the Land-Marks were.

*Varro* is of Opinion this Feast took its Name from the End of the Year: But *Festus* is of a different Sentiment, and derives it from the Name of the Deity in whose Honour it was held.

**TERMINATION**, in Grammar, the ending of a Word; or the last Syllables thereof.

'Tis the different *Terminations* of one, and the same Word, on different Occasions, that make the different Cases, Numbers, Tenses and Moods, &c. See **CASE**, **NUMBER**, **TENSE**, &c.

**TERMINISTS**, a Sect or Party among the Calvinists, whose particular Tenets are reducible to Five Points.

1<sup>o</sup> That there are several Persons, both in and out of the Church, to whom God has fix'd a certain *Term* before their Death, after which he no longer wills their Salvation, how long soever they live afterwards. 2<sup>o</sup> That God has fix'd this fatal *Term* of Grace, by a secret Decree. 3<sup>o</sup> That this

*Term* once elapsed, he makes them no further Offer of Repentance or Salvation; but takes away from his Word, all the Power it might have to convert them. 4<sup>o</sup> That *Pharaoh*, *Saul*, *Judas*, most of the *Jews*, and many of the Gentiles were of this Number. 5<sup>o</sup> That God still bears with several of these Sort of People, and even confers Benefits on them after the *Term* expired; but that he does not do it with any Intention they should be converted.

All the other Protestants, and particularly the Lutherans, look on these Articles with Abhorrence, as repugnant to the Goodness of God, as destructive to all Christian Virtue, and as contrary to Scripture, particularly the following Texts; *Ezek. xviii. 23, 30, 31, 32. xxxiii. 11. 1 Tim. ii. 1, 16. 2. Pet. iii. 9. Acts xvii. 30, 31. Mat. xi. 28. Isa. lvi. 1. Heb. iii. 7, 13. Rom. iv. 5, &c.*

**TERRA**, in Geography

**TERRA**, in Chymistry

**TERRA**, in natural History

} See **EARTH**.

**TERRA Damnata**

**TERRA Lemnia**

**TERRA Japonica**

**TERRA Sigillata**

**TERRA Merita**

} See { **CAPUT MORTUUM.**  
**LEMNIAM.**  
**JAPON Earth.**  
**SIGILLATA.**  
**TURMERIC.**

**TERRA**, a *Terra*, Gallies, and other Vessels, are said to go *Terra*, a *Terra* when they never go far from the Coasts. See **COASTING**.

The Phrase is also apply'd in the Manage, to Horses, which neither make Curvets nor Balotades, but run smoothly on the Ground, on a press'd Gallop; only making little Leaps or Risings something with the fore Feet.

The *Terra*, a *Terra*, is a Series of very low, easy Leaps, which a Horse makes forward, bearing sidewise, and working on two Treads. In this Motion he lifts both Legs at once; and when those are on the Point of descending, they are accompany'd by the hind Legs, with a short and quick Cadence, always bearing and staying on the Haunches, so that the Motions of the hind Quarters are very short and quick.

The *Term* is also apply'd to Dancers who cut no Capers, nor scarce quit the Ground. Hence it is also figuratively apply'd to Authors, whose Style and Diction is low and creeping.

**TERRACE**, or **TERRAS**, a Bank of Earth, raised in a Garden, Court, &c. above the Level of the Ground.

The *Terras* is an Earth-work usually lined and breasted with a strong Wall, in Compliance with the natural Inequality of the Ground. Sometimes it is made in Talus, or a slope, and cover'd with Turf. A *Counter-terrace*, is a *Terrace* raised over another, for the joining of the Ground, or the raising a Parterre.

**TERRACE** is also applied to the Roofs of Houses that are flat, and whereon one may walk; as also to Balconies that project. See **ROOF**.

The *Terrace* is properly the Covering of a Building, which is in Plat-form; as that of the Peristyle of the *Louvre*; or that of the Observatory, paved with Flint and Mortar. All the Buildings of the Oriental Nations, are cover'd with *Terrasses*, to take the fresh Air on, and even to lie on. See **PLAT-FORM**.

**TERRA-Firma**, in Geography, is sometimes used for a Continent; in Contradistinction to Islands. See **CONTINENT**.

Thus *Asia*, the *Indies* and *South America* are usually distinguish'd into *Terra-firma's* and Islands. See **ISLAND**.

In our ancient Law-Books, we meet with *Terra* in the Sense of *Land* or *Ground*; joined with divers Additions; as

*Terra Normannorum*, the Lands of such Norman Noblemen, as were forfeited to the Crown, by the Owners taking Part with the French King, against King Henry III. --- *Terra Frusca*, such Land as has not been lately plough'd. --- *Terra Gilliflorata*, Land held by the Tenure of paying a Gilliflower yearly. See **SERVICE**. --- *Terra Vestita*, Land sown with Corn, and the Crop still remaining thereon. --- *Terra Testamentalis*, Land held free from feudal Services, and devolved by Will. --- *Terra culta*, Land that is Till'd and Manur'd, in Contradistinction to *Terra Inculta*. --- *Terra Affirmata*, Land let out to Farm. --- *Terra Dominica*, or *Indominata*, Demain Land of a Manor. See **DEMAIN**. --- *Terra Hydata*, was Land subject to the Payment of Hydrage. See **HYDRAGE**. --- *Terra Lucrabilis*, Land that may be gained from the Sea, or inclosed out of a Waste or Common, to particular Uses. --- *Terra Wainabilis*, Tillage Land. --- *Terra Waresta*, Fallow Land. --- *Terra Boscalis*, Wood Land, &c.

**TERRA extendenda**, is a Writ directed to the Escheator, &c. willing him to inquire and find out the true year's Value of any Land, &c. by the Oath of 12 Men, and certify the Extent into Chancery. See **ESCHEATOR**.

**TERRAGE**, **TERRAGIUM**, anciently signified a Service, in which a Tenant or Vassal was bound to his Lord, to plough and reap the Ground for him. See **PARCENAGE**.



Others will have it Money paid for digging or breaking the Earth in Fairs and Markets.

*Quæti sunt de Theolonio, Pavagio, Passagio, Lastagio, Tullagio, Caravagio, Prifagio & Terragio.*

**TERRAQUEOUS**, an Epithet given to our Globe or Earth, consider'd as consisting of Land and Water; which, together, constitute one globular Mass. See **GLOBE** and **EARTH**.

The Word, like the Thing, is a Compound of *Terra* and *Aqua*, *Earth* and *Water*.

Some Philosophers, particularly Dr. *Burnet* in his *Theory*, tax the Frame and Fashion of the *Terraqueous Globe* as rude, unartful and disorderly; and conclude it highly absurd to suppose it came thus out of the Hands of the Creator, and therefore have Recourse to a Deluge to make it thus. See **DELUGE**.

But others can perceive a world of Art and Conveniency, even in this apparent Disorder: Mr. *Derham* particularly observes, That the Distribution of Land and Water is admirable; the one being laid over the other so skilfully all the World over, that there is a just Equipoise or Ballance of the whole Globe.

Thus the Northern Ocean balances the Southern; and the American Continent, is a Counterpoise to the European, African and Asiatic. See **OCEAN**, &c.

And what some object, that the Waters occupy too great a Part of the Globe, which they imagine would be of more Use were it dry Land; he obviates, by shewing that this would deprive the World of a due Quantity of Vapours and Rain: For if the Cavities which contain the Sea, and other Waters, were deeper; tho' the Quantity of Water were the same, and only the Surface lesser and narrower, the Evaporations would be so much the less, inasmuch as they are made from the Surfaces, and, consequently, are in proportion thereto. See **VAPOUR**, **CLOUD**, **RAIN**, &c. See also **MOUNTAIN**, **VALLEY**, &c.

**TERRÆ-Filius**, q. d. *Son of the Earth*. A Student in the University of *Oxford*, appointed on certain Occasions to make Jestings and Satyrical Speeches against the Members thereof; to tax them with any growing Corruptions, &c.

**TERRE-Plain**, in Fortification, the Top, Plat-form, or Horizontal Surface of the Rampart, whereon the Cannon are placed, and the Defenders perform their Office. See **RAMPART**.

It is thus call'd, as lying level; having only a little Slope outwardly, to bear the Recoil of the Cannon.

It is terminated by the Parapet on that Side towards the Campaign; and by the inner Talus, on the Side towards the Place. Its Breadth is from 24 to 30 Feet. See **PARAPET**, &c.

**TERRE-Tenant**, is he who hath the actual Possession of the Land, otherwise call'd the *Occupation*. See **TENANT** and **OCCUPATION**.

Thus a Lord of a Manor hath a Freeholder, who letteth out his Freehold to another to be occupied: And this Occupier, having the actual Possession, is called the *Terre-Tenant*.

**TERRELLA**, *μικρογῆ, little Earth*; is a Magnet, turn'd of a just spherical Figure, and placed so as that its Poles, Equator, &c. do exactly correspond to those of the World. See **MAGNET**.

'Twas thus first call'd by *Gilbert*, as being a just Representation of the great magnetic Globe we inhabit. See **GLOBE**.

Such a *Terrella*, if nicely pois'd, and placed in a Meridian like a Globe, it was supposed, would be turn'd round like the Earth in 24 Hours by the Magnetic Particles pervading it; but Experience has shewn this to be a Mistake. See **MAGNETISM**.

|                      |       |   |                   |
|----------------------|-------|---|-------------------|
| TERRESTRIAL Globe    | } See | { | GLOBE.            |
| TERRESTRIAL Paradise |       |   | PARADISE.         |
| TERRESTRIAL Line     |       |   | LINE Terrestrial. |

**TERRIER**, or **TERRAR**, in our ancient Customs, a Collection of Acknowledgments of Vassals or Tenants of a Lordship, containing the Rents, Services, &c. they owe their Lord; and serving as a Title, or Claim for demanding and executing the Payments thereof.

At present, by *Terrier* we mean no more than a Book, or Roll, wherein the several Lands, either of a private Person, or of a Town, College, Church, &c. are describ'd. It should contain the Number of Acres, the Scite, Boundaries, Tenants Names, &c.

**TERRIER** is also the Lodge or Hole which Foxes, Badgers, Rabbits, &c. dig themselves under Ground; and wherein they save themselves from the Pursuit of the Hunters.

Hence *Terrier* is also used for a kind of little Hound to hunt those Animals, which, like a *Ferrer*, creeps into the Ground, and by that Means affrights and bites them; either tearing them with his Teeth, or else haling them by Force out of their Holes.

**TERRIS Bonis & Catallis rehabendis post purgationem**, a Writ which lies for a Clerk to recover his Lands, Goods or Chattels formerly seiz'd; after having clear'd himself of a

Felony, upon Suspicion whereof he was convict, and deliver'd to his Ordinary to be purged.

**TERRIS & Catallis tentis ultra debitum levatum**; a Writ Judicial, for the restoring Lands or Goods to a Debtor, that is distrained beyond the Quantity of the Debt. See **DISTRESS**.

**TERRIS Liberandis**, a Writ lying for a Man convicted by Attaint, to bring the Record and Process before the King, and take a Fine for his Imprisonment, and deliver him Lands and Tenements again, and release him of a Strip and Waste.

**TERRITORY**, *Distric*, the Extent or Compass of Land within the Bounds, or belonging to the Jurisdiction, of any State, City or other Division.

'Tis a Maxim, that the Church has no *Territory*, i. e. it has no Temporal Jurisdiction; so that an Ecclesiastical Judge cannot arrest any Body, not even a Priest.

Much in this Sense, *Cujas* says, the Church has an Auditor, but no *Territory*.

**TERSION**, the Act of wiping or rubbing a Thing. See **ATTRITION**.

The Word comes of *tero*, I wear:

**TERTIAN**, a Fever or Ague intermitting but one Day; so that there are two Fits in three Days. See **FEVER**.

The Method of curing *Tertian*s, as well as other Agues, is by the Cortex, either given in Substance or Decoction. This last is best in weak Constitutions, and where the Fits are not so regular; but the Substance more to be depended on as to Certainty in other Cases. See **AGUE**, &c.

**TERTIATE**, in Gunnery: To *Tertiate* a great Gun, is to find the Thickness of the Metal at the Touch-hole, the Trunnions, and at the Muzzle; whereby to judge of the Strength of the Piece, and whether it be well fortified or not. See **GUN**, **CANNON**, **ORDNANCE**, &c.

This is usually done with a Pair of Calliper Compasses; and if the Piece be Home-bored, the Diameter less by the Height, divided by 2, is the Thickness at any Place. See **CALLIPER**.

**TERUNCIVS**, in Antiquity, a very small Silver Coin, in use among the *Romans*. See **COIN**.

The Inconvenience of such very small Pieces being soon found, the *Teruncius* became disused; but its Name was still retain'd in reckoning; and thus it became a Money of Account. See **MONEY**.

The *Teruntius* at first, was a Quarter of the *As*, or *Libra*: Hence, as the *As* contained 12 Ounces, the *Teruncius* contained Three; whence the Name, which is form'd of the *Latin*, *tres uncie*.

The *Teruncius* was also a Quarter of the Denarius; so that when the Denarius was at ten *As*'s, the *Teruncius* was worth Two and a Half, and when the Denarius was risen to 16 the *Teruncius* was worth Four. See **DENARIUS**.

**TESSELATED Pavement**, *Pavementum tessellatum*, a rich Pavement of Mosaick Work, made of curious small square Marbles, Bricks or Tiles, call'd *Tesselle*, from the Form of Dies. See **MOAIC Work**.

These Pavements were much used in the Tents of the *Roman* Generals.

**TESSERA-COSTE**, in our ancient Writers, the 40 Days between *Easter* and *Holy Thursday*. See **LENT**.

**TEST**, or *Test Oath*, in our Customs, a Form of Oath, whereby the Doctrine of Transubstantiation, the Sacrifice of the Mass, the Invocation of Saints, &c. are abjured. See **OATH**.

This Oath was first introduced by Authority of Parliament in 1672; and they who refused to take it, were excluded the Privilege of holding any public Offices.

The Word signifies *Proof* or *Trial*, being form'd of the *Latin*, *Testis*, Witness; this Oath being a Mark or Evidence, that the Person is not a *Roman Catholic*.

**TEST**, among Chymists and Refiners, the same as the *Coppel*, *Cuppel* or *Coppel*, an Instrument used in the purifying Gold and Silver. See **COPPEL**.

**TESTACEOUS**, in natural History, an Epithet given to a Species of Fish, which are covered with a strong, thick Shell; as Tortoises, Oysters, Pearl Fish, &c. See **FISH**.

In Strictness, however, *Testaceous* is only applied to such Fish, whose strong and thick Shells are intire and of a Piece: Those which are soft, thin, and consist of several Pieces jointed, as the Lobster, &c. being called *Crustaceous*. See **SHELL**.

In Medicine, all Preparations of Shells, and Substances of the like Kind, are called *Testaceous Powders*.

Such are Powders of Crabs Claws and Eyes, Harts-horn, Pearl, &c.

Dr. *Quincy*, and others, suppose the Virtue of all *Testaceous* Medicines to be alike; that they seldom or never enter the Laëicals; but that the chief of their Action is in the first Passages; in which Case, they are of great Use in absorbing Acidities. See **ANSONMENT**.

Hence they become of Use in Fevers, and especially in rectifying the many Distempers in Children, which generally owe their Origin to such Acidities. See *Diseases of CHILDREN*.



**TESTAMENT**, in Law, a solemn and authentic Act, whereby a Person declares his Will, as to the Disposal of his Estate, Effects, Burial, &c. See **WILL**.

A *Testament* has no Effect till after Death; and 'tis always revocable till then. As *Testaments* are Acts, of all others the most subject to Deceits, Surprise, &c. it was necessary to use all kinds of Precautions to prevent the Wills of the Deceased from being eluded; and the Weakness of dying Persons from being abused.

The most ancient *Testaments* among the *Romans*, were made *viva voce*; the Testator declaring his Will in the Presence of Seven Witnesses: These they call'd *Nuncupative Testaments*; but the Danger of trusting the Will of the Dead to the Memory of the Living, soon abolish'd them; and all *Testaments* were order'd to be in Writing. See **NUNCUPATIVE**.

The *French* Legislators, thought *Holographic Testaments*, i. e. *Testaments* wrote wholly with the Testator's Hand, an abundant Security; but the *Roman* Law, more severe, did not admit of *Testaments* without further Solemnity.

The easiest and most favourable, is the 21<sup>st</sup> Law in the *Code de Testamentis*, which permits such as are unwilling to trust the Secret of their *Testaments* to others, to write it with their own Hand, and to close it in the Presence of Seven Witnesses, declaring to them, that it is their *Testament*; after which it is to be Sign'd by all the Seven Witnesses.

Otherwise, to make a Solemn *Testament*, it was required to be attested by Seven Witnesses, and sealed with their Seals.

Yet the *Military Testament* was not subject to so many Formalities: The Soldier was supposed too much employ'd in defending the Laws, to be subject to the Trouble of knowing them. His tumultuary Profession excused him from observing all the Rules.

Add, that *Testaments*, wherein Fathers disposed of their Estates among their Children, had particular Privileges, and were dispens'd from most of the ordinary Formalities.

The Word is form'd from the *Latin*, *Testamentum*, which the *Latin* Lawyers derive from *Testatio Mentis*.

**TESTATOR**, or **TESTATRIX**, the Person who makes his or her Will and Testament. See **TESTAMENT**.

M. *Gillet*, shews, that a Person incapable of a Legacy, cannot demand any Sum, which the *Testator* in his Testament declares himself indebted to him in; in regard such a Declaration of Debt is presumed a Fraud, against the Intention of the Law.

**TESTA NEVELLI**, or **TESTA de NEVIL**, an ancient Record kept by the King's Remembrancer in the *Exchequer*; containing the King's Fees throughout the greatest Part of *England*, with Inquisitions of Lands Escheated, and Serjeanties.

It was denominated from its Compiler, *Johan. de Nevil*, one of the Itinerant Justices under K. *Henry III*.

**TESTATUM**, in Law, a Writ in perional Actions. If the Defendant cannot be arrested on a *Capias* in the County where the Action is laid, but is return'd *non est Inventus* by the Sheriff; this Writ shall be sent into any other County, where this Person is thought to have wherewithal to satisfy the Demand.

It is call'd *Testatum*, because the Sheriff has before testify'd, that the Defendant was not to be found in his Bailiwick.

**TESTE**, a Term commonly us'd in the Close of every Writ, where the Date is contain'd, which begins with *Teste meipso*, if it be an original Writ; or if Judicial, *Teste Matheo Hale, Mil.* or *Francisco North, Mil.* &c. according to the Court whence it comes.

In some ancient Formula's, we read *Teste Custode Anglie*.

**TESTES**, in Anatomy, two white, soft, oval Bodies serving for Generation; usually call'd, diminutively, *Testicles*. See **TESTICLE**.

**TESTES**, of the Brain, are two little, round, hard Bodies, between the third and fourth Ventricle, near the pineal Gland. See **BRAIN**.

**TESTICLE**, *Testis*, a double Part in an Animal, serving for the Office of Generation. See **GENERATION**.

In Man, and most Animals, they are exterior; in some, as Fowls, interior.

Some have only one, ordinarily they have two, and some have naturally had three; nay, Anatomists assure us they have known four.

The *Testicles* are soft white Bodies, of an oval Figure, and about the Size of a Pidgeon's Egg: They have been thought to be of a glandulous Substance, and, according to the present Doctrine of Glands, they may be allow'd to be so still. See **GLAND**.

They are form'd of a Convolution of divers Kinds of Vessels, particularly the Spermatic Veins and Arteries; the latter of which bring the Blood whence the Seed is to be secreted in the Meanders of the *Testicles*; and the former return it back again after the Secretion made. See **SEED**.

The rest of the *Testicle* is made up of Seed-Vessels, which, indeed, are but one continu'd Series or Rope, intricately convoluted and wound up as it were into a Bottom, but adhering so laxly, that they are easily drawn out into Length, and in Rats shaken from their close Contexture.

These Seminal Vesicles terminate in the *Parastata*. See **PARASTATA**.

The *Testicles*, with the *Parastata*, are said to be inclos'd in three proper Coats; the first the *Musculosa*, deriv'd from the Cremaster Muscle; the second the *Elythroides*, or *Vaginalis*, which is a Continuation of the external Lamina of the Peritonæum; the third, the *Abuginea*. See each under its proper Article, **MUSCULOSA**, **ELYTHROIDES**, &c.

The common Capsula or Membrane including both *Testicles*, is the *Scrotum*; which see describ'd under the Article **SCROTUM**.

For the Use of the *Testicles*, in preparing and secreting the Seed; See **SEED**.

They are call'd *Testicles*, by Diminution, of *Testes*, Witnesses; as giving Testimony of Virility. They are what we properly call *Genitors*, *Genitalia*.

The *Greeks* call them *Didymi* or Twins. See **DIDYMI**.

**TESTIMONIAL**, a kind of Certificate, sign'd either by the Master and Fellows of the College where a Person last resid'd; or by three, at least, Reverend Divines, who knew him well for three Years last past; giving an Account of the Virtues, Uniformity, and Learning of the Person. See **CERTIFICATE**.

Such a *Testimonial* is always requir'd before Holy Orders are conferr'd; and the Bishop even ordinarily demands one of a Priest before he admits him to a Benefice. See **ORDINATION**, &c.

**TESTIMONIAL** is also a Certificate under the Hand of a Justice of Peace, testifying the Place and Time when and where a Soldier landed, and the Place of his Dwelling, &c. whither he is to pass.

**TESTIMONY**. See **EVIDENCE** and **WITNESS**. For the Credibility of *human Testimony*; See **CREDIBILITY**.

**TESTUDO**, in Natural History. See **TORTOISE**.

**TESTUDO**, in Antiquity, was particularly us'd among the Poets, &c. for the ancient Lyre; by Reason it was originally made, by its Inventor *Mercury*, of the Back or hollow Shell of a *Testudo Aquatica*, or Sea Tortoise, which he accidentally found on the Banks of the River Nile. See **LYRE**.

Dr. *Molyneux* has an express Discourse, in the *Philosophical Transactions*, to shew that the Tortoise-shell was the Basis of the ancient Lyre, and that the whole Instrument had thence the Denomination *Testudo*; which Account lets some Light into an obscure Passage in *Horace*, Ode 3. lib. 4. mistaken by all the Commentators.

O *Testudinis Auræ*  
Dulcem quæ strepitum, Pieri, temperas;  
O Mutis quoque piscibus,  
Donatura Cygni, si libeat, somum.

**TESTUDO**, *Tortoise*, in the military Art of the Ancients, was a Kind of Cover or Screen which the Soldiers, &c. a whole Company, made themselves of their Bucklers, by holding them up over their Heads, and standing close to each other.

This Expedient serv'd to shelter them from Darts, Stones, &c. thrown upon them; especially those thrown from above when they went to the Assault.

**TESTUDO** was also a kind of large Wooden Tower which mov'd on several Wheels, and was cover'd with Bullocks Hides newly flead; serving to shelter the Soldiers when they approach'd the Walls to mine them, or to batter them with Rams.

They were call'd *Tortoises* from the Strength of their Roof, which cover'd the Workmen as the Shell does the Tortoise.

**TESTUDO**, in Medicine, a soft broad Tumour, or gathering of impure Humours between the Scull and the Skin, call'd also *Talpa*, as resembling the Form of a Tortoise or a Mole. See **TALPA**.

**TESTUDO Veliformis quadrabilis**, a Hemispherical Vault, or Ceiling of a Church, &c. wherein four Windows are so contriv'd, as that the rest of the Vault is quadrable, or may be squar'd. See **VAULT**, **QUADRATURE**, &c.

The determining of these Windows, was a Problem propos'd to the great Mathematicians of Europe, particularly the Cultivators of the new *Calculus Differentialis*, in the *Acta Eruditorum Lipsiæ*, by Sig. *Fixian*, under the famous Name of *A. D. Pia Lipsiensi pascillo Geometra*, which was the Anagram of *Postremo Galilæi Discipulo*.

It was solv'd by several Persons, particularly M. *Johannes*, the very Day he saw it: And he gave it in the *Lapicæ Acti* in an Infinity of Manners; as also did M. *Bernoulli*, the Marquis *del Hospital*, Dr. *Wallis*, and Dr. *Gregory*. **TETANOS**.



**TETANOS**, in Medicine, a Term purely Greek, and signifying a kind of Tonic Spasmus, or Convulsion, where-in the fore and hind Muscles of the Head are render'd rigid and inflexible; so that it can neither bend one Way nor t'other. See CONVULSION.

The Word is form'd from the Greek, *τετανν*, to stretch.

Some Authors also use *Tetanos*, or *Tetanus* in a more general Sense. When a Convulsion is universal, they denominate it *Tetanus*; which they sub-divide into *Emprosthotonus* and *Opisthotonus*. See EMPROSTHOTONOS and EPISTHOTONOS.

**TETRACHORD**, in the ancient Music, a Concord consisting of three Degrees, Tones, or Intervals, or four Sounds or Terms; call'd also by the Ancients *διατέσσαρον*, and by the Moderns a *Fourth*. See FOURTH.

This Interval had the Name *Tetrachord* given it with respect to the Lyra, and its Chords or Strings. See CHORD. See also DIATESSARON.

Ancient Authors make frequent Mention of the Synaphe, or Conjunction; and Diecufis, or Disjunction of *Tetrachords*. To conceive their Meaning, it must be observ'd, that two *Tetrachords* were said to be join'd, when the same Chord was the highest of the first, or lowest Instrument, and the lowest of the second; as was the Case in the two *Tetrachords* that compose the ancient Heptachord or Seventh. But when two *Tetrachords* had no common Chord; but, on the contrary, had each their different ones to begin and end withal, so that between the two there were two Intervals of a Tone, then the *Tetrachords* were said to be disjoin'd; which was the Case in the two *Tetrachords* that compose the Octachord or Octave. See OCTAVE.

The Word is form'd of the Greek, *τετρα*, four times, and *χορδή*, a Chord or String.

**TETRACTYS**, in the ancient Geometry. The *Pythagoric Tetractys* is a Point, a Line, a Surface, and a Solid.

**TETRADIAPASON**, a *Quadruple Diapason*; a Musical Chord, otherwise call'd a quadruple eight or nine and twentieth. See DIAPASON.

**TETRADITES**, in Antiquity, a Name given to several different Sects of Hereticks, out of some particular Respect they bore to the Number four, *τετρα*.

The Sabbathians were call'd *Tetradites*, from their fasting on *Easter-Day*, as on the fourth Day, or *Wednesday*. See SABBATHIAN.

The Manichees, and others, who admitted a Quaternity instead of a Trinity in the Godhead, or four Persons in lieu of three, were also call'd *Tetradites*. See MANICHEE.

The Followers of *Petrus Fullensis* bore the same Appellation of *Tetradites*, by Reason of the Addition they made to the *Trisagion*, to countenance an Error they held, that in our Saviour's Passion, 'twas not any particular Person of the Godhead, e. g. the Son, that suffer'd; but the whole Deity. See TRISAGION.

The Ancients also gave the Name *Tetradites* to Children born under the fourth Moon; and these they believ'd unhappy.

The Word is form'd from the Greek, *τέτρας* or *τέσσαρες*, four.

**TETRAEDRON**, *TETRAIEDRON*, in Geometry, one of the five regular or Platonic Bodies, or Solids; comprehended under four equilateral and equal Triangles. See SOLID.

The *Tetraedron* may be conceiv'd as a triangular Pyramid of four equal Faces. See PYRAMID.

Such is that represented (Tab. Geometry, Fig. 59.) See REGULAR BODY.

'Tis demonstrat'd by Mathematicians, that the Square of the Side of a *Tetraedron*, is to the Square of the Diameter of a Sphere wherein it may be inscrib'd, in a subsesquialteral Ratio: Whence it follows, that the Side of a *Tetraedron* is to the Diameter of a Sphere it is inscrib'd in, as  $\sqrt{2}$  to the  $\sqrt{3}$ , consequently they are incommensurable.

**TETRAGON**, in Geometry, a *Quadrangle*; or a Figure with four Angles. See QUADRANGLE.

Thus a Square, Parallelogram, Rhombus, Trapezium, are *Tetragonal Figures*. See SQUARE, &c.

The Word is form'd from the Greek, *τέτρας*, four, and *γωνία*, Angle.

**TETRAGON**, in Astrology, &c. an Aspect of two Planets with Regard to the Earth, when they are distant from each other a fourth Part of a Circle, or  $90^\circ$ ; as A D Tab. Astronomy, Fig. 3.

The *Tetragon* is express'd by the Character,  $\square$ . See ASPECT.

**TETRAGONIAS**, a Name given to a Comet, whose Head is of a Quadrangular Figure, and its Tail or Train long, thick, and uniform; not much different from the Meteor call'd *Trabs*. See COMET and TRABS.

**TETRAGONISM**, a Term some Authors use to express the Quadrature of the Circle. See QUADRATURE.

**TETRAGONUS**, in Anatomy, a Muscle, call'd also *Quadratus Genæ*. See QUADRATUS.

**TETRAGRAMMATON**, a Denomination given by the Greeks to the Name of God, because consisting of four Letters in most Languages. See GOD.

**TETRAMETER**, in the ancient Poetry, an Iambic Verse consisting of eight Feet. See IAMBIC.

We meet with none of these but in the Comic Poets, as Terence.

The Word is form'd from the Greek, *τέτρας*, four, and *μετρον*, Measure, q. d. four Measures.

**TETRAPASTUS**, in Mechanics, a Machine wherein are four Pullies. See PULLEY.

The Word is form'd from the Greek, *τετραπαστος*. See POLYPASTUS.

**TETRAPETALOUS**, in Botany, an Epithet given to Flowers that consist of four *Petala*, or Leaves, plac'd around the Pistil. See PETALA.

These, M. *Jussieu* calls *Polypetalous* Flowers. See POLYPETALOUS.

Mr. Ray, who calls them *Tetrapetalous*, makes them constitute a distinct Kind, which he divides into

1<sup>o</sup>. Such as have an uniform *Tetrapetalous* Flower, and their Seed-Vessels a little oblongish, which he therefore calls *Siliquose*; as the Keiri or Leucium Luteum, and the other common Leucium, the Dentaria, the Leucium Siliquosum, Alyssum, Viola Lunaris, Paronychia, Hesperis, Alliaria, Rapa, Napus, Sinapis, Rapistrum, Eruca Spuria, Erisimum, Cardamine, Turrilis, Pilosella Siliquosa, and the Raphanus Rusticanus and Aquaticus.

2<sup>o</sup>. Such as have their Seed Case or Vessel shorter, which therefore, for Distinction Sake, he calls *Capsulate*, and *Sili-culose*; as the Myagrum, Draha, Leucium Siliqua subrotunda, Cochlearia, Nasturtium, Lepidium vulgare, Thlaspi, Brassica marina, Glastum, Eruca marina, &c.

3. Such as have a seeming *Tetrapetalous* Flower, that is, a Monopetalous one, divided deeply into four Partitions; which he particularly calls *Anomalous*; as the Papaver, Agremony, Veronica, Tithymallus, Plantago, Coronopus, Psyllium, Lysimachia Siliquosa, Alfine spuria, &c.

**TETRAPHARMACUM**, from *τετρα*, quater, four, and *φάρμακον*, Medicamentum, is any Remedy consisting of four Ingredients.

**TETRAPLA**, in Church History, a Bible dispos'd by Origen under four Columns, in each whereof was a different Greek Version, viz. that of *Aquila*, that of *Symmachus*, that of the *Seventy*, and that of *Theodosian*. See BIBLE.

*Sixtus* of *Sienna* confounds the *Tetrapla* with the *Hexapla*; but the *Tetrapla* is a different Work, compos'd after the *Hexapla*, in Favour of such as could not have the *Hexapla*. See HEXAPLA.

Some Authors are of Opinion, that the Order wherein the four Versions of the *Tetrapla* were rang'd, was different from that wherein we have rehears'd them; and particularly that the Septuagint was in the first Column: But S. *Epiphanius* says expressly to the contrary, and places it in the third. He even gives us Origen's Reason for putting it there; which was, says he, that the best Version might be in the Middle, that the others might be the more easily confronted therewith; and corrected from it.

*Baronius*, however, in his Annals for the Year 231, takes the Septuagint to have been in the third Place in the *Hexapla*, but the first in the *Tetrapla*; yet *Epiphanius* gives it the same Place in both.

The Word is form'd from the Greek *τετραπλούς*, quadruplex, fourfold.

**TETRAPTOTE**, *TETRAPTOTON*, in Grammar, such defective Nouns as have only four Cases; as *Plus*, which wants the Dative and Vocative singular. See CASE, AP-PTOTE, &c.

**TETRARCH**, *TETRARCHIA*, a Prince who holds and governs a fourth Part of a Kingdom; thus call'd from the Greek *τέτρας*, fourth, and *αρχή*, Rule, Dominion.

Such, originally, was the Import of the Title *Tetrarch*; but it was afterwards apply'd to any petty King, or Sovereign, and became synonymous with *Arch*; as appears from the following Consideration: 1<sup>o</sup>. That *Pliny* makes mention of six *Tetrarchies* within the Cities of *Decapolis*. 2<sup>o</sup>. That *Herod's* Kingdom was only divided into three Parts, which yet were call'd *Tetrarchies*, and the Sovereigns thereof, *Iuke* iii. 1. *Tetrarchs*. 3<sup>o</sup>. *Josephus*, Antiq. Jud. lib. xiv. c. 23. tells us, that after the Battle of *Philippi*, *Anthony* going into Syria, constituted *Herod*, *Tetrarch*; and on Medals the same *Herod* is call'd *Arch*. See ARCH-NARCHA.

**TETRASTICH**, a Stanza, Epigram, or Poem, consisting of four Verses. See DISTICH.

**TETRASTYLE**, in the ancient Architecture, a Building, and particularly a Temple, with four Columns both before and behind, i. e. in Front and Rear. See TEM-  
PLE.



The Word is form'd from τετρας, four, and συλλαβή, Columns.

**TETRASYLLABICAL**, a Word consisting of four Syllables. See WORD and SYLLABLE.

**TEUTONIC**, something belonging to the *Teutones*, an ancient People of *Germany*, inhabiting chiefly along the Coasts of the *German Ocean*.

The *TEUTONIC Language* is the ancient Language of *Germany*, the same with the *Celtic*. See LANGUAGE, CELTIC; &c.

The *Teutonic*, or *German*, is rank'd among the Mother Tongues. See MOTHER Tongue.

It is now distinguish'd into *Upper* and *Lower*.

The *Upper* has two notable Dialects, viz. 1<sup>o</sup>. the *Scandinavian*, *Danish*, or perhaps, *Gothic*; to which belong the Languages spoke in *Denmark*, *Norway*, *Sweden*, and *Ireland*. 2<sup>o</sup>. The *Saxon*; to which belong the several Languages of the *English*, *Scots*, *Frisian*, and those on the North of the *Elbe*. See ENGLISH, &c.

To the *Lower* belong the *Low Dutch*, *Flemish*, &c. spoke thro' the *Netherlands*, the more Southerly Parts of *Germany*, &c.

**TEUTONIC Order**, a Military - Religious Order of Knights, establish'd towards the Close of the XIIIth Century; and thus call'd, because consisting principally of *Germans*. See KNIGHT and ORDER.

The Origin, &c. of this Order was thus: The Christians under *Guy of Lusignan*, laying Siege to *Aca*, or *Acra*, a City of *Syria*, on the Borders of the Holy Land; at which Siege were present, *Richard King of England*, *Philip Auguste of France*, &c. some *Germans* of *Bremen* and *Lubeck*, touch'd with Compassion for the Sick and Wounded of the Army, who wanted common Necessaries, set on Foot a kind of Hospital under a Tent, which they made of a Ship's Sail; and here betook themselves to a charitable Attendance of the Sick.

This started a Thought of establishing a third Military Order, in Imitation of the *Templars* and the *Hospitallers*.

The Design was approv'd by the Patriarch of *Jerusalem*, the Archbishops and Bishops of the neighbouring Places, the King of *Jerusalem*, the Masters of the Temple and the Hospital, and the *German* Lords and Prelates then in the Holy Land, &c. And by common Consent, *Frederic*, Duke of *Suabia*, who was then at their Head, sent Embassadors to his Brother, *Henry*, King of the *Romans*, to solicit the Pope to confirm the new Order.

*Calixtus III.* who then govern'd the Church, granted it by a Bull of the 23d of February, 1192; and the new Order was call'd, *The Order of Teutonic Knights of the House of St. Mary of Jerusalem*.

The Pope granted them all the Privileges of the *Templars*, and the *Hospitallers* of *St. John*; excepting that they were to be subject to the Patriarchs, and other Prelates, and that they should pay a Tenth of what they possess'd.

The first Master of the Order, *Henry Valsper*, elected during the Time of the Siege of *Aca*; after the taking of that City, purchas'd a Garden, wherein he built a Church and an Hospital, which was the first House of the *Teutonic Order*. Such is the Account given by *Peter of Dusborg*, a Priest of this Order.

*Jacques de Vitry* differs a little herefrom; and relates, that the *Teutonic Order* was establish'd at *Jerusalem* before the City of *Aca* was besieg'd.

These two Opinions *Hartknok*, in his Notes on *Dusborg*, reconciles, by saying, that the Order was first instituted by a private Person, a *German*, at *Jerusalem*; that it was confirm'd by the Pope, the Emperor, and the Princes at the Siege of *Aca*; and that after the taking that City, it was become so considerable, that it was known all over the World.

If it be true that it was a private Person who first set on Foot the Order, and that those People of *Bremen* and *Lubeck* only join'd with them; as some Authors assert; we don't know the precise Year of its Establishment.

The Order made no great Progresses under the three first Grand Masters; but under the fourth, *Herman de Salza*, it became very powerful; insomuch, that *Comrade*, Duke of *Mazovia* and *Cujavia*, about the Year 1230, sent an Embassy to him, to solicit his Friendship and Assistance, offering him and his Order, the Provinces of *Culmes* and *Livonia*, with all the Lands they could recover from the Idolatrous *Prussians*, who harass'd him exceedingly with their continual IncurSIONS, and against whom he intended this new Militia; his own Knights of the Order of *Christ*, or of *Dolmin*, instituted for the like Purpose, being found too weak.

*De Salza* accepted the Donation; and *Gregory IX.* confirm'd it: and to aid the Knights in reducing the *Prussians*, *Innocent IV.* publish'd a Croisade.

With this Help, in a Year's Time, they subdu'd the Provinces of *Warmia*, *Notangerland*, and *Barthia*; the Inhabitants whereof renounc'd the Worship of Idols; and in the Course

of fifty Years more, they reduc'd all *Prussia*, *Livonia*, *Samogitia*, *Pomerania*, &c.

In 1204, Duke *Albert* had founded the Order of Sword-bearers, *Port-Glaives*, which now became united to the *Teutonic Knights*, and the Union approv'd by Pope *Gregory IX.* See PORT-GLAIVE.

*Waldemar III.* King of *Denmark*, sold the Order the Province of *Eslein*, the Cities of *Nerva* and *Wessenberg*, and some other Provinces.

A new Union some time afterwards occasion'd great Divisions and Troubles in the Order: It was with the Bishops and Canons of *Prussia* and *Livonia*; who hereupon took the Habit of the *Teutonic Order*, and shar'd the Sovereignty with the Knights, in their respective Dioceses.

The Order, thus Master of all *Prussia*, built the Cities of *Elbing*, *Mariembourg*, *Thorn*, *Dantzic*, *Koningsberg*, and some others: The Emperor *Frederic II.* permitted them to add to the Arms of the Order, the Imperial Eagle; and *S. Louis*, in 1250, allow'd them to Quarter the *Flower-de-Luce*.

After the City *Aca*, or *Acra*, had been recover'd by the Infidels, the Grand Master of the *Teutonic Order* remov'd his Seat from that City to *Mariembourg*. As the Order grew in Power, the Knights took more State on them; and, at length, instead of *Friars*, *Brothers*, as at first, would be call'd *Lords*. And tho' the Grand Master *Conrade Zolner*, of *Rotensteyne*, oppos'd this Innovation, his Successor *Conrade Wallerod* not only approv'd it, but even procur'd himself to be treated with Honours only render'd to the greatest Princes.

Divisions being got into the Order, the Kings of *Poland* made their Advantage of them: The *Prussians* revolted to them; and after several Wars between the Knights and the *Poles*, the former yielded to King *Casimir* the upper *Prussia*, and did Homage to him for the lower.

Lastly, at the Time of the Reformation, *Albert*, Marquis of *Brandenbourg*, then Grand Master, becoming Lutheran, renounc'd the Dignity of Grand Master, dissolv'd the Commanderies, and drove the Knights out of *Prussia*.

Most of the Knights follow'd his Example, and embrac'd the Reformation: The rest transferr'd the Seat of their Order to *Margentheim*, or *Mariendal* in *Franconia*, which they still retain.

They there elected *Walter of Cromberg* their Grand Master; form'd a Process against *Albert*; and the Emperor put him to the Ban of the Empire. The Order, however, could never recover their Domains; but are now little more than the Shadow of what they formerly were, having only three or four Commanderies, scarce sufficient for the ordinary Subsistence of the Grand Master and his Knights.

The Officers of the *Teutonic Order*, when in its Splendor, were the Grand Master, who resided at *Mariembourg*; under him were the Grand Commander; the Grand Marshal, who had his Residence at *Koningsberg*; the Grand Hospitaller, who resided at *Elbing*; the Draper, who took Care to furnish the Habits; the Treasurer, who lived at the Court of the Grand Master; and several Commanders, as those of *Thorn*, *Culme*, *Brandenbourg*, *Koningsberg*, *Elbing*, &c.

They had also their Commanders of particular Castles and Fortresses; Advocates, Proveditors, Intendants of Mills, Provisions, &c.

*Wasselius* in his Annals says, they had 28 Commanders of Cities, 46 of Castles, 81 Hospitallers, 35 Masters of Convents, 40 Stewards, 37 Proveditors, 93 Masters of Mills, 700 Brothers or Knights to take the Field, 162 Brothers of the Choir, or Priests, 6200 Servitors or Domesticks, &c.

**TEXT**, a relative Term, contra-distinguish'd to Commentary. It signifies an original Discourse, exclusive of any Note, or Interpretation.

Infinite Pains have been taken by the Critics to rectify, reconcile, settle, explain, &c. the Text of the Bible, and the Classics.

Mr. *Whiston* accounts for all those Misunderstandings between the New and Old Testament, particularly as to the Prophecies in the Old, cited as fulfill'd in the New, to the Corruption of the Text of the Old Testament; and to obviate Objections made against Christianity on that Head, has publish'd an Essay towards restoring the true Text of the Old Testament, &c.

This Restoration he is to effect from the *Samaritan Pentateuch*, the *Roman Psalter*, the *Apostolical Constitutions*, &c. But all our Critics take this Corruption of the Text to be imaginary, and look out for other Ways of solving those Difficulties. See PROPHECY.

**TEXT**, is particularly used for a certain Passage chose by a Preacher to be the Subject of his Sermon.

Anciently, the Lawyers began all their Pleadings with like Texts of Scripture.

A Text-book, in several Universities, is a Classic Author wrote very wide, by the Students, to give Room for an Interpretation dictated by the Master or Regent, to be insert'd in the Inter-lines.



In this Sense, the *French* say, proverbially, *Glose d'Orleans plus obscure que le Texte.*

The *Spaniards* give the Name *Text* to a kind of little Poem or Set of Verses, placed at the Head of a Gloss, and making the Subject thereof; each Verse being explain'd, one after another in the Course of the Gloss. See *Gloss*.

In ancient Authors, *Text* is appropriated to the *New Testament*, by way of Eminence: it was written in gold Letters, and carefully preserved in the Churches.

*Codex aurato conscriptus Grammate, Scriptus  
Auctus Evangelicum conservat corpore Textum.*

**TEXTUARIES, TEXTUARIJ**, a Name given the Sect of the Caraites, among the *Jews*. See *CARAITES*.

*Itzel* shone among the Traditionaries; and *Schemmai* among the *Textuaries*. See *TRADITIONARY*.

The Civil and Canon Lawyers, sometimes also call a Book containing the bare Text, without any Gloss or Commentary, a *Textuary*.

**TEXTUS Rossensis**, is an ancient Manuscript, containing the Laws of *Ethelbert*, *Floethere*, *Ratric* and *Witred* Kings of *Kent*, collected by *Eadulf*, the venerable Bishop of *Rekester*, about the Year 760. See *LAW*.

**TEXTURE, TEXTURA**, properly denotes the Arrangement and Cohesion of several slender Bodies or Threads, interwove, or intangled among each other; as in the Webs of Spiders, or in Cloths, Stuffs, &c. See *WEB* and *WEAVING*.

The Word is *Latin*, form'd of *Texo*, I weave.

The Word is also used not only of Threads, but for any Union or Cohesion of the constituent Particles of a concrete Body; whether by weaving, hooking, knitting, tying, chaining, indenting, intruding, compressing, attracting, or any other way. See *COHESION*, *PARTICLE*, *BODY*, &c.

In this Sense, we say a close, compact *Texture*; a lax, porous *Texture*; a regular, or irregular *Texture*, &c. See *PORE*, *RAREFACTION*, *CONDENSATION*, &c.

A great deal depends on the *Texture* of the Component Parts of a Body; hence most of its particular Properties, its specific Gravity, Colour, &c. See *COLOUR*, &c.

**THABORITES, or TABORITES**, a Branch of the ancient *Hussites*. See *HUSSITE*.

The *Hussites*, towards the Close of the XVth Century, dividing into several Parties; one of them retired to a little Mountain or Rock, situate in *Bohemia*, 15 Leagues from *Prague*, and there put themselves under the Conduct of *Zisca*: Building themselves a Fort or Castle, which they call'd *Thabor*, either from the general Word *Thabor*, which in the *Sclavonic* Language signifies Castle; or from the Mountain *Thabor*, mention'd in Scripture: And hence they became denominated *Thaborites*.

These carried the Point of the Reformation further than *Hus* has done; rejected Purgatory, Auricular Confession, the Unction at Baptism, Transubstantiation, &c.

They reduced the Seven Sacraments of the *Romanists* to Four, viz. Baptism, the Eucharist, Marriage and Ordination.

They maintain'd a stout War with the Emperor *Sigismund*. Pope *Martin V.* was obliged to publish a Croisade against them. Nor did this succeed: At length, however, in 1544, their Castle of *Thabor* was taken, and they dispersed.

**THALAMI Nervorum Opticorum**, in Anatomy, two oblong Prominences, of the lateral Ventricles of the Brain; Medullary without, but a little Cineritious within. See *BRAIN*.

They are thus call'd, because the Optic Nerves rise out of them. See *OPTIC*.

**THANE or THAIN, THIANUS**, the Name of an ancient Dignity among the *English*, or *Anglo-Saxons*. See *NOBILITY*.

*Skene* makes *Thane* to be a Dignity equal with that of the Son of an Earl; *Camden* will have it, that *Thanes* were only dignify'd by some Offices which they bore.

There were two Kinds or Orders of *Thanes*: The King's *Thanes*, and the Ordinary *Thanes*.

The First, were those who attended our *English-Saxon* Kings in their Courts; and who held Lands immediately of the King; whence, in *Doomsday-Book*, they are promiscuously call'd *Thani* and *Servientes Regis*.

Soon after the Conquest, the Name was disused; and instead thereof they were call'd the King's Barons, *Barones Regis*. See *BARON*.

As to Dignity, they took Place next after Knights.

Their Origin is refer'd to King *Canutus*, who, taking the chief of the *Danish* Nobility, to the Number of 3000, for his Guard; and arming them with Battle Axes and Sables with gilt Handles, call'd them *Thing-lith*, from the Two *Danish* Words *Thing* or *Thain* or *Thin*, Body of Nobility, and *lith*, Order of Battel.

The ordinary *Thanes* or *Thani Minores*, were the Lords of Manors, who had particular Jurisdiction within their Limits, and over their own Tenants. See *LORD* and *MANOR*.

These, too, changed their Name for that of Barons; and hence their Courts are call'd *Courts Baron*, to this Day. See *COURT* and *BARON*.

In old Authors, Charters, &c. we meet with *Thane*, as signifying a *Nobleman*; sometimes, a *Freeman*, and sometimes a *Magistrate*.

**THANE Lands**, were Lands granted by Charter of the *Saxon* Kings to their *Thanes*.

**THAUMATURGUS**, *q. d. Worker of Miracles*; an Appellation which the *Romanists* give to several of their Saints. See *SAINT*.

St. Gregory *Thaumaturgus*, or Gregory of *Neocæsarea*, was a Disciple of *Origen*, about the Year 223; and afterwards Bishop of *Cæsarea* in *Pontus*; and in that Capacity assisted at the First Council of *Antioch*, and at that of *Ephesus* against *Paulus Samosatensis*.

St. Leo of *Caranea*, is also usually call'd S. Leo *Thaumaturgus*: He lived in the VIIIth Century; and his Body is still honour'd at *Rome* in the Church of S. *Martin de Tours*.

St. Francis *Paul*, and St. Francis *Xavier*, are the great *Thaumaturgi* of these last Ages. See *MIRACLE*.

The Word is form'd from the *Greek*, *θαυμα*, wonderful thing, and *εργον*, work.

**THAWING**, the Resolution of Ice into its former fluid State, by the Warmth of the Air, &c. See *ICE*; see also *FREEZING*.

**THEANDRIC**, a Term signifying Divine and Human under one; or God-Man; form'd from *θεός*, God, and *άνθρωπος*, Man.

S. *Dionysius* Bishop of *Athens*, first used the Word *Theandric*, to express the two Kinds of Operations in *Jesus Christ*; the one divine, the other human: The *Monothelites* afterwards abused it, to signify the one only Operation which they admitted in *Jesus Christ*; in whom they believed there was a Mixture of the divine and human Nature, whence resulted a third Nature, which was a Compound of the one and the other, whose Operations follow'd the Essence and Qualities of the Mixture, and were neither divine nor human; but both at once, or, in one Word, *Theandric*. See *OPERATION* and *MONOTHELITE*.

The Term *Theandric*, and the Dogma of *Theandric Operations* were examined with great Care and Attention, at the Council of the *Lateran*, held in 649; where Pope *Martin* solidly refuted the Notion of *Theandric Operations*, and shew'd, That the Sense wherein S. *Dionysius* first used the Word, was Catholic, and quite remote from that of the *Monothelites*.

**THEANTHROPOS**, a Term sometimes used in the Schools, to signify the Person of *Jesus Christ*, who is really *Theanthropos*, i. e. God-Man; from the *Greek*, *θεός*, *Deus*, and *άνθρωπος*, *homo*, Man.

**THEATER or THEATRE, THEATRUM**, among the Ancients, a Public Edifice, for the exhibiting of Spectacles or Shews to the People. See *SPECTACLE*.

Under the Word *Theater* was comprehended, not only the Eminence whereon the Actors appear'd, and the Action pass'd; but also the whole Area, or Extent of the Place, common to the Actors and Spectators.

In this Sense, the *Theater* was a Building encompass'd with Portico's, and furnished with Seats of Stone, disposed in a Semi-circle, and ascending by degrees over one another; which encompass'd a Space, call'd the *Orchestra*, in the Front whereof, was the *Proscenium*, or *Pulpitum*, whereon the Actors perform'd, and which is what we properly call the *Theater* or *Stage*. See *ORCHESTRA* and *PROSCENIUM*.

On the *Proscenium* stood the *Scena*, a large Front, adorn'd with Orders of Architecture, behind which was the *Postscenium*, or Place where the Actors made themselves ready, retired, &c. So that the *Scena*, in its full Extent, comprehended all the Part belonging to the Actors. See *SCENA*, *POSTSCENIUM*, &c.

In the *Greek Theaters*, the *Orchestra* made a Part of the *Scena*; but in the *Roman Theaters*, none of the Actors ever descended into the *Orchestra*; which was taken up by the Seats of the Senators.

The most celebrated *Theaters* remaining of Antiquity, are the *Theater of Marcellus*, and that of *Pompey*; which are also call'd *Amphitheaters*. See *AMPHITHEATER*.

At *Athens*, are still seen, the Remains of the Temple of *Bacchus*, which was the first *Theater* in the World, and a Master-piece in Architecture. All *Theaters* were consecrated to *Venus* and *Bacchus*.

The Word is form'd from the *Greek*, *θεατρον*, Spectacle, Shew, of *θαυμα*, *specto*, *video*, I see.

**THEATER**, among the Moderns, is the Stage, or Place whereon the Drama, or Play is exhibited; answering to the *Scena* of the Ancients. See *DRAMA*.

In its full Latitude, however, the *Theater* includes the whole Play-House; in which Sense, it is a spacious Room, or Hall, part whereof is taken up by the *Scena*, which comprehends the Stage, the Decorations and the Machines; and the rest distributed into a Space, call'd the *Pir*, or *Parterre*, [ See ] which



which is cover'd with Seats, Boxes, &c. and terminated with an Elevation of one, or two Galleries, disposed into Benches ascending over one another. See STAGE; see also COMEDY, TRAGEDY, &c.

THEATER is also used in Architecture, chiefly among the *Italians*, for an Assemblage of several Buildings, which, by a happy Disposition and Elevation, represents an agreeable Scene to the Eye.

Such as are most of the Vineyards at *Rome*; but particularly that of *Monte Dragone*, at *Frescati*; and in *France*, the new Castle of *St. Germain en Laye*.

Anatomical THEATER, in a School of Medicine and Chirurgery, is a Hall, with several Rows of Seats, disposed in the Sweep of an Amphitheatre; having a Table, bearing on a Pivot, in the middle; for the Dissection of Bodies.

Such is the *Anatomical Theater* of the Royal Garden of Plants at *Paris*, &c.

The *Theater* at *Oxford* is a beautiful Building erected by Archbishop *Skeldon*, for the Use of Scholastic Exercises.

THEATINS, a Religious Order of Regular Priests; thus call'd from Don *John Pietro Caraffa*, Archbishop of *Chieti*, in the Kingdom of *Naples*, which was anciently call'd *Theate*.

The same Archbishop was afterwards Pope, by the Name of *Paul IV.* after having been a Companion of *Caetan*, a *Venetian* Gentleman, the first Founder of this Order, at *Rome* in 1524.

The *Theatins* were the first that assum'd the Title of *Regular Clerks*. They have not only no Lands or fix'd Revenues either in common or in particular; but they don't even ask or beg any thing, but wait for what Providence shall send them for their Subsistence.

They employ themselves much in Foreign Missions; and in 1627 enter'd upon *Mingrelia*, where they have an Establishment: They have had the like in *Tartary*, *Circassia*, and *Georgia*, which they have since abandon'd, by Reason of the little Fruit they perceiv'd thereof.

Their first Congregation appear'd at *Rome* in 1524, and was confirm'd the same Year by *Clement VII.* Their Constitutions were drawn up at a General Chapter in 1604, and approv'd by *Clement VIII.* They wear Priests Habit.

THEATINES, are Congregations of Nuns, under the Direction of the *Theatins*.

There are two Kinds of *Theatines*, under the Title of Sisters of the *immaculate Conception*, who form two different Congregations, the one engag'd by solemn Vows, and the other only by simple Vows. Their common Foundress was *Ursula Benincasa*.

Those who make the simple Vows, are the most ancient; and are call'd simply *Theatines* of the Congregation: They had their Rise at *Naples* in 1583.

The others are call'd *Theatines of the Hermitage*: The whole Business of these is Praying in Retirement; and an austere Solitude, to which they engage themselves by solemn Vows.

The *Theatines* of the first Congregation take Care of the Temporal Concerns of these last. Their Houses stand together, and communicate by a large Hall. Their Foundress drew up their Constitutions, and laid the Foundation of their House at *Naples*; but dy'd e'er it was finish'd.

*Gregory* the XVth, who confirm'd the new Institute under the Rule of *S. Augustin*, appointed that they should be under the Direction of the *Theatins*. *Urban VIII.* revok'd this Article by a Brief in 1624, and subjected them to the Nuncio of *Naples*; but *Clement IX.* annull'd this Brief, and submitted them anew to the *Theatins* by a Brief in 1668.

THEBAID, THEBAIS, a famous heroic Poem of *Statius*, the Subject whereof is the Civil War of *Thebes* between the two Brothers *Eteocles* and *Polynices*; or *Thebes* taken by *Thebesus*. See HEROIC and POEM.

*Statius* was twelve Years in composing his *Thebaid*, which consists of XII Books: He wrote under *Domitian*.

He is censur'd by the best Criticks, as *Bossu*, &c. for a vicious Multiplication of Fables and Actions, for too much Heat and Extravagance, and for going beyond the Bounds of Probability. See FABLE and PROBABILITY.

Several Greek Poets had compos'd *Thebais* before him; the principal were, *Antagoras*, *Antiphanes* of *Colophon*, *Alcman* the *Ægean*, and an anonymous Author mention'd by *Pausanias*, lib. ix.

*Aristotle*, praising *Homer* for the Simplicity of his Fable, opposes to him the Ignorance of certain Poets, who imagin'd that the Unity of Fable or Action was abundantly provided for by the Unity of the Hero, and who compos'd *Thebais*, *Herculeids*, &c. in each whereof they collected every thing that had ever happen'd to their principal Person. See FANT.

THEFT, *Larceny*, *Furtum*, in Law, a felonious taking away another Man's moveable and personal Goods, against the Owner's Will, with an Intent to steal them. See LARCENY.

It is divided into *Theft* or *Larceny*, properly so call'd, and *petit Theft* or *Larceny*; the former whereof is call'd, above the Value of 12*d.* and is deem'd Felony: The other, which is of Goods under that Value, is not Felony. See FELONY.

*Theft* from the Person, or in Presence of the Owner, is properly call'd *Robbery*. See ROBBERY.

THEFTHOLE, the receiving Goods from a Thief, to favour and maintain him, the Punishment whereof is Imprisonment, and not Loss of Life or Member. See THEFT.

THELONIUM, TELONIUM, or *Breve essendi quietum* &c. *THELONIO*, is a Writ lying for the Citizens of a City, or Burghesses of a Town, that have a Charter or Prescription to free them from Toll; against the Officers of any Town or Marker, who would constrain them to pay it, contrary to the said Grant or Prescription.

THEME, THEMA, a Subject or Topic, to write or compose on.

*Theme*, among Astrologers, is the Figure they construct when they draw the *Horoscope*: It represents the State of the Heavens for a certain Point or Moment requir'd, i.e. the Places of the Stars and Planets for that Moment. See HOROSCOPE.

It consists of 12 Triangles; inclos'd within two Squares, and call'd the *Twelve Houses*.

THENAR, in Anatomy, a Muscle, call'd also *Abductor Pollicis manus*. See ABDUCTOR.

THNETOPSYCHITES, a Sect in the ancient Church, who believ'd the Soul of Man perfectly like that of Bees; and taught that it dy'd with the Body. See SOUL.

We meet with no Account of these Hereticks any where, but in *J. Damascenus*, *Heres.* 90. unless they be the same with those *Eusebius* speaks of, *Hist. Eccles.* lib. ix. c. 38. who relates, that in *Origen's* Time, there were Hereticks in *Arabia*, who taught that the Soul of Man dy'd with the Body; but that it should rise again with it at the End of the World. He adds, that *Origen* refuted them in a numerous Council, and reclaim'd them from their Errors. *S. Augustin* and *Jerome*, calls them *Arabian Hereticks*.

*Marshall*, in his Tables, has disfigur'd the Word, for want of understanding it; he writes it *Theopyschites*, instead of *Thnetopsychites*: He likewise places them in the VIIIth Century; on what Grounds we can't imagine.

The Word is compos'd of the Greek, *θνητός*, Mortal, and *ψυχή*, Soul.

THEOCATAGNOSTES, a Sect of Hereticks, or rather Blasphemers, who dar'd to find fault with certain Words and Actions of God, and to blame many Things in the Scriptures.

*Marshall*, in his Tables, places these Hereticks in the VIIth Century; for what Reason we know not; *Damascenus* being the only Author that mentions them, but without taking any Notice of the Time of their Appearance.

Add to this, that in *Damascenus's* Treatise of Heresies, we meet with Hereticks that were not so much the Authors of Sects subsisting at any certain Time, as wicked Persons, such as are found in all Times, and all Ages.

The Word is form'd from the Greek, *θεός*, God, and *καταγινώσκω*, I condemn.

THEOCRACY, a State govern'd by the immediate Direction of God alone. See GOVERNMENT.

According to *Josephus*, the ancient Government of the *Jews* was *Theocratic*; God himself ordering and directing every thing belonging to the Sovereign Authority. See JUDGE.

This *Theocracy* lasted till the Time of *Saul*; when the *Israelites*, weary thereof, desir'd they might have a king, like other Nations; and thence-forward the State became Monarchic.

There was also a kind of imaginary *Theocracy* at *Athens*: While the Sons of *Codrus* were disputing the Succession, the *Athenians*, weary'd out with the Miseries of an intestine War, abolish'd the Royalty, and declar'd *Jupiter* the King of the People of *Athens*.

The Word is form'd from *θεός*, God, and *κρατος*, Power, Empire.

THEODOLITE, a Mathematical Instrument, much us'd in Surveying, for the taking of Angles, Distances, Altitudes, &c. See ANGLE, &c.

It is made variously; several Persons having their several Ways of contriving it each more simple, and portable, more accurate and expeditious, than other. The following one is not inferior to any we have seen: It consists of a Brass Circle, inferior to any we have seen: It consists of a Brass Circle, about a Foot Diameter, cut in Form of Fig. 25. Place Surveying; having its Limb divided into 360 Degrees, and each Degree sub-divided either diagonally, or otherwise, into Minutes.

Underneath, at *cc*, are fix'd two little Pillars (Fig. 26.) which support an Axis, whereon is fix'd a *Telescope*, consisting of two Glasses, in a square Brass Tube; for the viewing of remote Objects.



On the Centre of the Circle B, moves the Index C; which is a circular Plate, having a Compass in the Middle, whose Meridian Line answers to the Fiducial Line *aa*: at *bb* are fix'd two Pillars to support an Axis, which bears a Telescope like the former, whose Line of Collimation answers to the Fiducial Line *aa*.

At each End of either Telescope, is fix'd a plain Sight for the viewing nearer Objects. See SIGHT.

The Ends of the Index *aa* are cut circularly; to fit the Divisions of the Limb B; and when that Limb is diagonally divided, the Fiducial Line at one End of the Index shews the Degrees and Minutes upon the Limb. The whole Instrument is mounted with a Ball and Socket, upon a three-leg'd Staff.

Most Theodolites have no Telescopes, but only four plain Sights, two of them fasten'd on the Limb, and two on the Ends of the Index.

The Use of the Theodolite is abundantly shewn in that of the Semicircle; which is only half a Theodolite. See SEMICIRCLE. And in that of the plain Table, which is occasionally made to be us'd as a Theodolite. See PLAIN Table.

Note, the Index and Compass of the Theodolite, likewise serve for a Circumferentor, and are us'd as such. See CIRCUMFERENTOR.

THEOGONY, that Branch of the Heathen Theology, which taught the Genealogy of their Gods. See GOD.

Hesiod gives us the ancient Theogony, in a Poem under that Title. Among the ancient Writers, Dr. Burnet observes, Theogony and Cosmogony, signify'd the same Thing. In effect, the Generation of the Gods of the ancient Persians, Fire, Water, and Earth, is apparently no other than that of the primary Elements. See COSMOGENY; see also CHAOS.

The Word is form'd from *θεός*, God, and *γενή*, Geniture, Seed, Offspring.

THEOLOGY, call'd also Divinity, a Science which instructs us in the Knowledge of God, and divine Things; or which has God, and the Things he has reveal'd, for its Object. See GOD and DIVINITY.

Theology is a Doctrine which shews us what we are to think of God, and of the Manner wherein he would be serv'd. It is divided into two Branches, Natural, and Reveal'd or Supernatural.

Natural Theology, is the Knowledge we have of God from his Works, by the mere Light of Nature and Reason. See NATURE and REASON.

Supernatural Theology, is that which we learn from Revelation. See REVELATION.

Positive THEOLOGY, is the Knowledge of the holy Scriptures, and of the Signification thereof, agreeable to the Opinions of the Fathers and Councils; without the Assistance of any Argumentation. Some will have it, that this ought to be call'd *expositive*, not *positive*. See POSITIVE.

Moral THEOLOGY, is that which teaches us the divine Laws relating to our Manners. See MORAL.

Scholastic, or School THEOLOGY, is that which proceeds by Reasoning; or that derives the Knowledge of several divine Things from some establish'd Principles of Faith. See SCHOLASTIC.

The Ancients had a three-fold Theology; the first *μυθικόν*, Mythic, fabulous, which flourish'd among the Poets; and was chiefly employ'd in the Theogony, or Genealogy of the Gods. See FABLE and FABULOUS; see also THEOGONY.

The second, *πολιτικόν*, Political, which was that chiefly embrac'd by the Politicians, Priests, and People, as most suitable and expedient to the Safety, Quiet, and Interest of the State.

The third, *φυσικόν*, Natural, chiefly cultivated by the Philosophers, as most agreeable to Nature.

The Physical or Natural Theology acknowledg'd one only supreme God; to which it added Demons, as Mediators between him and Man. See DEMON.

The Word is compounded of *θεός*, God, and *λογος*, Discourse.

THEOLOGIUM, in the ancient Theater, was a Place, or little Stage, above that whereon the ordinary Actors appear'd.

The Theologium was the Place where the Gods appear'd; it also included the Machines whereon they descended, and from which they spoke. See MACHINE.

There was a Theologium requir'd for the Representation of the Ajax of Sophocles, the Hippolytus of Euripides, &c. Scal. Poet. lib. 1. cap. 1.

The Word is Latin, form'd from *θεός*, and *λογος*, Speech, Discourse.

THEOPASCHITES, a Sect of Hereticks, in the Vth Century, the Followers of *Petrus Fullensis*, or Peter the Fuller.

Their distinguishing Doctrine was, That the whole Trinity suffer'd in the Passion of Jesus Christ. See PATRI-PASCIANS.

This Heresy was embrac'd by the Eutychian Monks of *Scythia*; who using their utmost Efforts to make it obtain, rais'd great Disorders toward the Beginning of the following Century.

It was condemn'd at its first Rise, in the Councils of Rome and Constantinople, held in 483: It was reviv'd in the IXth Century, and again condemn'd in a Council at Rome, held in 862 under Pope Nicholas I.

F. Quien, in his Notes on *Damasceus*, says, that the same Error had been taught before Fullensis, by *Apollinarius*, whose Disciples were the first that were call'd Theopaschites, or Theopaschites.

THEORBO, THEORBA, a Musical Instrument, made in Form of a Lute; except that it has two Necks, or Juga, the second and longer whereof sustains the four last Rows of Chords, which are to give the deepest Sounds. See LUTE.

The Theorbo is an Instrument, which for these last sixty or seventy Years, has succeeded to the Lute, in the playing of thorough Basses: 'Tis said to have been invented in France by the Sieur Hotteman, and thence introduc'd into Italy, &c.

The only Difference between the Theorbo and the Lute, is, that the former has eight Bass or thick Strings, twice as long as those of the Lute; which Excess of Length renders their Sound so exceedingly soft, and keeps it up so long a Time, that 'tis no Wonder many prefer it to the Harpsichord itself. At least it has this Advantage, that it is easily remov'd from Place to Place, &c.

All its Strings are usually single; tho' there are some who double the Bass Strings with a little Octave, and the small Strings with an Unison; in which Case, bearing more Resemblance to the Lute than the common Theorbo, the Italians call it the *Archilute* or *Arch-Lute*.

The Word Theorbo is form'd from the French *Theorbe*, of the Italian *Tiorba*, which signifies the same Thing, and which some will have the Name of the Inventor.

THEOREM, in the Mathematical Method, a Proposition which terminates in Theory, and which considers the Properties of Things already made, or done. See THEORY and PROPOSITION.

Or, strictly, a Theorem is a Theoretical Proposition, deduc'd from several Definitions compar'd together. Thus, if a Triangle be compar'd with a Parallelogram standing on the same Base, and of the same Altitude; and, partly, from their immediate Definitions, and, partly, from other of their Properties already determin'd, 'tis infer'd, that the Parallelogram is double the Triangle; that Proposition is a Theorem. See DEFINITION, &c.

There are two Things to be chiefly regarded in every Theorem, viz. the Proposition and the Demonstration: In the first is express'd what agrees to some certain Thing under certain Conditions, and what does not. See PROPOSITION.

In the latter, the Reasons are laid down, by which the Understanding comes to conceive that it does or does not agree thereto. See DEMONSTRATION.

Theorems are of various Kinds: Universal Theorem, is that which extends to any Quantity without Restriction, universally; as this, *That the Rectangle of the Sum and Difference of any two Quantities, is equal to the Difference of their Squares*.

Particular Theorem, is that which extends only to a particular Quantity.

Negative, is that which expresses the Impossibility of any Assertion; as, *That the Sum of two Biquadrate Numbers cannot make a Square*.

Local Theorem, is that which relates to a Surface; as, *That Triangles of the same Base and Altitude are equal*. See LOCAL.

A plane Theorem, is that which either relates to a Rectilinear Surface, or to one terminated by the Circumference of a Circle; as, *That all Angles in the same Segment are equal*. See PLANE.

A Solid Theorem, is that which considers a Space terminated by a solid Line; that is, by any of the three Conic Sections; e.g. this, *That if a right Line cut two Asymptotick Parabolas, its two Parts termin'd by them shall be equal*. See SOLID.

A Reciprocal Theorem, is one whose Converse is true; as, *That in a Triangle two equal Sides, it must have two equal Angles*: The Converse of which is true, *That if it have two equal Angles, it must have two equal Sides*. See RECIPROCAL.

THEORETIC, THEORETICAL, or THEORIC, something relating to Theory, or that terminates in Speculation; in which Sense the Word stands in Opposition to Practical.

'Tis form'd from the Greek, *θεωρεω*, I see, I contemplate. The Sciences are ordinarily divided into Theoretical, as Theology, Philosophy, &c. and Practical, as Medicine, Law, &c. See SCIENCES.

In ancient Authors, Theoric Money was what was rais'd by Way of Tax on the People, to defray the Expences of Theatrical Representations, and other Spectacles.

There



There were particular Questors or Treasurers of the *Theoric Money*. By a Law of *Eubulus*, it was made a capital Crime to pervert the *Theoric Money* to any other Use, even to employ it in the Occasions of War.

**THERORETICKS**, or **THEORETICI**, a peculiar Appellation given to an ancient Sect of Physicians. See **PHYSICIAN**.

The *Theoretic Physicians* were such as apply'd themselves to a careful Study and Consideration of what relates to Health and Diseases; the Principles of the human Body, its Structure and Parts, with their Actions and Uses; whatever befalls it either naturally, or preternaturally; the Differences of Diseases, their Nature, Causes, Signs, Indications, &c. the Textures, Properties, &c. of Plants, and other Medicines, &c. In a Word, the *Theoretic Physicians* were such as went on the Foot of Reason; in Opposition to the *Empirical Physicians*, who went wholly on Experience. See **MEDICINE**.

The Word is form'd from the Greek, *θεωρία*, I see.

**THEORICAL Astronomy**, is that Part of Astronomy which considers the true Structure and Disposition of the Heavens, and heavenly Bodies; and accounts for their various Phenomena therefrom. See **ASTRONOMY**.

It is thus call'd in Opposition to that Part which considers their apparent Structure, or their Disposition as view'd by the Eye, which is call'd *Spherical Astronomy*. See **SPHERICAL**.

The several Parts of *Theoretical Astronomy*, see under **SYSTEM**, **SUN**, **STAR**, **PLANET**, **EARTH**, **MOON**, **SATELLITE**, **COMET**, &c.

**THEORY**, a Doctrine which terminates in the sole Speculation or Consideration of its Subject, without any View to the Practice, or Application thereof.

To be learn'd in an Art, &c. the *Theory* suffices; To be a Master of it, both the *Theory* and Practice are requir'd.

Machines, many times, promise well in the *Theory*, yet fail in the Practice. See **MACHINE**.

**THEORIES** of the Planets, &c. are Hypotheses, according to which the Astronomers explain the Reasons of the Phenomena or Appearances thereof. See **HYPOTHESIS**.

**THERAPEUTES**, or **THERAPEUTÆ**, a Greek Term, signifying a Servant wholly employ'd in the Service of God.

The Greeks gave the Appellation *Therapeutes* to such as apply'd themselves to a contemplative Life, whether it were from the great Concern they had for their Souls, or from the particular Mode and Manner of their Religion; the Word *θεραπεύειν*, whence *Therapeutes*, signifying the Care a Physician takes of his Patient, and the Service any one renders another.

*Philo*, in his first Book of the contemplative Life, relates, that there were a People spread throughout most of the known World, but particularly throughout *Aegypt*, and about *Alexandria*, who renounc'd their Friends, their Effects, &c. and who, after discharging themselves of all Temporal Concerns, retir'd into solitary Places, where they had each their separate Place, call'd a *Semnee*, or Monastery. See **MONASTERY**.

He adds, that they there resign'd themselves wholly to the Exercises of Prayer and Contemplation, were continually as in the Presence of God, pray'd Mornings and Evenings, eat nothing till after Sun-set, and many of them not above once in three, or even six Days; nor then any thing but a Piece of Bread season'd with Salt, or, at best, with Hyssop.

They carry'd nothing with them into their *Semnee* but the Books of *Moses*, the Prophets, the Psalms, and other like Writings, wherein they sought for Mystical and Allegorical Meanings, from a Persuasion that the Scriptures were only Shadows or Figures, the hidden Meanings whereof were to be unfolded.

They had also some Books left them by the Founders of their Sect: They met together every seventh Day in a large *Semnee*, to confer together, and partake of the Mysteries.

There are two Points relating to these *Therapeutes*, exceedingly controverted among the Criticks, viz. 1°. Whether they were *Jews* or *Christians*; and 2°. If they were the latter, whether they were Monks or Laymen.

As to the first, *Scaliger de Emend. Temp.* maintains, they were *Essene-Jews*; but *Valesius* on *Eusebius* rejects this Opinion of *Scaliger*, 1°. Because *Philo* never calls them *Essenes*. 2°. Because there were no *Essenes* but in the Holy Land; whereas the *Therapeutes* were spread thro' *Greece*, and all the barbarous Nations. 3°. Because *Josephus*, who gives a very ample Account of the *Essenes*, does not say one Word of the *Therapeutes*, or the *Therapeutic Life*. See **ESSENIE**.

And yet *Valesius* takes them to be *Jews*; and *Photius* is of his Opinion: The chief Reasons *Valesius* gives are what *Philo* says, That they read nothing but the Law and the Prophets. 2°. That they had some Books of their Founders; And how can this quadrate with the *Christians*, who were then in their first Rise? 3°. That they only pray'd

twice a Day, whereas the *Christians* then pray'd much oftner. 4°. That the *Christians* had no Hymns or Psalms till after the Time of *Antoninus*. Lastly, That the *Christians* could not be spread over the World.

And yet *Eusebius*, lib. II. Hist. Eccl. c. 17. *S. Jerom*, *Sozomen*, *Nicephorus*, *Baronius*, *Petavius*, *M. Godeau*, *Mouton*, *faucon*, &c. maintain them to have been *Christians*; urging, that nothing can be more conformable to the Practices of the Church, than the Account given of them by *Philo*; that those Books of their Founders are the Gospels, and other Writings of the Apostles; and that there are Indications even of Bishops and other Ministers among them.

*M. Bobier*, President of the Parliament of *Dijon*, refuses this Opinion; supposing it inconsistent in *Philo*, a *Jew*, to write a Book expressly in Praise of the *Christians*.

Yet several Authors, as *Cassian*, *F. Helyot*, &c. maintain, that the *Therapeutes* were not only *Christians*, but that they were also Religious: And, in effect, *M. Bobier* allows, that if they were *Christians*, they must be confess'd to have been Monks. As to his Argument, that *Philo* would never have wrote a Panegyric on the *Christians*, 'tis answer'd, that they were People of his own Nation, *Jews*, as he himself expresses; and that he only look'd on them as a Sect of *Jews*, who, by their extraordinary Virtue, did Honour to his Nation.

But tho' the Christianity of the *Therapeutes* appears probable enough; yet their Monachism is not made out at all.

**THERAPEUTICE**, **THERAPEUTICKS**, that Part of Medicine which is employ'd in seeking out Remedies against Diseases, and in prescribing and applying them to effect a Cure. See **MEDICINE**.

*Therapeutice* teaches the Use of Diet, Pharmacy, Chirurgery, and the *Methodus Medendi*. See **DIET**, **MEDICINES**, **PRESCRIPTION**, &c.

The Word is form'd from the Greek, *θεραπεύειν*, to attend, to cure, &c.

*Therapeutice* is also apply'd, figuratively, to the Mind, and to Discourses made to correct the Errors and Defects thereof.

Such is the *Therapeutice* of *Theodoret*; being a Treatise against the Errors or unwholesome Opinions of the Greeks, i. e. the Heathens.

**THERAPHIM**, a Hebrew Term, which has given great Torture to the Criticks.

We meet with it 13 or 14 times in Scripture; where 'tis commonly interpreted *Idols*; but the Rabbins are not contented to have it simply signify *Idols*, it must be *Idols*, or Images for the Knowledge of Futurity, i. e. *Oracles*.

*R. David de Pomis* observes further, that they were call'd *Theraphim*, from *רפא*, *Raphah*, to leave, because they quitted every thing to consult them. He adds, that the *Theraphim* were in human Shape, and that when rais'd upright, they spoke, at certain Hours, and under certain Constellations, by the Influence of the celestial Bodies.

This is a Rabbinical Fable, which he has learnt from *Abenezra*.

Others hold, that the *Theraphim* were brazen Instruments which pointed out the Hours and Minutes of future Events, as directed by the Stars. *De Pomis* corrects *Abenezra*, saying, that the *Theraphim* being made under a certain Constellation, the Devil made them speak under the same.

*R. Eliezer* tells us the Reason why the Rabbins will have the *Theraphim* to speak and render Oracles: 'Tis, says he, because it is written in the Prophet *Zachary*, x. 2. The *Theraphim* speak vain Things.

The same Rabbi adds, that to make the *Theraphim*, they kill'd a first-born Child, clove his Head, and season'd it with Salt and Oil; that they wrote on a Plate of Gold, the Name of some impure Spirit, laid it under the Tongue of the Dead; placed the Head against the Wall, lighted Lamps before it, pray'd to it; and it talk'd with them.

Be this as it will, *Vossius* observes, that beside the Passage of *Zachary* just quoted, it appears likewise from *Ezekiel* xxi. 21. that the *Theraphim* were consulted as Oracles.

*De Pomis* shews, that the *Theraphim* which *Melchior* put in *David's* Bed, were not of this Kind, because they were not in the Figure of Men; but *R. Eliezer* is of another Sentiment.

As to the manner of making the *Theraphim*, *Vossius* takes it to be a vain Tradition of the Rabbins; though *R. Tanchuma* and *Jonathan*, in his *Targum*, Gen. xxxi. 21. tell us after *R. Eliezer*. The chief Reason of his Disbelief, is, that *Laban*, who had not quite lost all Notion of the true God, as appears from Gen. xxxi. 53. could not be guilty of such a Cruelty; but *Vossius* does not consider that the Case might not be less real, for its not having been establish'd so early as *Laban*; and that the *Hebrews* sometimes burnt their Children to *Moloch*.

*P. Kircher* directs us to seek the Origin of the *Theraphim* in *Egypt*; adding, that the Word is *Egyptian*.



Spencer, in his Differtation on the *Urim* and *Thummin*, maintains the Word to be *Chaldee*, and to signify the same with Seraphim; the *Chaldeans* being frequently known to change the *w* into *r*, that is, the *f* into *r*. He adds, that those Images were borrowed from the *Amorites*, the *Chaldeans* or *Syrians*; and that the Serapis of the *Egyptians* is the same thing with the *Teraphim* of the *Chaldeans*. See *Selden. de Diis Syriis*.

**THERIACA**, *Treacle*, in Medicine, a Name the Ancients have given to various Compositions, esteem'd good against Poisons; but now generally restrained to what, by way of Distinction, we sometimes call *Theriaca Andromachi*. See **ALEXIPHARMACIC**.

This is a Compound of no less than 64 Drugs, prepared, pulverized and reduced, by means of Honey, into a liquid Electuary.

The Basis, or Foundation of the Composition, is Vipers Flesh. *M. Charas* has wrote a particular History of the Animals, Plants and Minerals, which enter the Composition of this fam'd Remedy.

'Tis found sovereign against the Bites of venomous Beasts, and in the Wind-cholic; and is also used in intermitting Fevers, and in Cases requiring Perspiratives and Diaphoreticks; also in continual Fevers, especially such as are malignant, and where the Pulse is low and ticking; in the Small-pox and Measles: And, as most of the Ingredients thereof, are very hot, for all Diseases, where the natural Heat is weak and languid.

*Andromachus*, Nero's Physician, passes for the Inventor of the *Theriaca*; at least, 'twas he gave the first Description thereof in Elegiac Verses; his Son did the same in Prose, and *Democritus* in Iambics.

Anciently, the *Treacle* made at *Venice* had all the Vogue; and many still retain the ancient Prejudice; but 'tis now prepared at *Montpellier*, at *Paris*, and even at *London*, with as much Advantage as at *Venice*.

There is another vulgar kind of *Theriaca*, call'd *Diateffaron*, because only consisting of four Ingredients.

*Treacle Water* and *Treacle Vinegar* are found good Preservatives against putrid Air, whether by being only smelt at, or by rubbing the Wrists, Temples, and Nose therewith.

**THERMÆ**, ancient Buildings, destined for Bathing in. See **BATH**.

Among the noblest Monuments of ancient *Rome* are reckon'd the *Thermæ* or Baths of *Dioclesian*.

Among us, *Thermæ* is restrain'd to such Baths as are hot.

The Word is form'd from the *Greek*, *θερμῶς*, hot.

*Thermæ*, 'tis commonly argued, owe their Heat to a Collocation, or Effervescence of the Minerals in them. Though *Dr. Woodward* ascribes it to the subterraneous Heat, or Fire which communicates with them by some Spiracle or Canal whereby a greater Quantity of Heat is derived thither, than to ordinary Springs. See **MINERAL** and **WATER**.

**THERMOMETER**, **THERMOMETRUM**, an Instrument shewing, or rather measuring, the Increase and Decrease of the Heat and Cold of the Air. See **HEAT**, **AIR**, &c.

The *Thermometer* and *Thermoscope*, are ordinarily accounted the same thing; *Wolfius*, however, makes a Difference; and shews that what we call *Thermometers*, are, in reality, no more than *Thermoscopes*. See **THERMOSCOPE**.

There are various Kinds of *Thermometers*; the Constructions, Defects, Theories, &c. whereof, are as follow:

#### *Construction of a THERMOMETER, depending on the Rarefaction of the Air.*

In a Tube B C, (Tab. Pneumaticks Fig. 3.) to which is fasten'd a Glass Ball A B, is put a Quantity of common Water mix'd with Aqua Regia, to prevent its freezing; and the Mixture ting'd with a Solution of Vitriol to give it a Greenness. In filling the Tube, Care is taken that there be so much Air left in the Ball and the Tube, as that when at its greatest Condensation in the middle of Winter, it may just fill the Ball; and yet in its greatest Rarefaction in Summer, may not drive all the Liquor out of the Tube. To the other Extreme of the Tube, is fasten'd another Glass Ball C D, open to the Air at D: On each Side the Tube is applied the Scale E F, divided into any Number of equal Parts.

Now, as the ambient Air becomes warmer, the Air in the Ball and the Top of the Tube, expanding, will drive the Liquor into the lower Ball, and consequently its Surface will descend; on the contrary, as the ambient Air grows colder, that in the Ball becoming condensed, the Liquor will ascend. See **RAREFACTION** and **CONDENSATION**.

#### *Construction of the Mercurial THERMOMETER.*

In the same Manner, and with the same Caution as before, put a little Quantity of Mercury, not exceeding the Bigness of a Pea, into a Tube B C (Fig. 4.) thus bent with Wreaths, that, taking up the less Height, it may be the more manageable

and less liable to Harm; divide this Tube into any Number of equal Parts to serve for a Scale.

Here the Approaches of the Mercury towards the Ball A will shew the Increases of the Degree of Heat. The Reason is the same, as in the former.

The Defect of both the Instruments consists in this, that they are liable to be acted on by a double Cause: For, not only a Decrease of Heat, but also an Increase of Weight of the Atmosphere, will make the Liquor rise in the one, and the Mercury in the other; and, on the contrary, either an Increase of Heat, or Decrease of Weight of the Atmosphere will make it descend. See **BAROMETER**.

#### *Construction of the Florentine or common THERMOMETER.*

The *Academists del Cimento*, considering the Inconveniences of the *Thermometers* just described; attempted another, that should measure Heat and Cold, by the Rarefaction and Condensation of Spirit of Wine; though that be vastly less than that of Air; and, consequently, the Alterations in the Air like to be much less sensible.

The Structure of their *Thermometer* is this: On some little Pieces of Turmeric is pour'd a Quantity of rectified Spirit of Wine, which hereby receives a red Tincture; this done, the Spirit of Wine is filtrated again, and again through a brown Paper, that the coarser Particles of the Root may be separated therefrom. With the Spirit thus tinged and prepared, they fill a Glass Ball A B (Fig. 5.) with a Tube B C; and that all the Spirit mayn't descend in Winter into the Ball, 'tis convenient to put the Ball into a Lump of Snow, mix'd with Salt: Or, if the Instrument be to be made in Summer, into Spring Water, impregnated with Salt-petre; that the condensed Spirit may shew how far it will retire in the extremest Cold.

If it be still at too great a Distance from the Ball, part of it is to be taken out; and that the Tube mayn't be made longer than needs, 'tis convenient to immerge the Ball, fill'd with its Spirit, in boiling Water; and to mark the furthest Point to which the Spirit then rises.

At this Point the Tube is to be hermetically seal'd, by the Flame of a Lamp; and at the Sides, is to be added a Scale, as in the former *Thermometer*.

Now, Spirit of Wine rarifying and condensing very considerably; as the Heat of the ambient Air increases, the Spirit will dilate, and, consequently, will ascend in the Tube; and as the Heat decreases, the Spirit will descend; and the Degree or Quantity of Ascent and Descent will be seen in the Scale. Yet as the *Ratio* of yesterdays Heat, to to-days, is not hereby discovered, this Instrument is not strictly a *Thermometer*, no more than the former.

It is to be here observed, 1°. That as the natural Gravity of the Liquor makes it tend downwards; so it resists its Ascent out of the Ball into the Tube; and that the more, as it rises higher: For which reason, 'twere best to have the Tube B C Horizontal.

2° Since there must of Necessity be some Air left in the void Part of the Tube over the Liquor; that Air, by its Elasticity, will tend downwards, and, of consequence will resist the Rise of the Liquor, and be compress'd by it as it does rise: Its Elasticity, therefore, is thus increased.

3° Since 'tis found from Experience, that a less Degree of Heat is communicated more easily to the Spirit of Wine in the Ball, than a greater; the Rarefactions of the Spirit of Wine are not proportionable to their Producing Causes; especially since a greater Degree of Heat finds more Liquor in the Tube than a less does, to which, notwithstanding, the Heat may be more easily communicated, than to that stagnating in the Ball.

On these Accounts, the *Florentine Thermometer*, though that commonly in Use, is far from being an accurate Measure of Heat, &c. to which may be added what *Dr. Halley* observes in the *Philosophical Transactions*, that he has learnt from those who have kept Spirit of Wine long, that it loses Part of its expansive Force, in Course of Time.

Various Methods have been proposed by various Authors, for finding a fix'd Point, or Degree of Heat and Cold, from which to account the other Degrees, and adjust the Scale; that so Observations made at the same or different Times, in different Places, may be compared together.

Some note the Place the Liquor is at in Winter, when Water begins to freeze; and again, that in Summer, when Butter placed near the Ball of the Microscope, melts: The intermediate Space they divide into two equal Parts, the middle Point whereof answers, in their Graduation, to temperate Heat; and each Moiety they sub-divide into ten Degrees: Adding four other equal Degrees on each of the two Extremes. But this Method supposes the same Degree of Heat and Cold, to answer to the freezing of all Water, and the melting of all Butter; as also, that all *Thermometers* receive the same Impressions from the same Degree of Heat; all which are contrary to Experience.

[ F f f ]

Others



Others advise the Ball of the *Thermometer* to be put in a Quantity of Snow and Salt, and the Point the Liquor is at to be noted. Thence, the *Thermometer* is to be removed into a deep Cave or Cellar, whither no external Air reaches; so that the Liquor receiving the Action of a temperate Air, may shew the Degree of temperate Heat. Lastly, they divide the intermediate Space into 15, or more equal Parts, which they continue beyond each Extreme: But this Method is liable to the like Inconveniences as the former.

Dr. *Halley* assumes That for a fix'd Degree of Heat, wherein Spirit of Wine begins to boil; but there is Reason to suspect this, too, of being precarious: Though after him, M. *Amon-ron* retains the Degree of Heat, answering to boiling Water, for the graduating his mercurial *Thermometer*. But as the different specific Gravities of Water, argue a Difference of Mass and Texture; 'tis highly probable that Heat of all boiling Waters is not the same: So that the Point is yet undetermined.

**THERMOSCOPE**, an Instrument shewing the Changes happening in the Air, with respect to Heat and Cold. See AIR, WEATHER, &c.

The Word *Thermoscope* is generally used indifferently, with that of *Thermometer*. There is some Difference, however, in the literal Import of the two Words; the first signifying an Instrument that shews, or exhibits the Changes of Heat, &c. to the Eye; form'd from *θερμῶς*, Heat, and *σκοπέω*, video, I see; and the latter an Instrument that measures those Changes; from *θερμῶς*, Heat, and *μέτρον*, to measure: on which Foundation the *Thermometer* should be a more accurate *Thermoscope*, &c.

This Difference the excellent *Wolffius* taking hold of, describes all the *Thermometers*, in use, as *Thermoscopes*; shewing that none of them properly measure the Changes of Heat, &c. none of them do more than indicate the same. Though their different Heights yesterday and to-day, shew a Difference of Heat; yet since they don't discover the *Ratio* of yesterday's Heat to to-days, they are not, strictly, *Thermometers*. See THERMOMETER.

In the *Acta Erudit. Lips.* we have a Method of graduating the common *Thermometers* so, as that the unequal Divisions thereof shall correspond to equal Degrees of Heat; whereby the *Ratio* of to-day's Heat to yesterday's, will be measured, and, consequently, the *Thermoscope* improved into a *Thermometer*.

The Method is that of *Car. Renaldinus*, and is described by the *Leipsic* Editors thus: Take a slender Tube about four Palms long, with a Ball fasten'd to the same; pour into it Spirit of Wine, enough just to fill the Ball when surrounded with Ice, and not a Drop over. In this State, seal the Orifice of the Tube Hermetically; and provide six Vessels, each capable of containing a Pound of Water, and somewhat over; and into the first, pour 11 Ounces of warm Water, into the second 10 Ounces, into the third 9, &c. This done, immerse the *Thermometer* in the first Vessel, and pour into it one Ounce of hot Water; observing how high the Spirit rises in the Tube, and noting the Point with Unity: then remove the *Barometer* into the second Vessel, into which is pour'd two Ounces of hot Water, and note the Place the Spirit rises to, with 2. By thus proceeding till the whole Pound of Water is spent, the Instrument will be found divided into 12 Parts, denoting so many Terms or Degrees of Heat: So that at 2, the Heat is double that at 1, at 3 triple, &c.

But the Method, though plausible, *Wolffius* shews is deceitful; and is built on false Suppositions: For it takes for granted, that we have one Degree of Heat, by adding one Ounce of hot to 11 of cold Water; two Degrees, by adding two Ounces to 10, &c. It supposes that a single Degree of Heat acts on the Spirit of Wine in the Ball with a single Force, a double with a double Force, &c. Lastly, it supposes, that if the Effect be produced in the *Thermometer* by the Heat of the ambient Air which is here produced by the hot Water, the Air has the same Degree of Heat with the Water.

But none of these Suppositions is true: For, as to the First; allowing the Heat of the hot Water, equally distributed through the Cold; one Degree of Heat will then be distributed through 11 Parts, two through 10, three through 9, &c. Taking, therefore, equal Bulks of the Water, e. gr. a twelfth Part of each, the Heat will not be double in one, triple in another, quadruple in another, &c.

The first Supposition, therefore, is erroneous; and so is the Second: For neither is the Heat of the hot Water equally diffused throughout the cold; nor does the Heat of the hot Water act uniformly on the Spirit of Wine; i. e. not with the same Force, all the time of its Action.

For the third Supposition; the Heat of the ambient Air acts not only on the Spirit of Wine in the Ball, but also on that in the Tube; and therefore this, as well as that, will be changed.

**THESEA, THESSEA**, in Antiquity, Feasts celebrated by the *Athenians*, in Honour of *Theseus*. See PEAST.

In sight of the important Services that *Hero* had done his Country, in delivering it from a shameful Tribute of so

many Youths of either Sex, sent yearly to be devour'd by the *Minotaur* in *Crete* (as the Fable has it) or sent as Slaves to *Minos* King of *Crete*, as the Histories have it; from which he freed them, by overcoming *Taurus*, *Minos's* General: He was banish'd for some time; and retired to *Seyre*, under the Protection of *Lycomedes*, King of that Island; who slew him out of Jealousy.

The Gods revenged this Treatment *Theseus* received from the *Athenians*, by afflicting them with a Famine, which the Oracle assured them should not cease, till they had avenged his Death.

Upon this, they slew *Lycomedes*, brought *Theseus's* Bones to *Athens*, placed them in a Temple erected to him, and appointed *Thesea* to be held every Eighth Day of each Month; wherein Largeesses were distributed to the People, and the Day spent by the Rich in Feasting and Rejoicing.

**THESIS**, in the Schools, a general Proposition, which a Person advances, and offers to maintain.

The Word is pure Greek, *θέσις*, Position. In the Colleges, 'tis frequent to have Placards, containing a Number of these *Theses*.

There are *Theses* in Theology, in Medicine, in Philosophy, in Law, &c. The maintaining a *Thesis*, is a great Part of the Exercise a Student is to undergo for a Degree. See DEGREE.

**THESIS**, in Logic, &c. every Proposition is divided into a *Thesis* and *Hypothesis*: *Thesis* contains the Thing affirmed or denied; and the *Hypothesis* the Conditions of the Affirmation or Negation: Thus, in *Euclid*, If a Triangle, and Parallelogram have equal Bases and Altitudes, (is the Hypothesis) the First is half of the Second; the *Thesis*. See HYPOTHESIS.

**THEURGY, THEURGIA**, a Name which the Ancients gave to that Part of Magic, which we sometimes call *celite Magic*, or the white Art. See MAGIC.

The Word is form'd from the Greek, *θεός*, God, and *εργα*, Work, q. d. the Art of doing divine Things, or Things which God alone can do; or the Power of working extraordinary and supernatural Things by lawful Means, as by Prayer, Invocation of God, &c.

Accordingly, those who have wrote of Magic in the general, divide it into three Parts; the first whereof is call'd *Theurgy*, as operating by divine or celestial Means; the second, *Natural Magic*, perform'd by the Powers of Nature; and the third, *Necromancy*, which proceeds by invoking Demons. See NECROMANCY, &c.

**THIGH**, a Part of the Body of Men, Quadrupeds, and Birds, between the Leg and the Trunk. See LEG, &c.

The several Parts of the *Thigh* have different Names: The fore and upper Part is call'd the *Groin*, or *Inguen*; the Side, the *Hanch*, or *Hip*, *Coxa*, *Coxendix*; the upper hind Part the *Buttock*, *Clunis*; the lower and hind Part the *Ham*, *Poples*, of *post* and *plico*, because it bends backwards; and the fore Part the *Knee*, *Genu*, of the Greek *γόνυ*, Angle.

The Bone of the *Thigh* is the largest and strongest in the whole human Body, as being to bear the whole Burthen thereof; whence its Name *femur*, of *fero*, I bear. See FEMUR.

**THINKING, Cogitation**, a general Name for any Act or Operation of the Mind. See MIND and THOUGHT.

*Chauvin*, with the *Cartesians*, will have *Thinking* to consist in a certain native inherent Motion or Agitation of the human Mind, whereof itself is conscious. -- Native and Inherent, since he conceives it no other than the very Essence of the Mind itself, or, at least, its principal and fundamental Property; -- An Agitation, since there is a new Modification or Change made in the Mind, which we scarce know to conceive without Motion; add, that the Origin and Etymology of the Word Cogitation, according to *Varro* and *Festus*, implies as much; *cogito* being us'd for *coagito*.

When the Mind turns its View inwards, upon itself, the first Idea that offers, says Mr. *Lock*, is *Thinking*; wherein it observes a great Variety of Modifications, and thereof frames to itself distinct Ideas: Thus the Perception annex'd to any Impression on the Body made by an external Object, is call'd *Sensation*. See SENSATION.

When an Idea recurs without the Presence of the Object, 'tis call'd *Remembrance*. See MEMORY.

When sought after by the Mind, and brought again in View, 'tis call'd *Recollection*. See RECOLLECTION.

When held there long under attentive Consideration, it is *Contemplation*. See CONTEMPLATION.

When Ideas float in the Mind without Regard or Reflection, 'tis call'd a *Revery*: When they are taken express Notice of, and, as it were, register'd in the Memory, it is *Attention*: And when the Mind fixes its View on any one Idea, and considers it on all Sides, it is *Study* and *Intention*. See ATTENTION, STUDY, &c.

These are the most obvious Modes of *Thinking*; but there are several others which we know of; and, doubtless, the Mind is capable of infinite others, whereof we have no Notion at all. See MODI.



The School Philosophers usually divide *Thinking*, with regard to the Objects it is employ'd about, into *Understanding*, *Intellectio*; and *Willing*, *Volitio*. See UNDERSTANDING and WILLING.

And hence, those are said to be two Powers or Faculties of the human Mind. See POWER.

Intellectual *Thinking* is further sub-divided into divers Kinds: The first, when the Mind merely apprehends or takes Notice of a Thing, call'd *Perception*: The second, when it affirms or denies a Thing, call'd *Judgment*: The third, when it gathers or infers a Thing from others given, call'd *Reasoning*: The fourth, when the Mind disposes its own Thoughts or Ideas in Order, call'd *Method*. See PERCEPTION, JUDGMENT, REASONING, and METHOD.

*Volitive Knowledge*, or *Volition*, admits of infinite different Modifications, or new Determinations. See VOLITION.

Some Authors extend the Idea of *Thinking* further; and consider it in God, Angels, Brutes, &c. whence a new Division of *Thinking* into *Divine*, *Angelical*, *Human*, and *Animal* or *Sensitive*.

But the two first we know little or nothing of. See GOD and ANGEL.

The third is that we have already been treating of. As to the last, viz. *Animal* or *Sensitive Thought*, it is defin'd to be an Action of the Soul attending to an external Object, effected by means of the Animal Spirits duely agitated in the Brain, to excite an Idea. See SPIRITS; see also KNOWLEDGE, &c.

The *Cartesians* maintain, that *Thinking* is essential to the human Soul; and, consequently, that there is no Time when the Soul does not *think*: But this Doctrine is overturn'd by Mr. *Lock*, who shews, that in Sleep, without Dreaming, there is an entire Cessation of all the Modes of *Thinking*. See IDEA.

*I think, cogito*, according to *des Cartes*, is the first, and surest of all Truths; from which alone we draw this Consequence, *therefore I am*, or exist, *sum*.

One might also say, *Cogito, ergo Deus est*; I think, therefore there is a God. See EXISTENCE.

Logic is defin'd the Art of *Thinking* justly. See LOGIC.

THIRD, *Tertius*, See NUMBER, and NUMERATION.

THIRD, in Music, a Concord resulting from a Mixture of two Sounds, containing an Interval of two Degrees. See CONCORD.

'Tis call'd a *Third*, as containing *three* Terms, or Sounds between the Extremes. See INTERVAL.

The *Third*, in *Italian*, *Terza*, in *French* *Tierce*, in *Latin* *Tertia*, has no general Name in the *Greek*: 'Tis the first of the imperfect Concorde; i. e. of such as admit of Majority and Minority, without ceasing to be Concorde.

And hence it is, that it is distinguish'd into two Kinds.

The first, which the *Italians* call *Ditono*, (from the *Greek* *Ditono*) or *Terza Maggiore*, and we greater *Third*, is compos'd diatonically of three Terms or Sounds, containing two Degrees or Intervals; one whereof, in the ancient System, is a greater Tone, and the other a lesser Tone; but in the modern temperate System they are both equal, as *ut, re, mi*, or *ut, mi*. See DEGREE, TONE, SEMITONE, &c.

Chromatically it is compos'd of four Semitones; two whereof are greater, and the *third* less: It takes its Form from the Ratio sesqui-quarta 4 : 5.

The second *Third*, which the *Italians*, like the *Greeks*, call *Tritemutono*, or *Semi-ditono*, or *Terza minore*, and we lesser *Third*, is compos'd, like the former, of three Sounds or Terms, and two Degrees or Intervals: But these Degrees, diatonically, are only a greater Tone, and a Semitone; and chromatically of three Tones, two greater, and one less, as *re, mi, fa*, or *re, fa*: It takes its Form from the Ratio Sesqui quinta 5 : 6.

Both these *Thirds* are of admirable Use in Melody, and make, as it were, the Foundation and Life of Harmony. See MELODY and HARMONY.

They are us'd agreeably both ascending and descending; and that either in running over all the Degrees, as *ut, re, mi*, or *re, mi, fa*, or in skipping the middle Degree, as *ut, mi*, or *re, fa*.

But it is to be observ'd, the greater *Third* has somewhat gay and sprightly in rising, and somewhat heavy and melancholic in falling: The lesser *Third*, on the contrary, has somewhat soft and tender in rising, and somewhat brisk in falling.

For the Use of the greater or lesser Third in the Series of the Scale. See SCALE.

There are two other Kinds of *Thirds* that are dissonant and vicious; the first only compos'd of two greater Semitones, and, by Consequence, of a Semitone less than the lesser *Third*: This they call the defective *Third*.

The second, on the contrary, has a Semitone more than the greater *Third*; and this they call redundant *Third*.

The defective *Third* is very frequent in *Italian* Songs, especially those compos'd for Instruments; but is not to be

us'd without Necessity, and a deal of Discretion. The redundant *Third* is absolutely forbidden.

THIRD-Point, or Tierce-Point, in Architecture, the Point of Section in the Vertex of an Equilateral Triangle.

Arches or Vaults of the *Third Point*, call'd by the *Italians* *da terzo Acuto*, are those consisting of two Arches of a Circle, meeting in an Angle a-top. See ARCH.

THIRD Estate. See ESTATE.

THIRD Order, a Sort of Religious Order, that observes the same Rule, and the same Manner of Life, in Proportion, as some other two Orders instituted before. See ORDER.

The *third Orders* are not originally Religious Orders, but Associations of secular, and even marry'd Persons, who conform, as far as their Condition will allow them, to the Design, Intention, and Rules of a Religious Order which associates and directs them.

The *Premonstrantes*, *Carmelites*, *Augustines*, and *Franciscans* dispute among themselves the Honour of having first introduc'd *third Orders*; But the Pretensions of these last appear to be the best founded.

The first contend that the *third Order* of *Premonstrantes* began in the Life-time of their Founder, *S. Norbert*, who dy'd in 1134. See PREMONSTRANTES.

*F. Diego de Coria Maldonado*, a Spanish Carmelite, who has a particular Treatise on the *third Order* of Carmelites, derives them immediately, as well as the Carmelites themselves, from the Prophet *Elias*; and among the great Men who have made Profession of that *third Order*, reckons the Prophet *Obadiab*, who liv'd 800 Years before Christ; and among the Women, our Saviour's Great Grandmother, under the borrow'd Name of *St. Emmerentiana*. This *Obadiab*, he says, was Controller-General of the House of *K. Ahab*, mention'd in the 1st Book of *Kings*, cap. xviii. and Disciple of the Prophet *Elijah*. After serving that Prince, and his Successors, he retir'd to serve God, and enter'd the Prophetic Order of *Elijah*, but without quitting his House, his Wife, or Children.

The Author adds, that he was not properly of the *third Order*, but of the *second*, which consisted of marry'd People, and was call'd the Order of Eunuchs, under the Direction of *Elijah*. Such, according to him, is the Foundation of the *third Order* of Carmelites. See CARMELITE.

*F. Helyot* shews, that this *third Order* was not begun till the Year 1476, when *Sixtus IV.* gave Permission to the Prior and Provincials of the Carmelites, to give the regular Habit and Rule of their Order, to People of both Sexes, marry'd or unmarried, living at Liberty in the World. *De Coria* reckons *S. Louis*, King of France in the *third Order* of the Carmelites.

The *third Order* of *Augustines*, if we credit *F. Bruno*, was instituted by *St. Augustin* himself: But the Arguments he produces are so frivolous, that *F. Helyot* observes, they are not worth the refuting.

The *third Order* of *Franciscans* was instituted by *S. Francis* in 1221, in Favour of People of both Sexes, who being smitten with the Preachings of that Saint, demanded of him an easy Manner of living a Christian Life: Upon which he gave them a Rule, the Constitutions whereof are not now extant as wrote by himself, but only as reduc'd and confirm'd by Pope *Nicholas IV.* 68 Years afterwards.

The first Order of this Saint are the Monks call'd *minor Friars*, comprehending the *Cordeliers*, *Capuchins*, and *Recollets*; the second comprehends the Nuns of *S. Clare*; and the third several Persons of both Sexes, who live at Liberty, and these are what we call the *third Order*.

Of this Order, which was only establish'd for secular Persons, several of both Sexes, to attain the greater Perfection, have since commenc'd Religious, and form'd various Congregations, under various Names, as *Religious Penitents of the third Order*, &c.

THIRD Earing, in Husbandry, the Tilling or Ploughing of the Ground a third Time.

THIRD BOROW, in our ancient Law Books, denotes a Constable. See CONSTABLE.

THIRD-NIGHT-awN-hyND; by the Laws of *S. Edward* the Confessor, a Guest who had lain three Nights in an Inn, was reputed a Domestic, and his Host was answerable for what Offences he should commit.

For one Night he was accounted *Uncivil*, for two Nights *Guest*, and the third *awN-hyND*. *Prima Nocte Inognitus, secunda hospes, tertia Domesticus censetur*. *Bracton*, lib. 3. writes it *Hogenehynd*.

THIRDINGS, the third Part of the Corn or Grain growing on the Ground at the Tenant's Death, due to the Lord for a Heriot, within a certain Manor and Lands belonging to the Chapel of *Turfat*, in *Com. Heref.*

THIRST, a painful Sensation, occasion'd by a preternatural Vellication of the Nerves of the Throat or Fauces, and producing a Desire of Drinking. See DRINK.

*Robault* accounts for *Thirst* thus: The Stomach Liquor, which ordinarily resolves into a thick Vapour, and ascends from the Stomach up into the Throat, to moisten it; being too much warm'd and agitated, either from a Want of some other



other Liquor to temper and dilute it, or from any other Cause, becoming converted into too thin, subtile, and penetrating a Vapour, is so far from moistening and cooling the Throat, that, on the contrary, it dries and heats it; and hence that Motion in the Nerves, the Sensation whereof we call *Thirst*. See HUNGER.

*Thirst* sometimes also arises from a mere Dryness of the Part; and sometimes from sharp Salts, more immediately vellicating the Fibres of the Throat.

There are various Kinds of Liquors which quench *Thirst*; some by tempering the Stomach Liquor, others by diluting, and even dissolving the Salt; and others by moistening and suppling the Fibres.

Acids are peculiarly fitted for that End. See ACID.

*Thirst* is sometimes eluded by rolling a leaden Bullét or a Pebble in the Mouth, which occasions an extraordinary Issue of Saliva to moisten the Throat, &c. See SALIVA.

Mr. Boyle mentions a Man who could easily abstain from Drinking for nine Days, and yet his Diet nothing more liquid than usual; the Secretions of Urine, Sweat, &c. being perform'd all the while regularly, and in the same Quantity as usual.

In dropical Cases, where there is not a right Secretion of the Urine by the Renal Glands, and the Vessels and Parts of the Body are loaded with too great a Quantity of serous Humours, a great Moderation in Drinking might be attended with good Success, provided some Liquor could be found out to allay that uneasy Sensation: Probably this would be best perform'd by Mucilages acidulated with Spirit of Vitriol or Sulphur, or Gellies with Juice of Lemon, &c. and that a small Quantity of such a Composition now and then us'd, might be of as much real Service in quenching *Thirst*, as Draughts of Liquors which increase the Symptoms. See DROPSY.

THISTLE, *Carduus*, a Name common to divers Plants, whose Flowers consist of several little narrow longish Leaves, in Manner of Tubes, rang'd close together like a Head, and whose Leaves are very prickly.

The most known of these Plants are 1<sup>o</sup> *Carduus Benedictus*. The Apothecaries distil a Water from it, said to be of great Service in pestilential Diseases, the worse Kind of Fevers, and particularly as a Sudorific. The Water is likewise accounted one of the four common Cordial Waters: Its fixt Salt is much of the same Nature as other fixt Salts prepar'd from Wormwood, &c. viz. Anti-emetic, Diuretic, &c. See *CARDUUS Benedictus*.

2<sup>o</sup> The hundred-headed THISTLE, or *Eryngium vulgare*; the Root whereof boil'd in Wine, is us'd with good Success against Retentions of Urine: This is not properly of the *Thistle* Kind.

3<sup>o</sup> Our Ladies *Thistle*, *Carduus Albus Maculis notatus vulgaris* CB, the Decoction whereof is recommended against the Dropsy, Jaundice, and Pains of the Kidneys.

The *Fullers Thistle*, or Teazel; See under the Article TEAZEL.

Order of the THISTLE, or of St. Andrew, is a Military Order in Scotland; instituted, as some say, by Hungus, or Hungo, King of the Picts, after a Victory obtain'd over Arhelstan. See KNIGHT.

The Legend is, that a Cross of St. Andrew (the Patron of that Kingdom) appearing to him at the Time of the Engagement; he blest the happy Augury; took the Figure thereof into his Standard in Honour of his Protector; and instituted an Order of Knights, whose Collar is of Gold interwoven with *Thistle* Flowers.

From the Collar hangs a Medal representing S. Andrew holding his Cross in his Right Hand; with this Motto, *Nemo me impune lacesset*, No Body shall provoke me impune.

Others give a different Account of its Origin, and assure us, it was instituted after the Conclusion of a Peace between Charles VII. of France, and the King of Scotland.

The Abbot *Justiniani* goes up higher, and will have it to have been instituted by Acharus I. King of Scotland, in 809; who, after an Alliance made with Charlemagne, took for his Device the *Thistle*, with the Words *Nemo me impune lacesset*, which, in Effect, is that of the Order: He adds, that King James the IVth. renew'd the Order, and took St. Andrew for its Protector.

The Order only consists of twelve Knights, whereof the King is the Chief: They wear a green Ribbon, with a Gold Medal enamell'd; on the one Side whereof is the Image of St. Andrew, and on the Reverse, the Device above mention'd.

Our Lady of the THISTLE, was also a Military Order instituted in 1370, by Louis II. Duke of Bourbon.

It consisted of 26 Knights, whereof that Prince and his Successors were the Chiefs: Their Badge was a Sky-blue Girdle; and, on solemn Occasions, a Mantle of the same Colour, with a Gold Collar, interwoven with Flower-de-Luces, among which was the Word *Esperance*, Hope, in Capitals.

They had their Name from a *Thistle* fix'd to an Oval, which hung to the Girdle.

THISTLE-take, a Custom in the Honour of Halton, in the County of Chester, whereby, if in driving Beasts over the Common, the Driver permits them to graze, or take over a *Thistle*; he shall pay a Half-penny a Beast to the Lord of the Fee.

At Fiskerton, in Nottinghamshire, by ancient Custom, if a Native, or Cottager kill'd a Swine above a Year old, he paid the Lord one Penny; which was also call'd *Thistle-take*.

THLIPSIS, is used by some Anatomists, for a pressing together of the Vessels of a human Body.

THOMÆANS, THOMEANS, THOMITES, or Christians of St. THOMAS, a People of the East Indies, who, according to Tradition, receiv'd the Gospel from the Apostle S. Thomas. See CHRISTIAN.

Upon the Arrival of the Portuguese at Calcut, in their first Voyage to the Indies, they met with ancient Christians, who pretended to be descended from those converted by S. Thomas.

The *Thomeans* being inform'd of a new People arriv'd among them, who bore a particular Veneration for the Cross; sent Embassadors to them to make an Alliance with them, and to solicit their Assistance against the Gentile Princes, by whom they were greatly oppress'd.

'Tis certain the *Thomeans* are Indigenæ, or originally of India: They are call'd *Nazareans*; but Custom has annex'd to that Name an Idea of Contempt: Their other Name *Mappulêy*, and, in the plural, *Mappuleymar*, is more honourable.

They form a very considerable Clan, or Canton; but are always divided by Factions, inveterate Enmities, &c. The Clan extends through all the Lands from Calcut to Trancor; not that all the Tract is possess'd wholly by them: Sometimes they have a whole Town to themselves, and sometimes only a certain Quarter in it.

They own themselves Strangers in that Country, and their Tradition is, that they came thither from the Country about the City of Mailapur, or S. Thomas, by reason they were persecuted by the Prince thereof. But the Time of this Transmigration no Body knows any thing of; for they keep no Monuments.

The *Thomeans* ascribe their Conversion, their Discipline, &c. to S. Thomas: Their Breviary adds, that their Apostles pass'd thence into China.

We shall not here enter into the Dispute, whether the S. Thomas so fam'd in the Indies, be the Apostle, or some other Saint of that Name; which latter is the Opinion of several learned Men, and particularly of M. Huet.

But the Progress of the History of this Church is not less difficult to trace than its Origin: Our European Books mention the Patriarch of Alexandria's sending Bishops to the Indies, particularly S. Pantenus, S. Frument, &c. It may be doubted, whether or no it were to these Indies that they were sent: Baronius, indeed, maintains it was; but the Portuguese Author *da Historia d' Ethiopia*, endeavours to prove it was to Ethiopia these ancient Missionaries went. All we know for certain is, that the *Thomeans*, for several Ages, were furnish'd with Bishops from the Side of Babylon, or Syria; and there is a kind of Patriarch at Babylon who continues to furnish them.

Whether or no their Apostle ordain'd them any Bishops, (the Order whereof may have been since extinct thro' want of proper Subjects, as F. Bouquet imagines) is a Question: All we can say is, that the *Thomean Church*, at the first Arrival of the Portuguese, was wholly govern'd by these foreign Bishops. The Language they use, in Sacris, is the Chaldee, some say the Syriac: As to their ordinary Language, 'tis the same with that of their Neighbours.

The Chaldee was doubtless brought among them by their Bishops: 'Tis added, that at the Time the East was infected with Nestorianism, Eutychianism, &c. the Bishops likewise carry'd them those Heresies.

Such a Mixture of Opinions, with a total Interruption of Pastors, sometimes for several Years together, occasion'd that horrible Chaos their Religion was in at the Arrival of the Portuguese; For a Specimen whereof we shall add this Manner of celebrating the Eucharist.

Over the Altar was a kind of Tribune or Gallery; and while the Priest was saying the Beginning of the Office below, a Cake of Flower of Rice was frying in Oil or Butter above: When enough, the Cake was let down in a Basket upon the Altar, where the Priest consecrated it. As to the other Species, for Wine, they used a kind of Brandy usually prepar'd in that Country. Nor was their Ordination much more regular; the Archdeacon, who was sometimes more respected than the Bishop himself, frequently ordained Priests.

Their other Abuses were infinite: The Portuguese, for these two last Centuries, have labour'd the Reformation of this Church; and have employ'd both the Ecclesiastical and Secular Power therein: To this End they have call'd the *Thomean Bishops* to the Councils at Goa, have introduc'd



charg'd them, &c. and have even sent them for Instruction to Portugal and Rome: But they were still apt to relapse at their Return; so that finding no Good was like to be done with them, they resolv'd to exclude them once for all, and to appoint an *European* Bishop in their Room.

These Proceedings have render'd the *Portuguese* infinitely odious to the *Thomæans*.

The Person who contributed most to the Reform, is *Dome Frey Alexo de Menezes*, Archbishop of Goa, who governing the *Portuguese* Indies for some time, in defect of a Viceroy, took that Occasion to call a Synod in the Village of *Diamper*, where Abundance of Regulations were made, and the *Thomæans* united to the *Roman* Church: He was seconded by the *Jesuits*.

After the Death of the Archbishop, a great Part of the *Thomæan* Church relaps'd, and thus still continues, partly *Roman*, partly *Thomæan*.

**THOMISM**, or **THOMASISM**, the Doctrine of *S. Thomas Aquinas*, and his Followers the *Thomists*; chiefly with Regard to Predestination and Grace. See **THOMIST**.

There is some doubt what the true genuine *Thomism* is: The Dominicans pretend to hold pure *Thomism*; but there are other Authors who distinguish the *Thomism* of *S. Thomas*, from that of the Dominicans. See **DOMINICANS**.

Others again make *Thomism* no other than a kind of Jansenism disguis'd; but Jansenism we know has been condemn'd by the Pope, which pure *Thomism* never was. See **JANSENISM**.

In effect, the Writings of *Alvarez* and *Lenos*, who were appointed by their Order to lay down and defend before the Holy See the Dogmata of their School, have since been reputed the Rule of pure *Thomism*.

The modern School has abandon'd many ancient *Thomists*, whose Sentiments and Expressions appear'd to *Alvarez* and *Lenos* too hard; and the new *Thomists*, who pass the Bounds mark'd by these two Doctors, cannot give their Opinions for the Sentiments of the School of *S. Thomas*, which the Pope has forbid being censur'd.

The *Thomism* allow'd, is that of *Alvarez* and *Lenos*: Those two Authors distinguish four Classes of *Thomists*: The first, which they reject, destroys or takes away Liberty; the second and third don't differ from *Molinists*. See **MOLINISTS**.

The last, which *Alvarez* embraces, admits a Physical *Premotion*, or *Predestination*, which is a Compliment of the active Power, whereby it passes from the first Act to the second; that is, from compleat and next Power to Action. See **PREDETERMINATION**.

This Premotion they hold is offer'd in sufficient Grace: Sufficient Grace is given to all Men; and they have a compleat, independent, next Power not to act, and even to reject the most efficacious Grace. See **SUFFICIENT** and **GRACE**.

**THOMISTS**, a Sect of School Divines, who maintain *Thomism*. See **SCHOOL** and **THOMISM**.

The avow'd Antagonists of the *Thomists* are the *Scotists*. See **SCOTIST**.

**THORACIC**, in Anatomy, an Epithet given to two Branches of the Axillary Artery, on Account of their conveying the Blood into some Parts of the *Thorax*. See **THORAX**.

The *Thoracic Arteries* are distinguish'd by *upper* and *lower*. There are likewise *Thoracic Veins*, an *upper* and *under*, for the Reconveyance of the Blood from the *Thorax* to the Axillary Vein. See **AXILLARY**.

**THORACIC Duct**, or *Ductus Thoracicus Chyliferus*, is a little Canal arising from, or rather a Continuation of, the Exit or Mouth of the Receptaculum Chyli. See **RECEPTACLE**.

It mounts all along the *Thorax*, whence it takes its Name, and ends in the left Subclavian Vein.

In its Progress thro' the *Thorax*, it is furnish'd with a proper Integument from the *Pleura*, besides the Membrane it has in common with the Receptaculum: At about one Third of its Way it devaricates, but soon unites again.

*Dr. Drake* observes, that it has Valves in divers Places of its Traß; *Eustachio* says Glands. Its Use is to carry the Chyle and Lympha from the Receptaculum into the Subclavian, by which it is forwarded to the Cava, and thence to the Heart. See **CHYLE**.

It is sometimes call'd *Pecquets Duct*, or *Ductus Pecqueticus*, from *M. Pecquet*, the first Discoverer thereof. See **PECQUET'S DUCT**.

**THORAX**, in Anatomy, that Part of the human Body which forms the Capacity of the Breast, and wherein are included the Heart and Lungs. See **BREAST**.

It is bounded a-top by the Clavicles, and at Bottom by the *Cartilago Xiphoides*, and the Diaphragm.

Its fore Part is call'd the *Sternum*, or *Breast Bone*; its side Parts, the *Costa*, or *Ribs*; its hind Part are the *Spina Dorsi*, and its *Vertebrae*, with the *Omoplate*. See **RINS**, **STERNUM**, &c.

The *Thorax* is also call'd the *second* or *middle Venter*, and popularly the *Chest*. See **VENTER**.

Beside the Heart and Lungs, the *Thorax* likewise contains the ascending Cava, the Aorta, the pulmonary Vein and Artery, the Trachea, Oesophagus, &c.

'Tis lin'd within-side with a Membrane call'd the *Pleura*, and divided in the Middle by another call'd the *Mediastinum*. See **PLEURA** and **MEDIASTINUM**.

It has its Name from the *Greek*, *δοξω*, *salire*, to leap; by Reason the Heart, contain'd therein, makes a continual Motion. *Galen* calls it *Cybara*, and says it contains the Parts that excite to love.

**THOROUGH-Bass**, in Music, is that which goes quite through the Composition. See **BASS**.

It is also call'd *Continu'd Bass*. See **CONTINU'D Bass**.

**THOUGHT**, *Sentiment*, a general Name for all the Ideas consequent on the Operations of the Mind, and even for the Operations themselves. See **THINKING**.

As in the Idea of a *Thought*, there is nothing included of what we include in the Idea of an extended Substance; and that whatever belongs to Body, may be deny'd to belong to *Thought*: We may conclude that *Thought* is not a Mode of extended Substance, it being the Nature of a Mode not to be conceiv'd, if the Thing whereof it is the Mode be deny'd it. Hence we infer, that *Thought* not being a Mode of extended Substance, must be the Attribute of some other Substance very different. See **MODE**.

*F. Mallebranch*, with the Spirit of a *Cartesian*, denies that a Man who thinks seriously on the Matter, can doubt but the Essence of the Mind consists altogether in *Thought*, as that of Matter does in Extension; and that according to the various Modifications of *Thought*, the Mind sometimes wills, sometimes imagines, &c. as, according to the various Modifications of Extension, Matter is sometimes Water, sometimes Wood, Fire, &c.

By the Way, by *Thought* he does not mean the particular Modifications of the Soul, i. e. such or such a *Thought*, but *Thought* or *Thinking* in the general, consider'd as capable of all Kinds of Modifications or *Thoughts*: As by Extension he does not mean such or such an Extension, as a Square, Oval, or the like, but Extension in the Abstract, consider'd as susceptible of all Kinds of Modifications or Figures.

He adds, that he takes it to be impossible to conceive a Mind which does not think, tho' it be easy to conceive one which does not feel, or imagine, or will; in like Manner as 'tis impossible to conceive a Matter which is not extended, tho' it be easy to conceive one that is neither Earth, nor Metal; nor square, nor round; nor that is even in Motion.

Hence it may be concluded, that as 'tis possible there may be Matter which is neither Earth nor Metal; nor square nor round; nor even in Motion; 'tis also possible, that a Mind may neither perceive Heat nor Cold; nor Joy nor Grief; nor imagine any thing, nor will any thing; so that these Modifications are not essential to it. *Thought* alone, therefore, is the Essence of the Mind, as Extension alone is the Essence of Matter. See **ESSENCE**, **EXTENSION**, **WILL**, &c.

But this Doctrine no longer passes among us. The Followers of *Sir Isaac Newton*, and the new Philosophy, deny Extension to be the Essence of Matter (see **MATTER**); and the Followers of *Mr. Lock* deny *Thought* to be the Essence of the Mind. See **SOUL**.

**THOUSAND**. See **NUMERATION**.

**THOUSAND Years Reign**. See **MILLENNIUM**.

**THRASHING**, or **THRESHING**, in Agriculture, the Act of beating the Corn out of the Ears. See **CORN**.

*Thrashing* is perform'd two Ways; or rather there are two Ways of separating Corn from the Ear; the first by beating it with a Flail, which is properly what we call *Thrashing*.

Some Authors will not by any means we should call this by the *Roman* Name *tritura* or *trituration*, but *flagellatio* of *flagellum*, a Scourge or Flail.

The other Manner, still practis'd in several Countries, as we are inform'd by *Liger*, is to make Mules or Horses trample on it backwards and forwards: This is properly what the Ancients call'd *tritura* and *trituration*.

But they also us'd Oxen therein; witness the *Hebrees*, who sometimes yolk'd four Oxen together.

Another Way was with a kind of Sledge made of Boards join'd together, and loaden with Stones or Iron, upon which a Man was mounted, and the whole drawn over the Corn by Horses: This Instrument was call'd *Traba* or *Tributus*.

'Tis a Rule among Husbandmen, that the Season for *Thrashing*, is when the Corn has sweated in the Heap, or Mow.

**THRAVE** of Corn, from the *Saxon*, *Thraev*, Bundle, or the *British* *Dresa*, twenty-four, is in most Parts of *England* twenty-four Sheaves, or four Shocks of six Sheaves to the Shock.

King *Abelcan*, Anno 923, gave by Charter to *Sir John of Beverley's* Church, four *Thraves* of Corn for every Plough Land in the East Riding of *Yorkshire*.

*Ya jou Threve le Heven King  
Of Ika Plough of Ift Riding.*

[ G G G ]

See **PETER-CORN**.

THREE.



**THREE-Legged Staff**, an Instrument consisting of three Wooden Legs, made with Joints, so to shut all together, and to take off in the Middle, for the better Carriage; and usually having on its Top a Ball and Socket, serving to support and adjust Instruments for Astronomy, Surveying, &c. See **BALL** and **SOCKET**.

**THRENGUS**, in our ancient Customs. See **DRENCHES**.

*Quia vero non erant adhuc tempore Regis Willielmi Milites in Anglia, sed Threnes; precipit Rex ut de eis Milites fierent ad defendendam terram: fecit autem Lanfrancus Threnos suos Milites, &c. Somn. Gavelk.*

They were Vassals, but not of the lowest Degree of those who held Lands of the chief Lord.

The Name was impos'd by the Conqueror; for when one *Edwyn Sharnbourn* of *Norfolk*, and others, were ejected out of their Lands; they complain'd to the Conqueror; insisting, that they were always on his Side, and never oppos'd him: which, upon Enquiry, he found to be true; and therefore he commanded that every one should be restor'd to their Lands, and for ever after be call'd *Drenches*. *Spelm.*

**THRENODY**, **THRENODIA**, a mournful, or Funeral Song. See **FUNERAL**.

**THROAT**, the Part of an Animal between the Head and the Shoulders, wherein is the Gullet. See **GULLET**.

Physicians include under the Word *Throat*, all that Hollow or Cavity which may be seen when the Mouth is wide open.

It is sometimes also call'd *Isthmus*, by Reason it is narrow, and bears some Resemblance to those Streights call'd by the Geographers *Isthmi*.

**THROAT**, in Architecture, Fortification, &c. See **GORGE** and **GULA**.

**THRONE**, from the Greek *θρόνος*, a magnificent Seat or Chair; is a Royal Seat, enrich'd with Ornaments of Architecture and Sculpture, made of some precious Matter, rais'd on several Steps, and cover'd with a kind of Canopy.

Such as are in the Rooms of Audience of Kings and other Sovereigns.

**THROWS of Women**, the Pains of Child-Birth. See **DELIVERY**, &c.

**THROWSTER**, one who throws, i. e. winds or rolls Silk. See **SILK**.

**THUNDER**, a Noise in the lowest Region of the Air, excited by a sudden kindling of sulphurous Exhalations. See **AIR**, **ATMOSPHERE**, **EXHALATIONS**, &c.

*Seneca*, *Rohault*, and other Authors, both ancient and modern, account for *Thunder*, by supposing two Clouds impending over one another, the upper and rarer whereof becoming condens'd by a fresh Accession of Air rais'd thither by Warmth from the lower Parts of the Atmosphere; or driven upon it by the Wind; immediately falls forcibly down upon the lower, and denser Cloud: By which Fall, the Air interpos'd between the two being compress'd; that next the Extremities of the two Clouds is squeez'd out, and leaves Room for the Extremity of the upper Cloud to close tight upon the under: Thus a great Quantity of Air is inclos'd, which at length escaping thro' some winding irregular Vent or Passage, it occasions that Noise we call *Thunder*. See **CLOUD**, &c.

But this only reaches to the Phenomena of *Thunder* heard without Lightening; and, in effect, we have now a better Solution: *Thunder* is not occasion'd by the falling of Clouds; but by the kindling of sulphurous Exhalations, in the same Manner as the Noise of *Aurum Fulminans*.

"There are sulphurous Exhalations, says *Sir Isaac Newton*, always ascending into the Air when the Earth is dry; there they ferment with the nitrous Acids, and sometimes taking Fire, generate into *Thunder*, Lightening, &c.

That, beside the Vapours rais'd from Water, &c. there are also Exhalations carry'd off from Sulphur, Bitumen, Volatile Salts, &c. is past all doubt; the vast Quantity of sulphurous and bituminous Matter all over the Surface of the Earth, and the Volatile Salts of Plants and Animals, afford such an ample Stock thereof; that 'tis no Wonder the Air should be fill'd with such Particles, rais'd higher or lower, according to their greater or less Degree of Subtility and Activity; and more copiously spread in this or that Quarter, according to the Direction of the Winds, &c. See **SULPHUR**.

Now, the Effects of *Thunder* are so like those of fir'd Gunpowder, that *Dr. Wallis* thinks we need not scruple to ascribe them to the same Cause: But the principal Ingredients in Gunpowder we know are Nitre and Sulphur; Charcoal only serving to keep the Parts separate, for the better kindling. See **GUNPOWDER**.

Hence, if we conceive in the Air a convenient Mixture of nitrous and sulphurous Particles, from the Sources above-mention'd; and those, from some Cause, to take Fire; such Explosion may well follow, and with such Noise and Light, the two Phenomena of *Thunder*; as in the firing of Gunpowder; and being once kindled, it will run from Place to Place, this Way or that, as the Exhalations happen to lead it; as in a Train of Gunpowder.

This Explosion, if high in the Air, and remote from us, will do no Mischief; but if near us, may destroy Trees, Animals, &c. as Gunpowder would do in the like Circumstances.

This Nearness or Farness may be estimated by the Interval of Time between the Flash and the Noise: *Dr. Wallis* observes, that ordinarily the Difference between the two is about seven Seconds; which, at the Rate of 1142 Feet in a Second of Time, gives the Distance about a Mile and half: But sometimes it comes in a Second or two, which argues the Explosion very near us, and even among us. And in such Cases, the Revd. Doctor assures us, he has more than once foretold the Mischiefs that befall.

Upon the whole, that there is in Lightening a sulphurous Vapour, appears from the Sulphur which attends it, and from the sultry Heat in the Air which usually precedes it; and that there is a nitrous Vapour along with it, the same Author concludes hence, that we know of no other Body so liable to a sudden and violent Explosion. And as to the kindling of these Materials, we know that a Mixture of Sulphur and Steel Filings, with a little Water, will break forth into actual Flame. Nothing therefore is wanting to the Explosion, but some Chalybeat, or Vitriolic Vapour; and among the various Effluvia from the Earth, the Doctor does not doubt, but there must be some of that: But what he leaves as a Probability, we can produce a kind of Proof of.

In History we meet with Instances of its raining Iron in *Italy*, and Iron Stones in *Germany*: *Jul. Scaliger* tells us, he had by him a Piece of Iron rain'd in *Savoy*. *Carani* reports 1200 Stones to have fallen from Heaven, some of them weighing 30, some 40, and one an hundred and twenty Pound, all very hard, and of the Colour of Iron.

The Matter of Fact is so well attested, that *Dr. Lister*, in the *Philosophical Transactions*, builds a whole Theory of *Thunder* and Lightening on it; maintaining, that they owe their Matter to the Breath or Exhalation of *Pyrites*. See **PYRITES**.

That Rattling in the Noise of *Thunder*, which makes it seem as if it pass'd thro' Arches, or were broken variously, is doubtless owing to the Sound being excited among Clouds hanging over one another, and the agitated Air passing between them. See **LIGHTENING**.

**THUNDER-Bolt**. If what we call *Lightning*, act with extraordinary Violence, and break or shatter any thing; it is call'd a *Thunder-bolt*; which the People, to fit it for such Effects, suppose to be a hard Body, and even a Stone. See **LIGHTENING**.

But that we need not have recourse to a hard solid Body to account for the Effects commonly attributed to the *Thunder-bolt*, will be evident to any one, who considers those of *Pulvis Fulminans*, &c. of Gunpowder. See **FULMINANS**.

The Phenomena of the *Thunder-bolt* are, that it oftener strikes on high Places than on low: That it frequently burns Peoples Cloaths, without touching their Bodies: That it sometimes breaks their Bones, without hurting their Flesh, or their Cloaths; that it has even melted the Sword without touching the Scabbard, &c.

The First is easily accounted for, from the ordinary Height of the Clouds, out of which the Lightening darts: As to the rest, since Exhalations may be very different from one another; some, e. gr. coming nearest the Nature of Sulphur, may only yield a very slight lambent Flame, which will only affect such things as take Fire the soonest. And others, on the contrary, so subtle and penetrating, as to come near the Nature of Volatile Salts or Aqua-fortis, which spare soft Bodies, and spend their whole Force on hard ones.

The *Chevalier de Louville* of the French Academy of Sciences, accounts for some of the Effects of *Thunder* upon a new Principle; as to killing of Animals, without burning or wounding them, 'tis naturally enough ascribed to the Sulphur, which falling near enough the Person, the Fumes thereof stop his Respiration. As to Trees, Buildings, &c. split or beat down, there must be another Cause. *M. de Louville*, therefore, supposes, that when the *Thunder* is so high, its Flame is dissipated e'er it arrive at the Earth: And that the Air being violently driven along by the impetuous Motion of the Flame, and of consequence exceedingly condensed becomes a kind of hard Body, capable of producing terrible Effects.

Places struck with *Thunder-bolts*, were held Sacred among the Ancients. *Nigidius* has a very curious Treatise on the *Thunder-bolt*.

*Marcellus Ficinus*, and some others, maintain, that *Coral* dissipates panic Fears, and keeps off *Thunder-bolts* and *Hail*: *Fortunat. Licetus* has endeavour'd to account for it physically. *P. le Brun* proves very easily, that those Philosophers are mistaken.

On Medals, the *Thunder-bolt* is sometimes found to accompany the Emperors Heads; as that of *Augustus*. In which Case, it is a Mark of Sovereignty, and of a Power equal with the Gods.

*Appian* informs us, that the *Thunder-bolt* was the principal Divinity of *Seleucia*; adding, that it was adored even in his Time, with various Hymns and Ceremonies. See **GOR**.



THUS. See FRANKINCENSE.

THUMMIM, in the Scripture Learning. See URIM and

THUMMIM.

THURSDAY. See WEEK.

Matuay THURSDAY. See MAUNDAY *Thursday*.

THYMUS, in Anatomy, a conglobate Gland, situated in the upper Part of the Thorax, under the Clavicular, where the Cava and Aorta divide into the Subclavian Branches. See GLAND.

This Gland is big in Infants, but as they grow in Age, it grows less; its Arteries and Veins are Branches of the Carotides and Jugulars. It has Nerves from the Par Vagus, and its Lymphatick Vessels discharge themselves into the Ductus Thoracicus.

The learned Dr. *Zyff* supposes the Use of this Gland to be for a Diverticulum to the Chyle in the Thoracick Duct of a Fœtus, whose Stomach being always full of the Liquor in which it swims, must keep the Thoracick Duct distended with Chyle; because the Blood which the Fœtus receives from the Mother, fills the Veins, and hinders the free Entrance of the Chyle into the Subclavian Veins. See Fœtus.

M. *Chefelden* observes, that where the *Thymus* in Men is very small, the Thyroid Glands encrease proportionably; but in such Brutes as have fallen under his Observation, it is just the contrary; from which he is inclined to believe that they belong to the same Lymphatics, and that either of them encreasing as much as both ought to do, if both encreased, answers the same End as both did; and that the Reason why the *Thymus* encreases rather than the Thyroid Glands in Brutes, is, because the Shape of their Thorax affords convenient Room for it to lodge in; and that in Men, the Reason why the Thyroid Glands encrease so much, is, because there is no Room in that part of the Thorax where the *Thymus* is seated, for a large Gland to be lodg'd.

The *Thymus* is that, which in a Breast of Veal we call the Sweet-Bread.

THYMUS, in Medicine, is used for a kind of Wen, growing on the natural Parts, the Fundament, and several other Places of the Body, with cloven Asperities like those of the Herb *Thyme*, whence its Name. See WEN.

The ordinary Method of curing a *Thymus*, is by Ligature and desiccative Lotions, or by Caustics; and if large, by Incision; taking Care first to secure the greater Vessels by tying them.

THYREOARYTÆNOIDEUS, in Anatomy, a Pair of Muscles, situate under the Cartilago Thyreoides; from the fore and back Part of which, it arises with a very broad Head, and terminates in the Arytænoides, which it constricts, and shuts the Larynx. See ARYTÆNOIDES.

THYROIDEÆ Glandulæ, THYROID Glands, are two Glands of the Larynx. See LARYNX.

There are Four pretty large Glands, which serve to moisten the Larynx; two above and two below.

The two latter are call'd *Thyroidæ*; situate at the bottom of the Larynx, aside of the Annular Cartilage, and of the first Ring of the Trachea; one on each Side.

They are in form of little Pears; their Colour a little more reddish, their Substance more solid, more viscous, and resembling more the Flesh of the Muscles, than the other Glands.

They receive Nerves from the Recurrents, Arteries from the Carotides; Veins which pass to the Jugulars, and Lymphaticks, which discharge themselves into the Thoracic Duct.

Their Use is to separate a viscid Moisture, serving to line, and lubricate the Larynx, to facilitate the Motion of its Cartilages, to soften the Acrimony of the Saliva, and to sweeten the Voice.

THYROIDES, in Anatomy, one of the five Cartilages of the Larynx. See LARYNX.

The first, and biggest of the Cartilages of the Larynx is call'd *Thyroides* or *Scutiformis*, by reason of its Figure, which some fancy to resemble a Shield. It is hollow within, and gibbous without side; but more so in Men than in Women. In the middle is a Prominence, call'd *Pomum Adami*. 'Tis usually parted by a Line running along the middle; whence some make two of it; tho' in reality 'tis very rare 'tis found double.

It is near a Square; and at each Angle is a Process: The two uppermost are the longest, and tie it by means of a nervous Ligament to the Os Hyoides: The two lower, and shorter, connect it to the second Cartilage, call'd *Cricoides*.

The Word is form'd from the Greek, *Thyros*, Buckler, and *Idion*, Form.

THYRSUS, in Antiquity, the Scepter which the ancient Poets put in the Hand of *Bacchus*, and wherewith they furnish the *Menades* in their *Bacchanalia*. See BACCHANALIA, &c.

The *Thyrsus* was originally a Lance, or Spear, wrapt up in Vine-Leaves; wherewith *Bacchus* is said to have arm'd himself and his Soldiers in his *Indian Wars*, to amuse and deceive the unpractis'd *Indians*, and make them suspect no Hostilities.

Hence it was afterwards bore in the Feasts and Sacrifices of that God; and as the Satyrs, who were *Bacchus's* Soldiers, were supposed to have fought with it, it became a Custom to represent them therewith. See SATYR, &c.

The Word is form'd from the Greek, *Thyros*, *Hastula* from *Thyros*, signifying the same thing.

TIARA or THIAIRA, an Ornament or Habit, wherewith the ancient *Persians* cover'd their Head; and which the *Armenians*, and Kings of *Pontus* still wear on Medals; these last, because descended from the *Persians*.

The *Latin* Authors call it indifferently, *Tiara* or *Cidaris*.

*Strabo* says, the *Tiara* was in form of a Tower: The Scholiast on *Aristophanes's* Comedy, *Thesmophoriazusen*, Act 1. Scene 2. affirms, that it was adorn'd with Peacock's Feathers. Some Moderns, however, take it, the Scholiast is here speaking of the Cask which the ancient *Persians* wore in War; rather than the Habit which they wore on the Head in the Cities: But they don't seem to have consider'd the Passage in the Poet, to which the Scholiast refers: The Matter there spoke of is Peace, and Embassadors sent to treat of Peace, with Habits of Pomp and Ceremony, *Thesmophoriazusen*, &c. These Ambassadors, these Peacocks, all these Things of Pomp and Ostentation displease me. By these Peacocks, says the Scholiast, he means the *Tiara*, which among the *Persians* are Ornaments of the Head, wherein are Peacock's Feathers, &c.

St. *Jerom* on *Dan. cap. iv.* defines the *Tiara* a kind of Cap, genus *Pilleoli*, wore by the *Persians* and *Chaldeans*. In another Place, he adds, 'tis like *Ulysses's* Cap.

The ancient Scholiast, on *Juvenal*, describes the *Tiara* as a Priest's Cap, which descending over the Cheeks, was tied under the Chin; which agrees very well with the Form of that which we see *Mithridates* wear, on Medals. *Servius* on *Virgil*, lib. viii. *Æneid*. calls the *Tiara*, a *Phrygian* Cap; and *Statius*, *Trebat*, lib. viii. gives it the Kings of *Parthia*, who, doubtless, borrowed it from the *Persians*.

*Justin* attributes the long Garment and *Tiara* of the *Persians*, to *Semiramis's* Disguise; whereby she pass'd for *Nymus*.

The Kings of *Persia* alone, had the Right of wearing the *Tiara* straight and upright: The Priests, and great Lords wore it depress'd, or turn'd down on the Fore-side. *Xenophon* in his *Cyropæd.* says, that the *Tiara* was sometimes encompass'd with the Diadem, at least in Ceremonies; and had frequently the Figure of a Half Moon embroider'd on it: Others are of Opinion, that 'twas the Diadem had the Figure of a Moon, and that it was hence the *Tiara* was call'd *Lunata*; and, lastly, others think that the *Tiara* itself was sometimes in form of a Half Moon. From what we have said, it appears, that there were different Forms of *Tiara's*; and, in effect, *Paschalius, de Coronis*, shews there were Five different Kinds. See DIADEM.

TIARA is also the Name of the Pope's Triple Crown; anciently call'd *Regnum*. See CROWN.

The *Tiara*, and Keys are the Badges of the Papal Dignity; the *Tiara* of his Civil Rank, and the Keys of his Jurisdiction: For, as soon as the Pope is dead, his Arms are represented with the *Tiara* alone, without the Keys.

The ancient *Tiara* was a round high Cap, *John XXIII.* first encompass'd it with a Crown. *Boniface VIII.* added a second Crown; and *Benetict* the XIIth, a Third.

TIBIA, in Anatomy, the bony Part of the Leg, between the Knee and the Ankle. See LEG.

The *Tibia* consists of two Bones, call'd *Fociles*, the one on the Inside the Leg, call'd the *Fibula*, or *little Focil*. See FIBULA.

The other on the Out-side, call'd by the common Name *Tibia*, or the great *Focil*. See the following Article.

TINTA, is, properly, the inner and bigger Bone of the Leg, call'd also *Focile Majus*. See BONE.

The *Tibia* is hard and firm, having a pretty large Cavity in its Middle, to contain the Medulla. See MEDULLA.

It is almost Triangular; its fore, and sharp Edge being call'd the *Shin*: in its upper Extremity, it has two large Sinus's, ript with a soft and fine Cartilage, from its Figure, call'd *Cartilago Lunata*; which runs in between the Extremities of the two Bones, and grows very thin at its Edge; serving to facilitate a small Side-motion in the Knee, like those in the Articulation of the lower Jaw.

The Sinus's receive the two Promuberances of the Femur, or Thigh-bone; and the Production which is between the Sinus's of the *Tibia*, is received into the Sinus, which divides these two Promuberances of the Femur. See FEMUR.

By bending the Knee, we bring the Leg, in walking, in a strait Line forwards; which we could not have done without this Articulation; but like those who have the Misfortune to have a wooden Leg, we must have brought our Foot about in a Semi-circle, in going even upon a Plain, but more evidently upon an Ascent.

On the Side of this upper End, it has a small Knob, which is received into a small Sinus of the *Fibula*, and on its Fore-part, a little below the Patella, it has another into which the Tendons of the Extensors of the Leg, are inserted. See FIBULA.



Its lower Extremity, which is much smaller than its upper, has a remarkable Process, which forms the inner Ankle; and a pretty large Sinus, divided in the Middle by a small Protuberance; the Sinus receives the convex Head of the Astragalus, and the Protuberance is received into the Sinus, in the convex Head of the same Bone.

It has another shallow Sinus in the Side of its lower End, which receives the Fibula.

Mr. *Chefeldien* gives an Instance of a Boy of Seven Years of Age, where both the Epiphyses at the upper End of the *Tibia*, were so far separated, that not more than Half each *Tibia* was join'd to Half the Epiphysis; which made his Legs wholly useless. This had been occasion'd, by the Nurse's holding him out to Stool by the Heels and Back, when very young; which is among them (as he observes) too common a Practice.

**TIBIALIS** or **TIBIÆUS**, in Anatomy, a Name given two Muscles of the Leg; distinguish'd by *Anticus* and *Posticus*.

The *Tibialis Anticus*, springs from the exterior Process of the *Tibia*, and becoming gradually broad and fleshy about the middle of the *Tibia*, down the Fore-part of which it runs, is contracted again, into a slender, smooth Tendon, which passes under the Ligamentum Annulare, and is partly inserted to the Os Cuneiforme Majus, and partly to the Bone of the Metatarsus, that supports the great Toe. Its Office is to draw the Foot up.

*Tibialis Posticus*, is derived from both Bones of the *Tibia*, and from the Ligament that bends them together; and runs with a smooth, strong Tendon through the Sinus on the inner Malleolus, under the Annular Ligament, to the Inside of the Os Naviculare.

Its Office is to draw the Foot inwards. From the Use Sailors make of it in Sailing, it is also called the *Nauticus*.

**TICHONIC System** or *Hypothesis*. See **TYCHONIC**.

**TIDES**, Two periodical Motions of the Waters of the Sea, call'd the *Flux* and *Reflux*; or the *Ebb* and *Flow*. See **SEA**, **FLUX**, **EBB**, &c.

When the Motion of the Water is against the Wind, 'tis call'd a *Windward Tide*; when Wind and *Tide* go the same Way, *Leeward Tide*: When it runs very strong, 'tis a *Tide-gate*.

To *Tide it over or up* into any Place, is to go in with the *Tide*, either Ebb or Flood, as long as that lasts; then to stay at Anchor all the Time of contrary *Tide*; and thus to set in again with the Return of the first *Tide*.

It is said to *flow Tide and Half Tide*, when the *Tide* runs three Hours in the Offing, longer than it does by the Shore: but, by *longer*, they don't mean more Hours; but, that if it be high Water a-shore at 12, it will not be so in the Offing till Three. If it Ebb and Flow longer, they say it runs *Half Tide* and *Half quarter*.

When the Moon is in the First and Third Quarter, *i. e.* when she is New and Full, the *Tides* are High and Swift, and called *Spring Tides*; when she is in the second and last Quarter, the *Tides* are lower and slower, and call'd *Neap Tides*. See **NEAP**, &c.

#### *Phænomena of the TIDES.*

The Sea is observ'd to flow, for certain Hours, from *South* towards *North*; in which Motion, or *Flux*, which lasts about Six Hours, the Sea gradually swells; so that entering the Mouths of Rivers, it drives back the River-waters towards their Heads or Springs. See **RIVER**, &c.

After a continual *Flux* of Six Hours, the Sea seems to rest for about a Quarter of an Hour; after which it begins to ebb or retire back again from *North* to *South*, for Six Hours more: In which Time, the Water sinking, the Rivers resume their natural Course. After a seeming Pause of a Quarter of an Hour, the Sea again begins to flow as before, and thus alternately.

Thus does the Sea ebb twice a-day, and flow as often; but not in the same Hours thereof. The Period of a *Flux* and *Reflux* is 12 Hours 50 Minutes, so that the *Tides* return later, and later each Day, by 50 Minutes or  $\frac{1}{2}$  of an Hour, 5 Minutes.

Now, 12 Hours 50 Minutes is a Lunar Day; *i. e.* the Moon passes the Earth's Meridian later and later each Day by 50 Minutes. So that the Sea flows as often as the Moon passes the Meridian, both the Arch above, and that below the Horizon; and Ebbs as often as she passes the Horizon, both the Eastern and Western Point thereof. See **MOON**.

This further Agreement we observe between the Moon and the Sea; that the *Tides*, though constant, are not equal; but are greatest, when the Moon is in Conjunction, or Opposition to the Sun, and least when in Quadrature thereto.

Lastly, those *Tides* are the greatest, which happen in the New and Full Moon, at the Times of the Equinoxes.

Add, that the same Things are observed throughout most of the Coasts of *Europe*; only that the *Tides* are so much the less, and happen the later, as the Coasts are the more Northerly.

These Phænomena of the *Tides* are admirably accounted for, from the Principle of Gravitation. All we require to

their Solution, is, that the Earth and Moon, and every Particle thereof, mutually gravitate towards each other; the Reasonableness of which Assumption, see under the Article **GRAVITATION**.

Indeed the sagacious *Kepler* long ago, conjectured this to be the Cause of the *Tides*: "If, says he, the Earth ceas'd to attract its Waters towards itself; all the Water of the Ocean would rise and flow into the Moon: The Sphere of the Moon's Attraction extends to our Earth, and draws up the Water." Thus thought *Kepler* in his *Introductio ad Theor. Mart.* This Surmize, for it was then no more, is now abundantly verified, in the following Theory, deduced by Dr. *Halley*, from the *Newtonian* Principles.

#### *Theory of the TIDES.*

1° As the Surface of the Earth and Sea is naturally globular; if we suppose the Moon A (Tab. Geography Fig. 6.) perpendicularly over some Part of the Surface of the Sea, as E; 'tis evident the Water E, which is now nearest the Moon, will gravitate towards it more than any other Part of the Earth and Sea in the Hemisphere FPH.

The Water in E, therefore, must by this means, be rais'd towards the Moon, *i. e.* it will be lighter than usual, and of consequence will swell in E.

For the same Reason the Water in G being the most remote from the Moon, will gravitate towards the same, rather than any other Part of the Earth or Sea in the Hemisphere FGH.

The Water here, therefore, must approach less towards the Moon, than any other Part of the Globe, *i. e.* it must be rais'd the contrary Way; as being lighter than usual, and will therefore swell in G.

By this means, the Surface of the Ocean must necessarily form itself into a Spheroidal, or Oval Figure, whose longer Diameter is EG; its shorter FH. And thus, the Moon shifting her Position in her Diurnal Motion round the Earth; this Oval of Water must shift with her; by which means are effected those two Floods and Ebbs, observable every 25 Hours.

2° Since, in the Conjunctions and Oppositions of the Sun and Moon, the Gravitation of the Water to the Sun conspires with its Gravitation towards the Moon; but in the Quadratures, the Water rais'd by the Sun is depress'd by the Moon: Hence it is that the *Tides* are greatest in the Syzygies, and least in the Quadratures.

In effect, there are two *Tides* every natural Day, from the Action of the Sun, as there are in the Lunar Day from that of the Moon; all govern'd by the same Laws: Only those caus'd by the Sun, are much less than those of the Moon; because though the Sun be Ten thousand times bigger than both the Earth and Moon, yet he is at so immense a Distance, that the Earth's Semi-diameter bears no Proportion thereto.

Hence, the different *Tides* depending on the particular Actions of the Sun and Moon are not distinguish'd, but confounded. The Lunar *Tide* is somewhat changed by the Action of the Sun; and this Change varies every Day, by reason of the Inequality between the Natural and Lunar Day. See **DAY**.

3° Since the greatest *Tides* about the Equinoxes (*viz.* those happening in the Syzygies) arise from the Sun and Moon being in the Equinoctial; and those about the Solstices, from the Sun and Moon being in the Tropicks; for this Reason, those greatest *Tides* about the Equinoxes are greater than those about the Solstices, since the greater the Circle is, wherein the Waters turn, the greater is their Apertion. And if the Moon stood still in the Pole, the Spheroid would become immoveable about the Pole, and the high Water be fix'd therein.

4° Since the *Tides* are somewhat chang'd by the Libration of the Waters, which use to retain a Motion impressed on them for some time; for this Reason the highest *Tides* are not precisely in the very Conjunction and Opposition of the Moon, but two or three *Tides* afterwards.

5° Since the Sun is somewhat nearer the Earth in Winter than in Summer; hence it is, that the greatest Equinoctial *Tides* are observ'd to be a little before the Vernal Equinox, and a little after the Autumnal one.

6° Since the greatest of the two *Tides* happening in every Diurnal Revolution of the Moon, is that wherein the Moon is nearest the Zenith, or Nadir: For this Reason, when the Sun is in the Northern Signs, the greater of the two Diurnal *Tides* in our Climates, is that arising from the Moon above the Horizon; when the Sun is in the Southern Signs, the greatest is that arising from the Moon below the Horizon.

7° Such would the *Tides* regularly be, if the Earth were cover'd with Sea very deep; but by Reason of the Shalowness of some Places, and the Narrowness of the Straits and others, by which the *Tides* are propagated, there is a great Diversity in the Effect, not to be accounted for without an exact Knowledge of all the Circumstances of the Places; as the Position of the Land, and the Breadth of



Depth of the Channels, &c. for a very flow and imperceptible Motion of the whole Body of Water, where it is (for Example) two Miles deep, will suffice to raise its Surface 10 or 12 Feet in a *Tides*-time; whereas, if the same Quantity of Water were to be convey'd upon a Channel of 40 Fathom deep, it would require a very great Stream to effect it, in so large Inlets as are the Channel of *England* and the *German Ocean*; whence the *Tide* is found to set strongest in those Places where the Sea grows narrowest, the same Quantity of Water being in that Case to pass thro' a smaller Passage.

This is most evident in the Straits between *Portland* and *C. de la Hogue*, in *Normandy*, where the *Tide* runs like a Sluice; and would be yet more between *Dover* and *Calais*, if the *Tide* coming about the Island did not check it.

And this Force being once impress'd upon the Water, continues to carry it above the Level of the ordinary Height in the Ocean, particularly where the Water meets a direct Obstacle, as it is in *St. Maloes*; and where it enters into a long Channel, which running far into the Land, grows very strait at its Extremity, as it is in the *Severn*-Sea at *Chepstow* and *Bristol*.

This Shoalness of the Sea, and the intercurrent Continents, are the Reason that in the open Ocean, high Water is not at the Time of the Moon's Appulse to the Meridian, but always some Hours after it, as it is observ'd upon all the West Coast of *Europe* and *Africa*, from *Ireland* to the *Cape of Good Hope*; in all which a South-West Moon makes high Water; and the same is reported to be on the West of *America*.

It would be endless to recount all the particular Solutions, which are easy Corollaries from this Doctrine: as, why the Lakes and Seas, such as the *Caspian Sea*, and the *Mediterranean Sea*, the *Black Sea*, and *Baltick*, have no sensible *Tides*: For Lakes having no Communication with the Ocean, can neither increase or diminish their Water, whereby to rise and fall; and Seas that communicate by such narrow Inlets, and are of so immense an Extent, cannot in a few Hours Time receive and empty Water enough to raise or sink their Surface any thing sensibly.

To demonstrate the Excellency of this Doctrine, the Example of the *Tides* in the Port of *Tunking* in *China*, which are so extraordinary, and different from all others we have yet heard of; may suffice. In this Port there is but one Flood and Ebb in 24 Hours; and twice in each Month, viz. when the Moon is near the Equinoctial, there is no *Tide* at all, but the Water is stagnant; but with the Moon's Declination, there begins a *Tide*, which is greatest when she is in the Tropical Signs; only with this Difference, that when the Moon is to the Northward of the Equinoctial, it flows when she is above the Earth, and ebbs when she is under, so as to make high Water at Moon-setting, and low Water at Moon-rising: But, on the contrary, the Moon being to the Southward, makes high Water at rising, and low Water at setting, it ebbing all the Time she is above the Horizon.

The Cause of this odd Appearance is propos'd by Sir *Isaac Newton* to arise from the Concurrence of two *Tides*, the one propagated in six Hours out of the great *South-Sea* along the Coast of *China*; the other out of the *Indian Sea* from between the Islands in twelve Hours, along the Coast of *Malacca* and *Cambaya*. The one of these *Tides* being produc'd in North Latitude, is, as hath been said, greater when the Moon being to the North of the Equator, is above the Earth, and less when she is under the Earth. The other of them, which is propagated from the *Indian Sea*, being rais'd in South Latitude, is greater, when the Moon declining to the South is above the Earth, and less when she is under the Earth; so that of these *Tides* alternately greater and lesser, there come always successively two of the greater, and two of the lesser together every Day; and the high Water falls always between the Arrival of the two greater Floods; and the low Water between the Times of the Arrival of the two lesser Floods: And the Moon coming to the Equinoctial, and the alternate Floods becoming equal, the *Tide* ceases, and the Water stagnates; but when she has pass'd to the other Side of the Equator, those Floods which in the former Order were the least, now becoming the greatest, that which before was the Time of the high Water, now becomes the low Water, and the converse; so that the whole Appearance of these strange *Tides* is, without any forcing, naturally deduc'd from these Principles, and is a great Argument for the Certainty of the whole Theory.

*TIDE-waiters*, or *TIDE-men*, certain Officers belonging to the Custom-house, appointed to watch or attend on Ships, coming from abroad, to see that nothing be landed till the Custom of the Freight be paid. See *CUSTOM*, *FREIGHT*, &c.

They are thus call'd, because they go aboard the Ships at their Arrival in the Mouth of the *Thames*, and come up with the *Tide*.

*TIERCE*, in Heraldry, a Term denoting the Shield to be divided into three equal Parts, of different Colours or Metals.

If the Chief and Base be of the same Colour when divided by a Fesse, they blazon it by expressing the Colour, and mentioning the Fesse; otherwise, they say it is *Tierce en fasce*, and mention each of the Colours; or *Tierce en pal*, if so divided in Pale.

*TIERCE*, or *TERCE*, is also a Measure of liquid Things, as Wine, Oil, &c. containing the third Part of a Pipe, or 42 Gallons. See *MEASURE*, *GALLON*, &c.

*TIERCE*, in Music. See *THIRD*.

*TIERCE*, *Three*, a Sequence of three Cards of the same Colour. See *SEQUENCE*.

*TIERCE*, in Fencing. See *GUARD*.

*TIERCE Order*. See *THIRD Order*.

*TIGE*, in Architecture, a *French* Term for the Shaft or Fust of a Column; comprehended between the Astragal and the Capital. See *FUST* and *COLUMN*.

*TILE*. See *TYLE*.

*TILLER*, or *TILLAR*, in Husbandry, a little young Tree left to grow till it be fellable. See *TIMBER*.

*TILLER* of a Ship, is a strong Piece of Wood fasten'd to the Rudder. See *RUDDER*.

The same Name is also given to that which serves for a Helm in a Boat.

*TILLING*, in Gardening and Agriculture, a moving or stirring of the Ground, with the Plough or Spade; which being perform'd on the Top, enters to a certain Depth, and makes the lower and upper Parts change Place; by which means the Goodness of the Earth is kept from being spent in feeding ill Plants. See *PLOUGHING*, &c.

The Rule, as to Gardening in general, is, that hot and dry Earth should be *till'd* in Summer, either a little before, or while it rains, or soon after; and that neither too often nor too deep: In hot Weather 'tis not to be perform'd, unless water'd soon after: But for moist, cold, and strong Earth, it must never be *till'd* in Time of Rain, but rather in the greatest Heats. As to Arable Lands, that which is clayey, stiff, cold, and moist, is generally thrice *till'd*; in Spring, Summer, and at Seed Time, for Wheat; and four Times for Barley.

These repeated Ploughings or Fallows are very advantageous to the Soil, both as they destroy Weeds, and as the Ground is hereby laid in Ridges, which prevents its being over-drench'd in wet Seasons, saves it much from Blights, and bleak Weather, and makes the Land lighter and fitter for the Seed to take Root in, and to imbibe the nitrous Dews and Influences of the Air, &c. See *FALLOWING* and *VEGETATION*.

*TILT*. See *JOUST* and *TOURNAMENTS*, *CARROUSELS* and *QUADRIL*, &c.

*TILT-Boat*, a Boat cover'd with a *Tilt*, i. e. a Cloth, or Tent, for the Sheltering of Passengers: Such is that which carries Passengers between *London* and *Gravesend*.

*TIMAR*, *TIMARIUM*, a Lordship or Tract of Ground, which the Grand Signior gives the *Stabis*, in Use Fruit, i. e. to enjoy during Life, for their Subsistence. See *SPAHN*.

*Meninski* calls it a Pension, Stipend, or Revenue, granted to old Soldiers who have deserv'd well, in Lands and Possessions of Castles, Towns, Villages, Fields, or in Tithes, and other Fruits and Incomes, with the Præfecture, Jurisdiction, or Lordship of the said Places.

The *Timar* is a kind of Fief granted for Life. --- The whole Ottoman Empire is divided into Sangiackes or Banneries, under which, all such as hold *Timars*, who are call'd *Timariots*, are bound to list themselves, when summon'd upon any Expedition. See *TIMARIOT*.

*Timars* may be resign'd as Benefices among us, only obtaining the Consent of the Beglerbei, or Governor of the Province.

Indeed, for *Timars* of above 20000 Aspers per Annum, call'd *Zaim*, the Grand Vizier alone grants Dispensations. See *ZAIM*.

*TIMARIOTS*, those who enjoy Lands and Benefices on the Tenure and Condition of *Timars*. See *TIMAR*.

The *Timariots* are oblig'd to serve in War, personally, with as many Men and Horses for Service, as their *Timar*, by the Estimate made thereof, contains Times 2500 Aspers, or 11 Pounds Sterling; and to maintain them constantly mounted and arm'd, after their Manner, to be ready to march at all Hours when commanded; and that on Pain of Death; nothing, not even Sickness itself, being allow'd to excuse them.

Beside this Service, they likewise pay an Acknowledgment of one Tenth of their Revenue. --- If they have any Children of Age to bear Arms, and fit for the Service, after their Decease, or in Defect hereof, if they have any Relations, that have the least Interest; the *Timar* is us'd to be continu'd to them on the same Conditions; otherwise, it is transferr'd to others.

If the Revenue thus held of the Grand Signior exceed 15000 Aspers, or 66 Pounds Sterling, they who hold it, are not call'd *Timariots*, but *Subass*, or *Zaims*; and have the Administration of Justice in the Place, under the Sangiac of the Province.



The *Timariots* have different Appointments, from 4 or 5000 Aspers; equal to about 22 Pounds Sterling; to 20000 Aspers: But unless their *Timar* exceed 8000 Aspers, they are never oblig'd to march, except when the Grand Signior goes in the Army in Person; on which Occasion none are exempted.

The Origin of the *Timariots* is referr'd to the first Sultans, who being Masters of the Fiets or Lands of the Empire, erected them into Baronies or Commanderies; to reward the Services of their bravest Soldiers; and especially to raise and keep on Foot a Number of Troops without disbursing any Money.

But it was *Soliman II.* that first establish'd the Order and Discipline among these Barons, or Knights of the Empire; and by his Order it was, that the Number of Horsemen each should maintain, was regulated.

This Body has always been not only exceedingly powerful, but great and illustrious, throughout all the Empire: But Avarice, the ordinary Fault of the Orientals, has occasion'd their Declension of late Years.

The Viceroys and Governors of Provinces manage their Matters so at Court, that *Timars*, even out of their Jurisdiction, are given to their Domesticks, or to such as will give the most Money for them.

There are two Kinds of *Timariots*; the one appointed by the Porte, the other by the Viceroy of the Country: But the Revenues of both are less than those of the *Zaims*, and their Equipage and Tents less in Proportion. See *ZAIM*.

Those who have their Patents from the Court, have from 5 or 6000 Aspers, to 19999 Aspers *per Annum*; if they have one Asper more, they become *Zaims*. Those who receive their Patents from the Viceroys, have from 3 to 6000 Aspers *per Annum*.

This Cavalry is better disciplin'd than that properly call'd the *Spahis*, tho' the *Spahis* be the neatest and briskest. These last only fight in Platoons; whereas the *Zaims* and *Timariots* are divided into Regiments, and commanded by Colonels, under the Direction of Bashaws.

The Bashaw of *Aleppo*, when in the Army, is Colonel General of this Militia.

**TIMBER**, includes all Kinds of fell'd and season'd Woods, us'd in the several Parts of Building; as Carpentry, Joinery, Turnery, &c. See *WOOD* and *BUILDING*.

The Kinds of *Timber* are numerous: We shall only mention some of the most usual; from *Evelyn's Sylva*, &c. as,

1°. *Oak*; the Uses whereof need no enumerating: To endure all Seasons and Weathers, there is no Wood like it: Hence its Use in Pales, Shingles, Posts, Rails, Boards, &c. For Water-works it is second to none; and where it lies expos'd both to Air and Water, there is none equal to it.

2°. *Elm*: This fell'd between *November* and *February*, is all Spine or Heart, and no Sap; and is of singular Use in Places where it is always wet or dry: Its Toughness likewise makes it of Use to Wheel-wrights, Mill-wrights, &c. nor must it be omitted, that its not being liable to break and fly in Chips, makes it fit for Dressers and Planks to chop on.

3°. *Beech*: Its chief Use is in Turnery, Joinery, Upholstery, and the like, as being of a clean, white, fine Grain, not apt to bend or split: Yet is it sometimes, especially of late, us'd for building *Timber*; and if it lie constantly wet, is judg'd to out-last *Oak*.

4°. *Ash*: Its Use is almost universal: 'Tis good for Building, or other Occasions where it may lie dry: It serves the Carpenter, Cooper, Turner, Plough-wright, Wheel-wright, Gardener; as also at Sea for Oars, Hand-Spikes, &c.

5°. *Fir*; commonly known by the Name of *Deal*, is of late much us'd in Building, especially within Doors, for Stairs, Floors, Wainscot, and most Works of Ornament.

6°. *Walnut-Tree*, is of universal Use; excepting for the Out-sides of Buildings: None better for the Joiners Use; it being of a more curious brown Colour than *Beech*, and less subject to Worms.

7°. *Chestnut-Tree*, next to *Oak*, is the *Timber* most sought for by Joiners and Carpenters: 'Tis very lasting.

8°. *Service-Tree*, us'd in Joinery, as being of a delicate Grain, and fit for Curiosities: It also yields Beams of considerable Bigness for Building.

9°. *Poplar*, *Ashel*, and *Aspen*, differing very little from one another, are much us'd of late instead of *Fir*: They look as well, and are tougher and harder.

10°. *Alder*; much us'd for Sewers or Pipes to convey Water. When always wet it grows hard like a Stone; but where sometimes wet, and sometimes dry, it rots immediately.

#### Felling of TIMBER.

The Season usually commences about the End of *April*; in regard the Bark then generally rises the freeliest; so that

where a Quantity of *Timber* is to be fell'd, the Statute requires it to be done then for the Advantage of Tanning. See *TANNING*.

However, the Opinions and Practices of Authors are very different, as to the best Season for felling *Timber*: *Vitruvius* recommends an Autumnal Fall; others advise *December* and *January*: *Cato* was of Opinion, that Trees should have bore their Fruit e'er fell'd; at least their Fruit should be first ripe; which falls in with the Sentiment of *Vitruvius*.

In effect, tho' *Timber* unbark'd be most obnoxious to Worms, yet we find the wild *Oak*, and many other Kinds, if fell'd too late, when the Sap begins to be proud, to be very subject to Worms; whereas, about Mid-Winter, it neither casts, rifts, nor twines.

It were happy, therefore, if a Method of Tanning without Bark could be invented, that Trees being fell'd more early, the *Timber* might be the better season'd.

The Ancients had a great Regard to the Age of the Moon in the felling their *Timber*: If their Rules avail ought, they are these: Fell *Timber* in the Wain, or four Days after new Moon: Some say, let it be the last Quarter, *Pliny* orders it to be in the very Article of the Change; which happening in the last Day of the Winter Solstice, the *Timber*, says he, will be immortal. *Columella* says, from the 20th to the 28th Day. *Cato*, four Days after the Fall. *Vegetius*, from the 15th to the 25th for Ship *Timber*; but never in the Increase, Trees then abounding with Moisture, the only Source of Putrefaction.

Some even have a Regard to the Temper and Time of the Day; the Wind to be low, neither East nor West; neither in frosty, wet, nor dewy Weather; and therefore never in the Forenoon.

Lastly, some Regard is had to the Species: *Fir* is best fell'd when it begins to spring; both as it then quits its Coat best, and as the Wood, according to *Theophrastus*, is by that Means render'd wonderfully durable in Water. *Elm*, says Mr. *Worlidge*, is to be fell'd between *November* and *January*; in which Case it will be all Heart; at least, the Sap will be very inconsiderable: This, he adds, is the only Season for felling *Ash*.

Some Authors add further, that in felling *Timber*, Care is to be taken only to cut it into the Pith, and so to let it stand till dry; by which Means the Moisture is evacuated in Drops, which would otherwise occasion Putrefaction.

#### Seasoning of TIMBER.

After felling, and sawing it, some advise it to be laid up very dry, in an airy Place, yet out of the Wind and Sun, at least free from any Extremities of either; And that it mayn't decay, but dry evenly, they order it to be daub'd over with Cows Dung.

'Tis not to stand upright, but to lie all along, one Piece over another, only kept apart by short Blocks interpo'd, to prevent a certain Mouldiness, which they are apt to contract in Sweating on one another; from which frequently arises a kind of Fungus, especially if there be any sappy Parts remaining.

Others advise Boards, Planks, &c. to be laid in some Pool, or running Stream for a few Days, to extract the Sap from them, and afterwards to dry them in the Sun or Air. By this means, 'tis said, they will be prevented from either chapping, casting, or cleaving; but against shrinking there is no Remedy. Mr. *Evelyn* particularly recommends this Method for *Fir*.

Others again, are for burying them in the Earth; others in Wheat; and others for scorching and seasoning them in Fire, especially Piles, Posts, &c. that are to stand either in Water or Earth.

Sir *Hugh Platt* informs us, that the *Venetians* burn and scorch their *Timber* in the flaming Fire, continually turning it round with an Engine, till it has got a hard, black, crusty Coal upon it.

#### Preserving of TIMBER.

When Boards, &c. are dry'd, season'd, and fix'd in their Places, Care is to be taken to defend and preserve them; to which the smearing them with Linseed Oil, Tar, or the like Oleaginous Matter, contributes much.

The *Dutch* preserve their Gates, Portcullises, Draw-Bridges, Sluices, &c. by coating them over with a Mixture of Pitch and Tar, whereon they strew small Pieces of Coal and other Shells, beaten almost to Powder, and mix'd with Sea Sands; which incrusts and arms it wonderfully against all Assaults of Wind and Weather.

*Timber* fell'd before the Sap is perfectly at rest, is very subject to the Worms; to prevent, or cure which, Mr. *Evelyn* gives us the following Secret, as most approved: Put common Sulphur in a Cucurbit, with as much *Aqua-vitæ*, as will cover it three Fingers deep; distil it to a Dryness, which is perform'd by two or three Rectifications.



Lay the Sulphur remaining at Bottom on a Marble, or in a Glass; and with the Oil it dissolves into, anoint the *Timber*. This, he adds, not only infallibly prevents or cures the Worminess; but preserves all Kinds of Woods, and even many other Things, as Ropes, Nets, and Masts from Putrefaction, either in Air, Water, Snow, &c.

For such as would go a shorter Way to work, two or three Anointings with Linseed Oil may do very well. As to Posts, &c. that are to stand in the Ground, the burning the Outfides to a Coal is a great Preservative.

As to the Chops or Clefts green *Timber* is liable to after working, a very great Eye-sore in many fine Buildings, they are clos'd by anointing, suppling, and soaking it with the Fat of powder'd Beet-Broth, twice or thrice repeated. Some Carpenters use Grease and Saw Dust mingled for the same Purpose. But the former Method is excellent, only it is not to be us'd while the *Timber* is green.

*TIMBER-Trees*, the Wood of *Timber*, e'er yet fell'd; particularly that of Oak, &c. See *TIMBER* and *TREE*.

For the *Raising, Planting, Transplanting, Pruning, &c.* of *Timber-Trees*. See *SEMINARY, PRUNING, TRANSPLANTING, &c.*

*TIMBER Measure.* *Timber* is usually measur'd and estimated by the *Load* or *Tun*; which is a solid Measure containing 40 Feet of round *Timber*, or 50 of hewn *Timber*. The Denomination of *Load, &c.* we suppose arises hence, that 40 or 50 solid Feet of such *Timber* weighs about a Tun, i. e. 20 hundred Weight, which is usually accounted a Cart Load.

1<sup>o</sup>. For the *Measuring of round Timber*; the Practice is to gird the Tree about, in the Middle of the Length, and folding the Line twice, to take one Length or Quarter of the whole, and account that for the true Side of the Square: Then, for the Length, 'tis counted from the But-end of the Tree, so far up as the Tree will hold *half a Foot Girt*, as they call it; i. e. so long as the Line, twice folded, is half a Foot.

The Dimensions thus taken, the Quantity of *Timber* is had, either by multiplying the Side of the Square into itself, and that Product by the Length; by the Method of Cross-Multiplication. See *CROSS-MULTIPLICATION*.

Or, more easily, and speedily on *Gunter's Line*, by extending the Compasses from 12, to the Side of the Square in Inches; for that Extent turn'd twice (the same Way) from the Length in Feet, will reach to the Content in Feet. See *GUNTER'S Scale*.

Or, better still, on *Coggeshall's Sliding Rule*, by setting 12 on the Girt Line D, to the Length in Feet on the Line C. Then against the Side of the Square, on the Girt Line D, taken in Inches, you have on the Line C the Content of the *Timber* in Feet. See *Coggeshall's SLIDING Rule*.

Note, 1<sup>o</sup>. This Method of measuring round *Timber*, tho' common, is yet erroneous; and the Content found hereby, 'tis demonstrated, is less than the true Content or Measure in the Ratio of 11 to 14. How to avoid this Error, and measure it justly, we have shewn under the Use of *Coggeshall's Sliding Rule*.

2<sup>o</sup>. If the Tree have any great Boughs that are *Timber*, as the Phrase is, i. e. which will hold Foot girt, they are commonly measur'd, and added to the rest: The Solidity of the whole being thus found, they divide it by 40, which brings it into Loads.

3<sup>o</sup>. In measuring round *Timber* for Sale, they usually cast away an Inch out of the Square for the Bark, if Oak; so that a Tree 10 Inches square, they only account as if 9; but for Ash, Elm, Beach, &c. an Inch is too much.

II<sup>o</sup>. For the *Measuring of hewn or square Timber*; the Practice is, to find the Middle of the Length of the Tree, and there to measure its Breadth, by clapping two Rules, or other straight Things, to the Sides of the Tree, and measuring the Distance between them: In the like Manner they measure the Breadth the other Way. If the two be found unequal, they add them together, and take half the Sum for the true Side of the Square.

The Dimensions thus taken, the Content is found either by Cross-Multiplication, *Gunter's Scale*, or the *Sliding Rule*, after the Manner already directed.

The Content divided by 50, gives the Number of Loads. Note, If the *Timber* be unequally sided, this Method of measuring it is erroneous; always giving the Content more than the Truth, and the more so, as the Difference of the Sides is greater; yet Custom has authoriz'd it.

To measure such *Timber* justly, a mean Proportional should be found between the unequal Sides; and this Mean be accounted the Side of the Square.

For the *measuring of Taper Timber, &c.* *Timber* of other Forms, as *Cubes, Prisms, Pyramids, &c.*; See the Methods under the Article *SLIDING Rule*.

*Timber of Skins*, is forty Skins. *Hec Civitas (sc. Cestrie) tunc reddebat de forma 45 Libras & tres Timbres pellium Martenarum* II. Edw. Conf.

*TIMBER, in Falconry.* To *timber*, is to nestle, or make a Nest, as Birds of Prey do. See *NEST*.

*TIMBERS of Ermine*, in Heraldry, are the Ranks or Rows of Ermine in Noblemens Coats. See *ERMINE*.

*TIMBRE, or TIMMER*, in Heraldry, the Crest of an Armoury; or whatever is placed a-top of the Escutcheon, to distinguish the Degree of Nobility, either Ecclesiastic or Secular. See *CREST*.

Such is the Papal Tiara, Cardinals Hat, the Cross, Mitre, Coronet, Mortier; and particularly the Casks or Helmets, which the Ancients call'd more especially *Timbres*, from their resembling a kind of Bell without a Clapper, which the French call *Timbres*; or because they re-founded like those *Timbres* when struck. This is the Opinion of *Loiseau*, who derives the Word from the Latin, *Tintinnabulum*. See *CASK*.

*TIME*, a Succession of Phænomena in the Universe; or a Mode of Duration, mark'd by certain Periods and Measures; chiefly by the Motion and Revolution of the Sun. See *MODE* and *DURATION*.

The Idea of *Time* in the General, Mr. *Lock* observes, we acquire by considering any Part of infinite Duration, as set out by periodical Measures: The Idea of any particular *Time* or Length of Duration, as a Day, an Hour, &c. we acquire first by observing certain Appearances at regular, and, seemingly, equidistant Periods.

Now, by being able to repeat those Lengths or Measures of *Time* as often as we will, we can imagine Duration, where nothing really endures or exists; and thus we imagine to *Morrow, next Year, &c.*

Some of the later School Philosophers define *Time* to be the Duration of a Thing, whose Existence is neither without Beginning nor End; by which, *Time* is distinguish'd from *Eternity*. See *ETERNITY*.

*Aristotle* and the Peripateticks, define it *Numerus motus secundum prius & posterius*; or a Multitude of transient Parts of Motion, succeeding each other, in a continual Flux, in the relation of Priority and Posteriority.

Hence it should follow, that *Time* is Motion itself, or at least the Duration of Motion, consider'd as having several Parts, some whereof are continually succeeding to others: But on this Principle, *Time*, or temporal Duration, would not agree to Bodies at rest, which yet no Body will deny to exist in *Time*, or to endure for a *Time*.

To evade this Inconvenience, the *Epicureans* and *Corpuseularians* made *Time* to be a sort of Flux, different from Motion, consisting of infinite Parts, continually and immediately succeeding each other, and this from Eternity to Eternity; but others directly explode this Notion, as establishing an Eternal Being, independant of God. For how should there be a Flux, before any thing existed to flow? And what should that Flux be, a Substance or an Accident?

*Time* may be distinguish'd like Place, into *Absolute* and *Relative*. See *PLACE*.

*Absolute TIME*, is *Time* consider'd in itself, and without any relation to Bodies or their Motions. This flows equally, i. e. never proceeds either faster or slower; but glides on in a constant, equable Tenor.

*Relative or Apparent TIME*, is the sensible Measure of any Duration, by means of Motion. For since that equable Flux of *Time* does not affect our Senses, nor is any way immediately cognizable thereby; there is a Necessity for calling in the Help of some nearly equable Motion to be a sensible Measure, whereby we may determine its Quantity, by the Correspondency of the Parts of this, with those of that.

Hence, as we judge those *Times* to be equal, which pass while a moving Body, proceeding with an equable Velocity, passes over equal Spaces; so we judge those *Times* to be equal, which flow while the Sun, Moon and other Luminaries perform their Revolutions, which, to our Senses, are equal.

But since the Flux of *Time* cannot be accelerated, nor retarded; whereas all Bodies move sometimes faster and slower, and there is, perhaps, no perfectly equable Motion in all Nature: It appears hence to follow, that absolute *Time* should be something truly and really distinct from Motion. For let us suppose the Heavens and Stars to have remained without Motion from the very Creation; does it hence follow, that the Course of *Time* would have been at a Stand? Or, rather, would not the Duration of that Quiescent State be equal to the very *Time* now elapsed?

Since absolute *Time* is a Quantity uniformly extended, and in its own Nature most simple; it hence comes to be represented by Mathematicians, to the Imagination, under the most simple, sensible Magnitudes, and particularly right Lines and Circles, with which it bears a near Analogy, in respect of Genesis, Similarity, &c.

'Tis not, indeed, necessary, that *Time* should be measured by Motion; any constant periodical Appearance in seemingly equidistant Spaces, as the freezing of Water, the blowing of a Plant, &c. returning at set Periods, might do as well. In effect, Mr. *Lock* mentions an *American* People, who count their



their Years by the coming and going away of Birds. See PERIODS.

Some Authors distinguish *Time* into *Astronomical* and *Civil*.

*Astronomical Time*, is that taken purely from the Motion of the heavenly Bodies, without any other regards.

*Civil Time*, is the former *Time* accommodated to Civil Uses; and form'd and distinguish'd into *Years, Months, Days, &c.* See DAY, MONTH, WEEK, YEAR, &c.

In this Sense, *Time* is the Subject of Chronology. See CHRONOLOGY.

*TIME*, in Music, is an Affection of Sound, whereby we denominate it *long* or *short*, with regard to its Continuity in the same Degree of Tune. See SOUND.

*Time* and *Tune* are the great Properties of Sound, on whose Difference, or Proportions, Music depends: Each has its several Charms; where the *Time*, or Duration of the Notes is equal, the Differences of *Tune* alone are capable to entertain us with endless Pleasure. See TUNE.

And of the Power of *Time* alone, *i. e.* of the Pleasures arising from the various Measures of long and short, swift and slow; we have an Instance in the Drum, which has no Difference of Notes, as to Tune. See DRUM, ACCENT, &c.

*Time*, in Music, is consider'd, either with respect to the absolute Duration of the Notes, *i. e.* the Duration consider'd in every Note by itself, and measured by some external Motion foreign to the Music; in respect to which, the Composition is said to be *quick*, or *slow*: or it is consider'd, with respect to the relative Quantity or Proportion of the Notes compared with one another. See NOTE.

The Signs or Characters by which the Time of Notes is represented, are shewn under the Article, CHARACTERS in Music; where the Names, Proportions, &c. are also express'd.

A Semi-breve, for Instance, is mark'd to be equal to two Minims, a Minim to two Crotchets, a Crotchet to two Quavers, so on, and still in a duplicate Ratio, *i. e.* in the Ratio of 2 : 1. Now, where the Notes respect each other, thus, *i. e.* where they are in this Ratio; the Music is said to be in *Duple*, *i. e.* *double* or *common Time*.

When the several Notes are Triple each other, or in the Ratio 3 : 1; that is, when the Semi-breve is equal to three Minims, the Minim to three Crotchets, &c. the Music is said to be *triple Time*.

Now, to render this Part as simple as possible, the Proportions already stated among the Notes, are fix'd and invariable; and to express the Proportion of 3 : 1, a Point (.) is added on the right Side any Note, which is deem'd equivalent to Half of it; and by this means a pointed Semi-breve O becomes equal to three Minims, &c. so of the rest.

From hence arise several other Ratios constituting new Kinds of triple Time; as 2 : 3 and 3 : 4, &c. but these Mr. *Malcolm* observes, are of no real Service, and are not perceived without a painful Attention. For the Proportions of the Times of Notes, to afford us Pleasure, must be such as are not difficultly perceived; on which account, the only Ratios fit for Music, besides that of Equality, are the *Double* and *Triple*.

*Common or duple TIME*, is of two Species; the First, when every Measure is equal to a Semi-breve, or its Value in any Combination of Notes of a lesser Quantity.

The Second, where every Bar is equal to a Minim, or its Value in lesser Notes. The Movements of this Kind of Measure are various; but there are Three common Distinctions; the first *slow*, signify'd at the beginning by the Mark C; the second *brisk*, signify'd by C; the third *very quick*, signify'd by D.

But what that slow, brisk and quick is, is very uncertain, and only to be learnt by Practice. The nearest Measure we know of, is to make a Quaver the Length of the Pulse of a good Watch; then, a Crotchet will be equal to two Pulses, a Minim to four, and the whole Measure or Semi-breve to eight. This may be reputed the Measure of *brisk Time*; for the *slow*, 'tis as long again, and the *quick*, only half as long.

The whole Measure, then, of common *Time*, is equal to a Semi-breve or a Minim: But these are variously sub-divided into Notes of less Quantities. See MEASURE.

Now to keep the *Time* equal, we make use of a Motion of the Hand or Foot, thus: Knowing the true *Time* of a Crotchet, we shall suppose the Measure or Bar actually sub-divided into four Crotchets for the first Species of common *Time*; then the Half Measure will be two Crotchets; therefore, the Hand or Foot being up, if we put it down with the very beginning of the first Note or Crotchet, and then raised with the Third; and then down to begin the next Measure: this is call'd *beating of Time*.

By Practice, we get a Habit of making this Motion very equal, and consequently of dividing the Measure or Bar into equal Parts, up and down; as also of taking all the Notes in the just Proportion, so as to begin and end them precisely with the beating. In the Measure of two Crotchets, we beat down the first, and the second up. Some call each Half of

the Measure in common *Time*, a *Time*; and so they call this the Mode or Measure of two *Times*, or the *Duple* Measure.

Again, some mark the Measure of two Crotchets with a 2 or  $\frac{2}{2}$ , signifying it to be equal to two Notes, whereof four make a Semi-breve; and some mark it  $\frac{4}{4}$  for Quavers.

For *Triple TIME*; see TRIPLE *Time*.

*TIME in Fencing*, There are three Kinds of *Time*; that of the Sword; that of the Foot, and that of the whole Body. All the *Times* that are perceived out of their Measure, are only to be consider'd as Appeals or Feints, to deceive and amuse the Enemy.

*TIME in Grammar*

*TIME in Mechanics*

*Periodical TIME in Astronomy*

*Equation of TIME*

See { TENSE.  
MOTION.  
PERIOD.  
EQUATION.

*TIME-Keeper*, or *TIME-Measure*. See CHRONOMETER.

TIN, a whitish Metal, softer than Silver, yet much harder than Lead. See METAL.

The Chymists, &c. hold *Tin* an imperfect Metal, generated of two different Seeds, *viz.* that of Silver and that of Lead; which renders it a kind of Compound of both; and accordingly it is frequently found in Lead and Silver Mines.

*Tin*, however, has also its proper Mines, of which our Counties of *Cornwall* and *Devonshire* are an abundant Evidence: The greatest Part of the *Tin* consumed in *Europe*, is procured from thence; and *Cambden* even supposes this Abundance of *Tin* in those two Provinces, to have given the original Denomination *Britain* to the whole Country. In the *Syrian* and *Chaldee*, *Tin* is call'd *Bragmanac*; the Primitive whereof is *Bratman* or *Britman*, whence *Britain*.

The principal Characters or Properties of *Tin*, enumerated by *Boerhaave*, are, That it is the lightest of all Metals; very little ductile or elastic; the most fusible and volatile of all Metals; scarce dissoluble by Acids, unless the weaker Sorts; and easily and intimately miscible with other Metals, the Ductility whereof becomes diminish'd by such Mixture.

The same Author concludes, that Sulphur is a prevailing Ingredient in *Tin*, and deduces several of its particular Properties therefrom. He adds, that could the Metal be perfectly purged of this heterogeneous Sulphur, 'tis probable it would be found no other than Silver.

Several Authors had before noted a great Conformity, in divers Particulars, between the two Metals; as, that both grow bitter when dissolved by Acids; that when fused together, there is scarce any separating them again, nor even by Lead. Add, that Mr. *Boyle* and others, give us several Instances of Silver being actually procured in considerable Quantity from *Tin Ore*. See SILVER.

Yet some Naturalists judge the Analogy greater between *Tin* and Lead; and contend that *Tin* is only Lead, under a less Degree of Coction; but if there be some Marks of Agreement between them, there are as many of Disagreement. The Calx of Lead, for instance, easily fuses and vitrifies, but that of *Tin* not without the last Difficulty: If *Tin* and Lead be mix'd by a vehement Fire, a vehement Colluctation ensues, and they both run into a Calx: Add, that *Tin* is easily revived; but Lead with great Labour. See LEAD.

The Method of getting, preparing, &c. the *Tin* in the *Cornish* Mines, much the best and most considerable in the World; is given us in the *Philosophical Transactions*.

The working of the *Tin* Mines is very hard and difficult; not only by reason of the great Depth which the Veins descend to, even as low as 50 Fathom; but also because the Rocks, through which Passages are frequently to be cut, are often so hard, that the Workman can't dig a Foot in a Week. Nor is the soft, shaking Earth found in the *Tin* Mines, much less inconvenient to the Workmen; both by reason of the malignant Vapours it exhales, and of the Currents of Water often met withal therein: all these Disadvantages together render it impracticable for the Workmen to hold it above four Hours together.

The mineral Stones or Glebe being dug and drawn out of the Mine, is there broke into Pieces with large Iron Mallets; then brought to a Stamping Mill, where 'tis still pounded smaller with Stampers, much like those of Paper Mills; and the Water passing through it washes away the earthy Parts, leaving the Metallic ones behind: The Lotion is repeated twice, to make the better Separation.

This done, they dry it in a Furnace on Iron Plates; and grind it very fine in a Crasing Mill; then wash it again, then dry it: In this State, the metallic Matter is call'd *Black*, or *Black Tin*.

To convert it into *Tin*, *i. e.* into *white Tin*, they carry it to a Furnace or blowing House; where, by means of a Charcoal Fire, kept up by huge Bellows work'd with the Water, it is melted; after it has pass'd all these Preparations, and is become cold, they forge it; which is the last Thing done to it in the Works.



The Dross or Scoria scumm'd off the *Tin* in Fusion, being melted down with fresh Ore, runs into Metal; and even the Caulfalty, *i. e.* the Matter wash'd and separated from the Metal in the Mill, being thrown up in Heaps, after resting Six or Seven Years, they fetch it over again, and it yields as good *Tin* as any of that of *Germany*.

The Workmen distinguish several Kinds of *Tin*; as *Moor-Tin*, which is the best Sort, a Fool whereof, weighs 80 Pounds; and *Mine-Tin*, which is the next, a Fool thereof weighing about 52 or 50 Pounds. The *Tin* got from the soft, gravelly Earth, they call *Pryan Tin*, to distinguish it from that got from the Stones, which is better by almost Half.

Two Pounds of *black Tin*, when melted, yield about one of *White*.

There is a Curiosity in these *Cornish Mines*, which the Lover of Natural History will be pleas'd to hear; and 'tis this: That in digging, at the Depth of 40 or 50 Fathoms, they frequently meet with large Trees, still entire. See SUBTERRANEANS.

*Culivrey*, in his Natural History, goes back as far as the Deluge to place them there; but without having recourse to so great Antiquity, they who believe that the Mines, when exhausted of their Ore or Mineral Matter, renew and fill again in course of Time, will soon solve the Difficulty, by supposing, that in the first Working of these Mines, these Trees had been let down to serve as Props and Pillars. See DELUGE.

But there are other People will think this Renewal of the Mines itself a Difficulty as great as the former. However, what the former Author adds, *viz.* that in some Places in the Mines, they likewise find Pick-axes, &c. with wooden Shafts, as also brass Nails, and even a Medal of *Domitian*, seems to countenance the Opinion. See MINE.

The Chymists call *Tin*, *Jupiter*: But from what Analogy between the Metal and the Planet, we leave them to explain. See JUPITER.

By the Analyses made of this Metal, they hold it compounded of Earth, Sulphur, a metallic Salt, and Mercury.

The chief chymical Preparations from *Tin*, are Salt of *Tin*, Flower of *Tin*, and Diaphoretic of *Tin*.

*Salt of TIN*, or of *Jupiter*, is *Tin* calcined; and distill'd Vinegar pour'd thereon; from which, by means of Fire, and then of a cool Place wherein 'tis put, a very white Salt is drawn. See SALT.

*Flower of TIN*, is a kind of white Cosmetic, or Paint, for the Complexion; drawn with Sal Ammoniac, by means of Sublimation. See FLOWER.

*Diaphoretic of TIN*, is fine *Tin*, and Regulus of Antimony melted, first together, and then both with Salt-petre. Whence, after various Lotions, is drawn a Powder, held to be sovereign against various Diseases.

*Ceruss of TIN*, is a white Powder, procured from *Tin*, whereof a Fucus is made, call'd *Spanish White*.

This *Ceruss* is not made with Vinegar, as that of Lead is; but with the Urine of a young Person: The Powder is also used to colour Delft Ware.

*Cake of TIN*, is what we properly call *Bezoardicum Joviale*. See BEZOARDICUM.

*Tin of Glass*, is what we properly call *Bismuth*. See BISMUTH.

For the use of *Tin* in the Composition of Pewter; see PEWTER.

#### Method of Assaying TIN.

To find whether *Tin* be soft and ductile, or harsh and brittle; there are two Kinds of Assays; the First, is by putting the *Tin* in a hot, brass Mould, and there melting it. If the Metal be harsh, it will be taken out heavier than before; otherwise it will be lighter. The Second, is by casting the melted *Tin* into a little Mould, made of the Thunder-stone. This Mould has a little Canal of moderate Length, which conducts the Matter into a Cavity, capable of containing half a Billiard Ball: If the *Tin* be harsh, it appears whitish towards the Entry of the Mould, otherwise 'tis ringed superficially with a very faint, bluish Brown.

*TINCTURE* or *Essence*, in Pharmacy and Chymistry, a Separation of the finer and more volatile Parts of a mixt Body, made by means of a proper Menstruum dissolving the same. See MENSTRUUM and DISSOLUTION.

*TINCTURE* is particularly applied to the Extraction, or Separation of a Colour from a mixt, and the Impression it makes in a Liquor, or Menstruum which takes away a Part of its purest Substance, and by that means becomes a sharer in its Colour, Virtues, &c.

Thus in Pharmacy, we have Cephalic *Tinctures*, Antiscorbutic *Tinctures*, Stomachic *Tinctures*, Anticholic *Tinctures*, Invigorating *Tinctures*, &c.

*Tinctures* are drawn from Roses, from Corals, &c. See EXTRACTION.

To make a *Tincture*, the Matter is usually bruised, put in a Matraass, and the Menstruum, which commonly is

Spirit of Wine, poured on it, to the Height of two or three Fingers above it. Then the Glass is closed, and set for Digestion, in a Sand Heat during four or five Hours, till the Spirit is well impregnated, and has received a high Colour. See DIGESTION.

Thus are *Tinctures* of odoriferous Vegetables, as Cinnamon, &c. drawn; and the same Menstruum serves for those of Metals and Minerals.

The *Tinctures* of Metals, so much talk'd of by the Chymists and Alchymists, are not proper *Tinctures*; they are only Dissolutions, wherein the Metal is divided and attenuated to a greater Degree, than it is in its natural and ordinary Dissolvent.

If the *Tincture* were irreducible; that is, if the Metal were dissolv'd to such a Degree, as that it could not be brought back again into Metal; or, which comes to the same, if the Principles which compose it were disunited, it would be what the Chymists have so long and so earnestly wish'd for, and sought with such infinite Pains, especially with regard to Gold; the *Irreducible Tincture* whereof, is what should be call'd *Aurum Potabile*. See GOLD.

But no such *Tincture* has ever yet been discover'd: The Potable Gold in use among us, being only Gold extremely divided; and the Case is the same with the *Tinctures* of other Metals. See METAL and MINERAL.

The Intention of metalline *Tinctures*, is to rarify and extend the Sulphur of the Metal as much as possible; and so render the fix'd and earthy Parts, as subtle and volatile as may be: If they are designed to be of Use in Medicine, some harmless and agreeable Intermedium is to be used. See STEEL.

The Alchymists give the Name of *Grand Mineral Tincture* to the Philosophers Stone; from an Opinion, that all which is required to that Operation, is to give the Colour or *Tincture* of Gold to fix'd Mercury. See PHILOSOPHERS Stone.

Marble, Alabaster and Bones, receive *Tinctures* from Lixiviums, and sharp Juices; and Mr. Boyle thinks there is reason to hope the same may be done of precious Stones; Rock Crystal, 'tis certain, is tinged by Subterraneous Juices; so is Saphyr itself. See STONE.

In the Memoirs of the *French Academy*, mention is made of certain Liquors, *e. gr.* Salts drawn from Wheat, which will extract *Tinctures*, even out of some precious Stones. 'Tis added, they are the more capable of producing this Effect, as they give a greater Degree of Redness to the Solution of Vitriol.

*TINCTURE* is also applied by the Heralds, to the Colours in an Escutcheon, or Coat of Arms; under which may be likewise reduced the two Metals, *Or* and *Argent*, because often represented by Yellow and White. See COLOUR and METAL.

*TINEA*, in Medicine, a Disease call'd by the *Arabic Writers Sabasati*, and in *English* usually a *scall'd Head*.

The *Tinea* is a Disease of the Leprous Kind: Authors usually reckon three Species of it, *viz.* a *dry*, *moist*, and *lupinous*; which, in reality, are only so many Degrees of the same Disease. See LEPROA.

*Turner* defines it an Ulcer arising in the Heads of Children, from a vicious, corrosive, or saline Humour, which preying on the Cutaneous Glands, in Time destroys their Texture.

In the first Stage it is cover'd with white, dry, scurfy, or squamous Matter: In the second the subjacent Flesh appears granulated: And in the third it is ulcerous.

It has its Name *Tinea*, Moth, from the Similitude of the Holes eat by that Insect on Paper, &c.

The internal Remedies proper for the *Tinea*, are Mercurials, proper Cathartics, and Dietetics, or Edulcorants; and sometimes a Salivation, especially by Uction, has been efficacious, after all other Methods have prov'd vain. The Externals are Fomentations made of Roots of *Oxyapathum*, *Biribwort*, *Horse-Radish*, *Wormwood*, &c. boil'd in Water and strain'd; to which are added, Spirits of Wine camphorated, &c. *Liniments* of Hogs Lard, white Precipitate Mercurial Ointments, with powder'd Brimstone; and sometimes Powder of *Roman* and white Vitriol, red Precipitate, &c.

*TIN-Glass*, a mineral Matter, white, smooth, and, as to Appearance, resembling *Tin*; but hard, sharp, brittle, and dispos'd into shining Scales, as it were Pieces of Glass, whence its Name. See MINERAL.

*Tin-Glass* is the same with what we otherwise call *Bismuth*. See BISMUTH.

*TINNING*, the covering or lining any thing with melted *Tin*, or with *Tin* reduc'd to a very fine Leaf.

Looking Glasses are foliated or *rim'd* with thin Tables of beaten *Tin*, the whole Bigness of the Glass; apply'd and fasten'd thereto by means of Quicksilver. See FOLIATING and LOOKING-Glass.

Kettles, Saucepans, and other Kitchen Utensils, are *rim'd* with melted *Tin*; and Locks, Bits, Spurs, &c. with Leaf *Tin* by Help of Fire.

The Plumbers use to *rim* or whiten their Sheets of Lead; in order to which they have a *tinning Furnace*, fill'd with



live Coal, at the two Sides whereof two Men are plac'd, who hold up the Sheets over the Fire to heat; and the *Tin*-leaves being laid over them, as fast as the Sheets grow hot, and the *Tin* melts, they fix it on by rubbing and stretching it with Tow and Rosin. See **PLUMBERY**.

**TINNITUS Auris**, *Tingling of the Ear*, a Disease pretty frequent in the Ear, consisting in the Perception of a Sound which is not, or, at least, which is not external.

This Perception is occasion'd by the beating of an Artery in the Ear, by an Inflammation, or Abscess of the Tympanum or Labyrinth, by the Admission of foreign Bodies, by Commotions of the Cranium, Blows on the Ear, &c. Extraordinary and irregular Motions of the Animal Spirits are also found to occasion the *Tinnitus*, as we find in Deliriums, Phrensies, Vertigos, &c. The Tingling of the Ear is one of the Diagnostic Signs of the Plague.

**TIP-staves**, or *Bastons*, are the Wardens of the Fleet's Officers, attending the King's Courts, with a painted Staff, for the taking into Custody such Persons as are committed by the Court; and to attend such Prisoners as go at large by Licence. See **BASTON**.

By this Name also are the Judges Officers call'd, who carry a Rod, or Staff, *tip'd* with Silver, and take Charge of such Prisoners, as are either committed or turn'd over at the Judge's Chambers. See **VERGE**.

**TIRE**, or, as the Seamen pronounce it, **TEER**, of *Guns*, is a Rank of Guns plac'd along upon a Ship's Side, either above upon Deck, or below; the former of which are call'd the *upper Tire*, the latter the *lower Tire*. See **SHIP**.

**TITANS**, in the ancient Mythology, the Sons of *Uranus*, or *Cælus*, and *Vesta*, i. e. of *Heaven* and *Earth*, according to *Hesiod* and *Apollodorus*; or, which comes to the same Thing, of *Æther* and *Earth*, according to *Hyginus*.

*Apollodorus* reckons five *Titans*, *Oceanus*, *Cæus*, *Hyperion*, *Crius*, and *Japetus*; all elder Brothers of *Saturn*: *Hyginus* reckons six, all, except *Hyperion*, different from the former; their Names, *Briareus*, *Gyges*, *Steropes*, *Atlas*, *Hyperion*, and *Prolus*; but he seems to include the hundred-handed Giants in the Number, which *Apollodorus*, and the Generality of Mythologists, distinguish from the *Titans*.

*Cæus*, by the same Wife, *Vesta*, had *Briareus*, *Gyges*, and *Cottus*, the hundred-handed Giants, and had chain'd them up in *Tartarus*: *Vesta*, the Earth, their Mother, resenting this Treatment, rais'd the *Titans* against their Father, her Husband: All, excepting *Oceanus*, made War upon him, and dethron'd him, setting up *Saturn* in his Place.

*Saturn*, it seems, prov'd no more favourable to them than his Father; but continu'd the Giants in their Prison.

Upon this, *Jupiter* revolted against *Saturn*; serving him as he had done *Cæus*; and rescu'd the three Giants; who afterwards prov'd of great Service to him in the War the *Titans* wag'd against him.

This War lasted ten Years; but at length the *Titans* were vanquish'd; *Jupiter* remain'd in peaceable Possession of Heaven, and the *Titans* were bury'd under huge Mountains thrown on their Heads.

*Hyginus* gives another Origin of the *Titans*: He derives 'em from *Titan*, *Saturn*'s elder Brother, by *Cæus* and *Vesta*; who, tho' presumptive Heir of Heaven, yet finding his Father and Mother more inclin'd for *Saturn* than him, surrender'd to him his Right of Succession, on Condition he should not bring up any Male Child, that the Empire of Heaven might revert to his own Issue the *Titans*.

But *Jupiter*, *Neptune*, and *Pluto* having been afterwards sav'd by the Artifice of *Ops*; *Titan* and his Sons, the *Titans*, made War on *Saturn*, vanquish'd, and imprison'd him: Thus he continu'd in the Power of his Enemies, till *Jupiter* being grown up, made War on the *Titans*, and deliver'd his Father.

*F. Pezron*, in his *Antiquity of the Celtic*, makes them the same with the *Titans* in Mythology; and their Princes the same with the Giants in Scripture: He adds, that the Word *Titan* is perfect *Celtic*, and derives it from *Ti*, Earth, and *Den* or *Ten*, Men: And hence the *Greeks* call them very properly *Γηγενες*, q. d. *Terrigenæ*, Earth-born.

The Word *Titan* is also us'd by the Poets for the Sun; in which Case it is likewise *Celtic*; only of another Etymology, being form'd from *ti*, House, or Habitation, and *tan*, Fire.

*Hesychius* observes, that the Word *Titan* is likewise us'd for *Sodomite*: He adds, further, that 'tis one of the Names of Antichrist; in which Sense it must be wrote *Teitan* in *Græck*, to contain the Numeral Letters of 666; which in the *Apocalypse* xiii. 18. is the Number of the Beast.

**TITE**, or **TIGHT**: The Seamen say a Ship is *tite*, when she is so staunch as to let in but very little Water. This is known by the Smell of the Water pump'd out; for if she let in little, it will always stink; otherwise not.

**TITHES**, or **TYTHES**, **TENTHS**, *Decimæ*, *Dixmes*, the tenth Part of all Fruits, both *Prædial*, *Personal*, and *Mix'd*; allotted to the Clergy for their Maintenance. See **FRUIT**, **CLERGY**, &c.

Of *Tithes* there are three Kinds, viz. 1°. *Personal Tithes*, which are those due or accruing from the Profits of Labour; *Art*, *Trade*, *Navigation*, and *Industry* of Man. See **PERSONAL**.

2°. *Prædial Tithes*, which arise either from the Fruits of the Ground; as *Corn*, *Hay*, *Underwood*, *Flax*, *Heap*, &c. or from the Fruits of Trees; as *Apples*, *Pears*, *Plums*, *Cherries*; or from the Fruits of Gardens. See **PRÆDIAL**.

3°. *Mixt Tithes*, which are such as arise from Beasts, and other Animals fed with the Fruits of the Earth; as *Cheese*, *Milk*, *Wool*, *Lambs*, *Calves*, *Fowls*, &c. See **MIXT**.

*Prædial Tithes*, again, are either great or small: The great *Tithes* are those of *Corn*, *Hay*, and *Wood*; small *Tithes* are those of *Flax*, &c. which are *prædial*; and those of *Wool*, *Milk*, *Cheese*, *Lambs*, *Ferrets*, &c. which are *mix'd*. See **PARSON**, **RECTOR**, **VICAR**, &c.

The Custom of giving or paying *Tithe* is very ancient: In *Gen. xiv. 2. Abraham* gives *Abimelech* the Tenth of all the Spoils he had taken from the four Kings he had defeated: In *Gen. xxviii. 22. Jacob* makes a Vow at *Bebel*, to give the Tenth of all the Riches he shall gather in that Sojourn, to God.

But these *Tithes* were free and voluntary; and, beside, differ'd in divers other Respects from what was afterwards call'd *Tithes*: What *Melchisedech* receiv'd, was only the Tenth of the Spoils, not of *Abraham*'s Possessions; and this once, not annually; and beside, not as Maintenance, which *Melchisedech* wanted not, but as Homage: Add, that this was only from one Priest to another; for *Abraham* had not only a Priest in his Loins, but was a Priest himself. — And as to *Jacob*, who was also a Priest, what he did was the Effect of a Vow, voluntarily taken, to offer the Tenth of all he should possess; not to any other Priest, but to God himself upon an Altar.

*Tithe* was first legally enjoin'd by *Moses*, *Exod. xii. Lev. xxvii. 30. Numb. xviii. 21. Dent. xiv.*

That Legislator oblig'd the *Israelites* to several Kinds of *Tithes*; as, 1°. The first *Tithe*, *מִשְׁכָּן הַמִּזְבֵּחַ*, which was a *Tithe* of all the Fruits, given to the *Levites*: This was not taken till after the Oblation call'd *תרומה* had been made. See **LEVITE**.

2°. The second *Tithe* was a tenth Part of the nine remaining after Payment of the first *Tithe*. This *Tithe* was set apart in each Family; and the Master of the Family was oblig'd to carry it to *Jerusalem*, and to spend it there; or, in Case he could not, he was to redeem it, or convert it into Money, in which Case he was to add a Fifth to it, and carry the Money to *Jerusalem*. The Rabbins say, that if he did not redeem it himself, that is, if he did not substitute his own Money in lieu of it, but sold it to another, he was only requir'd to carry the bare Price to *Jerusalem*, without any Addition.

3°. The *Tithe of the Tithe*, was the tenth Part of all the *Tithes* that had been given the *Levites* by the People; for the *Levites*, after they had got all their *Tithes* of the People, divided it into ten Parts; and in their Turn, gave a *Tithe* to the Priests.

This *Tithe* the Rabbins call *תרומת תרומה*, the Oblation of the *Tith*, or *מִשְׁכָּן הַמִּזְבֵּחַ*, *Tithe of Tithe*, or *מִשְׁכָּן הַמִּזְבֵּחַ*, the *Tithe* of sanctify'd Things. — And this the *Levites* were oblig'd to carry to the Temple; the rest was reserv'd for their own Subsistence.

4°. The *Tithe of the third Year*, was another Kind of *Tithe*, not much different from the second *Tithe*, excepting that it was less troublesome, by Reason they were not oblig'd to carry it to *Jerusalem*. Every seventh Year God appointed the Ground should lie and rest, nor should the Owners even gather the Fruits which it produc'd spontaneously: That Year, therefore, they paid no *Tithe*, but only the six preceding ones. See **SAUBARTH**.

Now, every third of these six Years, i. e. on the third, and the sixth, they rais'd, as usually, the first *Tithe*; and after that a second. — But this second they did not carry to *Jerusalem* either in Kind or in Money; but kept it by them to be spent by the *Levites*, the Strangers, the Fatherless, and the Widows of the Place, *Dent. xiv. 28, 29.*

This was also call'd the *Tithe of the Poor*, and the *third Tithe*; and these third Years it was paid on, were call'd the *Tithe-Years*.

All these *Tithes* amounted to above one Sixth of the Revenue of each Person: For if, for Instance, a Master of a Family reap'd 6000 Measures of Wheat, and 100 were first taken away for the first Fruits or Oblation, he had only 5900 left: From this 5900, taking away the first *Tithe*, there remain'd 5310, the Tenth whereof is 531; which being taken, leaves 4779 for the Proprietor; who, consequently, has given 1221, viz. 122 more than a Sixth of the whole.

Of the 590 which the *Levites* receiv'd for the first *Tithe*, 59 went to the Priest for the *Tithe of Tithe*; so that they were left 531 for their own Subsistence, and that of their Families.



These Matters are all further explain'd in the *T'halmid*, wherein there are two Books of *Tithes*, the Book of Benedictions, כְּרִכּוּת, in the Commentaries of *Bartenora*, *Maimonides*, *R. Schelomoh Jarrhi*, in *Scaliger*, *Amama*, *Selden*, *Frishmuth*, *Quenstedt*, *Varenius*, *Hortinger*, *Sigonius*, *Cunaeus*, *Goodwin*, *Leidekker*, &c.

Under the new Law, 'tis not Jesus Christ that establish'd *Tithes*, as 'twas God himself did it under the old Law by the Ministry of *Moses*: The Christian Priests, and the Ministers of the Altar of the new Covenant, liv'd, at first, wholly of the Alms and Oblations of the Devout. See OBLATIONS, &c.

In after Times the Laity gave a certain Portion of their Revenues to the Clergy, but voluntarily, and not out of any Constraint or Obligation: The first Instances we have of it, are in the IVth and Vth Centuries.

This Gift was call'd *Tithe*; not that it was really a tenth Part of their Income, or near so much; but only in Imitation of the *Tithes* of the old Law.

In the following Age, the Prelates in their Councils, in Concert with the Princes, made an express Law to the Purpose; and oblig'd the Laity to give a full tenth Part of their Revenues, their Fruits, &c. to the Ecclesiasticks.

This the Church enjoy'd without Disturbance for two or three Centuries; but in the VIIIth Century the Laity got hold of Part of these *Tithes*, either by their own Authority, or by Grants and Donations of the Princes; and appropriated them to their own Uses. See APPROPRIATION.

Some time afterwards they restor'd them, or apply'd them to the founding of Monasteries or Chapters; and the Church consented, at least tacitely, to this Restitution.

In 1179, the third Council of *Lateran*, held under *Alexander III.* commanded the Laymen to restore all the *Tithes* they yet held, to the Church.

In 1215, the fourth Council of *Lateran*, held under *Innocent III.* moderated the Matter a little; and, without saying anything of the *Tithes* which the Laity already possess'd, forbade them to appropriate or take any more for the future.

*Fra. Paolo*, in his Treatise *de materia Beneficaria*, is of Opinion, that the Custom of paying *Tithes* under the new Law, began in *France*; and affirms, that there are no Instances of it before the VIIIth and IXth Centuries: But he must be mistaken; for in the 2d Council of *Mariscon*, held in 585, 'tis said expressly, that the Christians had a long Time kept inviolate that Law of God, whereby *Tithe* of all their Fruits was enjoin'd to be given to holy Places, &c.

In effect, *Origen*, *Hom. XI.* on *Numb.* thinks, that the old Laws of *Moses*, touching the first Fruits and *Tithes*, both of Cattle, and of the Fruits of the Earth, are not abrogated by the Gospel; but ought to be observ'd on their ancient footing. The Vth Canon of the Council of *Macon*, orders *Tithe* to be paid to the Ministers of the Church according to the Law of God, and the immemorial Custom of the Christians, and that upon Penalty of Excommunication; which is the first Penalty we find impos'd on such as would not pay *Tithe*.

On these Grounds it is that many among the modern Clergy hold their *Tithes* to be *Jure Divino*.

Others, on the contrary, plead, that the Recompence to be given Church Ministers, is differently ordain'd by God, according to the Differences he has put between his two great Dispensations, the Law and the Gospel: Under the Law he gave them *Tithes*; under the Gospel, having left all Things in his Church to Charity, and Christian Freedom, he has given them only what shall be given them freely, and in Charity: That the Law of *Tithes* is in Force under the Gospel, all the Protestant Divines, except some among the *English*, deny; for tho' Hire to the Labourer be of moral and perpetual Right, yet the special Kind of Hire, the Tenth, can be of no Right or Necessity, but to the special Labour for which God ordain'd it: That special Labour was the Levitical and Ceremonial Service of the Tabernacle, *Numb. xviii. 21, 31.* which was abolish'd; the Right therefore of the special Hire must be abolish'd too.

That *Tithes* were Ceremonial, is evident from their not being given to the *Levites* till they had been first offer'd as a Heave Offering to the Lord, *v. 24, 28.*

He, then, who by the Law brings *Tithes* into the Gospel, brings in likewise a Sacrifice and an Altar; without which, *Tithes*, by the Law, were unsanctify'd and polluted, *v. 32.* And therefore were never thought of in the first Christian Times, till Ceremonial Altars and Oblations had been brought back.

The *Jews* themselves, ever since their Temple was destroy'd, tho' they have Rabbies and Teachers of the Law, yet pay no *Tithes*, as having no proper *Levites* to whom, nor Altar whereupon, to hallow them; which argues, that the *Jews* themselves never look'd on *Tithes* as Moral, but merely Ceremonial. Add, that *Tithes* were not allow'd to the Priests and *Levites* merely for their Labours in the Tabernacle; but in Consideration of this likewise, that they

were not allow'd to have any other Part or Inheritance in the Land, *v. 20, 24.* and who, by that Means, for a Tenth, lost a Twelfth.

In effect, for the first three hundred Years after Christ, no mention is made in all Ecclesiastical History of any such Thing as *Tithes*; tho', in that Time, Altars and Oblations had been recall'd, and the Church had miserably judais'd in many other Things. The Churchmen confessedly liv'd all that Time on Free-will Offerings; nor could the Defect of paying *Tithes* be owing to this, that there were wanting Civil Magistrates to injoin it, since Christians, having Lands, might have given out of them what they pleas'd, and the first Christian Emperors, who did all Things by Advice of the Bishops, supply'd what was wanting to the Clergy, not out of *Tithes*, which were never propos'd, but out of their own Imperial Revenues.

The first Authority produc'd, setting aside the Apostolical Constitutions, which few of the Patrons of *Tithes* will insist on, is a Provincial Synod at *Cullen* in 356, where *Tithes* are voted to be God's Rent: But before that Time, divers other Abuses and Complaints had got ground, as Altars, Candles at Noon, &c. And one Complaint begot another; as 'tis certain that *Tithes* suppose Altars.

'Tis all'dg'd, that *Tithes* are of early and solemn Force among us; having been paid by Statute ever since the *Saxon* King *Arhelstan*, An 928: To which it may be said, that *Rome-Scot*, or *Peter Pence*, had been likewise paid to the Pope by Statute above 200 Years longer, viz. from the Year 725. And by the Way it is to be noted, that these ancient *Tithes* among our Ancestors, kept a nearer Analogy to their Original in the Mosaic Law; for the Priests had but a third Part, the other two Thirds being appointed for the Poor, and to adorn and repair the Churches, as appears from the Canons *Ecbert* and *Elfric*.

The Custom of paying *Tithe*, or of offering a Tenth of what a Man enjoys, or of what he reaps from it, has not only been practis'd under the old and the new Law, but we also find something like it among the Heathens.

*Xenophon*, in the 5th Book of the Expedition of *Cyrus*, gives us an Inscription upon a Column near the Temple of *Diana*, whereby the People were warn'd to offer the tenth Part of their Revenues every Year to the Goddesses.

*Pausanias*, lib. 5. and *Diodorus Siculus*, *Biblioth. Hist.* lib. 11. tell us, that a Tenth of the Spoils were offer'd to the Gods. And *Festus de Verb. signif.* assures us, that the Ancients us'd to give *Tithe* of every thing to their Gods: *Decima quaque veteres Diis suis offerebant.*

Impropriated and Appropriated *TITHES*, call'd also *Infeoff'd Tithes*, are those alienated to some Temporal or Ecclesiastical Lord, united to their Fee, and possess'd as secular Goods. See IMPROPRIATION.

By the Council of *Lateran*, held under *Alexander III.* in 1179, the Alienation or Infeodation of *Tithes* is prohibited for the future: Whence all Infeodations made since that Time are generally held by the Canonists illegal.

Some attribute the Original of these impropriated *Tithes* to *Charles Martel*; and hold him damn'd for first giving the Revenues of Benefices to secular Nobles: But *Baronius* will have this a Fable, and refers their Origin to the Wars in the Holy Land; which is also the Opinion of *Pasquier*.

The Tribute, it seems, which the *Romans* impos'd on all the Provinces of their Empire, was a tenth Part of all the Fruits: Hence several Authors observe, that the *Franks* having conquer'd the *Gauls*, and finding the Imposition establish'd, they kept it on Foot, and gave those *Tithes* in Fee to their Soldiers: And this, say they, was the Origin of infeoff'd, or impropriated and appropriated *Tithes*. See FEE and BENEFICE.

But the Truth is, they are not so ancient; nor do we find any mention of them before the Reign of *Hugh Capet*; even the very Council of *Clermont*, held in 1097, as hot as it was in the Interests of the Church, does not say one Word of them; which yet would undoubtedly have made loud Complaints of such an Usurpation, had it been then known.

The *Tithes* of Grounds newly broke up and cultivated, are call'd *Decime Novales*, and always belong to the Vicar, as well as the small *Tithes*. The Novelty is confin'd to forty Years before the Demand. See VICAR.

TITHING, from the *Saxon*, *Teothinge*, Decury, a Number or Company of Ten Men, with their Families; knit together in a kind of Society, and all bound to the King, for the peaceable Behaviour of each other. See DECENNA.

Of these Companies there was one chief Person, who from his Office was call'd *Teothingman*; and at this Day in the West *Tithingman*, tho' now no more than a Constable; the old Custom of Tenmentals, or *Tithings*, being long since diffus'd. See CHIEF PLEDGE, FRANK-PLEDGE, DECENNIER, TRITHING, TENMENTAL.

TITILLATION, the Act of *Tickling*, i. e. of exciting a sort of pleasurable Idea, by a gentle Application of some soft Body,



Body, upon a nervous Part; and which usually tends to produce Laughter. See LAUGHTER.

The Word is *Latin*, *Titillatio*, signifying the same Thing.

**TITLE**, *Titulus*, an Inscription put over any thing, to make it known. See INSCRIPTION.

The Word is particularly used for that in the first Page of a Book, containing the Subject thereof, the Author's Name, &c.

What tortures abundance of Authors, is to find specious *Titles* for their Books: A *Title* should be simple, and yet clear: These are the two genuine Characters of this kind of Composition. Assuming *Titles* are a Prevention against the Author.

The *French* are much addicted to Fanfaronnades in their *Titles*; Witness that of M. *le Pay's* *Amitiez, Amours, Amourettes*; or that Improvement hereon, *Fleurs, Fleurons, Fleurettes*, &c.

**TITLE**, *Titulus*, in the Civil and Canon Law, is a Chapter or Division of a Book. See CHAPTER, &c.

A *Title* is subdivided into Paragraphs, &c. See PARAGRAPH, &c.

Each of the 50 Books of the Digest consists of a Number of *Titles*; some of more, others of less. See DIGEST.

**TITLE** is also an Appellation of Dignity, Distinction or Pre-eminence; given to Persons possess'd of the same. See DIGNITY.

The *Titles* of Order or Dignity, *Loyseau* observes, should always come immediately after the Name, and before the *Titles* of Office.

The King of *Spain* has a whole Page of *Titles*, to express the several Kingdoms, and Signiories he is Master of. The King of *England* takes the *Title* of *King of Great Britain, France and Ireland*: The King of *France*, the *Title* of *King of France and Navarre*: The King of *Sweden* entitles himself *King of the Swedes and Goths*: The King of *Denmark*, *King of Denmark and Norway*: The King of *Sardinia*, among his *Titles*, takes that of *King of Cyprus and Jerusalem*: The Duke of *Lorraine*, the *Title* of *King of Jerusalem, Sicily*, &c. See KING, &c. See also the following Article.

The Cardinals take a *Title* from that of some Church in *Rome*; as of *St. Cecilia*, *St. Sabina*, &c. and they are call'd Cardinals of the *Title* of *St. Cecilia*, &c. See CARDINAL.

The Emperor can confer the *Title* of *Prince* or *Count* of the Empire; but the Right of Suffrage in Assemblies of the Empire, depends on the Consent of the Estates. See EMPIRE.

The *Romans* gave their *Scipio's* the *Titles* of *Africanus*, *Asiaticus*, &c. and to others, they gave those of *Macedonicus*, *Numidicus*, *Creticus*, *Parthicus*, *Dacicus*, &c. in Memory of the Victories obtained over the People so call'd. The King of *Spain*, after the like manner, gives honourable *Titles* to his Cities, in Recompence for their Services, or their Fidelity.

**TITLE** is also a certain Quality ascribed in way of Respect to certain Princes, &c. See QUALITY.

The Pope has the *Title* of *Holiness*; A Cardinal Prince of the Blood, that of *Royal Highness* or *Most serene Highness*, according to his Nearness to the Throne; other Cardinal Princes, *Most Eminent Highness*; an Archbishop, *Grace*, and *Most Reverend*, a Bishop, *Right Reverend*; Abbots, Priests, Religious, &c. *Reverend*. See HOLINESS, EMINENCE, GRACE, REVERENCE, &c. See also POPE, CARDINAL, &c.

As to secular Powers, to the Emperor is given the *Title* of *Imperial Majesty*; to Kings, *Majesty*; to the King of *France*, *Most Christian Majesty*; to the King of *Spain*, *Catholic Majesty*: The *Italians* give the King of *Ireland* that of *Orthodox Majesty*; to the King of *England*, is given *Defender of the Faith*; to the *Turk*, *Grand Signior*, and *Highness*; to the Prince of *Palat*, *Royal Highness*; to the Dauphin of *France*, *Serene Highness*; to Electors, *Electoral Highness*; to the Grand Duke, *Most Serene Highness*; to the other Princes of *Italy* and *Germany*, *Highness*; to the Doge of *Venice*, *Most Serene Prince*; to the Republic or Senate of *Venice*, *Signory*; to the Grand Master of *Malta*, *Eminence*; to Nuncios and Ambassadors of Crown'd Heads, *Excellency*. See EMPEROR, KING, PRINCE, DUKE, &c. see also HIGHNESS, SERENITY, EMINENCE, EXCELLENCY, &c.

The Emperor of *China* among his *Titles*, takes that of *Viceroy*, Son of Heaven.

The Orientals are exceedingly fond of a Number of *Titles*: The simple Governor of *Scheras*, for Instance, after a pompous Enumeration of Qualities, Lordships, &c. adds the *Titles* of *Flower of Courtesy*; *Nutmeg of Consolation*, and *Refect Delight*.

**TITLE**, in Law, is a Right which a Person has to the Possession of any thing. See RIGHT.

It is also an authentic Instrument, whereby he can prove, and make appear his Right.

A Prescription of Twenty Years, with a *Title*, is good; and of Thirty without a *Title*. See PRESCRIPTION.

There must be at least a colour'd *Title*, to come into Possession of a Benefice; otherwise the Person is deem'd an Intruder. See BENEFICE.

**TITLE**, in the Canon Law, is that by Virtue whereof a Beneficiary holds a Benefice; such is a Collation of an Ordination, or a Provision in the Court of *Rome* founded on a Resignation, Permutation or other legal Cause.

The *Title* of a Benefice, or Beneficiary, is either a *True* or a *Colourable one*: A *True* or *Valid Title*, is that which gives a Right to the Benefice; such is that given by a Collator who has a Right to confer the Benefice to a Person capable thereof, the usual Solemnities being observ'd. See COL-LATOR, &c.

A colourable *Title* is an apparent one, i. e. such a one as appears Valid, and is not. Such would that be founded on the Collation of a Bishop, in Case the Benefice in Question were not in his Collation.

By the Canons, a colourable *Title*, though false, produces two very considerable Effects. 1<sup>o</sup> That after peaceable Possession of three Years, the Incumbent may defend himself by the Rule of *Triennali Possessione*, against such as would dispute the Benefice with him. 2<sup>o</sup> That in Case he be prosecuted within three Years, and obliged to surrender the Benefice; he shall not be obliged to restore the Fruits.

**TITLE** is also used in several ancient Synods and Councils, for the Church to which a Priest was ordained, and where he was constantly to reside. *Nullus in Presbyterium, nullus in Diaconum, nisi ad certum Titulum Ordinetur*. Concil. *London.* An. 1125.

There are many Reasons why a Church might be call'd *Titulus*, *Title*; the most probable, *Cowel* takes to be this, That in ancient Days, the Name of the Saint, to whom the Church was dedicated, was engraven on the Porch, as a Token that the Saint had a *Title* to that Church; whence the Church itself became afterwards call'd *Titulus*. See CLERICAL TITLE.

**TITLES**, or *Titular Churches*, M. *Fleury* observes, were formerly a particular Kind of Churches at *Rome*. See CHURCH.

In the VI. and VII. Centuries, there were four Sorts of Churches in that Metropolis, viz. *Patriarchal, Titular, Diaconal* and *Oratorial*.

The *Tituli*, *Titular*, were, as it were, Parishes, each assigned to a Cardinal Priest, with a certain District or Quarter depending thereon, and a Font for the Administration of Baptism, in Case of Necessity. See QUARTER, CARDINAL, &c.

**Clerical** or **Sacerdotal TITLE**, is a yearly Revenue or Income, of the Value of 50 Crowns, which the Candidates for Priesthood were anciently obliged to have of their own; that they might be assured of a Subsistence. See ORDINATION, &c.

By the ancient Discipline, there were no Clerks made, but in Proportion as they were wanted for the Service of the Church; which is still observed with regard to Bishops; none being consecrated, but to fill some vacant See. See BISHOP, PRIEST, &c.

But, for Priests, and other Clerks, they began to make vague Ordinations in the *East*, as early as the Vth Century: This occasion'd the Council of *Chalcedon* to declare all vague and absolute Ordinations null.

Accordingly, the Discipline was pretty well observed, till towards the End of the XIth Century; but then it began to relax, and the Number of Priests was exceedingly increased; either because the People became desirous of the Privileges of the Clericacy; or because the Bishops sought to extend their Jurisdiction.

One of the great Inconveniencies of these vague Ordinations, was Poverty, which frequently reduced the Priests to sordid Occupations, and even to a shameful Begging. To remedy this, the Council of the *Lateran*, laid it on the Bishops, to provide for the Subsistence of such as they should Ordain without *Title*, till such time as they had got a Place in the Church, that would afford them a settled Maintenance.

There was also another Expedient found out to elude the Canon of the Council of *Chalcedon*; and it was appointed, that a Priest might be ordained on the *Title* of his Patrimony: That is, it was not necessary he had any certain Place in the Church, provided he had a Patrimony sufficient for a creditable Subsistence.

The Council of *Trent* retrieved the ancient Discipline in this respect; forbidding all Ordinations, where the Candidate was not in peaceable Possession of a Benefice sufficient to subsist him; and allowing no Body to be ordained on Patrimony or Pension, unless where the Bishops declare it to be expedient for the Good of the Church: So that the Benefice is the Rule, and the Patrimony the Exception.

But this Rule is not regarded, even in some Catholic Countries, particularly *France*, where the Patrimony *Title* is the most frequent; and the *Title* is even fix'd to a very moderate Sum; about 3 l. 15 s. per Annum Sterling. Indeed at *Paris*, and in some other Dioceses 150 Livres are required.

As to Religious, the Profession they make in a Monastery serves them for a *Title*; in regard the Convent is oblig'd to maintain



maintain them. And as to Mendicants, they are ordained upon the *Title of Poverty*.

Those of the House, and Society of the *Sorbonne*, are also ordained without any *Patrimonial Title*, and on the sole *Title of Poverty*; it being supposed a Doctor of the *Sorbonne* can never want a Benefice. See *SORBONNE*.

**TITUBATION**, or **TREPIDATION**, in Astronomy, a kind of Libration or Shaking, which the ancient Astronomers attributed to the Crystallin Heaven; to account for certain Inequalities, which they observed in the Motion of the Planets. See *TREPIDATION*.

**TITULAR** or **TITULARY**, a Person invested with a Title, in Virtue whereof he holds an Office, or Benefice; whether he perform the Functions thereof or not. See *OFFICE* and *BENEFICE*.

An Officer is always reputed *Titular*, till he have resigned his Office, and the Resignation have been admitted.

In this Sense, the Term is used in Opposition to *Survivor*, and to a Person only acting by Procurator or Commission. See *PROCURATOR*, &c.

**TITULAR** is sometimes also applied adjectively, to a Person who has the Title and Right of an Office or Dignity; but without having Possession, or discharging the Function thereof.

It is sometimes also used, abusively, for a Person who assumes and pretends a Title to a Thing, without either a Right thereto, or a Possession thereof.

**TMESIS**, in Grammar, a Figure whereby a compound Word is separated into two Parts; and one or more Words interpos'd between them.

Thus, when *Terence* says, *Quæ meo cumque animo lubitum est facere*, there is a *Tmesis*; the Word *quæcumque* being divided by the Interposition of *meo*.

*Lucretius* abounds in *Tmeses*; as *Sæpe salutatum tactu præterque meantum*: Or, *Diffidio potis est sejungi seque gregari*; and, *Dispectis disque gregatis*.

The Word is form'd from the Greek, τέμνω, I cut.

**TOBACCO** or **TABACCO**, a Medicinal Herb, not known in *Europe* till after the Discovery of *America* by the *Spaniards*; and first Imported about the Year 1560.

The *Americans* of the Continent call'd it *Petun*; those of the Islands, *Toli*. The *Spaniards*, who gave it the Name *Tabaco*, took it from *Tabaco*, a Province of *Yucatan*, where they first found it, and first learnt its Use.

The *French*, at its first Introduction among them, gave it various Names; as *Nicoriana*, or the *Embassador's Herb*, from *John Nicot*, then Embassador of *Francis II.* in *Portugal*, who brought some of it with him from *Lisbon*, and presented it to a Grand Prior of the House of *Lorraine*, and to Queen *Catherine de Medicis*; whence it was also called *Queen's Herb* and *Grand Prior's Herb*.

They also gave it other Names; which are now all reduced to the original Name *Tobaco*, or *Tobacco*, for *Tabaco*, given it by *Hernandez de Toledo*; who first sent it into *Spain* and *Portugal*.

#### Culture and Preparation of TOBACCO.

*Tobacco* is cultivated in several Parts of *America*; particularly in the *Caribee Islands*, *Virginia*, &c. where they are forced to mix Ashes with the Soil, to prevent its rising too thick.

After sowing, they water it every Day, and on very hot Days cover it up to prevent its being scorched by the Sun.

When 'tis risen to a convenient Pitch, they transplant it, much as we do Lettice, only at a Distance of three Feet, and in a Soil prepared with great Care: When re-planted, 'tis kept continually Weeding; the Stem frequently cleans'd; and the lowest Leaves and the Suckers it puts forth, taken off, that Ten or Fifteen of the finest Leaves may have all the Nourishment.

The Leaves thus reserved being ripe, which is known by their breaking when bent; the Stalks are cut, and left to dry two or three Hours in the Sun; after which they are tied two by two, and hung up on Ropes under a Shed to be dried by the Air.

When the Leaves are sufficiently dried, they are pull'd from off the Stalks, and made up in little Bundles; which being steep'd in Sea-water, or for want thereof, in common Water, are twisted, in manner of Ropes; and the Twists form'd into Rolls, by winding them with a kind of Mill around a Stick.

In this Condition 'tis imported into *Europe*, where 'tis cut by the *Tobacconists*, for Smoaking; form'd into Snuff, and the like.

Besides the *Tobacco* of the *West-Indies*, there are considerable Quantities cultivated in the *Levant*, the Coasts of *Greece* and the *Archipelago*, the Island of *Malta* and *Italy*. The Marks of good Twist *Tobacco*, are a fine shining Cut, an agreeable Smell; and that it have been well kept.

*Tobacco* is either taken by way of Snuff, as a Sternutatory; or as a Masticatory by chewing it in the Mouth; or by

smoaking it in a Pipe. See *PIPE*, *STERNUTATORY*, *MASTICATORY*, *FUMIGATION*, &c.

'Tis sometimes also taken in little longish Pellets put up the Nose, where 'tis found to produce very good Effects, to attract a deal of Water or Pituata, unload the Head, resolve Catarrhs, and make a free Respiration; for the subtile Parts of the *Tobacco* in Inspiration, are carried into the Trachea and Lungs, where they loosen the peccant Humours adhering thereto, and promote Expectoration.

Some have left this *Tobacco* in their Noses all Night; but this is found to occasion Vomiting the morrow Morning. Another thing charged on this Way of Application, is, that it weakens the Sight.

*Tobacco* is held a first rate Narcotic. See *OPIATE*.

When taken in great Quantities in the way of Snuff, 'tis found to prejudice the Smelling, greatly diminishes the Appetite, and in time gives rise to a Phthisis.

That taken in the way of Smoak, dries and damages the Brain. *Borrbens* in a Letter to *Bartholine*, mentions a Person, who through Excess of Smoaking had dried his Brain to that degree, that after his Death, there was nothing found in his Head but a little black Lump, consisting of mere Membranes.

Some People use the Infusion of *Tobacco* as an Emetic; but 'tis a very dangerous and unjustifiable Practice, and often produces violent Vomitings, Sickness and Stupidity.

*Bates* and *Fuller* give some Receipts, in which *Tobacco* is an Ingredient with mighty Encomiums in Asthmatic Cases.

A strong Decoction of *Tobacco*, with proper Carminatives and Catharticks, given Clyster-wise, sometimes proves of good Effect in what is usually called the *Stone Colic*; and also in the *Iliac Passion*. See *COLIC* and *ILIAC Passion*.

A Drop or two of the Chymical Oil of *Tobacco* being put on the Tongue of a Cat produces violent Convulsions, and Death itself in the Space of a Minute; yet the same Oil used in Lint, and applied to the Teeth, has been a Service in the Tooth-ach; though it must be to those that have been used to the taking of *Tobacco*, otherwise great Sickness, Reachings, Vomiting, &c. happens; and even in no Case is the internal Use of it warranted by ordinary Practice.

A strong Decoction of the Stalks, with sharp pointed Dock and Allom, is said to be of good Service, used externally, in Curaneous Distempers, especially the Itch. Some boil them for that Purpose in Urine. The same is said to be infallible in curing the Mange in Dogs.

Sig. *Paulli*, Physician of the King of *Denmark*, in an express Treatise on *Tobacco*, observes that the Merchants frequently lay it in Bog-houses, to the End that becoming Impregnated with the volatile Salt of the Excrements, it may be rendred the brisker, more fetid and stronger.

*Amurath IV.* Emperor of the *Turks*; the Grand Duke of *Muscovy*, and the Emperor of *Persia* have prohibited the Use of *Tobacco* in their States. Our King *James I.* wrote a Treatise against *Tobacco*, entitled a *Counter-blast to Tobacco*. By a Bull of Pope *Urban VIII.* such are excommunicated, as take *Tobacco* in Churches.

**TOD of Wooll**; is mention'd in 12 Car. c. 23. as a Weight, containing 28 Pounds and two Stone. See *WOOLL*.

It is derived from the *French*, *Toilet*, a Wrapper, within which, by Usage, two Stone of Wooll is folded.

**TOES**, by Anatomists, call'd *Digitus pedis*, are the extreme Divisions of the Feet, answering to the Fingers of the Hand. See *FOOT*.

The *Toes* of each Foot consist of 14 Bones; the great *Toe* having two, and the rest three each. They are like the Bones of the Fingers, but shorter. See *FINGER*.

In the *Toes* are found, twelve *Ossa Sesamoidæa* as in the Fingers. See *SESAMOIDEA*.

The Gout chiefly seizes the great *Toe*. See *GOUT*.

**TOFT**, **TOFTUM** or **TORRA**, in our Law-books, a Parcel of Land, or a Place where a Messuage hath stood, but is decay'd or casually burnt, and not re-edified.

**TOGA**, in Antiquity, a large woollen Gown or Mantle, without Sleeves, used among the *Romans*, both by Men and Women.

In process of Time, none wore the *Toga* but lewd Women, whence that of *Horace*.

*In Matrona, peccasse togata.*

The *Toga* was of divers Colours, and admitted of various Ornaments: There was that called *Toga Domestica*, wore within Doors; *Toga Forensis*, wore Abroad; *Toga Militaris*, used by Soldiers, tucked up after the *Gabinian* Fashion; and *Toga Picta*, or *Triumphalis*, wherein the Victorious triumphed, embroidered with Palms: that without any Ornaments, was called *Toga Pura*.

The *Toga* was sometimes wore open, call'd *Aperta*: Sometimes girt or tucked up, call'd *Præcineta*; And this Cincture or Girding again, according to *Sigonius*, was of three Kinds: *Javier*, or the loose Kind, where the Tail trailed on the Ground; *Asstrictior*, the close Kind, wherein it did not reach



low as the Feet ; and *Gabinia*, where one of the Skirts or Lappets was girt round the Body.

*Sigonius* distinguishes the *Toga* or Roman Gowns into *Pura*, *Candida*, *Pulla*, *Picta*, *Prætexta*, *Trabea* and *Palludamentum*. See *PRÆTEXTA*, *PALLUDAMENTUM*, &c.

The *Toga Pura* was also call'd *Virilis*. See *VIRILE*.

The *Jus Toga*, or Right of the *Toga*, was the same with the Right of a Roman Citizen, i. e. the Right of wearing a Roman Habit, of taking, as they explain'd it, Fire and Water through the Roman Empire. See *CITIZEN*.

*TOILES*, are Snares or Nets set by Hunters for catching of wild Beasts.

*TOILET*, a fine Cloth, of Linnen, Silk, or Tapistry, spread over the Table in a Bed-chamber or Dressing Room, to undress and dress upon.

The Dressing-Box, wherein are kept the Paints, Pomatums, Effences, Patches, &c. the Pin-cushion, Powder-Box, Brushes, &c. are esteem'd Parts of the Equipage of the Ladies *Toilet*.

That of the Men, consists of a Comb-Case, Brushes, &c. To make a Visit to one at his *Toilet*, is to come to entertain him while he is dressing or undressing.

Satin, Velvet, Brocade, Point de France, &c. are now ordinarily us'd for *Toilets* ; anciently they were much plainer ; whence the Name, which is form'd from the French, *Toilette*, a Diminutive of *Toile*, any thin Stuff.

*TOISE*, a French Measure, containing six of their Feet, or a Fathom. See *FATHOM* ; see also *MEASURE*.

*TOISON d'Or* ; is a Term in Heraldry for a Golden Fleece, which is sometimes borne in a Coat of Arms. See *GOLDEN FLEECE*.

*TOL-BOOTH*, or *TOLL-BOOTH*, a Place in a City where Goods are weigh'd, to ascertain the Duties or Imports thereon.

*TOLERATION*, in Religion, a Term which has made a great Figure in the Disputes among the Protestants ; who have been exceedingly divided about the Measures of *Toleration*, or the Degrees to which Hereticks and Schismatics are, or are not, to be suffer'd.

All who have reason'd consistently from the Principles of the Reformation, have been for *Toleration* ; as well perceiving they had no Right to oblige any body to follow their particular Sentiments : but the Difficulty was, the setting Bounds to this *Toleration*.

M. *Basnage*, and some others, distinguish *Civil Toleration* from *Ecclesiastical*. The latter allows of different, and even opposite Sentiments in the Church ; and the first permits them in Civil Society.

By *Civil Toleration*, is meant Impunity and Safety in the State, for every Sect which does not maintain any Doctrine inconsistent with the Peace and Welfare of the State. This *Civil* or *Political Toleration*, implies a Right of enjoying the Benefit of the Laws, and of all the Privileges of the Society, without any Regard to Difference of Religion.

*Ecclesiastical Toleration*, is an Allowance of certain Opinions, which not being Fundamentals, don't hinder those who profess them from being esteem'd Members of the Church. But as to the Quality and Number of these Fundamental Points, they never could, nor, in all Probability, ever will, be agreed upon.

*TOL*, in Law, a Term signifying to defeat, or take away ; from the Latin, *tollere*. Thus to *tol* the Entry, is to take away the Right of Entry.

*TOLL*, a Saxon Term, tho' deriv'd originally from the Latin, *tollere*, to take away : It has two Acceptations,

1<sup>o</sup>. It denotes a Liberty to buy and sell within the Bounds of a Manor.

2<sup>o</sup>. A Tribute or Custom paid for Passage, &c. See *PASSAGE*, *TRIBUTE*, &c.

Some interpret it to be a Liberty, as well to take, as to be free from, *Toll* ; for they who are enfeoff'd with *Toll*, are Custom-free.

Of this Freedom from *Toll*, the City of *Coventry* boasts an ancient Charter, granted them by *Leofrick* or *Luriche*, Earl of the *Mercians*, in *Edward* the Confessor's Time, who, at the Importunity of *Godeva* his Lady, granted this Freedom to the City.

Some Records make mention of *Toll-thoro*, or *Thur-toll*, which is Money paid for Passage in or through some Highways, or over Ferries, Bridges, &c.

*Toll Trovers*, for passing over a private Man's Ground.

*Toll Turn*, paid at the Return of Beasts from Fairs and Markets, tho' they were not sold.

By the ancient Law, the Buyers of Corn and Cattel in Fairs or Markets ought to pay *Toll* to the Lord of the Market, in Testimony of the Contract there lawfully made in open Market ; because privy Contracts were held unlawful. See *IN-TOLL* and *UT-TOLL*.

*TOMAN*, or *TOUMAN*, a kind of Money of Account, us'd among the *Persians* in the keeping of their Books, and to facilitate the Reduction of Money in the Payment of considerable Sums.

The *Toman* consists of fifty *Abassi's*, or a hundred *Mamoudi's*, or two hundred *Chayez*, or ten thousand *Dinars* ; which amount to about three Pounds seven Shillings Six-pence Sterling. See *MONEY*.

*D'Herbelot* derives the Word from the Language of the Moguls, where it signifies the Number ten thousand.

*Eben Arabschah* says, that the Word *Touman*, when us'd to express a Weight, or Money, contains ten thousand Silver *Arab Drachmas*, call'd *Metkhal* ; which are a Third lighter than the *Attic*. See *DRACHMA*.

The *Moguls*, &c. frequently use *Toman* for ten thousand Men ; and say, e. gr. that the City *Samarcant* contains seven *Tomans* of People fit to bear Arms ; and that of *Andikh* nine *Tomans*.

*TOMB*, includes both the *Sepulchre*, wherein the Defunct is interr'd ; and the *Moniment* erected to preserve his Memory. See *SEPULCHRE* and *MONUMENT*.

Among the *Romans*, none but the Emperors, Vestals, and Persons signaliz'd by great Actions, were allow'd to have *Tombs* in the Cities ; the rest were all in the Country, near the High-Roads ; whence those common Words, *Siste*, &c. *Viator* ; which are still retain'd in the Inscriptions of our Monuments in Churches, &c. tho' the Occasion be no more. See *VIATOR*.

At *Anchiales* is still seen the *Tomb* of *Sardanapalus*, with this Inscription in Verse : *Sardanapalus built Anchiales and Tarlus in one Day : Go, Passenger, eat, drink, and be merry ; the rest is nothing*.

The Word *Tomb* is form'd from the Greek, *τύμβος*, *Tumulus*, Sepulchre ; or, according to *Mencege*, from the Latin, *Tombe*, which signified the same Thing.

The *Romans* had a kind of empty *Tomb*, call'd *Cenotaphium*, or an *honorary Tomb*, wherein no Deceas'd was laid. It was us'd to be built in Favour of Persons perishing at Sea, in remote Countries, &c. where no Sepulture could be had.

The Occasion hereof was a superstitious Notion, that the Souls of those whose Bodies were not bury'd, wander'd an hundred Years by the Banks of the Rivers of Hell, e'er they were admitted to pass over.

The *Κενόταφιον* being made, the same Ceremonies were practis'd as at real Funerals. The *Cenotaphia* were inscrib'd with the Words *ob Honorem*, or *Memorie Sacrum* ; whereas other *Tombs*, wherein the Ashes were really deposited, were inscrib'd *D. M. S. q. d.* Sacred to the Manes.

When the Words *Tacito Omne* were added, it declar'd the Ashes inclos'd therein infamous for some Crime.

*TOME*, is a bound Book ; or Writing that makes a just Volume.

All the Works of such an Author are compiled, and reduc'd into one, or more *Tomes*. There are *Tomes* in Folio, in Quarto, in Octavo, Duodecimo, &c.

The Councils printed in the Loure are in XXXVII *Tomes*. *Salmeron* has wrote the Life of Christ in XII *Tomes*. See *VOLUME*.

*TOMENTUM*, properly signifies Flocks, or Locks of Wooll ; but by Botanists is us'd for that soft downy Matter which grows on the Tops of some Plants, hence denominated *Tomentosa* ; as, *Gramen Tomentosum*, *Carduus Tomentosus*, &c.

M. *Winflow* observes a kind of *Tomentum* in the secretory Vessels of the Glands ; and from this, accounts for the secretion of the various Fluids from the Blood. See *GLAND* and *SECRETION*.

*TONDIN*, in Architecture. See *TONE*.

*TONE*, or *TUNE*, in Music, a Property of Sound, whereby it comes under the Relation of *Grave* and *Acute* ; or the Degree of Elevation any Sound has, from the Degree of Swiftness of the Vibrations of the Parts of the sounding Body. See *SOUND*.

For the Cause, Measure, Degree, Difference, &c. of *Tones*. See *TUNE*.

The Variety of *Tones* in human Voices, arises partly from the Dimensions of the Wind-pipe, which, like a Flute, the longer and narrower it is, the sharper is the *Tone* it gives ; but principally from the Head of the Larynx, or Knot of the Throat, call'd *Pomum Adami* ; the *Tone* of the Voice being more or less grave, as the Rima, or Cleft thereof is more or less open. See *VOICE*.

*TONE*, is particularly us'd in Music for a certain Degree or Interval of *Tune*, whereby a Sound may be either rais'd or lower'd from one Extreme of a Concord to the other ; so as still to produce true Melody. See *INTERVAL* and *CONCORD*.

Musicians, beside the *Concords*, or harmonical Intervals, admit three lesser Kinds of Intervals, which are the *Disjunctures* and component Parts of the greater ; and are call'd *Degrees* : The Nature, Origin, Use, &c. whereof, see under the Article *DEGREE*.

Of these Degrees, two are call'd *Tones*, and a third *Semitone* ; their Ratio's in Numbers are 8 : 9, and 9 : 10.



greater Tone; 9: 10, call'd a lesser Tone; and 15: 16, a Semitone.

The Tones arise out of the simple Concords, and are equal to their Differences: Thus the greater Tone 8: 9 is the Difference of a Fifth and a Fourth: The lesser Tone 9: 10 the Difference of a lesser Third and Fourth, or of a Fifth and sixth greater: And the Semitone 15: 16, the Difference of a greater Third and Fourth. See SEMITONE.

Of these Tones and Semitones every Concord is compounded, and consequently is resolvable into a certain Number thereof: Thus, the lesser Third consists of one greater Tone and one Semitone; the greater Third of one greater Tone and one lesser Tone. See THIRD.

The Fourth of one greater Tone, one lesser Tone, and one Semitone. See FOURTH.

The Fifth of two greater Tones, one lesser Tone, and one Semitone. See FIFTH, &c.

For the Use of these Tones, &c. in the Construction of the Scale of Music; See SCALE.

TONGUE, in Anatomy } See { LINGUA.  
TONGUE-grafting } GRAFTING.  
TONGUE-Tied } RANULA.

TONIC, in Medicine, is apply'd to a certain Motion of the Muscles, wherein the Fibres being extended, continue their Extension in such Manner, as that the Part seems immoveable, tho' in reality, it be in Motion. See MUSCLE.

Such is the Case in a Man standing, in Birds planing or swimming thro' the Air, &c.

Galen says, that the Muscles act even when at rest; for after having made any Contraction to fix themselves in a certain State or Disposition; the preserving of that Contraction is what we call the Tonic Motion.

The Word is form'd from the Greek *τείνειν*, to stretch.

TON } See { TUN.  
TONNAGE } TUNNAGE.

TONSILS, in Anatomy, call'd also *Amygdalæ*, or *Almonds*, are two round Glands, situate near the Root of the Tongue, on each Side the Uvula, under the common Membrane of the Fauces, with which they are cover'd.

Each of them has a large oval Sinus, which opens into the Fauces, and in it are a great Number of lesser ones, which discharge themselves thro' the great Sinus, of a mucous and slippery Matter into the Fauces, Larynx, and Oesophagus, for the moistening and lubricating these Parts. When the Muscle Oesophagæus acteth, it compresseth the Tonsille. See AMYGDALÆ.

TONSURE, the Art or Act of cutting the Hair, and shaving the Head. See HAIR.

The Tonsure was anciently a Mark of Infamy in France; inasmuch, that when they would render any Prince incapable of succeeding to the Crown, they cut off his Hair, and shav'd him.

The Word is form'd from the Latin, *tondere*, to shave.

TONSURE, in the Romish Church, is us'd for the Entrance or Admission into Holy Orders. See ORDERS.

In Propriety, Tonsure is the first Ceremony us'd to devote a Person to God and the Church, by presenting him to the Bishop, who gives him the first Degree of the Clericacy, by cutting off Part of his Hair, with certain Prayers and Benedictions.

Some hold the Tonsure a particular Order; others, as *Joyseau*, only the Mark and Form of Ecclesiastical Orders in general.

The Tonsure suffices to make a Clerk: The rest is only to qualify him for the holding a Benefice.

A Person is capable of the Tonsure at seven Years of Age; hence a Benefice of simple Tonsure, is such a one as may be enjoy'd by a Child of seven Years old. The Tonsure is the Basis of all the other Orders.

TONSURE is particularly us'd for the Corona, which Priests, &c. wear, as the Mark of their Order, and of the Rank they hold in the Church. See CROWN.

The Barbers have the Measures and Dimensions of the different Kinds of Tonsures, or Clerical Crowns; to be practis'd according to the different Degrees and Orders.

A Clerk's Tonsure, a Sub-deacon's Tonsure, a Deacon's Tonsure, a Priest's Tonsure, are each successively bigger than other.

Various are the Ceremonies and Customs the Beard has been liable to: *Kingson* assures us, that a considerable Branch of the Religion of the Tartars consists in the Management of their Beards; and that they wag'd a long and bloody War with the Persians, and declar'd them Infidels, tho', in other Respects, of the same Faith with themselves, merely because they would not cut their Whiskers after the Mode or Rite of the Tartars.

*Athenens*, from *Chrysippus*, observes, that the Greeks always wore their Beards till the Time of *Alexander*; and that the first who cut it at Athens, ever after bore the Addition of *xepov*, shaven, in Medals. *Plutarch* adds, that *Alexander* commanded the Macedonians to be shaven, lest the

Length of their Beards should give a Handle to their Enemies: However this be, we find *Philip*, his Father, as well as *Amyntas* and *Archelaus*, his Predecessors, represented on Medals without Beards.

*Pliny* observes, that the Romans did not begin to shave till the Year of Rome 454, when *P. Ticinius* brought over a Stock of Barbers from Sicily: He adds, that *Scipio Africanus* was the first who introduc'd the Mode of shaving every Day.

Among that People, it became the Custom to have Visits made in Form at the cutting of the Beard for the first Time: The first fourteen Roman Emperors shav'd, till the Time of the Emperor *Adrian*, who retain'd the Mode of wearing the Beard. *Plutarch* tells us, he did it to hide the Scars in his Face.

Formerly there was a great deal of Ceremony us'd in blessing the Beard; and there are still extant the Prayers us'd in the Solemnity of consecrating it to God, when an Ecclesiastic was shaven.

Persons of Quality had their Children shav'd the first time by others of the same, or greater Quality, who, by this Means, became Godfather, or adoptive Father of the Children. See ADOPTION.

Anciently, indeed, a Person became Godfather of the Child by barely touching his Beard: Thus Historians relate, that one of the Articles of the Treaty between *Alaric* and *Clovis* was, that *Alaric* should touch the Beard of *Clovis* to become his Godfather. See GOD-father.

As to Ecclesiastics, the Discipline has been very different on the Article of Beards: Sometimes they have been enjoin'd to wear them, from a Notion of too much Softness and Effeminacy in shaving, and that a long Beard was more suitable to the Ecclesiastical Gravity; and sometimes, again, they were forbid it, as imagining Pride to lurk in a venerable Beard.

The Greek and Romish Churches have been long together by the Ears about their Beards: Since the Time of their Separation, the Romanists seem to have given more into the Practice of shaving, by Way of Opposition to the Greeks; and have even made some express Constitutions *de radendis Barbis*.

The Greeks, on the contrary, espouse very zealously the Cause of long Beards, and are extremely scandaliz'd at the beardless Images of Saints in the Roman Churches.

By the Statutes of some Monasteries it appears, that the Lay Monks were to let their Beards grow, and the Priests among them to shave; and that the Beards of all that were receiv'd into the Monasteries, were bless'd with a great deal of Ceremony.

To let the Beard grow is a Token of Mourning in some Countries, and to shave it in others. *Le Comte* observes, that the Chinese affect long Beards extravagantly; but Nature has balk'd them, and only given them very little ones, which, however, they cultivate with infinite Care: The Europeans are strangely envy'd by them on this Account, and esteem'd the greatest Men in the World.

The Russians wore their Beards till within a very few Years, when the late Czar enjoin'd them all to shave; but notwithstanding his Injunction, he was oblig'd to keep on Foot a Number of Officers to cut off by Violence the Beards of such as would not otherwise part with them.

*Chrysostom* observes, that the Kings of Persia had their Beards wove or matted together with Gold Thread; and some of the first Kings of France had their Beards knotted and button'd with Gold. See PERRUKE.

TOOLS, are simple Instruments, us'd in the more obvious Operations; and particularly in the making of other more complex Instruments. See INSTRUMENTS.

Tools are divided into Edg'd Tools, Spring-Tools, Pointed-Tools, &c. See STEEL and TEMPERING.

TOOTH. See TERTH.

TOOTH-ACH. See ODONTALGY.

The Tooth-ach usually proceeds from a Caries which rots the Bone, and eats it hollow. For the Causes, &c. of this Caries; See TERTH.

Sometimes it proceeds from a Defluxion of a sharp Matter upon the Gums. For the Tooth-ach, a Paste made of soft Bread, and the Seed of Stramonium, laid on the Tooth affected, abates the Pain. If the Tooth be hollow, and the Pain great, a Composition of equal Quantities of Opium, Myrrh, and Camphire, made up into a Paste with Brandy or Spirits of Wine, and about a Grain or two put into the hollow Place, puts a Stop to the Caries, and blunts the acute Pain of the Nerve; by which it often gives immediate Relief.

Chymical Oils, as those of Origanum, Cloves, Tobacco, &c. are also of Service, destroying, by their hot Caustic Nature, the Texture of the sensible Vessels of the Tooth affected; tho', from too liberal an Use of them, frequently proceeds a Defluxion of Humours, and Impostumation.



A Blister apply'd behind one or both Ears, seldom fails to cure the *Tooth-ach*, especially when attended with a hot De-fluxion of Humours, and swelling of the Gums, Face, &c. Liniments of Ointment of Marshmallows, Alder, &c. mix'd with Rum, Brandy, or Spirit of Wine, camphorated, are good, us'd outwardly, to abate the Swelling.

Mr. *Chefelden* mentions one cur'd of the *Tooth-ach* by applying a small cauterizing Iron to the Anthelix of the Ear, after he had undergone Bleeding, Purging, Salivation, Setons, &c. to no Purpose: The Case was very remarkable; for when he was seiz'd with it, a Convulsion of that whole Side of his Face follow'd, whenever the Pain became acute, or he attempted to speak.

*Scookins*, in his Treatise of Butter, maintains, that there is no better Means of keeping the Teeth fair and sound, than by rubbing them over with Butter: An Opiate not much less distasteful than that of the *Spaniards*, who wash their Teeth every Morning with Urine.

To prevent and cure the Scurvy in the Gums, 'tis recommended to wash the Mouth every Morning with Salt and Water; and to hinder the Teeth from spoiling or growing carious, some use only Powder of Hartshorn to rub the Teeth with, and then wash the Mouth with cold Water: 'Tis alledg'd, this is preferable to other Dentifrices, on this account, because their hard Particles are apt to abrade that fine smooth Polish, with which the Surface of the Teeth is cover'd, and which is their Preservative from the ill Effects of Air, Aliment, Liquors, &c. which occasion Ailments of the Teeth when wore off.

Dentifrices are usually compounded of Powders of Hartshorn, red Coral, Bone of the Cuttle Fish, burnt Alum, Myrrh, Dragon's Blood, &c. Some commend Powder of Bricks, as sufficient to answer all the Intentions of a good Dentifrice. See DENTIFRICE.

TOPARCHY, a little State, or Signory, consisting only of a few Cities, or Towns; or a petty Country govern'd and possess'd by a *Toparch*, or Lord.

*Judea* was anciently divided into ten *Toparchies*. See *Pliny*, lib. 5. c. 14. and *Joseph*, lib. 3. de *Bel. Jud.* lib. 5. c. 2, &c.

The last mention'd Author calls the Cities of *Azotes*, *Tamnia*, and *Phasaelides*, which *Herod* left by Testament to his Sister *Saloma*, a *Toparchy*.

*Procopius* only gives the Quality of *Toparchy* to the Kingdom of *Edeffa*; to *Abgarus*, the *Toparch* or Lord whereof there is a Tradition, that Jesus Christ sent his Picture, with a Letter.

The Word is form'd from the Greek, *τόπος*, Place, and *ἀρχή*, Command, Government.

TOPAZ, a precious Stone; the third in Order after the Diamond. See PRECIOUS Stone.

The *Topaz* is transparent; its Colour, a beautiful Yellow, or Gold Colour: It is very hard, and takes a fine Polish.

It is the true Chrysolite of the Ancients; and is found in several Parts of the *Indies*, in *Ethiopia*, *Arabia*, *Peru*, and *Bohemia*. See CHRYSOLITE.

The Oriental *Topazes* are most esteem'd; their Colour borders on the Orange: Those of *Peru* are softer, but their Colour much the same: The Yellow of those of *Bohemia* is a little blackish; they are the softest of all, and their Polish the coarsest. Those of *Madagascar* were in much Esteem, but are now held good for little.

*Tavernier* mentions a *Topaz*, in the Possession of the Great Mogul, weighing 157 Carats, which cost 20300 Lib. Sterling: And *Boetius de Boor*, in his Treatise of precious Stones, affirms to have seen in the Cabinet of the Emperor *Rudolphus*, whose Physician he was, a *Topaz* above three Foot long, and six Inches broad. Probably it might be some Marble a little transparent, of a *Topaz* Colour.

The *Topaz* is easily counterfeited; and there are fictitious ones, which, to the Eye, don't come behind the natural ones.

If we might believe the Ancients, the *Topaz* has very notable Virtues; but those are now in Discredit: And yet the *Topaz* is of some Use in Medicine, reduc'd into an impalpable Powder, and apply'd in Water. See GEM.

Some say, it takes its Name *Topaz* from an Island in the Red Sea, of the same Name, where it was first found by *Juba*, King of *Mauritania*; but it was known to the *Hebrews* before, as appears from the 118th Psalm.

TOPHUS, in Medicine, a stony Concretion in any Part of an Animal Body; as in the Bladder, Kidneys, &c. (See STONE) or in the Joints, &c. See GOUT.

Dr. *Rumey*, in a Treatise, just publish'd, of the *Urinary Passages*, takes the Stone to arise from the Attraction of volatile and saline Particles; of which Particles the Stone, when view'd with a Microscope, seems to be made up: He thinks the Fault of these Aggregates of saline Particles, ought generally to be suppos'd to begin in, or proceed from, the Papillæ of the Kidneys, and not from the Sediment of Urine in the Bladder.

The Reason why Wine-drinkers are more subject to the

Stone, and other Concretions, than Malt or Water-drinkers, he supposes to be the volatile and saline, or earthy Particles contain'd in the Wine in greater Quantities than in the Ale, &c. A Calculus, he observes, reduc'd to a Caput Mortuum, will, upon the Affusion of warm Water, dissolve, and entirely thereof so closely unite or attract, as that, by repeated Affusions, they cannot be brought again to dissolve. See LITHONTRIPTIC.

TOPIC, in Rhetoric, a probable Argument, drawn from the several Circumstances and Places of a Fact, &c. See PLACE, &c.

TOPICKS, or TOPICA, expresses the Art or Manner of inventing and managing all Kinds of probable Argumentations: *Aristotle* has wrote *Topicks*; and *Cicero* a kind of Comment on them, to his Friend *Trebatius*, who, it seems, did not understand them.

But the Criticks observe, that the *Topica* of *Cicero* agree so little with those eight Books of *Topicks* which pass under the Name of *Aristotle*, that it follows necessarily, either that *Cicero* was much mistaken; which is not very probable; or that the Books of *Topicks* attributed to *Aristotle*, are not wholly his.

*Cicero* defines *Topica*, or *Topice*, to be the Art of finding Arguments, *Disciplina Inveniendærum Argumentorum*. See ARGUMENT.

Rhetoric is divided into two Parts, Judgment, call'd also *Dialectice*; and Invention, call'd *Topice*. See RHETORIC.

The Word is form'd from the Greek, *τόπος*, of *τοπος*, Place; its Subject being the Places, which *Aristotle* calls the *Seats*, of Arguments.

TOPIC, in Medicine. *Topicks*, or *Topical Remedies*, are what we otherwise call *External Remedies*, i. e. such as are apply'd externally to some diseas'd and painful Part. See MEDICINE.

Such are Plaisters, Cataplasms, Blisters, Unguents, Salves, Collyriums, &c.

The Gout is never cur'd by *Topicks*: They may assuage the Pain for a Time; but for a Cure, the Source of the Evil must be attack'd with Internals. See GOUT.

The Word is form'd from *τόπος*, Place.

TOPOGRAPHY, a Description or Draught of some particular Place, or some small Tract of Land; as that of a Manor or Tenement, Field, Garden, House, Cattle, or the like; such as Surveyors set out in their Plots, or make Draughts of, for the Information and Satisfaction of the Proprietors. See MAP, SURVEYING, &c.

*Topography* differs from *Chorography*, as a Particular from more General; *Chorography* being a Description of a Country, a Diocese, Province, or the like. See CHOROGRAPHY.

The Word is form'd from *τόπος* and *γραφω*, I describe.

TORCH, *Teda*, a Sort of Luminary; being, properly, a kind of Staff, or Stick, of Fir, or other resinous and combustible Matter, as Pine, Linden, &c. more, or less thick, and from seven to twelve Foot long; encompass'd at one End with six Wax Candles, which being lighted, yield a kind of gloomy Brightness. See LUMINARY.

*Torches* are us'd in some Church Ceremonies, particularly at the Processions of the Holy Sacrament in the *Roman* Church, and at the Interments of the poorer People.

Formerly they were us'd at the Funerals of those of the first Rank; but Tapers and Flambeaux are now us'd in their stead. See FLAMBEAU and TAPER.

TORCULAR, or TORCULARIS, among Chirurgeons, a Contrivance for stopping of Bleedings in Amputations. See AMPUTATION.

TORCULAR *Herophili*, in Anatomy, a Name given to a Part in the Duplicatures of the Dura Mater; form'd of a Concourse of a Branch of the longitudinal Sinus, with the lateral Sinus's. See DURA Mater and SINUS.

It has its Name *Torcular* from its resembling a Press or Screw: *Herophili* is added from the Discoverer's Name.

TORÉ, TORUS, in Architecture, a thick round Mould us'd in the Bases of Columns. See BASE.

'Tis the Bigness that distinguishes the *Torus* from the *Astragal*. See ASTRAGAL.

The Bases of *Tuscan* and *Doric* Columns have but one *Tore*, which is between the Plinth and the Lintel. In the *Attic* Base there are two; the upper, which is the *impost*, and an under.

The Word is form'd from the Greek, *τόρος*, a Cable, with which it bears some Resemblance; or from the *Latin*, *Torus*, a Bed, as being suppos'd to represent the Edge of such Mould as swell out with the Weight of the incumbent Column.

It is also call'd a *thick Baton*; sometimes its Contour resembles half a Heart; in which Case it is call'd *Baton*. See BAGUETTE.

TORÉUMATOGRAPHY, a Greek Term, signifies the Knowledge, or, rather, the Description of ancient Sculptures, and Basso-Relievo's.



The *Italian* Engravers have given a great deal of Light to this Science. See SCULPTURE and ENGRAVING.

**TORÉUTICE**, *τορευτική*, that Part of Sculpture, call'd *Turning*. See SCULPTURE and TURNING.

The Word is form'd of the *Greek*, *τορεῖν*, or *τορῶ*, Lath, of *τορεῖω*, terebro, perforo.

**TORIES**, or **TORYS**, a Party or Faction in *England*, opposite to the Whigs. See FACTION.

These two celebrated Parties, which have so long divided our Country, will make a considerable Article in the *English* History, nothing inferior, in many Respects, to that of the *Guelphs* and *Gibellins*. --- The Division has gone so deep, that it is presum'd, no *Englishman*, who has any Concern or Principles at all, but inclines more to one Side than the other: For which Reason, we shall borrow our Account of them from the Mouths of Foreigners, who may be suppos'd more impartial; and particularly from M. *de Cise*, a *French* Officer, some time in the Service of *England*, who has wrote the History of *Whigism* and *Torism*, printed at *Leipsic*, Anno 1717; and M. *Rapin*, whose *Dissertation sur les Whigs & les Torys*, printed at the *Hague* the same Year, is well known.

During the unhappy War which brought King *Charles I.* to the Scaffold; the Adherents of that King were first call'd *Cavaliers*, and those of the Parliament *Round-Heads*; which two Names were afterwards chang'd into those of *Tories* and *Whigs*, on the following Occasion.

A kind of Robbers, or Banditti in *Ireland*, who kept on the Mountains, or in the Islands form'd by the vast Bogs of that Country, being call'd *Tories*; a Name they still bear indifferently with that of *Rapparees*; the King's Enemies accusing him of favouring the Rebellion in *Ireland*, which broke out about that Time, gave his Partisans the Name of *Tories*: And, on the other Hand, the *Tories*, to be even with their Enemies, who were closely leagu'd with the *Scots*, gave them the Name of *Whigs*, which is that given in *Scotland* to another Kind of Banditti, or rather of Fanatics, in that Country. See WHIG.

The *Cavaliers*, or *Tories*, had then principally in View the Political Interests of the King, the Crown, and the Church of *England*: And the *Round-Heads*, or *Whigs*, propos'd chiefly the maintaining the Rights and Interests of the People, and of Protestantism. Nor have the two Factions yet lost their first Ideas; tho' their first Names, *Cavalier* and *Round-Head*, be now entirely diffus'd.

This is the most popular Account; and yet 'tis certain the Names *Whig* and *Tory* were but little known till about the Middle of the Reign of King *Charles II.* M. *de Cise* relates, that it was in the Year 1678, that the whole Nation was first observ'd to be divided into *Whigs* and *Tories*; and that on Occasion of the famous Deposition of *Titus Oates*, who accus'd the Catholics of having conspir'd against the King and the State. --- The Appellation *Whig* was given to such as believ'd the Plot real; and *Tory* to those who believ'd it fictitious.

We should here, confine ourselves to the *Tories*; and for what regards the *Whigs*, refer to that Article; but since by comparing and confronting the two Parties together, both the one and the other will appear in the stronger Light, it would be imprudent to separate them; so that we rather chuse to say the less under the Word *Whigs*, and refer thence hither.

The Factions we are speaking of, may be consider'd either with Regard to the State, or to Religion.

The *State Tories* are either violent or moderate: The first would have the Sovereign to be absolute in *England*, as in other Countries, and his Will to be a Law. This Party, which is not very numerous, has yet been considerable; 1°. On Account of its Leaders, which have been Lords of the first Rank, and generally Ministers and Favourites. 2°. In that being thus in the Ministry, it engag'd the Church *Tories* to maintain stiffly the Doctrine of Passive Obedience. 3°. Because the King has usually thought it his Interest to support them.

The moderate *Tories* would not suffer the King to lose any of his Prerogatives; but neither would they sacrifice those of the People. These, says M. *Rapin*, are true *Englishmen*; have frequently sav'd the State, and will save it again whenever it shall be in Danger, either from the violent *Tories*, or from the Republican *Whigs*.

The *State Whigs*, again, are either Republican or Moderate: The first, according to our Author, are the Remains of the Party of the long Parliament, who took in Hand to change the Monarchy into a Commonwealth: These make so slender a Figure, that they only serve to strengthen the Party of the other *Whigs*. The *Tories* would persuade the World, that all the *Whigs* are of this Kind; as the *Whigs* would make us believe that all the *Tories* are violent.

The moderate *State Whigs* are much in the same Sentiments as the moderate *Tories*; and desire the Government may be maintain'd on its ancient Foundation: All the Difference is,

that the moderate *Tories* lean a little more to the Side of the King, and the moderate *Whigs* to that of the Parliament and People. These last are in a perpetual Motion to prevent the Rights of the People from being broke in upon; and have sometimes taken Precautions at the Expence of the Crown.

Before we consider our two Parties with Regard to Religion, it must be observ'd, that the Reformation, as carry'd on to a greater or less Length, divided the *English* into Episcopalians, and Presbyterians or Puritans: The first contended, that the Episcopal Jurisdiction should be continu'd on the same Footing, and the Church in the same Form, as before the Reformation: The latter maintain'd, that all Ministers or Priests had equal Authority; and that the Church ought to be govern'd by Presbyteries, or Consistories of Priests and Lay Elders. See PRESBYTERIAN, &c.

After long Disputes, the more moderate of each Party relax'd a little of their Stiffness, and thus form'd two Branches of moderate *Whigs*, and moderate *Tories*, with regard to Religion; but there was a much greater Number kept to their Principles with inconceivable Firmness: And these constituted two Branches of rigid Episcopalians and Presbyterians, subsisting to this Day; and now compriz'd under the general Names of *Whigs* and *Tories*; in regard the first join the *Tories*, and the latter the *Whigs*.

From what has been observ'd, we may conclude, that as the Names *Tory* and *Whig* have a Regard to two different Objects, they are equivocal, and of consequence ought never to be apply'd without expressing in which Sense 'tis done; --- For the same Person may be, in the different Respects, both *Whig* and *Tory*.

A Presbyterian, for Instance, who wishes the Ruin of the Church of *England*, is certainly, on that Score, of the Party of *Whigs*; yet if he oppose the Attempts some of his Party would make against the Royal Authority, it can't be deny'd but he is effectually a *Tory*.

After the like Manner, the Episcopalians ought to be esteem'd as *Tories* with Regard to the Church; and yet how many of them are *Whigs* with Regard to the Government?

For the rest, the general Motives that have form'd and kept up the two Parties, appear, in the main, to be no other than the private Motives of particular Persons: Self-Interest is the Primum Mobile of their Actions: Ever since the Rise of these Factions, each has struggled earnestly to get the Advantage over the other; inasmuch as from such Superiority accrue Places, and Honours, and Promotions, &c. which the prevailing Party distributes among its own Members, exclusive of the contrary Party.

As to the Characters commonly attributed to the *Whigs* and *Tories*; The *Tories*, says M. *Rapin*, appear fierce and haughty: They treat the *Whigs* with the last Contempt, and even somewhat hardly, when they have the Advantage over them: They are very hot and vehement, and proceed with a Rapidity which yet is not always the Effect of Heat and Transport, but has its Foundation sometimes in good Policy: They are very subject to change their Principles, as their Party prevails, or gives Way.

If the rigid Presbyterians prevail'd in the *Whig* Party, it would not be less hot and zealous than that of the *Tories*; but 'tis said they have not the Direction thereof; which gives Room to affirm, that those at the Head of the *Whig* Party are much more moderate than the Chiefs of the *Tories*: Add, that they usually conduct themselves on fix'd Principles, proceed to their End gradually, and without Violence; and their Slowness is not less founded on good Politicks, than the Hastiness of the *Tories*. --- Thus much, says our Author, may be said to the Advantage of the moderate *Whigs*, that, in the general, they maintain a good Cause, viz. the Constitution of the Government as by Law establish'd. See WHIGS.

**TORMINA**, in Medicine, a Term used to express Pains in the General; but particularly a Species of Pain call'd *Tormina Ventris*, or *Alvi*; in *English*, the Gripes. See GRIPES.

Young Children are very often troubled with Gripes; 'tis upon this account, that Nurses, in order to prevent or remedy them, usually mix with their Spoon-meats, a little Brandy or some Carminative Seeds, as Carus Seeds, &c. See CHILDREN.

Some Children breed their Teeth with violent Gripes, which is apt to turn to Convulsions of the Bowels. See DENTITION.

In Adults, the dry Gripes is usually cured by the Exhibition of warm Catharticks, such are Tincture of Hiera Picra, Elixir Salutis, Tincture of Rhubarb, &c. with the Assistance of Opiats.

**TORNADO**, a sudden and violent Storm at Sea. See WHIRLWIND.

**TORNESOL**, *TOURNEFOL*, or *TURNEDOL*, call'd also *Heliotrope*, and *Sun-flower*, and by the Botanists *Ricinioides*, [ L 11 ] a Plant



a Plant whose Flower is said to follow the Motion of the Sun ; and to turn still towards it.

Some say, 'tis hence it takes its Name, and account for the Effect, by supposing that its heavy Stalk, warm'd and soften'd with the Heat which is strongest on that Side toward the Sun, inclines naturally towards the same ; but others take the Opinion to have had its Rise from the Name, which was given it by Reason of its Appearance in the Time of the greatest Heats, when the Sun is in the Tropic.

Some have imagined the Sun-flower of use in Medicine ; but its Reputation that Way is now out of Doors. Its principal Use is in Dying : In order to which, its Juice is inspissated and prepared with Calx and Urine, into blue Cakes ; used also for Starch, instead of Smalt. See BLUE, SMALT, &c.

Its Juice likewise furnishes the Colour wherewith the People of *Languedoc* and some other Parts of *France*, where it grows, prepare what they call the *Tournesol en Drapeaux*, or *Turnsol in Rags*. The Process whereof, is owing to M. *Nissolle* of the Royal Academy of Sciences, and is as follows ;

The Summits or Tops of the Plant being gather'd in the beginning of *August*, are ground in Mills, not unlike our Oil Mills : Then, being put up in Bags, the Juice is express'd with Presses.

This Juice having been exposed to the Sun about an Hour, they dip Linnen Rags therein, and hang them out in the Air till they be well dried again. When, moistening them for some time, over the Vapour of about ten Pound Weight of quick Lime slaked in a sufficient Quantity of Urine, they lay them out again to the Sun to dry ; to be again dipp'd in the Juice of the *Ricinioides*.

When they are dried for the last Time, they are in their Perfection ; and are thus sent into most Parts of *Europe*, where they are used to tinge Wines and other Liquors, and give them an agreeable Colour.

The *Dutch* prepare a kind of *Turnsol* in Paste or Cakes, or Stones ; pretended to be the Juice of that Plant Inspissated : But there is Reason to think it a Cheat ; and to be the Juice of some other Plant prepared after the like Manner ; the *Tournsol* being no Plant of their Growth.

TORPEDO, in Natural History, a Sea-fish, fam'd both among the Ancient and Modern Naturalists, for a remarkable Numbness wherewith it strikes the Arm of such as touch it.

Various are the Accounts given us of this singular Fish ; some Authors raising the Effects it produces, to a kind of Miracle ; and others treating them as little better than Chimeras ; some solving the Appearance this Way, and some that. But M. *Reaumur*, of the *French* Academy of Sciences, has at length cleared the Point, and set the Matter in a satisfactory Light.

The *Torpedo* is a flat Fish, much of the Figure of the Thorn-back ; sufficiently described in most Treatises of Fishes, and commonly enough found about the Coasts of *Provence*, *Gascony*, &c. where the People eat it without any Danger. See its Figure represented in Tab. Natural History, Fig. 9.

#### *Phenomenon of the TORPEDO.*

Upon touching it with the Finger, it frequently, though not always happens, that the Person feels an unusual painful Numbness, which suddenly seizes the Arm up to the Elbow, and sometimes to the very Shoulder and Head.

The Pain is of a very particular Species, and not to be described by any Words ; yet Messieurs *Lorenzini*, *Borelli*, *Redi* and *Reaumur*, who all felt it severally, observe it to bear some Resemblance to that painful Sensation felt in the Arm, upon striking the Elbow violently against a hard Body : though M. *Reaumur* assures us, this gives but a very faint Idea thereof.

Its chief Force, is at the Instant it begins ; it lasts but a few Moments and then vanishes entirely. If a Man don't actually touch the *Torpedo*, how near soever he holds his Hand ; he feels nothing : If he touch it with a Stick, he feels a faint Effect : If he touch it through the Interposition of any pretty thin Body, the Numbness is felt very considerably ; if the Hand be press'd very strong against it, the Numbness is the less, but still strong enough to oblige a Man speedily to let go.

#### *Theory of the Phenomenon of the TORPEDO.*

There are different Ways of accounting for this Effect : The first is, that of the Ancients, who contented themselves with ascribing a *Torporific* Virtue or Faculty to this Animal.

The second, will have this Effect produced by the *Torpedo*, to depend on an Infinity of Corpuscles issuing continually out of the Fish, but more copiously under some Circumstances than others : This is the Opinion most generally received ; being adopted by *Redi*, *Perrault* and *Lorenzini*.

They explain themselves thus ; As the Fire emits a Quantity of Corpuscles, proper to heat us ; so the *Torpedo* emits

a Quantity of Corpuscles fit to numb the Part they insinuate themselves into ; whether it be by their entering in too great abundance, or by their falling into Tracks or Passages very disproportionate to their Figures.

The third Account, is that of *Borelli*, who looks on this Emission of Corpuscles, as imaginary : He says, That upon touching the Fish, it puts itself into a violent Tremor or Agitation, and that this occasions a painful Numbness in the Hand that touches it. But M. *Reaumur* assures us, That notwithstanding all the Attention he could view this Fish withal, when ready to strike the Numbness, he could perceive nothing of this Trembling or Agitation.

The last and justest Hypothesis, is that of M. *Reaumur* : The *Torpedo*, like other flat Fishes, he observes, is not absolutely flat, but its Back, or rather all the upper Part of its Body, a little Convex : When it did not, or would not, produce any Numbness in such as touch'd it, its Back, he found, always preserved its natural Convexity ; but whenever it would dispose itself to resent a Touch or Thrust, it gradually diminished the Convexity of the back Parts of the Body ; sometimes only rendring them flat, and sometimes even concave.

The very next Moment, the Numbness always began to seize the Arm ; the Fingers that touch'd, were obliged to give back, and all the flat and concave Part of the Body was again seen Convex : And whereas, it only became flat insensibly, it return'd to its Convexity so swiftly, that one could not perceive any Passage from the one to the other State.

The Motion of a Ball out of a Musket, is not, perhaps, much quicker than that of the Fish reassuming its former Situation ; at least the one is not more perceivable than the other.

'Tis from this sudden Stroke, that the Numbness of the Arm arises ; and accordingly, the Person when he begins to feel it, imagines that his Fingers have been violently struck. 'Tis the mere Velocity of the Stroke that produces the Numbness.

The Wonder is, how so soft a Substance, as that of the Fish, should give so rude a Blow : Indeed a single Stroke of a soft Body could never have done it ; But in this Case, there is an Infinity of such Strokes given in an Instant. To explain the admirable Mechanism hereof, we must give a View of the Parts whereon it depends.

The Mechanism, then, consists in two very singular Muscles, *b, b*, described by several Authors, who have given the Anatomy of the *Torpedo*. *Redi*, and after him *Lorenzini*, call them the *Musculi Falcati* ; their Form is that of Crescents, and they together, take up almost Half the Back of the Fish ; the one on the right Side, and the other on the Left. Their Origin is a little above the Mouth ; and they are separated from each other by the Bronchia, into the last of which they have their Insertion.

What is singular in them, is their Fibres ; if, with the Authors above-mentioned, we may give that Name to a Sort of lesser Muscles as big as Gooses Quills ; of an Assemblage whereof the two great Muscles are form'd. These lesser Muscles are hollow Cylinders, their Length nearly equal to the Thickness of the Fish, and ranged a-side of each other ; all perpendicular to the upper and lower Surfaces of the Fish, accounting these Surfaces as two nearly parallel Planes. The exterior Surface of each of these Cylinders, consists of whitish Fibres, whose Direction is the same with that of the Cylinder : But these Fibres only form a kind of Tube, whose Parietes are not above the Thickness of a Leaf of Paper. The Cavity of the Tube is full of a soft Matter, of the Colour and Consistence of Pap, divided into Twenty five or Thirty different little Masses, by so many Partitions, parallel to the Base of the Cylinder ; which Partitions are form'd of transverse Fibres : So that the whole Cylinder is in some measure composed of Twenty five or Thirty smaller Cylinders placed over each other, and each full of a medullary Substance.

We need only now, remember, that when the *Torpedo* is ready to strike its Numbness, it slowly flattens the exterior Surface of its upper Part ; and the whole Mechanism, whereon its Force depends, will be apparent. By that gradual Contraction, it bends, as it were, all its Springs ; renders all its Cylinders shorter, and at the same time augments their Bases, or, which amounts to the same, stretches all the little Inclosures which divide the soft Matter. In all Probability, 'tis the large Fibres, or little Muscles, in that Moment, lose their cylindrical Form, to fill the Vacuities between them.

The Contraction being made to a certain Degree, all the Springs unbend ; the longitudinal Fibres are lengthen'd, the transverse ones, or those which form the Inclosures, are shorten'd ; each Inclosure, drawn by the longitudinal Fibres, is lengthen'd, drives the soft Matter it contains, upwards ; in which it is apparently assisted by the undulatory Motion, which is in the transverse Fibres when contracting.

If then, a Finger touch the *Torpedo*, it instantly receives a Stroke, or rather several successive Strokes, from each of the Cylinders whereon it is applied. As the soft Matter is distributed into divers Inclosures, 'tis more than probable, all the Strokes are not given precisely at the same Moment. Should there be no Inclosures to separate the Matter, it would



would give Strokes, in some measure, successive : For all Parts of soft Bodies don't strike at once ; the Impression of the last does not take till after the first have done acting. But these several Inclosures serve to augment the Number of the Springs, and, of Consequence, the Velocity and Force of the Action.

These quick re-iterated Strokes given by a softish Matter, shake the Nerves, suspend, or change the Course of the Animal Spirits, or some Fluid equivalent : Or, if you had rather, these Strokes produce an Undulatory Motion in the Fibres of the Nerves, which clashes or disagrees with that they should have, in order to move the Arm. And hence the Inability we are under of using the same, and the painful Sensation which accompanies it.

Hence it is, that the *Torpedo* does not convey its Numbness to any Degree, except when touch'd on these great Muscles ; so that the Fish is very safely taken by the Tail, which is the Part by which the Fishermen catch it.

The Authors who have accounted for the Effect of the *Torpedo* from *Torporific* Effluvia, have been obliged to have recourse to the same two Muscles ; but then they only make them Reservoirs of the Corpuscles, whereby the Numbness is effected.

*Lorenzini*, who has observed the Contraction as well as *Reaumur*, pretends that all its Use, is to express those Corpuscles from out of the hollow Fibres of these Muscles wherein they are imprison'd ; but this Emanation of Corpuscles admitted by most Authors, is disproved by *M. Reaumur*, from the following Considerations ;

1<sup>o</sup> In that no Numbness is convey'd, if the Hand be at the smallest Distance from the *Torpedo* : Now, to use their own Comparison, if the *Torpedo* numbs as the Fire warms, the Hands would be affected at a Distance from the one as well as the other.

2<sup>o</sup> In that the Numbness is not felt till the Contraction of the Muscles is over ; whereas were the Cause in *Torporific* Particles express'd by the Contraction, the Effect would be felt in the time of the Contraction.

3<sup>o</sup> In that were the Numbness the Effect of *Torporific* Particles, it would be convey'd by degrees, as the Hand warms by degrees.

Lastly, in that the *Torpedo* conveys its Numbness to the Hand thro' a hard, solid Body, but does not do it thro' the Air.

Were the only Use the *Torpedo* makes of its Faculty, the saving itself from the Fishermen, as some have supposed, it would signify but little ; for 'tis very rare that it escapes their Hands. *Pliny*, *Aristotle* and most Naturalists, therefore agree, that it likewise serves it for the catching of other Fishes : All we know for certain, is, that it lives on other Fishes, and that 'tis generally found on Banks of Sand, &c. probably, to serve it as a Foundation or Support for the exerting its Faculty.

*M. Reaumur* had no Fishes alive to examin what the *Torpedo* would do to them ; but an Animal, next a-kin to a Fish, he tried it on, viz. a Drake, which being shut up a while in Water with the Fish, was taken out dead ; doubtless from its too frequent Contacts on the *Torpedo*.

In the History of *Abyssinica*, we are assured, that if the *Torpedo* kill living Fishes, it seems to bring dead ones to life again ; dead Fishes being seen to stir, if put in the same Vessel with it : But this is much less credible than what is told us in the same History, that the *Abyssinians* used *Torpedo's* for the Cure of Fevers, by tying down the Patient to a Table, and applying the Fish successively upon all his Members, which puts the Patient to cruel Torment, but effectually rids him of his Disease.

*Bellon* assures us, that our own *Torpedo's* applied to the Soles of the Feet, have prov'd successful against Fevers.

*M. du Hamel* in his Memoirs of the Academy of Sciences, Anno 1677, mentions a kind of *Torpedo's*, which he compares to Conger Eels : *M. Richer*, from whom he has the Account, affirms on his Knowledge, that they numb the Arm strongly, when touch'd with a Staff, and that their Effects even go to the giving Vertigo's.

TORQUE, in Heraldry, a round Roll of Cloth twisted and stuff'd ; such is the Bandage frequently seen in Armories about the Heads of Moors, Savages, &c.

It is always of the two principal Colours of the Coat. The *Torque* is the least Honourable of all the Enrichments wore on the Helmet by way of Crest. See CREST.

TORREFACTION, in Pharmacy, a kind of *Affatium*, wherein a Drug is laid to dry on a Metal Plate plac'd over Coals, till it become friable to the Fingers.

*Torrefaction* is particularly us'd, when, after reducing some Drug, as Rhubarb, or Myrabolans into Powder, 'tis laid on an Iron or Silver Plate, and that plac'd over a moderate Fire till the Powder begin to grow darkish ; which is a Mark those Remedies have lost their purgative Virtue, and have acquir'd a more astringent one. See RHUBARB, &c.

The Word is form'd from the Latin *torrefacere*, to roast. Formerly, they us'd to *torrefy* Opium, to get out some malignant Parts fancy'd to be in it, e'er they durst use it in

Medicine ; but the Effect was, that its volatile Spirits and Sulphur, wherein its greatest Virtue consists, were hereby evaporated. See OPIUM.

TORRENT, TORRENS, in Geography, an impetuous Stream of Water, falling suddenly from Mountains wherein there have been great Rains, or an extraordinary Thaw of Snow ; and making great Ravages in the Plains. See RIVER, &c.

TORRICELLIAN, a Term very frequent among physical Writers, used in the Phrases, *Torricellian Tube*, and *Torricellian Experiment*, on account of the Inventor, *Torricelli*, a Disciple of the great *Galileo*.

The *TORRICELLIAN Tube* is a Glass Tube, as A B, about three Foot long, and  $3\frac{1}{4}$  of an Inch in Diameter, represented (Tab. Pneumatics, Fig. 6.) whose upper Orifice A is hermetically sealed.

The *TORRICELLIAN Experiment*, is perform'd by filling the *Torricellian Tube* A B with Mercury ; then stopping the Orifice B, with the Finger ; inverting the Tube ; and plunging that Orifice in a Vessel of stagnant Mercury C. See MERCURY.

This done, the Finger is removed, and the Tube sustain'd perpendicular to the Surface of the Mercury in the Vessel.

The Consequence is, that Part of the Mercury falls out of the Tube into the Vessel, and there only remains enough in the Tube to fill from 28 to 31 Inches of its Capacity, above the Surface of the stagnant Mercury in the Vessel.

Those 28, &c. Inches of Mercury, are sustain'd in the Tube by the Pressure of the Atmosphere on the Surface of the stagnant Mercury ; and according as that Atmosphere is more or less heavy, or as the Winds blowing upwards or downwards, heave up, or depress the Air, and so increase or diminish its Weight and Spring ; more or less Mercury is sustain'd from 28 Inches to 31. See AIR and ATMOSPHERE.

The *Torricellian Experiment* makes what we now commonly call the *Barometer* or *Weather-Glass*. See BAROMETER.

TORRID Zone, the Tract of Earth lying under the Line, and extending on each Side to the Two Tropicks ; or to 23 Degrees and a Half of Latitude. See TROPIC, ZONE, &c.

The Ancients believed the *Torrid Zone* uninhabitable ; but from the late Navigations, we learn, that the excessive Heat of the Day there, is tempered by the Coldness of the Night.

TORT, in Law, an *Injustice* or *Injury* ; as *de son Tort meme*, in his own Wrong, &c. Hence also *Tort-feasor*, &c. The Word is pure French.

TORTEAUX, in Heraldry. See TOURTEAUX.

TORTOISE-SHELL, the Spoils or Cover of a Testaceous Animal, call'd a *Tortoise* ; used in Inlaying, and on various other Occasions, as for Snuff-boxes, Combs, &c. See TESTACEOUS and SHELL.

There are two Kinds of *Tortoises*, viz. the *Land* and *Sea Tortoise*.

The *Sea Tortoise*, again, is of four Kinds, viz. the *Fresh Tortoise*, the *Caret*, the *Cabobanna*, and the *Lager-hu* : But 'tis the *Caret* alone furnishes that beautiful *Shell*, so much admired in *Europe*.

The Shell of the *Caret* is thick, and consists of two Parts, the upper, which covers the Back, and the lower, the Belly : The Two are joined together at the Sides by strong Ligaments which yet allow of a little Motion.

In the Fore-part is an Aperture for the Head and fore Legs : and behind, for the hind Legs and Tail.

'Tis the under Shell alone is used : To separate it from the upper, they make a little Fire beneath it, and as soon as ever 'tis warm, the under Shell becomes easily separable from the upper, with the Point of a Knife, and is taken off in Laminae or Leaves, without killing the Animal, which, 'tis said, being turn'd to Sea again, gets a new Shell.

The whole Spoils of the *Caret* consist in 13 Leaves, 8 of them flat, and 5 a little bent : Of the flat ones, there are 4 large ones, about a Foot long, and 7 Inches broad.

The best Shell is thick, clear, transparent, of the Colour of Antimony, sprinkled with Brown and White. When used in Marquetry, &c. the Workmen give it what Colour they please, by means of colour'd Leaves, which they put underneath them.

In Generation, *Rondeletius* observes, the Embraces of the Male and Female *Sea Tortoise*, continue for a whole Lunar Month ; and that they squirt Water out of the Nostrils, in the same Manner as the Dolphin. On the *Brazilian Shore*, they are said to be so big, as sometimes to dine Four-score Men : And that in the *Indian Sea*, the Shells serve the Natives for Boats. *De Laet* adds, that in the Island of *Cuba* they are of such a Bulk, that they will creep along with Five Men on their Backs.

TORTOIS in the Military Art. See TESTUDO.

TORTURE, a grievous Pain inflicted on a Criminal, or Person accused ; to make him confess the Truth. See QUESTION.

The Forms of *Torture* are different in different Countries. In some they use Water, in others Iron, in some the Wheel or Rack, in some the Boot, Thumblins, &c. See RACK.



In *England*, the use of all *Torture* is abolish'd, both in Civil and Criminal Matters; and even in Cases of High Treason; tho' something like it still obtains, where the Criminal refuses to plead. See *PAINE fort & dure*.

In *France*, the *Torture* is not practis'd in Civil Matters: But by an Ordonnance of 1670, if a Person be accused of a Capital Crime, he may be put to the Question, *i. e.* to the *Torture*, if there be considerable Proof against him, and yet not Proof enough to convict him. See *PROOF*.

There are two Kinds of *Torture*; the one *Preparatory*, appointed before Sentence pass'd; the other *Definitive*, decreed by a Sentence of Death.

The *Preparatory Torture*, is order'd *Manentibus Judiciis*, so that if the Accused don't confess, he cannot be condemn'd to Death, but only *ad omnia citra Mortem*.

The *Definitive Torture*, is that a condemn'd Criminal is put to, to make him confess his Accomplices. The Ordinary *Torture* is given at *Paris* with Six Quarts of Water, and the little Trestle; and the Extraordinary, with Six other Pots, and the great Trestle.

In *Scotland*, the *Torture* is given with the Boot. See *BOOR*.

In some other Countries, by heating the Criminal's Feet; in others, with Wedges, &c.

The *Torture*, says *M. Brugere*, is a sure Expedient to destroy an Innocent Person of a weak Complexion, and to save a Criminal of a robust one. --- It was a noble Saying of an Ancient, *They who can, and they who cannot bear the Torture, will equally lie*.

**TOTTED.** A good Debt to the King is, by the foreign Apposer, or other Officer in the *Exchequer*, noted for such by writing the Word *tot*, *q. d. tot pecunie Regi debentur*, whence it is said to be *totted*.

Also that which is paid is to be *totted*. See *EXCHEQUER*.

**TOTUM.** See *WHOLE*.

**TOUCAN**, in Astronomy, a Constellation of the Southern Hemisphere. See *CONSTELLATION*.

**TOUCH**, in Music. An Organ is said to have a good *Touch*, when the Keys close, and lie down well; being neither too loose, nor too stiff. See *ORGAN*.

*Touch the Wind*, in the Sea Language, is when the Steer's-man at the Helm is bid to keep the Ship as near the Wind as may be. See *STEERAGE*.

**TOUCHING** is sometimes us'd for the Sense of *Feeling*. See *FEELING*.

**TOUCHING**, in Geometry. A right Line is said to *touch* a Circle, when it meets it in such Manner, as that being produc'd it does not *cut*, but falls without the Circle. See *TANGENT*.

**TOUCH stone**, a black polish'd Stone, us'd to try Metals upon. See *STONE*.

The Ancients call'd it *Lapis Lydius*, the *Lydian Stone*, from *Lydia*, a Country of *Asia minor*, whence it was brought.

The Moderns call it *Touch-stone*, in regard the Proof they make of Metals, is by *touching* or rubbing the Metal to be try'd on the Stone, and comparing the Colour of the Mark it leaves thereon, with the Mark of another Piece of Metal of the same Species, whose Goodness is past doubt. See *METAL*.

**TOUR**, *Turn*, a French Term, often us'd among *English* Writers, for a Journey. Thus we say the *Tour* of *Paris*, of *Rome*, &c.

*Tour of Hair*, a Tress, or Border of Hair, going round the Head, which mingled dexterously with the natural Hair, lengthens and thickens it. See *HAIR*.

These *Tours* are for Men. --- The Women likewise use *Tours*, and false Hair, either to hide their Age, or to supply the Thinness of their natural Hair on the Forehead and Temples.

The Form is different according to the Mode; sometimes rais'd and curl'd, sometimes straight and laid flat along the Forehead. See *PERRUKE*.

The Word is pure French, signifying literally a *Round*, or something that goes around.

**TOURN**, in Law. See *TURN*.

**TOUT** *temps prist & uncore est*, *q. d.* always ready, and so at the present Time; is a kind of Plea in Way of Excuse or Defence, for him that is sued for any Debt or Duty belonging to the Plaintiff. See *PLEA*.

**TOW**. Whatever is drawn by a Ship or Boat with a Rope, is said to be *towed* after her.

**TOWAGE**, the haleing or drawing a Ship or Barge by Men or Beasts, or by another Ship or Boat, fallen'd to her; in order to make her enter a Port, ascend a River, or the like.

The Term is also us'd for the Money, or other Recompence, given by Bargemen to the Owner of the Ground next the River where they *tow* a Barge or other Vessel, for the Liberty of passing along the Side thereof.

The Word is probably deriv'd from the Saxon, *Tean*, to draw.

**TOWER**, a tall Building, consisting of several Stories, and usually of a round Form.

Before the Invention of Guns, they us'd to fortify Places with *Towers*; and to attack them with moveable *Towers* of Wood, mounted on Wheels, to set the Besiegers on a Level with the Walls, and drive the Besieg'd from under the same.

These *Towers* were sometimes 20 Stories, and 30 Fathom high: They were cover'd with raw Skins, and an hundred Men employ'd to move them.

*Towers* are also built to enable one, by their Elevation, to view to a great Distance.

These are of all Figures; as, square, round, pentagonal, &c. See *PHAROS*.

In *China* is a famous *Tower* of Porcelain, whereof the *Dutch* relate Wonders. See *PORCELAIN*.

*Towers* are also built for Fortresses, Prisons, &c. as the *Tower of London*, the *Towers* of the *Bastille*, &c. See *FORTIFIED Place*.

The *Tower of London* is not only a Citadel, to defend and command the City, River, &c. but also a Royal Palace, where our Kings with their Courts have sometimes lodg'd; a Royal Arsenal, wherein are Arms and Ammunition for 60000 Soldiers; a Treasury for the Jewels and Ornaments of the Crown; a Mint for coining of Money; the great Archive, wherein are preserv'd all the ancient Records of the Courts of *Westminster*, &c. and the chief Prison for State Criminals. See *ARSENAL*, *MINT*, &c.

In the midst of it is the great square, white *Tower*, built by *William the Conqueror*; --- Within the *Tower* is a Parochial Church, exempt from all Jurisdiction of the Archbishop, and a Royal Chapel, now disus'd.

The chief Officer of the *Tower* is the *Constable*, under whom is the *Lieutenant*, who acts by his Direction, and in his Absence. He has by Grant of several of our Kings, *Unam Lagenam*, two Gallons and a Pint of Wine, out of every Vessel; and a certain Quantity out of every Boat laden with Lobsters, Oysters, and other Shell Fish, and double the Quantity out of every Alien's Boat, passing by the *Tower*: To him also belongs a Fee of 200*l.* for every Duke committed Prisoner; 100*l.* for every Peer not a Duke, and 50*l.* for every Commoner. See *CONSTABLE*, &c.

Under the *Constable*, and, in his Absence, under the *Lieutenant*, are a *Gentleman Porter*, and the *Warders*.

The first has Charge of the Gates, to lock and unlock them, and deliver the Keys every Night to the *Constable*, or *Lieutenant*, and receive them of him next Morning: He commands the *Warders* who are upon the Day's Wait; and at the Entrance of a Prisoner has for his Fee *Vestimenta Superiora*, or else a Composition for the same, which is usually 30*l.* for a Peer, and 5*l.* a-piece for others.

Note, The ancient Allowance from the King to a Duke or Marquis, Prisoner in the *Tower*, was 12*l.* a Week, now but 4*l.* To all other Lords anciently 10*l.* a Week, now 2*l.* 4*s.* 5*d.* To Knights and Gentlemen anciently 4*l.* a Week, now 13*s.* and 4*d.* And to inferior Persons, now 10*s.* per Week.

The *Women Warders* of the *Tower* are 40, who are accounted the King's Domestic Servants: Their Duty is to attend State Prisoners, and to wait at the Gates: Ten of them to be upon the Day's Wait, to take account of all Persons that come into the *Tower*, to enter their Names, and the Names of those they go to: Two of them are on the Watch all Night. See *WARDER*.

In the *Tower* is likewise kept a Court of Record every *Monday*, by Prescription, for the Liberty of the *Tower*, of Debt, Trespass, and other Actions of any Sum. See *COURT*.

Beside the ancient Liberty of the *Tower*, which adjoins to it; the old Artillery Garden by *Spittle Fields*, and the *little Minories*, are within the *Tower* Liberty; within which the *Gentleman Porter* has the same Power and Authority, as *Sheriffs* within their respective Counties. See *ORDINANCE*, &c.

*Hollow Tower*, in Fortification, is a Rounding made of the Remainder of a *Brisure*, to join the Courtin to the Orillon.

**TOWN**, a Place inhabited by a considerable Number of People; of an intermediate Degree between a City and a Village. See *VILLAGE*, &c.

'Tis very hard to give a tolerable Definition of a *Town*, in regard the Idea is a little arbitrary and unfix'd. A *Town* is generally without Walls, which is the Character that usually distinguishes it from a City: But this does not hold universally. See *CITY*.

We have several Kinds of *Towns*; Borough *Towns*, Market *Towns*, County *Towns*. See *BOROUGH*, &c.

**TOXICA**, a Sort of Poison, said to be us'd by the *Indians* to their Arrows, in order to render Wounds made by them incurable. See *POISON*.

The *Indians* are suppos'd to poison their Arrows, Daggers, &c. with the Virus of *Vipers*, the mischievous Effects whereof continue a long Time after the Matter is quite dry'd.

See *VIPER*.

TRABITION.



**TRABEATION**, in the ancient Architecture, the same with *Entablature*. See **ENTABLATURE**.

It consists of three principal Members or Divisions, viz. the Architrave, Freeze, and Cornice; each of which consists of divers lesser Members and Ornaments. See **ARCHITRAVE**, **FREEZE**, &c.

The Proportion, Members, &c. are different in the several Orders. See **ORDER**; see also each Order apart, **TUSCAN**, **DORIC**, &c.

**TRACE**, a Mark or Impression which any thing leaves behind it in passing over another.

*Traces of the Brain*, among the *Cartesian* Philosophers, are those Impressions, more or less deep, which sensible Objects make on the fine Fibres of the Brain, by means of the Organs of Sense. See **BRAIN**.

These Impressions are also call'd *Traces of the Object*: The Course of the Animal Spirits serves to keep them up, and to renew them. See **SPIRIT**.

The Vivacity of the Imagination arises from the prodigious Quantity of *Traces* of different Objects in the Brain, which are so link'd together, that the Spirits cannot be sent into one of them, but they run into all the rest; by which Means the Ideas occasion'd by the Application of the Spirits to those several *Traces*, are all excited, as it were, at once. See **IMAGINATION**.

Memory, according to the same, consists in the *Traces* which the Animal Spirits have impress'd. See **MEMORY**, **HABITUDE**, &c.

*Trace of a Hare*, among Hunters, is her Footing in the Snow; distinct from her other Treadings, call'd *Doubling* and *Pricking*, &c.

*Traces* are also the Tracts of ravenous Beasts, as Wolves, wild Bears, &c.

**TRACHEA**, in Anatomy, a large Artery, call'd also *Aspera Arteria*, and popularly the *Wind-pipe*; being the Canal or Tube which carries the Air into the Lungs, for the Use of Respiration and Speech. See **RESPIRATION** and **VOICE**.

It is compos'd wholly of Cartilages, Membranes, little Veins, Arteries, and Nerves: *Galen* gave it the Name *Trachea*, *τερχέα*, because of its being rough and uneven; on which Account the *Latins* also call'd it *Aspera*.

The Head or Cover of the *Trachea Arteria* is call'd the *Larynx*. See **LARYNX**.

Its Cartilages are in Form of Rings, flat on one Side, and not finishing the whole Circle, but representing the Figure of an ancient Greek Sigma, whence they are call'd *Sigmoides*. See **ASPERA**.

In the *Philosophical Transactions*, is a Letter by Mr. *John Keen*, recommending the more frequent Use of Laryngotomy, or Opening of the Wind-pipe upon pressing Occasions; which he urges from a remarkable Case of a Person who had the *Trachea*, or Wind-pipe, cut quite thro' beneath the Pomum Adami, cur'd by stitching the Wound, and using proper Medicines. See **LARYNGOTOMY**.

**TRACHOMA**, in Medicine, a Roughness or Asperity of the inner Part of the Palpebrae; attended with an Itching, Redness, and frequently with Pustles, resembling Millet-Seeds.

Its Degrees are the *Sycosis* and *Tylosis*. See **SYCOSIS**, &c.

**TRACT**, from the *Latin*, *Tractus*, properly denotes an Extent of Ground, or a Portion of the Surface of the terraqueous Globe. See **TERRAQUEOUS**, &c.

**TRACT**, or **TRACTATE**, from the *Saxon*, *Tract*, or the *Latin*, *Tractatus*, does also signify a small Treatise, or written Discourse, upon any Subject. See **TREATISE**.

**TRACT**, in Hunting, denotes the Trace or Footing of a wild Beast.

**TRACTION**, *drawing*, the Action of a moving Power whereby the Moveable is brought nearer to the Mover; call'd also *Attraction*. See **ATTRACTION**.

**TRACRIX**, in Geometry, a Curve Line; call'd also *Catenaria*. See **CATENARIA**.

**TRADE**, *Traffic*, *Commerce*, the negotiating, buying, selling, exchanging, &c. of Commodities, Bills, Money, &c.

For the Origin, Progress, &c. of *Trade*. See **COMMERCE** and **NAVIGATION**.

*Trade-winds*, are certain regular Winds at Sea, blowing either constantly the same Way, or alternately this way and that; thus call'd from their great Use in Navigation and the *Indian Commerce*.

The *Trade-winds* are of different Kinds; some blowing three or six Months of the Year one Way, and then the like Space of Time the opposite Way; very common in the *Indian Seas*, and call'd *Monsoons*. See **MONSOON**.

Others blow constantly the same Way: such is that general Wind between the Tropicks, which off at Sea is found to blow all Day long from East to West.

For the Phenomena of each, with their Physical Causes, see **WIND**.

*Dr. Lister* has a Conjecture in the *Philosophical Transactions*, that the *Tropical*, or *Trade-winds*, arise, in great Part, from the daily and constant Breath of a Sea Plant, call'd the *Sargessa*, or *Lenticula Marina*, which grows in vast Quantities from 36° to 18° North Latitude, or elsewhere upon the deepest Seas. --- For the Matter of Wind coming from the Breath of one only Plant, must needs be constant and uniform; whereas the great Variety of Trees and Plants at Land, furnishes a confus'd Matter of Winds. Hence, he adds, it is, that these Winds are briskest about Noon; the Sun quickening the Plant most then, and causing it to breathe faster, and more vigorously. Lastly, the Direction of this Wind from East to West, he attributes to the general Current of the Sea; for a gentle Air is observ'd to be constantly led along with the Stream of a River: Nor must it be omitted, that every Plant is, in some Measure, a Heliotrope, and bends itself, and moves after the Sun, and consequently emits its Vapour thitherward; so that the Direction of the *Trade-wind* is, in some measure, also owing to the Course of the Sun.

*Dr. Gordon* has another Hypothesis: The Atmosphere, which surrounds the Earth, and moves along with it in its Diurnal Motion, he supposes to keep Pace therewith; that Part of it, at least, which is near the Earth; if the remoter Part should be judg'd to lose Ground.

If then there were no Changes in the Atmosphere's Gravity, he supposes it would always go along with the Earth from West to East in an uniform Motion, altogether insensible to us: But the Portion of the Atmosphere under the Line being extremely rarify'd, its Spring expanded, and so its Gravity and Pressure much less than the neighbouring Parts of the Atmosphere; it is incapable of the uniform Motion towards the East, and must therefore be press'd Westwards, and make the continual Breeze from East to West, between the Tropicks.

**TRADITION**, the Act of delivering a Thing into the Hands of another.

The Sale of a Moveable is complicated by a simple *Tradition*. See **LIVERY**.

**TRADITION**, in Matters of Religion, is apply'd to those Laws, Doctrines, Relations, &c. which have been handed down to us from our Fore-fathers, without being written.

Taking *Tradition* in this Sense, for every thing relating to Faith, or the Rites and Ceremonies of Religion thus deriv'd down to us from the Primitive Church, there are two Kinds, viz. *Apostolical* and *Ecclesiastical Tradition*.

*Apostolical Tradition*, which is what we properly call *Tradition*, is defin'd by the *Romanists*, to be the unwritten Word of God, descended from the Apostles to us, thro' a continual Succession of the Faithful.

By this *Tradition*, say they, it is that the Holy Scriptures have been kept entire, both as to the Letter, i. e. the Text, and as to the Spirit or Sense thereof: This *Tradition*, the Council of *Trent* declares to have the same Authority with the Holy Scripture itself; and pronounces every one who rejects it a Heretic.

*Ecclesiastical Traditions*, are certain Statutes and Regulations regarding the Rites, Customs, and Circumstances of Religion, introduc'd since the Time of the Apostles, by Councils, Popes, &c. and continu'd to our Time thro' a constant Observance of the Church.

The *Romanists* make another Division of *Tradition*, viz. into *Written* and *Unwritten*.

*Written Tradition*, is that whereof we find some Traces in the ancient Fathers and Doctors.

*Unwritten Tradition*, is that whereof we find no Signs or Footsteps in any of the Fathers extant.

The Church of *Rome* pretends to be the Depositary of each Kind: *Tradition*, she holds to be absolutely necessary in the Church; grounding this Necessity on the Promise of Infallibility which Jesus Christ is pretended to have made her.

Yet others of that Communion deny *Tradition*, how excellent soever it may be for the Reclaiming of Hereticks, to be absolutely necessary; maintaining, that the Church would not be less intallible, nor less the Rule of Doctrine, &c. if the Fathers had never wrote at all.

**TRADITIONARY**, **TRADITIONARIUS**, a Name given among the *Jews*, to such of them as acknowledge *Tradition*, follow it, and explain the Scriptures thereby; in Opposition to the *Caraites*, who refuse any thing but the pure Scriptures themselves. See **CARAITES**.

The *Traditionaries* are what we more usually call *Rabbins*, or *Talmudists*. See **RABBIN** and **TALMUD**.

*Hillel* shone among the *Traditionaries*, and *Schammai* among the *Textuaries*. See **TEXTUARY**.

**TRADITORES**, a Name given in the first Ages of the Church, to such Christians, as, in Times of Persecution, to avoid Death and Martyrdom, deliver'd up the sacred Writings to the Persecutors.



The Enemies of Religion, even under the old Law, made their utmost Efforts to deprive the World of the Holy Scriptures: In that cruel Persecution which *Antiochus* rais'd against the *Jews*, the Books of the Law were very solicitously sought after, torn, and burnt, and such as kept them put to Death; as we read in the first Book of *Maccab.* cap. iv. 59, and 60.

*Dioclesian* renew'd the same Impiety, by an Edict publish'd in the 19th Year of his Empire, commanding all the sacred Books to be brought to the Magistrates, and burnt.

Many weak Christians, and even some Bishops, overcome by the Fear of Punishment, carry'd in their Books to the Persecutors; which the Church detesting, made very severe Laws against them, and gave them the infamous Name of *Traditores*, from *Trado*, I deliver.

As the great Pretence of the Schism of the Donatists was, that the Catholics tolerated the *Traditores*; it was decreed in the Council of *Arles*, held in 314, that such as should be found guilty of having deliver'd up any of the Holy Books, or Vessels, should be depos'd from the Order of the Clergy, &c.

TRADUCIANS, TRADUCIANI, a Name the *Pelagians* anciently gave to the Catholics, because of their teaching, that original Sin was transmitted from Father to Children, or that it was communicated to the Children by the Father in the Way of Generation. See ORIGINAL SIN.

The Word is form'd of the *Latin*, *tradux*, which was made Use of to express that Communication; and which comes from *traduco*, I transmit, or make pass from one to another.

At present, some give the Appellation *Traducian* to such as hold that the Souls are transmitted to the Children by the Father.

TRADUCTION, the *Translating*, or turning out of one Language into another. See TRANSLATION.

The Word is form'd of *trans*, beyond, and *duco*, I lead, draw.

TRAFINE, among Surgeons, an Instrument, call'd also *Trepanum*, *Anabapiston*, *Modiolus*, &c. See TREPANUM and MODIOLUS.

TRAFFIC. See TRADE and COMMERCE.

The principal *Traffic* in *Muscovy*, and the North, is in Furs and Skins: The great *Traffic* of the *Dutch* in the East is in Spices: The *Traffic* of Money is mostly carry'd on at the Exchange.

The Word is form'd from the *French*, *Trafic*, and that from the *Italian*, *Trafico*, which is again borrow'd from the *Arabic*.

TRAGACANTH, or ADRAGANTH, a kind of Gum oozing out at Incisions made in the Trunk and larger Branches of a Plant, or little Shrub, of the same Name. See GUM.

The naked Hillocks of Mount *Ita* in *Candia*, M. *Tournefort* tells us, produce a deal of the Plant *Tragacantha*, which gives the Gum spontaneously towards the End of *June*, and in the following Months; when the nutritious Juice of the Plant, thicken'd by the Heat, bursts most of the Vessels it is contain'd in.

This Juice coagulates in Threads, which make their Way into the Pores of the Bark, where being push'd forwards by new Juice, they get thro' the Bark, and are at length harden'd in the Air, either into little Lumps, or into twisted Pieces in Form of little Worms, more or less long according to the Matter they are form'd of.

It should seem too that the Contraction of the Fibres contributes to the Expression of the Gum: Those fine Fibres, like those of Hemp, laid bare and trampled under Foot by Men and Horses, contract themselves, and facilitate the Expression of the extravasated Juice.

The Plant grows also in several Places of the *Levant*, particularly about *Aleppo*.

The Word is form'd of the *Greek*, *τραγος*, Goat, and *ακανθα*, Thorn, by Reason the Plant is beset with Thorns.

The Gum is of different Colours, and Qualities; some being white, other some greyish, some red, and some almost black. The white is the best. It must be chosen clear, smooth, and twisted like little Worms.

It dissolves easily in any aqueous Menstruum, which it will give the Consistence of a Syrup to, in the small Proportion of a Dram to a Pint. It is smooth and softening, and therefore good to obtund the Acrimony of any Humours, which makes it of Service in such Coughs as proceed from Catarrhs and Effluxions of Rheum. It is also very strengthening in some Seminal Weaknesses, and prevalent against the Whites in Women.

TRAGEA, in Pharmacy, a Term frequently used to express Powders grossly beat; but now obsolete. See POWDER.

TRAGEDY, a Dramatic Poem, representing some signal Action, perform'd by illustrious Persons, and which has frequently a fatal Issue or End. See DRAMA.

*Aristotle* more Scientifically defines *Tragedy*, the Imitation of one grave and entire Action, of a just Length; and which,

without the Assistance of Narration, by raising of Terror and Compassion, refines and purges our Passions.

This Definition has given the Criticks some Perplexity; and *Corneille* declares he cannot reconcile *Aristotle* with himself: The Instances *Aristotle* cites, he thinks, ruin his own Definition. He even denies the purging our Passions to be the End of *Tragedy*.

Our *English* Authors are more favourable to the Definition: By the purging our Passions, they understand not the expiating them, but the reducing them to just Bounds; for by shewing the Miseries that attend a Subjection to them, it teaches us to watch them more narrowly; and by seeing the great Misfortunes of others, it lessens the Sense of our own.

*Tragedy*, in its Original, M. *Hedelin*, observes, was only a Hymn sung in Honour of *Bacchus*, by several Persons, who, together, made a Chorus of Music, with Dances and Instruments. See CHORUS.

As this was long, and might fatigue the Singers, as well as tire the Audience; they bethought themselves to divide the singing of the Chorus into several Parts, and to have certain Recitations in the Intervals.

Accordingly, *Thespis* first introduced a Person upon the Stage with this View: *Æschylus* finding one Person insufficient, introduced a Second to entertain the Audience more agreeably, by a kind of Dialogue: He also cloath'd his Persons more decently, and first put them on the Buskin. See COTHURNUS.

The Persons who made these Recitations on the Scene, were call'd *Actors*; so that *Tragedy* at first was without Actors. And what they thus rehearsed, being things added to the singing of the Chorus, whereof they were no necessary Part, were call'd *Episodes*. See EPISODE.

*Sophocles* found that two Persons were not enough for the Variety of Incidents; and accordingly introduced a Third: And here the *Greeks* seem to have stopp'd; at least 'tis very rare that they introduce four Speakers on the same Scene. See PERSON.

*Tragedy* and Comedy were at first confounded with each other; But they were afterwards separated; and the Poets applied themselves to the cultivating of *Tragedy*, neglecting Comedy. See COMEDY.

When *Tragedy* was got into a better Form; they changed the Measure of its Verse, and endeavour'd to bring the Action within the Compass of a Day, or of a Revolution of the Sun. See UNITY.

For the several Parts of *Tragedy*; see ACT, SCENE, ACTION, FABLE, CHARACTER, MANNERS, &c.

The *English* received the first Plan of their Drama from the *French*; among whom it had its first Rise towards the End of the Reign of *Charles V.* under the Title of *Chant-Royal*, which were Pieces in Verse, composed in Honour of the Virgin, or some of the Saints, and sung on the Stage; call'd by the Title of *Chant-Royal*, because the Subject was given by the King of the Year; or the Person who had bore away the Prize the Year preceding. See CHANT.

The Humour of these Pieces run wonderfully among the People, insomuch that in a little time there were form'd several Societies, who began to vie with each other: One of these, to engage the Town from the rest, began to intermix various Incidents, or Episodes, which they distributed into *Acts*, *Scenes*, and as many different Persons as were necessary for the Representation.

Their first Essay was in the *Young S. Maur*; and their Subject the Passion of Our Saviour. The Prevot of *Paris* prohibiting their continuing of it, they made Application to Court; and to render it the more favourable to them, erected themselves into a Fryary or Fraternity, under the Title of *Brothers of the Passion*; which Title has given some Occasion to suspect them to have been an Order of Religious, or Friars of the Passion.

The King, on seeing and approving some of their Pieces, granted them Letters of Establishment in 1402: upon which they built a Theatre; and for an Age and a Half, acted none but grave Pieces, which they call'd *Moralities*; till the People growing weary of them, they began to intermix Farces or Interludes taken from profane Subjects.

This Mixture of Farce, and Religion, displeasing many, they were re-establish'd by an Arret of Parliament in 1548, on Condition of their acting none but profane, lawful, and decent Subjects, without intermeddling with any of the Mysteries of Religion; and thus were the Brothers of the Passion despoil'd of their religious Character; upon which they mounted the Stage no more in Person; but brought up a new Set of Comedians, who acted under their Direction.

Thus was the Drama establish'd; and on this Foundation arrived in *England*. In process of Time, as it was improv'd, it became divided into Branches, agreeable to the Practice of the Ancients, and the Nature of Things, viz. into *Tragedy* and Comedy, properly so call'd, and this last again was sub-divided into pure Comedy and Farce; see each under its proper Head, COMEDY, &c.



**TRAGI-COMEDY**, another kind of Dramatic Piece, representing some Action pass'd among eminent Persons, the Event whereof is not unhappy or bloody; and wherein is sometimes admitted a Mixture of less serious Characters.

The Ancients, M. *Dacier* observes, knew nothing of such Compositions, wherein the Serious and Comic are blended: Nor does the Epithet M. *Cornelle* gives them of *Heroic Comedies*, excuse their Irregularity.

Their Foundation is certainly bad; for endeavouring both to make us laugh and cry in their turns, they endeavour at contrary Emotions, which the Heart can never undergo; every thing that disposes for the one, indisposing for the other.

The *Tragi-Comedy* was formerly very common on the English Stage: Scarce such a thing in the 17th Century, as a pure Tragedy without a spice of Comedy, or Farce to make the People laugh. Now, that the Stage and our Tastes are brought nearer to the Model of Nature and the Ancients, the *Tragi-Comedy* is disused. *Tragi-Comedy* is the only Case, wherein Comedy is allow'd to introduce Kings and Heroes. See **COMEDY**.

**TRAGUS**, in Anatomy, one of the Protuberances of the Auricle, or external Ear; call'd also *Hircus*, because usually hairy. See **EAR**.

The *Tragus* is that Protuberance next the Temple; that on the opposite Side, to which the soft Lobe of the Ear is annex'd, is call'd the *Antitragus*.

**TRAJAN Column**, a famous historical Column, erected in Rome, in Honour of the Emperor *Trajan*. See **COLUMN**.

'Tis of the *Tuscan* Order, though somewhat Irregular: Its Height is Eight Diameters, and its Pedestal *Corinthian*; it was built in a large Square there, call'd the *Forum Romanum*.

Its Base consists of 12 Stones of an enormous Size, and it is rais'd on a Socle or Foot of Eight Steps. Within-side, is a Stair-case, illumined with 44 Windows. 'Tis 140 Foot high, which is 35 Foot short of the *Antonine Column*; but the Workmanship of the former is much more valued.

'Tis adorn'd from top to bottom with Bas-relievo's, representing the great Actions of that Emperor against the *Dacæ*.

Several learned Men have explain'd the Bas-reliefs of the *Trajan Column*, and among others *Ciaconius* and *Fabretti*.

The late King of France, *Louis XIV.* had Models of all the Bas-reliefs taken off in Plaster of *Paris*.

**TRAJECTORY** of a Comet, is its Path or Orbit; or the Line it describes in its Motion. See **ORBIT**.

This, *Hevelius*, in his *Cometographia*, will have to be very nearly a right Line; but Dr. *Halley* rather concludes it to be a very excentric Ellipsis. See **ELLIPSIS**.

Sir *Isaac Newton* in Prop. 41. of his third Book, shews how to determine the *Trajectory* of a Comet from three Observations; and in his last Proposition, how to correct a *Trajectory* graphically described. See **COMET**.

**TRAIL-Board**, in a Ship, is a curved Board on each Side of her Beak, which reaches from the Main-stem to the Figure, or the Brackets. See **SHIP**.

**TRAIN**; the Attendance of a great Person; or, the Trail of a Gown, or Robe of State.

In Falconry, it is the Tail of an Hawk. See **TAIL**.

**TRAIN** is likewise used for the Number of Beats which a Watch makes in an Hour, or any other certain Time. See **WATCH-Work**, &c.

**TRAIN** is also used for a Line of Gun-powder, laid to give fire to a Quantity thereof, in order to do Execution, by blowing up Earth, Works, Buildings, &c. See **GUN-Powder**, **MINE**, &c.

**TRAIN of Artillery**, includes the great Guns and other Pieces of Ordnance belonging to an Army in the Field. See **GUN**, **CANNON**, **ORDNANCE**, &c.

**TRAIN Oil**, the Oil procured from the Blubber of Whales, by boiling. See **OIL** and **WHALE**.

**TRAIN-Bands**, or **TRAINED-Bands**, a Name given to the Militia of *England*. See **MILITIA**.

**TRAINING a Load**, among Miners, is the searching for, and pursuing a Vein of Ore. See **VEIN**.

**TRAMBLING the Tin Ore**, among Miners, is a washing it very clean; which is done with a Shovel, and in a Frame of Boards. See **TIN**.

**TRAMEL**, an Iron Instrument, wherewithal to make a Horse amble. See **AMBLING**.

It is also taken in many Places for an Iron moveable Instrument in Chimneys, to hang Pots over the Fire.

**TRAMEL Net**, is a long Net, wherewith to take Fowl by Night, in Champian-Countries; much like the Net used for the Low-bell, both in Shape, Bigness and Meshes.

To use it, they spread it on the Ground, so as the nether or further End, fitted with small Plumets, may lie loose thereon. Then the other Part being bore up by Men, placed at the Fore-ends, it is thus trailed along the Ground. At each Side, are carried great blazing Lights, by which the

Birds are raised; as they rise under the Net, they are taken. See **Low-Bell** and **HAND-Net**.

The Word comes from the *French*, *Tremail*, form'd of the *Latin Tremaculum* or *Tremaculum*, of *Macula*, by reason it is compos'd of three Rows of Meshes.

**TRAMONTAN**, **TRAMONTANE** or **TRAMONTAIN**, something beyond, or on the further Side the Mountains.

The Term is particularly applied by the *Italian* Painters, to all such as live on the other Side the *Alps*, i. e. all out of *Italy*; as the *Germans*, *Flemish*, *French*, &c.

The *French* Lawyers give the same Title of *Tramontane* or *Ultramontane* Doctors to the *Italian* Canonists, *Gomez*, *Hostiensis*, *Panorm*, &c. who go upon Rules and Maxims, too favourable to the Court of *Rome*, and contrary to those of *France*, &c.

The Word is form'd from the *Italian*, *tra*, of the *Latin*, *trans*, which signify beyond; and *mons* or *mont*, Mountain.

On the *Mediterranean*, and in *Italy*, a North Wind is call'd a *Tramontane Wind*: and some call the Pole Star, the *Tramontane*.

Hence the Proverb, To lose the *Tramontane*; that is, to be out of one's Aim, to be disconcerted.

**TRANCHE** is used by the *French* Armorists, to express that Manner of Partition call'd among us *Party per bend Dexter*. See **PARTY** and **BEND**.

A Scutcheon is said to be *tranche*, cut, when it is divided in two Diagonally; the Division coming from the Dexter Angle of the Chief, to the Sinister Angle of the Point: When it is divided contrary-wise, it is said to be *taille*.

**TRANSACTION**, a *Negotiation*, particularly an Accommodation, or a Dispatch of some Business, or of a Dispute between two Parties, by a mutual and voluntary Agreement or Contract between them.

*Philosophical* TRANSACTIONS, are a kind of Journal of the principal Things that come before the Royal Society of *London*. See **JOURNAL** and **Royal Society**.

The *Transactions* contain the several Discoveries and Histories of Nature and Art, made by the Members of the Society, or communicated by them from their Correspondents; the several Experiments, Observations, &c. made by them, or transmitted to them, &c.

They were first set on Foot in 1665 by Mr. *Oultenbourg*, Secretary of the Society, and continued by him till the Year 1679. After his Death, Dr. *Hook*, the succeeding Secretary, continued them under the Title of *Philosophical Collections*: But Dr. *Grew*, appointed to the same Office in 1689, resumed the former Title of *Philosophical Transactions*, which was retain'd by his Successor Dr. *Plott*, and subsists to this Day.

They were publish'd every Month, with great Care, by Mr. *Oultenbourg*, and the first Secretaries; but after Dr. *Plott*, they were frequently interrupted. In the Year 1700 Dr. *Stoan* relaps'd, and only came out once in two Months; from that they fell to 3, 4 and 6 Months. They are now publish'd more frequently and regularly, by the Care of Dr. *Jurin*.

**TRANGLE**, in Heraldry, the Diminutive of a Fesse, commonly call'd a *Bar*. See **BAR** and **FESSE**.

**TRANSCENDANT**, or **TRANSCENDENTAL**, something rais'd, or elevated beyond other Things; or which passes and transcends the Reasons and Circumstances of other inferior Beings, so as not to be intimately and essentially included under them.

The Term is particularly applied to the Object of Metaphysics, which considers Being in general, or *Transcendant* Beings, as God and Angels; and Truths consisting in pure Speculation. See **METAPHYSICS**.

The Logicians and Metaphysicians, call *Transcendental* Terms, those which are so general and of a Signification so extensive and universal, that they pass through all the Categories, and agree to all kinds of Things; such are the Terms *Ens*, *Unum*, *Verum*, *Bonum*, *Res*. See **ENS**, &c.

**TRANSCENDENTAL Quantities**, among the School-men, &c. are particularly apply'd to the Continuation of the Existence, Duration, or Time of a Being. See **DURATION** and **TIME**.

**TRANSCENDENTAL Quantities**, among Geometricians, are undeterminate ones; or such as cannot be express'd or fix'd to any constant Equation: Such is a *Transcendental Curve*, or the like. See **TRANSCENDENTAL Curve**.

M. *Leibnitz* has a Dissertation in the *Acta Erudit. Lips.* wherein he endeavours to shew the Origin of such Quantities, viz. why some Problems are neither Plain, Solid, nor Sur-solid, nor of any certain Degree, but do transcend all algebraical Equations. See **PROBLEM**.

He also shews how it may be demonstrated without a Calculus, that an algebraic Quadratrix for the Circle or Hyperbola, is impossible: For if such a Quadratrix could be found, it would follow, that by means thereof, any Angle, Ratio or Logarithm might be divided in the given Proportion of one right Line to another, and this, by one universal Construction; and, consequently, the Problem of the Section of an Angle, or



or the Invention of any Number of mean Proportionals, would be of a certain Degree. See CIRCLE, QUADRATRIX, QUADRATURE, &c.

Whereas the different Degrees of algebraical Equations; and, therefore, the Problem, understood in general of any Number of Parts of an Angle or mean Proportionals; is of an indefinite Degree, and transcends all Algebraical Equations. See EQUATION.

TRANSCENDENTAL *Curve*, in the higher Geometry, is such a one as cannot be defined by any Algebraic Equation, or which, when express'd by an Equation, one of the Terms thereof is a variable or flowing Quantity. See CURVE.

These Curves are the same with what *Des Cartes*, and, after his Example, several others, call *Mechanical Curves*; and which they would have excluded out of Geometry; but Sir *Isaac Newton* and M. *Leibnitz*, are of another Sentiment. For, in effect, in the Construction of Geometrical Problems, one Curve is not to be prefer'd to another, as is defined by a more simple Equation; but as it is more easily described than that other. See GEOMETRICAL *Line*.

And some of these *Transcendental* or *Mechanical Curves*, are found of greater Use than all the Algebraical ones together, except the Circle. See MECHANICAL.

Add, That M. *Leibnitz*, in the *Acta Eruditor. Lips.* gives us a kind of *Transcendent Equations*, whereby these *Transcendental* Curves are actually defined, and which are of an indefinite Degree; that is, are not always the same in all the Points of the Curve.

Whereas Algebraists, use to assume some general Letters, or Numbers, for the Quantities sought; in these *Transcendental* Problems, M. *Leibnitz* assumes general or indefinite Equations for the Lines sought; e. gr. putting  $x$  and  $y$  for the Absciss and Ordinate, the Equation he uses for a Line sought, is,  $a + bx + cy + exy + fxx + gyy$ , &c. = 0. By the help of which indefinite Equation, which in reality is Finite; for it may always be determined, how far soever 'tis necessary to raise it; he seeks the Tangent; and that which results, comparing with the given Property of Tangents, he finds the Value of the assumed Letters,  $a, b, c$ , &c. and thus defines the Equation of the Line sought.

If that Comparison abovementioned, do not proceed, he pronounces the Line sought, not to be an Algebraical, but a *Transcendental* one.

This supposed, he goes on to find the Species of *Transcendency*; for some *Transcendentals* depend on the general Division or Section of a Ratio, or upon the Logarithms; others upon the Arks of a Circle, and others on more indefinite and compound Enquiries.

Here, therefore, besides the Symbols  $x$  and  $y$ , he assumes a Third, as  $v$ , which denotes the *Transcendental Quantity*; and of these Three, forms a general Equation for the Line sought; from which he finds the Tangent, according to the differential Method, which succeeds even in *Transcendental Quantities*. What he finds he compares with the given Properties of the Tangent; and so discovers, not only the Values of  $a, b, c$ , &c. but also the particular Nature of the *Transcendental Quantity*.

And though it may sometimes happen, that the several *Transcendents* are so to be made use of, and these of different Natures too, one from another; also though there be *Transcendents* of *Transcendents*, and a Progression of these in Infinitum, yet we may be satisfied with the most easy and useful one; and for the most Part may have recourse to some peculiar Artifices for shortning the Calculus, and reducing the Problem, to as simple Terms as may be.

This Method being applied to the Business of Quadratures, or to the Invention of Quadratrices, in which the Property of the Tangent is always given; 'tis manifest not only how it may be discovered, whether the indefinite Quadrature may be algebraically Impossible, but also how, when this Impossibility is discovered, a *Transcendental* Quadratrix may be found; which is a Thing which had not before been shewn. So that it seems, that Geometry is by this Method carried infinitely beyond the Bounds, to which *Vieta* and *Des Cartes* brought it: Since by this means a certain and general Analysis is establish'd, which extends to all the Problems which are of no certain Degree, and consequently not comprehended within Algebraical Equations.

Again, in order to manage *Transcendental* Problems, where-ever the Business of Tangents or Quadratures occurs, by a Calculus, there is hardly any that can be imagined shorter, more advantageous, or universal, than the Differential Calculus, or Analysis of Indivisibles and Infinites.

By this Method we may explain the Nature of *Transcendental* Lines by an Equation, e. gr. Let  $A$  be the Ark of a Circle, and  $x$  the versed Sine: Then will  $A = \int dx$

===== and if the Ordinate of the Cycloid be  $y$ , then will  $\sqrt{2x - xx}$

$y = \sqrt{2x - xx} + \frac{\int dx}{\sqrt{2x - xx}}$  which Equation perfectly

expresses the Relation between the Ordinate  $y$  and the Abscissa  $x$ , and from it all the Properties of the Cycloid may be demonstrated.

Thus is the Analytical Calculus, extended to those Lines which have hitherto been excluded, for no other Cause, but that they were thought incapable of it. See GEOMETRICAL *Line*.

TRANSCOLATION, in Pharmacy, the same with Filtration or Percolation. See FILTRATION, &c.

TRANSCRIPT, a Copy of any Original Writing; particularly that of an Act or Instrument, inserted in the Body of another. See COPY.

In this Sense, we say *Transcript of a Fine*, &c. See FINE, DUPLICATE, &c.

TRANSCRIPTIO *Recognitionis factæ coram Iusticiariis Itinerantibus*, &c. is a Writ for the certifying a Recognizance into Chancery, taken before the Justices in Eyre. See RECOGNIZANCE.

TRANSCRIPTIO *pedis finis levati mittenda in Cancellarium*, is a Writ for the certifying the Foot of a Fine, levied before the Justices in Eyre, &c. into Chancery. See FINE.

TRANSEAT, in the Schools, &c. a Term purely Latin, signifying *Let it pass*, or suppose a Proposition to be true, without granting it.

Hence the Proverb, *Transseat, Græcum est, non legitur*: The Diction is said to have taken its Rise from some ancient Commentators, or Glossographers of the Civil Law, who not understanding Greek, pass'd over all the Words that occur'd in that Language, without explaining them.

In the Roman Chancery, a *Nil Transseat* is a kind of Opposition made to the sealing of a Bull, or to the Delivery of some other Instrument, till the Parties against whose Interest it is directed, have been heard against it.

TRANSELEMENTATION, in the Schools, a Change of the Elements or Principles of one Body into those of another. See ELEMENT.

Such is that which the Roman Catholics contend for in the Eucharist; where the Elements of Bread and Wine are changed into those of Flesh and Blood. See TRANSUBSTANTIATION.

*Transselementation*, where-ever it happens, is always allow'd Miraculous; or an Effect beyond the ordinary Powers of Nature. See MIRACLE.

TRANSFER, in Commerce, &c. an Act whereby a Person surrenders his Right, Interest or Property in any thing moveable or immoveable, to another.

The Term is principally used in the Commerce of Stocks; for the assigning and making over Subscriptions, or Shares therein, to such as purchase them of the Proprietors. See SUBSCRIPTION, &c.

In the South Sea Company, the Bank, East India, &c. Transfers are made, by erasing the former Proprietors Names, and entering the Stock under the Name of the Purchaser, under his proper Letter of the Alphabet. See COMPANY, BANK, &c.

In order to a *Transfer*, 'tis required the Party bring another with him to swear he is the same Person to whom the Stock is enter'd. A Counterfeit in this Case is by Act of Parliament made a capital Crime.

The Lawyers say, that the Sale, or Donation of an Inheritance, &c. Transfers the Property, Rights, &c. thereof.

TRANSFIGURATION, among Divines, that miraculous Change wrought by Jesus Christ, in Presence of St. Peter, St. James and St. John, on Mount Thabor, where he appear'd in his Glory, in the middle of Moses and Elias. See the Description thereof in St. Matthew, c. xvii.

The Term is also applied to a Feast held in the Romish Church on the Sixth of August, in Commemoration of that Miracle.

TRANSFORMATION, a Change of Form; or a Metamorphosis. See METAMORPHOSIS.

The Chymists have been a long Time seeking the *Transformation* of Metals, that is, their *Transmutation*, or the Manner of changing them into Gold. See TRANSMUTATION.

Among the Mysticks, by *Transformation*, is understood a Change of the Contemplative Soul, whereby it is in some measure deified or converted into the Substance of God, and wherein it is, as it were, lost and swallow'd up in the Divinity, so as not to perceive its own Distinction from God.

The Sense of the Word *Transformation* is very liable to be abused; and, in effect, the Quietists and Quakers have abused it. But many of the Mysticks use it innocently enough; meaning no other by it than what St. Paul did when he said, *Vivo ego, jam non ego, vivit ego in Christus*.

TRANSFORMATION is also sometimes used for what we more properly call *Transubstantiation*. See TRANSUBSTANTIATION.

TRANSFUSION, the Act of pouring a Liquor out of one Vessel into another.



The Word is compounded of the *Latin* Preposition *trans*, beyond, further, and *fundo*, I pour.

In the Preparations of Chymistry and Pharmacy, there are frequent *Transfusions* of Liquors, Syrup, &c.

*TRANSFUSION* of the Blood, is particularly us'd for the letting out the Blood of one Animal; so as to be immediately receiv'd into the Body of another. - See BLOOD.

Dr. *Lower* is usually accounted the Inventor of this *Transfusion*, and the Experiment said to have been first publicly made by him at *Oxford* in 1665, and the Description thereof publish'd in his excellent Book *de Corde*.

Yet we are inform'd from good Hands, that it had been propos'd at *Paris* in 1658; that another of our Countrymen had had the Idea before; and that it had been known in *Germany* several Years. - 'Tis certain there is a Passage in *Libavius*, wherein the *Transfusion* is exactly describ'd as now practis'd: 'Tis true he disapproves of it; and only mentions it to ridicule it.

The Use most naturally expected from the Operation, is, that one Animal may live of the Blood of another; so that those which want Blood, or have corrupt, morbid Blood, may be supply'd from others with a sufficient Quantity, and of such as is good and laudable.

However, 'tis certain the Operation has no Place in the present Practice of Physic; but whether that be the Fault of the Operation itself, or owing to the Indolence and Averseness of People to run into new Methods, we will not undertake to say.

The Method of *transfusing*, Dr. *Lower* gives us to the following Effect: Take up the carotid Artery of the Dog, or other Animal whose Blood is to be *transfus'd* into another of the same, or a different Kind; separate it from the Nerve of the eighth Pair, and lay it bare above an Inch. Make a strong Ligature on the upper Part of the Artery; and an Inch nearer the Heart another Ligature with a running Knot, to be loosen'd and fasten'd as Occasion requires. Draw two Threads between the two Ligatures; open the Artery, put in a Quill, and tye up the Artery again upon the Quill by the two Threads, and stop the Quill by a Stick.

Then make bare the Jugular Vein of the other Animal, for about an Inch and half in Length, and at each End make a Ligature with a running Knot; and in the Space between the two Knots, draw under the Vein two Threads, as in the other.

Open the Vein, and put into it two Quills, one into the descending Part of the Vein, to receive the Blood from the other Dog, and carry it to the Heart: The other Quill put into the other Part of the Jugular, towards the Head, through which the second Animal's own Blood is to run into Dishes. The Quills thus ty'd fast, stop them up with Sticks till there be occasion to open them.

Things thus dispos'd, fasten the Dogs on their Sides towards one another, in such Manner, as that the Quills may go into each other: Then unstop the Quill that goes down into the second Dog's Jugular Vein, as also that coming out of the other Dog's Artery; and by the Help of two or three other Quills put into each other, as there shall be occasion, insert them into one another.

Then slip the running Knots, and immediately the Blood runs through the Quills as through an Artery, very impetuously.

As the Blood runs into the Dog, unstop the Quill in the upper Part of his Jugular, for his own Blood to run out at, tho' not constantly, but as you perceive him able to bear it, till the other Dog begin to cry, and faint, and at last die.

Lastly, Take out both Quills out of the Jugular, tye the running Knot fast, and cut the Vein asunder, and sew up the Skin: The Dog thus dismiss'd, will run away as if nothing ail'd him.

In the *Philosophical Transactions*, we have Accounts of the Success of various *Transfusions* practis'd at *London*, *Paris*, in *Italy*, &c. Sir *Edmund King* *transfus'd* 49 Ounces of Blood out of a Calf into a Sheep; the Sheep after the Operation appearing as well and as strong as before.

Mr. *Coxe* *transfus'd* 14 or 16 Ounces out of a mangy into a sound Dog: The Effect was, that no Alteration was observ'd in the sound Dog, but the mangy one was cur'd.

M. *Gayant* *transfus'd* the Blood of a young Dog into the Veins of an old one almost blind with Age, and scarce able to stir; which yet, two Hours afterwards, leap'd and frisk'd about.

M. *Denis* *transfus'd* the Blood of three Calves into three Dogs, which all continu'd brisk, and eat well as before. --- The same Person *transfus'd* the Blood of four Weathers into a Horse 26 Years old, which thence receiv'd much Strength, and a more than ordinary Appetite.

At St. *Griffon's* at *Uaine*, the Blood of a Lamb was *transfus'd* into the Veins of a Spaniel 13 Years old, which had been quite deaf for three Years, and so feeble as scarce to be able to walk at all. --- After the Operation he leap'd from the Table, and went about the House to seek his Masters. --- Two Days afterwards he ran up and down the Streets with

other Dogs: His Stomach grew strong, and he recover'd his Hearing.

*TRANSGRESSION*, *Transgressio*, an Offence against some Law, or a Breach or Violation thereof. See LAW.

The Term is chiefly us'd in respect of the Laws of God. In the Doctrine of Original Sin, all Mankind are suppos'd to share with *Adam* in the Guilt of his first *Transgression*. See ORIGINAL SIN.

*Moses* threatens the *Transgressors* of his Law with abundance of Temporal Punishments. See PUNISHMENT.

The Word is compounded of *trans*, beyond, and *gradiri*, to go.

*TRANSGRESSIONE*, in our Law, a Writ usually call'd a Writ or Action of *Trespass*.

Of this *Fitzherbert* has two Sorts: One Vicountial, thus call'd because directed to the Sheriff, and not returnable; but to be determin'd in the County. See VICOUNTIAL.

Its Form differs from that of the other; as wanting the Words *quare vi & armis*, &c.

The other is term'd a Writ of *Trespass*, and to be sued in the *Common Pleas* and *King's-Bench*. See TRESPASS.

*TRANSIRE*, in Stat. Anno 14. Car. II. is us'd for a Custom-house Warrant, or a Let-pais; from the Verb *transseo*, I go forth.

*TRANSIT*, *TRANSITUS*, in Astronomy, signifies the Passage of any Planet, just by, or over any fix'd Star; and of the Moon, in particular, covering or moving over any other Planet. See STAR and PLANET.

*Mercury*, *Venus*, &c. in their *Transits* over the Sun, appear like dark Specks. See MERCURY and VENUS.

The Word comes from the *Latin*, *transire*, to pass over; form'd of *trans* and *eo*, I go beyond.

*TRANSITION*, in Music, is when a greater Note is broken into lesser, to make smooth the Roughness of a Leap, by a gradual Passage to the Note next following; whence it is commonly call'd the *breaking of a Note*; being sometimes very necessary in Musical Compositions. See NOTE and PASSAGE.

*TRANSITION*, in Rhetoric, (which some will have to be a Figure, tho' others, with *Quintilian*, deny it) is a kind of Connexion in Discourse, whereby the several different Parts and Members thereof are join'd, so as to constitute one regular Whole.

*F. de Colonia* makes two Kinds of *Transitions*; the one perfect, the other imperfect.

A *perfect Transition*, is such wherein we briefly intimate what is said, and what remains to be said; as, *Now that we have spoke of War, there remains something to be said of Peace*. --- *Satis multa de Turpitudine: dicam deinceps, quod proposui, de periculo*. --- *Uni Epistolæ respondi: Venio ad alteram*. --- *Sed hæc Vetera; illud recens: Cæsarem meo Consilio Interfectum*.

An *imperfect Transition*, is such wherein only one of these is express'd; as, *Let us now consider the Consequences of*, &c. *Postularet hic locus ut dicerem de --- sed finis sit; neque enim præ lachrymis jam loqui possum; & hic se lachrymis defendi nequeat*.

*TRANSITIVE*, in Grammar, an Epithet given to such Verbs, as signify an Action which passes from the Subject that does it, to, or upon another Subject which receives it. See VERB.

Under the Head of *Verbs Transitive*, come what we usually call Verbs Active and Passive: Other Verbs, whose Action does not pass out of themselves, are call'd Neuters, and by some Grammarians *Intransitives*. See NEUTER.

In the *Hebrew*, the Verb *היה*, *hajah*, in the *Greek*, *ἐμν*, and in the *Latin*, *sum*, are Verbs purely Neuter or *Intransitive*; or, as the *Latin* and *Greek* Grammarians more usually express it, Verbs substantive, signifying the mere Existence of the Thing, without the active or *transitive* Conjugations.

*TRANSITORY*, in Law, &c. a Term opposite to Local. See LOCAL.

*TRANSLATION*, the Act of transferring or removing a Thing from one Place to another. See PLACE.

As the *Translation* of a Bishop, a Council, a Seat of Justice, a Parliament; the *Translation* of the Relicks of a Saint; the *Translation* of the Empire, &c.

The Word is form'd of *trans*, beyond, and *latio*, of *ferre*, to carry.

The *Translations* of Bishops from one See to another, are prohibited by the Council of *Nice*, which renders them null, and appoints the *translated* Bishop to return to his former Church. --- The Council of *Sardica* excludes *translated* Bishops from Communion. It had been observ'd, that no Bishop was ever remov'd from a greater Church to a lesser; and that those who thus quitted their Churches, only did it out of Ambition or Avarice.

This Discipline was observ'd for 900 Years; and the first Instance of any *Translation* of Note, was that of Pope *Formosa*, who was Bishop of *Porto*. One of his Successors took hold of this Pretence to have him taken out of his



Grave; and a Council held soon after, forbid this *Translation* to be made a Precedent.

However, the same Church allow'd of some legitimate Causes of *Translations*; as, the apparent Advantage of the Church: Under which Pretence, *Translations* soon became so frequent, that for 500 or 600 Years last past, they have been esteem'd a Kind of Common Law. See BISHOP.

The *Translation* of a Religious from one Order to another, cannot be effected without the Consent of the Pope: 'Tis added, that it is not allow'd to *translate* from a severer Rule to a laxer one.

TRANSLATION is also us'd for the Version of a Book, or Writing out of one Language into another. See VERSION.

*Translators* frequently endeavour to excuse themselves at the Expence of their Language; and ask Pardon for it, as if it were not rich and copious enough to express all the Force and Beauties of the Original.

Thus is the *English* Tongue accus'd of the Poverty and Dryness which is in the *Translator's* own Genius; and the Faults charg'd on that, which should only lie at their own Doors.

The *Italians* have a Proverb, *Traduttore, Traditore*: A *Translator*, a Traytor.

TRANSMARINE, TRANSMARINUS, something that comes from, or belongs to, the Parts beyond Sea. See FOREIGN and EXOTIC.

TRANSMIGRATION, the Removal or Translation of a whole People into some other Country, by the Violence of a Conqueror.

Some translate the leading of the Children of *Israel* Captive into *Babylon*, the *Transmigration* of the *Israelites*, &c. See MIGRATION.

TRANSMIGRATION is particularly us'd for the Passage of a Soul out of one Body into another; the same with what we otherwise call METEMPSYCHOSIS.

The *Siamese*, F. *Tachard* informs us, from a Belief of the *Transmigration* of Souls into other Bodies, forbear killing any Beasts; lest, by that Means, they should dispossess the Souls of their deceas'd Relations.

TRANSMISSION, in Opticks, &c. the Act of a transparent Body passing the Rays of Light through its Substance, or suffering them to pass; in which Sense the Word stands in Opposition to *Reflection*. See REFLECTION.

*Transmission* is also frequently us'd in the same Sense with *Refraction*, by Reason most Bodies in *transmitting* the Rays, do also *refract* them. See REFRACTION.

For the Cause of *Transmission*, or the Reason why some Bodies *transmit*, and others reflect the Rays. See TRANSPARENCY and OPACITY.

The Rays of Light, Sir *Isaac Newton* observes, are subject to Fits of easy *Transmission* and each Reflection. See RAY and LIGHT.

TRANSMUTATION, the Act of transforming, converting or changing one Nature into another. See CONVERSION and TRANSFORMATION.

The Term is chiefly us'd in Chymistry and Medicine: 'Tis greatly question'd, whether the *Transmutation* of Silver into Gold, and of Tin into Silver, so much sought by the Chymists, be possible or not. See GOLD, &c.

The purest and subtlest Parts of the Food are *transmuted* or assimilated into the proper Substance of the Body. For the Manner how, see NUTRITION.

Nature, Sir *Isaac Newton* observes, seems delighted with *Transmutations*: He goes on to enumerate several Kinds of *Natural Transmutations*; gross Bodies and light, he suspects, may be mutually *transmuted* into each other; and adds, That all Bodies receive their active Force from the Particles of Light which enter their Composition. See LIGHT and FIRE.

For all fix'd Bodies, when well heated, emit Light as long as they continue so; and again, Light intermingles itself and inheres in Bodies as often as its Rays fall on the solid Particles of those Bodies. See OPACITY.

Again, Water, which is a fluid, volatile, tasteless Salt, is by Heat *transmuted* into Vapour; which is a kind of Air; and by Cold, into Ice, which is a cold, transparent brittle Stone, easily dissolvable; and this Stone convertible again into Water by Heat, as Vapour is by Cold. See WATER, VAPOUR, ICE, &c.

Earth, by Heat, becomes Fire; and by Cold, is turned into Earth again: Dense Bodies, by Fermentation, are rarified into various kinds of Air; and that Air by Fermentation also, and sometimes without, reverts into gross Bodies. See AIR, &c.

Quicksilver sometimes puts on the Form of a fluid Metal; sometimes it appears in Shape of a pellucid, fragile Salt, called *Sublimat*; sometimes of a pellucid volatile, white, tasteless Earth, called *Mercurius Dulcis*; by Distillation it becomes Vapour, and by Agitation in vacuo, shines like Fire, &c. See MERCURY and PHOSPHORUS.

All Bodies, Beasts, Fishes, Insects, Plants, &c. with all their various Parts, grow and increase out of Water, and aqueous and saline Tinctures; and by Putrefaction, all of

them revert into Water or an aqueous Liquor again. See WATER.

Further, Water expos'd a while to the open Air, puts on a Tincture, which in Process of Time has a Sediment and a Spirit; and before Putrefaction, yields Nourishment and a Animals and Vegetables. See NUTRITION and VEGETATION.

TRANSMUTATION, in Alchymy, the Act of changing or exalting imperfect Metals into Gold or Silver. See METAL, GOLD, &c.

This is also call'd the *Grand Operation*, and is to be effected with the Philosophers Stone. See PHILOSOPHERS Stone.

Some Alchymists hold, that the *Transmutation* should rather be call'd the *Perfection* of imperfect Metals; as holding all Metals intended by Nature to arrive equally at this Perfection, inasmuch as they are compos'd of the same Matter; and that 'tis only the Impurity of their Matrices, that is, of the Place wherein they are form'd by Nature, that has prevented their arriving thereat. See METAL.

The Elixir being projected on any of those Metals, it is suppos'd to purge, and separate the impure Parts from the pure, and to join itself wholly to the Mercury (which is the pure Part,) as being of the same Nature. See PROJECTION.

Whether or no Metals are *transmutable* into one another, is a Point strongly disputed among the Philosophers; the Alchymists strenuously asserting the Affirmative. See ALCHYMY.

Some Metals 'tis commonly allow'd may be chang'd into others, e. gr. Iron into Brass or Copper, and Lead into Tin; but *Cardan* and some others deny even this, and argue further, that tho' Iron and Brass, as being nearly alike in Weight and Tenacity, &c. provided their Colour and Hardness could be chang'd, might be converted into one another, either really, or, at least, apparently, yet would the *transmuting* or ripening of other Metals into Gold or Silver be still impossible; both as those Metals are all to be first calcin'd, after which they can never be brought again to their pristine Purity; and as there is a Generation requir'd, which is not the Work of Art, but Nature.

*Cardan de Metall. Lemery, Dickenson*, and others, give us Accounts of the various Impositions of *Adepti* in the Business of *Transmutation*; some, for Instance, fixing Mercury with Verdigrise, and then heightening the Colour with Cadmia, Turmeric, &c. But this, if try'd with the Coppel, all goes off in Fumes; and, in effect, nothing produc'd this Way ought to be adjudg'd true Gold, unless it endure Cop-pelling, Cementation, Purification, with Antimony and the Depart. See PURIFICATION, ESSAYING, &c.

Add, that it must have the Malleability, extreme Ductility, and specific Gravity of Gold, which is to Water as 18 and half to 1. See WEIGHT.

The Trick of *transmuting* Cinnabar into Silver is thus: The Cinnabar being bruis'd grossly, is stratify'd in a Crucible with granulated Silver, and the Crucible plac'd in a great Fire; and after due Time for Calcination, taken off: then the Matter being pour'd out, is found to be Cinnabar turn'd into real Silver, tho' the Silver Grains appear in the Number and Form they were put into the Crucible; but the Mistake chief is, coming to handle the Grains of Silver, you find them nothing but light friable Bladders, which will crumble to Pieces between the Fingers.

Mr. *Boyle* in his Scept. Chymist. tells us, that two Friends of his did, by urging Mercury in a skilfully manag'd Fire, turn it almost Weight for Weight into Water; but does not say what was the specific Gravity of the produc'd Water, nor of the remaining *untransmuted* Mals of Mercury. -- He likewise assures us, that Rain Water being distill'd and re-distill'd by a Friend of his, near 200 times, did, after each Distillation, leave, at the Bottom of the Glass Body, a considerable Quantity of a white Earth; and that more plentifully in the latter Distillation than the former. This he believ'd to be a certain Quantity of Water actually *transmuted* into Earth; adding, that it was above twice as heavy specifically as common Water, and of so fix'd a Nature, that it lay a considerable Time in a red hot Crucible, without losing any thing of its Weight, or emitting any Smoak.

TRANSMUTATION, in Geometry, the Reduction, or Change, of one Figure or Body into another of the same Area, or Solidity, but of a different Form; as a Triangle into a Square; a Pyramid into a Parallelopiped, &c. See FIGURE, &c.

TRANSMUTATION, in the higher Geometry, is us'd for the Converting a Figure into another of the same Kind and Order, whose respective Parts rise to the same Dimensions in an Equation, admit the same Tangents, &c. See TRANSFORMATION.

If a rectilinear Figure be to be *transmuted* into another, 'tis sufficient that the Intersections of the Lines that compose it, be transferr'd; and Lines drawn thro' the same in the new Figure. See REDUCTION.

If the Figure to be *transmuted* be Curvilinear, the Points, Tangents, and other right Lines, by means whereof the



Curve Line is to be defin'd, must be transferr'd. See CURVE.

TRANSMUTATION of Plants. See SEED.

TRANSOM, among Builders, the Piece that is framed across a double light Window. See WINDOW.

TRANSOM among Mathematicians, denotes the Vane of a Cross-staff; or a wooden Member fixed across it, with a square Socket whereon it slides, &c. See VANE and CROSS-STAFF.

TRANSOM, in a Ship, is a Piece of Timber which lies athwart the Stern, between the two Fashion Pieces, directly under the Gun-room-port.

TRANSPARENCY, or *Diaphaneity*, in Physics, a Quality in certain Bodies, whereby they give Passage to the Rays of Light. See LIGHT.

The *Transparency* of natural Bodies, as Glass, Water, Air, &c. some have imputed to the great Number, and Size of the Pores or Interstices between the Particles of those Bodies: But this Account is exceedingly defective; for the most solid and opaque Body in Nature, we know, contains a great deal more Pores than it does Matter; a great deal more, sure, than is necessary for the Passage of so infinitely fine and subtile a Body as Light. See PORE.

*Aristotle*, *Des Cartes*, &c. place *Transparency* in the Rectitude or Straightness of the Pores; by means of which, say they, the Rays are enabled to make their Way through, without striking against the solid Parts, and being reflected back again: But this Account, *Sir Isaac Newton* shews, is lame; the Quantity of Pores in all Bodies being sufficient to transmit all the Rays that fall on them, howsoever those Pores be situated with respect to each other.

The Cause, then, why all Bodies are not *Transparent*, must not be ascribed to their wanting Rectilinear Pores; but either to the unequal Density of the Parts; or to the Pores being fill'd with some foreign Matters, or their being empty; by means of which, the Rays in passing thro', undergoing a great Variety of Reflections and Refractions, are perpetually diverted this way and that, till at length falling on some of the solid Parts of the Body, they are extinguish'd and absorbed. See RAY and REFLECTION, &c.

Thus, Cork, Paper, Wood, &c. are Opaque; when-as Glass, Diamonds, &c. are *Transparent*: The Reason is, that in the neighbourhood of Parts equal in Density, such as those of Glass, Water, Diamond, &c. are with respect to each other; the Attraction being equal on every Side, no Reflection or Refraction ensues; but the Rays which enter'd the first Surface of the Bodies, proceed without Interruption quite through the Body; those few only excepted, which chance to meet with the solid Parts. But in the Neighbourhood of Parts, that differ much in Density, such as the Parts of Wood and Paper are both in respect of themselves, and of the Air or the empty Space in their Pores; as the Attraction will be very unequal, the Reflections and Refractions must be very great; and therefore the Rays will not be able to make their Way through such Bodies, but will be perpetually deflected, and at last quite stopp'd. See OPACITY.

TRANSPARENCY, in Heraldry, the same as *Adumbration*. See ADUMBRATION.

TRANSPIRATION, the insensible, or almost insensible Passage of an excrementitious Matter through the Pores of the Skin; called also *Perspiration*. See PERSPIRATION.

There are an Infinity of these *transpiratory* Pores in the Skin; the most considerable whereof, are the Orifices of the Ducts arising from the milliary Glands. See PORE and SKIN.

The Cause of *Transpiration*, is the Circulation and Heat of the Blood.

Insensible *Transpiration* is found very much to exceed all the sensible Evacuations put together. *Sanctorius* even shews, in his *Medicina Statica*, that a Person loses more in one Day by *Transpiration*, than by all the other Outlets, in Fifteen. He adds, that if the Food taken in one Day weigh Eight Pounds, the *Transpiration* will be Five of them.

Cold prevents *Transpiration*, by its constringing the Pores of the Skin, and thickening the Liquors circulating in the cutaneous Glands: Heat, on the contrary, augments *Transpiration*, both by its opening the excretory Ducts of the Glands, and by its increasing the Fluidity and Velocity of the Humours. See COLD, &c.

M. *Dolart*, from a Number of Experiments made for 33 Years together, assures us that we *transpire* much more in Youth than in Age.--- In some Persons, the *Transpiration* is so copious, that they void but very little of the coarser Excrements, though they eat very heartily.

*Transpiration* is absolutely necessary in the Animal Economy, to purify the Mass of Blood, and discharge it of a Number of useless heterogeneous Particles which might corrupt it. Hence it is, that upon a Stoppage of the usual *Transpiration*, there arise so many Indispositions, particularly Fevers, Agues, Itch, &c.

*Transpiration* is also of use to the Organ of Feeling, in that it prevents the Papillæ of the Skin from being dry'd,

either by the Air, or by the continual Touches of external Bodies.

TRANSPIRATION is also used by some Authors, for the Entrance of the Air, Vapours, &c. through the Pores of the Skin into the Body.

*Cardan*, by this kind of *Transpiration*, accounts for the Prodigy of a Woman, whose daily Urines weigh'd 27 Pounds; though all the Foods she took, both dry and liquid, did not exceed Four Pounds.--- Dr. *Baynard* suspects some such *Transpiration* to be the Cause in hydropical Persons. See DROPSY.

TRANSPLANTATION or TRANSPLANTING, in Agriculture and Gardening, the Removing of Trees or Plants, from the Places where they were sowed or bred up, and planting them in other. See PLANTING and REPLANTING.

In the *Transplanting of Forest Trees*, Care is to be taken to preserve the Roots, and even the fine Hairs or Filaments thereof, with the Earth that sticks thereto; these Filaments being the Mouths that suck the Nourishment, and transfuse it to the Tree. See ROOT and VEGETABLE.

The Pits or Poles, into which the Trees are *transplanted*, should be left open for some time before hand, that the Rain, Frost and Sun may dissolve the compacted Salt, render the Earth friable, and qualify it for nourishing the Tree.--- The same may be done, in some measure, by burning Straw in the new Pits, and drenching the Mould with Water in dry Seasons, and by enriching the Ground with Manure. See MANURE.

*Pliny* was of Opinion, no Tree should be removed under two, or above three Years old. *Cato* would have none *transplanted* less than Five Fingers in Diameter: But we are, now, able to *transplant* Trees of all Ages and Sizes, without Danger.

To *transplant* old Trees, was reckon'd so difficult, that *Veterem Arborem transplantare* is become a Proverb for a difficult Enterprize; and yet we are informed of a Grove of Six hundred Coco Trees of 80 Years Growth, and 60 Foot high to the lowest Bough, *transplanted* by Count *Maurice*; to his Paradise of *Friburg*: And a great Person in *Devonshire*, Mr. *Evelyn* tells us, *transplanted* Oaks, as big as Twelve Oxen could draw, to supply a Defect in an Avenue.

For the *Transplantation* of grown Trees, Mr. *Evelyn* gives the following Method, as practis'd with good Success by the Lord *Fitzharding*: Choose Trees about the Thickness of a Man's Thigh; remove the Earth from about them; cut through all the side Roots, till the Tree may be, by force, brought down on one Side; so that the tap Roots may be conveniently come at to be cut off with the Ax: then redress the Tree, and let it stand cover'd with the Mould from which it was loosen'd, till next Year, or longer; and by that time it will have drawn new tender Roots fit for *transplanting*, and may be taken up at a fit Season.

Otherwise, for very large Trees; e'er the hard Frosts come on, make a Trench about the Tree, at such Distance from the Stem, as you judge sufficient for the Root; dig so deep, as almost to undermine it; place Blocks, and Quarries of Wood to sustain the Earth, and cast in as much Water as may fill the Trench or sufficiently wet it, unless the Ground were very moist before. Thus let it stand till some hard Frost bind it firmly to the Roots, and then convey it to its new Station, which may be preserv'd from freezing, by placing store of warm Litter in it: so close the Mould the better to the straggling Fibres, and place the Earth taken out of the Pit about the Root of the new-planted Tree.

The common Rules for *Transplanting*, are, 1° The lighter the Soil is, the deeper are the Trees to be planted. 2° If the Soil be Gravel, or Sand, mix Clay with it, and *vice versa*. 3° The best Season, is either *October* or *February*; in warm, moist, clear Weather. 4° The large Roots to be abated, to prevent the Necessity of digging too deep; but the small Fibrous ones to be spared. 5° In taking up the Trees to observe how the Roots grow, and in *Transplanting*, to dispose them in the same Order, and place the Tree to the same Aspect. 6° To defend young Trees after *Transplantation*, both from Wind and Sun, till the Roots be fix'd, and they begin to shoot. 7° If the Soil you *transplant* into, be good, don't top the Trees, but lop all the Boughs to one single one, the most upright and promising among them: But if the Soil be poor, top them, and when they are shot out again, lop off all the Branches to one. See PRUNING.

TRANSPLANTING of Fruit-Trees. After a Summer's Growth of Fruit Seedlings in the Seminary, such are pull'd up as are above a Foot high, and *transplanted* into a Nursery; the rest to be left in the Seed-Plot till another Year. See SEMINARY.

When drawn up, the Sprigs are to be cut off, from about the Top, the Strings from the Roots, and the Extremities, both of the Top, that it mayn't run too fast upwards, and of the tap or heart Root, that it may not pass directly downwards; lest it go beyond the good Soil. The Holes, or Pits to be so deep, as that the Plants may stand somewhat deeper in the Ground, than when in the Seed-plot; close the



the Mould about them, and if it be a dry Time, water them the first Day, and cover the Soil with old Fern.

Mr. Bradley gives us a new Method of *Transplanting* Trees of all Kinds and Ages with Safety, either while they are in Blossom, or with Fruit upon them; thus: The Holes to receive the Trees, are to be prepared before the Trees are taken up; and the Earth which comes out of the Holes to be made very fine, and put into large Tubs and mix'd with Water, till it be about the Consistence of thin Batter. Then the Holes wherein the Trees are to be planted, are to be fill'd with this thus-temper'd Earth, before the earthy Parts have time to settle.

The Advantage hereof is, that the Trees thus planted, have their Roots immediately inclosed and guarded from the Air; and the warm Season of the Year disposing every Part of the Tree for Growth and Shooting, it will lose very little of its Vigour. --- In Winter it does not succeed.

The same Author adds, that in consideration of the Circulation of the Sap, it is as necessary to preserve the Vessels of Trees entire, as those in Animal Bodies: And therefore in *transplanting* Trees in the Summer Seasons, 'tis not proper to cut off any of the Branches, or wound any of the Vessels, till they have renewed their Roots, which it is of absolute Necessity to wound in *Transplanting* them. For the wounded Roots, he has provided a Plaister of a Mixture of Gums to prevent the Canker and Rot, and promote their Healing.

*TRANSPLANTATION*, in Natural Magic, is used for a Method of curing Diseases, by transferring them from one Subject to another; much in Vogue among certain Philosophers. See *SYMPATHETIC*.

This *Transplantation* is effected, either by the Use of a certain Medium, called on that account a *Magnet*; or without, by simple Contact.

The first Kind, which is that most properly call'd *Transplantation*, is when the Patient's Excrement being mix'd up with Earth, the Disease is *transplanted* into a Vegetable, arising from a Seed sown in the said Compost; or, when the Parings of the Nails of a gouty Person, are inclosed in an Auger-hole made in a Plant, particularly an Oak.

Here the Patient's Excrement is the Magnet, and the vital-Spirit of the Plant arising from the Seed, is the Mumia which the Magnet receives; and the Case is the same, in the Parings of the Nails, and the vital Spirit of the Oak. See *MUMIA*.

The second Kind of *Transplantation*, properly call'd *Approximation*, is, when a Finger seiz'd with a Panaris or Whitlow, is cured by rubbing in a Cat's Ear, which is held to receive the Pain.

In this Case, the sound Subject receives the vital Spirits, unites with them, and corrects their morbid State: And, as certain Diseases are got by Approximation; the infected Spirits of a diseas'd Body, insinuating themselves into a sound one, and thus infecting the same; so they are cured by Approximation; when the Spirits of a diseased Person entering a sound Body, the latter corrects and retrieves the morbid State of the former.

*Transplantation*, by means of the Magnet, is of five Kinds, viz. *Inscination*, *Implantation*, *Imposition*, *Irroration* and *Infection*; each whereof, see under its proper Article, *INSCINATION*, *IMPLANTATION*, &c.

*TRANSPORT-SHIP*, is a Vessel whereon to convey Provisions, warlike Stores, Soldiers, &c. See *VESSEL*.

*TRANSPORTATION*, the Act of conveying, or carrying a thing from one Place or Country to another. See *EXPORTATION*.

In Matters of Commerce, *Transportation* is of equal Import with *Re-exportation*, viz. the taking up of Commodities in one foreign State or Kingdom, bringing them hither, and paying Duties for them; and then conveying them into some other foreign State, &c. by which it is distinguish'd from *Importation* and *Exportation*; where the Commodities are either carried originally out of, or brought finally into, our own Kingdom. See *IMPORTATION* and *EXPORTATION*.

Our *Transportation* or *Re-exportation* of Wooll, Butter, Hides, Tallow, Herrings, Beef and Salmon, which we transport from *Ireland*, to other Provinces, being the Concerns of our Merchants, and paying Duties to His Majesty, have been reckon'd at 300,000 *l.* per Annum.

'Twould be tedious to enumerate the Value of our *Transportations* from *Denmark*, *Sweden*, *Spain*, *Portugal*, the *Streights*, *Turkey*, *Guinea*, &c. the most considerable, is from the *East Indies*. In the Infancy of that Trade, viz. in the Year 1613, of Pepper only, besides what we consumed at Home, we *transported* in one Year to other Countries, after it had paid Duty here, to the Value of 200,000 *l.* and of late Years our Exportation of what we bring from thence, after we have supplied ourselves, is computed at 500,000 *l.* Sterling. See *NAVIGATION* and *COMMERCE*.

*TRANSPORTATION* is also a kind of Punishment; or, more properly, an Alleviation or Commutation of Punishment, for Criminals convicted of Felony, who, for the first Offence,

unless it be an extraordinary one, are ordinarily *Transported* to the Plantations, there to bear hard Labour for a Term of Years, within which if they return, they are executed without further Trial. See *FELONY*, *PUNISHMENT*, &c.

*TRANSPOSITION*, in Algebra, the bringing any Term of an Equation over to the other Side. See *TERM*.

Thus if,  $a + b = c$ , and you may make  $a = c - b$ ;  $b$  is said to be *transposed*. See *EQUATION*.

*TRANSPOSITION*, in Grammar, call'd also *Hyperbaton*, a disturbing or dislocating of the Words in a Discourse; or a changing of their natural Order of Construction, to please the Ear, by rendering the Contexture more easy, smooth, and harmonious. See *HYPERBATON*.

A *Transposition*, which renders the Sense perplex'd, is vicious.

The Construction of the ancient Languages being much more Artful than that of the Modern ones; allowed of much greater and more frequent *Transpositions*. The *English*, *French*, &c. scarce ever allow of them but in Oratory and Poetry; in which Cases they serve to give a Force and Energy to the Discourse or the Verse, and to prevent their languishing. See *CONSTRUCTION*.

*TRANSPOSITION in Music*, is a changing of the Notes of a Piece of Music. See *NOTE*.

Of this there are two Kinds; the first with respect to the *Clef*, the second with respect to the *Key*.

*Transposition with respect to the Clef*, consists in the changing of the Place or Seats of the Notes or Letters, amongst the Lines and Spaces; but so as that every Note is set at the same Letter. See *CLEF*.

This is done either by removing the same Clef to another Line; or by using another Clef, but with the same Signature, by reason the Piece is still in the same Key. See *CLEF*.

The Practice is easy in either Case: In the first, you take the first Note at the same Distance above or below the Clef-Note, in its new Position as before; and all the rest of the Notes in the same Relations or Distances from one another; so that the Notes are all set on Lines and Spaces of the same Name.

In the second, or setting the Music to a different Clef, 'tis to be observed, the Places of the three Clef Notes are invariable in the Scale, and are to one another in these Relations, viz. the Mean a 5th above the Bass, and the Treble a 5th above the Mean. Now to *Transpose* to a new Clef, e. g. from the Treble to the Mean; where-ever that new Clef is set, we suppose it the same individual Note, in the same Place of the Scale, as if that Piece were that Part in a Composition to which this new Clef is generally appropriated; that so it may direct to the same Notes we had before *Transposition*: Now, from the fix'd Relations of the three Clefs in the Scale, it will be easy to find the Seat of the first *Transposed* Note; and then all the rest are to be set at the same mutual Distances they were at before. See *SCALE*.

Suppose, e. g. the first Note of a Song be *A*, a 6th above the Bass-clef; where-ever that Clef is placed, the first Note must be the greater 2d above it, because a greater 2d above the Mean is a greater 6th above the Bass-clef, the Relation of the two being a 5th. --- So that the first Note will still be the same individual *A*.

The Use of this *Transposition* is, that if a Song being set with a certain Clef, in a certain Position, the Notes go far above or below the System of five Lines; they may, by the Change of the Place of the same Clef in the particular System, or by taking a new Clef, be brought more within the Compass of the Lines.

*Transposition from one Key to another*, is a changing of the Key; or a setting all the Notes of the Song at different Letters, and performing it, consequently, in different Notes upon an Instrument. See *KEY*.

The Design hereof is, that a Song which being begun in one Note, is too high or low, or otherwise inconvenient for a certain Instrument; may be begun in another Note, and then that carried on in all its just Degrees and Intervals.

The Clef and its Position here remain the same; and the Change is of the Notes themselves, from one Letter, and its Line or Space, to another.

In the former *Transposition*, the Notes were express'd by the same Letters, but both removed to different Lines and Spaces: In this, the Letters are unmoved, and the Notes of the Song transferr'd to, or express'd by other Letters, and consequently set upon different Lines and Spaces, which therefore, requires a different Signature of the Clef.

*TRANSPOSITION of Equation*. See *EQUATION*.

*TRANSSUMPTION*, *TRANSMISSION*, in the Schools, a Syllogism by Concession or Agreement, us'd where a Question propos'd is transferr'd to another, with this Condition, that the Proof of this latter shall be admitted for a Proof of the former.

Thus *Aristotle* in his Book *de Caelo*, undertaking to shew that all the Stars are round, transfers the Question to the Moon, and proves her Rotundity from her Increasing and Waning.



Waining; supposing it a Thing admitted by his Opponents, that the Stars are all alike.

**TRANSUBSTANTIATION**, in Theology, the Conversion or Change of the Substance of the Bread and Wine, in the Eucharist, into the Body and Blood of Jesus Christ. See **EUCCHARIST**.

*Transubstantiation*, taken in its general and literal Sense, implies any Change of one Substance into another; thus, the Change of *Moses's* Rod into a Serpent; of the Waters of the Nile into Blood; of *Lor's* Wife into a Pillar of Salt, were preternatural *Transubstantiations*; and the Change of the Food we eat, into the Substance of our Bodies, is a natural *Transubstantiation*. See **SUBSTANCE**.

But the Word in its proper Sense, as a Term, is restrain'd to the miraculous Change which the *Romish* Church holds is wrought in the Sacrament, by the Consecration of the Priest.

One of the great Articles of that Church, rejected by the Reform'd, is that of *Transubstantiation*; the latter maintaining the *Transubstantiation* to be only figurative, and the former real.

The Reform'd interpret *est, is*, in the Text, *Hoc est Corpus meum*, This is my Body, by significat; *q. d.* this signifies my Body: But the Council of *Trent* stand up strenuously for the literal Sense of the Verb: Thus, in Can. 1. Sess. 13. of that Council, 'tis expressly decreed, that in *Transubstantiation*, the Body and Blood of our Lord Jesus Christ are truly, really, and substantially under the Species of Bread and Wine.

'Tis added, that by *truly*, we mean properly, and not only by Signification, as if the Eucharist were no more than a Sign of the Body and Blood of Jesus Christ: That by *really*, we mean in Fact, and not only in a Figure, as if the Eucharist were only a Figure and Representation of the Body and Blood of the Saviour of the World: And that by *substantially*, we mean in Substance, and not only in Virtue and Energy. --- Thus is *truly* oppos'd to a simple Sign; *really* to a Figure; and *substantially* to Energy.

**TRANSVERSALIS**, in Anatomy, a Name given to several Muscles, &c. in respect of their Situation, Progress, &c. as the

**TRANSVERSALIS Abdominis**, a Muscle which lies under the Obliqui, and arises from the Cartilago Xiphoides, from the Extremities of the false Ribs, from the Transverse Apophysis of the Vertebrae of the Loins, and fix'd to the inner Side of the Spine of the Ilium, and inserted in the Os Pubis, and Linea Alba.

This, with the Obliqui, (which see) unites its Tendons, as it approaches the *Linea Alba*, and is the only Muscle that is cut in the Operation of the *Bubonocoele*: It has a fine and thin Membrane that closes exactly its Ring or Hole, through which the Vessels pass.

**TRANSVERSALIS Colli**, is a Part of the *Transversalis Dorfi*, which some divide into three, viz. the Sacer, Semispinatus, and *Transversalis Colli*.

It arises from the Os Sacrum, and from all the transverse Processes of the Vertebrae of the Loins, Back, and Neck, except the two first; and is inserted by so many distinct Tendons to all their superior Spines: It moves the whole Spine obliquely backwards.

**TRANSVERSALIS Pedis Placentalis** comes from the Bone of the Metatarsus, that sustains the Toe next the little Toe, and passing across the other Bones, is inserted into the Os Sesamoides of the great Toe: Its Use is to bring all the Toes close to one another.

**TRANSVERSALIS Penis** arises from the Ischium just by the Erectores, and runs obliquely to the upper Part of the Bulb of the Urethra.

It helps to press the Veins upon the Back of the Penis, against the Os Pubis, which is the Cause of Erection. See **ERECTION**.

|                        |         |               |
|------------------------|---------|---------------|
| TRANSVERSALIS Dorfi    | } See { | SEMISPINATUS. |
| TRANSVERSALIS Lumborum |         | SACER.        |
| TRANSVERSALIS Femoris  |         | QUADRATUS.    |

**TRANSVERSALIS** is also a Name given to a Suture of the Cranium, because of its traversing or crossing the Face from one Side to other. See **SUTURE**.

It arises at one of the lesser Angles of the Eye, and passing along the Bottom of its Orbit, and the Root of its Nose, terminates in the other lesser Angle.

**TRANSVERSE**, something that goes across from Right to Left, or from Corner to Corner.

Thus Bends and Bars in Heraldry are *transverse* Pieces or Bearings. See **BEND**.

The Diagonals of a Parallelogram or a Square are *transverse* Lines. See **DIAGONAL**.

Lines which make Intersections with Perpendiculars, are also call'd oblique or *transverse* Lines. See **LINE**, **PERPENDICULAR**, **OBLIQUE**, &c.

**TRANSVERSE Axis**, or *Diameter*, call'd also the *first* or *principal Axis*. See **AXIS** and **LATUS Transversum**.

The *Transverse Axis* of an *Ellipsis*, is the longer Axis, or that which *traverses* it lengthwise, in contra-distinction to the Conjugate one. See **ELLIPSIS** and **CONJUGATE**.

The *Transverse Axis* of an Hyperbola, is the Line **D K**, Tab. Conicks, Fig. 17. cutting the Curve in the Points **D** and **K**. See **HYPERBOLA**.

**TRANSVERSE Muscles**, in Anatomy, are certain Muscles arising from the *transverse* Processes of the Vertebrae of the Loins. See **VERTEBRÆ** and **LOINS**.

**TRANTERY**, in some Customs, is the Money arising by Amerciaments of Ale-sellers and Victuallers, for breaking the Assize of Bread and Ale. See **ASSIZE**.

Particularly at *Lusson*, and other Manors in *Herefordshire*.

**TRAVERSE** or **TRANSVERSE**, something that goes athwart another, *i. e.* crosses and cuts it obliquely. See **TRANSVERSE**.

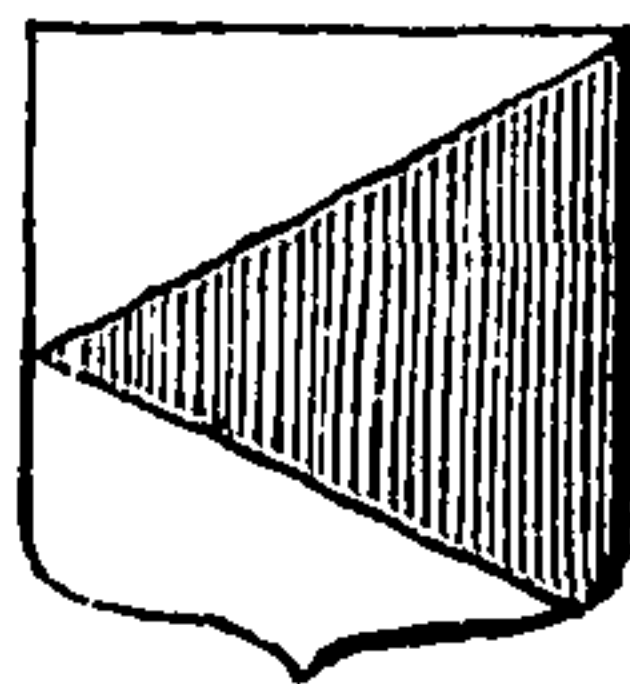
**TRAVERSE** is particularly used for a Piece of Wood or Iron placed transversely, to strengthen and fortify another. Such are those used in Gates, Windows, &c.

To plane a Board against the Grain, is also call'd among Joiners, &c. to *Traverse* it.

**TRAVERSE**, in Gunnery, signifies to turn or point a Piece of Ordnance which Way one pleases, upon her Platform. See **ORDNANCE**, **CANNON**, &c.

The laying and removing a Piece of Ordnance or a great Gun, in order to bring it to bear, or lie level with the Mark; is also called *Traversing the Piece*. See **GUNNERY**, &c.

**TRAVERSE** is sometimes also used in Heraldry, for a Partition of an Escutcheon, of the Figure adjoining, which they Blazon parted *per pal Traverse*, Argent and Gules.



**TRAVERSE**, in Navigation, is the Variation or Alteration of a Ship's Course, occasion'd by the shifting of the Winds, Currents, &c. See **COURSE**.

*Traverse Sailing*, is used when a Ship having set Sail from one Port, towards another, whose Course and Distance from the Port sail'd from, is given or known, is, by reason of contrary Winds, or other Accidents, forced to shift and sail on several Courses, which are to be brought into one Course, to learn, after so many Turnings and Windings, the true Course and Distance made from the Place sail'd from, and the true Point or Place where the Ship is; that so the Wind coming fair, it may be known how to shape a Course for the Place intended. See **SAILING**.

This may be perform'd Geometrically two Ways: The First, by drawing new Meridians, through the Extremity of every Course, parallel to the first Meridian, or North and South Lines at first made: and setting off every Course with a Sweep of 60, as if it were a Question in Plain Sailing. You may also let fall Perpendiculars to every new Meridian, from the Point that the Ship sail'd to upon that Course, by which you have the Course, Distance, Difference of Latitude and Departure to every Course. To illustrate this by an Example: A Ship being bound for a Port distant 120 Miles N. E. 1 E. sails S. S. E. 30 Miles, then N. E. by N. 40, then E. by N. 25, then N. N. E. 44; 'tis requir'd to find the Course and Distance made good, and also the Course and Distance to the Port bound for.

Draw the Line **H K** (Tab. Navigation, Fig. 17.) at pleasure, for a Meridian, or North and South Line, and therein assume a Point, as at **A**, for the Port sail'd from; then with 60 of the Chords, and one Foot in **A**, draw the Arch **L m**, upon which set off two Points (because the Course is S. S. E.) from **L** to **m**, and draw the Line **A m**, upon which set off the Distance 30, from **A** to **B**; then is the Ship at **B**: Thus letting fall the Perpendicular **B K**, **AK** 27° 7' is the Difference of Latitude, and **B K** 11° 5', the Departure for the first Course.

For the second Course, with the Distance **K B**, draw the Parallel **BN**, and thereby with the Chord of 60, as before, set off the Second Course and Distance, N. E. by N. 40, from **B** to **C**, and let fall the Perpendicular **CI**, then is the Ship at **C**, the Difference of Latitude upon that Course is **BI** 33: 3, and Departure **CI** 22: 2.

Proceed in the same manner for the third Course, with the Parallel **CO**, set off E. by N. 25, from **C** to **D**, and draw the Line **DP**, from which set off the last Course, N. N. E. 44, then is your Ship at **E**.

Since, then, the Ship came from **A**, and is now at **E**, the Line **A E** measured on the same equal Parts, upon which all the other Distances were taken, will be found 91 Miles, and the Arch **R Q** measured on the Rhumbs, five Points, viz. N. E. by E. so that the Ship is now 91 Miles N. E. by E. from the Port sail'd from.

To find her Course and Distance to the Port bound for, set off 4 half Points upon the Arch **R Q** from **R** to **S**, and from **A** through **S** draw the Line **A S P**; upon which set off



120, the Distance from the Port sailed from to the Port bound for, from A to F, then is, F the Port bound for; now the Port bound for being at F, and the Ship being but at E, the Line EF measured on the same equal Parts that the rest was taken from, will be found to be 31, and the Arch TU measured on the Chords, is  $35^{\circ} 12'$ , or N. E. by N. somewhat easterly, &c.

This Method is useful, where the Courses tend generally one way, without intersecting one another; but if they often cross, 'tis best to have recourse to the 2d Method, which is without new Meridian.

In order to this, observe how many Points are between the Point next to be laid down, and the Point opposite to the Course last laid down; for that is the Point for laying down; then, with the Chord of 60, and one Foot in the Point the Ship is last come to, describe an Arch; upon which set off the Points found by the abovesaid Rule, and through that draw the Line for the next Course, &c. For an Example;

Draw a North and South Line, as in the former, as the Line RM, Fig. 17; in which assume a Point, as at A, for the Port sail'd from; then from A set off the first Course and Distance, viz. N. N. W. 68, from A to B, and for the second Course, with the Chord of 60, and one Foot in B, draw the Arch TW, upon which to set off the next Course S. S. W. 70, observe the Rule above delivered, viz. To take the Number of Points between the Point opposite to the last Course sail'd, and the Point you are next to sail. The Reason of which Rule is this: If from A to B your Course be N. N. W. the Back from B to A, must needs be S. S. E. the opposite Point, and then if you were to sail S. by E. it must be one Point to the Southward of that S. S. E. Line; if South. it is two Points, and consequently the next Course being S. S. W. I set off 4 Points, upon which set off 70 Miles, from B to C, and then is your Ship at C: For the third Course, if from B to C be S. S. W. then from C to B N. N. E. but the next Course being E. half N. the Points between N. N. E. and E. half N. are five Points and an Half, and therefore with the Chord of 60 and one Foot in C, draw the Arch xy, upon which set off five Points and an Half, from x to y, and through y draw the Line CD, upon which set off 90 Miles from C to D, then is y our Ship at D.

After the same Manner lay down all the rest, as DE W. N. W. half N. 70, then EF South 25, then FG, E. half S. 45; then lastly GH, South 30, which is the last Course.

Thus your Ship being at H, and the Port sail'd from at A, the Line AH 28 Miles, is the Distance made good; and the Angle at A is four Points, viz. S. E. but the Port intended for, being S. W. 55. Set it from A to K, and the Ship being at H, the Line HK, 62 Miles, is the Distance from the Ship to the Port bound for; and the Course is found by measuring the Angle at H  $71^{\circ} 48'$  or W. S. W. more than a Quarter Westerly, &c.

To work a TRAVERSE by the Tables of Difference of Latitude and Departure.

This is the principal Use those Tables are intended for; and the Way of working a Traverse hereby, is equal to the best for Exactness, and superior in Point of Expedition.

Make a little Table with six Columns, the First for the Course, the Second for the Distance, the Third for the Northing, the Fourth for the Southing, the Fifth for the Easting, the Sixth for the Westing. Then find the Difference of the Latitude and the Departure to every Course, and set them in their proper Columns; as where the Course is Northerly, set the Difference of the Latitude under Northing, or in the North Column; and where the Course is Southerly, set the Difference of Latitude in the South Column.

Again, where the Course is Easterly, set the Departure in the East Column, and when Westerly, set it in the West Column; then adding up each Column by itself, subtract the North and South Columns, the greater from the lesser, the Remainder is the Northing or Southing made good. Also subtract the East and West Columns, the bigger from the lesser, the Remainder is the Easting or Westing made good; then have you the Difference of Latitude and Departure given, to find the Course and Distance.

In the first Example above specified, the first Course is S. S. E. 30 Miles, or two Points 30 Miles; for which, I find the Difference of Latitude  $27 : 7$ . Now the Course being between South and East, I place my Difference of Latitude in the South Column, and my Departure  $11 : 5$  in the East Column, leaving the North and West Columns blank.

Then for the Second Course, N. E. by N. or three Points 40 Miles, my Difference of Latitude,  $33 : 3$  is to be placed in the North Column, and the Departure  $22 : 2$ , in the East Column, because the Course is between the North and East.

Then the third Course being E. by N. or seven Points, 25 Miles, I place my Difference of Latitude,  $4 : 9$  in the North Column, and Departure  $24 : 5$ , in the East Column.

And so for the fourth Course N. N. E. or two Points 44 Miles, I place my Difference of Latitude  $40 : 6$ , in the North Column, and my Departure,  $16 : 8$ , in the East Column; then adding up each Column, the Sum of the Northing Column is  $78 : 8$ , and the Sum of the South Column is  $27 : 7$ , which subtracted from the Northing 78 : 8, the Remainder  $51 : 1$ , is the Difference of Latitude made good, which is Northing, because the Northing was the greater Number.

Again, the Sum of the Easting Column is  $75 : 0$ , which, because there is no Westing to subtract from it, is the Easting made good. Thus you have the Northing  $51 : 1$ , and the Easting  $75 : 0$  given, to find Course and Distance; and though you cannot find in the Table the exact Number of  $51 : 1$ , and  $75 : 0$  together, yet find the nearest you can, which is  $75 : 4$ , and  $50 : 9$ , over which at the Top, you find 34 Degrees for the Course, which is N. E. by N.  $0^{\circ} 15'$  easterly, and the Distance 91 Miles.

TRAVESTY or TRAVESTI, a Term which some late Authors have introduced into Poetry. The Word is originally French, being a Participle, of the Verb *Travestir*, to disguise one's self, or to appear in Masquerade. Hence *Travesty* comes to be applied to the disfiguring of an Author, or the Translating him into a Style and Manner different from his own; by which means it becomes difficult to know him.

G. Battista Lalli, has travestied Virgil, or turn'd him into Italian Burlesque Verse. Scarron has done the same in French, and Cotton and Phillips in English Verse. See BURLESQUE.

Castalio is charged with having travestied the Bible, by reason of the Difference of Air and Stile between his Version and the Original.

TRAUMATICKS, *Traumatismé*, Vulneraries; are Herbs or Drugs good for the curing of Wounds. See VULNERARY.

TRAYL-BASTON, TRAIL-BASTON (*q. d. trake baculum*, drag a Club or Staff). See JUSTICE of Trail-baston.

Edward I. in his 32d Year, sent out a new Writ of Inquisition, called *Trail-baston*, against the Intruders on other Mens Lands, who to oppress the right Owner, would make over their Lands to great Men; against Batterers hired to beat Men; Breakers of Peace; Ravishers; Incendiaries; Fighters; false-Assisors and other Malefactors; which Inquisition was so strictly executed, and such Fines taken, that it brought in a world of Treasure to the King.

TRAYTOR, TRAITOR, TRADITOR, a Betrayer of his King and Country; or one guilty of High Treason. See TREASON and TRADITOR.

TRAYTEROUS *Position*, is particularly understood of a Tenet, which some formerly held, of the Legality and Property of taking Arms by the King's Authority against his Person and those commission'd by him; which is condemn'd by Statute 14 Car. II.

TREACLE, in Pharmacy, &c. See THERIACA.

TREASON, *Treachery*; the Act of Infidelity to one's lawful Sovereign.

*Treason*, in our Laws, is of two Sorts, viz. High and Petty Treason.

High TREASON or TREASON Paramount, is an Offence committed against the Security of the King or Kingdom, whether by Imagination, Word or Deed. Such are, To compass or imagine the Death of the King, Queen or Prince; or to Deslour the King's Wife, or his Eldest Daughter unmarried, or his Eldest Son's Wife; or to levy War against the King in his Realm; to adhere to his Enemies; Counterfeit his great Seal or Money; to kill the King's Chancellor, Treasurer, Justices of either Bench, Justices in Eyre, of Assize, or of Oyer and Terminer, being in their Place during their Office; diminishing or impairing current Money; saying that the King is a Heretic or Papist, or intends to introduce Popery, &c. Anno 13 Car. II.

'Tis a Maxim, That *In majori Proditione, omnes sunt Principales*; there are no Accessaries in Treason, all are Principals.

Also, that *Voluntas non reputabitur pro facto, nisi in causa Proditionis*; the Will is never taken for the Deed in any Case, but that of High Treason: Though some High Treasons are much more Heinous than others, yet the Punishment appointed by Law, is the same in all (Clipping and Coining only excepted) which is, that the Traitor be laid upon a Hurdle or Sledge, drawn to the Gallows, there hanged, but cut down while alive, the Entrails pulled out and burnt before the Criminal's Face; then his Head and Quarters cut off, and Impaled where the King shall judge meet. Add to this, that he forfeits all his Lands and Goods whatever, to the King; his Wife loses her Dowry; his Children their Nobility, and all Right of Inheriting.

Even an Idiot or Lunatic, though judg'd incapable of most Crimes, shall be punished as a Traitor, if he go about to kill the King.

For Petty TREASON. See PETTY Treason.



This Kind gives Forfeiture of Escheats to every Lord within his Manor. See ESCHEAT.

There is also mention made of *Accumulative and Constructive Treason*, in the Statute 14 Car. II.

**TREASURE**, *Thesaurus*, *thesauri*, Store of Money in reserve. See TREASURER and TREASURY.

**TREASURE-Trove**, q. d. *Treasure found*, in Law, is when any Money, Gold, Silver, Plate, or Bullion, is found in any Place, and none knows to whom it belongs.

This should, naturally, fall to the Finder; but particular People have made particular Provisions for it.--- The *Jeros* gave it the Proprietor of the Place where it was found: The *Roman* Jurisprudence was various with regard hereto; sometimes it was given to the Master of the Grounds; sometimes to the Finder; and sometimes it was adjudged to the public Treasury.

In *France* and *England*, the general Usage is to have such *Treasure* sequestered to the King, unless where the Benefit thereof is expressly granted or made over by the King to some other.

In some Places in *France*, it is divided into three Parts; one for the Prince, one for the Proprietor of the Land, and one for the Finder.

*Briton* says, 'tis every Subject's Part, as soon as he hath found any *Treasure* in the Earth, to make it known to the Coroners of the County, &c.

This was anciently call'd *Findaringa*, of finding the *Treasure*, L.L. Hen. I.

The Punishment for concealing *Treasure* found in *England*, is Imprisonment and Fine; but if any Mine of Metal be found in any Ground, it always appertains to the Lord of the Soil, except it be a Mine of Gold or Silver, which anciently always belong'd to the King, in whose Ground soever it were found: But by an Act of Parliament, the King now, hath only the *Præ-emption*.

**TREASURER**, an Officer to whom the *Treasure* of a Prince or Corporation is committed to be kept and duly disposed of in the Payment of Officers and other Expences. See TREASURY.

Of these there is a great Variety. --- His Majesty of *Great Britain*, in Quality of Elector of *Brunswick*, is *Arch-Treasurer of the Roman Empire*. --- In the States of *Poland* are two *Grand-Treasurers*; that of the Kingdom of *Poland*, and that of the Duchy of *Lithuania*.

In *England*, the principal Officers under this Denomination are the Lord *High Treasurer*, the *Treasurer of the Household*; *Treasurer of the Navy*, of the *Wardrobe*, of the *King's Chamber*, &c.

Anciently we had likewise a *Treasurer of the Exchequer*; *Treasurer of Wars*, &c.--- In the *Romish* Countries, the Title *Treasurer* is also given, somewhat abusively, to an Ecclesiastic, who has the keeping of the Relicks, and the Charters, and Archives of a Church, or Monastery.

This Dignity succeeds, in some measure, to that of the ancient Deacons, who had the like Charge in the Primitive Church. See DEACON.

Lord *High Treasurer of England*, is the Third great Officer of the Crown. See CROWN.

He receives the Office, by Delivery of a white Staff to him from the King, and holds it during the King's Pleasure: Anciently, he received it, by Delivery of the Golden Keys of the Treasury.

Under his Charge and Government, is all the King's Revenue kept in the Exchequer. See REVENUE and EX-CHEQUER.

He has the Check of all the Officers, any way employ'd in collecting Imposts, Customs, Tributes or other Revenues of the Crown. He has the Gift of all the Customs, Comptrollers and Searchers Places, in all the Ports of *London*, and the Nomination of the Escheators in every County. See CUSTOM-HOUSE, &c.

He, alone, or others in Commission with him, letteth Leases of all the Crown Lands, gives Warrants to certain Persons of Quality to have their Wine Custom-free, &c.

The ancient Salary was 383 l. but at present 8000 l. The Office of Lord *Treasurer*, is now in Commission. See TREASURY.

**TREASURER of the Household**, is an Officer, who, in the Absence of the Lord Steward, has Power, with the Comptroller and other Officers of the Green Cloth and the Steward of the *Marshalsea*, to hear and determine Treasons, Felonies and other Crimes committed within the King's Palace. See HOUSEHOLD, GREEN CLOTH, &c.

**TREASURER of the Navy**, is an Officer who receives Money out of the Exchequer, by Warrant from the Lord *High Treasurer*, or the Lords Commissioners executing that Place; and pays all Charges of the Navy, by Warrant from the principal Officers of the Navy. See NAVY.

**TREASURY**, the Place wherein the Revenues of a Prince are receiv'd, preserv'd, and disburs'd.

In *England*, the *Treasury* is a Part of the Exchequer, by some call'd the *Lower Exchequer*. See EX-CHEQUER.

The Officers of his Majesty's *Treasury*, or the lower *Exchequer*, are, the Lord *Treasurer*, a Chancellor, a Secretary, two Chamberlains, an Auditor, four Tellers, a Clerk of the Pells, Ushers of the Receipt, a Tally-cutter, &c. See each Officer under his proper Article, CHANCELLOR, TELLER, TALLY, &c.

At *Rome* under the Emperors, there were two Kinds of *Treasuries*, the one call'd *Ærarium*, wherein the Monies destined to support the Charges of the Government were kept; the other *Fiscus*, wherein were preserv'd those intended for the particular Subsistence of the Emperor and his Court. In effect the *Ærarium* belong'd to the People, and the *Fiscus* to the Prince. See FISCUS.

We have still a Resemblance of this Difference among us; but it is confounded in *France*, &c. where the King disposes absolutely of the public *Treasure*, &c.

**Lords of the TREASURY**. In lieu of one single Director, and Administrator of his Majesty's Revenues, under the Title of Lord *High Treasurer*; it is frequently thought proper to put that Office in Commission, i. e. to appoint several Persons to discharge it, with equal Authority, under the Title of *Lords Commissioners of the Treasury*. See TREASURER.

**TREAT**, in our old Law books, from the *French*, *Traiter*, signifies as much as taken out, or withdrawn: Thus a Juror was challenged, because he could not dispend 40 l. and therefore was *Treat* by the Statute. *Old. Nat. Br.* or discharged.

**TREATISE**, *TRACTATUS*, a set Discourse in Writing, on any Subject.

The *Treatise* is supposed more express, formal and methodical than an Essay; but less so than a System. See ESSAY, &c.

**TREATY**, a Covenant between several Nations; or the several Articles or Conditions stipulated and agreed upon between Sovereign Powers. See ALLIANCE.

There are *Treaties* of Peace, of Marriage, of Confederacy, of Neutrality, of Capitulation, and of Commerce and Navigation. See PEACE, CONFEDERACY, &c.

The celebrated *Treaties* are those of *Nimeguen*, of *Munster*, of the *Pyreneans*, of *Westphalia*, of *Riswick*, of *Utrecht*, of *Hanover*, of *Vicenna*, &c.

*Treaties* of Commerce are usually follow'd by various Tariffs, to adjust the Duties of Exportation and Importation of Merchandizes into the respective Dominions of the contracting Power.

The last *Treaty* of Peace, Commerce, Navigation, &c. between *England* and *France*, was sign'd at *Utrecht* the 11th of *April*, 1713, and consists of 39 Articles, most whereof are regularly executed between the two Nations, only some of the more particular ones cannot yet be executed, by Reason of some Difficulties in the Tariffs. See TARIFF.

**TREATY**, in Commerce, is a Convention or Contract agreed on, and the Clauses and Conditions thereof regulated between two or more Persons. The Word is understood of any thing that may enter into Commerce by way of Purchase, Sale, Exchange, &c. There are *Treaties* for the Buying of Merchandize, for the Freighting of Vessels, for the Assurance of Goods, &c. See POLICY.

**TREBELLIANICA**, or *TREBELLIAN Fourth*, in the *Roman* Jurisprudence, a Right belonging to an Heir instituted by Testament.--- If the Testator, after appointing a full and general Heir, spent and dispos'd of all his Effects in Legacies; or if he went *ultra Dodrantem*, beyond three Fourths thereof; in that Case, the Heir was allow'd to retrench and detain one fourth Part of the Legacies to his own Use.

In like Manner, if the Testator charg'd his Heir with a Feoffment of Trust, and to restore the Succession to another; in that Case, the Heir might likewise retain a Fourth of the whole Succession, that the Quality of Heir might not be render'd wholly vain and fruitless.

**TREBLE**, in Music, the highest or acutest of the four Parts in Symphony, or that which is heard the clearest in a Concert. See MUSIC, GRAVITY, and SYMPHONY.

In the like Sense we say, a *Treble Violin*, *Treble Hautboy*, &c. See VIOLIN, &c.

In Vocal Music, the *Treble* is usually committed to Boys and Girls.--- Their Part is the *Treble*. See PART.

The *Treble* is divided into *first* or *highest Treble*, and *second* or *Base Treble*.--- The half *Treble* is the same with Counter-tenor. See HARMONY.

**TREBUCHET**, *TRIBUCH*, *TRIBUCHETUM*, a Tumbrel, or Cucking-stool. See CUCKING-STOOL.

**TREDECILE**. See ASPECT.

**TREE**, *Arbor*, the first and largest of the vegetable Kind, consisting of a single Trunk, out of which spring forth Branches and Leaves. See VEGETABLE, &c.

Standards, or *Trees in full Air*, are such as naturally rise a great Height, and are not topp'd.--- For the Choice of *Trees* of this Kind to be transplanted out of a Nursery, *Quintency* recommends us to such as are straight, six Foot high



high at least, and five or six Inches thick at Bottom, and three or four at Top; the Bark pretty smooth and shining, as a Token of their Youth, and of the good Soil they grew in. See TRANSPLANTING, NURSERY, &c.

*Dwarf Trees*, are such as are kept low, and never suffer'd to have above half a Foot in Stem. — These are us'd to be kept vacant or hollow in the Middle, that the Branches spreading round about the Sides, may form a kind of round Bowl or Bush. See DWARF.

*Wall Trees*, are those whose Branches are stretch'd out, and nail'd against Walls. See WALL and ESPALIER.

For Dwarf and Wall Trees, such are to be chose out of the Nursery for Transplantation as are straight, and consist of a single Stem, and a single Graft, rather than two or three Grafts in several Branches: Their Thickness at Bottom should be two or three Inches.

*Fruit Trees*, are such as bear Fruit. See FRUIT.

*Timber Trees*, are those whose Trunks are tall and straight, whereof Beams, Masts, &c. are us'd to be made. See TIMBER.

*Coniferous Trees*, are those whose Fruit is of a conical Figure, as the Pine, Fir, Larch, &c. See CONIFEROUS.

These are also call'd *Resiniferous*, by reason Coniferous Trees are generally cover'd with a Bark that abounds in Resin.

Mr. Ray, and other Authors, speak of several Trees of prodigious Bulk. — The Jesuit *d'Acosta*, in his History of the Indies, lib. iv. c. 3. mentions a hollow Tree at *Tlococharaya*, three Leagues from *Gauxa* in *New Spain*, nine Fathom within-side near the Ground, and sixteen without-side. He adds, that 'tis under this Tree the Barbarians assemble to perform their religious Ceremonies, dance round their Idols, &c. — *Herrera* mentions another, which sixteen Men, joining Hands, cannot fathom. — *F. Kircher*, in his *Latium*, p. 50. affirms, he has seen a Tree near *Gonzano*, which would lodge a whole Family of 25 Persons in its Cavity. The common People have a Tradition, that it was planted by *Augustus*.

In the Indies there are very large Forests consisting only of one single Tree, whose Branches falling to the Ground, take Root, and put forth new Trees: The Fig Tree and Paratuvier are of this Kind.

*M. Louvillier* mentions *Trees* in *Pernu*, one Part of whose Branches produce Fruit one half the Year, and the other Part the other half.

In *China* is a Tree which bears Tallow, whereof that Nation make their Candles. See TALLOW.

There are two or three very remarkable Phenomena in the Growth of Trees, which have escap'd the Observations of the Naturalists of all Ages, except those of our own: These are the *Perpendicularity of their Trunks*, or Stems, to the Horizon; and the *Parallelism of their Tufts* to the Spot of Earth they grow on. An Account of each, see under the Articles PERPENDICULARITY and PARALLELISM.

For the *Planting, Transplanting, Semination, Pruning, Felling, Grafting*, &c. of Trees; see the respective Articles, PLANTING, TRANSPLANTING, SEMINATION, PRUNING, FELLING, GRAFTING.

Mr. Ray distinguishes the Trees and Shrubs of our native Growth in *England*, into, I. Such as have their Flower disjoint'd, and remote from the Fruit. These are,

1°. *Nuciferous* ones, or such as bear Nuts; as the Walnut Tree, the Hazle-nut Tree, the Beach, the Chestnut, and the common Oak. See NUT.

2°. *Coniferous* ones, or such as bear a squamous or scaly Fruit, of a kind of Conical Figure, and of a woody or hard Substance, in which are many Seeds, which, when they are ripe, the Cone opens or gapes in all its several Cells or Partitions, and lets them drop out: Of this Kind are the Scotch Firs, Male and Female; the Pine, which in our Gardens is call'd the Scotch Fir; the common Alder Tree, and the Birch Tree.

3°. *Bacciferous* ones, or such as bear Berries; as the Juniper and Yew Tree. See BACCIFEROUS.

4°. *Lanigerous* ones, or such as bear a woolly, downy Substance; as the black, white, and trembling Poplar, Willows, and Osiers of all Kinds.

5°. Such as bear their Seeds, (having an imperfect Flower) in leafy Membranes and Cases; as the Horn-beam, or Hard-beam, call'd, in some Places, the Hornbeech.

II. Such as have their Fruits and Flowers contiguous; which are either with the Flower plac'd on the Top of the Fruit, or adhering to the Base or Bottom of the Fruit.

Of the former Kind, some are *Pomiferous*, as Apples and Pears; and some *Bacciferous*, as the Sorb or Service Tree, the White or Hawthorn, the wild Rose, Sweet-brier, Currants, the great Bilberry bush, Honey-suckle, Ivy, &c.

The latter Kind are either such as have their Fruit moist and soft when ripe, as 1°. *Pruniferous* ones, whose Fruit is pretty large and soft, with a Stone in the Middle, as the black Thorn or Sloe Tree, the black and white Bullace Tree, the common wild Cherry, the black Cherry, &c.

2°. *Bacciferous* ones; as the Strawberry Tree in the West of Ireland, Mistletoe, Water-Elder, the Dwarf, a large Laurel, the Viburnum or way-faring Tree, the Dogberry Tree, the Sea black Thorn, the Berry-bearing Elder, the Privet, Barberry, common Elder, the Holly, the Buckthorn, the Berry-bearing Heath, the Bramble, and the Spindle Tree or Prickwood.

Or such as have their Fruit dry when ripe; as the Bladder-Nut Tree, the Box Tree, the common Elm and Ash, the Maple, the Gaule or Sweet Willow, common Heath-Broom, Dyers Weed, Furze or Gorse, the Lime Tree.

*Diana's Tree*, *Arbor Dianæ*, among the Chymists, is a kind of Vegetation of Mercury, which after a long Process shoots out into Branches, with the Appearance of Leaves, and even Flowers. See DIANA's Tree.

*Arbor Martis*, or Tree of Mars, is another very singular Vegetation, first discover'd accidentally by the younger *Le mery*. See VEGETABLE.

The Manner of the Discovery was this: On a Dissolution of Iron-filings in Spirit of Nitre, contain'd in a Glass, he pour'd Oil of Tartar per Deliquium: Upon this the Liquor soon swell'd very considerably, tho' with a very small Fermentation; and was no sooner at rest, than there arose a Sort of Branches adhering to the Surface of the Glass, which continuing to grow, at length cover'd it all over.

The Form of the Branches was so perfect, that one might even discover a kind of Leaves and Flowers thereon; so that this Vegetation has as good a Title to the Appellation of *Arbor Martis*, as the former has to that of *Arbor Dianæ*. See *Histoir. Acad. Royal. An. 1706*.

TREDDLE, or TREADLE, *Chalazza*, in Natural History. See CHALAZZA, EGG, CICATRICULA, &c.

TREMOR, *Trembling*, in Medicine, a Disease nearly akin to a Convulsion, wherein there is something of a convulsive Motion accompanying a voluntary or natural Motion. See CONVULSION.

A Tremor is frequently found to arise upon the more violent Passions, particularly, Anger, Gluttony, Venery, &c. but this is accidental and transitory.

A Tremor is sometimes apt to degenerate into other worse Diseases, viz. Palsey, Apoplexy, Lethargy, Spasmus, &c. In old Men it is incurable.

*Tremor of the Heart*. See PALPITATION.

The Medicine commonly made use of in Tremors and other nervous Distempers, by the Name of *Palsey Drops*, is no other than compound Spirit of Lavender. The most successful Way of using it, is by taking 30 or 40 Drops twice or thrice a Day, dropt on Loaf Sugar or a little Bread. — 'Tis suppos'd, that by this Way the most spirituous and efficacious Parts make their Way directly by the Nerves of the Pallat, &c. without undergoing the Course of the Circulation, as it is said to do when taken in a liquid Vehicle.

TRENCH, a Ditch cut or dug in the Ground, to drain off the Waters in a Meadow, a Morass, or the like; or to divert the Course of a River.

Many of the Bogs in Ireland have been drain'd, and made good Ground, by only digging Trenches around them. See BOG.

TRENCHES, in Fortification, are Moats or Ditches, which the Besiegers cut to approach more securely to the Place attack'd; whence they are also call'd Lines of Approach. See DITCH, APPROACH, &c.

These Trenches are of several Sorts, according to the Nature of the Soil; for if the adjacent Territory be rocky, the Trench is only an Elevation of Bavins, Gabions, Wooll-packs, or Shouldrings of Earth, cast round about the Place: But where the Ground may be easily open'd, the Trench is dug therein, and border'd with a Parapet on the Side of the Besieg'd. See PARAPET, &c.

The Breadth of the Trench is from eight to ten Feet, and the Depth from six to seven; and 'tis cut in Talus, or a slope. See TALUS.

The Trenches are to be carry'd on with winding Lines, in some Manner parallel to the Works of the Fortress, so as not to be in View of the Enemy, nor to expose its Length to their Shot, which they call *Enfilading*; for then it will be in Danger of being Enfiladed, or scoured by the Enemies Cannon: This carrying of the Trenches obliquely, they call carrying them by *Condecs* or *Traverses*.

They call it *Opening the Trenches*, when the Besiegers begin to work upon the Line of Approaches, which is usually done in the Night, and sometimes within Musket-shot, and sometimes within half, or whole Cannon-shot of the Place, if there be no rising Ground about it, the Garrison strong, and their Cannon well serv'd.

The Workmen that open the Trenches, are always supported by Bodies of Men against the Sallies of the Besieg'd; and sometimes those Bodies lie between them and the Place, as also on their Right and Left.

The Pioneers sometimes work on their Knees; and the Men that are to support them lie flat on their Faces, in order



to avoid the Enemies Shot; and the Pioneers are likewise usually cover'd with Mantelets, or Saucissons.

They say, *Mount the Trenches*, that is, go upon Duty in them: To *Relieve the Trenches*, is to relieve such as have been upon Duty there.

The Enemy is said to have clear'd the *Trenches*, when they have driven away or kill'd the Soldiers who guarded them.

The *Tail of the Trench*, is the Place where it was begun; and the *Head* that to which it is carry'd. See *HEAD*.

To *TRENCH the Ballast*, is a Sea Phrase, signifying to divide the Ballast into several *Trenches* in a Ship's Hold. See *BALLAST*.

TRENCH, in Heraldry. See *TRANCHE*.

TRENCHING *Plough*, is an Instrument for cutting out the Sides of *Trenches* and Drains, or the Sides of Turf, &c. See *PLOUGH*.

TRENTAL, TRIGINTAL, or TRICENNAL, a *Romish* Office for the Dead, consisting of thirty Masses, rehears'd for thirty Days after the Party's Death: Thus call'd from the *Italian*, *trenta*, *triginta*, thirty.

'Tis mention'd *Anno primo Et. VI. Et volo, & ordino, quod Executores mei ordinent seu ordinare faciant unum Trental pro salute Animæ meæ*.

TREPANUM, a Chirurgion's Instrument, call'd also *Anabaptiston* and *Modiolus*. See *MODIOLUS*, &c.

It is in Form of a Terebra or Wimble, only the Handle indented somewhat in Manner of a round Saw.

Its Use is for the Cure of Wounds, Contusions, and Fractures of the Cranium, when they don't go beyond the second Table; for by means hereof, an Amputation or Exfoliation is made of what Part, or Quantity of a Bone one pleases. See *CRANIUM*, *FRACTURE*, *TREPANNING*, &c.

It has usually a sharp Nail in the Middle of its Circumference, serving to keep it firm and steady during the Operation. --- It should also have a kind of Cope to rise and fall as Occasion requires, that it mayn't go deeper in the Bone than is necessary.

There are also two-pointed *Trepans*, others Triangular, Quadrangular, and Hexagonal, for the Cure of Caries's of the Bones. --- There are also perforative *Trepans*, and exfoliative ones.

TREPANNING, in Chirurgery, the Operation of relieving Cuts, Contusions, Corruptions, and Fractures in the Skull; by means of an Instrument call'd the *Trepanum*. See *TREPANUM*.

*Trepanning* is a very dangerous and difficult Operation; not to be us'd, unless when the Chips and Prominences of the Bones prick; when the upper Table is entire, but depress'd, and the lower broken; and when the extravasated Blood would endanger the Person's being suffocated. See *CRANIUM*.

The Manner of *Trepanning*, or Opening the Skull, is thus: The Hairs being shaven off, the Skin is to be cut thro' to the Pericranium, avoiding, as much as possible, the Muscles of the Temples, and the Sutures of the Skull: And for this Time the Wound is to be bound up, unless there be so little Blood spilt, that the Pericranium may at the same time be pull'd up from the Bone.

After a few Hours, stop the Patient's Ears, and take one of the Instruments call'd a *Male Trepanum*, or *Modiolus*; fix its Point in the Skull, but so far off the Fracture, that it touch it not, much less the Suture, with its Teeth; tho' some Surgeons don't mind to avoid the Sutures, but assure us, they have perforated them as successfully as any other Part.

Then, holding the Instrument fast with the left Hand, turn it round with the right, till you have cut a pretty deep Hole: After this take a *Female Trepanum*, which has no Point in the Middle, and turn it round as before: In the mean time, take away the Dust or Chips that proceed from the Perforation, and moisten the Instrument in Oil and Water to make it cool and slippery.

The Blood appearing, will shew you are now gone as deep as the second Table, i. e. beyond the Skull, to the Dura Mater; in which Case you must press very gently, lest that Membrane be unadvisedly hurt.

When the Bone begins to wag, put something in between the Sides of the Wound; loosen it, and take it out with a Pair of Surgeons Pincers or Forceps.

After the Operation is over, the Part is to be wash'd gently with weak red Wine; and proper Dressings apply'd thereon, as Honey of Roses, Arceus Liniment, Oil of St. John's Wort, &c. --- If the Dura Mater be corrupted, add, as Occasion requires, Spirits of Wine, Tincture of Myrrh and Aloes, Venice Turpentine, Honey, *Aegyptiacum*, &c.

Mr. Cheselden takes Notice, that the Sinus's and Spine in the Os Frontis, make it very dangerous, if not impracticable, to apply a *Trepanum* to the middle and lower Part of the Forehead.

TREPIDATION, in Medicine, a *Tremor*, or Trembling of the Members and Nerves of the Body. See *TREMOR*.

The first Symptom of Madness in Dogs, is a *Trepidation* of the Members, &c. See *HYDROPHOBIA*.

TREPIDATION, in the ancient Astronomy, is a Libration of the eighth Sphere; or a Motion which the *Ptolemaic* System attributes to the Firmament, to account for certain almost insensible Changes and Motions observ'd in the Axis of the World; by means whereof the Latitudes of the fix'd Stars come to be gradually chang'd, and the Ecliptic seems to approach reciprocally, first towards one Pole, then the other. See *PTOLOMAIC*, &c.

This Motion is also call'd the Motion of the first Libration. See *LIBRATION*.

TRESPASS, in Law, signifies any Transgression of the Law, under Treason, Felony, or Misdemeanor of Treason. See *TRANSGRESSION*.

For a Lord of Parliament to depart from thence without the King's Licence, is neither Treason nor Felony, but *Trespas*. See *STANDARD* Pl. Ccr.

The Word *Trespas*, however, is generally us'd either for that Wrong or Damage which is done to the King in his Forest, or by one private Man to another.

According to this Signification, it is of two Sorts; *Trespas general*, otherwise call'd *Trespas vi & armis*, where Force or Violence is us'd: And *Trespas special*, otherwise call'd *Trespas upon the Case*; which should be that done without Force. --- But the two are sometimes confounded.

In an Action of *Trespas*, the Plaintiff always sues for Damages, or the Value of the Hurt done him by the Defendant. See *DAMAGES*.

There is also *Trespas local* and *Trespas transitory*.

*Trespas local* is that which is so annex'd to the Place certain, that if the Defendant join Issue upon a Place, and traverse the Place mention'd in the Declaration, and aver it; it is enough to defeat the Action.

*Trespas transitory*, is that which cannot be defeated by the Defendants Traverse of the Place, because the Place is not material. See *TRAVERSE*.

The Action of *Trespas*, *quare clausum fregit*, ought to be local.

TRESSURE, in Heraldry, a Diminutive of an *Orle*, usually suppos'd to be half the Breadth thereof. See *ORLE*.

It is usually born flory, and counterflory; and sometimes double, as in the Figure adjoining; and sometimes triple.

TRESTLE, of the French *Treseau*, is explain'd by *Minsheu* to be three Stools, or a three-footed Stool; particularly a wooden Frame to bear up Tables, Scaffolds, &c.

TRET, in Commerce, an Allowance made for the Waste or the Dust that may be mix'd with any Commodity; which is always 4 Pounds in every 104 Pounds Weight. See *TARE*.

TREVE de Dieu, *Trevia*, *Treuvia*, *Trenga*, or *Truga Dei*, a Phrase famous in the Histories of the XIth Century; when the Disorders and Licences of private Wars between particular Lords and Families, oblig'd the Bishops of France to forbid such Violences within certain Times, under Canonical Pains.

Those Intervals they call'd *Trev de Dieu*, q. d. Truce of God, a Phrase frequent in the Councils since that Time. See *TRUCE*.

The first Regulation of this Kind was in a Synod held in the Diocese of *Elmo* in *Roussillon*, Anno 1027, where it was enacted, That throughout that County, no Person should attack his Enemy from the Hour of Nones on Saturday, to that of Primes on Monday, that Sunday might have its proper Honour: That no Body should attack, at any Time, a Religious or Priest walking unarm'd, nor any Person going to Church, or returning from the same, or walking with Women: That no Body should attack a Church, or any House within thirty Paces around it. --- The whole under Penalty of Excommunication, which, at the End of three Months, was converted into an Anathema.

TRIA *prima*, among Chymists, the three Hypostatical Principles, viz. Salt, Sulphur, and Mercury; of which they hold all Bodies to be primarily made, and into which they are all held resolvable by Fire. See *PRINCIPLE* and *ELEMENT*. See also *SALT*, *SULPHUR*, and *MERCURY*.

TRIAD, *TRIAS*, *τεας*, a Term sometimes us'd for a Trinity. See *TRIAS*.

TRIAL, in Law, the Examination of any Cause, whether Civil or Criminal, according to the Laws of the Realm, before a proper Judge. See *CAUSE* and *PROOF*.

Of this there are divers Kinds: Matters of Fact, e. gr. being to be try'd by the Jurors; Matters of Law by the Justices; Matters of Record by the Record itself. See *JURY*, *JUROR*, *JUSTICE*, *RECORD*, &c.

A Lord of Parliament indicted of Treason or Felony, shall be try'd, without any Oath, by his Peers, upon their Honours and Allegiance; but in Appeal, at the Suit of any Subject, they shall be try'd *per bonos & legales homines*. See *PEER*.





If ancient Demesne be pleaded of a Manor, and deny'd, this shall be try'd by the Record of Doomday. See DEMESNE and DOOMSDAY.

Baltardy, Excommunication, Lawfulness of Marriage, and other Ecclesiastical Matters, shall be try'd by the Bishop's Certificate.

Before Trial in a Criminal Case, 'tis usual to ask the Criminal how he will be try'd? which was anciently a very pertinent Question, tho' not so now; in regard there were formerly several Ways of Trial, viz. by Battel, Ordeals, and Jury. See BATTEL, ORDEAL, and JURY.

When the Criminal answer'd by God, and his Country, it shew'd he made Choice to be try'd by a Jury. --- But there is now no other Way of Trial. This is also call'd trying *per pais, per patriam*.

For the ancient Manner of Trial by Combat and great Assize; See COMBAT, DUEL, and ASSIZE.

TRIANGLE, in Geometry, a Figure comprehended under three Lines, and which of Consequence has three Angles. See FIGURE and ANGLE.

If the three Lines or Sides of the Triangle be all right, it is said to be a Plane or Rectilinear Triangle. See PLANE and RECTILINEAR.

If all the three Sides of the Triangle be equal, (as ABC Tab. Geometry, Fig. 68.) it is said to be equilateral. See EQUILATERAL.

If only two of the Sides of the Triangle be equal, (as in DEF, Fig. 69.) it is call'd an Isosceles, or Equicrural Triangle. See ISOSCELES, &c.

If all the Sides of the Triangle be unequal to each other, (as in ACB, Fig. 70.) the Triangle is said to be Scalenoous. See SCALENOUS.

If one of the Angles (as K of Fig. 71.) of a Triangle KML be a right Angle, the Triangle is said to be Rectangular. See RECTANGLE.

If one of the Angles (as N Fig. 72.) be obtuse, the Triangle is said to be Obtusangular, or Amblygonous. See OBTUSANGLE.

If all the Angles be acute, (as in ACB, Fig. 68.) the Triangle is said to be Acutangular, or Oxygonous. See ACUTANGLE, &c.

If the three Lines of the Triangle be all curves, the Triangle is said to be Curvilinear. See CURVILINEAR.

If some of the Sides be right, and others curve, the Angle is said to be Mixtilinear. See MIXTILINEAR.

If the Sides be all Arches of great Circles of the Sphere, the Triangle is said to be Spherical. See SPHERICAL Triangle.

#### Construction of TRIANGLES.

1°. Two Sides, as AB and AC, Fig. 73. being given in Numbers, or otherwise, together with the Quantity of the Angle intercepted between them, A; to construct a Triangle --- Assume AB as a Base; and in A make the given Angle: On the other Leg set off the other given Line AC; lastly, draw BC: Then will ABC be the Triangle requir'd.

Hence, two Sides with the intercepted Angle being determin'd, the whole Triangle is determin'd. --- Wherefore, if in two Triangles ACB and acb;  $a = A$ ; and  $ab : ac :: AB : AC$ , the Triangles are determin'd in the same Manner, and are therefore similar; consequently  $c = C$  and  $b = B$ ,  $ab : bc :: AB : BC$ , &c.

2°. Three Sides, AB, BC, and CA, Fig. 70. being given, any two whereof, as AC, AB, taken together, are greater than the third, to construct a Triangle --- Assume AB for a Base; and from A, with the Interval AC, describe an Arch y; and from B, with the Interval BC, describe another Arch x: Draw the right Lines AC and BC. Thus is the Triangle constructed.

Hence, as of any three given right Lines, only one Triangle can be constructed; by determining the three Sides, the whole Triangle is determin'd.

Wherefore if in two Triangles ACB and acb;  $AC : AB :: ac : ab$ ;  $AC : CB :: ac : bc$ ; the Triangles are determin'd in the same Manner, and consequently are similar, and therefore are mutually equiangular.

3°. A right Line, as AB, and two adjacent Angles A and B, which, taken together, are less than two right ones, being given; to describe the Triangle ABC. --- On the given Line AB, make the two given Angles A and B: Continue the Sides AC and BC till they meet in C. Then will ABC be the Triangle requir'd.

Hence, one Side and two Angles being given, the whole Triangle is determin'd. --- Wherefore if in two Triangles  $A = a$  and  $B = b$ , Fig. 73. the Triangles are determin'd after the same Manner, and therefore are similar.

#### Mensuration of TRIANGLES.

To find the Area of a Triangle. --- Multiply the Base AB Fig. 74. by the Altitude CD; half the Product is the Area of the Triangle ABC.

Or thus: Multiply half the Base AB by the Altitude CD; or the whole Base by half the Altitude; the Product is the Area of the Triangle.

|                                 |                          |                          |
|---------------------------------|--------------------------|--------------------------|
| E. gr. $AB = 342$<br>$CD = 234$ | $AB = 342$<br>$CD = 117$ | $AB = 171$<br>$CD = 234$ |
| 1368                            | 3994                     | 684                      |
| 1026                            | 342                      | 513                      |
| 684                             | 342                      | 342                      |
| 2) 80028 (                      | 40014                    | 40014 Area               |
| are as 40014                    |                          |                          |

Or, The Area of any Triangle is had by adding all the three Sides together, and taking half the Sum; and from that half Sum, subtracting each Side severally, and multiplying that half Sum and the Remainder continually into one another, and extracting the Square Root of the Product.

Hence, 1°. If between the Base, and half the Altitude; or between the Altitude, and half the Base, be found a mean Proportional; it will be the Side of a Square equal to the Triangle.

2°. If the Area of a Triangle be divided by half the Base, the Quotient is the Altitude.

#### General Properties of Plane TRIANGLES.

1°. If in two Triangles ABC and abc, Fig. 73. the Angle  $A = a$ ; and the Sides  $AB = ab$ , and  $AC = ac$ ; then will the Sides  $BC = bc$ , and  $C = c$ , the Angle  $B = b$ ; and therefore the whole Triangles will be equal and similar.

2°. If one Side of a Triangle ABC (Fig. 75.) be continu'd to D; the external Angle DAB will be greater than either of the internal opposite ones B or C.

3°. In every Triangle, the greatest Side is oppos'd to the greatest Angle, and the least to the least.

4°. In every Triangle, any two Sides taken together are greater than the third.

5°. If in two Triangles, the several Sides of the one be respectively equal to the Sides of the other, the Angles will likewise be respectively equal; and consequently the whole Triangles equal and similar.

6°. If any Side, as AC (Fig. 76.) of a Triangle ACB be continu'd to D, the external Angle DCA will be equal to the two internal opposite ones y and z taken together.

7°. In every Triangle, as ABC, the three Angles A, B, C, taken together, are equal to two right ones, or 180°.

Hence, 1°. If the Triangle be rectangular, as MKL, (Fig. 71.) the two oblique Angles M and L, taken together, make a right Angle, or 90°; and therefore are half Right, if the Triangle be Isosceles. --- 2°. If one Angle of a Triangle be oblique, the other two taken together are oblique likewise. --- 3°. In an Equilateral Triangle, each Angle is 60°. --- 4°. If one Angle of a Triangle be subtracted from 180°, the Remainder is the Sum of the other two; and if the Sum of two be subtracted from 180°, the Remainder is the third. --- 5°. If two Angles of one Triangle be equal to two of another, either together or separately; the third of the one is likewise equal to the third of the other. --- 6°. Since in an Isosceles Triangle DFE (Fig. 69.) the Angles at the Base y and v are equal; if the Angle at the Vertex be subtracted from 180°, and the Remainder be divided by 2, the Quotient is the Quantity of each of the equal Angles: In like Manner, if the double of one of the Angles at the Base y be subtracted from 180, the Remainder is the Quantity of the Angle at the Vertex.

8°. If in two Triangles, ABC, and abc, Fig. 71.  $AB = ab$ ,  $A = a$  and  $B = b$ ; then will  $AC = ac$ ,  $BC = bc$ ,  $C = c$ , and the Triangle ACB equal and similar to the Triangle abc. --- Hence, if in two Triangles, ACB and acb,  $A = a$ ,  $B = b$  and  $BC = bc$ ; then will  $C = c$ ; consequently  $AC = ac$ ,  $AB = ab$ ; and the Triangle ACB = acb.

9°. If in a Triangle DFE the Angles at the Base y and z, Fig. 69. be equal, the Triangle is Isosceles: Consequently, if the three Angles be equal, it is equilateral.

10°. If in a Triangle ABC, (Fig. 77.) a right Line DE be drawn parallel to the Base; then will  $BA : BC :: BD : BE :: AD : EC$ . And  $BA : AC :: BD : DE$ . Consequently the Triangle BDE similar to BAC.

11°. Every Triangle is inscribable in a Circle. See CIRCLE.

12°. The Side of an equilateral Triangle, inscrib'd in a Circle, is in Power triple of the Radius. See RADIUS.

13°. Triangles on the same Base, and having the same Height, that is between the same parallel Lines, are equal. See PARALLEL.

14°. Every Triangle, as CFD, Fig. 41. is one half of a Parallelogram ACDB on the same, or an equal Base CD, and of the same Altitude, or betwixt the same Parallel; but the Triangle is equal to a Parallelogram upon the same Base, but half the Altitude; or half the Base, and the same Altitude. See PARALLELOGRAM.



15°. In every *Triangle*, as well plane as spherical, the Sines of the Sides, are proportional to the Sines of the opposite Angles.

16°. In every plane *Triangle*, as the Sum of two Sides is to their Difference, so is the Tangent of half the Sum of the opposite Angles, to the Tangent of half their Difference. See TANGENT.

17°. If a Perpendicular be let fall upon the Base of an oblique angled *Triangle*; the Difference of the Squares of the Sides is equal to double the Rectangle under the Base, and the Distance of the Perpendicular from the Middle of the Base.

18°. The Sides of a *Triangle* are cut proportionably, by a Line drawn parallel to the Base.

19°. A whole *Triangle*, is to a *Triangle* cut off by a right Line, as the Rectangle under the cut Sides, is to the Rectangle of the other two Sides.

20°. In a right lined *Triangle*, a Line drawn from the right Angle at the Top perpendicular to the Hypotenuse, divides the *Triangle* into two other right lined *Triangles*, which are similar to the first *Triangle*, and to one another.

21°. In every right angled *Triangle*, the Square of the Hypotenuse is equal to the Sum of the Squares of the other two Sides. See HYPOTHENUSE.

22°. If any Angle of a *Triangle* be bisected, the bisecting Line will divide the opposite Side, in the same Proportion as the Legs of the Angle are to one another. See BISECTION.

23°. If the vertical Angle of any *Triangle* be bisected, the Difference of the Rectangles, made by the Sides and the Segments of the Base, is equal to the Square of the Line that bisects the Angle.

24°. If a right Line BE, Fig. 78. bisect an Angle ABC of a *Triangle*, the Square of the said Line BE = AB + BC - AE + EC. *New. Arith. Univers.*

*Properties of Spherical Triangles.* See SPHERICAL *Triangle*.

To divide a *Triangle* into any given Number of equal Parts: Divide the Base CD (Fig. 77.) into as many equal Parts as the Figure is to be divided into; and draw the Lines A 1, A 2, &c.

TRIANGLE, in Trigonometry.--- The Solution or Analysis of *Triangles*, is the Business of *Trigonometry*. See TRIGONOMETRY.

The several Cases thereof are reducible to the following Problems.

#### Solution of plane TRIANGLES.

1°. Two Angles A and C (Tab. *Trigonometry*, Fig. 27.) being given, together with the Side AB opposite to one of them; to find the Side BC opposite to the other.

The Rule or Canon is this: As the Sine of the Angle C, is to the given Side AB, opposite to the same; so is the Sine of the other Angle A, to the Side requir'd. The Side BC, therefore, is commodiously found by the Logarithms, from the Rule for finding a fourth Proportional to 3 Numbers given. See LOGARITHM.

For an Example: Suppose C = 48° 35', A = 57° 28', AB = 74. The Operation will stand thus:

|                   |           |
|-------------------|-----------|
| Log. of Sine of C | 9.8750142 |
| Log. of AB        | 1.8692317 |
| Log. of Sine of A | 9.9258681 |

|                   |              |
|-------------------|--------------|
| Sum of Log. of AB | } 11.7950998 |
| and of Sine of A  |              |

Log. of BC 1.9200956. The Number corresponding to which, in the Table of Logarithms, is 83, the Quantity of the Side sought.

2°. Two Sides AB and BC, together with the Angle C, opposite to one of them given; to find the other Angle A and B.

The Rule is this: As one Side AB is to the Sine of the given Angle opposite thereto C; so is the other Side BC, to the Sine of the Angle requir'd opposite thereto.

E. gr. Suppose AB = 94, BC = 69, C = 7° 15'.

|                   |           |
|-------------------|-----------|
| Log. of AB        | 1.9731279 |
| Log. of Sine of C | 9.9788175 |
| Log. of BC        | 1.8388491 |

|                     |              |
|---------------------|--------------|
| Sum of Log. of Sine | } 11.8176666 |
| of C and of BC      |              |

Log. of Sine of A 9.9444387. The Number corresponding to which, in the Table of Logarithms, is 61° 37'. Now the given Angle C being 7° 15', the Sum of the two; 133° 52' subtracted from 180, the Sum of the three, gives 46° 8' for the other Angle sought B.

In like Manner, suppose, in a right angled *Triangle*, (Fig. 28.) that beside the right Angle, A, is given the Hypotenuse

BC, 49, and the Cathetus AC, 36, to find the Angle B; Then will the Operation stand thus:

|                    |            |
|--------------------|------------|
| Log. of BC         | 1.6901961  |
| Log. of whole Sine | 10.0000000 |
| Log. of AC         | 1.5563025  |

Log. of Sine of B 9.8661064. The corresponding Number to which, in the Table of Logarithms, is 47° 16'; consequently, C = 42° 44'.

3°. Two Sides BA and AC, together with the included Angle A being given; to find the two remaining Angles.

I. If the *Triangle* ABC be rectangular; take one of the Sides including the Right Angle, as AB, for Radius; then will CA be the Tangent of the opposite Angle B: The Rule then is;

As one Leg AB, is to the other AC; so is the whole Sine to the Tangent of the Angle B.

E. gr. Suppose BA 79, and AC 74;

|                    |            |
|--------------------|------------|
| Log. of BA         | 1.8976271  |
| Log. of AC         | 1.7323938  |
| Log. of whole Sine | 10.0000000 |

Log. of Tang. of B 9.8347667; The corresponding Number to which, in the Table of Logarithms, is 34° 21'; consequently the Angle C is 55° 39'.

II. If the *Triangle* be oblique, the Rule is; As the Sum of the given Sides AB and AC, Fig. 29. is to this Difference; so is the Tangent of Half the Sum of the sought Angles C and B, to the Tangent of Half the Difference. Adding, therefore, the Half Difference, to the Half Sum; the Aggregate will be the greater Angle C; and subtracting the Half Difference from the Half Sum; the Remainder is the less Angle B.

E. gr. Suppose AB = 75, AC 58, A 108° 24'; Then will

|         |            |                    |
|---------|------------|--------------------|
| AB 75   | AB 75      | A + B + C 179° 60' |
| AC 58   | AC 53      | A 108 24           |
| Sum 133 | Differ. 17 | B + C 71 36        |
|         | B + C      | 35 48              |

|                     |           |
|---------------------|-----------|
| Log. of AB + AC     | 2.1238516 |
| Log. of AB - AC     | 1.2504489 |
| Log. of Tang. B + C | 9.8580694 |

|                   |            |
|-------------------|------------|
| Sum of Log.       | 12.0885183 |
| L. of Tang. C - B | 8.9646667  |

The corresponding Number to which is 5° 16'.

|                 |                 |
|-----------------|-----------------|
| B + C = 35° 48' | B + C = 35° 48' |
| C - B = 5 16    | C - B = 5° 16'  |
| C = 41 4        | B = 30 32       |

4°. The Three Sides, AB, BC and CA (Fig. 30.) being given, to find the Angle A, B and C.

From the Vertex of the Angle A, with the Extent of the least Side AB, describe a Circle: Then will CD be the Sum of the Legs AC and AB; and CF their Difference. The Rule then is,

As the Base BC is to the Sum of the Legs CD; so is the Difference of the Legs CF, to the Segment of the Base CG. --- This Segment, thus found, being subtracted from the Base CB, the Remainder is the Chord GB. Then, from A to the Chord GB let fall the Perpendicular AE; thus will BE = EG = 1/2 GB.

Thus, in a rectangular *Triangle*, AEB, the Sides AB and BE being given; Or, in an obliquangled *Triangle*, ACE the Sides AC and CE being given: the Angles B and A are found.

E. gr. Suppose AB = 36, AC = 45, BC = 40.

|                 |           |
|-----------------|-----------|
| AC = 45         | AC = 45   |
| AB = 36         | AB = 36   |
| AC + AB = 81    | FC = 9    |
| Log. of BC =    | 1.6020600 |
| Log. of AC + AB | 1.9084850 |
| Log. of FC =    | 0.9542425 |
| Sum of Log. =   | 2.8627275 |

Log. of CG = 1.2606675; The corresponding Number to which, in the Tables, is 18.



$$\begin{array}{rcl}
 BC & = & 4000 \\
 CG & = & 1822 \\
 \hline
 BG & = & 2178 \\
 BE & = & 1089
 \end{array}
 \qquad
 \begin{array}{rcl}
 EG & = & 1089 \\
 CG & = & 1822 \\
 \hline
 CE & = & 2911
 \end{array}$$

$$\begin{array}{rcl}
 \text{Log. of } AB & = & 3.5563025 \\
 \text{Log. of whole Sine} & = & 10.0000000 \\
 \text{Log. of } EB & = & 3.0370279
 \end{array}$$

Log. of Sine of EAC = 9.8108297; to which the correspondent Number in the Tables is  $40^\circ 18'$ ; therefore ACE  $49^\circ 42'$ ; and CAB  $57^\circ 54'$ .

*Solution of right angled spherical TRIANGLES, by the common Rules.*

1. In a right angled spherical Triangle, any two Parts beside the right Angle, being given, to find any of the rest.

1<sup>o</sup> Consider whether the Parts, which come to the Question, be conjunct or disjunct (See PART.) If the disjunct be opposite to each other; as, if the Hypotenuse BC, and the Angle C, Fig. 31. be given for the opposite Leg AB; then the Rule is;

*As the whole Sine is to the Sine of the Hypotenuse BC; so is the Sine of the Angle C, to the Sine of the opposite Leg AB.*

2<sup>o</sup> If the disjunct Parts be not opposite to each other; as, if AB, and the adjacent Angle B be given for the opposite Angle C; the Sides of the Triangle are to be continued one Way, till they become Quadrants, that you may thus have a new Triangle, wherein the Parts that come into the Question, are mutually opposite to each other; as, in our Case, the Triangle EBF, wherein we have given BF, the Complement of the Leg AB, and the Angle B for EF, the Complement of the Angle C. The Rule then is;

*As the whole Sine is to the Sine of BF; so is the Sine of the Angle B to the Sine of EF, or Co-sine of C.*

3<sup>o</sup> If the Hypotenuse be not among the conjunct Parts, as if the Legs AB and AC be given for an Angle opposite to one of them; the Rule is,

*As the Sine of AC is to the whole Sine; so is the Tangent of AB, to the Tangent of O.*

4<sup>o</sup> But if the Hypotenuse be found among the conjunct Parts; as if the Hypotenuse BC, and the Angle C be given to find the adjacent Side AC: The Sides of the Triangle are to be continued one way, till they become Quadrants, that we may have a new Triangle, wherein the Hypotenuse is not among the Parts that come into the Question; e. gr. in our Case, the Triangle EBF, wherein are given the Complement EB of the Hypotenuse BC, and the Complement of the Angle C, and the Angle F the Complement of the Leg AC. Since then, in the Triangle EFB, the Hypotenuse does not come in the Question; the Rule is as before.

*As the Sine of EF, or Co-sine of C, is to the whole Sine; so is the Tangent of EB, or Co-tangent of BC, to the Tangent of F, or Co-tangent of AC.*

5<sup>o</sup> When the Sides of a Triangle are to be continued, 'tis the same thing, which way soever they be produced, provided no acute Angle come into the Question; otherwise, the Sides are to be continued through the other oblique one. If both be in the Connection, the Sides are to be continued through that adjacent to the Side in Question.

By this means, a Triangle is always obtained, wherein the Thing required is found, either by the Rule of Sines or Tangents.

*Solution of right angled spherical Triangles, by one catholic Rule.*

Consider, as before, whether the Parts that come in Question be conjunct or disjunct. See PART.

If either one, or both the Sides, including the right Angle, come into the Question; for it, among the Data, write its Complement to a Quadrant. --- Since, then, by the catholic Rule, deliver'd under the Article Trigonometry; the whole Sine, with the Sine Complement of the middle Part, is equal to the Sines of the disjunct Parts, and the Co-tangents of the conjunct Parts; from the Sum of those Data, subtract the third Datum: the Remainder will be some Sine or Tangent, the Side or Angle corresponding to which, in the artificial Canon of Triangles, is the Side or Angle sought.

This universal Rule being of great Service in Trigonometry, we shall apply it to the various Cases thereof, and illustrate it with Examples; which Examples, in the Case of separate Parts, will at the same time illustrate the common Method; but in the Case of contiguous Parts, admit of other Solutions.

1<sup>o</sup> Given the Hypotenuse BC  $60^\circ$  and the Angle C  $23^\circ 30'$ , to find the opposite Leg AB (Fig. 32.)

Since AB is the middle Part, C and BC are disjunct (See PART); the whole Sine, with the Co-sine of the Complement AB, i. e. with the Sine itself of AB, is equal to the Sines of C and BC.

$$\begin{array}{rcl}
 \text{Therefore, from Sine of C} & & 96006997 \\
 \text{Sine of BC} & & 99375306 \\
 \hline
 \text{Sum} & & 195382303
 \end{array}$$

$$\begin{array}{rcl}
 \text{Subtract whole Sine} & & 100000000 \\
 \text{Remain Sine of AB} & & 95382303
 \end{array}$$

responding Number to which, in the Canon, is  $20^\circ 12' 6''$ . The cor-  
2<sup>o</sup> Given the Hypotenuse BC  $60^\circ$  and the Leg AB  $20^\circ 12' 6''$  to find the opposite Angle C.

'Tis evident from the preceding Problem, that from the Sum of the whole Sine, and the Sine of the Leg AB, the Sine of the Hypotenuse BC is to be subtracted; the Remainder is the Sine of the Angle C. The Example, therefore, of the former Case is easily converted into an Example of this.

3<sup>o</sup> Given the Leg AB  $20^\circ 12' 6''$  and the opposite Angle C  $23^\circ 30'$ , to find the Hypotenuse BC.

'Tis evident from the first Case, that from the Sum of the whole Sine, and the Sine of AB is to be subtracted the Sine of the Angle C, and the Remainder is the Sine of the Hypotenuse BC.

4<sup>o</sup> Given the Hypotenuse BC  $60^\circ$ , and one Leg AB  $20^\circ 12' 16''$  to find the other Leg.

Since BC is the mean Part, and AB and AC are disjunct Parts, the whole Sine, with the Co-sine of the Hypotenuse BC, are equal to the Sines of the Complements; i. e. to the Co-sines of the Legs AB and AC.

$$\begin{array}{rcl}
 \text{Therefore from whole Sine} & & 100000000 \\
 \text{Co-sine of BC} & & 96989700 \\
 \hline
 \text{Sum} & & 196989700
 \end{array}$$

$$\begin{array}{rcl}
 \text{Subtract Co-sine of AB} & & 99724279 \\
 \hline
 \text{Remains Co-sine of AC} & & 97265421
 \end{array}$$

The Corresponding Number to which, in the Canon, is  $32^\circ 11' 34''$ ; therefore AC  $57^\circ 48' 26''$ .

5<sup>o</sup> Given the Legs AC  $57^\circ 48' 26''$  and AB  $20^\circ 12' 6''$ , to find the Hypotenuse BC.

'Tis evident from the preceding Case, that the whole Sine is to be subtracted from the Sum of the Co-sines of the Legs AB and AC; the Remainder is the Co-sine of the Hypotenuse BC. The Example, therefore, of the preceding Case is easily applied to this.

6<sup>o</sup> Given the Leg AC  $50^\circ 48' 26''$  and the adjacent Angle C  $23^\circ 30'$  to find the opposite Angle B.

Since B is the middle Part, and A and C disjunct Parts; the whole Sine, with the Co-sine of B, is equal to the Sine of C, and the Sine of the Complement, i. e. to the Co-sine of AC;

$$\begin{array}{rcl}
 \text{Therefore from Sine of C} & & 96006997 \\
 \text{Co-sine AC} & & 97265421 \\
 \hline
 \text{Sum} & & 193272418
 \end{array}$$

$$\begin{array}{rcl}
 \text{Subtract whole Sine} & & 100000000 \\
 \hline
 \text{Remains Co-sine of B} & & 93272418
 \end{array}$$

The Number corresponding to which, in the Canon, is  $12^\circ 15' 56''$ ; therefore B  $77^\circ 44' 4''$ .

7<sup>o</sup> Given the Leg AC  $57^\circ 48' 26''$  and the opposite Angle B  $77^\circ 44' 4''$  to find the adjacent Angle C.

'Tis evident from the preceding Case, that the Co-sine of AC is to be subtracted from the Sum of the whole Sine, and the Co-sine of B; the Remainder is the Sine of C. The former Example, therefore, is easily accommodated to the present Case.

8<sup>o</sup> Given the oblique Angles B  $77^\circ 44' 4''$  and C  $23^\circ 30'$  to find the Leg adjacent to the other, AC.

From Problem the Sixth, 'tis evident that the Sine of C is to be subtracted from the Sum of the whole Sine, and the Co-sine of B; and that the Remainder is the Co-sine of AC. The Example of the sixth Problem is easily applied to this.

9<sup>o</sup> Given the Leg AC  $57^\circ 48' 26''$  and the adjacent Angle C  $23^\circ 30'$ , to find the opposite Leg AB.

Since AC is the mean Part, and C and AB conjunct Parts; the whole Sine, with the Sine of AC, is equal to the Co-tangent of C, and the Tangent of AB.

$$\begin{array}{rcl}
 \text{Therefore from whole Sine} & & 100000000 \\
 \text{Sine of AC} & & 99275039 \\
 \hline
 \text{Sum} & & 199275039
 \end{array}$$

$$\begin{array}{rcl}
 \text{Subtract Co-tangent of C} & & 103616981 \\
 \hline
 \text{Remains Tangent of AB} & & 95658058
 \end{array}$$

To which the corresponding Number in the Canon, is  $20^\circ 12' 6''$ .  
10<sup>o</sup> Given the Leg AB  $20^\circ 12' 6''$  and the opposite Angle C  $23^\circ 30'$ , to find the adjacent Leg AC.



From the Sum of the Co-tangent of C, and the Tangent of A B, subtract the whole Sine; the Remainder is the Sine of A C.

11° Given the Legs A B 20° 12' 6", and A C 57° 48' 26", to find the Angle C, opposite to one of them.

From the Sum of the whole Sine, and Sine A C, subtract the Tangent of B A; the Remainder is the Co-tangent of C.

12° Given the Hypotenuse B C 60°, and the oblique Angle C 23° 30', to find the adjacent Leg A C.

Since C is the middle Part, and B C and A C conjoyned Parts; the whole Sine, with the Co-sine of C, will be equal to the Co-tangent of A C.

Therefore from whole Sine 100000000  
Co-sine of C 99623978

Sum 199623978

Subtract Co-tangent of B C 97614394

Remains Tangent of A C 102009584. The Number corresponding to which, in the Tables, is 57° 48' 26".

13° Given the Leg A C 57° 48' 26", and the adjacent Angle C 23° 30', to find the Hypotenuse B C.

From the Sum of the whole Sine, and the Co-sine of C, subtract the Tangent of A C, the Remainder is the Co-tangent of B C.

14° Given the Hypotenuse B C 60°, and the Leg A C 57° 48' 26", to find the adjacent Angle C.

From the Sum of the Co-tangent of B C, and Tangent of A C, subtract the whole Sine; the Remainder is the Co-sine of C.

15° Given the Hypotenuse B C 60°, and one Angle C 23° 30', to find the other, B.

Since B C is the middle Part, and B and C disjunct Parts, the whole Sine, and the Co-sine of B C will be equal to the Co-tangents of B and C.

Therefore from whole Sine 100000000  
Co-sine of B C 96989700

Sum 196989700

Subtract Co-tangent of C 10366981

Remains Co-tangent of B 93372719; The corresponding Number to which, in the Canon, is 12° 15' 56"; therefore B is 77° 44' 4".

16° Given the oblique Angles B 77° 44' 4" and C 23° 30', to find the Hypotenuse.

From the Sum of the Co-tangents of C and B, subtract the whole Sine; the Remainder is the Co-sine of B C.

#### Solution of oblique-angled spherical TRIANGLES.

1° In an oblique-angled spherical Triangle A B C, (Tab. Trigonometry Fig. 32.) two Sides A B and B C being given, together with an Angle A, opposite to one of them, to find the other C: The Rule is,

As Sine of the Side B C, is to the Sine of the opposite Angle A; so is the Sine of the Side B A, to the Sine of the opposite Angle C.

Suppose, for Example, B C 39° 29'; A 43° 20'; B A 66° 45'; then will

Sine of B C 98033572

Sine of A 983647

Sine of B A 99632168

197996939

Sine of C 99963367. The corresponding Number to which, in the Tables, is 82° 34' 7".

2° Given two Angles C 82° 34' 7", and A 43° 20', together with the Side A B 60° 45', opposite to one of them C; to find the Side B C opposite to the other of them A. Say,

As Sine of Angle C, is to Sine of the opposite Side A B; so is Sine of Angle A, to Sine of opposite Side B C. --- The former Example may suffice for the present Case.

3° Given two Sides A B 66° 45', and B C 39° 29', together with an Angle opposite to one of them A 45° 20'; to find the Angle included by them B.

Suppose the Angle C to be acute, since the other, A, is also acute; the Perpendicular B E falls within the Triangle. In the rectangled Triangle A B E, therefore, from the given Angle A, and Side A B, find the Angle A B E. Since B E is assumed as a lateral Part in the Triangle A B E, the Angle E B C is the middle Part, and the Side B C a conjoyned Part: The Co-sine of the Angle E B C will be found by subtracting the Co-tangent of A B from the Sum of the Co-sine of the Angle A B E, and the Co-tangent of B C. If then the Angles A B E and E B C be added together; or, in case the Perpendicular fall without the Triangle, be subtracted from each other, you will have the Angle requir'd B.

E. gr. whole Sine 100000000  
Cosine of A B 95963154

Sum 195963154

Cotang. of A 100252805

Cotang. of A B 95710349.

The Number corresponding to which, in the Tables, is 20° 25' 35". A B therefore is 69° 34' 25".

Cosine of A B E 95428300

Cotang. of B C 100141529

Sum 196269829

Cotang. of B 96330085

Cosine of E B C 9938544.

The Number corresponding to which, in the Tables, is 80° 26'. Therefore A B C is 79° 9' 59".

4° Given two Angles A 43° 20', and B 79° 9' 59', together with the adjacent Side A B 66° 45'; to find the Side B C opposite to one of them.

From one of the given Angles B, let fall a Perpendicular E B, to the unknown Side A C; and, in the rectangled Triangle A B E, from the given Angle A, and Hypotenuse A B, find the Angle A B E; which subtracted from the Angle A B C, leaves the Angle E B C. But if the Perpendicular should fall without the Triangle, the Angle A B C should have been subtracted from A B E. Since as the Perpendicular B E is taken for one of the lateral Parts, the middle Part in the Triangle A B E, is the Angle E, and the conjoyned Part B C; the Co-tangent of the Side B C is found by subtracting the Co-sine of E B A, from the Sum of the Co-tangent of A B, and the Co-sine of E B C. --- The Example of the preceding Case is easily apply'd to this.

5° Given two Sides A B 66° 45', and B C 39° 29', with the Angle A opposite to one of them, 43° 20'; to find the third Side A C.

Letting fall, as before, the Perpendicular B E; in the rectangled Triangle A B E, from the given Angle and Hypotenuse A B, find the Side A E. Since, assuming B E for a lateral Part in the Triangle A E B, A B is the middle Part, and A E the separate Part; and in the Triangle B E C, B C, is the mean Part, and E C a disjunct Part; the Co-sine of E C is found by subtracting the Co-sine of A B from the Sum of the Co-sines of A E and C B. If then the Segments A E and E C be added together; or in case the Perpendicular fall without the Triangle, be subtracted from each other; the Side A C will be had.

6° Given two Sides A C 65° 30' 46", and A B 66° 45', together with the included Angle A; to find the third Side B C opposite thereto.

Letting fall the Perpendicular B E, find, in the rectangled Triangle, the Segment A E; which subtracted from A C, leaves E C. If the Perpendicular fall without the Triangle, A C is to be subtracted from A E; since by assuming the Perpendicular B E for a lateral Part in the Triangle A E B, A B becomes a middle Part, and A E a separate Part: In the Triangle E B C, C B is the middle Part, E C a separate Part: The Co-sine of B C is found, by subtracting the Co-sine of A E from the Sum of the Co-sines of A B and E C.

7° Given two Angles A 43° 20', and B 79° 9' 59", together with the Side C B 39° 29', opposite to one of them; to find the Side A B adjacent to both.

Letting fall the Perpendicular C D from the unknown Angle C, to the opposite Side A B; and that falling within the Triangle, from the given Angle B, and the Hypotenuse B C, seek in the rectangled Triangle B C D for the Segment B D. Since assuming the Perpendicular C D for a lateral Part in the Triangle C D B, D B is the mean Part, and the Angle B a conjoyned Part; and in the Triangle C D A, A D is the middle Part, and the Angle A a conjoyned Part: The Sine of the Segment A D is found, by subtracting the Co-tangent of the Angle B from the Sum of the Sine of D B, and the Co-tangent of the Angle A. If then the Segments A D and D B be added, or in case the Perpendicular fall without the Triangle, be subtracted from each other, the Result will be Side A B requir'd.

8° Given two Sides A B 66° 45', and B C 39° 29', with the included Angle 79° 9' 59", to find the Angle A opposite to one of them.

Letting fall the Perpendicular C D, find the Segment D B, as in the preceding Problem. This subtracted from A B leaves A D. If the Perpendicular fall without the Triangle, A B is to be added to D B; since by assuming the Perpendicular C D for a lateral Part in the Triangle C D B, B D is the middle Part, and the Angle B a conjoyned Part; and in the Triangle C D A, A D is the middle Part, and the Angle A a conjoyned Part: The Co-tangent of the Angle A is found by subtracting the Sine of D B from the Sum of the Co-tangent of the Angle B, and of the Sine of A D.

9° Given two Angles A 43° 20', and B 79° 9' 59", together with the adjacent Side A B 66° 45'; to find the Angle C opposite to the same.



From one of the given Angles B, letting fall the Perpendicular BE, to the opposite Side AC; in the rectangled Triangle ABE, from the given Angle A, and Hypothenufe AB, we find the Angle ABE; which subtracted from ABC, leaves the Angle EBC. In case the Perpendicular fall without the Triangle, ABC is to be subtracted from ABE; since by assuming BE for a lateral Part in the Triangle CEB, the Angle C is the middle Part, and the Angle CBE the disjunct Part; and in the Triangle ABE, the Angle A is the middle Part, and the Angle ABE the disjunct Part: The Cosine of the Angle C is found by subtracting the Sine of the Angle ABE, from the Sum of the Cosine of the Angle A, and of the Cosine of EBC.

10°. Given two Angles A  $43^{\circ} 20'$ , and C  $82^{\circ} 34'$ , together with a Side BA  $66^{\circ} 45'$ , opposite to one of them; to find the other Angle.

From the sought Angle B, let fall a Perpendicular BE; and in the right angled Triangle AEB, from the given Angle A, and Hypothenufe BA, find the Angle ABE; since assuming the Perpendicular EB for a lateral Part in the Triangle ECB, the Angle E is the middle Part, and the Angle CBE a disjunct Part; and in the Triangle ABE, the Angle A is the middle Part, and the Angle ABE a disjunct Part: The Sine of the Angle EBC is found by subtracting the Cosine of A from the Sum of the Cosine of C, and of the Sine of ABE. If then ABE and EBC be added, or in case the Perpendicular fall without the Triangle, be subtracted from each other, the Result will be Angle requir'd ABC.

11°. Given the three Sides; to find an Angle opposite to one of them.

I. If one Side AC, Fig. 16. be a Quadrant, and the Leg AB less than a Quadrant, find the Angle A. Continue AB to F, till AF become equal to a Quadrant; and from the Pole A draw the Arch CF, to cut the Arch AF at right Angles in F. Since in the rectangled Triangle CBF, we have given the Hypothenufe BC, and the Side AF, or its Complement AB to a Quadrant; we shall find the Perpendicular CFC, which being the Measure of the Angle CAB, that Angle is found of course.

II. If one Side AC be a Quadrant, and the other AB greater than a Quadrant, seek again the Angle A: From AB subtract the Quadrant AD, and from the Pole A describe the Arch CD, cutting the Arch CD at right Angles in D. Since in the rectangled Triangle CDB, the Hypothenufe BC, and Side DB, or Excess of the Side AB beyond a Quadrant, is given, the Perpendicular CD will be found as before, which is the Measure of the Angle A requir'd.

III. If the Triangle be Isosceles, and  $AC = CF$ , and the Angle ACF be requir'd; bisect AF in D, and thro' D and C draw the Arch DC. Since CD is perpendicular to AF, the Angles A and F, and ACD and DCF are equal; from the Hypothenufe AC, and Leg AD, given in the rectangled Triangle ACD, we find the Angle ACD; the doublewhereof is the Angle requir'd ACF: and from the same Data may the Angle A or F be found.

IV. If the Triangle be Scalenois, and the Angle A, Fig. 22. be requir'd; from C let fall the Perpendicular CD, and seek the Semi-difference of the Segments AD and DB, by saying, As the Tangent of half the Base AB, is to the Tangent of half the Sum of the Legs AC and CB; so is the Tangent of their Semi-difference, to the Tangent of the Semi-difference of the Segments AD and DB: Add then the Semi-difference of the Segments to the half Base, to find the greater Segment; and subtract the same from the same for the less. Thus having in the rectangled Triangle CAD, the Hypothenufe AC, and the Side AD, the Angle A is found thence. After the same Manner is B found in the other CDB, from CD and DB given.

12°. Given the three Angles AB and C, to find any of the Sides.

Since in lieu of the given Triangle, another may be assumed, whose Sides are equal to the given Angles, and the Angles to the given Sides; this Problem is resolv'd after the same Manner as the preceding one.

TRIANGLE, TRIANGULUM, in Astronomy, a Name common to two Constellations; the one in the Northern Hemisphere, call'd simply *Triangulum*, or *Triangulum Cæleste*; the other in the Southern Hemisphere, call'd *Triangulum Australe*. See CONSTELLATION.

The Stars in the Northern Triangle, in Ptolemy's Catalogue are 4; in Tycho's as many; in the *Britannic* 24: The Longitudes, Latitudes, Magnitudes, &c. whereof, are as follow:

Stars in the Constellation TRIANGULUM.

| Names and Situation of the Stars. | Signs | Longitude | Latitude. | Magn. |
|-----------------------------------|-------|-----------|-----------|-------|
| That preceding the Vertex         | ♈     | 0 05 17   | 17 39 08  | 6     |
| Vertex of the Triangle            |       | 2 30 51   | 16 48 23  | 4     |
| That following the Vertex         | ♈     | 6 00 25   | 19 28 00  | 6     |
| First of 3 in the Base            |       | 7 59 44   | 20 34 17  | 4     |
|                                   |       | 7 19 45   | 17 06 13  | 7     |

Names and Situation of the Stars.

| Names and Situation of the Stars.  | Signs | Longitude | Latitude. | Magn. |
|--|-------|-----------|-----------|-------|
| 1st of 3 Inform. under Triangle  | ♈     | 6 52 35   | 15 59 02  | 6     |
| Contig. to the last of the Base  |       | 8 42 40   | 18 34 12  | 6     |
| Middle one of the Base   |       | 9 09 43   | 19 21 32  | 5     |
| Last of the Base   |       | 9 10 21   | 18 56 07  | 4     |
| S. of Inform. under the Triang.  |       | 7 38 31   | 13 55 26  | 6     |
| 10   |       |           |           |       |
| Last of these Informes   |       | 10 32 52  | 16 16 32  | 7     |
| A smaller contiguous to it.  |       | 9 59 15   | 14 13 03  | 6     |
|  |       | 10 12 15  | 14 24 24  | 6     |
|  |       | 13 08 28  | 20 00 37  | 6     |
|  |       | 13 15 01  | 18 26 13  | 7     |
| 15   |       |           |           |       |
| Informes between the Triangle and the Rams Tail, which are also number'd among the Stars of Aries. |       |           |           |       |
| 28th   |       | 10 14 15  | 8 49 43   | 7     |
| 31st   |       | 11 48 01  | 10 51 52  | 5     |
| 33d  |       | 12 35 47  | 11 17 13  | 4     |
| 40th   |       | 13 51 45  | 10 25 57  | 3     |
| 48th   |       | 16 13 53  | 8 51 55   | 7     |
| 50th   |       | 16 22 25  | 8 59 42   | 7     |
| 51st   |       | 16 39 24  | 7 29 04   | 6     |
| 54th   |       | 18 37 56  | 10 54 26  | 7     |
| 55th   |       | 18 41 07  | 8 58 28   | 7     |

TRIANGULAR Compasses, are such as have three Legs or Feet, whereby to take off any Triangle at once. See COMPASSES.

These are much us'd in the Construction of Maps, Globes, &c.

TRIANGULAR Numbers, are a kind of Polygonous Numbers; see POLYGONOUS Number; being the Sums of Arithmetical Progressions, the Difference of whose Terms is 1: Thus,

Of Arithmetical Progress 1 2 3 4 5 6  
are form'd Triang. Numb. 1 3 6 10 15 21.

TRIANGULAR Quadrant, is a Sector furnish'd with a loose Piece, whereby to make it an Equilateral Triangle. See SECTOR.

The Calendar is graduated thereon, with the Sun's Place, Declination, and other useful Lines; and by the Help of a String and a Plummert, and the Divisions graduated on the loose Piece, it may be made to serve for a Quadrant. See QUADRANT.

TRIANGULARIS, in Anatomy, a Name given to two Muscles, in respect of their Figure. See MUSCLE.

The *Triangularis Pectoris*, which has sometimes the Appearance of three or four distinct Muscles, arises from the Inside of the Sternum, and is implanted into the Cartilages which join the four lowest true Ribs to the Sternum.

The Action of this Muscle is very obscure; since both the Origination and Insertion are at Parts not moveable, but together. --- Dr. Drake conjectures it may conduce towards the forming the necessary Incurvation of the Sternum, and by its Over-tension in Children, while the Cartilages are soft, may occasion that morbid Acumination of the Sternum seen in rickety Children. --- Others suppose it may contract the Cavity of the Thorax in Expiration.

TRIANGULARIS Labii. See DEPRESSOR Labii Superioris.

TRIARI, in the Roman Militia, a kind of Infantry, arm'd with a Pike and a Shield, a Helmet and a Cuirass.

They were thus call'd, because they made the third Line of Battle.

Polybius distinguishes four Kinds of Forces in the Roman Army: The first, call'd *Pilati*, or *Velites*, were a raw Soldiery, lightly arm'd. --- The *Hastati*, or Spear-men, were a Degree older, and more experienc'd. --- The third, call'd *Principes*, Princes, were still older, and better Soldiers than the second. --- The fourth were the eldest, the most experienc'd, and the bravest: These were always dispos'd in the third Line, as a Corps de Reserve, to sustain the other two, and to restore the Battle, when the others were broken or defeated.

Hence their Name of *Triarii*; and hence the Proverb of *Triarios ventum est*, to shew that one is at the last and hardest Struggle.

The *Triarii* were also call'd *Postsignani*, because rang'd behind the *Principes*, who bore the Standard in a Legion. See PRINCIPES.

TRIAS Harmonica, or the Harmonical TRIAD, in Music, a Compound of three radical Sounds, heard all together; two whereof are a Fifth, and a Third above the other, which is the Fundamental. See CONCORD, &c.

The Triad is properly a Consonance form'd of a Third and a Fifth; which, with the Bass, or fundamental Sound, makes three different Terms, whence the Name *Trias*. --- That of harmonical is doubtless given it from that wonderful Property of the Fifth, which divides itself naturally into two Thirds, both excellent, and perfectly harmonical; so that this one Sound



Sound dispos'd between two others, makes two Thirds at once, and of Consequence a double Harmony. See FIFTH.

Hence it is, that in *Trio's*, particularly, this Concord is prefer'd to that which divides the Octave into a Fifth and a Fourth: In regard that, if there be a Concord on one Side, there is a Discord on the other; whereas here the Harmony is compleat on both Sides.

Of the three Sounds which compose the harmonical *Triad*, the gravest is call'd the *Fundamental*, or *Bass*; the acutest, that which makes the Fifth, and which terminates the Concord upwards, is call'd the *excluded* or *highest* Sound; and that which divides the Fifth so agreeably into two Thirds, is call'd the *harmonical Mean*.

The Division of the Fifth into two Thirds, may be perform'd two Ways, viz. 1°. Harmonically, when the greater Third is lowest, and the less a-top; in which Case the *Triad* is perfect and natural.

2°. Arithmetically, when the less Third is lowest, and the greater a-top; in which Case the *Triad* is imperfect and flat. Both are good; but the latter not to be often us'd.

TRIBE, *TRIBUS*, in Antiquity, a certain Quantity or Number of People; when a Division is made of a Nation into Quarters or Districts.

The City of *Athens* was divided into ten Tribes.--- The Jewish Nation into twelve Tribes, the Descendants of the twelve Sons of *Jacob*, viz. the Tribes of *Judah*, of *Reuben*, of *Gad*, of *Asher*, of *Dan*, of *Naphthali*, of *Ephraim*, of *Manassah*, of *Simeon*, of *Issachar*, of *Zabulon*, and of *Benjamin*.

These, in effect, make thirteen Tribes, from twelve Patriarchs; by Reason the Posterity of *Joseph* was divided into two Tribes, that of *Manassah*, and that of *Ephraim*. See PATRIARCH.

There were ten of these Tribes that revolted and follow'd *Jeroboam*.

The Roman People was at first only divided into three Tribes; and from this Number *three*, *tres*, it was that the Word *Tribe*, *Tribus*, took its Rise.--- This Division was accommodated by *Romulus*, to the several Nations he had united: The first consisted of the *Albans*, the second of the *Sabins*, and the third of a Mixture of Fugitives, who came to seek an Asylum at *Rome*.

*Scroivus Tullus* fearing this Partition might occasion Seditions, divided the Inhabitants of *Rome* by Cantons, not by Nations; accordingly, he distributed the City into four Quarters or Tribes; and by Reason a great Number of Citizens had retir'd into the Country about, of those he compos'd 26 other Tribes; so that from his Time the Roman People consisted of 30 Tribes.

In after-times, the Number of Tribes was increas'd to 35; but they then ceas'd to be rang'd according to the Quarters of the City.--- The Distribution depended on the Censors, who form'd their List at Discretion, frequently confounding the Country Tribes with those of the City.

A Man was never absolutely a Roman Citizen, unless he had the *Jus Tribus*, i. e. till he were intitled to the Honours of the Magistrature, as also to a Right of voting in Assemblies of the People: And this was what they call'd *Jus Quiritium*.

Hence, the Inhabitants of the municipal Cities, were only imperfect Citizens, as being of no Tribe. See CITIZEN.

The Freedmen were oblig'd to purchase this Right of Tribe, which did not otherwise belong to them, tho' they were Citizens of *Rome*. See LIBERTUS.

The Names of the 35 Tribes were, 1°. the *Palatina*. 2°. the *Suburana*. 3°. the *Collina*. 4°. the *Isquiliua*. 5°. the *Romula*. 6°. the *Emilia*. 7°. the *Crustumina*. 8°. the *Cornelia*. 9°. the *Fabia*. 10°. the *Galeria*. 11°. the *Leomania*. 12°. the *Mentina* or *Menenia*. 13°. the *Ocriculana*. 14°. the *Papiria*. 15°. the *Pollia*. 16°. the *Popilia*. 17°. the *Pupinia*. 18°. the *Sergia*. 19°. the *Vegentina*. 20°. the *Volturna*. 21°. the *Clautia*. 22°. the *Stellatina*. 23°. the *Tromentina*. 24°. the *Arvensis*. 25°. the *Sabatina*. 26°. the *Pomptina*. 27°. the *Tubulila*. 28°. the *Mæcia*. 29°. the *Scaptia*. 30°. the *Onsentina*. 31°. the *Falerina*. 32°. the *Aniensis*. 33°. the *Terentina*. 34°. the *Velina*. 35°. the *Quirina*. In ancient Authors and Inscriptions, we meet with the Names of others, viz. *Pinaria*, *Sappinia*, *Camilla*, *Cestia*, *Cluentia*, &c.

TRIBRACHIYS, in the ancient Profody, a Foot of Verse, consisting of three Syllables, and those all short, as *Melius*.

The Word is form'd from the Greek, *τρεῖς*, three, and *βραχυς*, short.

TRIBUCH, and *TRIBUCHET*, a Tumbrel, or Cucking-stool. See CUCKING-STOOL.

TRIBUNAL, *Judgment-Seat*, the Seat of a Judge. See JUDGE.

The Tribunal in a Court of Justice, is properly the Seat or Bench whereon the Judge and his Associates are placed. See BENCH.

The Word is Latin, and takes its Origin from a Seat rais'd from the Ground, wherein the Tribune of the Roman People was plac'd to administer Justice. See TRIBUNE.

*Tribunal*, *Tribuna*, or *Tribune*, among the Ancients, was also a Place from whence the People were harangued.

Among the Romans, it was an Eminence near the Temple, in the Place call'd *Pro Rostris*, where the People were harangued in Tribes.

The French Architects likewise use the Word *Tribune* for a Gallery or Eminence in a Church, or other Place, wherein the Music is plac'd for a Symphony or Concert.

TRIBUNE, *TRIBUNUS Militum* or *Militaris*; an Officer in the Roman Army. See TRIBUNUS.

TRIBUNE, *TRIBUNUS Plebis*, in Antiquity, a Roman Magistrate, chosen out of the Populace, to protect them against the Oppression of the Great, and to defend the Liberty of the People against the Attempts of the Senate and Consuls.

The Tribunes of the People were first establish'd in the Year of *Rome* 259. The first Design of the Creation, was to shelter them from the Cruelties of Usurers, and to engage them to quit the *Aventine* Mount, whither they had retir'd in Displeasure.

Their Number, at first, was but two; but the next Year, under the Consulate of *A. Posthumus Aruncius*, and *Cassius Viscellinus*, there were three more added; and this Number of five was afterwards increas'd by *L. Trebonius* to ten.

The Appellation *Tribune* was given them, by reason they were at first chosen out of the Tribunes of the Army. See TRIBUNUS.

The Tribunes were, as it were, the Leaders and Guardians of the People.--- They call'd Assemblies of the People when they pleas'd; and in those Assemblies frequently annull'd the Decrees of the Senate. Nothing could be concluded without their Consent, which they express'd by subscribing the Letter *T* at the Bottom of the Decree. They had it in their Power to prevent the Execution of any Decree, without giving any Reason for it, and merely by subscribing *Veto*.

They sometimes call'd the Consuls and Dictator to account for their Conduct, before the People.

*Augustus* himself was Tribune for 37 Years; *Tiberius* assum'd the same Quality; as likewise did his Successor, signifying the Year of their Tribunate on their Medals and Coins: But their Design, herein, was only to possess themselves of all the Authority, that there might be no-body to oppose them. See TRIBUNICIAN.

TRIBUNICIAN, a Term among Antiquaries and Medallists.--- The *Tribunician Power*, was the Dignity, Office, or Authority of a Tribune of the People. See TRIBUNE.

This Power was assum'd by the Emperors, and makes one of the chief Titles they bear on their Medals: The Quality was first introduc'd by *Augustus*, to keep the Sovereign Authority over the other Magistrates, without either taking that of Dictator or King. Indeed it was offer'd to *Julius Caesar*, but he despis'd it. *Augustus* is the first who us'd it, and his Successors follow'd his Example.--- They reckon the Years of their Empire on their Medals by those of their *Tribunician Power*.

This Power was sometimes given them for a certain Number of Years, and sometimes for ever. Sometimes the Emperors would communicate the Power to such as they associated, or as they intended to succeed them; And *Tiberius* held it fifteen Years with *Augustus*. But this Practice only obtain'd till the Time of *Valerian* and *Gallian*. After them we only find T. R. P. II. in *Claudius*; T. R. P. V. in *Aurilian*; and T. R. P. in *Probus*.

This, however, is to be understood of Medals; for in Inscriptions we find it after that Time.

Cardinal *Noris* and *F. Pagi* have disputed about this *Tribunician Power*, wherein it consisted.--- The first maintains, that it did not at all differ from that of the ordinary Tribunes, which consisted in three Things, 1°. In a Right of opposing all the Acts and Resolutions of the other Magistrates. 2°. In that it render'd their Person sacred and inviolable. 3°. In a Right of making Edicts and Laws.

*F. Pagi* asserts, that it made an Addition to the Power of the Tribunes; that the Privilege it had of making Edicts, was more ample than that of the ordinary Tribunes; besides, that it carry'd with it a Power of convening the Senate at Pleasure.

*M. Spanheim* is of *F. Pagi's* Opinion: He believes that the *Tribunician Power* had much the Advantage of the Tribunate, 1°. In that it was peculiar to the Patricians, and did not reduce the Person who held it to the Degree of a Plebeian. 2°. In that it was not confin'd to the City of *Rome* alone, like the other, but extended throughout the Empire; as well as the Proconsular Power, which was usually annex'd to it. 3°. That the Dignity of the Tribunes was inferior to that of the Pretors; whereas the *Tribunician Power* of the *Cæsars*, conferr'd, according to *Tacitus*, a Sovereign Authority over all Magistrates, and render'd such as it was communicated to, equal to the Emperors, and even their Collegues in the Empire: Besides the Power of opposing the Enterprizes of all the other Magistrates; and that



that it render'd their Persons sacred, and gave them a Right to assemble and dismis the Senate, which were Rights the *Tribunician Power* held in common with the Tribunes.

F. Hardouin thinks we should distinguish two *Tribunician Powers*; the one Civil, the other Military; but the Proof he brings thereof is very weak. M. Spanheim says, his Distinction is only founded on vain Conjectures, none of which deserve Notice.

The Learned are greatly divided as to the Month and Day whereon the *Tribunician Power* commenced: Sigonius and Petavius will have it begin on the 1st of January: Others, as Perizonius, on the 5th of the Calends of July: M. Toinard on the 4th of the Ides of December: Onuphrius, Cardinal Noris, F. Pagi, &c. on the Day of the Emperor's Accession to the Empire; with this Difference, that F. Pagi takes it to be on the 5th of the Calends of the Month wherein the Prince was proclaim'd; and that this Day was, for this Reason, held sacred among the Romans.

F. Hardouin thinks, that on Medals the *Tribunician Power* commences on the Anniversary of the Building of Rome, viz. the 11th of the Calends of May; excepting on the Greek Medals, where it begins in September, in regard this Month, which began the Greek Year, was near the Time when the *Tribunician Power* was first conferr'd.

Of all these Sentiments the most probable is that of Onuphrius, &c. setting aside the Restriction of F. Pagi. See M. Spanheim, Dissert. XII. Tom. II. p. 429.

**TRIBUNUS Militum** or *Militaris*, or *Military Tribune*, an Officer in the Roman Army who commanded in chief over a Body of Forces, particularly a Legion; much the same with our Colonel, or the French *Mestre de Camp*. See **LEGION**.

There is some Distinction of the Tribunes, into *Laticlavi*, and *Angusticlavi*: Those born of noble Families were allow'd, after they were made Tribunes of a Legion, to take the *Laticlavus*. See **LATICLAVUS**.

The rest were only to wear the *Angusticlavus*; whence Suetonius takes Care to inform us, that his Father was *Tribunus Laticlavus* of the 13th Legion.

Over these Tribunes of Legions and Cohorts, there were other Tribunes who commanded in the Absence of the Consuls, and who were invested with a Consular Authority. --- Budeus will have these to be much the same as the Marshals of France, or, at least, Lieutenants General.

Romulus likewise establish'd a *Tribune* of the Cavalry, *Tribunus Equitum*, who was the same with the *Magister Equitum* under the Dictators, the first Officer after the Kings. See **MAGISTER Equitum**.

The Tribunes of the Soldiery, were of an elder standing than those of the People; those latter being elected out of the former.

Varro will have it, they were call'd Tribunes, because, at first, they were only three in Number in each Legion, when the Legion consisted of three thousand Men, taken out of the three Tribes then on Foot.

In Proportion as the Legion was increas'd, the Number of Tribunes was likewise increas'd to the Number of six.

At first, the Election lay in the General of the Army; but in the Year of Rome 391, it was appointed, that the People should nominate one Part, and the General another: The latter were call'd *Rufuli*, from *Rutilius Rufus*, who pass'd the Law.

Those chose by the People in the Comitia, were call'd *Comitiani*: They were indifferently either Patricians or Plebeians; and had the same Marks of Honour as the Consuls themselves. --- The *Tribune of the Pretorian Cohorts* was the Captain of the Guards. See **PRETORIAN**.

The Term *Tribune* was also apply'd to various other Officers; as the *Tribuni Aerarii*, Tribunes of the Treasury: --- The *Tribune of the Celeres*, the Officer who commanded them: The *Tribuni Fabricarum*, those who had the Direction of the making of Arms: The *Tribuni Marinarum*; *Tribuni Nolanorum*, *Tribuni Voluptatum*, mention'd in the *Theodosian Code*, as Intendants of the Publick Shews and other Diversions.

The Title *Tribune* was also given to the chief of a Tribe. See **TRIBE**.

**TRIBUTE**, *TRIBUTUM*, a Duty or Tax which one Prince or State is oblig'd to pay to another, as a Token of Dependance; or in Virtue of a Treaty, and as a Purchase of Peace.

The Romans made all the Nations they subdu'd pay them *Tribute*. --- Mahomet laid it down as a Fundamental of his Law, that all the World should pay him *Tribute*.

In the States of the Grand Signior, Christian Children are taken in Way of *Tribute*, to make Janisaries. See **JANISARY**.

**TRIBUTE** is sometimes also us'd for a personal Contribution, which Princes levy on their Subjects by Way of Capitation or Poll-Money. See **TAX**.

In this it differs from an *Impost*, which is properly what is laid on Merchandizes. See **IMPOST**.

**TRIBUTARY**, one who pays *Tribute* to another, in order to live in Peace with him, or share in his Protection. See **TRIBUTE**.

The Republic of *Ragusa* is *Tributary* to the Grand Turk; so is the Cham of Little *Tartary*, &c.

**TRICEPS**, in Anatomy, a Muscle of the Thigh, having three Originations, and as many Insertions; and which may therefore, be conveniently divided into three Muscles, all arising from the Os Pubis, and inserted into the *Linea Aspera* of the Thigh Bone, whercof they possess the greatest Part. See **MUSCLE**.

They serve as Adductores, and draw the Thighs together. **TRICUSPIDES**, in Anatomy, an Epithet given to three Valves, situate at the Entrance of the *Vena Cava* into the Heart. See **VALVE**.

They open from without inwards, so as to let the Blood of the Cava pass into the Heart, but prevent its Reflux into the Cava. See **HEART**.

They are thus call'd, from their Figure, which is triangular: Some fancy them to be of the Figure of three Tongues; and call them *Triglottides*.

**TRIDENT**, *TRIDENS*, an Attribute of *Neptune*; being a kind of Scepter which the Painters and Poets put in the Hands of that God, in form of a Fork with three Teeth, whence the Word. See **SCEPTER**.

The Poets still tell us, that *Neptune* makes the Earth open, whenever he strikes it with his *Trident*.

**TRIDENT**, among Mathematicians, is us'd for a Kind of Parabola, by which *Cartes* constructed Equations of six Dimensions. See **PARABOLA**.

**TRIEMIMERIS**, a kind of Cæsura of a *Latin Verse*, wherein, after the first Foot of the Verse, there remains an odd Syllable, which helps to make up the next Foot; as in this Verse,

*Ille latus niveum molli fulvis Hyacintho.*

**TRIENNIAL**, an Epithet applied chiefly to Offices or Employments, which last for three Years.

Thus we say, a *Triennial Government*: Most regular Monasteries have *Triennial* Superiors; they elect new ones at the End of each three Years.

In 1695, an Act was made for *Triennial Parliaments*, i. e. for Parliaments which should be dissolved, and the Members be elected anew every three Years. Till that Time, the King had it in his Power to prorogue and continue his Parliaments as long as he pleas'd. --- This opened a Door to Corruption, which the *Triennial Bill* was intended to prevent.

The *Triennial Act* has, from some other Views, been since Repeal'd: The great Struggles usual at Elections, the great Ferment it usually puts the Nation into, the great Expences upon that Occasion, with other Considerations, determined the Legislature, in 1717, to change *Triennial Parliaments* for Septennial ones. See **PARLIAMENT**.

**TRIENS**, in Antiquity, a Term us'd for two different Things; 1<sup>o</sup> A Copper Money, of the Value of one Third of an As. --- On one Side, it bore a *Janus's Head*, and on the other, a Water-Rat. This was the Piece of Money us'd to be put in the Mouths of the Deceas'd, to pay *Charon* his Fare for their Passage into the other Life. See **MONEY** and **COIN**.

2<sup>o</sup> The *Triens* was also a drinking Cup; and that which was ordinarily us'd. --- It was a fourth Part of the *Septary*. See **SEPTARY**.

**TRIFOLIUM** or *TREFOIL*, any three-leaf'd Grass: That which is most us'd in Medicine, is the *Trifolium Aquaticum*, or Buck-Bean, which is very detergent, and us'd with Success in Scorbutic, Rheumatic and Scrophulous Habits. The way of using it is generally to make a pretty strong Infusion of the dry'd Herb, in form of Tea.

**TRIGA**, in Antiquity, a kind of Car, or Chariot with three Horses. See **CAR**, &c.

The *Triga*, in reality, was only drawn by two Horses; so that it was properly a *Biga*; but it had, besides, a third Horse tied to the others, like a led Horse, for Change. See **BIGA**.

*Statius* calls the third Horse *Equus funalis*; *Hippius* *πυλῖος*; and *Dionysius Halicarnassensis*, *ερατῖος*.

We don't find the *Triga* on any ancient Monument: but it was a long time in use among the Romans, at their *Ludi Circenses*. --- The Greeks, who first introduced it, soon abandon'd it.

**TRIGAMY**, a third Marriage; or the State of a Person who has been married three Times. See **MARRIAGE**.

In the ancient Church, *Trigamy* was only allowed to such as had no Children by their former Marriages.

If, having Children by one or both the former, they married again, after 40 Years of Age, they were excommunicated from Communion for five Years. --- If they were under 40 Years old, the Penance was but four Years. See **BIGAMY**.

**TRIGLYPHS**, in Architecture, a sort of Ornament, consisting of three Triangles, placed at equal Intervals in the *Doric Frieze*. See **TRIGLYPH**.



They consist of two entire Gutters or Channels, cut to a right Angle, call'd *Glyphes*, and separated by two Interstices, call'd, by *Vitruvius*, *Shanks*, from two Half Channels at the Sides. See *GLYPHES*.

The ordinary Proportion of *Triglyphs*, is to be a Module broad, and one and a Half high. --- But this Proportion, *M. le Clerc* observes, sometimes occasions ill-proportion'd Intercolumnations in Portico's; for which Reason he chuses to accommodate the Proportion of his *Triglyphs* to that of the Intercolumns. See *INTERCOLUMNATION*.

The Intervals between the *Triglyphs*, are called *Metopes*. See *METOPES*.

Under the Channels, or *Glyphes*, are placed *Guttæ* or Drops. See *GUTTÆ*.

The *Triglyphs* make the most distinguishing Character of the *Doric* Order. --- Some imagine them originally intended to convey the *Guttæ* that are underneath them: Others fancy they bear some Resemblance to a Lyre, and thence conjecture the Order to have been originally invented for some Temple sacred to *Apollo*. See *DORIC*.

The Word is form'd from the Greek *τρίγωνον*, three Engravings, from *γύψω*, *Sculpo*.

*TRIGON*, *TRIGONUS*, in Geometry, a Triangle. See *TRIANGLE*.

The Word is form'd from the Greek *τρίγωνον*, Triangle.

*TRIGON*, in Astrology, is an Aspect of two Planets, wherein they are 120 Degrees distant from each other; called also *Trine*. See *TRINE*.

The *Trigons* of *Mars* and *Saturn*, are held Malefic Aspects. See *ASPECT*.

*TRIGON*, *TRIGONON*, in Music, is a Musical Instrument, used among the Ancients.

The *Trigon* was a kind of triangular Lyre, invented by *Ibycus*. See *LYRE*.

*TRIGONOMETRY*, the Art of finding the Dimensions of the Parts of a Triangle unknown, from other Parts known: Or, the Art whereby, from any three Parts of a Triangle given, all the rest are found. See *TRIANGLE*.

Thus, *e. gr.* from two Sides *AB* and *AC* and an Angle *B*, we find by *Trigonometry*, the other Angles *B* and *C* with the third Side *BC*, Tab. *Trigonometry* Fig. 1.

The Word literally signifies the measuring of Triangles; form'd from the Greek, *τρίγωνον*, Triangle, and *μετρον*, Measure; yet does not the Art extend to the measuring of the Area or Surface of Triangles, which comes under Geometry: *Trigonometry* only considers the Lines and Angles thereof.

*Trigonometry* is of the utmost Use in various mathematical Arts. --- 'Tis by means hereof, that most of the Operations of Geometry and Astronomy are perform'd; without it the Magnitude of the Earth and the Stars, their Distances, Motions, Eclipses, &c. would be utterly unknown. --- *Trigonometry*, therefore, must be own'd an Art, whereby the most hidden Things, and those remotest from the Knowledge of Men, are brought to light. A Person ignorant hereof, can make no great Progress in mixt Mathematicks; but will often be gravell'd, even in Natural Philosophy, particularly in accounting for the Phenomena of the Rain-bow, and other Meteors.

*Trigonometry*, or the Solution of Triangles, is founded on that mutual Proportion which is between the Sides and Angles of a Triangle; which Proportion is known, by finding the Proportion which the Radius of a Circle has to certain other Lines, call'd *Chords*, *Sines*, *Tangents* and *Secants*. See *RADIUS*, *CHORD*, *SINE*, *TANGENT* and *SECANT*.

This Proportion of the Sines and Tangents to their Radius, is sometimes express'd in common or natural Numbers, which constitute what we call the *Tables of natural Sines*, *Tangents*, &c. --- Sometimes it is express'd in Logarithms, and in that Case, constitutes the *Tables of artificial Sines*, &c. See *TABLES*.

Lastly, sometimes the Proportion is not express'd in Numbers; but the several Sines, Tangents, &c. are actually laid down upon Lines or Scales; whence the *Line of Sines*, *Tangents*, &c. See *LINE* and *SCALE*.

*Trigonometry* is divided into *Plain* and *Spherical*: The first considering rectilinear Triangles; and the second, Spherical ones. --- The *First* is of obvious and continual Use in Navigation, Measuring, Surveying and other Operations of Geometry. See *MEASURING*, *SURVEYING*, *SAILING*, &c.

The *Second* is only learn'd, with a View to Astronomy and its kindred Arts, Geography and Dialling. --- It is generally esteem'd exceedingly difficult, by reason of the vast Number of Cases, wherewith it is perplex'd; but the excellent *Wolffius* has removed most of the Difficulties. That Author has not only shewn how all the Cases of rectangled Triangles may be solv'd the common Way, by the Rule of Sines and Tangents; but has likewise laid down an universal Rule, whereby all Problems, both in Plain and Spherical rectangled Triangles are solv'd: And even obliquangular Triangles, he teaches to solve with equal Ease. --- His Doctrine, see under the Article *TRIANGLE*.

*Plain TRIGONOMETRY*, is an Art whereby, from three given Parts of a Plain Triangle, we find the rest.

The great Principle of *Plain Trigonometry*, is, that in every plain Triangle, the Sides are, as the Sines of the opposite Angles. --- See this Principle applied to the Solution of the several Cases of Plain Triangles, under the Article *TRIANGLE*.

*Spherical TRIGONOMETRY*, is the Art whereby, from three given Parts of a spherical Triangle, we find the rest. *E. gr.* whereby from two Sides and one Angle, we find the two other Angles, and the third Side. See *SPHERICKS*.

The Principles of *Spherical Trigonometry*, as reform'd by *Wolffius*, are as follow:

1° In every rectangled spherical Triangle, *ABC*, rectangular at *C*, the whole Sine is to the Sine of the Hypothenuse, *BC*, Tab. *Trigonometry* Fig. 32. as the Sine of either of the acute Angles, as *C*, is to the Sine of the Leg, opposite thereto *AB*; Or, the Sine of the Angle *B*, to the Sine of its opposite Leg *AC*; whence we deduce, that the Rectangle of the whole Sine into the Sine of one Leg, is equal to the Rectangle of the Sine of the Angle opposite thereto, into the Sine of the Hypothenuse.

2° In every right-angled spherical Triangle *ABC*, Fig. 31. none of whose Sides is a Quadrant; if the Complements of the Legs *AB* and *AC* to a Quadrant, be consider'd as the Legs themselves; the Rectangle of the whole Sine into the Cosine of the middle Part, is equal to the Rectangle of the Sines of the disjunct or separate Parts.

Hence, 1°. If the Sines be artificial, that is, the Logarithms of the natural ones; the whole Sine, with the Co-sine of the middle Part, will be equal to the Sines of the disjunct Parts.

--- 2° Since, in the rectilinear Triangle *ABC* (Fig. 34.) the whole Sine is to the Hypothenuse *BC*, as the Sine of the Angle *B* or *C* to the Sine of the opposite Leg *AC* or *AB*: if, instead of the Sines of the Sides, we take the Sides themselves; here, too, the whole Sine, with the Co-sine of the middle Part *AC* or *AB*, will be equal to the Sines of the disjunct Parts *B* or *C* and *BC*; *i. e.* to the Sine of *B* or *C*, and *BC* itself.

This, *Wolffius* calls *Regula Sinuum Catholica*, or the first Part of the Catholic Rule of *Trigonometry*; by means whereof all the Problems of either *Trigonometry* are solv'd, when the thing is effected by Sines alone. --- My Lord *Neper* had the first Thought of such a Rule: But he used the Complements of the Hypothenuse *BC* (Fig. 22.) and the Angles *B* and *C* for the Hypothenuse, and Angles themselves: So that the Tenor of his Catholic Rule of Sines is this:

The whole Sine, with the Sine of the middle Part, is equal to the Co-sines of the disjunct, or, as he calls them, opposite Parts. --- But, in this, that Harmony between Plain and Spherical *Trigonometry*, visible in *Wolffius's* Rule, does not appear.

3° In a rectangled spherical Triangle *ABC* (Fig. 33.) none of whose Sides is a Quadrant; as the whole Sine is to the Sine of the adjacent Leg *AC*; so is the Tangent of the adjacent Angle *C* to the Tangent of the Leg *AB*.

Whence, 1°, as the Co-tangent of the Angle is to the whole Sine, as the whole Sine is to the Tangent of the Angle *C*, so is the Sine of *AC* to the Tangent of *AB*; therefore the Co-tangent of the Angle *C*, will be to the whole Sine, as the Sine of the Leg adjacent thereto, *AC*, is to the Tangent of the opposite one *AB*. 2° The Rectangle, therefore, of the whole Sine, into the Sine of one Leg *AC*, is equal to the Rectangle of the Tangent of the other Leg *AB*, into the Co-tangent of the Angle *C*, opposite to the same. And, in like manner, the Rectangle of the whole Sine, into the Sine of the Leg *AB* is equal to the Rectangle of the Tangent of the Leg *AC* into the Co-tangent of the Angle *B*.

4° In every right-angled spherical Triangle, *ABC* (Fig. 31) none of whose Sides is a Quadrant; if the Complements of the Legs *AB* and *AC* to a Quadrant, or their Excesses beyond a Quadrant, be consider'd as the Legs themselves; the Rectangle of the whole Sine, into the Co-sine of the middle Part, will be equal to the Rectangle of the Co-tangents, of the conjunct Parts.

Hence, 1°, If the Sines and Tangents be Artificial; the whole Sine, with the Co-sine of the middle Part, is equal to the Co-tangents of the contiguous Parts. 2° Since in a rectilinear, right-angled Triangle, we use the Tangents, when from the Legs *AB* and *AC* (Fig. 34.) given, the Angle *C* is to be found; and in that Case the whole Sine is to the Co-tangent of *C*, *i. e.* to the Tangent of *B*, as *AB* to *AC*; therefore, also, in a rectilinear Triangle, if for the Sines and Tangents of the Sides be taken the Sines themselves; the whole Sine, with the Co-sine of the middle Part, *i. e.* with *AC*, is equal to the Co-tangents of the conjunct Parts, *i. e.* to the Co-tangent of *C*, or Tangent of *B* and the Side *AB*.

This, *Wolffius* calls *Regula Tangentium Catholica*, and constitutes the other Part of the Catholic Rule of *Trigonometry*; whereby all Problems in each *Trigonometry*, where Tangents are required, are solv'd.

My Lord *Neper's* Rule to the like Effect, is thus: --- That the whole Sine, with the Sine of the middle Part, is equal to the Tangents of the contiguous Parts.

'Tis, therefore, a Catholic Rule, which holds in all *Trigonometry*; that in a rectangled Triangle, (notatis notandis, *i. e.*



the Complements of the Legs AB and AC, being consider'd as Legs themselves, and in rectilinear Triangles, the Sides themselves being taken for the Sines and Tangents of the Sides) *The whole Sine with the Co-sine of the mean or middle Part is equal to the Sines of the disjunct or separate Parts, and the Co-tangents of the conjunct or contiguous Parts.*

*For an Illustration and Application of this Rule, in the Solution of the various Cases of spherical Triangles; see TRIANGLE.*

**TRIHING** or **TRICHING**, from the Saxon, *Tribinga*, an Extent containing three or four Hundreds, or the third Part of a Shire or Province. See **TITHING**.

The Word is also used for a Court held within that Circuit, which was the same with what we now call a *Court-Leet*, which is above a Court Baron, and inferior to the County Court. See **COURT, LEET, &c.**

**TRILLION** or **TRILION**, in Arithmetic, the Number of a Billion of Billions. See **NUMERATION**.

After Billions, we reckon by *Trillions*, which makes a Class of Numeration, and are divided, like the other Classes, into three Places: Thus we say *Trillions; Tens of Trillions; Hundreds of Trillions, &c.*

**TRIM**, in the Sea Language. --- *To Trim a Boat*, is to set the Passengers so as to keep the Boat even on both Sides.

**TRIM** of a Ship, is her best Posture, Proportion of Ballast, and hanging of her Masts for sailing.

Hence, to find the best way of making a Ship sail swiftly, is to find her *Trim*.

**TRIMACRUS**, *Τριμακρος*, in the ancient Profody, a Foot in Verse, consisting of three long Syllables. See **FOOT**.

**TRIMILCHI**, from the Saxon *Trimilc*, a Name by which the *English Saxons* called the Month of *May*; because they milked their Cattle three times a Day in that Month.

**TRIMMERS**, in Architecture, Pieces of Timber, fram'd at right Angles to the Joints, against the Ways; for Chimneys and Well-holes for Stairs.

**TRINE Dimension**, or *Three-fold Dimension*, includes Length, Breadth and Thickness. See **DIMENSION**.

The *Trine Dimension* is peculiar to Bodies or Solids. See **BODY, &c.**

**TRINE** in *Astrology*, is the Aspect or Situation of one Star with regard to another, when they are distant 120 Degrees, as the Arch AB (Tab. Astronomy, Fig. 3.) which is a Third of a Circle, and its subtense AB, a Side of an equilateral Triangle AB inscribed in the Sphere. See **ASPECT**.

It is also called *Trigon*, and signified by the Character  $\Delta$ . See **TRIGON**.

**TRINGLE**, in Architecture, a Name common to several little square Members, or Ornaments; as Reglets, Liscels and Plat-bands. See **REGLET, LISCHEL, &c.**

The Word is *French*, where it signifies the same thing.

**TRINGLE** is particularly used for a little Member fix'd exactly over every Triglyph, under the Plat-band of the Architrave; from whence hang down the Guttæ or Pendant Drops. See **TRIGLYPH** and **GUTTÆ**.

**TRINITARIANS**, a Term used very variously, and arbitrarily --- Frequently it stands as a common Name for all Hereticks, who have Sentiments on the Mystery of the Trinity, contrary to those of the Catholic Church. See **TRINITY**.

Sometimes it is more immediately restrain'd to some one or other particular Class of Hereticks: Thus the *Trinitarians* are frequently confounded with the *Unitarians*. See **UNITARIANS**.

Sometimes it is even applied to the Orthodox themselves, in Contradistinction to the *Antitrinitarians*, who deny or impugn the Doctrine of the Trinity: Thus the Socinians and others us'd to call the Arianas, *Trinitarians*.

**TRINITARIANS** are also an Order of Religious, instituted in Honour of the Trinity, for the Redeeming of Christian Captives from the Infidels; vulgarly call'd *Mathurins*, and Brothers of the *Redemption*. See **MATHURIN**.

They are cloath'd in White, and bear on the Stomach a Cross, partly Red and partly Blue; by which three Colours, White, Red and Blue, is supposed to be represented, the Mystery of the Trinity.

The *Trinitarians* make it their Business to go and ransom Christians held in Slavery in the Republicks of *Algiers, Tunis* and *Tripoly*, and the States of *Morocco*. --- They have a Rule peculiar to themselves; though several Historians rank them among the Observers of the Rule of St. *Augustin*.

The Order had its Rise in 1198, under the Pontificate of *Innocent III*. The Founders were *John de Matba* and *Felix de Valois*: The first of *Faucon* in *Provence*; the second, not of the Royal Family of the *Valois's*, as some have imagin'd; but thus call'd, in all probability, as being a Native of the County *Valois*.

*Guillaume de Clugny* was the first who gave them a Place in his Lands to build a Convent; which afterwards became the Chief of the whole Order: *Honorius III*. confirm'd their Rule. *Urban IV*. appointed the Bishop of *Paris* and others,

to reform them: they did it; and the Reform was approved in 1267, by *Clement IV*.

This Order possesses about 250 Convents, divided into Thirteen Provinces; whereof six are in *France*, three in *Spain*, one in *Italy*, and one in *Portugal*. --- Formerly, there was one in *England*, another in *Scotland*, and a third in *Ireland*.

In the general Chapters held in 1573 and 1576, a Reform was order'd, and begun some time afterwards by *Julian de Nantonville*, and *Claude Aleph*, two Hermits of St. *Michael*, Trinity; upon which their Hermitage was converted into a House of the Order.

In 1609, Pope *Paul* allow'd them to build new Houses, and to introduce the Reform into the old One. In 1635 *Urban VIII*. by a Brief, appointed the Cardinal *de Rochefort* to introduce the Reform into all the Houses of the Order, which was done accordingly, by a Sentence containing the Reform in Eight Articles, the Principal whereof were, That they should observe the primitive Rule approved of by *Clement IV*. should abstain from Flesh, use woollen Shirts, have Matins at Midnight, &c. In 1554 there was also a Reform made among those of *Portugal*.

The Habit of the *Trinitarians* is different in different Countries; and that of the Reform'd different from the rest.

**Bare-foot TRINITARIANS**, are a Reform of this Order, made in *Spain* at a general Chapter, held in 1594, where it was resolved, That each Province should establish two or three Houses, where the primitive Rule should be observ'd, and where the Religious should live up to a greater Austerity, use coarser Cloaths, &c. and yet should have the Liberty of returning to their ancient Convents when they thought fit.

*Dom. Alvares Bazar*, intending to found a Monastery at *Valdepeñas*, and desiring to have it held by bare-foot Religious; it was agreed to add Nudity of Feet to the Reform; that the *Trinitarians* might have the Benefit of that Establishment. The Reform afterwards grew into three Provinces, and was at length introduced into *Poland* and *Russia*, and thence into *Germany* and *Italy*.

There are also bare-footed *Trinitarians* in *France*, established by *F. Jerom Hallies*, who being sent to *Rome* to solicit the first Reform mentioned above; not content therewith, he carried it further, and obtain'd a Permission of Pope *Gregory*, to add a coarse Habit, and Nudity of Feet thereto. He began with the Convent of St. *Denis* at *Rome*, and those of *Aix* in *Provence*.

In 1670 there were Houses enough of this Reform to make a Province; and accordingly they held their first general Chapter the same Year. See **PROVINCE**.

There are also Nuns of the *Trinitarian* Order, established in *Spain* by St. *John de Matba* himself, who built them a Convent in 1201. --- Those who first took the Habit were only Oblati, and made no Vows; but in 1201 the Monastery was fill'd with real Religious, under the Direction of the Infanta *Constantia*, Daughter of *Peter II*. King of *Aragon*, who was the first Religious, and the first Superior of the Order.

There are also Bare-foot Nuns of this Order, established at *Madrid* about the Year 1612, by *Frances de Romero*, Daughter of *Julian de Romero*, Lieutenant-General in the *Spanish Army*. Her Design being to found a Monastery of Bare-foot *Augustines*, she assembled a Number of Maids for that End, lodging them, for the Time, in a House belonging to the Monastery of Bare-foot *Trinitarians* in the Neighbourhood.

Here, attending at the Church of those Fathers, and being under the Direction of *F. John Baptist* of the Conception, their Founder; the Knowledge of that Father, and the Services he did them, made them change their Resolution of becoming *Augustines*, and demand of their Director the Habit of his Order; which he gave them.

But the Order opposing their Design, and refusing to take them under its Jurisdiction, they address'd themselves to the Archbishop of *Toledo*, who allow'd them to live according to the Rule of that Order; so that they took the Habit anew in 1612, and began their Noviciate.

Lastly, there is a third Order of *Trinitarians*. See **THIRD ORDER**.

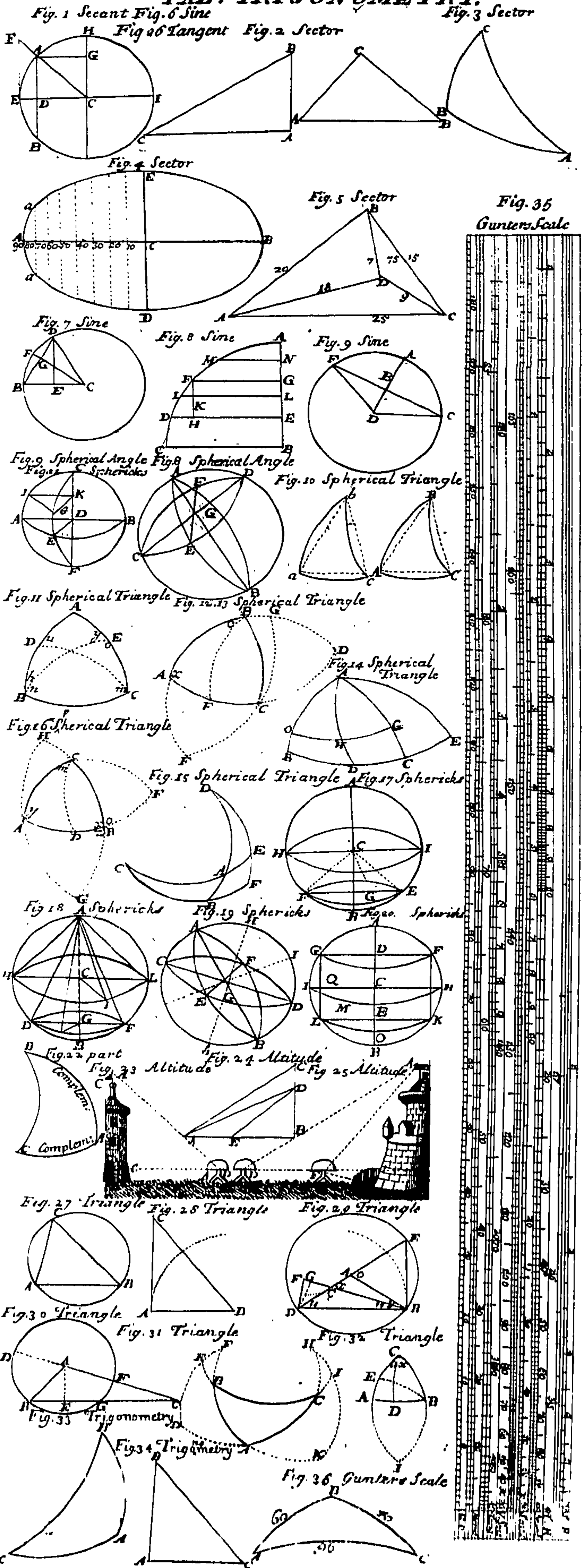
**TRINITY**, **TRINITAS**, **TRIAS**, **TRIAD**, in Theology, the ineffable Mystery of three Persons in one God; Father, Son, and Holy Spirit. See **PERSON** and **MYSTERY**.

'Tis an Article in the Christian Faith, that there is one God; an Unity in Nature and Essence, and a Trinity of Persons. --- The Term *Trinity* implies the Unity of three, the Unity of three divine Persons really different, and the Identity of an indivisible Nature: The *Trinity* is a Ternary of divine Persons of the same Essence, Nature, and Substance.

Theology teaches, that there is in God one Essence, three Persons, four Relations, five Notions, and



# TAB: TRIGONOMETRY.





the Circumincersion; which the *Greeks* call *Perichoresis*. Of each whereof we shall enlarge a little.

There is, then, one single *Essence*, one divine Nature, which is Infinite, Eternal, Spiritual; which sees all Things, which knows all Things, which is every where, All-mighty, and which created all Things of nothing. See *GOD*.

In this God there are two *Processions*, or Emanations, viz. that of the Son, and that of the Holy Spirit: The first is call'd *Generation*, and the second *Spiration*. See *GENERATION*, &c.

The Son proceeds from the Father by way of Knowledge; for God in knowing himself eternally, necessarily and infinitely, produces a Term, an Idea, a Notion or Knowledge of himself, and all his adorable Perfections, which is call'd his *Word*, his *Son*, who is equal to him in all Things, eternal, infinite, and necessary as his Father. -- The Father regards the Son as his Word, and the Son has a Regard to the Father as his Principle: And in thus respecting each other eternally, necessarily, and infinitely, they love each other, and produce an Act of their mutual Love: The Term of that Love is the Holy Spirit, who proceeds from the Father and the Son by way of *Spiration*, Love, and Impulsion; who is also equal in every Thing to the Father and the Son. See *FATHER*, *SON*, and *SPIRIT*.

Each divine Procession establishes two *Relations*: The one, on the Side of the Principle, or that from whence; and the other, on that of the Term, or that to which. -- Hence, as there are two Processions in God, there must be four Relations; the Paternity, the Filiation, the active *Spiration*, and the passive.

The *Paternity* is a Relation founded in what the School Divines call the notional Understanding; in which the Father stands related to the second Person, the Son. -- The *Filiation* is the Relation wherein the second Person, viz. the Son refers to the Father.

The *active Spiration*, is the Relation founded in the notional Act of the Will, whereby the first and second Persons regard or refer to the third: The passive *Spiration* or Procession, taken in its strict Sense, is the Relation whereby the third Person regards, and is referr'd to the first and second. -- Hence it appears, that there are in God four Relations, as we have already said; and five Notions, as we shall shew hereafter.

*Person* is defin'd an individual, reasonable, or intellectual Substance; or, an intellectual and incommunicable Substance. See *PERSON*.

The *Hypostasis*, or Subsistence, is what constitutes the Person. -- There are, then, in the Holy *Trinity*, three Persons, Father, Son, and Holy Spirit, which have all Things in common, except their Relations; whence that Axiom in Theology comes to have Place, in the divine Persons there is no Distinction where there is no Opposition of Relation: And hence it follows, that if Power be sometimes attributed to the Father, Wisdom to the Son, and Goodness to the Holy Spirit; or if Sins of Infirmary or Weakness be said to be against the Father, Sins of Ignorance against the Son, and Sins of Malice against the Holy Spirit, it is only spoke by way of Appropriation, and not of Property; for all those Things are in common: Whence that Axiom, The Works of the Holy *Trinity* are common and undivided, (*i. e.* they agree to all the divine Persons) but not their Productions *ad Persona*, (as they are call'd) by Reason they are Relative.

By Appropriation we mean the giving of some common Attribute to a certain divine Person, on account of some Suitableness or Agreement. Thus, in the Scriptures, in the Apostles, and the *Nicene Creed*, *Omnipotence* is attributed to the Father, because he is the first Principle, and a Principle without Origin, or higher Principle. -- *Wisdom* is attributed to the Son, because he is the Term of the divine Understanding to which Wisdom belongs: *Goodness* is attributed to the Holy Spirit, as being the Term of the Will to which Goodness belongs.

Some Divines give other Reasons of such Kind of Attributions and Appropriations, viz. that it is to save off those Imperfections from the divine Persons which are found in the Creatures: For created Fathers are weak, drooping, and impotent; wherefore to ward off this Imperfection from the third Person, he is peculiarly said to be *Allmighty*.

Again, created Sons are usually imprudent; wherefore to remove this Imperfection from the second Person, he is said to be *wise*, or *Eternal Wisdom*.

Lastly, great Minds or Spirits, among created Beings, are frequently wicked; wherefore to remove this Imperfection from the third Person, *Goodness* is attributed to him.

The Father is the first Person in the Holy *Trinity*, by reason the Father, alone, produces the Word, by the way of *Understanding*; and with the Word produces the Holy Spirit, by way of *Will*.

Here it is to be observ'd, that the Holy Spirit is not thus call'd from his Spirituality, that being common and essential to all three Persons; but from the passive *Spiration*, which is peculiar to him alone.

Add, that when one Person in the Holy *Trinity* is call'd *first*, another *second*, and another *third*, it must not be understood of a Priority of Time, or of Nature, which would imply some Dependance; but of a Priority of Origin and Emanation, which consists in this, that one Person produces the other in such Manner, as that the Person which produces cannot be, or be conceiv'd, without that produc'd.

From these Things it follows, that in the Holy *Trinity* there are five *Notions* (understanding by Notion the peculiar Manner whereby one divine Person is distinguish'd from another). The Notions, then, whereby the Father is distinguish'd from the Son and Holy Ghost, are *Innascibility* and *Paternity*. -- That whereby the Son is distinguish'd from the two other divine Persons, is *Filiation*.

*Active Spiration* distinguishes the Father and the Son from the Holy Spirit; and *passive Spiration* is that whereby the Holy Spirit is distinguish'd from the Father and Son.

The *Circumincersion* or *Perichoresis*, is the intimate In-existence of the divine Persons, or their mutual in-dwelling in each other: For tho' they be really distinct, yet are they Consubstantial; whence it is that Jesus Christ says in *St. John*, cap. xiv. *Believe ye not that I am in the Father, and the Father in me?* Identity of Essence, which the *Greeks* call *ομοια*, and Consubstantiality, with a Distinction of Persons, are necessary to this Circumincersion.

Many of the Heathens seem to have had a Notion of a *Trinity*. -- *Steuch. Lugub. de Peren. Philos. lib. 1. cap. 3.* observes, that there is nothing in all Theology more deeply grounded, or more generally allow'd by them, than the Mystery of the *Trinity*. The *Chaldeans*, *Hebrews*, *Phoenicians*, *Greeks*, and *Romans*, both in their Writings and their Oracles, acknowledg'd that the supreme Being had begot another Being from all Eternity, which they sometimes call'd the *Son of God*, sometimes the *Word*, sometimes the *Mind*, and sometimes the *Wisdom of God*, and asserted it to be the Creator of all Things.

Among the Sayings of the *Magi*, the Descendants of *Zoroaster*, this is one; *Παντα ὁξετελεσε παντα καὶ νῦν παρέδωκε δούτεω*: *The Father finish'd all Things, and deliver'd them to the second Mind*. -- The Son was call'd the *Anima Mundi*. See *ANIMA*.

The *Aegyptians* call'd their *Trinity Hemphra*, and represented it by a Globe, a Serpent, and a Wing dispos'd into one Hieroglyphic Symbol. -- *Kircher, Gale, &c.* suppose the *Aegyptians* learnt their Doctrine of the *Trinity* from *Joseph* and the *Hebrews*.

The Philosophers, says *St. Cyril*, own'd three Hypostases or Persons. -- They have extended the Divinity to three Persons; and even, sometimes, us'd the Term *Trias*, *Trinity*: They wanted nothing but to admit the Consobstantiality of the three Hypostases, to signify the Unity of the divine Nature, in exclusion of all Triplicity with regard to Difference of Nature; and not to hold it necessary to conceive any Inferiority of Hypostases.

In effect, *Plato*, and some of his Followers, speak of a *Trinity* in such Terms, that the primitive Fathers have been accus'd of borrowing the very Doctrine from the Platonic School; but *F. Mourgues*, who has examin'd the Point, asserts, that nothing can be more stupid, than to suppose the Platonic *Trinity* brought into the Church; and to have Recourse to the Platonism of the Fathers to discredit their Authority with regard to this Opinion. See *PLATONIC*.

*Friary or Fraternity of the Holy TRINITY*, is a Society instituted at *Rome* by *S. Philip Neri* in 1548, to take Care of Pilgrims coming from all Parts of the World to that Capital to visit the Tombs of *S. Peter* and *S. Paul*. See *FRATERNITY*.

In order to this, they had a House wherein they entertain'd them for the Space of three Days, and not only them, but poor People who were on the Recovery, and who being turn'd too hastily out of the Hospitals, were expos'd to Relapses.

It was first set on Foot in the Church of *S. Saviour in Campo*; and consisted only of fifteen poor Persons, who met in that Church the first Sunday of each Month, to practise the Exercises of Piety prescrib'd by the Founder, and to hear the Exhortations he there gave.

In 1558 *Pope Paul IV.* gave the Fraternity the Church of *St. Benedict*, to which they gave the Title of the Holy *Trinity*. Since that Time, they have built close by it a very ample Hospital for Pilgrims, and Persons on the Recovery.

The Fraternity is now very considerable, and most of the Noblesse of *Rome*, of either Sex, have done it the Honour to be of it.

*Congregation of the Holy TRINITY*, is a Congregation of twelve Priests establish'd in the Hospital of the Fraternity just mention'd, to take Care of Pilgrims and others entertain'd therein.

The frequent Change of Priests in the Hospital occasioning a deal of Diversity in the Spiritual Conduct and Instruction of the Pilgrims; to render it more uniform, the Guardians and Administrators establish'd a Congregation of twelve



twelve Priests, who lodge in a Quarter of the Hospital, as in a Monastery, and live there in Community.

*Order of the Holy TRINITY.* See TRINITARIAN.

*TRINITY Sunday*, is the next Sunday after *Whitsun-Sunday*; thus call'd, because on that Day was anciently held a Festival, (as it still continues to be in the *Romish Church*) in Honour of the Holy *Trinity*.

The Observation of this Festival was first enjoin'd by the Council of *Arles* in 1260.

*TRINITY House*, is a kind of College at *Deptford*, belonging to a Corporation of Sea-faring Persons, who have Power, by the King's Charter, to take Cognizance of such as destroy Sea-Marks, to correct the Faults of Sailors; &c. and to take Care of several other Things belonging to Navigation and the Seas, the Examination of young Officers, &c. Anno 8<sup>o</sup> *Eliz*.

*TRINIUMGELD*, *THRI-NIGON-GILD*, a Compensation us'd among our *Saxon* Ancestors for great Crimes, which were not absolv'd but by paying a Fine thrice nine Times. See *GELD*.

*TRINODA Neceffitas*, in our ancient Customs, were *Expediitio*; *Pontis*, & *Arcis Reparatio*; going to the Wars, repairing of Bridges, and of Castles.

These were the three Exceptions anciently inserted in the King's Grants of Lands to the Church, after the Words that freed them from all secular Service. See *PONTAGE*.

*TRINODIA terre*, in our ancient Writers, denotes a Quantity of Land containing three Perches. See *PERCH*.

*TRINOMIAL*, or *TRINOMINAL Root*, in Mathematicks, is a Root consisting of three Parts, connected together by the Sign +. See *ROOT*.

Such is  $x+y+z$ . See *BINOMIAL*.

*TRIO*, in Music, a Part of a Concert, wherein there are only three Persons sing; or a musical Composition consisting of three Parts.

*Trio's* are the finest Kind of Composition; and these and Recitativo's are what please most in Concerts.

*TRIOCTILE*, in Astrology, an Aspect or Situation of two Planets with regard to the Earth, when they are three Octaves, or eight Parts of a Circle distant from each other.

This Aspect, which some call the *Sesquiquadrans*, is one of the new Aspects super-added to the old ones by *Kepler*. See *ASPECT*.

*TRIONES*, in Astronomy, *βόες αεγέταιες*, q. d. ploughing Oxen; a Sort of Constellation or Assemblage of seven Stars in *Ursa Minor*; popularly call'd *Charles's Wane*. See *URSA MINOR*.

From the *Septem Triones* the North Pole takes the Denomination *Septentrio*. See *NORTH*, &c.

*TRIOURS*, in Law, such as are chosen by the Court to examine whether a Challenge made to the Pannel, or any of them, be just or no. See *JURY*.

*TRIP*, a Sea Term. A Ship is said to bear her Topails *a-trip*, when she carries them hoisted up to the highest.

*TRIPARTITION*, is a Division by three, or the taking the third Part of any Number or Quantity. See *PARTITION* and *DIVISION*.

Hence *Tripartite*, *Tripartitus*, something divided into three Parts, or made by three Parties: an Indenture *Tripartite*, &c. See *INDENTURE*.

*TRIPLE*, *Three fold*, Ratio. See *RATIO*.

*TRIPLE*, in Music, is one of the Species of Measure or Time. See *TIME*.

*Triple Time* consists of many different Species; whereof there are in general four, each of which has its Varieties. --- The common Name of *Triple* is taken hence, that the whole or half Measure is divisible into three equal Parts, and beat accordingly.

The first Species is call'd the *simple Triple*, whose Measure is equal either to three Semibreves, to three Minims, three Crotchets, three Quavers, or three Semiquavers; which are mark'd thus,  $\frac{3}{2}$  or  $\frac{3}{4}$ ,  $\frac{3}{8}$ ,  $\frac{3}{16}$ ,  $\frac{3}{32}$ ; but the last is not much us'd, except in Church Music.

In all these, the Measure is divided into three equal Parts or Times, call'd thence *Triple Time*, or the Measure of *three Times*, whereof two are beat down, and the third up.

The second Species is the *mix'd Triple*: Its Measure is equal to six Crotchets, or six Quavers, or six Semiquavers, and accordingly mark'd  $\frac{6}{4}$ , or  $\frac{6}{8}$ , or  $\frac{6}{16}$ ; but the last is seldom us'd.

Some Authors add other two, viz. six Semibreves, and six Minims, mark'd  $\frac{6}{2}$  or  $\frac{6}{4}$ ; but these are not in Use.

The Measure here is usually divided into two equal Parts or Times, whereof one is beat down, and one up; but it may also be divided into six Times, whereof the first two are beat down, and the third up; then the next two down, and the last up, i. e. each half of the Measure is beat like the *simple Triple*, (on which Account it may be call'd the *Compound Triple*); and because it may be thus divided either into two or six Times, (i. e. two *Triples*) 'tis call'd *mix'd*, and by some the Measure of *six Times*.

The third Species is the *Compound Triple*, consisting of nine Crotchets, or Quavers, or Semiquavers, mark'd  $\frac{9}{4}$ ,  $\frac{9}{8}$ ,  $\frac{9}{16}$ ; the first and last are little us'd; some also add  $\frac{9}{32}$ , which are never us'd.

This Measure is divided either into three equal Parts or Times, whereof two are beat down, and one up; or each third Part may be divided into three Times, and beat like the *simple Triple*; on which Account it is call'd the Measure of *nine Times*.

The fourth Species is a Compound of the second Species, containing twelve Crotchets, or Quavers, or Semiquavers, mark'd  $\frac{12}{4}$ ,  $\frac{12}{8}$ ,  $\frac{12}{16}$ , to which some add  $\frac{12}{32}$  and  $\frac{12}{64}$ , which are never us'd; nor are the first and third much us'd, especially the latter.

The Measure, here, may be divided into two Times, and beat one down, and one up; or each half may be divided, and beat as the second Species, either by two or three; in which Case it will make in all twelve Times, and hence is call'd the Measure of *twelve Times*.

The *French* and *Italian* Authors make a great many more Species and Divisions of *Triple Time*, unknown, or, at least, unregarded by our *English* Musicians, and therefore not so necessary to be dwelt upon here.

*TRIPPLICATE Ratio*, is the Ratio which Cubes bear to each other. See *CUBE*.

This Ratio is to be distinguish'd from *Triple Ratio*, and may be thus conceiv'd.

In the Geometrical Proportionals 2, 4, 8, 16, 32; as the Ratio of the first Term (2) is to the third (8), Duplicate of the first to the second; or as 4, the Square of 2, is Duplicate of 16, the Square of 4; so the Ratio of 2 to 16, the fourth Term, is *TriPLICATE*; or as 8, which is the Cube of 2, to 64, the Cube of 4. --- And this *TriPLICATE* Ratio is compounded of all the preceding Ratio's. *Harris*.

*TRIPPLICATIO*, *TRIPPLICATION*, in Civil Law, is the same with *Surjoinder* in Common Law. See *SURJOINDER*.

*TRIPPLICITY*, among Astrologers, is the Division of the Signs, according to the Number of the Elements; each Division consisting of three Signs.

*TRIPPLICITY*, a Term frequently confounded with *Trine-Aspect*; tho', strictly speaking, the two are very different Things.

*TriPLICITY* is only us'd with regard to the Signs; and *Trine*, on the contrary, with regard to the Planets. --- The Signs of *TriPLICITY* are those which are of the same Nature, and not those which are in *Trine-Aspect*. --- Thus *Leo*, *Scorpio*, and *Aries* are Signs of *TriPLICITY*, because those Signs are all suppos'd fiery. See *SIGN*.

*TRIPLOIDES*, of the Greek, *τρίπλοος*, a Surgeon's Instrument, with a three-fold Basis, us'd in the restoring great Depressions of the Skull. See *TREPANUM*.

*TRIPOD*, or *TRIPPOS*, in Antiquity, a fam'd sacred Seat or Stool, supported by three Feet, whereon the Priests and Sybils were plac'd to render Oracles. See *ORACLE*.

'Twas on the *Tripod* that the Gods inspir'd them with that divine Fury and Enthusiasm, wherewith they were seiz'd at the delivering their Predictions. See *ENTHUSIASM*.

*M. Spanheim* observes, that on *Roman* Medals, the *Tripod* expresses some Priesthood, or sacerdotal Dignity. --- A *Tripod* with a Crow and a Dolphin, is the Symbol of the *Dumviri*, deputed for the keeping of the Sybillin Oracles, and for the consulting them on Occasion.

*TRIPODIUM*. --- In the Laws of *Hen. I.* occurs this Passage. --- *In quibus vero causis triplicem ladam habet, scilicet iudicium Tripodii, i. e. 60 Solidi*: The Meaning whereof is, that as for a small Offence, or for a trivial Cause, the Composition was twenty Shillings; so for a great Offence, which was to be purg'd *TriPLICI lada*, the Composition was three times twenty Shillings, viz. *Tripodio*.

*TRIPOLI*, or *TRIPOLY*, call'd also *Alana*, a kind of Chalk, or white soft Stone, bordering a little on red, us'd in polishing the Lapidaries, Goldsmiths, Coppersmiths, and Glass-grinders Works. See *GLASS*, *GRINDING*, *POLISHING*, &c.

Some imagine *Tripoli* to be a common Stone, burnt and calcin'd by the sulphurous Exhalations which happen to be under the Mines where it is found: Of these Mines there are a Number in divers Parts of *Europe*, particularly in *Italy*, where the *Tripoli* is very good. --- Others take it for a Native Earth.

*TRIPPING* is a Term in Heraldry. See *PASSANT*.

*Tripping*, in Heraldry, denotes the quick Motion of all Sorts of Deer, and some other Creatures represented with one Foot up, as it were on a Trot.

*TRIPHTHONGUE*, in Grammar, an Assemblage or Course of three Vowels in the same Syllable, as *aua*. See *SYLLABLE*.

*Quintilian*, lib. I. cap. 6. asserts, that there never was a Syllable of three Vowels, but that one of them was always a *Consonant*.



turn'd into a Consonant: *Scioppius* asserts the contrary: — However this may be in the *Latin* and *Greek*, which were the only Languages *Quintilian* understood; 'tis certain there are several Languages in *Europe*, wherein *Triphongues* are in Use. See *DIPHTHONG*.

**TRIPTOTES**, in Grammar, defective Nouns, which have only three Cases. See *CASE*.

Such are the Words *Tantundem*, *Tantandem*, *Tantidem*, and *Sordis*, *Sordem*, *Sorde*.

The Word is compounded of *τρεις*, three, and *πρωτον*, Case.

**TRIEME**, **TRIEMIS**, in Antiquity, a Galley with three Ranks of Oars on a Side. See *GALLEY*.

**TRIS-DIAPASON**, in Music, a Concord, otherwise call'd a *Triple Eighth* or *Fifteenth*. See *CONCORD*.

**TRISACRAMENTALES**, **TRISSACRAMENTARIANS**, an Appellation given to a Sect in Religion, who admit of three Sacraments, and no more. See *SACRAMENT*.

There have been several *Trissacramentarians* among the Protestants, who allow'd of Baptism, the Eucharist, and Absolution, for Sacraments. — The *English* are often misrepresented by Foreigners as *Trissacramentarians*, from an Opinion that they allow Ordination a Sacrament. See *ORDINATION*.

**TRISAGION**, or **TRISAGIUM**, in Church History, a Hymn, wherein the Word *holy* is repeated three Times. See *HYMN*.

The proper *Trisagion* is those Words *holy, holy, holy, Lord God of Hosts*, which we read in *Isaiab* vi. 3. and in the *Apocalypse*.

From these Words, the Church form'd another *Trisagion*, which is rehears'd in *Latin* and *Greek*, in the respective Churches, to this Effect: *Holy God, holy Fort, holy Immortal! have Mercy upon us*.

*Petrus Fullensis* to this *Trisagion* added, *Thou who wast crucify'd for us, have Mercy upon us*: Thus attributing the Passion not to the Son alone, but to all the three Persons of the *Trinity*, and pronouncing Anathema to all such as would not say the same.

The Use of this latter *Trisagion*, (exclusive of the Addition of *Fullensis*) began in the Church of *Constantinople*, from whence it pass'd into the other Churches of the East, and afterwards into those of the West. — *Damasceus*, *Codin*, *Balsamon*, and others, say it was in the Time of the Patriarch *Proclus* that it was first introduc'd, and on the following Occasion: There being a violent Earthquake in the 35th Year of the younger *Theodosius*, the Patriarch made a grand Procession, wherein, for several Hours together, was sung the *Kyrie Eleison*, *Lord have Mercy upon us*. While this was in Hand, a Child was taken up into the Air, where, it seems, he heard the Angels a singing the *Trisagion* just mention'd. He return'd soon after, and told what he had heard: Upon which they began to sing that Hymn, and the more willingly too, as they attributed the Troubles they were then under to the Blasphemies which the Hereticks of *Constantinople* utter'd against the Son. — *Asclepiades*, *Cedrenus*, *Pope Felix*, *Nicephorus*, &c. relate the same Story.

*Petrus Fullensis*, Patriarch of *Antioch*, and a zealous Partizan of *Nestorius*, endeavour'd to corrupt the Hymn, by adding, *who suffer'd for us*; but in vain: It still subsists in its primitive Purity, both in the *Latin*, *Greek*, *Ethiopic*, and *Mosarabic* Offices. See *PATRIPASSIONS*.

The Word is compounded of the *Greek*, *τρεις*, three, and *αγιος*, *sanctus*, holy.

**TRISECTION**, or **TRISSECTION**, a dividing of a Thing into three. See *DIVISION*, *SECTION*, &c.

The Term is chiefly us'd in Geometry, for the Division of an Angle into three equal Parts. See *ANGLE*.

The *Trisection* of an Angle geometrically, is one of those great Problems, whose Solution has been so much sought by Mathematicians for these two thousand Years; being, in this respect, on a Footing with the Quadrature of the Circle, and the Duplicate of the Cube Angle. See *PROBLEM*.

Several late Authors have wrote of the *Trisection* of the Angle, and pretend to have found out the Demonstration thereof; but they have all committed Paralogisms. See *ANGLE*.

**TRISMEGISTUS**, an Epithet or Surname given to that of the two *Hermes's* or *Mercuries*, Kings of *Thebes*, in *Aegypt*, who was cotemporary with *Moses*.

*Mercury*, or *Hermes Trismegistus*, is the latter of the two; the former having reign'd about the Time of the Deluge. — They are both of them represented as Authors of many Arts and Institutions of the *Aegyptians*. See *HERMETIC*.

The Word is form'd from *τρες*, thrice, and *μειστος*, greatest.

**TRISOLYMPIONICES**, among the Ancients, a Person who had thrice bore away the Prize at the Olympic Games. See *OLYMPIC*.

The *Trisolymphionics*, or *Trisolymphionicks* had great Privileges and Honours allow'd them. — Statues were erected to them, of the Kind call'd *Iconica*, which were modell'd to the Size and Form of their Persons. See *STATUE*.

They were exempted from all Charges and Incumbrances, and could never be mark'd with Infamy.

The Word is compos'd of *τρεις*, *tres*, three, *Ολυμπος*, *Olympic Games*, and *νικη*, *Victory*.

**TRISOS**, of the *Greek* *τρεσω*, a Convulsion of the Muscles of the Temples, causing the Teeth to gnash. See *CONVULSION*, &c.

**TRISPAST**, **TRISPASTON**, in Mechanics, a Machine with three Pullies; or an Assemblage of three Pullies. See *PULLY*.

The *Trispaston* is a Species of *Polyspaston*. See *POLYSPASTON*.

The Word is compounded of *τρεις*, three, and *σπασω*, *traho*.

**TRISTRIS**, **TRISTIS**, and **TRISTA**, in our old Law-Books, is an Immunity, whereby a Man is excus'd from attending on the Lord of a Forest, when he is dispos'd to chase within the Forest; and is also not compell'd to hold a Dog, follow the Chase, nor stand at a Place appointed, which otherwise he might be under Pain of Amercement. *Manw. fuit quieti*, &c. *de Chevagio*, *Londepenny*, *Buckstol* & *Tristri*, *de omnibus Misericordiis*, &c. *Privileg. de Semplingham*.

**TRISYLLABLE**, or **TRISSYLLABLE**, in Grammar, a Word consisting but of three Syllables. See *WORD* and *SYLLABLE*.

**TRITE**, in Music, the third musical Chord. See *CHORD* and *DIAGRAM*.

**TRITHEISM**, the Opinion of the *Tritheists*, or the Heresy of believing three Gods. See *GOD* and *TRINITY*.

*Tritheism* consists in admitting not only of three Persons in the Godhead; but of three Substances, three Essences or Hypostases, and three Gods. See *PERSON*, *HYPOSTASIS*, &c.

Several People out of Fear of giving into *Tritheism* have become Sabellians; and several others to avoid Sabellianism, have commenc'd *Tritheists*; so delicate and subtle is the Medium. See *SABELLIAN*.

In the famous Controversy between Dr. *South* and Dr. *Sherlock*, the first is judg'd to have run into Sabellianism, by a too rigorous asserting of the Unity of the Godhead; and the latter into *Tritheism*, by a too absolute maintaining the *Trinity*.

*John* the Grammarian, surnam'd *Philoponus*, Lover of Labour, is held the Author of the Sect of the *Tritheists*, under the Emperor *Phocas*; at least it appears he was a zealous Advocate thereof. — *Leontius* and *Georgius Pisides* wrote against him.

**TRITON**, in Poetry, a Sea Demi-God, held by the Ancients to be an Officer or Trumpeter of *Neptune*, attending on him, and carrying his Orders and Commands from Sea to Sea. See *GOD*.

The Poets and Painters represent him as half Man, half Fish, terminating in a Dolphin's Tail, and bearing in one Hand a Sea-shell, which serv'd as a Trumpet.

Some of the Ancients make him the Son of *Neptune*, and the Nymph *Salacia*; *Hesiod* of *Neptune* and *Amphitrite*; *Neumenius* in his Book *de Piscationibus*, makes him the Son of *Ocean* and *Terhys*; and *Lycophron* the Son of *Neptune*.

But tho' *Hesiod*, and the Mythologists, only speak of one *Triton*, yet the Poets have imagin'd several; giving some of them for Trumpeters to all the Sea-Gods, particularly to *Neptune* and *Venus*: accordingly they were frequently introduc'd on the ancient Theatres, and in the *Naumachia*.

In effect, the *Tritons* not only officiated as Trumpeters in *Neptune's* Retinue; but were also suppos'd to draw his Chariot, i. e. the Sea-shell wherein he rode over the Waters, as we find in *Virgil Aeneid* X. 209. *Ovid Metam.* I. 333. and on a Medal of *Claudius*.

The Fable of the *Tritons*, no doubt, took its Rise from Sea or Mer-men; for that there are such Things as Sea-men, would seem a Thing scarce to be doubted, after what we have said under the Article *MER-MAID*.

The Poets ordinarily attribute to *Triton* the Office of calming the Waves, and of making Tempests cease. — Thus in the 1st of the *Metamorphoses* we read, that *Neptune* desiring to recal the Waters of the Deluge, commanded *Tri-* to found his Trumpet, at the Noise whereof the Water all retir'd.

**TRITONE**, **TRITON**, in Music, a false Concord, consisting of three Tones, or a greater Third, and a greater Tone. See *CONCORD*.

Its Ratio, or Proportion in Numbers, is of 45 to 32. In dividing the Octave, we find, on one Side, the false Fifth, and the *Tritone* on the other. See *OCTAVE*.

The *Tritone* is a kind of redundant Third, consisting of three Tones, whence its Name; or, more properly, of two Tones, with a greater Semitone, and a lesser, as of *ut* to *fa*, of *fa* to *si*, &c. — But it is not, as many imagine, a greater Fourth; for the Fourth is a perfect Interval, which does not admit of any Majority or Minority: Nor must the *Tritone* be confounded with the false Fifth; for the *Tritone* only comprehends four Degrees, *viz.* *ut*, *re*, *mi*, *fa*, whereas the



false Fifth comprehends Five, viz. *fa, sol, la, si, ut*; besides, that among the Six Semitones, which compose the *Tritone* chromatically, there are three greater and three lesser; whereas among the Six Semitones, which compose the false Fifth, there are only two lesser, and four greater. See THIRD, FOURTH, FIFTH, &c.

**TRITURATION**, in Pharmacy, *Grinding*; the Act of reducing a solid Body into a subtil Powder; call'd also *Levigation*, *Pulverisation*, &c. See POWDER, LEVIGATION, &c.

The *Trituration* of Woods, Barks, Minerals, and other hard and dry Bodies, is perform'd in Metalline Mortars.

The same Term is also applied to the comminuting, bruising and dividing of humid Matters, into little Parts: --- The *Trituration* of moist Bodies is perform'd in Marble, or Stone Mortars, with Pestles of Wood, Glass, Ivory, &c.

The Word is form'd from *tri* and *tero*, I wear.

*Trituration*, *Boerhaave* observes, has a wonderful Force to dissolve some Bodies; and will render them as fluid, as if they were fused by the Fire. --- Thus if you grind the Powder of Myrrh, and Salt of Tartar together, they will dissolve each other. By rubbing new and bright Filings of Iron in a Mortar, with double their Weight of clean Sulphur, the Iron will be dissolved, so as by diluting it with Water to afford the *Vitriolum Martis*. See IRON and VITRIOL.

Gold long ground in a Mortar, with Salt of Tartar, will yield a kind of Tincture; and rubbed with Mercury, in a Mortar of Glass, it entirely dissolves into a Purple Liquor, and becomes a most powerful Medicine.

Dr. *Langelotte* has wrote a curious Treatise of the great Effects of *Trituration* in Chymistry; and describes a peculiar Way he employed to grind Gold, whereby he could render it as fluid as the Fire does, and make an *Aurum Potabile*, by the bare Motion of a Mill. See GOLD and POTABLE.

That Author, in the *Philosophical Transactions*, mentions his way of grinding Gold, and describes two Engines, or Philosophical Mills for the Purpose, with one of which, in the Space of Fourteen natural Days, he reduced a Leaf of Gold to a dusky Powder, and putting it into a shallow Retort placed in a Sand Heat, he thence obtained, by gradually increasing the Fire and giving a strong one at last, a few very red Drops, which, digested *per se*, or with tartarized Spirit of Wine, afforded a pure and genuine *Aurum Potabile*.

The Success of this Operation, the Doctor attributes, in a great measure, to the Salt of the Air, which in grinding, plentifully mixes and unites itself with the Gold.

**TRITURATION**, in Medicine, is used for the Action of the Stomach, on the Food. See STOMACH, &c.

Some Physicians have maintain'd, that Digestion was perform'd by *Trituration*, and not by *Fermentation*, i. e. that all the Stomach does, is to grind and comminute the Food into smaller Parts to fit it for Nutrition, without any other Alteration therein. See the Article DIGESTION, where the Doctrine is laid down at large.

This System was much talk'd of some Years ago, being countenanced by Dr. *Pitcairn*, and others; but seems now much declined.

The Doctrine of *Trituration* is not new: --- *Erissistratus* maintain'd it in all its Latitude many Ages ago; and the Moderns have only revived it.

It was first broach'd in the Time of *Hippocrates*, that is, in a Time when Anatomy was but little known; and 'twas this that render'd it current. --- An Opinion was entertain'd by some Physicians of those Times, that the Stomach was only the Receptacle of the solid or dry Foods; that those Foods, after having been diluted, and broke in the Mouth, were again broke more perfectly in the Stomach, and by this means alone were converted into Chyle: but that the Drink, by reason of its Liquidity, not being subject to be broken, went to the Lungs, and not the Stomach, where, by reason of its abundance, it would rather have prejudiced the Digestion than have aided it.

*Hippocrates*, we read, in the fourth Book of *Diseases*, stood up strenuously against an Opinion so visibly contrary to Reason and Experience; and he informs us, 'That if he gave himself this Trouble, 'twas because the Error had already got a good number of Partizans. --- It could not stand long against the Reasons of *Hippocrates*; and its Defeat was followed by the intire Ruin of the System of *Trituration*, which had its Foundation thereon.

But *Erissistratus* retrieved it again; and the Doctrine, after having been supported for some time, fell anew into Oblivion; whence some late Authors have in vain endeavour'd to recover it.

**TRIUMPH**, **TRIUMPHUS**, a Ceremony or Solemnity, practis'd among the ancient *Romans*, to do Honour to a victorious General, by affording him a magnificent Entry into their City.

The *Triumph* was the most pompous Spectacle known among the Ancients: Authors usually attribute its Invention to *Bacchus*; and tell us, that he first triumph'd upon the Con-

quest of the *Indies*; and yet this Ceremony was only in use among the *Romans*.

The *Triumph* was of two Kinds, the *lesser* and the *greater*. --- The *lesser Triumph* was granted upon a Victory over some unequal or unworthy Enemy; as over Pyrates, Slaves, &c. --- This they call'd *Ovario*; because the only Sacrifices offer'd herein, were Sheep. See OVATIO.

The *greater Triumph*, call'd also *Curulis*, and, simply, The *Triumph*, was decreed by the Senate to a General, upon the conquering of a Province, or gaining a signal Battle.

The Order and Oeconomy of the *Triumph* was thus: --- The General having dispatch'd Couriers with Tidings of his Success, the Senate met in *Bellona's* Temple to read his Letters: --- This done, they sent him the Title of *Imperator*, with Orders for him to return, and to bring his victorious Troops along with him. When he was arrived near the City, the General and principal Officers took Oath of the Truth of the Victory; and the Day of *Triumph* was appointed.

The Day being arrived, the Senate went to meet the Conqueror without the Gate call'd *Capena* or *Triumphalis*, and march'd in order before him to the Capitol. --- He was richly clad, in a Purple Robe Embroider'd with Figures of Gold, setting forth his glorious Atchievements: His Buskins were beset with Pearl, and he wore a Crown; which at first was only Laurel, but afterwards, Gold: One Hand bore a Laurel Branch, and the other a Truncheon. He was drawn in a Car or Chariot, adorn'd with Ivory and Plates of Gold, drawn usually by two white Horses, though sometimes by other Animals; as that of *Pompey*, when he triumph'd over *Africa*, by Elephants; that of *Mark Anthony*, by Lions; that of *Heliogabalus*, by Tygers; that of *Aurelian*, by Deer; that of *Nero* by Hermaphrodite Mares, &c.

At his Feet were his Children, or, sometimes, on the Chariot Horses. --- 'Tis added, that the public Executioner was behind him, to remind him, from Time to Time, that these Honours were Transitory, and wou'd not screen him from the Severity of the Laws, if he should ever be found delinquent.

The Cavalcade was led up by the Musicians, who had Crowns on their Heads: after them came several Chariots, wherein were Plans of the Cities and Countries subdued, done in Relievo: They were followed by the Spoils taken from the Enemy, their Horses, Arms, Gold, Silver, Machines, Tents, &c. After these came the Kings, Princes or Generals subdued, loaden with Chains, and followed by Mimicks and Buffoons, who insulted over their Misfortunes. --- Next came the Officers of the conquering Troops, with Crowns on their Heads.

Then appear'd the *triumphal* Chariot; before which as it pass'd, they all along strew'd Flowers; the Music play'd in Praise of the Conqueror amidst the loud Acclamations of the People, crying *Io Triumphe*.

The Chariot was follow'd by the Senate clad in white Robes, and the Senate by such Citizens as had been set at Liberty or Ransom'd.

The Procession was closed by the Sacrificers, and their Officers and Utensils, with a white Ox led along for the chief Victim.

In this Order they proceeded through the *triumphal* Gate, along the *Via Sacra* to the Capitol, where the Victims were slain.

In the mean time, all the Temples were open; and all the Altars loaden with Offerings and Incense; Games and Combats were celebrated in the public Places, and Rejoycings appear'd every where.

What was horrible amidst all this Mirth, was, that the Captives, when arrived at the Forum, were led back to Prison and Strangled; it being a Point of Religion with them, not to touch the Victims till they had taken full Revenge of their Enemies. --- The Rites and Sacrifices over, the *Triumph* treated the People in the Capitol, under the Porticos, and sometimes in *Hercules's* Temple.

**TRIUMPHAL** Crown or Garland. See CROWN.

It is said to have been taken from *Apollo's* crowning his Head with a Laurel, after killing the *Delphick* Serpent. --- It was as much esteem'd by the *Romans*, as if it had been Gold.

**TRIUMVIR**, one of three Persons who govern absolutely and with equal Authority in a State.

The Word is little used but in the *Roman* History. --- *Crassus* and *Pompey* were the first *Triumvirs*, i. e. the first who divided the Government of the Republic among them. See TRIUMVIRATE.

There were also other Officers, call'd *Triumvirs*, *Quaestors*; as the *Triumviri Capitales*, created in the Year of *Rome* 463, to take Care of Prisoners, and look to the Execution of Criminals.

*Triumviri Monetales*, who were Magistrates created at the same time, to look to the Coinage of the Money; whence that Mark still extant on many ancient Coins, **TRIVIR**. These Officers were very considerable, and chosen out of the



**Knights.** They made Part of the *Centumviri*. The Title they bear on Medals, is *III VIR AAA FF. Triumvir Auro Argentis Ere Flando, Feriendo*, which signifies that they had the Direction of the casting and striking of Gold, Silver and Brass.

There were also --- *Triumviri Aedibus resicientis*, Officers appointed to look to the Reparation of Temples. --- *Triumviri Colonis deducendis*, for the conducting and settling of Colonies. --- *Triumvirs* for the raising of Troops. --- *Nocturnal Triumviri*, to prevent or extinguish Fires. --- *Triumvirs* to review the Forces, &c.

In the *Acilian* Family, we read of one M. *Acilius III VIR VALETU*, that is, *Triumvir of Health*, or a Magistrate of Health. --- M. *Spanheim* takes him to have been a Commissioner establish'd to perform Sacrifice to the Gods of Health, to Dedicate their Temples, &c.

*Onuphrius* and *Vaillant* read *Triumvir Valetutinis*; *Patin*, *Triumvir Valetutiniarius*; but M. *Spanheim*, with much more Reason, reads *Triumvir Valetudo*; in like manner, as on a Medal of the *Aquilian* Family, we read *III VIR VIRTUS*, signifying, that one M. *Aquilinus* had been made *Triumvir*, to repair the Temple of *Virtue*, and *Acilius*, that of *Health*.

**TRIUMVIRATE**, an absolute Government administer'd by three Persons, with equal Authority. See **TRIUMVIR**.

There were two famous *Triumvirates* at Rome, --- *Pompey*, *Cesar* and *Crassus* established the first; and *Augustus*, *Mark Anthony* and *Lepidus*, the second.

This latter *Triumvirate* gave the last Blow to the Liberty of the Republic. *Augustus* having vanquish'd *Lepidus* and *Anthony*, the *Triumvirate* sunk into a Monarchy. See **MONARCHY**.

**TRIUNE**, *q. d. tres in Uno*, Three in one, a Term sometimes applied to God, to express the Unity of the God-head, in a Trinity of Persons. See **TRINITY**.

**TROCHAIC**, **TROCHAICUS**, in the *Latin* Poetry, a kind of Verse consisting of *Trochees*; or wherein that Foot predominates; as the *Iambic's* do in the *Iambic*. See **IAMBIC** and **TROCHEE**.

The XVIIIth Ode of the II. Book of *Horace's* Odes, consists of Strophes of two Verses, the first whereof is *Trochaic Dimetre Catalectic*; *i. e. Trochaic*, composed of three *Trochees*, besides a Syllable at the End.

*Non ebrius neque Aureum -----  
Largiora flagito.*

**TROCHANTER**, in Anatomy, a Name given to two Apophyses situate in the upper Part of the Thigh-bone. See **APOPHYSIS**.

The largest, which is above, is call'd the *great Trochanter*; and the smaller, beneath, the *less Trochanter*. See **FEMUR**.

The Word literally signifies *Rotator* or *Roller*, from the Greek, *τροχάω*, *roto*, I run, I turn round. --- That Appellation was given to those Apophyses, by reason they receive the Tendons of most of the Muscles of the Thigh, amongst which are the Obturators which move it round. See **OBTURATOR**.

**TROCHEE**, **TROCHÆUS**, in the *Greek* and *Latin* Poetry, a kind of Foot, consisting of two Syllables, the first long, the latter short --- Such are the Words *vada* and *musa*. See **FOOT**.

The *Trochee* is the Reverse of the *Iambus*; and has a just contrary Effect; the latter being light and sprightly, and the former weak and languid, as all those Measures are, which move from a long to a short Syllable. See **IAMBIC**.

Some call the *Trochee*, the *Chorce*, *Chorcus*, because proper for Songs and Dances.

**TROCHE**, **TROCHISCUS**, in Pharmacy, a Form of Medicine, made to be held in the Mouth to dissolve.

The *Troche* is properly a dry Composition, the chief Ingredients whereof, after having been brought into a very subtile Powder, are incorporated with some proper Liquor, as distill'd Waters, Wine, Vinegar or Mucilages; and reduced into a Mass, which is moulded into little Cakes or Balls of any Form, at Pleasure, and dried in the Air far from the Fire.

There are *Troches* of various Kinds, and for various Intentions; as Purgative, Alterative, Aperitive, Corroborative, &c.

*Latin* Authors call them *Pastilli*, *Rotule*, *Placentule*, *Orbes* and *Orbiculi*; and the *English*, frequently, *Lozenges*.

The chief *Troches* are of Agaric, Liquorice, Nutmeg, Amber, Rhubarb, Capers, Myrrh, Roses, Camphor, Squillæ, Vipers, &c.

Those of Coloquintida, are call'd *Troches of Albandal*, from the *Arabs*, who call Coloquintida, *Hundal*.

**TROCHILUS**, **TROCHILE**, in Architecture, a large hollow Member, whose Cavity is composed of two Arches; such is that HKI, Tab. Architect. Fig. 13.

The *Trochilus* is usually call'd by the Modern Architects, *Scotia*. See **SCOTIA**; and by our *English* Workmen, *Casement*. See **CASEMENT**.

**TROCHITÆ**, or **TROCHITES**, in natural History, a kind

of figur'd fossil Stones, resembling Plants; vulgarly call'd *St. Gilbert's Beads*. See **Fossil** and **STONE**.

They are usually of an opaque, dark Colour, break like Flint, polish'd and shining, and are easily dissolv'd in Vinegar. --- Their Figure is generally Cylindrical, sometimes a little Tapering, the Circumference smooth, and both the flat Sides cover'd with fine Radii drawn from a certain Hole in the Middle to the Circumference. See Tab. Natural History, Fig. 12.

Two or three or more of these *Trochitæ* joyn'd together, constitute what the Naturalists call an *Entrochos*. See **ENTROCHOS**.

The *Trochitæ*, or single Joints, are so set together, that the Rays of one enter into Furrows in the other, as in the Sutures of the Skull. --- They are found in great Plenty in the Bodies of the Rocks at *Braughton* and *Stock*, two Villages in *Craven*, at all Depths under Ground; in *Mendip Hills*, &c. sometimes only sprinkled here and there, and sometimes in large Strata or Beds of all Magnitudes, from the Size of the smallest Pin, to two Inches about.

They are generally found ramous or branchy, larger Branches arising from the Stem, or Cylinder, and smaller from these. The Branches being deeply inserted into the Stem, the tearing them off leaves great Holes therein.

Dr. *Lister* has discover'd a sort of little Fragments among them, which he takes to have been the Apices of the Plants; and another Sort, which he supposes to have been the Roots. --- In effect, the *Trochitæ* are generally allow'd to be the Bodies of Rock-Plants, such as Coral is. See **ROCK-PLANT**.

Mr. *Beaumont* in the *Philosophical Transactions*, assures us, he has found that all the Cliffs in some Mines, are made up of these Stone-plants, some whereof have been converted into Lime-stone Rocks, while in their tender Growth; while others becoming Spar, compose Bodies of that Substance; and considering that all the Cliffs for a very large Circumference in some Places, consist wholly of these Plants; we may say, there have been, and, in all probability, still are whole Fields or Forests of these under Ground, as there are of Coral in the Red Sea. See **CORAL**.

In the Courses between the Cliffs, are found of these Plants at all Stages and Degrees of Maturity, growing up in the gritty Clay, and rooted in the rake mold Stones, many of them of the Form and Dimensions of a Tobacco-pipe, some yet crude or raw Clay, others of the Consistence of Lime stone, others still harder, with the evident Beginnings of Circles and Sutures; and others full grown, and become perfect Spar, which is their Point of Maturity. See **SPAR**.

The Pith continues still white and soft; as the whole Plant, no doubt, was at first; and is continually refreshed by the mineral Streams and Moisture which have free Access to it through five hollow Slits or Feet in the figured Roots, or through the Mass of Clay usually lying under the plain Roots.

Nor can it be denied, but these Stone-plants have true Life and Growth. --- In the Curiosity of their Make, they may vie with most of the Vegetable Kingdom, and are shaped and formed like them, having Stem, Branches, Roots, an inward Pith, as likewise Joints and Runnings in their Girt, and sometimes Cells to supply the Place of Veins and Fibres: Why, then, mayn't they be allowed as proper Vegetations, as other Plants?

Indeed 'tis highly probable, these Rock-plants are *Lapides sui Generis*, and not parts of Animals or Plants petrified, as many Authors have imagined. --- If the figured Roots, whereon they sometimes grow, give any Suspicion they might have belong'd to an Animal, particularly a Species of the *Stella Arborescens*; the Trunks clearly evince the contrary, and can never be look'd on as Parts of an Animal: nor are they reducible to any known Species of Vegetables. Mr. *Beaumont* tells us, he has by him above 20 different Species of *Trochites*, all of them wonderfully regular, and not to be paralleled by any Vegetable he knows of in Nature: and 'tis inconceivable how so many Species diffus'd through many Parts of the Earth, should come to be lost. See **PLANT**, **PETRIFICATION**, **CORNU AMMONIS**, &c.

**TROCHILEA**, one of the mechanical Powers, usually call'd a *Pulley*. See **PULLEY**.

Hence the Cavity in the Bone of the Arm or Shoulder, whereinto, when the Arm is stretched forth, the Process of the undermost and lesser of the long Bones of the Cubitus enters, is also call'd *Trochilea*. See **CUBITUS**, &c.

**TROCHILEARES**, in Anatomy, a Name given the oblique Muscles of the Eye, because serving to pull the Eye obliquely upwards or downwards, as if it turn'd like a Pulley. See **OBLIQUUS** and **EYE**.

**TROCHOID**, **TROCHOIDES**, in Geometry, a Curve, whose Genesis may be thus conceived. --- If a Wheel or Circle be moved with a two-fold Motion at the same time, the one in a right Line, and the other circularly about its Centre; and these two Motions be equal, *i. e.* describe two equal Lines in the same Time: And if in the Radius, which at the beginning of the Motion, reaches from the Centre of the Wheel, or the first Point of the Line which describes the Circumference;



If, I say, in this Radius a Point be taken any where except in the Centre, this Point will describe a Curve, one Part whereof will be below the Line described by the Centre, and the other above it. --- This Line, thus described by the Point taken in the Radius, is call'd the *Trochoid*.

The right Line which joyns the two Extremities of the *Trochoid*, and which is either the Path the Wheel makes, or a Line parallel to that Path, is call'd the *Base of the Trochoid*.

The *Axis of the Trochoid*, is the Diameter of the Wheel, perpendicular to the Base in the middle of the Motion; or that Part of the Radius between the *Trochoid* and its Base. --- The Point wherein the Axis is cut into two Parts by the Line described by the Centre of the Wheel, is call'd the *Centre of the Trochoid*; the uppermost Point of the Axis, the *Vertex of the Trochoid*; and the Plane, comprehended between the *Trochoid* and its Base, the *Trochoidal Space*.

The *Trochoid* is the same with what we otherwise call the *Cycloid*; the Properties, &c. whereof, see under the Article *CYCLOID*.

The Word is form'd from the Greek, *τερόχον*, Wheel, and *εidos*, Form.

**TROGLODYTES**, *TROGLODYTÆ*, in the ancient Geography, a People of *Æthiopia*, said to have lived in Caves under Ground.

*Pomp. Mela* gives a strange Account of them. --- He says they did not so properly speak as shriek; that they liv'd on Serpents, &c.

*Izerna* calls them *Ichthyophagi*. *Montanus* takes them to be the same with those call'd in Scripture *Ghananim*. *Pinitianus* in *Strabo*, will have them wrote without the *I*, *Trogodite*.

The Word is form'd of the Greek, *τρωγλη*, Caverna.

**TROGLODYTES** are also spoke of as a Sect of Jewish Idolaters. See *SECT*.

The Prophet *Ezekiel* relates, *cap. viii. v. 8. 9. 10*, &c. that God, among other Abominations of the *Israelites* which he set before him, shew'd him seventy old Men, who with their Centers in their Hands, adored secretly, all kinds of Animals and Reptiles painted on the Wall.

*Philastrus* on this Vision of the Prophet, erects these Idolaters into a Sect of *Israelites*, who, hiding themselves under Ground and in Caves, adored all kinds of Idols: And the Editor of *Philastrus* calls this Sect *Troglodytes*, from *τρωγλη*, a Cave, and *εidos*, I penetrate, as believing, on the Credit of *Philastrus*, that those of this Sect hid themselves in Caves.

And yet the Prophet plainly shews, that it was in secret Parts of their Houses, and not in subterraneous Caverns, that these 70 *Israelites* Idolatrized.

The Word *Troglodytes*, then, is feign'd; so is the Sect.

**TROIA** or **TROJAN Games**, *Ludi TROJANI*, were Games instituted by *Ascanius*, Son of *Aeneas*; and which afterwards pass'd to the *Romans*, and were celebrated in the Circus by the Youth of *Rome*. See *GAMES* and *CIRCUS*.

One of the Number who presided over the Solemnity, was call'd the *Princeps Juventutis*; and was always of one of the first Families in *Rome*. See *PRINCE*.

At first, 'tis supposed, they only engaged on Foot and on Horseback; because *Virgil*, who describes these Games in the *Æneid. lib. V.* only speaks of Horses and Cavaliers, without any mention of Bigæ and Quadrigæ, which were not in Use at *Rome*, till long after *Ascanius*. --- And yet *Dion*, speaking of *Cæsar's Games*, says, the Youth there combated in Chariots: But 'tis thought by some, that these were not the *Trojan Games*, but Courses and Combats of a different Kind, proper for young People of a more advanced Age.

**TROLLING**, among Anglers. --- To *Troll*, is to fish for Pikes with a Rod, whose Line runs on a Reel. See *PIKE-FISHING*.

**TRONCHONNE** & *démembrée*, in Heraldry, denotes a Cross or other Thing cut in Pieces and dismembred, yet so as all the Pieces keep up the Form of a Cross, though set at a small Distance from one another. See *CROSS*.

**TRONAGE**, *TRONAGIUM*, an ancient Custom or Toll pay'd for the weighing of Wooll.

The Word comes from *Trona*, an old Name for a Beam to weigh withal. Hence

**TRONATOR**, an Officer of the City of *London*, whose Business it was to weigh the Wooll brought into that City.

**TRONE-Weight**, was the same with what we now call *Trove-weight*. See *WEIGHT*.

**TROOP of Horse**, is a small Body of Horse, under the Command of a Captain; answering to a Company of Foot. See *COMPANY* and *CAPTAIN*.

*Independent Troop*, is a *Troop* that is not imbodyed with, or joined to any Regiment. See *REGIMENT*, *GUARD*, &c.

To *beat the Troop*, is the second Beat of a Drum, whereby the Foot are advertis'd to march. See *DRUM*.

**TROPE**, *TROPUS*, in Rhetoric, a kind of Figure of Speech, whereby a Word or Diction is changed from its proper and natural Signification into another, with some Advantage. See *FIGURE*.

As, when we say an *Ass*, for a *stupid Person*; *Thunderbolts of War*, for a *great Captain*, to *wash the Black-mare* about, for a *fruitless Undertaking*.

This Change of Sense is never to be used, but where it gives a Force and Dignity, or renders the Discourse more significant, weighty and graceful.

'Tis call'd *Trope*, from the Greek, *τρέπω*, *verto*, I turn, change, in regard the Words are here transferred from the Things they properly import, to others which they only import indirectly; and that *Tropes* only signify the Things they are applied to by reason of the Connexion and Relation those Things have with those others, whose proper Names they are.

This Change or Inversion is perform'd various Ways; but chiefly Four; whence arise four principal *Tropes*, viz. the *Metaphora*, *Metonymia*, *Synechdoche* and *Ironia*; each whereof, see under the proper Articles, *METAPHORA*, *METONYMIA*, *SYNECHDOCHE*, &c.

Some Authors confound the Term *Trope*, with *Figure*; but they are very different Things. --- Most Authors, as *F. de Colonia*, &c. make *Figure*, the Genus, and *Trope*, a Species; defining *Figure* to be any Ornament in Discourse, whereby it is raised above the common Language; and *Trope* to be that peculiar kind of Ornament which consists in the Change of the Sense, &c.

But *Vossius* makes *Trope* and *Figure* to be two collateral and independent Things; defining *Trope* to be the Change of the Sense, &c. And *Figure*, to be any Ornament, except what becomes so by such Change, &c. See *FIGURE*.

'Tis in the *Tropes*, principally, that the Richness and Variety of a Language consists; and yet those should never be used but to express what could only be represented imperfectly, in common and proper Terms. --- *Tropes* should always be clear; they are vicious, if they be obscure, or too far-fetch'd. The Idea of the *Trope* should be so connected with that of the proper Name, that they should follow each other; so that in exciting the one, the other should be awakened of course.

Besides the four capital *Tropes* above-mentioned, there are several inferior ones: When the *Trope* is too bold, 'tis call'd an *Hyperbole*; when continued, 'tis an *Allegory*; when too obscure, an *Ænigma*; when it shocks us, or is too remote, a *Catachresis*. See *HYPERBOLE*, *ALLEGORY*, *ÆNIGMA*, &c.

Add to these, other *Tropes*, as the *Metalepsis*, *Antonomasia* and *Litotes* or *Extenuation*. See *METALEPSIS*, &c.

Some also refer the Six Kinds of Irrision, to the *Tropes*; viz. the *Sarcasm*, *Diasym*, *Charientism*, *Asteism*, *Myctism* and *Munefis*; but without sufficient Reason. See *SARCASM*, &c.

**TROPHY**, *TROPHÆUM*, among the Ancients, a Pile or Heap of Arms of a vanquish'd Enemy, rais'd by the Conqueror in the most eminent Part of the Field of Battel.

The Word is also used for an artificial Representation of such a Pile in Marble, Stone or other Matter. --- Such were the *Trophies* of *Marius* and *Sylla* in the Capitol, &c.

The ancient *Trophies* consist of Greek and Roman Arms; and the Modern ones of Arms of the various Nations now in use; as in those insolated ones near *Blenheim*, in the *Fauxbourg*, *S. Antoin*, and in the Castle of *Verfailles*.

Some are done in Basso-Relievo, as those of the *Trojan Column*, and the Attic of the Court of the *Louvre*.

*Trophies* are likewise frequently exhibited on Medals of the Emperors, struck on occasion of Victories; wherein, besides Arms and Spoils, are frequently seen, one or two Captives by the Sides of the *Trophy*.

*Trophies*, *M. Vaillant* observes, were, originally, nothing but Trunks of Trees, which the Victor planted on the most eminent Part of the conquer'd Province, and which were hung with the Spoils of the Enemy, to perpetuate the Memory of his Defeat.

The Word is form'd from the *Latin*, *Trophæum*, which *Vossius* deduces from the *Greek*, *Trope*, the Flight of an Enemy.

**TROPHY Money**, a Duty of 4*d.* paid Annually by the House-keepers or the Trained Bands, for the Dragoon Colours, &c. of their respective Companies. See *TRINITY*.

**TROPICKS**, *TROPICI*, in Astronomy, two imaginary Circles of the Sphere, drawn through the Solstitial Point, parallel to the Equator. See *CIRCLE* and *SPHERE*.

Such are the Circles *ME* and *NL*, Tab. *Astronomy* Fig. 52. See *SOLSTITIAL Point*.

Or, the *Tropicks* may be defined two Circles parallel to the Equator, at such Distance therefrom, as is equal to the Sun's greatest Recess from the Equator towards the Poles; or to the Sun's greatest Declination; or the Obliquity of the Ecliptic. See *DECLINATION*, *OBLIQUITY*, &c.

That of the *Tropicks* drawn through the beginning of *Cancer* *E*, is called the *Tropic of Cancer*. See *CANCER*.

And that through the beginning of *Capricorn*, the *Tropic of Capricorn*. See *CAPRICORN*.



They have their Name from the Greek, *τρεπῶν*, *Turn*, *Conversion*, as being the Limits of the Sun's Way, or Declination towards North and South; so that when the Sun is arriv'd at either of them, he *turns* the other Way.

Hence, 1°. Since the Declination of the Ecliptic is the Arch EA or LD; EN will be the Distance of the *Tropicks* which is double the greatest Declination.

2°. Wherefore if the Sun's Meridian Altitude be observ'd, both in the Winter and Summer Solstice, and the latter be subtracted from the former, the Remainder will be the Distance of the *Tropicks*; half whereof is the greatest Declination of the Ecliptic. See ECLIPTRIC.

*TROPICKS*, in Geography, are two lesser Circles of the Globe, drawn parallel to the Equator, thro' the Beginnings of *Cancer* and *Capricorn*. See *CANCER* and *CAPRICORN*.

These *Tropicks* are in the Planes of the *Cœlestial Tropicks*, and at the Distance of 23° 29' from the Equator, which is the Sun's greatest Declination. See *CIRCLE* and *GLOBE*.

*TROPISTS*, or *TROPICI*, the Name of a Sect. — St. *Albanastus*, in his Letter to *Serapion*, gives this Appellation to the *Macedonians*, who were also call'd *Pneumatomachi* in the East, and *Patristassians* in the West. See *PNEUMATOMACHI*, &c.

The Reason of the Name *Tropist* was, that they explain'd the Scripture altogether by Tropes and Figures of Speech. See *TROPE*.

The *Romanists* also give the Appellation *Tropists* to those of the Reform'd Religion; in regard of their constructing the Words of the Eucharist figuratively. See *TRANSUBSTANTIATION*.

*TROPITES*, *TROPITÆ*, a Sect, who, according to *Philastrius*, maintain'd that the Word was turn'd or chang'd into Flesh, or into Man.

This Opinion they founded on that Passage of St. *John*, misunderstood; *The Word was made Flesh*; as if it import-ed, that the Word was converted into Flesh, and not that he was cloath'd with our Flesh, and our Nature.

*TROT*, in the Manage, one of the natural Paces of a Horse, perform'd with two Legs in the Air, and two on the Ground at the same time, cross-wise, like St. *Andrew's* Cross; and continuing so alternately to raise the hind Leg of one Side, and the fore Leg of the other Side at once, leaving the other hind and fore Leg upon the Ground till the former come down.

In this Motion, the nearer the Horse takes his Limbs from the Ground, the opener, the evenner, and the shorter his Pace will be. — If he takes up his Feet slovenly, it is a Sign of Stumbling and Lameness; if he tread narrow, or cross, it betokens interfering or failing; if he tread long, it shews over-reaching; if he step uneven, it bespeaks Toil and Weariness.

*TROUBADOURS*, or *TROUVEOURS*, or *TROUVERS*, a Name anciently, and to this Day, given the ancient Poets of *Provence*. See *POETRY*.

Some will have the Name borrow'd from *trouver*, to find, by reason of their *Inventions*; tho' others take them to have been call'd *Trombatours*, by reason they sung their Poems on an Instrument call'd a *Trompe* or *Trump*.

The Poetry of the *Troubadours* consisted in Sonnets, Pastorals, Songs, Syrventes or Satyrs, which were much to their Taste; and in Tensons, which were Love Disputes.

*Jean de Notre Dame*, commonly call'd *Nostradamus*, a Procurer in the Parliament of *Provence*, wrote an ample Discourse of these Poets. — He makes their Number seventy-six.

*Pasquier* tells us, he had an Extract of an ancient Book belonging to Cardinal *Bonbo*, entitled, *Los Noms daquels qui firent Tensons & Syrventes*, which made their Number ninety-six, among which was an Emperor, viz. *Frederick I.* and two Kings, viz. *Richard I.* of *England*, and a King of *Aragon*, with a Dauphin, several Counts, &c. Not that all these had compos'd entire Works in Provincial; some of them had not brought forth any thing beyond Epigrams.

*Petrarch* speaks with Applause of several *Troubadours* in the IVth Chapter of the *Triumph of Love*. — The *Italian* Poets are said to have borrow'd their best Pieces from the *Troubadours*. *Pasquier* declares expressly, that *Dante* and *Petrarch* are, indeed, the Fountains of the *Italian* Poetry; but Fountains which have their Sources in the Provincial Poetry.

*Boetice*, in his History of *Provence*, relates, that about the Middle of the XIIth Century, the *Troubadours* began to be esteem'd throughout *Europe*, and that their Credit and Poetry was at the highest about the Middle of the XIVth. He adds, that it was in *Provence* that *Petrarch* learnt the Art of Rhiming, which he afterwards practis'd, and taught in *Italy*.

*TROVER*, in Law, an Action which a Man hath against one that having found any of his Goods, refuseth to deliver them upon Demand.

Actions of Detinue are frequently turn'd into Actions upon the Case, *sur Trover* and *Conversion*. See *DETINUE*.

*TROUGH of the Sea*, is the Hollow or Cavity made between the Waves or Billows in a rowling Sea. — Hence, when a Ship lies down there, they say she lies in the *Trough of the Sea*.

*TROUSSEQUIN*, in the Manage, a Piece of Wood cut arch-wise, rais'd above the hinder Bow of a great Saddle, and serving to keep the Bolsters firm.

*TROUT colour'd*. — A Horse is said to be of this Colour when he is white, and speckled with Spots of black, bay, or sorrel, especially about the Head and Neck.

*TROUT-Fishing*. See *TROUT-FISHING*.

*TROY-weight*, anciently call'd *Trone-weight*. See *TRO-NAGE* and *WEIGHT*.

*TRUCE*, a Suspension of Arms; or a Cessation of Hostilities between two Parties at War.

*Truces* are frequently concluded between Princes, in order to come to a Peace. — *Truces* of many Years serve in lieu of Treaties of Peace between Princes, whose Differences cannot be finally adjusted. See *TREATY*.

The Word, according to *Menage*, &c. comes from the Latin, *Treuga*, which signifies the same Thing. *Caseneuve* derives it from the German, *trava*, or *trzew*, which signifies Faith.

*TRUCE of God*, or *Trenga Dei*. See *TREUGA Dei*.

*TRUCHMAN*, *Drageman*, or *Dregman*, in the Countries of the *Levant*, an Interpreter. See *DRAGOMAN*.

*TRUCK*, in a Ship, a square Piece of Wood at the Top of a Mast, to put the Flag Staff in.

*TRUCKING*, in Commerce. See *PERMUTATION*, *EXCHANGE*, *COMMERCE*, &c.

*TRUCKS*, among Gunners, round Pieces of Wood like Wheels, fix'd on the Axel-trees of Carriages, to move the Ordnance at Sea.

*TRUE*, something agreeable to the Reality of Things, or to Truth. See *TRUTH*.

In this Sense we say, the *true* God, the *true* Religion, *true* Gold, &c. in Opposition to false or pretended ones. See *FALSHOOD*.

*TRUE Place* of a Planet, or Star, in Astronomy, is a Point of the Heavens shewn or pointed out by a right Line, drawn from the Centre of the Earth through the Centre of the Planet or Star. See *PLACE*. See also *PLANET*, &c.

In this Sense the Word stands oppos'd to *apparent Place*; which is that found by a right Line drawn from the Observer's Eye through the Centre of the Planet or Star. See *APPARENT*.

This Point in the Heavens is referr'd to the Ecliptick or Zodiac, by the Planet or Stars Circle of Longitude. See *CIRCLE of LONGITUDE*.

*TRUFFLES*, *Tubera Terra*, in Natural History, a kind of vegetable Productions, not unlike Mushrooms. See *MUSHROOM*.

The ancient Physicians and Naturalists, rank *Truffles* in the Number of Roots, Bulbs, or Cloves; and define them to be a Species of Vegetables, without Stalks, Leaves, Fibres, &c.

They are produc'd most in dry chap'd Grounds, and that, as *Pliny* says, chiefly after Rains and Thunder, in Autumn. — Their Duration he limits to a Year. — Their Colour is uncertain; some being white, others black, &c.

In *Italy*, *France*, &c. they eat them as a great Dainty; either fry'd in Slices with Oil, Salt and Pepper, or boil'd over and again in their own Broth. — The Hogs are exceedingly fond of them, and are frequently the Means of discovering the Places where they are; whence the common People call them *Swine bread*.

The modern Botanists rank *Truffles* in the Number of Plants; tho' they want most of the usual Parts thereof. — All we know of their Growth, is, that they are at first no bigger than a Pea, redish without, and within whitish; and that as they ripen, the white Part grows more dusky and black, only there are still left a Number of white Streaks, which all terminate at Places where the outer Coat is crack'd, or open; and which, in all Probability, are the Vessels that convey the Nourishment into the *Truffle*.

In these Vessels is found a whitish Matter, which, when view'd with a Microscope, appears to be a transparent Parenchyma, consisting of Vesiculæ; in the Middle whereof are perceiv'd little round black Grains, separate from each other, suppos'd to be the Seed of the *Truffles*. See *SEED*.

When the *Truffle* rots in the Ground thro' Excess of Ripeness, these Grains are the only Thing that remain of them; and these are suppos'd to produce new *Truffles*, which grow one after another.

What confirms the Opinion of their coming from Seed, is, that there have been *Truffles* lately discover'd in *England*, and this only in *Northamptonshire*, and even only in one Place thereof, viz. near *Rushdon*, a Place stock'd with Plants formerly brought from *Languedoc*; and 'tis only since then, that any *Truffles* have been there observ'd; whence 'tis con-

[ T r u ]

cluded;



cluded, that the Seed of these *Truffles* was brought from France among the Roots of the other Plants.

These *English Truffles* were first discover'd by Dr. *Hutton*. — Dr. *Tancred Robinson* assures us, they are the true *French Truffles*; the *Italian Tartuffi* or *Tartuffole*, and the *Spanish Turmas de Tiera*, being not noted by Mr. *Ray* as ever known on *English Ground*: Indeed, he adds, that he has seen them thrice as large at *Florence, Rome, &c.*

Those observ'd in *England* are all included in a studded Bark or Coat, and the inner Substance is of the Consistence of the fleshy Part of a young Chestnut, of a Paste Colour, a rank or hircine Smell, and unfavoury.

By a Chymical Analysis, *Truffles* are found to abound in a volatile Alkali mix'd with Oil, upon which their Smell, &c. depends. They never rise out of the Ground; but are found usually half a Foot beneath the Surface thereof.

Dr. *Hutton* has observ'd several little Fibres issuing out of some *Truffles*, and insinuating themselves within the Soil, which, in all Probability, do the Office of Roots. — The *Truffles* grow tolerably globular, as receiving their Nourishment all around them; they being to be consider'd, like Sea Plants, encompass'd with their Food, which they suck in thro' the Pores of their Bark or Rind. See *CORAL*.

They are tenderest and best in the Spring, tho' easiest found in Autumn; the Wet swelling them, and the Thunder and Lightening disposing them to send forth their Scent, so alluring to the Swine, that some of the Ancients call'd them *Ceraunia*.

The Depth at which the *Truffles* lie, Dr. *Robinson* observes, is no Objection to their being of the vegetable Tribe; that being a Thing common to several other Plants that shoot up Stalks, particularly the *Lathyrus tuberosus*, commonly call'd *Chamabalanus* and *Terra Glandes*, in *English Earth-Nuts*, the Roots of our *Bulbocastanum*, &c.

The Ancients are exceedingly divided as to the Use of *Truffles*; some affirming them to be wholesome Food, and others pernicious; *Avicenna* particularly, who will have them to cause Apoplexies. — For my own Part, says M. *Lemery*, I am of Opinion they have both good and evil Effects; they restore and strengthen the Stomach, promote the Semen, &c. but when us'd in abundance, they attenuate and divide the Juices immoderately, and by some volatile and exalted Principles, occasion great Fermentations, &c. tho' the Pepper and Salt they are ordinarily eaten withal, do doubtless contribute greatly to those Effects: — Their rich Taste is owing to their not putting forth any Stalk; in effect their Principles being united, and, as it were, concentrated in a little Bulb, must yield a richer and more delicious Savour than if the Juices were dispers'd by Vegetation thro' the several Parts of a common Plant. — Some roast the *Truffles* under the Ashes; others pulverize and mix them in Sauces.

The Word is form'd from the *Latin, Tuber, or Tuberculum*.

**TRUG**, and **TRUG-CORN**, in our ancient Customs. — *Tres Trug frumenti vel avenae faciunt 2 Busbels, intra prebendam de Hunderton in Ecclesia Heref. M. S. de temp. E. 3.*

In the black Book of *Hereford*, we find *truga frumenti* for a Measure of Wheat: And at *Lempster*, at this Day, the Vicar has *Trug-Corn* allow'd him for officiating at some Chapels of Eate, as *Stoke and Dockly* within that Parish. — Haply it may come from the *Saxon, Trog*, which signifies a great hollow Vessel or Trough.

**TRULLIZATION**, in the ancient Architecture, a Term us'd by *Vitruvius* for all Kinds of Couches or Layers of Mortar, wrought with the Trowel in the Inside of Vaults; or for the Hatches made on the Layer of Mortar, to retain the Lining of Stuc.

**TRULLUM**, a barbarous Word, signifying *Donze*; chiefly us'd in this Phrase, *The Council in Trullo*. See *COUNCIL*.

This was a Council assembled in the Year 680, against the *Monothelites*, in the Dome of the Palace of *Constantinople*, call'd *Trullum*; the Name whereof it has retain'd.

It was also call'd the *Quinsextum*. See *QUINSEXTUM*.

The *Trullum* was properly a Hall in the Palace of the Emperors of *Constantinople*, where they usually consulted of Matters of State. — The Council held therein was the 6th Oecumenical or General Council, call'd in *Trullo*.

The Term is form'd from the *Latin, Trulla*, Cup; the Hall being so call'd because vaulted.

**TRUMPET**, a musical Instrument, the most noble of all portable ones of the Wind Kind, us'd chiefly in War, among the Cavalry, to direct them in the Service. See *MUSIC*.

'Tis usually made of Brass, sometimes of Silver, Iron, Tin, and Wood. *Moses*, we read, made two of Silver, to be us'd by the Priests, *Numb. x.* and *Solomon* made 200 like those of *Moses*, as we are inform'd by *Josephus*, lib. viii. which shews abundantly the Antiquity of that Instrument.

The Ancients had various Instruments of the *Trumpet* Kind; as the *Tuba*, *Cornua*, and *Litui*; which see under their respective Articles.

The modern *Trumpet* consists of a Mouth-piece, near an Inch broad, tho' the Bottom be only one Third so much. — The Pieces which convey the Wind are call'd the *Branches*; the two Places where it is bent, *Potences*; and the Canal between the second Bend and the Extremity, the *Pavillon*; the Places where the *Branches* take asunder, or are solder'd, the *Knots*; which are five in Number, and cover the Joints.

When the Sound of the *Trumpet* is well manag'd, 'tis of a great Compass. — Indeed its Extent is not strictly determinable; since it reaches as high as the Strength of the Breath can force it. — A good Breath will carry it beyond four Octaves, which is the Limit of the usual Keys of Spinets and Organs.

In War there are eight principal Manners of sounding the *Trumpet*: The first, call'd the *Cavalquet*, us'd when an Army approaches a City, or passes thro' it in a March. — The second the *Boute-felle*, us'd when the Army is to decamp or march. — The third is when they sound to Horse, and then to the *Standard*. — The fourth is the *Charge*. — The fifth the *Watch*. — The sixth is call'd the *double Cavalquet*. — The seventh the *Chamade*. — And the eighth the *Retreat*. Beside various Flourishes, Voluntaries, &c. us'd in Rejoycings.

There are also People who blow the *Trumpet* so softly, and draw so delicate a Sound from it, that it is used not only in Church Music, but even in Chamber Music: And 'tis on this Account that in the *Italian* and *German* Music we frequently find Parts entitled *Tromba prima*, or 1<sup>st</sup> *Trumpet*, *Tromba II<sup>a</sup>, segonda*, *III<sup>a</sup>, terza*, second, third *Trumpet*, &c. as being intended to be play'd with *Trumpets*.

There are two notable Defects in the *Trumpet*, observ'd by Mr. *Roberts*, in the *Philosophical Transactions*; — The first is, that it will only perform certain Notes within its Compass, commonly call'd *Trumpet Notes*: The second, that four of the Notes it does perform, are out of Tune. See *NOTE*.

The same Defects are found in the *Trumpet Marine*; and the Reason is the same in both. See *TRUMPET MARINE*.

The Word *Trumpet* is form'd from the *French, Trompette*. *Menage* derives it from the *Greek, σπυρσθ, turbo*, a Shell anciently used for a *Trumpet*. *Du Cange* derives it from the corrupt *Latin, Trumpa*, or the *Italian, Tromba*, or *Trombetta*; others from the *Celtic, Trompill*, which signifies the same Thing.

**TRUMPET MARINE**, is a musical Instrument consisting of three Tables, which form its triangular Body.

It has a very long Neck, with one single String, very thick, mounted on a Bridge, which is firm on one Side, but tremulous on the other. — 'Tis struck by a Bow with the one Hand, and with the other the String is press'd or stopp'd on the Neck by the Thumb.

'Tis the Trembling of the Bridge, when struck, that makes it imitate the Sound of a *Trumpet*; which it does to that Perfection, that 'tis scarce possible to distinguish the one from the other.

And this is what has given the Denomination of *Trumpet Marine*, tho', in Propriety, it be a kind of Monochord.

The *Trumpet Marine* has the same Defects with the *Trumpet*, viz. that it performs none but *Trumpet Notes*, and some of those either too flat or too sharp. — The Reason, Mr. *Fr. Roberts* accounts for, only premising that common Observation of two unison Strings, that if one be struck, the other will move; the Impulses made on the Air by one String, setting another in Motion, which lies in a Disposition to have its Vibrations synchronous to them: To which it may be added, that a String will move, not only at the striking of an Unison, but also at that of an 8th or 12th, there being no Contrariety in the Motions to hinder each other. See *UNISON* and *CHORD*.

Now in the *Trumpet Marine* you do not stop close, as in other Instruments, but touch the String gently with your Thumb, whereby there is a mutual Concurrence of the upper and lower Part of the String to produce the Sound. — Hence 'tis concluded, that the *Trumpet Marine* yields no musical Sound, but when the Stop makes the upper Part of the String an Aliquot of the Remainder, and consequently of the Whole; otherwise the Vibrations of the Parts will stop one another, and make a Sound suitable to their Motion, altogether confus'd. Now these aliquot Parts, he shews, are the very Stops which produce the *Trumpet Notes*.

**TRUMPET HARMONIOUS**, is an Instrument which imitates the Sound of a *Trumpet*, and which resembles it in every thing, excepting that it is longer, and consists of more Branches.

'Tis ordinarily call'd *Sackbut*. See *SACKBUT*.

**SPEAKING TRUMPET**, is a Tube from six to fifteen Foot long, made of Tin, perfectly straight, and with a very large Aperture; the Mouth-piece being big enough to receive both Lips.

The



The Mouth being apply'd hereto, it carries the Voice to a very great Distance, so as it may be heard distinctly a Mile; whence its Use at Sea.

The Invention of this *Trumpet* is held to be modern; and is commonly ascrib'd to Sir Samuel Morland, who call'd it the *Tuba Stentorophonica*. — But *Atb. Kircher* seems to have a better Title to the Invention; for 'tis certain he had such an Instrument before ever Sir S. Morland thought of his.

*Kircher*, in his *Phonurg.* says, that the *Tromba* publish'd last Year in *England*, he invented 24 Years before, and publish'd in his *Misurgia*: He adds, that *Jac. Albanus Ghibbissus* and *Fr. Eschinardus*, ascribe it to him; and that *G. Schottus* testifies of him, that he had such an Instrument in his Chamber in the *Roman College*, with which he could call to, and receive Answers from the Porter.

Indeed, considering how fam'd *Alexander the Great's* Tube was, wherewith he used to speak to his Army, and which might be heard distinctly 100 Stadia or Furlongs, 'tis somewhat strange the Moderns should pretend to the Invention; the *Stentorophonic* Horn of *Alexander*, whereof there is a Figure preserv'd in the Vatican, being almost the same with that now in Use. See *STENTOROPHONIC*.

*Listening*, or *Hearing TRUMPET*, is an Instrument invented by *Joseph Lantini*, to assist the Ear in hearing of Persons who speak at a great Distance, without the Assistance of any speaking *Trumpet*. See *HEARING* and *EAR*.

*TRUMPETER*, in Anatomy. See *BUCCINATOR*.

*TRUNCATED Pyramid*, or *Cone*, is one whose Top or Vertex is cut off by a Plane parallel to its Base. See *PYRAMID* and *CONE*.

A *Truncated Cone*, or the Frustum of that Body, is sometimes also call'd a *Curvy-Cone*. See *FRUSTUM*. See also *GAUGING*.

The Word is form'd of the *Latin*, *Truncare*, to cut off a Part from the Whole; whence also *Truncus*, *Trunchion*, &c. In Heraldry they say *Trunked*.

*TRUNCHEON*, of the *French* *Trencon*, and the *Latin* *Truncus*; a *Battoon*; or a kind of short Staff us'd by Kings, Generals, and great Officers, as a Mark of their Command. See *BATTOON*.

*TRUNDLE*, is a kind of Carriage with low Wheels, whereon to draw heavy cumbersome Burdens.

*TRUNDLE Shot*, is an Iron Shot about 17 Inches long, sharp-pointed at both Ends, with a round Bowl of Lead cast upon it, about a Hand Breadth from each End. See *SHOT*.

*TRUNK*, *Truncus*, the Stem, or Body of a Tree; or that Part between the Ground and the Place where it divides into Branches. See *STEM*, *BRANCH*, and *TREE*.

In lopping of Trees, nothing is left but the *Trunk*. See *PRUNING*.

*Trunk* is also used for the Stump, or that Part left over the Root in felling. — Large Trees when fell'd, shoot out from the *Trunk*, and make a Copse or Underwood.

'Tis by means of the *Trunks* left rotting in the Ground, that the Wastes in Forests are discover'd.

*TRUNK*, in Anatomy, is used for the Busto of the human Body, exclusive of the Head and Limbs. See *BUSTO*.

*TRUNK*, *Truncus*, is also used for the Body of an Artery or Vein; in contra-distinction to the Branches and Ramifications thereof. See *VEIN* and *ARTERY*.

The Word is particularly apply'd to certain Parts of the Aorta and Cava. See *AORTA* and *CAVA*.

*TRUNK*, in Architecture, is used for the *Fust*, or *Shaft* of a Column, with that Part of the Pedestal between the Base and the Cornice, call'd the *Dye*. See *SHAFT* and *COLUMN*.

*TRUNK*, is also popularly used for the Snout of an Elephant; by Naturalists call'd the *Proboscis* thereof. See *PROBOSCIS*.

*TRUNK Roots* of a Plant, are little Roots which grow out of the *Trunks* of Plants. See *ROOT*.

These are of two Kinds, 1<sup>o</sup>. Such as vegetate by a direct Descent, the Place of their Eruption being sometimes all along the *Trunk*, as in Mints, &c. and sometimes only in the utmost Point, as in Brambles.

2<sup>o</sup>. Such as neither ascend nor descend, but shoot forth at right Angles with the *Trunk*; which therefore, tho' as to their Office they are true Roots, yet, as to their Nature, are a Medium between a *Trunk* and a *Root*.

*TRUNKED*, among Heraldry, is apply'd to Trees cut off at each End, which are said to be *trunked*, or *truncated*.

*TRUNNIONS* of a Piece of Ordnance, are those Knobs or Bunches of the Gun's Metal, which bear her up upon the Cheeks of the Carriages. See *GUN*, *CANNON*, *ORDNANCE*, *CARRIAGE*, &c.

*TRUNNION Ring*, is the Ring about a Cannon, next before the *Trunnions*. See *ORDNANCE*.

*TRUSS of Flowers*; is a Term us'd by Florists to signify many Flowers growing together on the Head of a Stalk; as in the Cowslip, Auricula, &c.

A *Truss of Hay* consists of fifty-six Pounds, or half an hundred Weight; thirty-six *Trusses* make a Load: But in *June* and *August* the *Truss* must weigh sixty Pounds, on Forfeiture of 18 s. per *Truss*.

A *Truss of Forage*, is as much as a Trooper can carry on his Horse's Crupper.

*TRUSS* is also us'd for a Sort of Bandage made of Steel or the like Matter, wherewith to keep up the Parts in those who have Hernias or Ruptures. See *HERNIA*, *BANDAGE*, &c.

*TRUSSES*, in a Ship, are Ropes made fast to the Barrels of a Yard, to bind the Yard to the Mast, when the Ship rolls. See *YARDS*.

*TRUSSING*, in Falconry, is an Hawk's raising any Fowl or Prey aloft, soaring up, and then descending with it to the Ground. See *HAWK* and *FALCONRY*.

*TRUSTEE*, one who has an Estate, or Money put or intrusted in his Hands for the Use of another.

*TRUTH*, *Veritas*, a Term us'd in Opposition to *Falshood*; and apply'd to Propositions which answer or accord to the Nature and Reality of the Thing whereof something is affirm'd, or deny'd. See *PROPOSITION*, &c.

Thus, when we say that 4 is the fourth Part of twice 8; that Proposition is *true*, because agreeable to the Nature of those Numbers. See *FALSHOOD*.

*Truth*, according to Mr. *Lock*, consists in the joining or separating of Signs as the Things signify'd by them do agree or disagree one with another. — Now the joining or separating of Signs, is what we call making of Propositions. — *Truth* then, properly, belongs only to Propositions, whereof there are two Sorts, *mental* and *verbal*; as there are two Sorts of Signs commonly made use of, *viz.* *Ideas* and *Words*. See *IDEA* and *WORD*.

*Mental Propositions*, are those wherein the Ideas in our Understanding are put together, or separated by the Mind perceiving or judging of their Agreement or Disagreement.

*Verbal Propositions*, are Words put together, or separated, in affirmative or negative Sentences: — So that Proposition consists in joining or separating Signs; and *Truth* consists in putting together or separating those Signs, according as the Things they stand for agree or disagree.

*Truth*, therefore, as well as Knowledge, may come under the Distinction of *verbal* and *real*; that being only *verbal Truth*, where Terms are join'd according to the Agreement or Disagreement of the Ideas they stand for, without regarding whether our Ideas are such as really have, or are capable of having any Existence in Nature. — But it is then they contain *real Truth*, when these Signs are join'd as our Ideas agree; and when our Ideas are such, as we know are capable of having an Existence in Nature; which in Substances we cannot know, but by knowing that such have existed. See *SUBSTANCE*.

*Truth* is the marking down in Words the Agreement or Disagreement of Ideas, as it is. — *Falshood* is the marking down in Words the Agreement or Disagreement of Ideas, otherwise than it is; and so far as these Ideas, thus mark'd by Sounds, agree to their Archetypes, so far only is the *Truth* real.

The Knowledge of this *Truth* consists in knowing what Ideas the Words stand for, and the Perception of the Agreement or Disagreement of those Ideas, according as it is mark'd by those Words. See *PROBABILITY*, *EVIDENCE*, &c.

Besides *Truth* taken in the strict Sense before mention'd, which is also call'd *Logical Truth*, there are other Sorts of *Truths*; as,

1<sup>o</sup>. *Moral Truth*, which consists in speaking Things according to the Persuasion of our own Minds; call'd also *Veracity*.

2<sup>o</sup>. *Metaphysical*, or *Transcendental Truth*, which is nothing but the real Existence of Things conformable to the Ideas which we have annex'd to their Names. See *KNOWLEDGE*. See also *ERROR*, &c.

In this Sense a Clock may be said to be *true*, when it answers the Idea or Intention of the Person who made it.

Others, will have *Metaphysical Truth* to consist in the Agreement of a Thing with the Idea thereof in the divine Understanding.

*TRUTINA Hermetis*, is used among Astrologers, for an artificial Method of examining and rectifying a Nativity. See *HOROSCOPE*.

*TRUTINATION*, the Act of weighing or ballancing a Thing. See *WEIGHT* and *BALLANCE*.

The Word is form'd from the *Latin* *Trutina*, a Pair of Scales.

*TRYAL*. See *TRIAL*.

To *TRY*, in the Sea Language. — A Ship is said to *try*, when she has no more Sails aboard but her Main-sail, or the Mizen-sail only.

*TRYPIERA*, *TRYPIERE*, in Pharmacy, a Term us'd for several Kinds of Opiates. — The *Great Trypiere* is composed



posed of Opium, Cinnamon, Cloves, and several other Ingredients: It is used to fortify the Stomach, to stop Fluxes, and for some Diseases of the Womb.

There is also the *Saracenic Tryphere*, and the *Persian Tryphere*, thus call'd, because first introduced the one by the *Saracens*, and the other by the *Persians*; they both purge gently.

The Word is form'd from the *Greek*, *τερυπερί*, delicate, soft, by reason it makes those who use it, rest.

TUB is used as a kind of Measure, to denote the Quantity of divers Things. --- A *Tub of Tea*, is a Quantity of about 60 Pounds. --- A *Tub of Camphire*, is a Quantity from 56 to 80 Pounds.

TUBE, TUBUS, a *Pipe, Conduit or Canal*; being a Cylinder, hollow within side, either of Lead, Iron, Wood, Glass or other Matter, for the Air or some other Fluid to have a free Passage or Conveyance through.

The Term is chiefly used for those used in Physicks, Astronomy, Anatomy, &c. On other ordinary Occasions, we usually say Pipe. See PIPE.

In the *Memoirs of the French Academy of Sciences*, M. *Varignon* gives us a Treatise on the Proportions necessary for the Diameters of *Tubes*, to give precisely any determinate Quantities of Water. --- The Result of his Piece turns upon these two Analogies; That the Diminutions of the Velocity of Water, occasion'd by its Friction against the Sides of the *Tubes*, are as the Diameters; the *Tubes* being supposed equally long; and the Quantities of Water issuing out at the *Tubes*, are as the square Roots of their Diameters, deducting out of them the Quantity each is diminish'd. See FLUID, FOUNTAIN, FRICTION, &c.

For the *TUBES of Barometers and Thermometers*; see BAROMETER and THERMOMETER.

For the *Ascent of Liquors in Capillary TUBES*; see ASCENT and CAPILLARY.

*Torricellian TUBE*. See TORRICELLIAN Tube.

TUBE, in Astronomy, is sometimes used for *Telescope*; but more properly for that Part thereof into which the Lens's are fitted, and by which they are directed and used. See TELESCOPE.

The Goodness of the *Tube*, being of great Importance to that of the *Telescope*; we shall here add its Structure.

#### *Construction of a Draw-Tube for a Telescope.*

The great Points to be regarded here, are, that the *Tube* be not troublesome by its Weight, nor lyable to warp and disturb the Position of the Glasses: So that any kind of *Tube* will not serve in every Case: But

1° If the *Tube* be small, 'tis best made of thin brass Plates cover'd with Tin, and form'd into Pipes or Draws, to slide within one another.

2° For long *Tubes*, Iron would be too heavy; for which reason some chuse to make them of Paper, thus: --- A wooden Cylinder is turn'd, of the Length of the Paper to be used; and of a Diameter equal to that of the smallest Draw. About this Cylinder is roll'd Paper, till it be of a sufficient Thickness: When one Pipe is dry, provide others after the same manner; still making the last serve as a Mould for the next, till you have enough for the length of the *Tube* desired. Lastly, to the Extremes of the Draws are to be glew'd wooden Ferrils, that they may be drawn forth the better.

3° Since Paper Draws are apt to swell with moist Weather, so as to spoil their sliding; and in dry Weather to shrink, which renders them loose and tottering; in both which Cases, the Situation of the Lens's is easily disturb'd; the best Method of making *Tubes*, is as follows: Glue Parchment round a wooden Cylinder; and let the Parchment be colour'd Black, to prevent the reflected Rays making any Confusion. Provide very thin Slits of Beech, and bending them into a Cylinder, glue them carefully to the Parchment: Cover this wooden Case with white Parchment; and about its outer Extreme make a little Ring or Ferril: after the same manner make another Draw over the former; and then another, till you have enough for the Length of the *Tube*.

To the inner Extremes of each Draw, fit a wooden Ferril, that the spurious Rays striking against the Sides, may be intercepted and lost. In those Places where the Lens's are to be put, it will be proper to furnish the Ferrils with Female Screws. Provide a wooden Cover to defend the Object Glass from the Dust, and putting the Eye Glass in its wooden Ferril, fasten it by the Screw to the *Tube*. Lastly, provide a little wooden *Tube* of a Length equal to the Distance the Eye Glass is to be from the Eye, and fit it to the other Extream of the *Tube*.

TUBE Fallopiæ  
TUBA Eustachiana

} in Anatomy. See

{ FALLOPIAN-  
TUBE.  
{ EUSTACHIANA.

TUBER, or TUBERCLE, in Botany, a kind of round turgent Root, in form of a Knob or Turnip. See ROOT. The Plants which produce such Roots, are hence denominated *Tuberose* or *Tuberous Plants*.

TUBER or TUBEROSITY, in Medicine, is used for a Knob or Tumour growing naturally on any Part; in Opposition to Tumors which arise accidentally, or from a Disease. See TUMOR.

The same Term is also used for a Knot in a Tree.

TUBERCULES, TUBERCLES, are little Tumors which suppurate and discharge Pus; often found in the Lungs. See LUNGS.

TUBERI Lactiferi, in Anatomy, is a Name used by some Writers, for those small Tubes through which the Milk passes to the Nipples of the Mammæ or Breasts. See MILK and MAMMÆ.

TUBEROSE, an Epithet given to such Roots as are round and fleshy, and grow in the Flesh solid and continuous: having neither Skin nor Shell. --- Such are the Roots of Saffron, Peony, &c.

TUBILUSTRIUM, in Antiquity, a Feast or Ceremony in use among the Romans. See FEAST.

This Name was given to the Day whereon they purified their sacred Trumpets; as also to the Ceremony of purifying them. It was held on the fifth and last Day of the Feast of *Minerva*, call'd *Quinquatrus* or *Quinquania*, which was perform'd twice a Year.

The Word is compounded of *Tubus*, and *Lustro*, I purify.

TUBULI Vermiculares, a Name sometimes used by Naturalists, for certain small winding Cavities on the outside of Shells. See SHELL.

TUFT, a Term used by some Authors for the bushy Part of Trees; or that Part set with Branches, Leaves, &c. See BRANCH.

*Parallelism of the Tufts of Trees*. --- All Trees are observ'd naturally to affect to have their *Tufts* parallel to the Spot of Ground they shadow; an Account of which Phenomenon, see under the Article PARALLELISM.

TUILERIE, or TYLERIE, a Tyle-work; being properly a large Building with a Drying-place, cover'd a-top, but furnished with Apertures on all Sides, through which the Wind having Admittance, dries the Tyles, Bricks, &c. in the Shade, which the Sun would crack, before they be in the Furnace. See BRICK and TYLE.

The Word is pure French, form'd from *Tuile*.

The Garden of the *Louvre* is call'd the *Tuileries*, as being a Place where Tyles were anciently made, &c. --- But the Term *Tuileries* does not only include the Garden; but also a magnificent Palace, whose Face takes up the whole Length of the Garden: And hence it is, that they say, The King lodges in the *Tuileries*; The King has quitted the *Tuileries* for a few Days, to reside in the *Louvre*.

The Palace of the *Tuileries* is joined to the *Louvre* by a large Gallery, which runs all along the same, and has its Prospects thereon. See LOUVRE.

The *Tuileries* was begun in 1564, by Catherine de Medici, Wife of Henry II. in the Time of her Regency; finished by Henry IV. and magnificently adorned by Louis XIV. --- The Garden of the *Tuileries* was much improved by Louis XIII.

TUMBLER, a sort of Dog, called in Latin, *Canis saltator*, from his quality of tumbling and winding his Body about, e'er he attacks and falls on the Prey.

These Dogs are often less than Hounds; being leaner, and somewhat pricked-eared; and by the Form of their Bodies, might be called Mungrel Grey-hounds, if they were a little bigger.

TUMBREL, TUMBRELLUM, TURBICETUM, an Engine of Punishment, which ought to be in every Liberty, that has View of Frank-pledge, for the Correction and Cooling of Scolds and unquiet Women. See CUCKING-STEL.

TUMEFACATION, the Act of swelling, or rising into a Tumor. See TUMOR.

Inflammations and *Tumefactions* of the Testes, frequently happen in the Gonorrhæa; either from the Weakness of the Vessels, violent Motion, unseasonable Use of Astringents, & Neglect of Purging, or the like. See GONORRHEA.

TUMOR or TUMOUR, in Medicine, &c. a preternatural Rising or Eminence on any Part of the Body.

*Tumor* is defined by the Physicians, a Solution of Continuity, arising from some Humor collected in a certain Part of the Body, which disjoyns the continuous Parts, intimating itself between them, and destroys their proper Form.

This has given occasion to the *Arabs* to define a *Tumor* to be an Indisposition, compos'd of three Kinds of Disorders, viz. an Intemperature, an ill Conformation, and a Solution of Continuity, all which they comprize under the Name *Apostem*, from the *Greek*, *αποστημα*. See APOSTEM. Tumors may proceed from various Causes. --- The most common of Blood throwing off or discharging itself of any particular Humor, as sometimes happens in the Crisis of a Fever, Pleurisy, Empyema, Bubo, &c. will give rise to them.



And according to the Nature of the Humour so discharged, whether Sanguinous, Watery, Bilious, &c. the *Tumor* is different.

Other *Tumors* there are, occasioned by Flatulency, as the Tympany, after the same Manner as hydropical *Tumors* are occasioned by a Collection of the Lympha, or Serum, in a particular Part.

Ruptures of the Intestines, or their starting from their Places, will likewise cause a *Tumor*. See RUPTURE.

External Injuries are another general Cause of *Tumors*.

Thus a Contusion, or a violent Stricture of any Part, a Wound, Fracture, Dislocation, &c. will make it swell, or rise above its natural Level. And the same thing may likewise happen from the Bites of venomous Creatures, &c. See WOUND, ULCER, CONTUSION, BITE, &c.

*Tumors*, properly so call'd, i. e. *Humoral Tumors*, or those which contain a fluid Matter, arise either from a Stagnation, i. e. an Obstruction of the Passage of some Fluid, occasioning a slow Congestion; or a Translocation or Fluxion of an Humor from some other Part; or a Generation of some new Humor. See HUMOR.

*Tumors* of the first Kind are very numerous, and are usually divided, with regard to the particular Humors they are filled with, into Phlegmons, which come from the Blood. See PHLEGMON and BLOOD.

*Erysipela's*, which are filled with the Bile. See ERYSIPELAS and BILE.

*Oedemas* fill'd with Pituita. See OEDEMA and PITUITA.

And *Schirrus's* with Melancholy. See SCHIRRUS.

To which may be added, *Flatulencies*, fill'd with Wind. See FLATULENCY, &c.

Of the second Kind, are *critical Tumors*. See CRITICAL.

And of the third Kind, are *Cancers*, *Ganglio's*, and all *Tumors* contain'd in a Cystis or Bag. See CANCER, GANGLIO, &c.

*Tumors* also frequently acquire peculiar Denominations from the Part affected, as *Ophthalmia*, if in the Eye; *Parotitis* about the Ears; *Paronychia* in the Fingers, &c. See OPHTHALMIA, &c.

With respect to the Cure, all *Tumors* are divisible into *Simple* and *Compound*, i. e. into such as are of a kindly Nature, and go off, or are cured in a reasonable Time, by the use of common Means, without the Appearance of any violent or dangerous Symptoms; and such as are more malignant, or prove difficult of Cure, and are attended with bad Symptoms, and affect the adjacent Parts, or the whole Body. --- When a *Tumor* is formed by Fluxion, a sudden Pain, Heat, Tension and Pulsation are felt in the Part, and manifest Signs of a Fever appear.

In those form'd by Congestion, the Swelling rises slowly, and the Pain, and other Symptoms, come on gradually, and prove less violent; unless it happen in the Joints, and other of the more sensible Parts.

All *Tumors*, except those from Ruptures, terminate or are removed, either by Discussion, Suppuration, Putrefaction, Induration, or Translocation. See DISCUSSION, SUPPURATIVE, &c.

When a *Tumor* is discussed, the Part that was affected, appears relaxed, or reduced to its natural Size and Figure, and is free from Pain and Hardness. See DISCUSSION.

When a *Tumor* hastens to Suppuration, a considerable Degree of Heat, Pain and Pulsation are felt in the Part, and if the *Tumor* be large, or lie deep, a Fever generally comes on: When the Matter is formed, these Symptoms commonly decrease, and sometimes totally vanish. And now, if the Situation of the Parts permits of it, the *Tumor* appears drawn to a Point, or becomes Conical in the Middle, or most depending Part, where the Matter collected commonly proves White. --- At this Time, likewise, the *Tumor* appears to be more contracted, and the Skin of the Part more shrivelled or flaccid than before: And now, upon Pressure, if the *Tumor* be superficial, or by vibrating it between the Fingers, the Matter may be felt to quash from Side to Side. See SUPURATION.

*Tumors* in the fleshy Parts of the Body, tend to their State, or suppurate faster than *Tumors* in the Joints, Glands, &c.

When a *Tumor* is resolved by Induration, the Swelling of the Part, and the Pain decrease, as the Hardness comes on. --- When it terminates in Putrefaction or Mortification, the Part grows senseless, and turns black and fetid. See MORTIFICATION.

But when a *Tumor* goes off by Repulsion, or a Return of the Matter into the Blood, it disappears at once; upon which a Fever, or some other acute Disease presently ensues. See REPELLENT.

*Windy Tumors*, M. *Littre* describes as form'd of Air, inclosed under some Membrane, which it dilates more or less in proportion to the Quantity, and from which it cannot escape; at least not for some time.

The Difficulty is, to conceive how the Air should come

to be collected here. --- M. *Littre* thinks that the most ordinary Cause of *windy Tumors*, is the gathering of Juices in some neighbouring Part, wherein there is an Obstruction. The Air which is intimately mix'd with all the Juices of the Body, continues to be so while they are in their natural Fluidity and Motion; but if they be collected in any Part, and, by Consequence, have their Motion and Fluidity diminished, the Air gets its Liberty, and disengages itself from them. Now the Membranes of the Part wherein the Liquor is collected, becoming dilated by this Collection, and their Pores enlarged; the disengaged Air escapes through them; but the Juice is left behind, as being too much thickened by its stay there: It therefore runs under some other neighbouring Membrane, which it raises, swells and extends.

TUN or TON, originally signifies a large Vessel or Cask, of an oblong Form, biggest in the Middle, and diminishing towards its two Ends; girt about with Hoops; and used to put up several kinds of Merchandizes in, for their better Carriage; as Brandy, Oil, Sugar, Skins, Hats, &c.

The Term is also used for certain Vessels of extraordinary Bigness, serving to keep Wine in for several Years. --- In *Germany*, there are many scarce ever emptied: The *Heidelberg Tun* is famous.

Some derive the Word from *Autumnus*, in regard 'tis then *Tuns* are most needed: *Du Cange* deduces it from *Tunna* or *Tonna*, Words used in the *bale Latin*, for the same thing; whence also *Tunnare* to *Tun*.

The *Tun*, we frequently call a *Hogshead*. See HOGSHEAD.

TUN is also a certain Measure, for Liquids, as Wine, Oil, &c. See MEASURE.

The *English Tun* contains two Pipes or four Barrels, or 252 Gallons.

The *Tun* of *Amsterdam* contains 6 Acms or Ams; the Acm 4 Ankers; the Anker 2 Stekans, the Stekan 16 Mingles; 12 Stekans are equal to an *English Barrel* or 63 Gallons. See GALLON.

The *Tun* of *Bordeaux* and *Bayonne* contains four Barrels, equal to three *Paris Muids*. --- At *Orleans* and *Berry*, it is about two *Paris Muids*. See MUID.

The *Tun* of *Malaga*, *Alicant*, *Sevil*, &c. is two Bottes, equal to about 36 or 37 Stekans. --- The *Tun* of *Lisbon* is two *Portuguese Bottes*, equal to 25 Stekans.

TUN is also a certain Weight, whereby the Contents of Ships, &c. are estimated. See WEIGHT.

The *Sea Tun* is computed to weigh Two thousand Pounds, or Twenty Quintals or Hundreds Weight; so that when we say a Vessel carries Two hundred *Tuns*, we mean 'tis able to carry Two hundred times the Weight of Two thousand Pounds, i. e. Four hundred thousand Pounds: It being found, by a curious Observation, that the Sea Water, whose Room the Vessel fills, when full loaden, weighs so much. See BURTHEN.

To find the Burthen and Capacity of a Ship, they measure the Hold or Place where she is loaden; allowing 42 Cubic Feet to the *Sea Tun*. See HOLD.

The Price of Freight, or Carriage of Merchandizes, is ordinarily settled on the Foot of the *Sea Tun*: And yet, though the *Tun* is Twenty hundred Weight, there is some Difference made therein, either on account of the Weight or Cumbersome or Bulk of the Commodities, the Space they take up, or the like. See FREIGHT.

Accordingly, at *Bordeaux*, four Barrels of Wine are held a *Tun*; five Barrels of Brandy are estimated two *Tuns*; three of Syrop are one *Tun*; four Barrels of Prunes, one *Tun*; two Dozen of Walnut-tree Tables, one *Tun*; a Dozen of Planks one *Tun*; Twenty Bushels of Chestnuts are accounted one *Tun*; and the like of Wheat or other Grain: Ten Bales of Cork; Five Bales of Feathers, and Eight of Paper, make each one *Tun*.

A *Tun* or Load of Timber, is 40 solid Feet, if the Timber be round: If it be hew'd, or square, 50. See TIMBER.

TUN, TON, in the end of Words or Names of Places, signify a Town, Village, or dwelling Place; from the *Saxon*, *Tun*, *Sepes*, *Vallum*, *Villa*, *Vicus*, *Oppidum*; and this from the *Saxon Thun*, i. e. an Hill, where they formerly built Towns. See TOWN.

TUN-Grove, from the *Saxon*, *Tungerava*, q. d. *Villa prepositus*, a Term anciently used for a Reeve or Bailiff, *qui in Villa, & que dicimus Maneris, Domini personam sustinet, eiusque vice omnia disponit & moderatur*. *Spelman*. See GROVE.

TUNE or TONE, in Music, is that Property of Sounds whereby they come under the relation of *Acute* and *Grave* to one another. See GRAVITY, &c.

Though Gravity and Acuteness be mere Terms of Relation, yet the Ground of the Relation, the *Tune* of the Sound, is something absolute: Every Sound having its own proper *Tune*, which must be under some determinate Measure, in the Nature of the Thing.



The only Difference, then, between one *Tune* and another, is, in Degrees; which is naturally infinite, *i. e.* we conceive there is something positive in the Cause of Sound, which is capable of less and more, and contains in it the Measure of the Degrees of *Tune*; and because we don't suppose a least or greatest Quantity of this, we conceive the Degrees depending on those Measures to be infinite. See *SOUND*.

If two or more Sounds be compar'd together in this Relation, they are either equal or unequal in the Degree of *Tune*. --- Such as are equal are call'd *Unisons*. See *UNISON*.

The unequal constitute what we call an *Interval*, which is the Difference of *Tune* between two Sounds. See *INTERVAL*.

*Cause and Measure of TUNE; or that whereon the Tune of a Sound depends.*

Sonorous Bodies, we find, differ in *Tune*, 1°. According to the different Kinds of Matter; thus the Sound of a Piece of Gold is much graver than that of a Piece of Silver of the same Shape and Dimensions; in which Case, the *Tones* are proportional to the Specific Gravities.

2. According to the different Quantities of the same Matter in Bodies of the same Figure; as a solid Sphere of Brass, one Foot in Diameter, sounds acuter than a Sphere of Brass two Foot Diameter; in which Case the *Tones* are proportional to the Quantities of Matter.

Here, then, are different *Tunes* connected with different specific Gravities, and different Quantities of Matter; yet cannot the different Degrees of *Tune* be referr'd to those Quantities, &c. as the immediate Cause. In Effect, the Measures of *Tune* are only to be sought in the Relations of the Motions that are the Cause of Sound, which are no where so discernable as in the Vibrations of Chords. See *CHORD*.

Sounds, we know, are produc'd in Chords by their vibratory Motions; not, indeed, by those sensible Vibrations of the whole Chord, but by the insensible ones, which are influenc'd by the sensible, and, in all Probability, are proportional to them. --- So that Sounds may be as justly measur'd in the latter, as they could be in the former, did they fall under our Senses: But even the sensible Vibrations are too small and quick to be immediately measur'd. --- The only Resource we have, is to find what Proportion they have with some other Thing, which is effected by the different Tensions, or Thickness, or Lengths of Chords, which, in all other Respects, excepting some one of those mention'd, are the same. See *VIBRATION*.

Now, in the general, we find that in two Chords, all Things being equal, excepting the Tension, or the Thickness, or the Length, the *Tones* are different; there must therefore be a Difference in the Vibrations owing to those different Tensions, &c. which Difference can only be in the Velocity of the Courses and Recourses of the Chords, thro' the Spaces wherein they move to and again. --- Now, upon examining the Proportion between that Velocity, and the Things just mention'd, whereon it depends, 'tis found to a Demonstration, that all the Vibrations of the same Chord are perform'd in equal Times.

Hence, as the *Tone* of a Sound depends on the Nature of those Vibrations whose Differences we can conceive no otherwise than as having different Velocities, and as the small Vibrations of the same Chord are all perform'd in equal Time; and as 'tis found true in Fact, that the Sound of any Body arising from one individual Stroke, tho' it grow gradually weaker, yet continues in the same *Tone* from first to last; it follows, that the *Tune* is necessarily connected with a certain Quantity of *Tune* in making every single Vibration; or that a certain Number of Vibrations, accomplish'd in a given Time, constitutes a certain and determinate *Tune*; for the frequenter those Vibrations are, the more acute is the *Tune*; and the slower and fewer they are in the same Space of Time, by so much the more grave is the *Tune*; so that any given Note of a *Tune*, is made by one certain Measure of Velocity of Vibrations, *i. e.* such a certain Number of Courses and Recourses of a Chord or String in such a certain Space of Time, constitutes a determinate *Tune*. See *NOTE*.

This Theory is strongly supported by our best and latest Writers on Music, Dr. *Holier*, Mr. *Alacorn*, &c. both by Reason and Experience. --- Dr. *Wallis*, who owns it very reasonable, adds, that 'tis evident the Degrees of Acuteness are reciprocally as the Length of the Chords; tho' he says, he will not positively affirm that the Degrees of Acuteness answer the Number of Vibrations as their only true Cause: But his Diffidence arises hence, that he doubts whether the Thing have been sufficiently confirm'd by Experiment. --- Indeed, whether the different Number of Vibrations in a given Time is the true Cause on the Part of the Object, of our perceiving a Difference of *Tune*, is a Thing which we conceive does not come within the Reach of Experiment; 'tis to silent the Hypothesis is reasonable. See *CONCORD*, *HARMONY*, &c.

**TUNICA**, a kind of Wastecoat or Under-Garment wore by the Ancients, both at *Rome*, and in the East.

The common People ordinarily wore only a single *Tunica*; but those of better Fashion wore a *Toga* or Gown over it. See *TOGA*.

The Philosophers wore a Gown without a *Tunica*, as professing to go half naked.

The *Tunica* was peculiar to the Men; the Under-Garment of the Women not being call'd *Tunica*, but *Stola*. See *STOLA*.

The Senators wore their *Tunica* enrich'd with several little Pieces of Purple, cut in Form of large Nails; whence it was call'd *Laticlava*: The Knights had lesser Nails on their *Tunica*, which was hence call'd *Angusticlava*: The common People wore their *Tunica* without any Nails at all. --- And 'twas by these three different Sorts of *Tunicas*, that the three different Orders of the Roman People were distinguish'd. See *LATICLAVA*, &c.

Among the Religious, the woollen Shifts, or Under-Garments, are still call'd *Tunicas* or *Tuniques*.

**TUNICA**, or **TUNIC**, in Anatomy, is a Term apply'd to the Skins or Membranes which coat or inclose the Vessels, and divers other of the less solid Parts of the Body. See *MEMBRANE*.

The Eye consists principally of a Number of *Tunics* rang'd over one another; as the *Tunica Albuginea*, the *Tunica Cornea*, the *Tunica Retiformis*, &c. See *EYE*, &c.

**TUNICA Vaginalis**. See *VAGINALIS*.

**TUNNAGE**, or **TONNAGE**, a Duty or Custom due for Merchandize brought or carry'd in Tuns, and such like Vessels, from or to other Nations; thus call'd, because rated at so much *per Tun*. See *CUSTOM*.

*Tunnage* is properly a Duty impos'd on Liquids according to their Measures; as Poundage is that impos'd on other Commodities according to their Weight. See *POUNDAGE*.

They were both first settled by Authority of Parliament under King *Edward III*; were re-establish'd in 1660, under the Reign of King *Charles II*. for his Life, upon abrogating all the Laws made under *Oliver Cromwell*, and re ordaining the Execution of the ancient Laws and Regulations; and have been continu'd and renew'd by the Parliaments ever since. --- By an Act made in the first Year of the Reign of Queen *Anne* they were continu'd for 96 Years, expiring in the Year 1798.

This Duty at first was 4*l.* 10*s.* Sterling *per Tun*, for French Wines brought into the Port of *London* by the *English*; and only three for that brought in the other Ports. --- For the same Wine imported by Strangers to *London*, this Duty was 6*l.* and that brought into the other Ports 4*l.* 10*s.* Sterling.

Rhenish Wine, in Virtue of the same Act, paid 7*l.* 10*s.* Sterling; and Spanish, Portuguese, Malinsey, and Greek Wines, the same as the French Wines.

But there have been divers additional Duties added since. --- As, the additional Duty of the old Subsidy, Seigniorage Duty of ancient Impost of Tunnage, Duty of additional Impost, Orphans Money, new Subsidy, &c.

**TUNNAGE** is also used for a certain Duty paid the Mariners by the Merchants, for unloading their Ships arriv'd in any Havens, after the Rate of so much a *Tun*. See *DUTY*.

**TUNNEL**, or **FUNNEL**, an Instrument thro' which any Liquor is pour'd into a Vessel. --- Part of the Draught of a Chimney above the Mantle piece, is also call'd by the same Name. See *CHIMNEY*.

**TUNNEL-Net**, is a kind of Net much used for the catching of Partridges; thus call'd from its Form, which is a Cone 15 or 18 Feet long.

To use it, a Covey of those Birds being found, a Compass is taken, and the Net pitch'd at a good Distance from them, according to the Situation of the Ground. --- Then, with a natural or artificial Stalking Horse, they are surrounded, and gently driven towards the Net, never coming on them in a direct Line, but by Windings, Turnings, &c. See *STALKING*.

**TUNNING**, a Part of the Process of Brewing, or rather an Operation which is the Sequel thereof. See *BREWING*.

The *Tunning of Beer*, &c. is perform'd various Ways; some being of Opinion 'tis best *tunn'd* as it cools, or begins to come; while others let it stand longer to become ripe.

The most regular Method is to cleanse and *tun* just as it comes to a due Ferment, and gets a good Head; for then it has the most Strength to clear itself. --- What works over is to be supply'd with fresh Beer of the same Brewing.

**TURBAN**, or **TURBENT**, the Head-dress of most of the Eastern and Mahometan Nations. See *HAT*, *CAP*, &c.

A *Turban* consists of two Parts, *viz.* a Cap, and a Shift of fine Linnen, or Taffary, artfully wound in divers Turns about the Cap.

The *Turks* call the Shift *Turbent*; whence we have form'd the Word *Turban*.

The Cap is red or green, without any Brim, pretty deep tho' roundish a top, and quilted with Cotton, but does not cover the Ears. --- About this is wrapp'd a long Piece of



fine, thin Linnen or Cotton, in several Wreaths variously dispos'd.

There is a good deal of Art in the giving a *Turban* the fine Air; and the making them up makes a particular Trade, as the making of Hats does among us.

The *Emirs*, who pretend to be descended of the Race of *Mahomet*, wear their *Turbans* quite green: Those of the other *Turks* are ordinarily red, with a white *Shash*. --- Your genteel People are to have frequent Changes of *Turbans*. --- *M. de Tournesfort* observes, that the *Turban*, all Things consider'd, is a very commodious Dress; and that he even found it more easy to him than his *French Habit*.

The Grand Signior's *Turban* is as big as a Bushel, and so exceedingly respected by the *Turks*, that they dare scarce touch it. --- It is adorn'd with three Plumes of Feathers, enrich'd with Diamonds and precious Stones: He has a Minister on Purpose to look to it, call'd *Tulbentoglan*.

That of the Grand Vizier has two Plumes; so have those of divers other Officers, only smaller, one than another; others have only one; and others none at all. --- The *Turban* of the Officers of the Divan is of a peculiar Form, and call'd *Mugenezek*.

The *Shash* of the *Turks Turban*, we have observ'd, is white Linnen; that of the *Persians* is red Woollen. These are the distinguishing Marks of their different Religions: *Sophi*, King of *Persia*, who was of the Sect of *Ali*, being the first who assum'd that Colour, to distinguish them from the *Turks*, who are of the Sect of *Omar*, and whom the *Persians* esteem Hereticks. See *MAHOMETAN*, &c.

The Word is form'd from the *Arabic* *dar*, or *dur*, *dar*, or *dal*, or *dul*, which signifies to encompass; and *band* or *bend*, which signifies *Shash*, or Scarf, or Band; so that *Durbent*, or *Turbent*, or *Tulbent* only signifies a Scarf, or *Shash*, ty'd round; it being the *Shash* that gives the Denomination to the whole *Turban*.

**TURBARY**, **TURBARIA**, a Right to dig Turf in another Man's Ground; from *Turba* an old *Latin* Word for a Turf. See **TURF**.

Common of *Turbary*, is a Liberty which some Tenants have by Prescription to dig on the Lord's Waste. See **COMMON**.

**TURBARIA** is sometimes also taken for the Ground where Turfs are digged. See **TURF**.

**TURBARIA Bruaria**, particularly denotes a Flaw Turf, or Heath Turf; mention'd in a Charter of *Hanson de Massy*.

**TURBITH**, or **TURPETH**, **TURPETHUM**, a Medicinal Root, brought from the *East Indies*, particularly *Cambaya*, *Surat*, and *Goa*; tho' others will have it, that the true *Turbeth* comes chiefly from *Ceylon*.

The *Turbeth* of the Moderns bears so little Resemblance to that of the Ancients, that 'tis difficult to suppose them the same. --- That sold by our Druggists is longish, about the Thickness of the Finger, resinous, heavy, and of a brownish hue without, and whitish within. --- 'Tis brought to us cloven in the Middle, length-wise, and the Heart or woody Matter taken out.

When in the Ground it shoots out Vines, some whereof creep along the Ground, and the rest wind about the neighbouring Trees and Shrubs.

*Turbeth* is a violent Purgative, and is used in the Dropsy, Palsy, and Apoplexy. See **PURGATIVE**.

It yields a deal of resinous Matter in a spirituous Menstruum, which *Dr. Quincy* observes, does not affect the larger Passages much; but is very active in the smaller Vessels, and glandulous Contortions, which it wonderfully clears of all viscid Adhesions. See **PURGATIVE**.

Some Apothecaries, either thro' Ignorance or Parsimony, substitute white Thapsia, which they call grey *Turbeth*, for the true *Turbeth*; tho' both as to Taste, Colour, and Qualities, they are very different.

It is commonly suppos'd to take its Name *Turbith* from the Violence of its Operation, as *disturbing* the whole Oeconomy.

**Mineral TURBITH**, or **TURPETHUM Minerale**, is a Name which the Chymists give to a yellow Precipitate of Mercury, which purges violently. See **MERCURY** and **PRECIPITATE**.

The Method of preparing it is thus: --- On the dry Powder gain'd by dissolving Mercury in Oil of Vitriol, pour a proper Quantity of warm Rain Water, and the Powder will immediately turn of a yellow Colour. Continue to wash this Powder by repeated Affusions of Water, till the Liquor comes away as insipid and colourless as it was pour'd on, leaving a beautiful yellow Calx at the Bottom of the Vessel, which being gently dry'd at the Fire, is call'd by the Name of *Turbith mineral*.

This Powder is call'd *Mineral Turbith* from the Resemblance it bears to the vegetable *Turbith* of the *Arabians*, in strongly purging the most internal Recesses of the Body; for tho' it be insipid upon the Tongue, yet it is possessed of very considerable Virtues. --- Being boild with Water, it loses more of its Salts, and thereby grows milder, and more

safe; so it does by being deflagrated twice or thrice, or distill'd with Spirit of Wine.

A very few Grains of this *Turbith* will prove emetic and purgative. --- It is also accounted an excellent Medicine in the Cure of the Venereal Disease: But as it operates with considerable Violence, it ought not to be given, unless the Viscera are known to be sound. See **PURGATIVE**.

This appears to have been the grand Secret of *Paracelsus*, which, in his scarce *German* Book of Hospital Medicines, he praises so extravagantly for the Venereal and all Chronical Diseases. --- *Sydenham* also commends it in Venereal Cases, given in the Quantity of six or eight Grains, in strong Habits of Body, so as to prove emetic; but when imprudently used, it is apt to give the Dysentery. See **VENEREAL Disease**.

**TURBINATED**, is a Term frequently apply'd by Naturalists to Shells, and other Bodies; to denote them of a Conical Figure, representing a Peer or a Top. See **SHELL**.

**TURBO**, in Meteorology, a *Whirlwind*. See **WHIRLWIND**.

**TURCOISE**, or **TURQUOIS**, in Natural History, a precious Stone, of a blue Colour; ordinarily opaque, but sometimes a little transparent. See **PRECIOUS Stone**.

There are *Turcoises* both *Oriental* and *Occidental*, of the new Rock and the old.

The *Oriental* partakes more of the blue Tincture than the green; and the *Occidental* more of the green than the blue. --- Those of the old Rock are a deep blue, and those of the new Rock more whitish, and don't keep their Colour.

The *Oriental* ones come from *Persia*, the *Indies*, and some Parts of *Turky*; and some even suppose that 'tis hence they derive their modern Name *Turquoise*. --- The *Occidental* are found in various Parts of *Europe*, particularly *Germany*, *Bohemia*, *Silesia*, *Spain*, and *France*.

*Turcoises* all grow of a round or oval Figure: They cut easily; and besides Seals, which are frequently engrav'd on them, some are form'd into Crucifix's, or other Figures near two Inches high; tho' *Boetius* mistakenly affirms, that none have been known to exceed the Bigness of a Walnut.

The Ancients attribute a Kind of Sympathetic Virtue to the *Turquois*. --- 'Tis commonly suppos'd, that it changes Colour, or breaks, at the Death, Sickness, or even Misfortune of the Person who bears it; that it disagrees with marry'd People, and even breaks on their Fingers; that it marks all the Changes and Accidents that happen in the Body of the Wearer, by correspondent Changes in its Colour; and that it is for this Reason the Ladies have forbore the Use of it. --- *De Boer* endeavours to account for all these Effects from natural, and even probable Causes.

The *Turquois* is easily counterfeited; and that so perfectly, that 'tis impossible to discover the Deceit, without taking it out of the Collet.

The *Greeks* and *Latins* call it *Calais*, and *καλαίς*; and it appears to have had a Place in the Rationale of the High Priest of the *Jews*.

In the Memoirs of the Academy of Sciences, we have a very curious Account of the Formation of the *Turquois*, the Manner of giving it the blue Colour, &c. by *M. Reaumur*. --- The *Turquois*, he observes, is one of the softest of precious Stones, its Hardness scarce exceeding that of a Crystal, or a transparent Pebble; tho' some are much harder than others; and still the harder, *ceteris paribus*, the more valuable, by Reason of the Vivacity of the Polish, which is always proportionable to the Hardness.

*Risnel*, a Jeweller, and the Author of a scarce Treatise call'd *Mercure Indien*, estimating the several precious Stones, sets a hard *Turquois*, whose Blue is neither bright nor deep, on the Foot of the most perfect Emeralds, that is, on a Level with a Diamond. --- Those with any Defect he only values at a *French Crown* the Carat.

*Tavernier* assures us, there are but two Mines of *Turquoises* known in all the Earth, and those are both in *Persia*; the one call'd the *Old Rock*, near a Town call'd *Neabong*, three Days Journey to the North East of *Meebet*: The other call'd the *New Rock*, is five Days Journey. --- The latter, he adds, are but little valued; and the King of *Persia* has for many Years prohibited the digging in the former for any but himself. --- *M. Reaumur* takes the *Old Rock* to be now exhausted; in effect the common Division of *Turquoises* into the *Old Rock*, or *Oriental*, and *New Rock*, or *Occidental*, is very arbitrary and precarious. --- All the best, and most perfect, grow they where they will, in *India* or *Europe*, are reckon'd among the former, and the rest among the latter.

Near *Simore*, in the lower *Langue doc*, are several considerable Mines of *Turquoises*; but that fine blue Colour admir'd in the *Turquois*, is not natural to these Rocks; the prevailing Colour being sometimes white, and sometimes much like that of *Tripoli* and *Venice*. The other precious Stones are dug out of the Mine with all their Colour, to the Force whereof nothing can be added, tho' it may frequently be



be diminish'd, as we see Fire bring down the too deep Colour of the Saphir, and quite take away that of a pale Saphir : These *Turquoises*, on the contrary, are naturally whitish or yellowish, of a Colour as common as that of a Free-stone ; and by opposing them for some Time to the Action of the Fire, they assume a blue Colour.

It seems a Paradox, and yet M. *Reaumur* has made it exceeding probable, that *Turquoises* are originally the Bones of Animals. --- In the Mines in *France*, Pieces have several times been found in the Figure of Teeth, Bones of the Arms, Legs, &c. And *Turquoises* which are yet imperfect or ill form'd, are apparently compos'd of Laminæ or Leaves like those of Bones, between which some petrifying Juice insinuating itself, binds them close together : And still, the softer, and more imperfect the Stones are, the more distinguishable are the different Directions of the Fibres and Laminæ, with their Intersections, and the greater Resemblance they bear to fractur'd Bones, and the less to any kind of Stones known.

To give them the blue Colour, they dry them awhile in the Air, then heat them gradually in a Furnace made after a particular Manner. If they be heated too hastily, the Humidity between the Lamina, wanting Time to evaporate all, will separate into Scales or Flaws. Some of the Stones require a greater Degree of Heat to bring them to their Colour than others ; and even in large Pieces, several Parts ordinarily require several Degrees of Heat.

On this Account a world of Care is to be taken in the Heating them ; for the Fire, which gives them their Blue by Degrees, if they be expos'd beyond a certain Degree, takes it away again.

M. *Reaumur* accounts for their taking a blue Colour by Heat, very well : When fresh cut out of the Rock, it seems, their Substance is found sprinkled and streak'd all over with Spots, Veins, little Circles, &c. of a black-blue Colour : These he takes to be Remains of a deep blueish Matter, which the Fire rarefying, spreads and diffuses throughout the whole Substance of the Stone. --- This Matter, again, he concludes to have been either originally the Juice contain'd in the Bones, since mix'd and coagulated with the petrifying Juice, or some other Mineral Matter insinuated into the Pores of the Stone.

The great Defect of all *Turquoises* is, that in Time they lose their blue Colour, and become green ; and then cease to be of any Value.

TURF, or PEAT, a blackish sulphurous Earth, us'd in several Parts of *England*, *Holland*, and *Flanders*, as Fuel. See FUEL.

In *Flanders*, their *Turf* is dug or pared from off the Surface of the Earth, and cut in Form of Bricks. --- The *Gramen*, a Species of Grass growing very thick on the *Turf* Earth, contributes greatly, when dry, to the Maintenance of the Fire.

The *Dutch* draw their *Turf* from the Bottom of the Dikes or Canals which run across most of their Lands ; by which Means they not only supply the Defect of Wood, which is very great in most of the United Provinces, but also keep their Dikes clear and navigable : This *Turf* Earth is very black. As they take it up from the Bottoms of the Dikes, they spread it about the Edges, of such a Thickness, as may be reduc'd to three Inches when moderately dry'd. --- In this Condition they cut it into Pieces or *Turfs* seven or eight Inches long, and three broad ; and, to compleat the drying, lay them up in Heaps, and at last in Stacks.

In the North of *England*, *Scotland*, &c. *Turf* or Peat is dug out of a soft, moist, rotten Earth, call'd *Peat-Moss* : For the Formation whereof, see Moss.

They dig horizontally from the Surface, to the Depth of about four Foot, with a Spade, which at once fashions and takes them out in Parallelopipeds nine or ten Inches long, and three square ; which are spread on the Ground to drain as fast as dug ; and then set up an end three or four against each other, for the Wind to blow thro' them ; and at last stack'd or housed.

The Pits or Dikes in a few Years fill up again, and afford a fresh Crop.

TURFING Spade, among Husbandmen, is an Instrument us'd to under-cut the *Turf*, after it is mark'd out with a Trenching Plough.

TURGESCE, a Swelling or growing *turged* or bloated. --- From the *Latin*, *turgere*.

TURIONES, the first young tender Shoots which Plants do annually put forth. See GEM, CYON, &c.

TURKEY Company. See COMPANY.

TURLUPINADE, a Term us'd chiefly among the *French* for a low dry Jest, or Witticism. --- The Occasion of the Name is deriv'd from a famous Comedian at *Paris*, call'd *Turlupin* ; whose Talent, like that of our *Pinkethman*, consisted chiefly in raising a Laugh by miserable Puns and Points.

TURLUPINES, TURLUPINI, a Sect of Hereticks, or rather of People who made publick Profession of Impudence, going naked, without so much as covering their Privy Parts,

and having to do with Women, like the Cynicks, in open Market.

They call'd their Sect the *Fraternity of the Poor*, and spread themselves over *England* and *France*.

They are said by some to have had their Name *Turlupini*, quod ea tantum habitarent loca que lupis exposita erant.

They attempted to settle themselves at *Paris* in 1372, but were a great Part of them burnt, with their Books ; as is related by *Gaguin* and *du Tillet* in the Life of *Charles V.*

TURMERIC, a Root us'd by the Dyers to give a yellow Colour, call'd in *Latin*, *Curcuma Officinarum*. See DYING.

'Tis yellow both within and without Side, very hard, as if petrify'd, and not unlike, either in Figure or Size, to Ginger. --- The Leaves it produces are like those of white Hellebore ; its Flowers rise in Manner of a Spica or Ear ; and its Fruit rough like our new Chestnuts.

'Tis brought chiefly from the *East-Indies* ; tho' the Island *Madagascar* does likewise afford it. --- You are to chuse that which is big, new, resinous, hard to break, and heavy.

Some People have mistakenly imagin'd there was a Native red *Turmeric* ; their Error was owing to this, that the yellow Root, as it grows old, turns brown ; and when pulveriz'd reddish.

'Tis much us'd by the Glovers, &c. to dye their Gloves ; as also by the Founders, &c. to give a Gold Colour to their Metals. --- The *Indians* use it to dye their Rice, and other Foods, of a yellow Colour ; whence some call it *Indic Saffron*.

Our Dyers don't find that it gives so steady a Yellow as the Luteola or Greening Weed ; but 'tis admirable to brighten and heighten the red Colours dyed with Cochineel or Vermillion ; as Scarlets, &c.

*Turmeric* is us'd in Medicine by Way of Decoction, Infusion, Powder, &c. with other Ingredients, in the Jaundice, Hypochondriac, Leucophlegmatic, and Cachectical Constitutions.

TURN, is used for a circular Motion ; in which Sense coincides with Revolution. See REVOLUTION.

TURN, in Clock or Watch Work, particularly denotes the Revolution of a Wheel or Pinion. See WHEEL, PINION, &c.

In Calculation, the Number of *Turns* which the Pinion hath in one *Turn* of the Wheel, is commonly set down as a Quotient in common Arithmetic, thus, 5)60(12, where the Pinion 5 playing in a Wheel of 60, moveth round 12 times in one *Turn* of the Wheel : Now, by knowing the Number of *Turns*, which any Pinion hath in one *Turn* of the Wheel it worketh in, you may also find how many *Turns* a Wheel or Pinion hath at a greater Distance ; as the Contrat-wheel, Crown-wheel, &c. by multiplying together the Quotients, and the Number produc'd, is the Number of *Turns* ; as in this Example :

$$\begin{array}{r} 5) 55 (11 \\ 5) 45 (9 \\ 5) 40 (8 \end{array}$$

The first of these three Numbers has 11 *Turns*, the next 9, and the last 8. If you multiply 11 by 9, it produces 99 ; that is, in one *Turn* of the Wheel 55, there are 99 *Turns* of the second Pinion 5, or the Wheel 40, which runs concentrical, or on the same Arbor with the second Pinion 5. --- If you multiply 99 by the last Quotient 8, it produces 792, which is the Number of *Turns* the third Pinion 5 hath.

TURN is also us'd for the Sheriff's Court, kept twice a Year, viz. a Month after *Easter*, and within a Month after *Michaelmas*. See SHERIFF and COURT.

From this Court none are exempted but Archbishops, Bishops, Earls, Barons, Religious Men and Women, and all such as have Hundreds of their own to be kept.

It is a Court of Record in all Things that pertain to it and is also the King's Leet through all the County, whereof the Sheriff is Judge ; this Court being incident to his Office.

It is call'd the Sheriff's *Turn*, because he takes a *Turn* Circuit thro' the Shire, holding the same in the Name of the King. See SÆCTA REGALIS.

TURN-pike, a Gate set up across a Road, with a small Officer for the Purpose, in order to stop Travellers, Waggons, Coaches, &c. to take Toll of them, towards repairing and keeping the Roads in repair. See ROAD.

TURN-pike is also us'd in the Military Art, for a Gate stuck full of Spikes, to be plac'd in a Gap, or Breach, the Entrance of a Camp ; to keep off an Enemy.

The *Turn pike* is a Spar of Timber, twelve or fourteen Feet long, and about six Inches Diameter ; of a square Form ; and bored with Holes, one right under another, of an Inch Diameter ; the Axis of the Holes being parallel one from another, and to go in from each Side. These are or Prickers that are driven into the Holes, and are five or six long, pointed with Iron ; and with Wedges or Saws driven hard into the Holes.



Two of these fasten'd together with an Iron Chain and Staple, six Inches long, are of great Use to stop the Enemy in the Breaches or elsewhere.

Those intended to be thrown in Breaches, must be made of Oak; and need not be so big, or the Pickets so long.

**TURNADO** or **TORNADO**, a Wind which on some Coasts blows all Night from the Shore. See **WIND**, **WHIRL-WIND**, **TRADE-WIND**, **MONSOON**.

**TURNAMENT** or **TOURNAMENT**, a martial Sport or Exercise, which the ancient Cavaliers used to perform, to shew their Bravery and Addrels.

The first *Turnaments* were only Courses on Horseback, wherein the Cavaliers tilted at each other with Canes, in manner of Lances; and were distinguish'd from Jutts, which were Courses accompanied with Attacks and Combats with blunted Lances and Swords.

Others say, it was a *Turnament*, when there was only one Quadril or Troop; and that where there were several to encounter each other, it was a *Jutt*: but 'tis certain the Two became confounded together in process of Time; at least we find them so in Authors. See **JUTT**.

The Prince who publish'd the *Turnament*, used to send a King at Arms with a safe Conduct, and a Sword to all the Princes, Knights, &c. signifying that he *Intended a Turnament and a Clashing of Swords, in the Presence of Ladies and Damfels*; which was the usual Formula of Invitation.

They first engaged Man against Man, then Troop against Troop; and after the Combat, the Judges allotted the Prize to the *Best Cavalier, and the best Striker of Swords*; who was, accordingly, conducted in Pomp, to the Lady of the *Turnament*, where, after thanking her very reverently, he saluted her, and likewise her two Maids.

These *Turnaments* made the principal Diversion of the XIIIth and XIVth Centuries. --- *Munster* says, it was *Henry the Fowler, Duke of Saxony*, and afterwards Emperor, that first introduced them; but it appears from the Chronicle of *Tours*, that the true Inventor of this famed Sport, was one *Goffrey, Lord of Preuilli*, about the Year 1066.

From France they passed into England and Germany. --- The *Historia Byzantina* tells us, That the Greeks and Latins borrowed the Use thereof from the Franks; and we find mention made of them in *Cantacuzana*, *Gregorias*, *Bessarion* and others of the late Greek Authors.

*Budens* derives the Word from *Trojana agmina*; others from *Trojamentum, quasi ludus Trojae*. *Ménage* deduces it from the Latin, *Tornensis*, or the French, *Tourner*, in regard the Combatants turn'd and twisted this way and that. *M. Paris* calls them in Latin, *Hastiludia*; *Neubrigensis*, *Meditationes Militares*; others *Gladiatura*, others *Decursiones ludicae*, &c.

Pope *Eugenius II.* excommunicated those who went to *Turnaments*, and forbade them Burial in holy Ground. --- *K. Henry II. of France* died of a Wound received at a *Turnament*. --- One *Chiaoux*, who had assisted at a *Turnament* under *Charles VIII.* said very happily; *If it be in Earnest, 'tis too little; If in Jest, too much.*

'Tis to the Exercise of *Turnaments* that we owe the first Use of Armories; of which, the Name Blazonry, the Form of the Escutcheons, the Colours, principal Figures, the Mantlings, Labels, Supporters, &c. are undeniable Evidences. See **ARMS**.

In Germany, 'twas anciently a Custom to hold a solemn *Turnament* every three Years, to serve as a Proof of Nobility. --- For the Gentleman who had assisted at Two, was sufficiently blazon'd and publish'd, i. e. he was acknowledged Noble, and bore two Trumpets by way of Crest on his *Turnament* Cask. --- Those who had not been in any *Turnaments*, had no Arms, though they were Gentlemen. See **NOBILITY**, **DESCENT**, &c.

**TURNETUM**, in our old Law books, a Duty paid to the Sheriff for holding his Turn or County-Court. See **TURN** and **SHERIFF**.

**TURNING**, a Branch of Sculpture; being the Art of fashioning hard Bodies, as Brass, Ivory, Wood, &c. into a round or oval Form, in a Lathe. See **LATHE**.

*Turning* is performed, by putting the Substance to be turned, upon two Points, as an Axis; and moving it about on that Axis; while an edge Tool set steady to the Outside of the Substance, in a Circumvolution thereof, cuts off all the Parts that lie further off the Axis, and makes the Outside of that Substance Concentric to the Axis.

The Invention of *Turning* appears to be very ancient. --- Some, indeed, to do Honour to the Age, will have it brought to Perfection by the Moderns; but if what *Pliny*, and some other ancient Authors relate, be true, that the Ancients turned those precious Vases, enrich'd with Figures and Ornaments in Relief, which we still see in the Cabinets of the Curious; it must be owned, that all that has been added in these Ages, makes but a poor Amend for what we lost of the manner of *Turning* of the Ancients. See **SCULPTURE**.

The principal Instruments used in *Turning*, beside the Lathe, are Chissels and Mandrels of various Forms; *The Description whereof, see under their proper Articles.*

**TURNSOLE**, **TOURNOL** or **TORNOL**. See **TORNOL**.

**TURPENTINE**, **TEREBENTHINA**, a transparent Gum or Resin flowing either Naturally or by Incision, from several fatty resinous Trees; such as the *Terebinthus*, Larch, Pine, Fir, &c. See **GUM** and **RESINIFEROUS**.

We distinguish several Kinds of *Turpentine*s; as that of *Chio*, that of *Venice*, that of *Bordeaux*, that of *Cyprus*, *Strasbourg*, &c.

The *Turpentine* of *Chio*, which is the only genuine Kind, and that which gives the Denomination to all the rest, is a whitish Resin, bordering a little on the Green, very clear and a little odoriferous; drawn by Incision from a Tree called *Terebinthus*, very common in that Island, as also in *Cyprus*, and some Parts of France and Spain.

The Gum must be chosen of a Solid Consistence, almost without either Taste or Smell, and not at all Tenacious, which distinguishes it from the false *Turpentine* of *Venice*, commonly substituted for it, which has a strong Smell, a bitter Taste, and sticks much to the Finger. --- This *Turpentine* of *Chio* is indisputably the best; but its Scarcity occasions it to be little in use.

The *Turpentine* of *Venice*, is falsely so called, for though there was a *Turpentine* anciently brought from *Venice*, yet that now so called, comes all from *Dauphine*. --- 'Tis liquid, of the Consistence of a thick Syrop, and whitish; and flows either spontaneously, or by Incision from Larches, Firs and Pines, chiefly in the Wood de *Pilatze*.

That flowing naturally, call'd by the Peasants, *Bijon*, is a kind of Balm not inferior in virtue to that of *Peru*, to which it is frequently substituted. --- That drawn by Incision, after the Tree has ceas'd to yield spontaneously, is of very considerable Use, in several Arts, and 'tis even of this that Varnish is made. See **VARNISH**.

It must be chosen White and Transparent, and Care be taken it hasn't been counterfeited with Oil of *Turpentine*.

The *Turpentine* of *Bordeaux* is white and thick as Honey. --- It does not ooze from the Tree in the Manner it is sent to us; but is properly a Composition, wherein, among other Ingredients, is a white hard Sort of Resin called *Galipot*. See **PITCH**.

The *Turpentine* of *Strasbourg*, *Dantzic*, &c. is that most commonly used among us; and is prefer'd, by our People, to that of *Venice*, which it is distinguish'd from, by its green Hue.

The Uses of *Turpentine* in Medicine, are innumerable. --- 'Tis a great Vulnerary, and very Detergent, and as such is prescribed in all Abscesses and Ulcerations, &c. It promotes Expectoration, and as such is prescribed in Diseases of the Lungs and Breast: But it is most famous for clearing the Urinary Passages, and as such prescribed in Obstructions of the Reins, in Gonorrhoeas, &c.

**OIL of TURPENTINE**. --- There are two Kinds of Oils drawn from *Turpentine* by Distillation; the first White, the second Red; both esteem'd as Balsoms proper for the Cure of Wounds, Chilblains, &c. But they are so little used among us, that 'tis not easy to procure either of them.

What is commonly sold under the Name of *Oil of Turpentine*, or *Ethereal Oil*, is only a Distillation of the Resin called *Galipot*, fresh from the Tree. --- It is used with Success in the Cure of green Wounds, as also by the Painters, Farriers, &c. --- To be good, it must be clear and white as Water, of a strong penetrating Smell, and very inflammable.

**TURUNDA**, in Chirurgery, a Tent; or any thing to be thrust into an Orifice or Cavity. See **TENT**, &c.

**TUSCAN**, in Architecture, the first, simplest, and most Massive of the five Orders. See **ORDER**.

The *Tuscan Order* takes its Name from an ancient People of *Iydia*, who coming out of *Asia* to people *Tuscany*, first executed it in some Temples, which they built in their new Plantations.

*Vitruvius* calls the *Tuscan*, the *Rustic Order*; with whom agrees *M. de Chambray*, who in his Parallel, says, it ought never to be used but in Country-houses and Palaces. *M. le Clerc* adds, that in the manner *Vitruvius*, *Palladio* and some others, have ordered it, it does not deserve to be used at all. But in *Vignola's* Manner of Composition, he allows it a Beauty, even in its Simplicity; and such as makes it proper not only for private Houses, but even for public Buildings, as in the Piazzas of Squares and Markets; in the Magazines and Granaries of Cities; and even in the Offices and lower Apartments in Palaces.

The *Tuscan* has its Character and Proportions, as well as the other Orders; but we have no ancient Monuments, to give us any regular *Tuscan Order* for a Standard.

*M. Perrault* observes, that the Characters of the *Tuscan* are nearly the same with those of the *Doric*; and adds, that the *Tuscan* is, in effect, no other than the *Doric*, made somewhat stronger, by the shortning of the Shaft of the



Column, and simpler, by the small Number, and Largeness of the Mouldings. See DORIC.

*Vitruvius* makes the whole Height of the Order 14 Modules, wherein he is followed by *Vignola*, M. le Clerc, &c. — *Serlio* only makes it 12. — *Palladio* gives us one *Tuscan* Profile; much the same as that of *Vitruvius*; and another too rich: On which Side *Scamozzi* is likewise faulty. Hence it is, that that of *Vignola*, who has made the Order very regular, is most follow'd by the Modern Architects. See COLUMN.

Of all the Orders, the *Tuscan* is the most easily executed; as having neither Triglyphs nor Dentils, nor Modillions to confine its Intercolumns. — On this account the Columns of this Order may be ranged in any of the five Manners of *Vitruvius*, viz. the *Picostyle*, *Sistyle*, *Eustyle*, *Diastyle* and *Areostyle*. See INTERCOLUMNATION.

For the Parts and Members of the *Tuscan* Order, their Proportions, &c. see CAPITAL, BASE, PEDESTAL, FREEZE, &c.

**TUSCULAN**, in Matters of Literature, a Term frequently used in the Phrase *Tusculan Questions*. — *Cicero's Tusculan Questions*, are Disputations on several Topicks in Moral Philosophy, which that great Author took Occasion to denominate from the *Tusculanum*; a Country Seat or Villa, where they were compos'd, and where he lays the Scene of the Dispute.

They contain Five Books; the First on the Contempt of Death; the second of enduring Pain; the third on asswaging Grief; the fourth on the other Perturbations of the Mind; and the last, to shew that Virtue is sufficient to a happy Life.

**TUSKES** or **TUSKS** of a Horse. See TEETH.

**TUSSIS**, in Medicine, a Cough; a Disease affecting the Lungs, occasioned by a sharp serous Humor, vellicating the Fibrous Coat thereof, and urging it to a Discharge by Spitting, &c. See LUNGS.

When the Humor is so subtil, that the Lungs cannot lay hold of it, to throw it off; or when the Humor is so thick that it will not give Way, it is said to be a *dry Cough*.

Dry Coughs are the most dangerous. — *Hippocrates* says, the Cough ceases, if the Testicles swell. See COUGH.

**TUT**, in Armory, &c. an Imperial Ensign of a golden Globe, with a Cross on it.

**TUTELARY**, **TUTELARIS**, one who has taken something into his Patronage and Protection. See PROTECTION.

'Tis an ancient Opinion, that there are *tutelary* Angels of Kingdoms and Cities, and even of particular Persons, call'd *Guardian Angels*. See ANGEL, DEMON, GENIUS, &c.

The ancient *Romans*, 'tis certain, had their *tutelary* Gods, whom they call'd *Penates*. See PENATES.

And the *Romish* Church to this Day, hold an Opinion not much unlike it. — They believe that every Person, at least every one of the Faithful, has, from the Time of his Birth, one of those *Tutelary* Angels attached to his Person, to defend him from all Temptations; and 'tison this, principally, that their Practice of invoking Angels is founded.

F. *Anthony Maceio*, a *Portuguese* Jesuit, of *Conimbra* has publish'd a large Work in Folio, on the *tutelary* Saints of all the Kingdoms, Provinces and great Cities of the Christian World: *Divi Tutelares Orbis Christiani*, at *Lisbon* 1687. See PATRON, SAINT, &c.

**TUTOR**, in the Civil Law, is one chose to look to the Person and Estate of Children, left by their Fathers and Mothers in their Minority. See GUARDIAN, MINOR and PUBERTY.

By the Custom of *Normandy*, the Father is the natural Tutor of his Children. — A Person nominated Tutor, either by Testament, or by the Relations of the Minor, may decline that Office, if he have Five Children alive; if he have any other considerable Tutorage; if he be under 25 Years of Age; if he be a Priest, or a Regent in an University; if he have any Law Suit with the Minors, &c. See TUTORAGE.

The Marriage of a Pupil, without the Consent of his Tutor, is invalid. — Tutors may do anything for their Pupils, but nothing against them; and the same Laws which put them under a Necessity of preserving the Interest of the Minors, put them under an Incapacity of hurting them. See PUPIL.

Tutor is also used in our Universities, for a Member of some College or Hall, who takes on him the Instructing young Students in the Arts and Faculties.

**TUTORAGE**, **TUTELA**, in the Civil Law, a Term equivalent to Guardianship in the Common Law; signifying an Office imposed on any one, to take care of the Person and Effects of one or more Minors. See MINOR.

By the *Roman* Law, there are three Kinds of Tutorage. — The *Testamentary*, which is appointed by the Father's Testament; The *Legal*, which is appointed by the Law to the nearest Relation; and the *Dative*, which is appointed by the Magistrate.

But in all Customary Provinces, as *France*, &c. all Tutorages are Dative and Elective; and though the Father have

by Testament, nominated the next Relation to his Pupil, yet is not that Nomination of any Force, unless the Choice be confirm'd by that of the Magistrate, &c.

By the *Roman* Law, Tutorage expires at 14 Years of Age; but in *France* not till 25 Years. A Minor quits his Tutorage, and becomes free by Marriage; in which Case a Curator is given him. See CURATOR and GUARDIAN.

**TUTTY**, **TUTIA** or **Lapis TUTIA**, a metallic Soil, thrown off from Brass, in the Furnace; and form'd into Concave Flakes of different Sizes and Thickness; very hard, greyish, and full of little protuberant Grains as big as Pins Heads.

It is found adhering to Rolls of Earth suspended for that Purpose over the Furnaces of the Founders in Brass, to receive the Fumes of the melted Metal. See BRASS and FOUNDERY.

Tutty is now brought chiefly from *Germany*. Anciently it came from *Alexandria*.

To prepare the Tutty for Use, they heat it red Hot three times in a Crucible, among burning Coals; and quench it as often in Rose-water: Then they grind it on a Porphyry Stone, mixing with it as much Rose-water, or Plantain-water as is necessary, till it be brought to a very fine Powder: Then they make it up into little Troches, and thus dry it.

Tutty is very desiccative. Its principal Use is in Diseases of the Eyes, particularly Inflammations; in order to which, it is diluted with Rose-water or Plantain-water, in form of a Collyrium. See COLLYRIUM.

Some use it incorporated with fresh Butter, in form of an Unguent.

In the *London* Dispensatory, it gives Title to a Composition call'd Ointment of Tutty, good for Eye Diseases, and frequently used by Surgeons with other Desiccatives to cicatrize Ulcers. — 'Tis also good in the Hemorrhoids.

**TWA-Nights-Geste**, in our ancient Customs. See THIRDNIGHTS-areen-Hynde.

If the *Twa-Nights-geste* did any harm to any, his Host was not answerable for it, but himself.

**TWELF-HINDUS**, in our ancient Customs, the same with *Thanus*. See THANE.

Among the *English Saxons*, every Man was valued at a certain Price; and where an Injury was done, either to the Person or Goods, a pecuniary Mulct was imposed, and paid in Satisfaction of that Injury, according to the Worth and Quality of the Person to whom it was done. — And hence all Men were ranked in three Classes; which see in HINDEN.

Those who were worth 1200 s. were call'd *Twelf-hindus*, and if an Injury was done to them, Satisfaction was to be made accordingly.

**TWELFTH-DAY** or **Tide**, the Festival of the Epiphany, or the Manifestation of Christ to the Gentiles; so call'd, as being the *Twelfth-day*, exclusively, from the Nativity or *Christmas-day*. See EPIPHANY.

**TWELVE-MONTH**, the Space of a Year, according to the Calender Months. See YEAR and MONTH.

**TWELVE-MEN**, *Duodecim homines Legales*, otherwise call'd the Jury or Inquest, is a Number of Twelve Persons, or upwards to Twenty-four; by whose Oath, as to Matters of Fact, all Trials pass, both in Civil and Criminal Cases, through all Courts of the common Law in this Realm. See JURY and TRIAL.

In Civil Cases, when Proof is made of the Matter in Question, the Point of Fact, whereon they are to give their Verdict, is deliver'd to them; which is call'd the *Issue*. — Then they are put in mind of their Oath, and are by the Judge's summing the Evidence, sent out of Court by themselves, to consider on the Evidence on both Sides, till they be agreed.

In Causes Criminal, there are two Sorts of Inquests: One call'd the *Grand Inquest*, the other the *Inquest of Life and Death*.

The first is so call'd, because it consists of Sixteen Persons at least; or because all Causes Criminal or Penal pass through their Hands; whereas the other Inquest is especially appointed for one or more Matters.

Those of the Grand Inquest are call'd by *Bracton*, *duodecim Milites*, because they were wont to be Knights; if so many could be had.

Their Function is to receive all Presentments of any Offence, and accordingly to give their general Opinion of them, by writing either the Words *Billa vera* upon the Bill of Presentment, which is an Indictment of the Party presented; or else *Ignoramus*; which is a doubting of the Fact presented. See ENQUEST and INDICTMENT.

**TWI-FOLLOWING Ground**, in Husbandry, is the Tilling or Ploughing it a second Time. See TILLING and FOLLOWING.

**TWI-HINDI**, among our *Saxon* Ancestors, were Men valued at 200 s. See TWELFHINDUS.

These Men were of the lowest Degree; and if they were killed, the Mulct was 30 s. — Thus in *Leg. Hen. 1. c. 20* de Twihindi hominis interfecti, *ecce debet reatu fieri* &c.



*gem.* — Where, Note, that this was not an Introduction of new Law, but a Confirmation of the Old, made in the Reign of King *Afred.*

**TWINS.** See *GEMINI, DIDYMI, &c.*

It has been greatly disputed, which of two *Twins* is to be esteem'd the Elder. — The Faculty of *Montpellier* have given it, that the latter borne is to be reputed the Elder; because first conceived: But by all the Laws which now obtain, the first-born enjoys the Privileges of Seniority; and the Custom is confirm'd by the Instance of *Esau* and *Jacob.*

But if two *Twins* be born so intermix'd, that one cannot distinguish which of the Two appeared the first; it should seem that neither the one nor the other can pretend to the Right of Primogeniture, which ought to remain in Succession, by reason of their mutual Concourse.

In such Case, some would have the Decision left to the Father, and othersto the Hazard of a Lot. Sometimes there are born Three *Twins*, as in the Instances of *Horatii* and *Curiatii*; and sometimes there have been known Four, or even Five or more. See *FOETUS, EMBRYO, &c.*

**TWIST of a Rope, Cord, &c.** See *ROPE, CORDAGE, CABLE, &c.*

**TWIST**, is also used in Architecture, for a Piece of Timber, otherwise called a *Girder*. See *GIRDER*.

**TWIST**, again, is used for the Inside, or flat Part of a Man's Thigh, upon which a true Horseman rests when on Horse-back. See *THIGH*.

To **TWIST a Horse**, is violently to wring or twist his Testicles twice about, which causes them to dry up, and deprives them of Nourishment, and reduces the Horse to the same State of Impotency with a Gelding. See *GELDING*.

**TWISTING of Silk, &c.** see *SILK, &c.*

**TYCHONICK System**, or *Hypokepsis*, is an Order or Arrangement of the heavenly Bodies, of an intermediate Nature between the *Copernican* and *Ptolomaic*, or participating alike of them both. See *SYSTEM*.

It takes its Name from *Tycho Brahe*, a noble Dane; of whom some Account is hereafter given, under the Article *URANISBOURG*.

In this System, the Earth is, with *Ptolomy*, placed in the Middle, and suppos'd immoveable; and the Sun and Moon to revolve in Orbits, respecting the same as a Centre: But the other five Planets are suppos'd, with *Copernicus*, to revolve round the Sun as their Centre. — So that the Orbits of the three superior Planets include the Earth, but not those of the inferior ones; by reason they are nearer to the Sun than the Earth is.

Accordingly, the Heavens are here suppos'd to be fluid; and to consist of three different Orbs or Spheres; the first moveable, suppos'd to make a Revolution in 24 Hours; the second the Sphere of the Planets; and the third the Firmament, or Region of fix'd Stars.

See the *Disposition of the heavenly Bodies in this System*, represented in *Plate Astronomy*, Fig. 45.

Some later Astronomers finding the *Ptolomaic* System disagree with the Phenomena; and not daring to make the Earth move; but at the same time disliking the *Tychonic* Notion of two Centres, one of them moveable, viz. the Sun; and the other fix'd, the Earth; have fram'd a new System out of the *Ptolomaic* and *Tychonic*, call'd the *Semi-Tychonic*; wherein, not only the Sun and Moon, but *Jupiter* also, and *Saturn*, are suppos'd to move in Excentrics or Deferents, respecting the Earth as a Centre, tho' revolvent at the same time in their respective Epicycles. — But even here, the inferior Planets are still suppos'd to move round the Sun as their Centre; their Phases, observ'd with the Telescope, being no otherwise accountable for.

**TYLE or TILE**, in Building, a sort of thin facitious Stone, used in the Roofs, &c. of Houses; or, more properly, it is a kind of fat, clayey Earth, knodden and moulded of a just Thickness, dried and burnt in a Kiln, like a Brick, and used in the Covering of Houses. See *BRICK* and *COVERING*. It is thus called from the *French, Tuile*, of the *Latin, Tegula*.

*Tyles* are made, says *M. Labyrinth*, of better Earth than Brick-earth, and something nearer akin to the Potter's Earth.

According to Stat. 17 *Edw. IV.* the Earth for *Tyles* should be cast up before the first of November, shired and turned before the first of February, and not made into *Tyles* before the first of March; And should likewise be tried and sever'd from Stones, Marle and Chalk.

For the Method of *Burning them*, see *BRICK*.

As to the applying of *Tyles*; some lay them dry, as they come from the Kiln, without Mortar or any thing else: Others lay them in a kind of Mortar made of Loam and Horse-dung. — In some Parts, as in *Kent*, they lay them in Moss.

There are various Kinds of *Tyles*, for the various Occasions of Building; as *Plain, Thack, Ridge, Roof, Crease,*

*Gutter, Pan, Crooked, Flemish, Corner, Hip, Dorman, Dormar Scallop, Astragal, Traverse, Paving and Dutch Tyles.*

*Plain or Thack Tyles*, are those in ordinary Use for the Covering of Houses. They are squeez'd flat, while yet soft, in a Mould. — They are of an oblong Figure, and by Stat. 17<sup>o</sup> *Edw. IV.* are to be 10  $\frac{1}{2}$  Inches long; 6  $\frac{1}{4}$  broad, and Half an Inch and Half a Quarter thick. But these Dimensions are not over-strictly kept to.

*Ridge, Roof or Crease Tyles*, are those used to cover the Ridges of Houses; being made circular breadth-wise, like a half Cylinder. — These are what *Pliny* calls *Laterculi*; and are, by Statute, to be 13 Inches long, and of the same Thickness with the *Plain Tyles*.

*Hip or Corner Tyles*, are those which lie on the Hips or Corners of Roofs. — As to Form; they are first made flat, like *Plain Tyles*, but of a Quadrangular Figure, whose two Sides are right Lines, and two Ends, Arches of Circles, one End being a little Concave and the other Convex; the convex End to be about Seven times as broad as the concave End; so that they would be Triangular, but that one Corner is taken off: Then, before they are burnt, they are bent on a Mould, breadth-wise, like *Ridge Tyles*. — They have a Hole at their narrow End, to nail them on by; and are laid with their narrow End upwards. By Statute, they are to be 10  $\frac{1}{2}$  Inches long, and of a convenient Breadth and Thickness.

*Gutter Tyles*, are those which lie in Gutters or Valleys in Cross-buildings. — They are made like *Corner Tyles*, only the Corners of the broad End are turned back again with two Wings. — They have no Holes in them, but are laid broad End upwards, without any nailing. — They are made in the same Mould as *Corner Tyles*, and have the same Dimensions on the convex Side. Their Wings are each 4 Inches broad and 8 long.

*Pan, Crooked, or Flemish Tyles*, are used in covering of Sheds, Lean to's, and all kinds of flat-roofed Buildings. — They are in Form of an oblong Parallelogram, as plain *Tyles*; but are bent breadth-wise forwards and backwards, in Form of an S, only one of the Arches is at least three Times as big as the other; which biggest Arch is always laid uppermost; and the lesser Arch of another *Tyle* lyes over the Edge of the great Arch of the former. — They have no Holes for Pins, but hang on the Laths by a Knot of their own Earth: They are usually 14  $\frac{1}{2}$  Inches long, and 10  $\frac{1}{2}$  broad.

*Dormar, or Dorman Tyles*, consist of a plain *Tyle*, and a triangular Piece of a plain *Tyle*, standing up at right Angles to one Side of a plain *Tyle*, and swept with an Arch of a Circle from the other End, which End terminates in a Point. — Of these *Tyles* there are two Kinds; the triangular Piece, in some, standing on the right, in others on the left Side of the plain *Tyle*. — And of each of these, again, there are two Kinds; some having a whole plain *Tyle*, others but half a plain *Tyle*. But in them all, the plain *Tyle* has two Holes for the Pins, at that End where the broad End of the triangular Piece stands.

Their Use is to be laid in the Gutters, betwixt the Roof and the Cheeks or Sides of the Dormars, the plain Part lying on the Roof, and the triangular Part standing perpendicularly by the Cheek of the Dormar. — They are excellent to keep out the Wet in those Places, and yet are not perhaps known any where but in *Sussex*. — The Dimensions of the plain *Tyle* Part are the same as those of a plain *Tyle*, and the triangular Part is of the same Length, and its Breadth at one End 7 Inches, and at the other nothing.

*Scallop or Astragal Tyles*, are in all respects like plain *Tyles*, only their lower Ends are in Form of an Astragal, viz. a Semicircle, with a Square on each Side. — They are us'd in some Places for Weather *Tiling*.

*Traverse Tyles*, are a kind of irregular plain *Tyles*, having the Pin-holes broke out, or one of the lower Corners broke off. — These are laid with the broken End upwards, upon Rasters, where pinn'd *Tyles* cannot hang.

*Flemish or Dutch Tyles*, are of two Kinds, ancient and modern. — The first were used for Chimney-foot Foot-paces: They were painted with antick Figures, and frequently with Postures of Soldiers, some with Compartments, and sometimes with Moresque Devices; but came much short, both as to the Design and Colours, of the modern ones.

The modern *Flemish Tyles* are commonly used, plaster'd up in the Jambes of Chimneys, instead of Chimney-Corner-stones. — These are better glaz'd; and such as are painted (for some are only white) much better perform'd than the ancient ones.

But both Kinds seem to be made of the same whitish Clay as our white glazed Earthen Ware. — The ancient ones are five Inches three Quarters square, and about three Quarters of an Inch thick: The modern ones six Inches and half square, and three Quarters of an Inch thick.

**TYLERY.** See *TULLERY*.

**TYLWITH**, in Matters of Heraldry and Descent, is sometimes used for a Tribe or Family branching out of another;



ther ; which the modern Heralds more usually call the second or third House.

TYMBER of *Skins*, is the Number of forty Skins. See  
TIMBER.

**TYMPAN**, or **TYMPANUM**, in Architecture, the Ground or Area of a Pediment; being that which is in a Level with the Naked of the Frieze. Or it is the Space included between the three Cornices of a triangular Pediment, or the two Cornices of a circular one. See **PEDIMENT**.

Sometimes the *Tympan* is cut out, and the Part fill'd with an Iron Lattice to give Light; and sometimes it is enrich'd with Sculpture, in Bas Relief, as in the West Front of St. *Paul's*, in the Temple of *Casior* and *Pollux* at *Naples*, &c.

The Word **TYMPAN** is also used for that Part of a Pedestal call'd the *Trunk* or *Dye*. See **PEDESTAL**. See also **DYE**.

**TYMPAN**, among Joiners, is also attributed to the Pannels of Doors. See **PANNEL**.

TYMPAN, among Printers, is a Frame belonging to the Press, cover'd with Parchment, on which every Sheet is placed, in order to be printed off. See *PRINTING Press*.

**TYMPAN** of an Arch, in Architecture, is a triangular Space or Table in the Corners or Sides of the Arch; usually hollow'd and enrich'd, sometimes with Branches of Laurel, Olive-tree, or Oak; or with Trophies, &c. sometimes with flying Figures, as Fame, &c. or sitting Figures, as the Cardinal Virtues. See ARCH.

**TYMPANITES**, or **TYMPANY**, in Medicine, a flatuous Tumor, or Swelling of the Abdomen, or Belly; very hard, equable, and permanent; whereby the Skin is stretch'd so tight, that when struck, it gives a Sound like that of a Drum. See **TUMOR**.

The *Tympanites* is a Species of a Dropsy; but what the Cause and Seat of the Disease is, or what the morbid Matter is that occasions the Tumor, Physicians are not at all agreed. See DROPSY.

Wind certainly makes a principal Part of the morbid Matter; but this is scarce ever found without Water, excepting at the Beginning; so that some will not allow of any Difference between the *Tympany* and the *Afcires*.

Some suppose it to arise from a watery Humour extravasated and rarify'd into Vapour; and by a Property common to it with common Air, corrupting the Parts.

But this *Boerhaave* makes a particular Kind of *Tympanites* or Wind Dropsy; and adds, that it is cured like the *Ascites* or Water Dropsy, by Tapping, &c. See TAPPING and ASCITES.

Others will have the *Tympanites* to arise from the Air's insinuating itself thro' Perforations in the putrid Intestines. --- A *Tympanites* from this Cause, *Boerhaave*, who makes it a peculiar Class, observes, is almost always incurable.

*Willis* sets aside this latter Cause, and accounts for the Disease from an Irregularity in the Animal Spirits belonging to the Viscera, which rushing tumultuarily into the nervous Fibres, bloat them up: Thus is the Peritoneum inflated, the Intestines distended, and the Mesentery, and other Viscera, render'd turgid; and while this is doing, that the Vacuities left in the tumify'd Viscera may be fill'd up, a Quantity of the Humour contain'd in them is rarify'd into Vapour, which presently spreads in Blasts through the vacant Places.

Others account for the *Tympanites* from a Convulsion of the Muscles of the Abdomen, &c.

M. Littre has propos'd a new System of the *Tympanites*, built on a great Number of Observations. -- According to him, it does not proceed from any Convulsion of the Abdominal Muscles, nor from any Air contain'd in the Cavity thereof, or in the Thorax, the Mesentery, or Epiploon; but from the Air inclos'd in the Stomach and Intestines, which swells them excessively.

This Air, always carry'd into those Parts with the Food, maintains a kind of Equilibrium therein; opposing, on the one Hand, the too great Pressure on that long Canal when empty of Food; and finding, on the other Side, in the Spring of the Coats of the Stomach and Intestines, an Obstacle capable of preventing its too great Dilatation.

If this Equilibrium chance to be destroy'd by the Irritation of the Fibres, whose Spring in that Case prevails over that of the Air; this latter is expell'd either upwards or downwards, or both: (whence Belching, &c.) But if the Equilibrium come to be broke by the Force of the Air, render'd superior to that of the Fibres, by those latter being left destitute of Spirits, from the Blood's being impoverish'd after a long Sickness; in that Case, the Air, rarifying itself beyond Measure, swells the Cavities it is contain'd in.

If it be demanded, Why when the Stomach and Intestines are so full of Wind, none of the Wind escapes, either thro' the Anus, or by the Mouth, which uses to be expell'd by those Passages?

M. *Afery* solves the Paradox thus : According to this Theory, the Fibres, both of the Stomach and Intestines have lost their Spring, at least in Part, and are in an imperfect Palsy ; but the Winds or evaded either by the Anus or Mouth, are Winds which these Viscera expel out of their Cavities, by

putting them in a State of Contraction capable of surmounting the Forces which oppose the Egress of the Matters contained in those Cavities. --- These Forces are two Sphincters, one whereof shuts the upper Orifice of the Stomach, and the other the Anus : But paralytic Viscera, *i. e.* Viscera destitute of Spirits, in which alone consists the Strength of the Muscles, cannot overcome the Resistance of those two Muscles. Whence the Wind, therefore, cannot escape thro' its usual Out-lets.

The *Tympanites* rarely kills of itself; but frequently degenerates into an *Afcites*. --- Catharticks rather aggravate than alleviate it: Antihystericks, Antiscorbuticks, Chalybeats, and Strengtheners are of use, before it be fallen into an *Afcites*. Equal Quantities of Leek and Elder Leaves mix'd analytically, is a fam'd Empirical Medicine, which is often prov'd effectual when every thing else had fail'd.

It is usual to apply Carminatives to the Belly, as the Ex-  
 plaſter of Cumin-Seeds, &c. and alſo to uſe Carminative  
 mix'd with Cathartics, Diuretics, &c. internally: But  
 the Diſeaſe proceed from a Paralytic Cauſe, deſtroying the  
 Tone of the Fibres of the firſt Paſſages, what is of Uſe  
 in rectifying of Paralytic Diſorders, where the Tension of the  
 Fibres are inſufficient, will doubtleſs ſerve for the ſame Reaſon  
 of Uſe here. See PALSY.

**TYMPANUM**, *τυμπανον*, *Drum*; a musical Instrument which among the Ancients, consisted of a thin Piece of Leather or Skin, stretch'd upon a Circle of Wood or Iron, or beat with the Hand. See **DRUM**.

**TYPANUM**, **TYPAN**, in Mechanics, is a kind of Wheel plac'd on an Axis or Cylindrical Beam, on the Top of which are two Levers or fix'd Staves, for the more easy turning the Axis about, in order to raise a Weight requir'd. See **WHEEL**.

But the *Tympanum* is much the same with the Peritrochium but the Cylinder of the Axis of the Peritrochium much shorter and leffer than the Cylinder of the *Tympanum*. See PERITROCHIIUM.

**TYMPANUM** of a Machine, is also us'd for any hollow Wheel, wherein one or more People, or other Animals, wait to turn it; such as that of some Cranes, Calanders, &c. See **WHEEL**.

**TYMPANUM**, in Anatomy, or *Membrana TYMPANI*, is thin tender Skin or Membrane, stretch'd upon a Bony Circle in the Meatus Auditorius of the Ear, which it shuts; and is suppos'd to be the immediate Organ of Hearing. See EAR.

The *Tympanum*, popularly call'd the *Drum*, with respect to the erect Posture of the Body, is situate obliquely, facing downwards; whence it is that we hear Sounds coming from below, better than those from above. See *DRUM*.

Its external Surface is a little hollow'd in the Middle. — It is compos'd of two Membranes; or, as others will have it, of only two or more Lamellæ. — It has a Perforation, or at least, a disengag'd Part, which admits of the Passage of Wind, and, in some, of Smoak from the Meatus a Palati.

Behind it is a Cavity of the Os Petrosum, call'd *Tympanum Cavitas*, and by some simply *Tympanum*; wherein are four little Bones, viz. the *Malleolus*, *Incus*, *Stapes*, and *Ossiculare*: Which see under their respective Articles, *MALLEOLUS*, &c.

Within the *Cavitas Tympani*, *Vieussens* has discovered a very fine thin Membrane, serving to shut the Door of the Labyrinth, and prevent the internal Air from having any Communication with the external. --- The *Membrana Tympani* has a remarkable Branch of a Nerve passing on its internal Surface between the Incus and Malleolus, call'd the *Chorda Tympani*. See CHORDA.

The *Tympanum*, Dr. Willis takes to be a kind of preparatory Instrument to Hearing; and its Office to be to receive the first Impressions of the Sound, or the sensible Species, and to convey them duly modify'd and proportion'd to the Sensorium. See SOUND.

Its Office, in effect, with respect to the Sense of Hearing seems to be the same as that of the Pupil of the Eye with regard to Seeing : Each of them prevent the Ingress of too many Rays, temper and soften them, and deliver them, as it were, commensurate to the Sensory ; upon which, if they should fall immediately, they might be apt to spoil its delicate Constitution. See PUPIL.

The *Tympanum*, it's true, does not hear; but it contributes to the better and safer Hearing. — That it may do the Office of a Porter the better, 'tis necessary its Expansion should, like the Pupil, be contracted and relax'd on Occasion; and to this purpose serve the four little Bones above mention'd, which have the same Use in straining and relaxing, as the Bones of the War Drum have in that Instrument. — By means of this Extension and Retraction, the *Tympanum* is made to correspond to all Sounds loud or languid; as the Pupil does to the Degrees of Light. See HEARING.

But what makes the Use of the *Tympanum* of the Ear considerable, is, that there are Instances where the Hearing has been perfect without any Use of a *Tympanum*. — Mr. *Chefelden* relates, that he broke the *Tympanum* in both Ears



of a Dog, yet it did not destroy his Hearing; tho' for some time afterwards he receiv'd strong Sounds with great Horror: He adds, that Mr. St. *Andre* assur'd him, that a Patient of his had the *Tympanum* destroy'd by an Ulcer, and the Auditory Bones cast out, without destroying his Hearing.

TYMPANY, or TYMPANIFES, in Medicine. See TYMPANITES.

TYPE, a Copy of a Model; or a Figure or Character either engraven or printed. See MODEL, CHARACTER, &c.

The Term *Type* is less in use than its Compounds *Prototype* and *Archetype*, which are the Originals that are made without Models. See PROTOTYPE, &c.

The Word is form'd from the Greek, *τυπος*, Figure.

TYPE is also a School Term, much used among Divines, signifying a Symbol, Sign, or Figure of something to come.

In this Sense, the Word is commonly used with relation to *Antitype*, *αντιτυπος*, which is the Thing itself, whereof that is a *Type* or Figure. See ANTI-TYPE.

Thus *Abraham's* Sacrifice, the Paschal Lamb, &c. were *Types* or Figures of our Redemption: The Brazen Serpent was a *Type* of the Cross, &c.

These *Types* were not simple Conformities or Analogies, which the Nature of Things sets on foot between them; nor arbitrary Images arising merely from the casual Resemblance of Things; but there is further requir'd a particular Institution of God to make a *Type*; a particular Declaration of his that it is so.

*Gale* divides *Types* into historical and prophetical. --- The first are those used by the Prophets in their Agitations and Visions: The second, those wherein Things done, or Ceremonies instituted in the Old Testament, prefigure Christ, or Things relating to him in the New Testament.

The ancient Fathers, as well as the modern Criticks, have been greatly divided about the Nature and Use of *Types*, and *typical* Representations, in the Old Testament; and 'tis this makes one of the great Difficulties in understanding the ancient Prophecies, and in reconciling the new and old Testament together. See PROPHECY.

There is no denying but that there were *Types* which the divine Wisdom instituted to be the Shadows and Figures of Things to come; and yet People run into an Excess that Way: Some looking for *Types* in every thing; like *Origen*, who discover'd Mysteries in the very Caldrons of the Tabernacle. --- One should be contented with the more sensible and obvious ones; nor propose any without proving them as much as possible, and shewing that they were really intended for *Types*, in order to justify the Solidity of the Reasoning of the Apostles, who argu'd from them.

A late Author maintains, that not the Fathers only, but St. *Paul* himself was of the Opinion, that "Christianity was all contained in the *Old Testament*, was implied in the *Jewish* History and Law; both which are to be reputed *Types* and Shadows of Christianity." --- In order to which, he quotes *Hebrews* viii. 5. x. 1, and *Co.* ii. 16, 17. --- He adds "That the Ritual Laws of *Moses*, being in their own Nature no other than *Types* and Shadows of future good Things, are to be consider'd as having the Effect of Prophecies." --- This is likewise the Sense of Mr. *Whiston* and others; but the same Author even quotes our Saviour speaking in behalf of this *Typical* Reasoning, in that Passage, *Matthew* xi. 13, where he affirms, that "The Law prophecies; and that he came to fulfil the Law as well as the Gospel, *Matthew* v. 17." *Discourse of the Grounds and Reason of the Christian Religion.*

An ingenious Divine takes this Occasion to observe, that had the Ancients, with the modern Retainers to the *typical* Way, expressly design'd to have expos'd Christianity, they could not have done it more effectually than by thus making every thing *Types* and Prophecies. --- 'Tis no wonder, he adds, That Atheists and Deists scoff at the Credulity of Christians, and reject what is supported by such Folly and Absurdity.

Not that he denies the Reality of such Things as *Types*. --- 'Tis manifest, there were many under the *Old Testament*, such were *Zacharia's* Staves, Beauty and Bands, *c.* xi. 7, 10, 14; such was *Hoseab's* Adulterous Wife, *c.* i. 2; and such were his Children, *v.* 4, 6. --- The Prophets design'd by these to prefigure future Events; but in these Instances the Reader is at once, by the Declaration of the Prophet, made to understand as much, and not left to his own Conjectures about them, after the Events are over.

In effect, all that is urged from Scripture for the *typical* or allegorical Interpretations of the *Jewish* Law, History, Ceremonies, &c. 'tis asserted, may be set aside, without any Violence to the sacred Text, which may be explain'd on more natural and intelligible Principles, and more consistently with Grammar. See ALLEGORICAL.

The Word *τυπος*, we have observed, literally denotes no more than a Copy or Impression of any thing; and accordingly, in our Translation, we find it sometimes render'd by *Print*, sometimes by *Figure*, sometimes by *Fashion*, and

sometimes by *Form*. --- Hence, also, the Word is figuratively applied to denote a moral Pattern; in which Sense it signifies no more than *Example* and *Similitude*.

Again, the Word *εικων*, in Scripture, signifies any thing form'd according to a Model or Pattern; and thus in the Epistle to the *Hebrews*, the Tabernacle, and Holy of Holies being made according to the Pattern shewn to *Moses*, are said to be *Antitypes* or Figures of the true holy Places. --- In the like Sense, St. *Peter* speaking of the Flood and the Ark, whereby Eight Persons were saved, calls Baptism an *Antitype* thereto; by which he expresses no more than a *Similitude* of Circumstances.

The other Words used in Scripture to imply a future Event, prefigured by some foregoing Act, are --- *προδειγμα*, render'd by Imitation and Example; and *σκια*, Shadow.

This last Word is frequently used by St. *Paul*, and applied to the *Jewish* Law, Ceremonies, Priest, &c. which are represented as only *Shadows* of Things to come, or of heavenly Things. 'Tis from such general Expressions, that People were led to mistake the Apostles Design in these Comparisons, and to assert, that all the *Mosaic* Rites were *Types* of, or design'd to signify future Events; and that the Gospel is to be found in the Pentateuch. --- Whereas St. *Paul's* Intent appears no other than to shew the great Advantage of the Gospel over the Law in several Particulars, wherein it has as much Pre-eminence as the Substance has over the *Shadow*.

If the *Shadow* of Things to come, signify a Prefiguration of future Events, what are those Events to which the *Jewish* New Moons, *Col.* xi. 16. or the *Jewish* Meats and Drinks, have a respect? Or, how did the Law of *Moses*, made up of Commands about Persons, Times, Places, and Sacrifices, prefigure a Dispensation, where regard to Sacrifices, holy Persons, Times and Places, are so far from being enjoin'd, that they are declared useless? Can a particular holy Place in the Law, be designed a Prefiguration of a State, where all Places are equally Holy?

Such being the Import of all the Terms used in the *New Testament* Writers seeming to imply any Prefiguration of future Events under the Gospel, we may observe,

1<sup>o</sup> That to argue from *Types*, is only to argue from Examples or Similitudes, and, consequently, all Inferences drawn from such Reasonings, are no farther conclusive, than Reasonings from Similitudes are. --- The Intent of Similitudes is only to help to convey some Ideas more clearly or strongly; so that to deduce Consequences from a Simile, or infer any thing from other Parts of the Simile than what are plainly similar, is absurd.

2<sup>o</sup> It cannot be proved that the Ceremonies of the *Mosaic* Law, were ever design'd to prefigure any future Events in the State of the *Messiah's* Kingdom. --- No such declared Prefigurations are mention'd in the Writings of the *Old Testament*; whatever Notions prevailed among the Writers, who immediately followed. 'Tis granted, that the Apostles argued from the Rites in the *Mosaic* Institution; but it appears to have only been by way of Illustration and Analogy.

There is certainly a general Likeness in all the Dispensations of Providence; an Analogy of things in the Natural as well as the Moral World, from which it is easy arguing by way of Parity; and 'tis very just and usual so to do: But that one of these Dispensations was therefore given to prefigure another that was future, can never be proved, unless it be expressly declared. --- The Land of Promise, we know, was to be a Place where the *Jews* were to enjoy Rest from their Labours; God likewise did, himself, rest the Seventh Day from his Works: Yet, whoever imagin'd God's Rest from the Creation to be prefigurative of the *Jews* Rest in *Canaan*; and is it not equally reasonable to say, that God's Rest on the Seventh Day, prefigured the Entrance of the *Jews* into *Canaan*, as to say, that the *Jews* Rest in *Canaan* prefigured the Rest mentioned by *David* in the *Psalms*?

This will equally imply, that all the following Events in the uniform Course of God's Government, similar to any preceding ones, were design'd to be prefigured; in which Sense, it will readily be owned, that the Rest of the *Jews* was *Typical* of the Rest of Christians.

'Tis in the same manner we are to understand St. *Paul*, where he says, "That Christ our Passover is sacrificed for us." And thus we are to understand *John the Baptist*, when he calls our Saviour the "Lamb of God." --- There was this Similitude of Circumstances, that Christ was slain on the same Day with the Paschal Lamb; that he died about the same time of the Day when the Priests began their Hallel; that not a Bone of the one, or the other was broken. Add, that as the Paschal Lamb was without Blemish, so was Christ without Sin. --- From these and other Circumstances, the Apostle applied the Term *Passover* to Christ.

Thus, also, are we to account for what St. *Paul* calls the Baptism of the Children of *Israel* in the Cloud, and in the



Sea; and for the Comparison betwixt the High Priest entering the Holy Place every Year, and Christ entering into Heaven. See QUOTATION.

TYPE is also a Name given to an Edict of the Emperor *Constantine*, publish'd in 648, to impose a general Silence both on the Orthodox and the Monothelites.

The *Type* ow'd its Original to *Paul* Patriarch of *Constantinople*, who persuaded that Emperor to take away the *Ectesis* compiled and hung up in all the public Places by *Heraclius*; (as occasioning great Complaints from the Orthodox, by its favouring the Monothelites) and to publish an Edict to impose Silence on both Parties.

But such kinds of Pacifications are held inexcusable in Matters of Religion; accordingly Pope *Theodore* soon procur'd the Patriarch *Paul* to be depos'd: The *Type* was examin'd in the Council of *Rome* in 649, and condemn'd; and an Anathema pronounc'd against all such as admitted either the impious *Ectesis* or *Type*. See ECTESIS.

It had the Name *Type*, as being a kind of Formulary of Faith; or rather a Form whereon Men were to regulate their Conduct.

TYPE, *Typus*, is sometimes also used for the Order observed in the Intermision of Pulses, Fevers, &c. See PULSE and FEVER.

TYPHOIDES, in Medicine, an ardent or burning Fever. See FEVER.

TYPHOMANIA, in Medicine, a Disease of the Brain, wherein the Patient not being able to sleep, tho' greatly inclin'd thereto, lies with his Eyes shut, talks absurdly, and flings himself this Way and that.

If he be pull'd, or the like, he just opens his Eyes, looks about, and sinks again into a kind of dozing, which is interrupted by a Train of disagreeable Imaginations.

A *Typhomania* frequently takes Place in Fevers, Phrenzies, and the like Diseases, -- 'Tis also call'd a *Coma Vigil*. See COMA.

The Word is form'd from the *Greek*, *μῆτις*, Smoak, and *μανία*, Madness.

TYPOGRAPHY, the Art of Printing. See PRINTING.

The Word is form'd from the *Greek*, *τυπος* and *γραφη*, *scriptura*, Writing.

TYRANT, *Tyrannus*, among the Ancients, denoted simply a King or Monarch. See KING and MONARCH.

But the ill Use several Persons invested with that sacred Character, made of it, has alter'd the Import of the Word; and *Tyrant* now carries with it the Idea of an unjust and cruel Prince, who invades the Peoples Liberty, and rules in a more despotic Manner than the Laws of Nature or the Country do allow of.

The Term *Tyrant*, we are told, became odious among the *Greeks*, those zealous Lovers of Liberty, almost as soon as introduc'd: But *Donatus* assures us, it was never taken to among the *Romans* till the latter Ages of that Empire.

TYRIAN-Purple. See PURPLE.

TYRO. See TYROCINIUM.

TYROCINIUM, *Tyrociny*, a Novitiate or Apprenticeship in any Art or Science. See NOVICE and NOVITIATE.

We have several Writings under the Title of *Tyrociniis*: *Tyrocinium Chymicum*, *Tyrocinium Chirurgicalium*, &c. containing the Rudiments of those Arts, accommodated to the Apprehensions of Beginners.

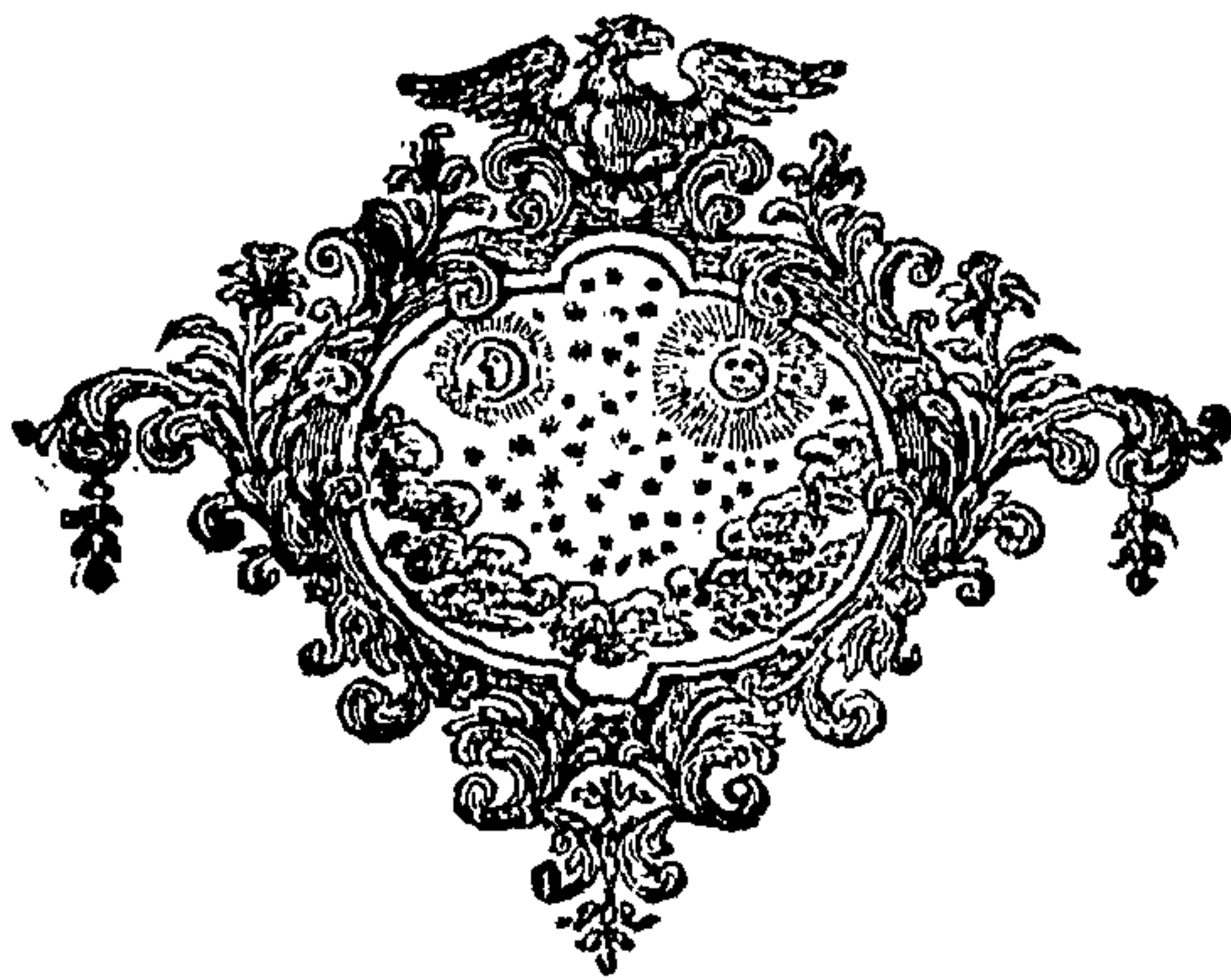
The Word is form'd of *Tyro*, a raw, fresh-water Soldier.

TYROSIS, in Medicine, a Coagulating or Curdling of Milk in the Stomach; after the Manner of Cheese. See CURDLING and COAGULATION.

The Word is form'd of the *Greek*, *τυρος*, *Casus*, Cheese. See CHEESE.

TYTH, or rather TITHE. See TITHE.

TYTHING and TYTHING-Man. See DECENNA, TEMENTALE, HUNDRED, WAPENTAKE, &c.





## V A C

U,

THE twentieth Letter in the Alphabet, and the fifth Vowel. See LETTER, and VOWEL.

Besides the Vowel U, there is a Consonant of the same Denomination, wrote

V, or U. See CONSONANT.

The Pronunciation of the U, as now used among the English, French, &c. is borrow'd from the antient Gaulish: for all the other Western People, with the Romans, pronounce it ou.

V is also a Numeral Letter, and signifies five; according to the Verse,

V, vero quinque dabit tibi, si recte numerabis.

When a Dash was added a-top,  $\bar{V}$ , it signified 5000.

V.R. among the Romans, stood for *Uti Rogas*, as you desire: which was the Mark of a Vote, or Suffrage for the passing of a Law. See ROGATIO; see also A.

VACANCY, or VACUUM, in Philosophy, an empty Interval, or Space void of Matter. See VACUUM.

VACANCY, in Law, &c. a Post or Benefice wanting a regular Officer, or Incumbent. See OFFICER, &c.

The Canonists hold, that the Kind of Vacancy is to be express'd in the Impetration of a Benefice. See BENEFICE.

A Future Vacancy, or Voidance of a Spiritual Living, some Writers call *Vacatura*.

Devolution is a Species of Canonical Vacancy. See DEVOLUTION.

VACANT Effects, *Prædia Vacua*, are such as are abandon'd for want of an Heir, after the Death or Flight of their former Owner. See RESIGNATION, &c.

In our Law-Books, *Vagantes Terræ*, for *Vacantes*, expresses forsaken or uncultivated Lands.

A Benefice is said to be vacant, in *Curia Romana*, when the Incumbent dies in Rome, or within 20 Leagues thereof; tho it be only by Accident that he was there.

The Pope nominates to all Benefices vacant in *Curia Romana*; excepting those of the neighbouring Bishopricks.

VACATION, *Non-Term*, in Law, is all the Time, respectively, included between the End of every Term, and the Beginning of the next succeeding one. See TERM, and *Non-Term*.

This Intermission was call'd by our Ancestors *Pax Dei*, and *Ecclesiæ*; and sometimes the *Times or Days of the King's Peace*.

Among the Romans, it was call'd *Iustitium*, or *Ferie*, or *Dies Nefasti*. See DAY; see also FASTUS.

The Time from the Death of a Bishop, or other Spiritual Person, till the Bishoprick or other Dignity be supplied by another, is also call'd *Vacation*. See PLENARY.

Cicero, in his *Orations*, mentions a Law, whereby the Priests were exempted from Service in all Wars, except only Uproars and Civil Tumults; which Exemptions he calls *Vacationes*.

VACUUM, VACUITY, in Physicks, a Space empty, or devoid of all Matter, or Body. See SPACE, and MATTER.

Whether there be any such Thing in Nature as an absolute Vacuum; or whether the Universe be completely full, and there be an absolute Plenum; is a thing has been controverted by the Philosophers of all Ages. See PLENUM.

The Antients, in their Controversies, distinguish two Kinds; a Vacuum *Coacervatum*, and a Vacuum *Interspersum*, or *Disseminatum*.

Vacuum *Coacervatum* is conceiv'd as a Place destitute of Matter: Such, e.g. as there would be, should God annihilate all the Air and other Bodies within the Walls of this Chamber.

The Existence of such a Vacuum is maintain'd by the Pythagoreans, Epicureans, and the Atomists, or Corpuscularians; most of whom assert such a Vacuum actually to exist without the Limits of the sensible World. But the modern Corpuscularians, who hold a Vacuum *Coacervatum*, deny that Application; as conceiving, that such a Vacuum must be Infinite, Eternal, and Uncreated. See UNIVERSE.

According, then, to the later Philosophers, there is no Vacuum *Coacervatum* without the Bounds of the sensible World; nor would there be any Vacuum, provided God should annihilate divers contiguous Bodies, than what a-

## V A C

mounts to a mere Privation, or Nothing: The Dimensions of such a Space, which the Antients held to be real, being by these held to be mere Negations; that is, in such a Place, there is so much Length, Breadth, and Depth wanting, as a Body must have to fill it. To suppose, that when all the Matter in a Chamber is annihilated, there should yet be real Dimensions; is to suppose Corporeal Dimensions without Body, which is absurd.

The Cartesians, however, deny any Vacuum *Coacervatum* at all; and assert, that if God should immediately annihilate all the Matter, v.g. in this Chamber, and prevent the Ingress of any other Matter, the Consequence would be, that the Walls would become contiguous, and include no Space at all. They add, that if there be no Matter in a Chamber, the Walls can be conceiv'd no otherwise than as contiguous; those Things being said to be contiguous, between which there is not any thing intermediate: But, if there be no Body between, there is no Extension between; Extension and Body being the same thing: and if there be no Extension between, then the Walls are contiguous; and where's the Vacuum?

But the Reasoning is built on a Mistake, viz. that Body and Extension are the same thing. See EXTENSION, and SPACE.

Vacuum *Disseminatum*, or *Interspersum*, is that suppos'd to be naturally interspers'd in, and among, Bodies, in the Pores of the same Body, and in the Interstices between different Bodies. See PORE.

'Tis this kind of Vacuum which is chiefly disputed among the modern Philosophers: The Corpuscularians strenuously asserting it; and the Peripateticks and Cartesians as stiffly impugning it. See CORPUSCULAR, CARTESIAN, &c.

The great Argument the Peripateticks urge against a Vacuum *Interspersum*, is, that there are divers Bodies frequently seen to move contrary to their own Nature and Inclination; and for no other apparent Reason, but to avoid a Vacuum: whence they conclude, that Nature abhors a Vacuum; and give us a new Class of Motions ascrib'd to the *Fuga Vacui*, or Nature's flying a Vacuum. See FUGA.

Such is the Rise of Water in a Syringe, upon drawing up the Piston; such also is the Ascent of Water in Pumps, the Swelling of the Flesh in a Cupping Glass, &c.

But since the Weight, Elasticity, &c. of the Air, have been ascert in'd by sure Experiments; those Motions and Effects are universally ascrib'd to the Gravity, and Pressure of the Atmosphere. See AIR; see also SYRINGE, PUMP, CUPPING GLASS, &c.

The Cartesians deny not only the Actual Existence, but even the Possibility of a Vacuum: and that on this Principle, That Extension being the Essence of Matter, or Body, wherever Extension is, there is Matter: But mere Space, or Vacuity, is suppos'd to be extended; therefore it is material. Whoever denies an empty Space, conceives Dimensions in that Space, i.e. conceives an extended Substance in it; and therefore admits a Vacuum, at the same time that he admits it.

On the other hand, the Corpuscular Authors prove, not only the Possibility, but the Actual Existence of a Vacuum, from divers Considerations; particularly, from the Consideration of Motion, in general; and that of the Planets, Comets, &c. in particular; from the Fall of Bodies; from the Vibration of Pendulums; from Rarefaction and Condensation; from the different Specific Gravities of Bodies; and from the Divisibility of Matter into Parts.

1<sup>o</sup>. 'Tis argued, that Motion could not be effected without a Vacuum. See MOTION.

This is what Lucretius urg'd long ago,—*Principium quoniam cedendi nulla daret res—undique materies quoniam stipata fuisset*.

The Force of this Argument will be increas'd from the two following Considerations, viz. first, that all Motion is either in a strait Line; or in a Curve, which returns into it self, as the Circle, and Ellipsis; or in a Curve that does not return into it self, as the Parabola, &c. And, secondly, that the moving Force must always be greater than the Resistance.

For, hence it follows, that no Force, even tho infinite, can produce Motion where the Resistance is infinite; consequently, there can be no Motion either in a strait Line, or a

A a a a

non-



non-returning Curve; because in either of those Cases, the Protrusion, and consequently the Resistance, would be infinite. There remains, therefore, only the Motion in a revolving Curve practicable; which must either be a Revolution upon an Axis, or an annular Motion round a quiescent Body; both which are, again, impossible in an Elliptic Curve: And consequently, all Motion must be in Circles geometrically true; and the revolving Bodies must either be Spheres, Spheroids, Cylinders, or Portions of them, exactly geometrical; otherwise, their Revolutions in a *Plenum* would be impossible: But such Motions, or such figur'd Bodies, we do not know in Nature. Therefore there is a *Vacuum*.

2°. The *Motions of the Planets and Comets* demonstrate a *Vacuum*: Thus Sir I. Newton argues; 'That there is no such fluid Medium as *Æther*, (to fill up the porous Parts of all sensible Bodies, as the Air and interstellar Parts, and so make a *Plenum*)' seems probable; because the Planets and Comets proceed with so regular and lasting a Motion thro' the Celestial Spaces, both from and to all Parts: For hence it appears, that those Celestial Spaces are void of all sensible Resistance, and consequently of all sensible Matter. For the resisting Force of fluid Mediums, arises partly from the Attrition of the Parts of the Medium, and partly from the Inactivity of Matter. Now that Part of the Resistance of any Medium, which arises from the Tenacity or Attrition of its Parts, may be lessen'd by dividing the Matter into smaller Parts, and by rendring those Parts more smooth and slippery: But that Part of the Resistance which arises from the Inactivity of Matter, is always in proportion to the Density of the Matter; nor can be diminish'd by dividing the Matter, nor by any other means, except by diminishing the Density thereof.

Consequently, if the Celestial Regions were as dense as Water, or Quicksilver, they would resist almost as much as Water or Quicksilver; but if they were perfectly dense, without any *interspers'd Vacuity*, tho the Matter were ever so fluid and subtile, they would resist more than Quicksilver does; a perfectly solid Globe, in such a Medium, would lose above half its Motion, in moving three Lengths of its Diameter; and a Globe not perfectly solid, such as the Bodies of the Planets and Comets are, would be stop'd still sooner. Therefore, that the Motion of the Planets and Comets may be regular and lasting, it is necessary the Celestial Spaces be void of all Matter, except perhaps some few and much rarified Effluvia of the Planets and Comets, and the passing Rays of Light. See RESISTANCE, MEDIUM, PLANET, COMET, &c.

3°. The same great Author deduces a *Vacuum* from the Consideration of the *Weights of Bodies*; thus: 'All Bodies about the Earth gravitate towards the Earth; and the Weights of all Bodies equally distant from the Earth's Centre, are as the Quantities of Matter in those Bodies. —If the *Æther*, therefore, or any other subtile Matter, were altogether destitute of Gravity, or did gravitate less than in proportion to the Quantity of its Matter: Because, (as Aristotle, Des Cartes, and others argue) it differs from other Bodies only in the Form of the Matter; the same Body might by the Change of its Form gradually be converted into a Body of the same Constitution with those which gravitate most in proportion to the Quantity of Matter: and on the other hand, the most heavy Bodies might gradually lose their Gravity, by gradually changing their Form; and therefore the Weights would depend upon the Forms of Bodies, and might be chang'd with 'em; which is contrary to all Experiment. See WEIGHT.

4°. The *Descent of Bodies* proves that all Space is not equally full; for the same Author goes on, 'If all Spaces were equally full, the Specific Gravity of that Fluid with which the Region of the Air would in that Case be fill'd, would not be less than the Specific Gravity of Quicksilver, or Gold, or any other the most dense Body; and therefore, neither Gold, nor any other Body, could descend therein. For Bodies do not descend in a Fluid, unless that Fluid be specifically lighter than the Body. But by the Air-Pump, we can exhaust a Vessel, till even a Feather shall fall with a Velocity equal to that of Gold in the open Air: The Medium, therefore, thro' which the Feather falls, must be much rarer than that thro' which the Gold falls.' See DESCENT.

The Quantity of Matter, therefore, in a given Space, may be diminish'd by Rarefaction: and why may not it be diminish'd in infinitum? Add, that we conceive the solid Particles of all Bodies to be of the same Density; and that they are only rarefiable by means of their Pores: Whence a *Vacuum* evidently follows. See RAREFACTION, PORES, and PARTICLES.

5°. 'That there is a *Vacuum*, is evident from the *Vibrations of Pendulums*: For since those Bodies, in Places out of which the Air is exhausted, meet with no Resistance to retard their Motion, or shorten their Vibrations; 'tis evident there is no sensible Matter in those Spaces, or in the occult Pores of those Bodies. See PENDULUM.

For, as to what Des Cartes urges of his *Materia Subtilis*, that its Tenuity prevents its Resistance from being sensible, and that a small Body striking against a greater, cannot in the least move, or resist the Motion of that other; but is reflect-ed back again with all its Momentum: 'tis contrary to all Experience. For Sir Isaac proves, that the Density of fluid Mediums, is proportionable to their Resistances very nearly; and that they are exceedingly mistaken, who suppose the Resistance of Projectiles to be infinitely diminish'd, by dividing the Parts of the Fluid, even in infinitum. (*Princip. Lib. II. Prop. 38.*) When, on the contrary, 'tis clear the Resistance is but little diminish'd by the Subdivision of the Parts; (*Ibid. Prop. 40.*) and that the resisting Forces of all Fluids are nearly as their Densities. For why should not the same quantity of Matter, whether divided into a great number of subtile Parts, or into a few larger ones, have the same resisting Force? If then there were no *Vacuum*, it would follow, that a Projectile moving in the Air, or even in a Space whence the Air is exhausted, should move with as much difficulty as in Quicksilver; which is contrary to Experience. See PROJECTILE.

6°. That there are *Interspers'd Vacuities*, appears from *Matter's being actually divided* into Parts, and from the Figures of those Parts: For, on Supposition of an absolute Plenitude, we do not conceive how any Part of Matter could be actually divided from that next adjoining, any more than it is possible to divide actually the Parts of absolute Space from one another: for by the actual Division of the Parts of a *Continuum* from one another, we conceive nothing else understood, but the placing those Parts at distances from one another which in the *Continuum* were at no distance from one another: But such Divisions between the Parts of Matter, must imply *Vacuities* between. See DIVISIBILITY.

7°. As for the Figures of the Parts of Bodies, upon the Supposition of a *Plenum*, they must either be all Rectilinear, or all Concavo-convex; otherwise, they would not adequately fill Space; which we do not find to be true in Fact.

8°. The denying a *Vacuum* supposes what it is impossible for any one to prove to be true, viz. That the material World hath no Limits. See UNIVERSE.

Since, then the Essence of Matter does not consist in Extension, but in Solidity, or Impenetrability, the Universe may be said to consist of solid Bodies moving in a *Vacuum*: Nor need we at all fear, lest the Phenomena of Nature, most of which are plausibly accounted for from a Plenitude, should become inexplicable when the *Plenum* is set aside. The principal ones, such as the Tides; the Suspension of the Mercury in the Barometer; the Motion of the Heavenly Bodies, of Light, &c. are more easily and satisfactorily accounted for from other Principles. See TIDES, &c.

*VACUUM*, or *VACUUM BOYLEANUM*, is also used, somewhat abusively, to express that approach to a real *Vacuum*, which we arrive at by means of the Air-Pump. See AIR-PUMP.

Thus, any thing put in a Receiver so exhausted, is said to be put in *Vacuo*: and thus, most of the Experiments with the Air-Pump, are perform'd in *Vacuo*, or in *Vacuo Boyleano*.

Some of the principal Phenomena observ'd of Bodies in *Vacuo*, are; That the heaviest and lightest Bodies, as a Guinea and a Feather, fall here with equal Velocity:—That Fruits, as Grapes, Cherries, Peaches, Apples, &c. kept for any time in *Vacuo*, retain their Nature, Freshness, Colour, &c. and those wither'd in the open Air, recover their Plumpness in *Vacuo*:—All Light and Fire becomes immediately extinct in *Vacuo*:—The Collision of Iron and Steel in *Vacuo*, produces no Sparks:—No Sound is heard, even from a Bell rung in *Vacuo*:—A square Viol, tun of common Air, well clos'd, breaks in *Vacuo*; a round one does not:—A Bladder half full of Air, will heave up 40 Pound weight in *Vacuo*:—Cats, and most other Animals, readily expire in *Vacuo*.

By Experiments made in 1704, Mr. Derham found, that Animals which have two Ventricles, and no *Foramen Orale*, as Birds, Dogs, Cats, Mice, &c. die in less than half a Minute; counting from the first Exsuction: A Mole died in one Minute; a Bat liv'd seven or eight. Insects, as Wasps, Bees, Grasshoppers, &c. seem'd dead in two Minutes; but, being left in *Vacuo* 24 Hours, came to life again in the open Air: Snails continu'd 24 Hours in *Vacuo*, without appearing much concern'd.

Seeds planted in *Vacuo* don't grow:—Small Beer dies, and loses all its Taste in *Vacuo*:—Lukewarm Water boils very vehemently in *Vacuo*:—Air, rushing thro' Mercury into a *Vacuum*, throws the Mercury in a kind of Shower upon the Receiver, and produces a great Light in a dark Room. See ATTRITION, &c.

The Air-Pump can never produce a precise *Vacuum*; as is evident from its Structure, and the manner of its working: In effect, every Exsuction only takes out a part of the Air: so that there will still be some left, after any finite Number of Exsuctions. Add, that the Air-Pump has no long effect.



effect, than while the Spring of the Air remaining in the Receiver, is able to lift up the Valves : When the Rarefaction is come to that degree, you can come no nearer to a Vacuum.

Sir I. Newton, observing that a Thermometer suspended in *Vacuo*, and in that State removed to a warm or a cold Room, receives the Heat or Cold, rises, or falls, almost as soon as another not in *Vacuo* ; takes thence occasion to suspect, that the Heat of the warm-Room is convey'd thro' the Vacuum by the Vibrations of a much subtiler Medium than Air, which remain'd in the Vacuum after the Air was drawn out. (Opt. p. 323.) See MEDIUM, HEAT, &c.

VADARI, in the Civil Law, denotes a Person to pledge, undertake, or give Security in behalf of another ; that he shall, on a certain Day, appear in Court, to prosecute, or answer.

If he fails, his Surety has *Actionem Vadimonii deserti* against him ; that is, an Action for deserting his Bail. See VADIMONIUM, and BAIL.

Properly speaking, the *Vadari Reum*, among the Romans, was the Act of the Plaintiff himself, who hereby demand'd Surety or Bail from the Defendant, that he would appear before the Prætor on a certain Day.

VADE-MECUM, or VENI-MECUM, a Latin Term, us'd in English to express a Thing that is very handy and familiar ; and which one usually carries about with him.

'Tis chiefly apply'd to some favourite Book : Some make Virgil, others Horace, their *Vade mecum*, or *Veni-mecum* ; others an *Epiæctus*, others a *Thomas à Kempis*, &c.

This is what the Greeks call an *εγχειρίδιον*, or *Manual*. The Arabs have a Phrase of equal import, viz. *Habib al seir*, Friend of the Journey. In Latin it is best express'd by *Comes* ; as, *Comes Theologicus*, *Comes Rusticus*, &c.

VADIMONIUM, in the Civil Law, a Promise, or Bond for appearance before the Judge upon a Day appointed. See VADARI.

VAGABOND, a Person that wanders about, having no certain Dwelling ; or a sturdy Beggar, &c. mention'd in divers Statutes. — *De Vagabundis & aliis hominibus mendicantibus qui se nominant.* — Travelling Men, &c. Charta 22. Hen. VI. — *Item utemur quod nullus vagabundus vagetur seu deambulet de nocte in Villa seu Suburbio post pulsationem campanæ nostræ communis, vocatæ Coverfeu, & si aliquis ibidem capiatur post pulsationem dictæ campanæ, ducatur ad Gaulam Domini Regis, & ibi morabitur usq; in Cræstum ut Notitia persone sue habeatur, &c.* MS. Cod. de Leg. & Stat. Burgi villæ Mountgomer. Temp. Hen. II.

VAGINA, a Latin Term, literally signifying a Sheath, or Scabbard ; us'd on divers Occasions.

VAGINA, in Architecture, is us'd for the lower Part of a *Terminus* ; because resembling a Sheath, out of which the Statue seems to issue. See TERMINUS.

The *Vagina* is that long Part between the Base and the Capital ; and is found in divers Manners, and with divers Ornaments.

VAGINA, in Anatomy, a Canal, or Cavity leading from the *Pudendum* to the *Uterus*, or Womb of Women. See UTERUS.

The *Vagina Uteri*, or *Matricis*, is a membranous Part, reaching from the *Rima*, or Aperture of the *Labia*, to the Neck of the Womb. See LABIA.

It lies upon the *Rectum*, to which it finally adheres ; and under the Urinary Bladder : Its length is ordinarily seven or eight Inches.

Its inward Substance is nervous, and exquisitely sensible ; the outer membranous, and loose : At its Orifice it is much narrower than elsewhere ; especially in Virgins.

Thro' its whole Course it is full of *Rugæ*, or Wrinkles ; especially in the upper internal Surface : which *Rugæ* the use of Venery renders less apparent, and frequent Parturition almost obliterates : Which shews, that they were intended to render the Part more easily distensible for Parturition.

Along the whole Tract of the *Vagina* are Pores, or *Ostia*, or little Ducts seen, which in the Act of Venery emit a Liquor, that has been by many mistaken for Seed. See SEED.

The *Vagina* has a Constrictory Muscle, inserted under the *Clitoris* ; which with a broad Series of Fibres embraces and constricts the lower Part of the *Vagina*, and puts the Dimension of the Part, in some measure, in the Power of the Mind. See MATRIX.

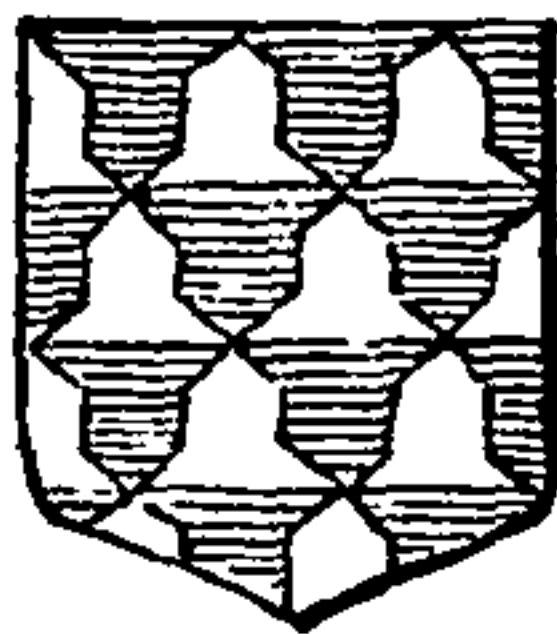
VAGINE *Uteri Sphincter*. See SPHINCTER *Uteri*, &c.

VAGINALIS *Gula*, in Anatomy, a Name some Anatomists give to the musculous Coat of the *Gula* ; as supposing it a proper Muscle, conspiring with the *Oesophagus* in thrusting the Aliment down, when enter'd. See GULA, DEGLUTITION, &c.

VAGINALIS *Tunica*, the same with what we otherwise call'd the *Perigroides*. See ELYTHROIDES.

VACUUM, in Anatomy, a Name given to the eighth Pair of Nerves of the *Medulla Oblongata*, call'd the *Par va-*

*gum*, because dispensed to divers Parts of the Body. See PAR, and NERVE.



VAIR, in Heraldry, a kind of Fur, or Doubling, consisting of divers little Pieces, Argent and Azure, resembling a Dutch U, or a Bell glass. See VAIRY.

*Vairs* have their Point Azure, opposite to their Point Argent, and the Base Argent to the Azure.

When there are only two, or three *Vairs*, the ancient Herald calls it *great Vair* ; and when there are more, *small Vair*.

*Vair* is intended to represent a kind of Skin, used antiently by the Kings of France in lieu of a Fur, and wherewith the Gowns of the Presidents à Mortier, the Counsellors of the Court, the Herald's Coats, &c. were lined, till the XVth Century.

It was properly the Skin of a kind of Squirrel, call'd also in French *Vair*, and in Latin *Sciurus*, which was white underneath, and Dove-colour a-top. It is describ'd by *Aldrovandus* under the Name of *Sciurus Vario*, and is the same, according to *Gesner*, with the *Mus ponticus* of *Aristotle* and *Pliny* ; which the Latins call *Varus*, or *Varius*, from the Variety of its Colour. Its two Skins join'd together, make the Figure of the *Vairs* in Armories ; being naturally white and azure.

*Vair*, *Colombiere* observes, is a second Fur, antiently us'd as a Lining of the Garments of great Men ; consisting of little Pieces, sew'd by the Furriers on white Skins : and because these Pieces were usually blue, those who first settled the Rules of Heraldry, decreed, that this Fur, in its natural Blazon, should always be Argent and Azure. So that if it be absolutely said, such a Family bears *Vair* ; it is supposed to be Argent and Azure.

Regularly, there must be but four Rows or Ranks of *Vair* in the Shield ; if there be either more, or less, the Number must be specify'd. The smallest Number, being three Rows, is call'd *Beffroy de Vair* ; and the most, being five or six, is call'd *Mennu*, or *small Vair*.

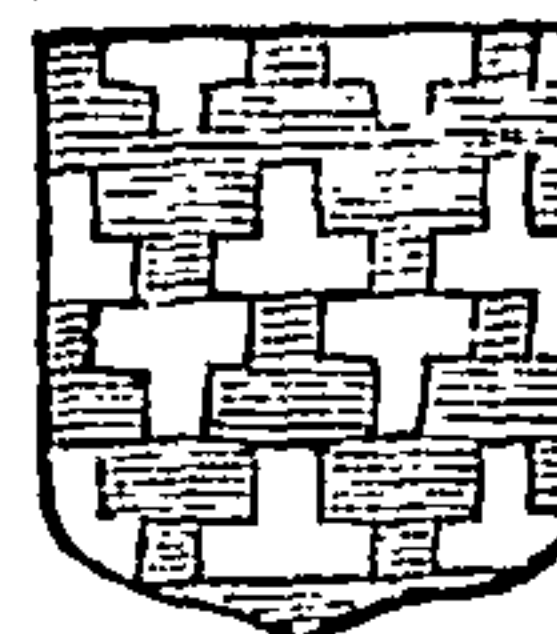
The *Beffroy* is also known by the first Figure on the Dexter-side of the Escutcheon, being always of Metal, and in form of a Belt ; whereas that of mere *Vair* is in shape of a Glass.

VAIRY, VAIRE, VERRY, or VARRY, is applied to a Coat, or the Bearings of a Coat, when charged or chequer'd with *Vairs*. See VAIR.

When the Colours are Argent and Azure, 'tis *Vairy proper* : if they be otherwise, the Colours are to be expressly nam'd ; *Vairy* of such a Colour or Metal ; he bears *Vairy Or*, and Gules. This is particularly call'd *Vair composé*.

The Bearings are likewise said to be *Vairy* when they are charged with *Vairs*. When Chiefs, Crosses, Paies, Fesses, &c. happen to be *Vairy*, the number of Ranks are to be specify'd.

*Vairy* Gowns are observed by *Julius Pollux* to have been the Habit of the antient Gauls, as Ermins were of the Armenians. See ERMIN.



VAIRY *Cuppy*, or VAIRY *Tassy*, or *Potent Counter-potent* ; is a Bearing in Heraldry of the Figure adjoining. In blazon, the Colours must be express'd ; as Azure, Argent, &c.

VALECT, VALET, VADELECT, VADLAT, and VASSET, in our Law-Books ; is, according to *Camden*, a Servitor, or Gentleman of the Privy-Chamber : but, according to *Selden*, antiently signify'd the young Heirs which were to be knighted, or young Gentlemen of Quality and Descent.

But the Term is now applied to those of the Rank of Yeomen.—In the Accounts of the *Inner Temple*, it is us'd for a Benchers Clerk, or Servant : The Butlers of the House corruptly call 'em *Varlers*.

VALENTINIANS, an antient and famous Sect of *Gnosticks* ; thus called from their Leader *Valentinian*. See Gnostic.

VALERIAN, the *great Set-wall*, a Plant, whose Root is of considerable use in Medicine.

There are various Kinds of *Valerian* ; but the only one in use is that cultivated in Gardens, call'd the *large Valerian*, or *Valeriana Hortensis* ; and by *Dioscorides*, *Phic, folio olivari*.

It has its Name, according to some, from one *Valerius*, who first brought it into use ; according to others, from *Valere*, to have great Virtues.

It is warm and aromatick, but somewhat of a fetid Scent : Its efficacy, as a Sudorific, is supported by the Testimony of both antient and modern Practice. It has been reckon'd by some Deterfive, so much as to make it Diuretick, and good in all Obstructions of the *Viscera*. It is extoll'd also or strength-



strengthening the Optic Nerves, and restoring decay'd Sight; but the present Practice acknowledges it not in any such Intentions. It sometimes does Wonders in hysterical Affections; especially where those of the fetid kind are good, and the Spirits are too impetuous in their Motions, so as to occasion Convulsions. It is also assisted with Camphire, and some other things of the like Nature which are very powerful in breaking thro' the minutest Obstructions, to cure obstinate Agues.

It is efficacious in all nervous Cases; and particularly the Epilepsy: which Virtue in it seems to have been first discover'd by *Fabius Columna*, who prescrib'd it for that Purpose in Powder.

*M. Marchant*, in the Memoirs of the Academy of Sciences, has confirm'd this Virtue by many Instances within his Knowledge: And what is very remarkable, is, that in the two Observations he enlarges most upon, the Patients voided great Quantities of Worms. His Custom was, always to purge before he administer'd it.

VALESIANS, VALESIANI, antient Sectaries, so called from one *Valens*, a Person unknown to *Epiphanius*, who makes mention of this Sect, *Her.* 58. tho he owns we know but very little of 'em; only this, that they admitted none into their Society but Eunuchs: at least, if any were admitted before Castration, they oblig'd 'em not to eat any Meat till the Operation was perform'd.

For, then, being no longer subject to the Motions of the Flesh, they allow'd 'em to eat any kind of Meats.

VALET, a French Term, antiently wrote *Varlet*.

In France, *Valet* is a common Name for all domestick Servants, employ'd in the lower, and more servile Offices; including what we call *Grooms, Footmen, Coachmen, Bailiffs*, &c.

But the Word is not used among us in this Sense, nor any otherwise than in the Phrase *Valet de Chambre*; which is a Servant, whose Office is to dress and undress his Master, to look to his Bed-Chamber, wait on him at Table, &c. the same with what we otherwise call a *Gentleman*.

In the History of *Lewis XII.* by *Seisfel*, we always find *Varlet de Chambre du Roi, Varlet de la Gardrobe*, &c. But *Varlet*, like *Knave*, and divers other Words, is now degenerated into a Word of reproach.

*Valet, Valett, Vadelett, Vadlat*, and *Vallet*, *Camden* observes, were antiently used at our Court for a Gentleman of the Privy-Chamber.

*Selden*, in his *Titles*, relates, that *Valets* antiently signify'd young Gentlemen, and Heirs of great Estate and Quality; especially such as were to be knighted. See VALECT.

VALETUDINARY, *Valitudinarius*, a Term sometimes used by the Writers of Medicine, for a Person of a weak, crazy, sickly Constitution, frequently out of order, &c.

*Dr. Cheyne*, by all means, directs the weakly, the studious, the sedentary, and the *valetudinary*, to a low, spare Regimen. See FOOD, EXERCISE, DIET, &c.

VALID, a Term applied to Acts, Transactions, Expeditions, &c. which are clothed in all the Formalities requisite to their being put in Execution, and to their being admitted in a Court of Justice.

A Contract by a Minor is not *valid*, or is *invalid*: A Marriage is not *valid*, unless perform'd with the Solemnities enjoyn'd.

VALLAR, VALLARIS, in Antiquity, an Epithet given to a kind of Crown, which the Roman Generals bestow'd on him who in attacking the Enemies Camp first broke in upon the Enemies Lines. See CROWN.

The Word is form'd from *Vallum*, a Stake with Branches, whereof they made the Pallisade of a Camp, call'd *Lorica*.

The *Corona Vallaris* was the same with what was otherwise call'd *Corona Castrensis*, from *Castra*, a Camp. *Aulus Gellius* assures us, that it was of Gold, as the Mural and Naval Crowns were: yet, tho they were made of that precious Metal, they were not the most valued: For *Pliny*, *Lib. XXII. cap. 3.* gives the Preference to the *Corona Obdionalis*, which yet was only of Gramen, or Grass.

VALLEY, VALE, in Geography. See MOUNTAIN.

VALORE *Maritagii*, *Value of Marriage*, a Writ which antiently lay for the Lord, after having proffer'd suitable Marriage to an Infant who refused the same; to recover the Value of the Marriage. See MARITAGIUM.

VALUE, in Commerce, the Price or Worth of any Thing.

*Intrinsic Value*, is the proper, real, and effective Value of any Thing: and is used chiefly with regard to Money; the popular Value whereof, may be rais'd and lower'd at the Pleasure of the Prince; but its real, or intrinsic Value, depending wholly on its Weight and Fineness, is not at all affected by the Stamp, or Impression thereon. See MONEY, &c.

'Tis generally on the Foot of this *intrinsic Value*, that Species are receiv'd in foreign Countries; tho in the Places where they are coin'd, and where the Sovereign Power makes 'em current, they generally pass for much more. See PAR.

'Tis, in good measure, on the difference of those two Values, one whereof is, as it were, arbitrary, and the other, in some sort, natural; that the difference of Exchanges depends: and those still rising and falling, as the Rate at which a Species is current, comes nearer or farther off the just Price of the Metal whereof it consists. See EXCHANGE.

In Bills of Exchange, Value is us'd to signify the Nature of the Thing, (as ready Money, Merchandizes, Bills, Debts, &c.) which is given, as it were, in Exchange for the Sum specify'd in the Bill.

From four different Manners of expressing this Value, some distinguish four Kinds of Bills of Exchange: The first bears Value receiv'd, simply and purely, which comprehends all Kinds of Value; the second, Value receiv'd in Money, or Merchandize; the third, Value of my self; and the fourth, Value understood.

The first is dangerous, and the fourth but little used: accordingly, to have the Value well express'd, and to prevent the ill Consequences of Oversight therein, 'tis well provided by the French Ordonnance of 1673, that Bills of Exchange shall contain the Name of the Person to whom the contain'd Sum is to be paid; the Time of Payment; the Name of him who has given the Value; and whether it was receiv'd in Money, Merchandize, or other Effects. See BILL of Exchange.

VALUE, VALOR, VALENTIA, in Law, &c. *West* gives us a nice Difference between Value and Price.—'The Value, (says he) of Things in which Offences are committed, is usually compris'd in Indictments; which seems necessary in Theft, to make a difference from petty Larceny, and in Trespass, to aggravate the Fault, and increase the Fine: But no Price of Things *feræ Nature* may be express'd, as of Deers, Hares, &c. if they be not in Parks and Warrens. And where the Number of Things taken is to be express'd in the Indictment, as of young Doves in a Dove-house, there must be said *Pretii*, or *ad Valentiam*: but of divers dead Things, *ad Valentiam*, and not *Pretii*: Of Coin not current, it shall be said *Pretii*; but of Coin current, neither *Pretii* nor *ad Valentiam*; the Price and Value being certain.

VALVE, VALVULA, in Anatomy, a thin Membrane, applied, like a Door or Shutter, on divers Cavities and Vessels of the Body; to afford a Passage to some Humour, or other Matter, going one way, and prevent its Re-flux towards the Part whence it came. See VESSEL, &c.

The Veins and Lymphatics have Valves, situate from Space to Space, which open towards the Heart, but keep close on that Side toward the Extremities, i. e. they let the Blood and Lymph pass towards the Heart, but prevent their returning to the extreme Parts, whence they came. See VEIN, and BLOOD.

The Heart has also its Valves, placed at the Entrance of the Vessels arising out of it. Those at the Entrance of the *Vena Cava* and Pulmonary Vein, let the Blood pass on to the Heart, and prevent its return: On the contrary, those at the Entrance of the *Aorta* and Pulmonary Artery, let the Blood pass out of the Heart, and prevent its flowing back again. See HEART, and CIRCULATION; see also CAVA, &c.

In the *Jejunum Intestinum* there are Valves which retard the Descent of the Chyle. See INTESTINES.

The Colon has a thick Valve, to prevent the Excrements from passing into the *Ileon*; and several other Valves, to retard the Descent of the Excrements. See COLON, and EXCREMENT.

The Valves in the Body acquire different Denominations from their different Forms, and other Circumstances; as *Sigmoides, Semilunares, Mitrales, Tricuspidæ*, &c. See each under its respective Article, SIGMOIDES, MITRALES, &c.

Some attribute the Discovery of the Valves in the Veins to *Fra. Paolo. Ruysch* has a particular Treatise on the Valves of the Lymphatic and Lacteal Vessels. See LACTEAL, &c.

VALVE, *Valvula*, in Hydraulics, Pneumatics, &c. is a kind of Lid, or Cover of a Tube, or Vessel, so contriv'd as to open one way; but which, the more forcibly 'tis press'd the other way, the closer it shuts the Aperture: so that it either admits the Entrance of a Fluid into the Tube, or Vessel, and prevents its return; or admits it to escape, and prevents its re-entrance.

Valves are of great use in the *Air-Pump*, and other Wind-Engines; in which they are ordinarily made of Pieces of Bladder. See AIR PUMP; and WIND GUN.

In Hydraulic Engines, as the Emboli of Pumps, they are frequently of Leather; their Figure round, and are fitted to the Bottoms, or other Parts of the Barrels, &c. to shut the Apertures. See EMBOLUS.

Sometimes they are made of two round Pieces of Leather, inclosed between two others of Brass; having several Perforations, which are cover'd with another piece of Leather moveable upwards and downwards, on a kind of Axis, which goes thro' the middle of them all.



Sometimes they are made of Brass cover'd over with Leather, and furnish'd with a fine Spring, which gives way upon a Force apply'd against it: but, upon the ceasing of that, returns the *Valve* over the Aperture. See *PUMP*, &c.

*Constantine Varole*, a *Boulognese*, and Physician of *Gregory XIII.* who dy'd in 1570, was the first who observ'd the *Valve* in the Colon. *Bart. Eustachio*, a Native of *San Severino* in *Italy*, discover'd, about the same time, the *Valve* at the Orifice of the Coronary Vein, and that remarkable one at the Orifice of the lower Trunk of the *Vena Cava*, near the right Auricle of the Heart: Tho he did not take it for a *Valve*, but merely for a Membrane.

*Sig. Lancisi*, Physician to the late Pope, who first publish'd *Eustachio's* Works, takes the Use of this *Valve* to be to prevent the Blood of the upper *Vena Cava* from striking with too much violence against that of the lower: And *Monsieur Winslow*, who has consider'd it very diligently in the Memoirs of the Royal Academy of Sciences, is much of the same Opinion.

But as it gradually dwindles in Children, and at length becomes quite lost in Adults, still diminishing as the *Foramen Ovale* does; it should seem to have some other Office; and that, chiefly, regarding the Circulation of the Blood in the *Fetus*.

In effect, by means hereof, *M. Winslow* reconciles the two opposite Systems of the Circulation of the Blood in the *Fetus*, deliver'd under the Article *Circulation*. See *CIRCULATION of the Blood*; and *FOETUS*.

*VALVULA, Valve*. See *VALVE*.

The great *Valve*, in Latin *Valvula Major*, is the upper Part, and, as it were, the Lid of the *Isthmus* between the *Testes*, and the first Vermicular Process of the *Cerebellum*: Its Substance is medullary. Its Use is to prevent the Lymph from falling on the Nerves at the Base of the *Cranium*.

In the *Jejunum* and *Ileum*, the inner Tunic being larger than the outer, is much corrugated; the loose Folds of which, have been thought in some measure to do the Office of *Valves*; and have therefore been call'd *Valvulae Conniventes*. *Drake's Anat.* p. 49.

The *Lacteals*, opening into the Intestines, receive the prepared fluid Part of the Chyle; and appear at Intervals, as it were, girt and straiten'd; and when press'd, do not admit of a Reflux towards the Intestines: tho the Liquor be easily propell'd towards the Glands: Which argues, that there are *Valves* in 'em, tho too minute to be sensible to the Eye. *Id. ibid.* p. 56.

The Word is form'd from the Latin *Valve*, folding Doors. *VAN*, or *VANT*, or *VAUNT*, of the French, *avant*, or *avant*, before; a Term used in Composition with several Words in our Language.

*VAN Couriers*, are Light-arm'd Soldiers, sent before to beat the Road, upon the Approach of an Enemy. See *RECONNOITRE*.

*VAN-Passe*, a Ditch dug without the Counterscarp, and running all along the Glacis; usually full of Water. See *DITCH*.

*VAN*, or *VANT*, or *VAUNT-Corps*. See *CORPS*.

*VAN-Guard*, is a Military Term, signifying the first Line of an Army, drawn up in Battalia.

It is the same with the *Front* of an Army, and gives the first Charge upon the Enemy. See *FRONT*.

Every Army is compos'd of three Parts, a *Van-guard*, *Rear-guard*, and *Main Body*.

*VANES*, on Mathematical Instruments, are Sights made to move and slide upon Cross-staves, Fore-staves, *Davis's Quadrants*, &c. See *CROSS-STAFF*, *FORE-STAFF*, &c.

*VANES*, or *FANES of Feathers*. } See *FEATHER*.

*VANES of Windmills*. } See *WINDMILL*.

*VANILLA*, or *BANILLA*, a little black Seed, growing in longish Pods; used in the *West-Indies*, *France*, *Spain*, &c. as a principal Ingredient in the Composition of Chocolate; to give it Strength, and an agreeable Flavour. See *CHOCOLATE*.

It is also used to perfume Tobacco withal. See *TOBACCO*.

It is supposed to strengthen the Brain, and Stomach; to attenuate viscid Humours, provoke Urine, and the Menstrues.

*VAPORATION*, in Chymistry, a Term applied to the Action of *Vapour*. See *VAPOUR*.

The Chymists have a Bath call'd a *Vaporatory*, or *Balneum Vaporationis*, or *Vaporis*; whereby the Warmth or Humidity of a *Vapour* is made to act on some other Body, that is to be warm'd, or moisten'd. See *BALNEUM*, *HEAT*, &c.

*VAPOROSUM Balneum*, or *VAPOUR-Bath*, in Chymistry, a Term applied to a Chymist's Bath, or Heat, wherein the Body is placed so as to receive the Fumes of boiling Water.

The *Balneum Vaporosum* consists of two Vessels, disposed over one another in such manner, as that the *Vapour* rais'd from the Water contain'd in the lower, heats the Matter enclosed in the upper. See *HEAT*.

The *Vapour-Bath* is very commodious for the distilling of odoriferous Waters, and the drawing of Spirit of Wine.

We also use the Term *Vapour-Bath*, when a sick Person is made to receive the *Vapours* arising from some liquid Matter placed over a Fire. See *BATH*.

*VAPOUR*, in Meteorology; a thin Vesicle of Water or other humid Matter, fill'd or inflated with Air; which being rarefy'd to a certain degree by the Action of Heat, ascends to a certain height in the Atmosphere, where it is suspended, till it return in form of Rain, Snow, or the like. See *RAIN*, and *SNOW*.

An Assemblage of a Number of Particles, or Vesicles of *Vapour*, constitutes what we call a *Cloud*. See *CLOUD*.

Some use the Term *Vapour*, indifferently, for all Fumes emitted; either from moist Bodies, as Fluids of any kind; or from dry Bodies, as *Sulphur*, &c. But Sir *I. Newton*, and other Authors, better distinguish between *humid* and *dry* Fumes, calling the latter *Exhalation*. See *EXHALATION*.

For the Manner wherein *VAPOURS* are rais'd, and again precipitated; see *DEW*, *RAIN*, *HEAT*, *COLD*, and *BAROMETER*.

For the Effect of *VAPOUR* in the Formation of Springs, &c. See *SPRING*, and *RIVER*.

The quantity of *Vapour* rais'd from the Sea by the Warmth of the Sun, is far greater than one would imagine. *Dr. Halley* has attempted to estimate it.

In an Experiment made with that view, and described in the *Philosophical Transactions*, he found that a Quantity of Water no warmer than Air in Summer, lost in *Vapour* in the Space of two Hours, no less than  $\frac{1}{3}$  part of an Inch in depth: Now, for  $\frac{1}{3}$  in two Hours, taking, for the easier Calculation,  $\frac{1}{6}$  in the twelve Hours that the Sun is up each Day, it will raise  $\frac{1}{6}$  of an Inch from the Surface of the Sea.

On this Supposition, every 10 square Inches of the Surface of Water, yield in *Vapour*, per Diem, a Cubic Inch of Water; and each square Foot, half a Wine Pint; every Space of four Foot square, a Gallon; a Mile square, 6914 Tuns; a square Degree, supposed of 69 English Miles, will evaporate 33 Millions of Tuns: And if the *Mediterranean* be estimated at 410 Degrees long, and four broad, Allowances being made for the Places where it is broader, by those where it is narrower, there will be 160 square Degrees at Sea: and consequently the whole *Mediterranean* must lose in *Vapour*, in a Summer's Day, at least, 5280 Millions of Tun.

And this Quantity of *Vapour*, tho very great, is only the Remains of another Cause, which cannot be reduced to Rule; we mean the Winds; whereby the Surface of the Water is lick'd up, sometimes faster than it exhales by the Heat of the Sun; as is well known to those that have consider'd those drying Winds. See *EVAPORATION*.

*VAPOURS*, in Medicine, a Disease, call'd popularly the *Hype*, or *Hypochondriacal* Disease; and in Men, particularly, the *Spleen*. See *SPLEEN*.

'Tis supposed to be owing to a subtle *Vapour*, rising from the lower Parts of the Abdomen, particularly the *Hypochondrium*, to the Brain; which it disturbs, and possesses with wild, delirious, but generally disagreeable Imaginations. See *HYPOCHONDRICAL Disease*.

*Vapours*, supposed to be emitted from the Womb, in Women, are what we otherwise call *Hysterical Affections*, or *Suffocations*, or *Fits of the Mother*. See *HYSTERICAL*, &c. *VAPOUR-Bath*. See *VAPOROSUM Balneum*.

*VARI*, in Medicine, little, hard, ruddy Tumors, whitish about the Tips, and of the size of an Hemp seed; frequently found on the Face and Neck of young People; chiefly such as are much addicted to Venery.

If the red be very lively, the Cure is somewhat difficult; and tho the Pustles be taken away, the Redness remains.

To which, if an Inflammation and Hoarseness be added, 'tis a Symptom of an approaching Leprosy. See *LEPROSY*.

*VARIABLE*, in the new Doctrine of Infinites, is a Term applied chiefly by the foreign Mathematicians, to such Quantities, as either increase, or diminish, according as some other Quantity either increases or diminishes.

Thus, the Semiordinates and Abscisses of a Circle, &c. are *Variable Quantities*; because, if the one increase, the other increases likewise. See *SEMIORDINATE*, &c.

They are thus call'd, in contradistinction to *constant*, or *given*, or *stable Quantities*; which are always the same, tho others change; as the Semidiameter of a Circle, which remains the same, tho the Abscisses and Semiordinates increase.

*Variable Quantities*, are usually denoted by the last Letters of the Alphabet, *x y z*. See *QUANTITY*.

Our English Authors, instead of *variable*, and *constant* Quantities, generally use the Terms *fluent*, and *stable* Quantities. See *FLEUENT*.

The infinitely small Quantity whereby a *variable* Quantity is continually increasing, or diminishing, is called the *Fluxion*, or Difference; the Calculation whereof, is the Subject of the new *Methodus Differentialis*, or *Doctrine of Fluxions*. See *DIFFERENTIAL*, and *FLUXION*.



**VARIANCE**, in Law, an Alteration or Change of Condition in a Person, or Thing; after some former Concern or Transaction therewith.

Thus, if the Commonalty of a Town make a Composition with a Lord, and afterwards Bailiffs be granted by the King to the same Town; there, if the Lord commence any Suit for breach of the Composition, he must *vary* from the Word *Commonalty*, used in the Composition; and use *Bailiffs and Commonalty*.

The Term *Variance* is also used for an Alteration of something formerly laid in a Plea. See **PLEA**.

**VARIATION**, in Geography, Navigation, &c. a Term apply'd to the Deviation of the Magnetical Needle, or Compass, from the true North-Point, towards either East, or West; call'd also the *Declination*. See **DECLINATION**.

The *Variation or Declination of the Needle*, is properly defin'd, the Angle which a Magnetic Needle, suspended at liberty, makes with the Meridian-Line on a horizontal Plane. See **NEEDLE**.

In the Sea Language, the *Variation* is usually called *North-Easting*, or *North-Westing*. See **COMPASS**, &c.

All Magnetic Bodies, we find, range themselves, in some sort, to the Meridian; but 'tis rare they fall in precisely with it: In one Place, they decline from the North to the East, and from the South to the West; and in another Place, on the contrary, from the North to the West, and from the South to the East; and that, too, differently, at different Times. See **MAGNET**, and **MAGNETISM**.

Various are the Hypotheses fram'd to account for this extraordinary Phenomenon: We shall only mention some of the later and more probable. The first is that of *Gilbert*, which is follow'd by *Cabeus*, &c.

Their Notion was, that 'tis the Earth, or Land, that draws the Needle out of its Meridional Direction; and hence they argued, that the Needle *vary'd* more, or less, as it was more or less distant from any great Continent: consequently, that if it were placed in the middle of an Ocean, equally distant from equal Tracts of Land, on each side, Eastward and Westward, it would not decline either to the one or the other; but point justly North and South.

Thus, in the *Azores* Islands, which are equally distant from *Africa* on the East, and *America* on the West, there is, in effect, found no *Variation*: but, as from the *Azores* you sail towards *Africa*, the Needle begins to decline from the North to the East; and that still more and more, till you reach the Shore.

If you still proceed Eastward, the Declination gradually diminishes again; by reason of the Land left behind on the West, which continues to draw the Needle.

The same holds till you arrive at a Place where there are equal Tracts of Land on each side, and there, again, there is no *Variation*.

The Observations of our Mariners in their *East-India* Voyages, seem to confirm this System: As they proceed towards the Cape of *Good Hope*, the *Variation* is still Eastward; at length, arriving at the Cape *De las Aguillas*, q. d. of the *Needles*, the Meridian-Line, then, dividing *Africa* into two equal Parts; there is no *Variation* at all: But as they proceed further, and leave the *African* Coasts on the West, the *Variation* becomes Westward.

But the Misfortune is, the Law does not hold universally: In effect, a great Number of Observations of the *Variation*, in various Parts, made and collected by Dr. *Halley*, overturn the whole Theory.

Others, therefore, have recourse to the Frame and Compages of the Earth, consider'd as interwove with Rocks and Shelves; which being generally found to run towards the Poles, the Needle comes to have a general tendency that way; but which seldom going perfectly in the Direction of the Meridian, the Needle, of consequence, has commonly a *Variation*. See **EARTH**.

Others hold various Parts of the Earth to have various degrees of the Magnetic Virtue; as some are more intermix'd with heterogeneous Matters, which prevent the free Action or Effect thereof, than others. See **MAGNETISM**.

Others ascribe all to Magnetic Rocks, and Iron Mines, which affording more of the Magnetic Matter than other Parts, draw the Needle more. See **IRON**, &c.

Lastly, others imagine Earthquakes, or High Tides, to have disturb'd and dislocated several considerable Parts of the Earth, and so chang'd the Magnetic Axis of the Globe, which originally was the same with the Axis of the Globe itself.

But still, that great Phenomenon, the *Variation of the Needle*, i. e. the continual Change of the Declination in one and the same Place, which the modern Observations do abundantly evince, is not accountable for, on any of these Foundations; nor even consistent with 'em.

Dr. *Halley*, therefore, gives us a new System; the Result of a great Number of Observations; and even of a great Number of Voyages made, at the publick Charge, on this very Account: The Light that excellent Author has let into this obscure Part of Natural History is very great; and the Consequences thereof in Navigation, &c. very considerable. Add, that he has reduced the diverse *Variations* of divers Places to a precise Rule, or Order, which before appear'd all precarious, and arbitrary.

His Theory, therefore, will deserve a more ample Detail.—The Observations it is built on, as laid down in the *Philosophical Transactions*, are as follow.

Observations of the Variations of the Needle, in divers Places, and at divers Times.

| Names of Places.                     | Longitude from London. | Latitude | Year of Observ. | Variation observ'd. | Names of Places.                  | Longitude from London. | Latitude | Year of Observ. | Variation observ'd. |
|--------------------------------------|------------------------|----------|-----------------|---------------------|-----------------------------------|------------------------|----------|-----------------|---------------------|
| London                               | 0 0                    | 51 32 N  | 1580            | 11 15 E             | Cape Aguillas                     | 16 30 E                | 34 50 S  | 1622            | 2 0 W               |
|                                      |                        |          | 1622            | 6 0 E               | At Sea                            | 1 0 E                  | 34 30 S  | 1675            | 8 0 W               |
|                                      |                        |          | 1634            | 4 5 E               | At Sea                            | 20 0 W                 | 34 0 S   | 1675            | 10 3 E              |
|                                      |                        |          | 1672            | 2 30 W              | At Sea                            | 32 0 W                 | 24 0 S   | 1675            | 12 30 E             |
|                                      |                        |          | 1683            | 4 30 W              | St. Helena                        | 6 30 W                 | 16 0 S   | 1677            | 0 40 E              |
| Paris                                | 2 25 E                 | 48 51 N  | 1640            | 3 0 E               | J. Ascension                      | 14 10 W                | 7 50 S   | 1678            | 1 0 E               |
|                                      |                        |          | 1666            | 0 0                 | Johanna                           | 44 0 E                 | 12 15 S  | 1675            | 12 30 W             |
|                                      |                        |          | 1681            | 2 30 W              | Monbasa                           | 40 0 E                 | 4 0 S    | 1675            | 16 0 W              |
| Uraniburg                            | 13 0 E                 | 55 54 N  | 1672            | 2 35 W              | Zocatra                           | 56 0 E                 | 12 30 N  | 1675            | 17 0 W              |
| Copenhagen                           | 12 52 E                | 55 41 N  | 1649            | 1 30 E              | Aden, at the Mouth of the Red Sea | 47 30 E                | 31 0 N   | 1675            | 15 0 W              |
| Dantzick                             | 19 0 E                 | 54 23 N  | 1679            | 7 0 W               | Diego Roiz                        | 61 0 E                 | 20 0 S   | 1675            | 20 30 W             |
| Montpelier                           | 4 0 E                  | 43 37 N  | 1574            | 1 10 W              | At Sea                            | 64 30 E                | 0 0      | 1675            | 15 3 W              |
| Brest                                | 4 25 W                 | 48 23 N  | 1680            | 1 45 W              | At Sea                            | 54 0 E                 | 27 0 S   | 1675            | 24 0 W              |
| Rome                                 | 13 0 E                 | 41 50 N  | 1681            | 5 0 W               | Bombay                            | 72 30 E                | 19 0 N   | 1675            | 12 0 W              |
| Bayonne                              | 1 20 W                 | 43 33 N  | 1680            | 1 20 W              | C. Comorin                        | 76 0 E                 | 8 15 N   | 1680            | 8 30 W              |
| Hudson's Bay                         | 79 40 W                | 51 0 N   | 1668            | 19 15 W             | Ballafore                         | 87 0 E                 | 21 30 N  | 1680            | 5 2 W               |
| In Hudson's Streights (Sound)        | 57 0 W                 | 61 0 N   | 1668            | 29 30 W             | Fort St. George                   | 180 0 E                | 13 15 N  | 1680            | 5 10 W              |
| In Baffin's Bay, at Sir Tho. Smith's | 80 0 W                 | 78 0 N   | 1616            | 57 0 W              | West Point of Java                | 104 0 E                | 6 40 S   | 1676            | 1 10 W              |
| At Sea                               | 50 0 W                 | 38 40 N  | 1682            | 7 30 W              | At Sea                            | 58 0 E                 | 39 0 S   | 1677            | 2 3 W               |
| At Sea                               | 31 30 W                | 43 50 N  | 1682            | 5 30 W              | I. St. Paul                       | 72 0 E                 | 38 0 S   | 1677            | 2 40 W              |
| At Sea                               | 42 0 W                 | 21 0 N   | 1678            | 0 40 E              | At Van Diemens                    | 142 0 E                | 42 25 S  | 1642            | 9 2 E               |
| Cape St. Augustine                   | 35 30 W                | 8 0 S    | 1670            | 5 10 E              | At New Zealand                    | 170 0 E                | 40 50 S  | 1642            | 5 40 E              |
| At Sea off the Mouth of R. Plata     | 58 0 W                 | 39 30 S  | 1670            | 20 30 E             | At Three King Isle in New Zealand | 169 30 E               | 34 35 S  | 1642            | 5 40 E              |
| Cape Frio                            | 41 10 W                | 22 40 S  | 1670            | 12 10 E             | I. Rotterdam in the South Sea     | 184 0 E                | 20 15 S  | 1642            | 6 2 E               |
| East Entrance of Magellan Streights  | 68 0 W                 | 52 30 S  | 1670            | 17 0 E              | On the Coast of New Guinea        | 149 0 E                | 4 30 S   | 1642            | 8 2 E               |
| West Entrance                        | 75 0 W                 | 53 0 S   | 1670            | 14 10 E             | At the West Point of New Guinea   | 126 0 E                | 0 26 S   | 1642            | 4 4 E               |
| Baldivia                             | 73 0 W                 | 40 0 S   | 1670            | 8 10 E              |                                   |                        |          |                 |                     |

From these Observations the learned Author gathers, 1st, That throughout all *Europe*, the *Variation*, at this Time, is *West*; and more in the Eastern Parts thereof than the Western, increasing that way.—2d, That on the Coasts of *America*, the *Variation* is *Westerly*; increasing all the way as you go Northerly along the Coast; so as to be above 20 Degrees at *Newfoundland*, nearly 30 Degrees in *Hudson's Streights*, and not less than 57 Degrees in *Baff-*

*fin's Bay*: And that as you sail Eastward from this Coast, the *Variation* diminishes. Hence, he argues, somewhere between *Europe* and the North Part of *America*, there must be an Easterly *Variation*, or at least no *Variation*.—3d, That on the Coast of *Brazil*, there is Easterly *Variation*, increasing as you go to the Southward, so as to be at *Cape Frio*, and 20 Degrees and half over *Plata*; and thence sailing South-westerly, to the *Streights*



of *Magellan*, it decreases 17 Degrees, and at the West Entrance about 14 Degrees.—4th, That Eastward of *Brasil*, this Easterly Variation decreases, so as to be very little at *St. Helena* and *Ascension*, and to be quite gone, and the Compass point true about 18 Degrees of Longitude West from the Cape of *Good Hope*.—5th, That to the Eastward of the aforesaid Places, a Westward Variation begins, and governs in all the *Indian Sea*, arising to 18 Degrees under the Equator, about the Meridian of the Northern Part of *Madagascar*; and 27 Degrees and a half in 39 Degrees South Latitude, near the same Meridian: Easterly from thence, the West Variation decreases, so as to be not much above 8 Degrees at Cape *Comorin*, and about 3 Degrees upon the Coast of *Java*; and about the *Molucca Islands* to be quite gone; as also a little to the Westward of *Van Diemen's Land*.—6th, That to the Eastward of the *Molucca's* and *Van Diemen's Land*, in South Latitude, there arises another Easterly Variation, which seems not so great as the former, nor of so large Extent; for that at the Island *Rotterdam*, it is sensibly less than upon the East Coast of *New Guinea*; and at the Rate it decreases, it may well be supposed, that about 20 Degrees further Eastward, or 225 Degrees East Longitude from *London*, in the Latitude of 20 Degrees South, a Westerly Variation begins.—7th, That the Variation taken at *Baldivia*, and at the West Entrance of the Straights of *Magellan*, shews, That the East Variation noted in the third Observation, is decreasing apace; and that it cannot well extend many Degrees into the *South Sea*, from the Coast of *Peru* and *Chili*, leaving room for a small Westerly Variation in that Tract of the unknown World that lies in the mid-way between *Chili* and *New Zealand*, and between *Hounds Island* and *Peru*.—8th, That in sailing North-west from *St. Helena*, by *Ascension*, as far as the Equator, the Variation continues very small East, and as it were, constantly the same: So that in this Part of the World, the Course, wherein there is no Variation, is evidently no Meridian, but rather North-west.—9th, That the Entrance of *Hudson's Straights*, and the Mouth of *R. Plata*, being nearly under the same Meridian, at the one Place the Needle varies 29 Degrees and a half West; at the other 20 Degrees and a half East.

#### Theory of the VARIATION of the Needle.

From the Circumstances above rehearsed, the learned Author takes occasion to assert, 'That the whole Globe of the Earth is one great Magnet, having four Magnetical Poles, or Points of Attraction; near each Pole of the Equator, two; and that in those Parts of the World which lie near adjacent to any one of these Magnetical Poles, the Needle is govern'd thereby; the nearest Pole being always predominant over the more remote.'

The Pole which at present is nearest to us, he conjectures to lie in or near the Meridian of the Land's-End of *England*, and not above 7 Degrees from the Arctick Pole: by this Pole, the Variation in all *Europe* and *Tartary*, and the North Sea, are principally govern'd; tho' still with some regard to the other Northern Pole, whose Situation is in the Meridian, passing about the Middle of *California*, and about 15 Degrees from the North Pole of the World; to which the Needle has chiefly respect in all the North America, and in the two Oceans on either side thereof, from the *Azores* Westwards, to *Japan*, and farther.

The two Southern Poles, he imagines, are rather farther distant from the South Pole of the World: The one about 16 Degrees therefrom, in a Meridian some 20 Degrees to the Westward of *Magellan Straights*, or 95 Degrees West from *London*: This commands the Needle in all South America, in the Pacifick Sea, and the greatest Part of the Ethiopick Ocean.—The other seems to have the greatest Power, and largest Dominions of all, as it is the most remote from the Pole of the World, being little less than 20 Degrees distant therefrom, in the Meridian which passes thro' *New Holland* and the Island *Celebes*, about 120 Degrees East from *London*: This Pole is predominant in the South Part of *Africa*, in *Arabia* and the Red Sea, in *Persia*, *India*, and its Islands; and all over the Indian Sea, from the Cape of *Good Hope* Eastwards, to the middle of the great South Sea that divides *Asia* from *America*.

Such seems to be the present Disposition of the Magnetical Virtue, throughout the whole Globe of the Earth. It remains to shew, how this Hypothesis accounts for all the Variations that have been observ'd of late; and how it answers to the several Remarks drawn from the Table.

1<sup>o</sup>, Then, it is plain, that as our *European* North Pole lies in the Meridian of the Land's-End of *England*, all Places near Easterly than that, will have it on the West side of their Meridian; and consequently the Needle, respecting it with its Northern Point, will have a Westerly Variation, which will still be greater as you go to the Eastwards, till you come to some Meridian of *Russia*, where

'twill be greatest, and from thence decrease again. Accordingly, in fact, we find that at *Brest* the Variation is but 1 Degree 3 Quarters; at *London*, 4 Degrees and an half; and at *Dantzick* 7 Degrees, West. Again, to the Westward of the Meridian of the Land's-End, the Needle ought to have an Easterly Variation; were it not that (by approaching the *American* Northern Pole, which lies on the West side of the Meridian, and seems to be of greater force than this other) the Needle is drawn thereby Westward, so as to counter-balance the Direction given by the *European* Pole, and to make a small West Variation in the Meridian of the Land's-End it self. Yet, about the Isle *Tercera*, 'tis supposed our nearest Pole may so far prevail, as to give the Needle a little Turn to the East; tho' but for a very little Space; the Counter-balance of those two Poles permitting no considerable Variation in all the Eastern Part of the Atlantick Ocean; nor upon the West Coast of *England* and *Ireland*, *France*, *Spain*, and *Barbary*: But to the Westward of the *Azores*, the Power of the *American* Pole, overcoming that of the *European*, the Needle has chiefly respect thereto; and turns still more and more towards it, as you approach it. Whence it comes to pass, that on the Coast of *Virginia*, *New England*, *Newfoundland*, and in *Hudson's Straights*, the Variation is Westward; that is, increases as you go from thence towards *Europe*: and that it is less in *Virginia* and *New England*, than in *Newfoundland* and *Hudson's Straights*.

2<sup>o</sup>, This Westerly Variation, again, decreases, as you pass over the North America, and about the Meridian of the middle of *California*, the Needle again points due North; and from thence Westwards to *Tedzo* and *Japan*, 'tis supposed the Variation is Easterly; and half Sea over, not less than 15 Degrees: And that this East Variation extends over *Japan*, *Tedzo*, East *Tartary*, and part of *China*, till it meet with the Westerly, which is govern'd by the *European* North Pole, and which is the greatest; somewhere in *Russia*.

3<sup>o</sup>, Towards the South Pole the Effect is much the same; only that here the South Point of the Needle is attracted. Whence it will follow, That the Variation on the Coast of *Brasil*, at the River of *Plata*, and so on to the Straights of *Magellan*, should be Easterly; if we suppose a Magnetical Pole situated about 20 Degrees more Westerly than the Straights of *Magellan*. And this Easterly Variation doth extend Eastward over the greatest Part of the Ethiopick Sea, till it be counterpoiz'd by the Virtue of the other Southern Pole; as it is about mid-way, between the Cape of *Good Hope*, and the Isles of *Tristan d'Acumba*.

4<sup>o</sup>, From thence Eastwards, the *Asian* South Pole becoming prevalent, and the South Point of the Needle being attracted thereby, there arises a West Variation, very great in Quantity and Extent; because of the great Distance of this Magnetical Pole of the World. Hence it is, That all the Indian Sea, as far as *Hollandia Nova*, and farther, there is constantly a West Variation; and that under the Equator it self, it arises to no less than 18 Degrees, where 'tis most. Add, that about the Meridian of the Island of *Celebes*, being likewise that of this Pole, this Westerly Variation ceases, and an Easterly begins, which reaches to the middle of the South Sea, between the middle of *Zelandia Nova* and *Chili*; leaving room for a small West Variation, govern'd by the *American* South Pole.

5<sup>o</sup>, From the whole it appears, That the Direction of the Needle in the Temperate and Frigid Zone, depends chiefly upon the Counterpoise of the Forces of two Magnetical Poles of the same Nature: As also why, under the same Meridian, the Variation should be in one Place 29 Degrees and a half West, and in another 20 Degrees and a half East.

6<sup>o</sup>, In the Torrid Zone, and particularly under the Equinoctial, respect must be had to all four Poles, and their Positions well consider'd; otherwise it will not be easy to determine what Variations shall be; the nearest Pole being always strongest: yet not so, as not to be counter-balance'd sometimes by the united Forces of two more remote: Thus, in sailing from *St. Helena* by the Isle of *Ascension*, to the Equator, on the North-west Course, the Variation is very little Easterly, and in that whole Tract unalterable; because, the South American Pole (which is considerably the nearest in the aforesaid Places) requiring a great Easterly Variation, is counterpoiz'd by the contrary Attraction of the North American, and the Asian South Pole; each whereof, singly, are, in these Parts, weaker than the American South Pole: and upon the North-west Course, the Distance from this latter is very little varied; and as you recede from the the Asian South Pole, the Balance is still preserv'd by accels towards the North American Pole. In this Case, no notice is taken of the European North Pole; its Meridian being little remov'd from those of these Places, and of it self requiring the same Variations we here find.

After the same manner, may the Variations in other Places, under and near the Equator, be accounted for: So that



that the Hypothesis must be allow'd very adequate, and sufficient for the Phænomena.

*Theory of the Variation of the VARIATION.*

From the Observations abovemention'd, it seems to follow, that all the Magnetical Poles have a Motion Westward: but if it be so, 'tis evident, that it is not a Rotation about the Axis of the Earth; for then the *Variations* would continue the same, in the same Parallel of Latitude (the Longitude only changed) as much as the Motion of the Magnetical Poles: But the contrary is found by Experience; for there is no where, in the Latitude of 51 and an half North, between *England* and *America*, a *Variation* of 11 Degrees East, at this time; as it was once here at *London*. Wherefore, it seems that our *European* Pole is grown nearer the Arctick Pole than it was heretofore; or else, that it has lost Part of its Virtue.

But whether these Magnetick Poles move altogether with one Motion, or with several; whether equally, or unequally; whether circular, or libratory: If circular, about what Centre; if libratory, after what manner? are Things yet unknown.

This Theory seems yet somewhat obscure, and defective: To suppose four Poles in one Magnetical Globe, in order to account for the *Variation*, is a little unnatural; but to conceive those Poles to move, and that by such Laws as to solve the *Variation* of the *Variation*, is still more extraordinary. In effect, the Solution appears as implicate and arbitrary as the Problem.

The Author, therefore, found himself under a Necessity to solve the Phænomena of his Solution; and with this View, presented the following Hypothesis.

The external Parts of the Globe, he considers as the Shell, and the internal as a *Nucleus*, or inner Globe; and between the two he conceives a fluid Medium. That inner Earth having the same common Centre, and Axis of diurnal Rotation, may turn about with our Earth each 24 Hours. Only the outer Sphere having its turbinating Motion some small Matter either swifter or slower than the internal Ball; and a very minute difference in length of Time, by many Repetitions, becoming sensible; the internal Parts will by degrees recede from the external; and not keeping pace with one another, will appear gradually to move, either Eastward or Westward, by the difference of their Motions.

Now, supposing such an internal Sphere, having such a Motion, the two great Difficulties in the former Hypothesis are easily solv'd: For if this exterior Shell of Earth be a Magnet, having its Poles at a distance from the Poles of diurnal Rotation, and if the internal *Nucleus* be likewise a Magnet, having its Poles in two other Places, distant also from the Axis; and these latter, by a gradual and slow Motion, change their Place in respect of the External: We may then give a reasonable Account of the four Magnetical Poles abovemention'd, as likewise of the Changes of the Needle's *Variations*.

The Period of this Motion being wonderful great, and there being hardly an hundred Years since these *Variations* have been duly observ'd; it will be very hard to bring this Hypothesis to a *Calculus*; especially since, tho the *Variations* do increase and decrease regularly in the same Place, yet in differing Places, at no great distance, there are found such casual Changes thereof, as can no ways be accounted for by a regular Hypothesis; but seem to depend upon the unequal and irregular Distribution of the Magnetical Matter within the Substance of the external Shell or Coat of the Earth, which deflect the Needle from the Position it would acquire from the Effect of the general Magnetism of the whole. Of which, the *Variations* at *London* and *Paris* give a notable Instance; for the Needle has been constantly about 1½ more Easterly at *Paris* than at *London*: Tho it be certain, that according to the general Effect, the Difference ought to be the contrary way; notwithstanding which, the *Variations* in both Places do change alike.

Hence, and from some other things of like Nature, it seems plain, that the two Poles of the external Globe are fix'd in the Earth; and that if the Needle were wholly govern'd by them, the *Variations* thereof would be always the same, with some Irregularities upon the Account just now mention'd. But the internal Sphere having such a gradual Translation of its Poles, does influence the Needle, and direct it variously, according to the Result of the attractive or directive Power of each Pole; and consequently, there must be a Period of the Revolution of this internal Ball; after which, the *Variations* will return again, as before. But if it shall in future Ages be observ'd otherwise, we must then conclude, that there are more of these internal Spheres, and more Magnetical Poles than four; which, at present, we have not a sufficient number of Observations to determine, and particularly in that vast *Mer del Zur* which occupies so great a Part of the whole Surface of the Earth.

If then two of the Poles be fix'd, and two moveable, it remains to ascertain, which they are that keep their Place.

The Doctor thinks it may be safely determin'd, that our *European* North Pole is the moveable one of the two Northern Poles, and that which has chiefly influenc'd the *Variations* in these Parts of the World: For in *Hudson's Bay*, which is under the Direction of the *American* Pole, the Change is not observ'd to be near so fast, as in these Parts of *Europe*, tho that Pole be much farther removed from the Axis. As to the South Poles, he takes the *Asian* Pole to be fixed, and consequently the *American* Pole to be moveable.

This granted, 'tis plain the fixed Poles are the Poles of this external Shell or Cortex of the Earth; and the other the Poles of the Magnetical *Nucleus*, included and moveable within the other. It likewise follows, that this Motion is Westwards; and, by consequence, that the *Nucleus* has not precisely attain'd the same Degree of Velocity with the exterior Parts in their diurnal Revolutions; but so very nearly equals it, that in 365 Revolves, the Difference is scarce sensible. That there is any difference, arises hence, That the Impulse whereby the diurnal Motion was impress'd on the Earth, was given to the external Parts; and from thence, in time, communicated to the internal: but not so, as yet perfectly to equal the Velocity of the first Motion impress'd on, and still conserv'd by, the superficial Parts of the Globe.

As to the precise Period, we want Observations to determine it; tho the Author thinks we may with some Reason conjecture, that the *American* Pole has moved Westward 45 Degrees in 90 Years; and that the whole Period thereof is perform'd in about 700 Years.

Mr. *Whiston*, in his *New Larus of Magnetism*, raises several Objections against this Theory; which see under the Article *MAGNETISM*.

*To observe the VARIATION or Declination of the Needle.*

Draw a Meridian-Line, as directed under the Article *MERIDIAN*: Then, a Style being erected in the middle thereof, place a Needle thereon, and draw the right Line it hangs over. Thus will the Quantity of the *Variation* appear. See *COMPASS*.

Or thus: As the former Method of finding the Declination cannot be applied at Sea, others have been thought of; the Principal whereof follow. Suspend a Thread and Plumbet over the Compass, till the Shadow pass thro' the Centre of the Card: Observe the Rhumb, or Point of the Compass, which the Shadow touches when 'tis the shortest. For the Shadow is then a Meridian-Line: Consequently the *Variation* is shewn.

Or thus: Observe the Rhumb wherein the Sun or some Star rises and sets: Bisect the Arch intercepted between the rising and setting; the Line of Bisection will be the Meridian-Line: Consequently, the Declination is had as before. The same is had from two equal Altitudes of the same Star, observed either by Day or Night.

Or thus: Observe the Rhumb wherein the Sun, or a Star rises and sets; and from the Latitude of the Place, find the Eastern or Western Amplitude: For the difference between the Amplitude, and the distance of the Rhumb observed, from the Eastern Rhumb of the Card, is the *Variation* sought.

Or thus: Observe the Altitude of the Sun, or some Star, SI, (Tab. Navigation, Fig. 16.) whose Declination is known; and note the Rhumb in the Compass to which it then corresponds. Since then in the Triangle ZPS we have three Sides, viz. PZ, the Complement of the Elevation of the Pole PR; SP, the Complement of the Declination DS; and ZS, the Complement of the Altitude SI; the Angle PSZ is found by Spherical Trigonometry, (see *TRIANGLE*;) the contiguous one to which, viz. AZS, measures the Azimuth HI. The difference, then, between the Azimuth, and the Distance of the Rhumb observed from the South, is the *Variation* sought.

Note, To have the Eastern or Western Amplitude accurately, regard must be had to the Refraction; the Laws whereof are abundantly deliver'd under the Article *REFRACTION*.

For the more commodious observing in what Rhumb of the Compass the Sun, or a Star is seen, it will be proper to have two little Apertures, or glass Windows opposite to each other under the Limb thereof; with a Telescope Sight fitted to one of them, and to the other a fine Thread.

*VARIATION of the VARIATION, or Declination, is the Change in the Declination of the Needle, observed at different Times in the same Place.*

This *Variation*, first, 'tis said, discover'd by *Gassendi*, is found to observe one and the same Law pretty regularly.

It is supposed owing to the difference of Velocity of the Motions of the internal and external Parts of the Globe. We want Observations of two or three hundred Years, to determine the Quantity of this *Variation* in any certain Time: but from what Observations we have, Dr. *Halley* computes it to be at about 23 Degrees in 90 Years: So that in 1000 Years it had. — See more at large under *VARIATION*.



**VARIATION** of Quantities, in Algebra. See COMBINATION, and PERMUTATION.

**VARIATION**, in Astronomy. The *Variation of the Moon*, called also the *Reflection of her Light*, is the third Inequality observ'd in the Moon's Motion; whereby, when out of the Quadratures, her true Place differs from her Place twice equated. See PLACE, EQUATION, &c.

Sir *I. Newton* takes the Moon's *Variation* to arise partly from the form of her Orbit, which is an Ellipsis; and partly from the Inequality of the Parts of Space which the Moon describes in equal Times, by a Radius drawn to the Earth. See MOON.

To find the greatest *Variation*, observe the Moon's Longitude in the Octants; and for the Time of Observation, compute the Moon's Place twice equated: The difference between the computed and the observ'd Place, is the greatest *Variation*.

*Tycho* makes the greatest *Variation* 40' 30": *Kepler* makes it 51'; Sir *I. Newton* makes the greatest *Variation* at a mean distance between the Sun and the Earth, to be 55' 9"; at the other Distances, the greatest *Variation* is in a Ratio compounded of the duplicate Ratio of the Times of the Moon's Synodical Revolution directly, and a triplicate Ratio of the Distance of the Sun from the Earth inversely. *Phil. Nat. Princ. Math. Prop. XXXIX. Lib. iii.*

**VARIATION**, in the Italian Musick, is understood of the different Manners of playing or singing a Tune, or Song; whether by subdividing the Notes into several others, of lesser Value, or by adding Graces, &c.—In such manner, however, as that one may still discern the Ground of the Tune thro' all the Enrichments; which some call *Embroideries*.

Thus, e. g. the divers Couples of Chacons, *Spanish* Folies, Gavots, *French* Passacailles, &c. are so many *Variations*: So also many Diminutions of Courants, Gavots, and other Pieces for the Lute, Harpsichord, &c. are real *Variations*.

**VARICIFORMES** *Parastate*, in Anatomy, a Name some Authors give to two Vessels near the Bladder; by reason of their many Turnings; serving to work the Seed the better. See PARASTATÆ.

**VARICOSUM** *Corpus*, in Anatomy, the same as *Corpus Pyramidale*. See PYRAMIDALE *Corpus*.

**VARIEGATION**, among Botanists and Florists, the Art or Art of streaking or diversifying the Leaves, &c. of Plants and Flowers with several Colours.

*Variation* is either *Natural*, or *Artificial*.

Of *Natural Variation* there are three Kinds; the first shewing it self in yellow Spots here and there in the Leaves of Plants; call'd by the Gardeners the *yellow Bloach*.

The second, call'd the *white Bloach*, marks the Leaves with a great number of white Spots, or Stripes; the whitest lying next the Surface of the Leaves, usually accompany'd with other Marks of a greenish white, that lie deeper in the Body of the Leaves.

The third, and most beautiful, is where the Leaves are edg'd with white, being owing to some Disorder or Infection in the Juices, which stains the natural Complexion or Verdure of the Plant.

*Variation* is in it self a Disease; and these are only so many Species, or rather Degrees thereof.

In the *yellow*, the Disease is the slightest: The *white* is a sure Sign of a deep Infection, and Weakness in the Plant: which is further evinc'd by this; that no two Leaves are ever mark'd exactly like. This sometimes degenerates into the third, or *edg'd* Kind; which is a total and immoveable Disease, that lays hold not only of the Leaves, but of the Wood, and even the Fruit, Seed, &c.

In the two first Kinds, there is a possibility of recovering the Plants to their native Verdure, by inarching 'em into a healthful Stock of the same Species, and letting the Stocks stand a Year or two join'd together; by which means, the Juices of the strong Stock overpowering the Distemper, throw off the morbid Humours by Perspiration: But the third Kind is incurable; no Art can recover the edg'd Plant to produce plain green Leaves again.

*Artificial Variation*, is perform'd by inarching, or inoculating a striped, or *variegated* Plant into a plain one of the same sort: as a *variegated* common Jessamin, into a plain, common, *Spanish*, *Brazil*, or *Indian* Jessamin. See INOCULATION, and ABLACTATION.

A single Bud, or Eye, Mr. *Bradley* observes, being plac'd in the Escutcheon of a distemper'd Tree, where it can only receive Nourishment from the vitiated Juices, will become *variegated* proportionably to the Nourishment it draws; and will partake more of the white or yellow Juice, than if a Branch should be inarch'd: the Bud having nothing to nourish it, but the Juices of the Plant it is inoculated on; whereas, a Cyon inarch'd is fed both by the striped Plant, and the healthful one.

As to the natural Stripes, or *Variations*, there are some particular Circumstances to be observ'd; 1<sup>o</sup>, That some Plants only appear *variegated*, or bloach'd in the Spring and Autumn; the Stains disappearing as they gather Strength in Summer: Of this Kind are Rue, Thyme, and Pot Marjoram.

2<sup>o</sup>, Some Plants are continually bloach'd in the spongy Part of their Leaves; the Sap-Vessels all the Time remaining of a healthful green: Such are the Alaternus, Orange-Mint, &c. which being strengthen'd by rich Manure, or being inarch'd into healthful Plants, throw off the Distemper.

3<sup>o</sup>, In other Plants, the Disease is so rooted and inveterate, that it is propagated with the Seed: Such are the Archangel, Water Betony, Bank Cress, Borage, Striped Salary, and Sycamore. The Seeds of which produce striped Plants.

**VARIOLÆ**, in Medicine, a contagious Disease, popularly called the *Small Pox*.

It is call'd *Variole*, as shewing it self in Pustles, or little Tumors like *Varices*; or as *variegating* the Skin. See *Small Pox*.

**VARIORUM**, in Matters of Literature, a Term or Phrase of Abreviation, used for an Edition of a Classic Author, printed in *Holland*, with the Notes of divers Authors thereupon; *Cum Notis Variorum*, or *Cum Selectis Variorum Observationibus*. See EDITION.

In this Sense, we say, *Plautus Variorum*; a Set of *Dutch Variorums*, &c.

The *Variorums*, for the generality, are the best Editions.

The Word is the Genitive Plural of the Latin *Varius*, different, divers.

**VARIX**, in Medicine, a little Dilatation of a Part of a Vein, so as to make it bulge out, or thrust the Skin above its natural level. See VEIN.

Sometimes, it is confin'd to one single Branch of a Vein; and sometimes it extends to several; and sometimes runs crooked, and bent, in various Knots and Circumvolutions.

It happens oftneft to the Crural and Hemorrhoidal Veins; sometimes, also, to those in the Testes, and frequently in the Abdomen and Breasts of pregnant Women, and such as give suck.

It is supposed owing to the too great abundance or thickness of the Blood; or to the Relaxation of the Membranes of the Veins; immoderate Labour, Sprains, Cramps, too great Pressure or Stricture by Bandages; and Stagnations of the Blood from a Plethora, Cacochymia, &c. may give occasion thereto.

Melancholic Persons, and those who feed on coarse Meats, are most subject to them: The generality of Women with Child have *Varices* on their Thighs and Legs, occasion'd by the *Fætus* compressing the Iliac Veins; and by that means preventing the Reflux of the Blood to the Heart.

*Varices* happening spontaneously, and proving of a moderate size, are rarely dangerous; but even are allow'd serviceable in case of the Hemorrhoids. When immoderate, they sometimes occasion a Cachexy, Dropsy, or Consumption.

The Cure is to be attempted by Evacuations, as Phlebotomy and Catharticks; external Applications, as discutient Fomentations, Cataplasms, Embrocations, Bandages, &c. Or, lastly, where the Case grows dangerous, by Incision.

The Word is pure *Latin*, form'd from the Verb *Variare*; by reason of the Turns and Meanders of the Veins, which the Tumor sometimes follows.

*Hernia* **VARICOSA**, in the Testes, is known by the Situation of the Tumor, the Course of the Vein, Relaxation of the Part, or its appearing inflated with Air, distended, and painful. See HERNIA.

It is remedy'd by a proper Truss, or Bandage, with the Medicines abovemention'd.

**VARLET**. See VALET.

**VARNISH**, or **VERNISH**, a thick, viscid, shining Liquor; used by Painters, Gilders, and various other Artificers, to give a gloss and lustre to their Works, as also to defend 'em from the Weather, Dull, &c.

There are several Kinds of *Varnish* in use; as the *Siccative*, or *Drying Varnish*, made of Oil of Aspin, fine Turpentine, and Sandarac, melted together.

*White Varnish*, call'd also *Venetian Varnish*; made of Oil of Turpentine, fine Turpentine, and Mastic.

*Spirit of Wine Varnish*, made of Sandarac, White Amber, Gum Flemy, and Mastic; serving to gild Leather, Picture Frames, &c. withal.

*Gilt Varnish*, made of Linseed Oil, Sandarac, Aloes, Gum-Gutta, and Litharge of Gold.

*China Varnish*, made of Gum Lacca, Colophony, Mastic, and Spirit of Wine.

And, lastly, the Common *Varnish*; which is only common Turpentine, dissolv'd in Oil of Turpentine.

Besides these *Varnishes*, there are *hard* and *soft Varnishes*, or Grounds, used by the Etchers and Engravers. See ETCHING.



VARNISH, is also used for a kind of shining Plaister, wherewith Potters Ware, Delft Ware, China Ware, &c. are cover'd, to give them a Smoothness and Lustre. Melted Lead is the *Varnish* us'd for the first; and Smalt for the second.

The true *Varnish* used by the *Chinese* and *Japonesse*, to give that inimitable Lustre to their Porcelain, is one of the grand Secrets in that Manufacture; and the only thing wanting, to make *Delft* and *French* Ware vie with the *Chinese*. Several have described the Preparation thereof; particularly *Kircher*: but none ever succeeded in the Trial. See PORCELAIN.

VARNISH is also a Term given to the Colours which antique Medals have got in the Earth. See MEDAL.

The Value of a Medal is heighten'd by a Beauty which Nature alone is able to give, and Art has never yet attain'd to counterfeit: we mean, the Colour or *Varnish* which certain Soils tinge the Medal withal; some with a blue, almost as beautiful as that of a *Turquoise*; others with an inimitable Vermilion Colour; others with a certain shining polish'd brown, infinitely finer than our *Brazil* Figures.

The most usual *Varnish* is a fine green, which hangs to the most delicate Strokes without effacing them; much more accurately than the finest Enamel does on Metals.

Brass alone is susceptible of it; for as to Silver, the green Rust that gathers on it always spoils it; and it must be scower'd off with Vinegar, or Lemon Juice.

There is also a *false*, or *modern Varnish*; which the Falsifiers of Medals give to their Counterfeits, to give them the Air of Antiquity: 'Tis discover'd by its being softer than the natural *Varnish*, which is as hard as the Metal it self.

Some lay their spurious Medals under-ground, where they contract a degree of *Varnish* that may impose on the less knowing: Others use Sal Armoniac, mix'd with Vinegar; others burnt Paper.

VAS, *Vessel*. See VESSEL.

VAS-BREVE, q. d. *Short Vessel*, in Anatomy, a Vessel at the bottom of the Stomach; thus called from its shortness. See STOMACH.

It sends divers little Branches from the bottom of the Stomach to the Spleen; or, according to the Use the Antients imagin'd it to be of, from the Spleen to the Stomach: For their Notion was, that by means of this Vessel, the Spleen supplied the Stomach with an acid Juice; which acting on the inner nervous Membranes of the Stomach, caus'd the Sensation of *Hunger*; and at the same time mixing with the Foods contain'd therein, assisted by its acid quality in the Dissolution thereof. See SPLEEN, HUNGER, &c.

But upon examining the little Branches of this Vessel more accurately, we find they don't pierce into the Stomach, and that they are no more than Branches of Veins, serving to return the Blood into the Splenic Vein; whence it passes into the *Vena Porta*. See SPLENIC, and PORTA.

VASA Adiposa, *Preparantia*, &c. See ADIPOSA, PRÆPARANTIA, &c.

VASA Concordiæ, among Hydraulic Authors, are two Vessels, so constructed, as that one of them, tho full of Wine, won't run a Drop, unless the other, being full of Water, do run also.

Their Structure and Apparatus may be seen in *Wolffius*, *Element. Mathes.* T. II. Hydraul.

VASCULAR, in Anatomy, is applied to any thing consisting of divers Vessels, Veins, Arteries, &c.

Thus, we say, The *Vascular* and *Valvular* Texture of the Lungs.

All the Flesh in an animal Body is found to be *Vascular*, none of it Parenchymous, as the Antients imagin'd. See FLESH, PARENCHYMA, &c.

VASCULAR, VASCULARIUS, in Antiquity, was the Denomination of a kind of Tradesmen, or Artificers, among the ancient *Romans*.

The *Vascularii* were properly a kind of Goldsmiths, or Workmen who made Silver and Gold Vessels without Reliefs, or Figures of different Matter thereon.

Hence, according to *Salmasius*, it is, that *Cicero* in his Vith Oration against *Verres*, distinguishes *Vascularius* from *Celator*.

In the Art call'd by the *Greek* *Ἐμπλαστική*, which was the Art of Superadding Ornaments of precious Stones, or rich Metals, to Vases of other Metals; the *Vascularii* and *Celatores* were different; the first being those who made the *Vase*, the second those who added the Ornaments: But in the Art call'd *Τεχνολογία*, or the Art of cutting Bas Reliefs, or stamping other Figures on Metal; the *Vascularii* were also *Celatores*, or Engravers: that is, they who made the *Vase*, made also the Reliefs, or Figures wherewith it was enrich'd.

VASCULIFEROUS Plants, are, according to the Botanists, such as besides the common Calyx, have a peculiar Vessel or Case to contain the Seed; which is sometimes divided into Cells. See PLANT.

These have always a Monopetalous Flower; either uniform, or difform. See MONOPETALOUS.

The former, have their Seeds all divided, 1<sup>o</sup>, into two Partitions, as the *Hyoscyamus*, *Nicotiana*, *Priapea*, and the *Gentiana*. 2<sup>o</sup>, Into three Partitions, as the *Convolvulus*, *Speculum Veneris*, *Trachelium*, *Rapunculus Campanula*, *Rapunculus Corniculatus*, &c. 3<sup>o</sup>, Into four Partitions; as the *Siramonium*.

Those of the latter Kind, which have a difform Monopetalous Flower, as the *Linaria Pinguicula*, *Antirrhinum*, *Aristolochia*, *Scrophularia*, *Digitalis*, *Pedicularis*, *Melampyrum*, *Euphrasia*, &c.

VASE, a Term of equal import with the Latin *Vas*, whence it is form'd; and the English *Vessel*.

It is applied to the antient Vessels, dug from under-ground, or otherwise found, and preserv'd in Cabinets, &c. as Vessels of Sacrifice, Urns, &c. and to other more modern Vessels which are rather of Curiosity and Shew than Use; as those of Crystal, Porcelain, &c.

VASES, in Architecture, are certain Ornaments, plac'd on Corniches, Socles, or Pedestals; representing the Vessels of the Antients; particularly those used in Sacrifice, as the *Præfericulum*, *Simpulum*, Incense-Pots, and Flower Pots: all which are occasionally enrich'd with Basso Reliefs.

They are commonly placed there to crown or finish Facades, or Frontispieces. See CROWNING.

They are frequently call'd *Acroteria*; and are usually insulate. See ACROTHERIA.

*Vitruvius* mentions a kind of *Theatrical Vases*, made of Brass, or Earthen Ware, call'd *Echeia*; which they dispos'd in private Places, under the Steps and Seats of the Theatres, to aid and increase the Reflection and Resonance of the Actors Voices, &c. See THEATRE.

'Tis said, there are *Vases* of this Kind in the Cathedral Church of *Milan*.

VASE is particularly used in Architecture, to signify the Body of the *Corinthian* and *Composite* Capital; call'd also the *Tambour*, or *Drum*; and sometimes the *Campana*, or *Bell*. See CORINTHIAN, and CAMPANA.

VASE is also sometimes used among Florists, for what they otherwise call the *Calyx*.

The *Vase*, or rather *Calyx* of a Tulip, is the Top, or Head of a Tulip; the Leaves whercof form a kind of *Vase*, or Cup. See CALYX.

Goldsmiths, Pewterers, &c. also use *Vase* for the middle of a Church Candlestick; which is usually of a roundish Figure, bordering somewhat on that of a *Vase*.

VASSAL, in our antient Customs, a Person who would Fidelity, and Homage to a Lord, on account of some Land, &c. which he held of him, in Fee. See FEALTY, HOMAGE, LORD, &c.

The *Vassal*, *Vassallus*, was also called *Piratus*, *Loriceman*, and *Fec-man*; but now the Denomination is changed into that of *Tenant in Fee*. See TENANT.

They sometimes also used the Term *Vassour* for *Vassal*; whence *Vavassour*. See VAVASSOUR.

If a *Vassal* offended his Lord grievously, either in Person, or in Honour, he committed the Crime of Felony; which carry'd with it a Confiscation of his Fee. See VASSALAGE.

A *Rear Vassal*, is he who holds of a Lord, who himself is *Vassal* of another Lord. See MESNE.

VASSAL was also antiently used for *Soldier*; by reason Fealties at first, were given to none but Military Men. See FEALTY.

*Du Cange* will have the Word to come from *Vas*, which antiently signify'd a Servant or Domestic of a Prince, and sometimes the *Comites*, or *Affidites* in publick Trust.

*Menage*, after *Cujas*, takes *Vassal* to have been form'd of *Gesse*, or *Gessus*; an antient *Gaulish* Word, signifying Fellow, or Companion in Arms; from *Gessò*, or *Gessum*, or *sum*, a kind of Javelin us'd among them.

*Vassius* derives *Vassal* from *Vas*, *Pledge*; whence also it will have it to be, that they are sometimes call'd *Fidei*.

VASSALAGE, the State of a *Vassal*; or a Servitude and Dependency on a superior Lord. See VASSAL.

Antiently, they distinguish'd between *Liege Vassalage* and *Simple Vassalage*.

*Liege Vassalage* only belong'd to the King; as carry'd with it an Obligation on the side of the *Vassal*, to serve his Lord in War against all Persons whatever.

In all *Simple Vassalage*, the Fealty, or *Liege* was still reserv'd to the King.

Some also make *Active Vassalage*, and *Passive*. The first is the Right of Fealty residing in the Lord; the second the Service and Duties incumbent on the Tenant.

VASTO, in Law, a Writ that lies for the Heir, or Tenant for Life, or Years, for making waste; or for an Infringement in the Reversion, or Remainder.

VASTUS, in Anatomy, a Name common to two Muscles of the Leg, distinguish'd into *internal*, and *external*; call'd from their largeness: both of 'em serving to extend the Leg.



*VASTUS Externus*, springs from the Root of the great *Trochanter*, and from the *Linea Aspera*; outwardly tendinous and inwardly fleshy; and descending obliquely forwards, becomes, *vice versa*, tendinous inwardly and fleshy outwardly; till meeting the Tendon of the *Rectus*, it grows quite tendinous, and is inserted together with it.

*VASTUS Internus*, arises likewise partly tendinous, and partly fleshy, from the *Linea Aspera*, immediately below the less *Trochanter*, upon the outside of the *Tibia*; and is continued almost to the lower *Apophyses* thereof, on the inside: whence it descends obliquely, and growing tendinous, is inserted with the former.

VAT, or FAT, a kind of Vessel, used to hold Wine, Ale, Beer, Syder, or any other Liquor, in the time of its Preparation.

VATICAN, is properly the Name of one of the seven Hills whereon *Rome* stands: On the Foot hercof is the famous Church of *St. Peter*, hence called the *Vatican*; and a magnificent Palace of the Pope, which has the same Denomination.

Hence arise divers figurative Expressions; as, the *Thunderbolt of the Vatican*, *q. d.* the Pope's Anathema, &c.

The Library of the *Vatican* is one of the most celebrated in the World: It is particularly remarkable for its Manuscripts. Towards the beginning of the last Century, it was greatly augmented by the addition of that of the *Electoral Palatine*. It is open to all the World three or four times a Week.

In it are shewn a *Virgil*, *Terence*, &c. above a thousand Years old; the Manuscript whereon the Edition of the Septuagint was made; and abundance of Rabbinical Manuscripts. See LIBRARY.

The Word, according to *Aulus Gellius*, is derived from *Vaticinium*, Prophecy; by reason of the Oracles and Predictions which were used to be deliver'd there by the Inspiration of an antient Deity, called *Vaticanus*; who was supposed to unbind the Organ of Speech in new-born Children; and whom others will have to be no other than *Jupiter*, consider'd in that Capacity.

VATICINATION, the Act of Prophecy or Divining. See DIVINATION, and PROPHECY.

VAVASOR, or VALVASOR, or VAVASOUR, or VALVASOUR, in our antient Customs, a Diminutive of *Vassal*, or *Vassor*; signifying a *Vassal of a Vassal*, or one who held a Fee of another *Vassal*. See VASSAL.

Yet, *Camden*, and others, hold *Vavasor* to be a Dignity, next below that of a Baron: He adds, that the word is form'd of *Vas fortitum ad Valetudinem*, a Vessel chosen for Safety, and Health.

Some derive the Word *a valvis*, *quasi obligatus sit ad stare ad valvas Domini*, *vel dignus sit eas intrare*; as being a Person oblig'd to wait at his Lord's Door, or worthy to enter thereat: But the Etymology is ridiculous enough.

*Du Cange* says, they were call'd *Valvasores*, and *Valvasini*; and were of two Kinds: the great, called *Valvasores*, who held of the King; such were Counts and Barons: and the lesser, call'd *Valvasini*, who held of the former.

VAVASORY, the Quality of the Lands, or Fee held by a *Vavasor*.

There are base *Vavasories*, and frank, or noble *Vavasories*; according as it hath pleas'd the Lord to make his *Vavasour*.

Base *Vavasories* are those for which the Lord of the Fee owes Summage, Light horse, Rents, or other Services.

Free *Vavasories* are such as are exempt from these Services. *Quod dicitur de Baronia non est observandum in Vavasoria, vel aliis minoribus feodis quam Baronia, quia caput non habent sicut Baronia.* *Bract. Lib. II. cap. 39.*

VAUDOIS, or VALDENSES, or WALDENSES, a Name given to a Sect of Christians, who made their first appearance about the Year 1160; or, as others will have it, about the Year 1118.

The Occasion of their Rise is thus deliver'd: 'In an Assembly of several of the more considerable Citizens of *Tyons*, one of 'em fell down suddenly dead in the middle. Upon which, *Pierre Valdo*, who was one of the Number, being struck with the Accident, distributed a large Sum of Money among the Poor on the Spot. This drawing a great number of People to follow him, he exhorted them to embrace a voluntary Poverty, after the Example of *Jesus Christ* and his Apostles: And as he was a Man of some learning, he expounded to 'em the New Testament in the vulgar Tongue.

The Clergy soon began to cry out on him as a rash Intruder: but he, despising their Reprimands, still held on; and even went further. For the Accusations of the Priests having exasperated him, he began to declaim against 'em; expos'd their corrupt Lives and Morals; and even, by degrees, came to censure some of the Corruptions in the Discipline and Doctrine of the Church. And this pav'd the way to the Reformation.

The *Vaudois* had their Name from this *Valdo*, whose Religioners they were. They were also call'd *Tyomists*, and *Salez*, or *Insabarez*, or *Ensabarez*.

VAULT, *Fornix*, in Architecture, an arch'd Roof, so contriv'd, as that the several *Voussoirs*, or *Vault-Stones* whereof it consists, do by their Disposition sustain each other. See ARCH.

*Vaults* are to be prefer'd, on many Occasions, to Soffits, or flat Cielings, as they give a greater Rise and Elevation; and besides, are more firm and durable. See CIELING, ROOF, &c.

The Antients, *Salmasius* observes, had only three Kinds of *Vaults*: The first, the *Fornix*, made Cradle-wise; the second, *Testudo*, Tortoise-wise, call'd by the French *Cul de Four*; or Oven-wise: The third *Concha*, or Trumper-wise, as growing narrower and narrower.

But the Moderns subdivide these three Sorts into a great many more, to which they give different Names, according to their Figures and Uses: Some are *Circular*, others *Elliptical*, &c.

The Sweeps of some, again, are larger, others less Portions of a Sphere: All above Hemispheres are call'd *high*, or *surmounted Vaults*; all that are less than Hemispheres, are *low*, or *surbas'd Vaults*, or *Testudines*, &c.

In some the Height is greater than the Diameter; in others 'tis less: There are others, again, quite flat, only made with Haunses; others Oven-like, or in form of a *Cul de Four*, &c. others growing wider as they lengthen, like a Trumpet.

There are likewise *Gothic Vaults*, with *Ogives*, &c.

Of *Vaults*, again, some are *single*, others *double*, *cross*, *diagonal*, *horizontal*, *ascending*, *descending*, *angular*, *oblique*, *pendent*, &c. See OGIVE, GROIN, PENDENTIVE, &c.

*Master Vaults*, are those which cover the principal Parts of Buildings; in contradistinction to the *lesser*, or subordinate *Vaults*, which only cover some little Part; as a Passage, a Gate, &c.

*Double Vault*, is such a one as being built over another, to make the exterior Decoration range with the interior, leaves a Space between the Convexity of the one, and the Concavity of the other; as in the Dome of *St. Peter's* at *Rome*.

*Vaults with Compartments*, are such whose Sweep, or inner Face, is enrich'd with Pannels of Sculpture, separated by Piat-bands: These Compartments, which are of different Figures, according to the *Vaults*, and usually gilt, on a white Ground, are made with Stuc, on Brick Walls; as in the Church of *St. Peter's* at *Rome*; and with Plaister, on Timber *Vaults*.

#### Theory of VAULTS.

A Semicircular Arch, or *Vault*, standing on two *Piedroits*, or Imposts, and all the Stones that compose them, being cut and placed in such manner, as that their Joints, or Beds, being prolong'd, do all meet in the Centre of the *Vault*; 'tis evident, all the Stones must be in form of Wedges, *i. e.* must be wider and bigger a-top than at bottom: by virtue of which, they sustain each other, and mutually oppose the Effort of their Weight, which determines them to fall.

The Stone in the middle of the *Vault*, which stands perpendicular to the Horizon, and is call'd the *Key of the Vault*, is sustain'd on each side by two contiguous Stones, just as by two inclined Planes: and of consequence, the Effort it makes to fall, is not equal to its Weight.

But still, that Effort is greater, as the inclined Planes are less inclin'd; so that, if they were infinitely little inclined, *i. e.* if they were perpendicular to the Horizon, as well as the Key, it wou'd tend to fall with its whole Weight; and wou'd actually fall; but for the Mortar.

The second Stone, which is on the right or left of the Key-Stone, is sustain'd by a third; which, by virtue of the Figure of the *Vault*, is necessarily more inclin'd to the second, than the second is to the first; and of consequence, the second, in the Effort it makes to fall, employs a less Part of its Weight than the first.

For the same Reason, all the Stones, reckoning from the Key-Stone, employ still a less and less Part of their Weight, to the last; which resting on a horizontal Plane, employs no part of its Weight; or, which is the same thing, makes no effort to fall; as being entirely supported by the Impost.

Now, in *Vaults*, a great Point to be aim'd at, is, that all the *Voussoirs*, or Stones, make an equal effort towards falling: To effect this, it is visible, that as such (reckoning from the Key to the Impost) employ a still less and less Part of its whole Weight, the first, for Instance, only employing one half; the second, one third; the third, one fourth, &c. there is no other way to make those different Parts equal, but by a proportionable Augmentation of the whole, *i. e.* the second Stone must be heavier than the first; the third than the second, &c. to the last; which should be infinitely heavier.

*M. de la Hire* demonstrates, what that Proportion is, in which the Weights of the Stones of a Semicircular Arch, must be increased, to be in *Equilibrio*, or to tend with equal Forces to fall; which is the firmest Disposition a *Vault* can have.

Before



Before him, the Architects had no certain Rule to conduct themselves by; but did all at random. Reckoning the Degrees of the Quadrant of the Circle from the Key-Stone to the Impost; the Extremity of each Stone will take up so much the greater Arch, as it is farther from the Key.

M. *de la Hire's* Rule is, to augment the Weight of each Stone, above that of the Key-Stone, as much as the Tangent of the Arch of the Stone, exceeds the Tangent of the Arch of half the Key. Now, the Tangent of the last Stone, of necessity becomes infinite, and of consequence its Weight should be so too: but as Infinity has no place in Practice, the Rule amounts to this, that the last Stones be loaded as much as possible, that they may the better resist the Effort which the Vault makes to separate 'em; which is call'd the *Shoot or Drift of the Vault*.

M. *Parent* has since determin'd the Curve, or Figure which the *Extrados*, or outside of a Vault, whose *Intrados*, or inside, is spherical, must have, that all the Stones may be in *Equilibrio*.

*Key of a VAULT*, is a Stone, or Brick, in the middle of the Vault, in form of a truncated Cone; serving to bind or fasten all the rest. See *KEY*.

*The Reins of a VAULT*, or the filling up, are the Sides which sustain it.

*The Pendentive of a VAULT*, is the Part suspended, between the Arches or Ogives. See *PENDENTIVE*.

*The Impost of a VAULT*, is the Stone whereon the first *Vauffair*, or Stone of the Vault, is laid. See *IMPOST*, &c.

*VAULT*, or *VOLT*, in the Manage, an Action of a Horse, wherein he turns round, or makes a Circle side-ways, going round a Centre.

There are some *Vaults* wherein the Horse makes two parallel Circles, the one with his fore Feet, and the other with his hind; and others, wherein the Horse making Curves and Capriols, his Haunches follow his Shoulders, and only make one Circle, or Oval, about a Pillar or Centre.

An *inverted*, or *backward Vault*, is that wherein the Horse, turning likewise sideways, has his Head towards the Centre, and his Tail towards the Circumference: So that the great Circle is form'd by the fore-Feet, and the little one by the hind-Feet.

A *Demi-Vault*, or *Half-Vault*, is when the Horse only goes half the Circle, and comes back again the same way.

*Vault* is also used for the Manages practis'd on the wooden Horse, to learn to mount and unmount with Ease and Expedition.

*VAUNT-Lay*, among Hunters, a setting of Hounds, or Beagles in a readiness where the Chace is to pass; and casting 'em off before the rest of the Kennel come in. See *RELAY*.

*VAYVODE*, or *VAIVODE*. See *WAYVODE*.

*UBIQUISTS*, *UBIQUITARIES*, or *UBIQUITARIANS*, a Sect of Hereticks, which rose and spread it self in *Germany*; and whose distinguishing Doctrine was, that the Body of Jesus Christ is every where, or in every Place.

*Brentius*, one of the earliest Reformers, is said to have first broach'd this Error, in 1560. *Melanchton* immediately declar'd against it; maintaining, that it introduc'd, with the *Eutychians*, a kind of Confusion into the two Natures of Jesus Christ; and protested that he would oppose it as long as he liv'd.

On the other hand, *Andrew* and *Flaccius Illyrius*, *Osiander*, &c. espoused *Brentius's* Party; and asserted, the Body of Jesus Christ to be every where.

The Universities of *Leipsick* and *Wirttemberg*, and the generality of Protestants, set themselves against this new Heresy, but in vain: The *Ubiquitarians* grew stronger and stronger. Six of their Leaders, *Smidelin*, *Selnecker*, *Muculus*, *Chemnitius*, *Chytraeus*, and *Cornerus*, having a Meeting in 1577, in the Monastery of *Berg*; they there compos'd a kind of *Credo*, or *Formula* of Faith; wherein the *Ubiquity* was establish'd as an Article.

All the *Ubiquists*, however, are not agreed: Some of 'em, and among the rest the *Swedes*, hold that Jesus Christ, even during his Mortal Life, was every where: Others maintain, that 'tis only since his Ascension that his Body is every where.

*G. Hornius* will only allow *Brentius* to be the first Propagator of *Ubiquitism*; its first Inventor, according to him, was *John of Westphalia*, a Minister at *Hambourg*, in 1552.

In the University of *Paris*, *Ubiquist* is a Term applied to such Doctors in Theology as are not restrain'd to any particular House; either to that of *Navarre*, or *Sorbonne*.

The *Ubiquists* are called simply *Doctors in Theology*; whereas the others add, *of the House of Sorbonne*, or *Navarre*, &c. See *SORBONNE*.

The Word is form'd from the *Latin* Adverb, *ubique*, every where.

*UBIQUITY*, more properly call'd *Omnipresence*; an Attribute of the Godhead, whereby he is always, intimately present to all Things; gives the *Essé* to all Things; knows, preserves, and works all, in all Things. See *GOD*.

For since God cannot be said to exist in all Places, as plac'd therein, (since, then, he would need something to his Existence, *vis.* Place; and would have Extension, Parts, &c.) he must be conceiv'd to be every where, or in all Things, as a first, universal efficient Cause, in all his Effects.

He is present, therefore, to all his Creatures, as a pure Act, or an Exercise of an active Virtue, which knows, preserves, governs, &c. every thing. Nor are, even finite Minds, present otherwise than by Operation. See *PRESENCE*.

*UDDER*, *UBER*, in Comparative Anatomy, that Part in Brutes wherein the Milk is prepared; answering to the *Mammae*, or Breasts, in the human Kind. See *MAMMÆ*, and *MILK*.

*VECTIS*, in Mechanics, one of the Powers; more usually call'd the *Lever*. See *LEVER*.

*VECTOR*, in Astronomy, a Line suppos'd to be drawn from any Planet moving round a Centre or the *Focus* of an Ellipsis, to that Centre, or *Focus*.

This, by some Writers of the new Astronomy, is call'd *Vector*, because it is that Line by which the Planet seems to be carried round its Centre; and with which it describes Areas, proportional to the Times. See *PLANET*.

*VEDETTE*, in the Military Art, a Sentinel on Horseback, detach'd from the main Body of the Army, to discover and give notice of the Enemy's Designs. See *RECONNOITRE*.

*VEER*, a Sea Term, variously used. *Veering out a Rope*, denotes the letting it go by hand, or letting it run out of it self: Thus, they say, *Veer more Cable*; that is, let more run out: But they do not use the Word for the letting out of any running Rope, except the Sheet.

The Word *Veer* is also used in reference to the Wind; for when it changeth often and suddenly, they say, *the Wind veereth*.

Also, when a Ship, under sail, hath her Sheet *veered* out, they say, *She goes veering*; that is, at large, neither by a Wind, nor directly before it, but between both; which they also call *Quartering*. See *WIND*, and *QUARTERING*.

*VEGETABLE*, in Physiology, a Term applied to all Plants, consider'd as capable of growth, *i. e.* to all natural Bodies which have Parts organically form'd for Generation, and Accretion, but not Sensation. See *PLANT*.

In *Vegetables*, there is supposed to be a Principle of Life, commonly call'd the *Vegetative Soul*. See *VEGETATIVE*, and *VEGETATION*.

*Boerhaave* very scientifically defines a *Vegetable* to be a Body generated of the Earth; to which it adheres, or is connected, by Parts called Roots, thro' which it receives the Matter of its Nourishment, and Increase; and consists of Juices, and Vessels, sensibly distinct from each other: Or, a *Vegetable* is an organical Body, compos'd of Vessels, and Juices, every where distinguishable from each other; to which grow Roots, or Parts whereby it adheres to some other Body, from which it derives the Matter of its Life, and growth.

This Definition furnishes a just and adequate Idea of a *Vegetable*: for by its consisting of Vessels and Juices, it is distinguish'd from a Fossil; and by its adhering to another Body, and deriving its Nourishment therefrom, it is distinguish'd from an Animal. See *FOSSIL*, and *ANIMAL*.

A *Vegetable* is defined an *Organical Body*, because consisting of different Parts, which jointly concur to the Exercise of the same Function. See *ORGANICAL*.

*Adhering by some of its Parts to another Body*; for we know of no Plant that is so absolutely vague and fluctuating, but has still a Body it adheres to; tho' that Body may be various, *e. g.* Earth, as in our common Plants; Stone, as in Rock Plants; Water, as in Sea Plants; and Air, as in some Mucilages. See *ROCK-PLANT*, *SEA-PLANT*, &c.

As to those few Plants which appear to float with the Water, their manner of growth is somewhat anomalous: M. *Tournefort* has shewn, that all Plants do not arise strictly from Seeds; but that some, instead of Semen, deposite, or let fall a little drop of Juice, which sinking in the Water, by its Gravity reaches the bottom, or some Rock, &c. in its way; to which it sticks, strikes Root, and shoots into Branches: Such is the Origin of Coral. See *CORAL*.

Add, that the Root of a Plant may have any Situation at pleasure, with respect to the Body thereof; nor needs it either be lowest, or highest, &c. Accordingly, in Aloes, Coral, Mosses, Fungus's, &c. the Root is frequently uppermost, and its growth downward.

The vascular Structure of *Vegetables*, is render'd very apparent, by an Experiment of Mr. *Willoughby*: Cutting off some pretty big Branches of Birch, and making a sort of Balloon, or Reservoir on the End thereof with some soft Wax; upon filling this with Water, and holding the Branch upright, the Water, in a few Minutes, sunk into the Vessels of the Wood, and running quite thro' the Length, drop'd out considerably fast; continuing so to do, so long as the Water was pour'd on.



The same succeeds in a Sycamore, Walnut, &c. tho the Flux here is not so copious. *Phil. Transact.* N<sup>o</sup> 70.

There are Secrets whereby the Growth of *Vegetables* is surprizingly promoted. Mr. *Boyle* mentions a Virtuoso, who entertain'd his Friends at the End of their Meal with a Salad of Lettices, which he sow'd in their presence, immediately before they sat down to Table.

The Chymists have furnish'd us with some very extraordinary *Vegetables*; as the *Arbor Dianæ*, *Arbor Martis*, &c.

In effect, Gold, Silver, Iron, and Copper, being prepared in Aqua fortis, there rises out of 'em a kind of Tree, which vegetates, or grows, to the naked Eye, and spreads into Branches, Leaves, &c. the whole height of the Water; till all the Matter is spent therein. See *TREE*.

This Water the Chymists call *Flint-Water*; the Secret whereof has been communicated by *Rhodes Canassès*, a Greek Chymist.

VEGETATION, the Act whereby Plants receive Nourishment, and grow. See *PLANT*, *VEGETABLE*, &c.

Plants, we learn from the Microscope, consist of different Parts, Vessels, &c. analogous to those of Animals: And each kind of Vessel is supposed to be the Vehicle of a different Humour, or Juice secreted from the Mass of Sap; which is consider'd as the Blood, or common Fund of them all. See *SAP*, and *BLOOD*.

Dr. *Grew* assigns the Offices of the several Vessels: Those placed on the inner Verge of the Bark, he calls *Lymphæducts*, and supposes 'em destin'd for the Conveyance of the most aqueous or watery Liquor; these, Mr. *Bradley* calls, the *new forming Vessels*, which are annually produced, and help to increase the Bulk of the Tree.

Those in the middle of the Bark, Dr. *Grew* calls *Lactiferous*, or *Resiniferous* Vessels; their use, according to *Bradley*, is to return the superfluous Sap: These Vessels, *Grew* observes, are the principal *Viscera* of Plants; and adds, that as the *Viscera* of Animals are but Vessels conglomerated; so the Vessels of a Plant are *Viscera* drawn out at length. See *VISCERA*.

To the Nutrition of Plants, as well as Animals, it seems necessary that there be a Concurrence of two specifically distinct Fluids; and a learned Author maintains an Intermixture of two such Humors in every Part of a Tree, like that which we observe in Linsey-woolsey: Every Part of Sap being impregnated with other Tinctures, and continually filter'd from Fibres of one kind to those of another. From this Mixture, many of the Phenomena of the Ripening, Odours, Colours, &c. are accounted for.

#### Theory of VEGETATION.

The Process of Nature in the *Vegetation* of Plants, is very accurately deliver'd by the excellent *Malpighi*, to the Effect following.

The Egg (or Seed) of the Plant being excluded out of the Ovary, (call'd *Pod*, or *Husk*) and requiring further fostering and brooding; is committed to the Earth. See *SEED*, and *EGG*.

There, that kind Mother having receiv'd it into her Bosom, not only does the Office of Incubation, by her own warm Vapours and Exhalations, join'd with the Heat of the Sun; but, by degrees, supplies what the Seed requires for its further growth: as abounding every where with Canals and Sinus's, wherein the Dew, and Rain-Water, impregnated with fertile Salts, glide, like the Chyle and Blood in the Arteries, &c. of Animals.

This Moisture meeting with the new deposited Seed, is percolated, or strain'd thro' the Pores or Pipes of the outer Rind, or Husk (corresponding to the *Secundines* of *Fetus's*) on the inside whereof lie one or more, commonly two, thick Seminal Leaves, (answering to the *Placenta* in Women, and the *Corydons* in Brutes). See *SECUNDINE*, *PLACENTA*, &c.

These Seed-Leaves consist of a great Number of little *Vesiculae*, or *Bladders*; with a Tube, corresponding to the Navel-string in Animals. See *UMBILICUS*.

Into these *Vesiculae* is receiv'd the Moisture of the Earth, strain'd thro' the Rind of the Seed; which makes a slight Fermentation with the proper Juice before contain'd therein.

This fermented Liquor is convey'd by the Umbilical Vessel to the Trunk of the little Plant; and to the Gem or Bud, which is contiguous thereto: upon which, a *Vegetation* and increase of the Parts succeeds.

Such is the Procedure in the *Vegetation* of Plants; which the illustrious Author exemplifies in a Grain of Wheat; as follows:

The first Day the Grain is sown, it grows a little turgid; and the Secundine, or Husk, gapes a little in several Places: and the Body of the Plant, being continued by the Umbilical Vessel to a conglobated Leaf, (which is call'd the Pulp or *Flesh* of the Seed, and is what constitutes the *Flower*) swells; by which means, not only the Gem, or Sprout, (which is to be the future Stem) opens, and waxes green; but the Roots begin to bunch out; whence the *Placenta*, or Seed Leaf, becoming loose, gapes.

The second Day, the Secundine or Husk, being broke thro'; the Stem, or Top of the future Straw, appears on the outside thereof, and grows upwards by degrees: In the mean time, the Seed Leaf guarding the Roots, becomes turgid with its *Vesiculae*; and puts forth a white Down. And the Leaf being pull'd away, you see the Roots of the Plant bare; the future Bud, Leaves, and rest of the Stalk, still laying hid. Between the Roots, and the ascending Stem, the Trunk of the Plant is knit by the Navel knot to the Flower-Leaf; which is very moist, tho it still retains its white Colour, and its natural Taste.

The third Day, the Pulp of the conglobated or round Leaf, becomes turgid with the Juice which it has receiv'd from the Earth, fermenting with its own.

Thus the Plant increases in bigness, and its Bud or Stem becoming taller, and from whitish, turns greenish: The lateral Roots also break forth greenish, and pyramidal from the gaping Sheath, which adheres closely to the Plant; and the lower Root grows longer, and hairy, with many Fibres shooting out of the same.

Indeed, there are hairy Fibres hanging all along on all the Roots, except on their Tips; and these Fibres are seen to wind about the saline Particles of the Soil, little Lumps of Earth, &c. like Ivy; whence they grow curled. Above the lateral Roots, there now break out two other little ones.

The fourth Day, the Stem mounting upwards, makes a right Angle with the Seminal Leaf: The last Roots put forth more; and the other three, growing larger, are clothed with more Hairs, which straitly embrace the Lumps of Earth; and where they meet with any Vacuity, unite into a kind of Net-work. The Conglobate, or Flower-Leaf, is now softer; and when bruis'd yields a white sweetish Juice, like Barley Cream. By stripping it off, the Root and Stem of the Plant are plainly seen, with the intermediate Navel-knot, whose outer Part is solid, like a Bark, and the inner more soft, and medullary.

The fifth Day, the Stalk still rising, puts forth a permanent or stable Leaf, which is green, and folded; the Roots grow longer, and there appears a new Tumor of a future Root: The outer, or Sheath-Leaf is loosen'd; and the Seed-Leaf begins to fade.

The sixth Day, the Stable-Leaf being loosen'd, the Plant mounts upwards; the Sheath-Leaf still cleaving about it like a Bark. The Seed-Leaf is now seen sinuous, or wrinkled, and faded; and this being cut or freed from the Secundine, the Flesh, or *Pericarpium*, is found of a different Texture; the outer Part, whereby the outside of the Seed or Grain is heaved up, being more solid; but the inside vesicular, and fill'd with Humor: especially that Part next the Navel-knot. All the Leaves being pull'd off, the Roots torn, and the Flower-Leaf remov'd, the Trunk appears; wherein, not far from the Roots, the Navel-knot bunches out, which is solid, and hard to cut: Above, there is the Mark of the Sheath-Leaf, which was pull'd off; and underneath, as in an Arm-pit, the Gem is often hid. The hind Part of the Plant shews the breakings forth of the Roots, likewise the faded *Placenta*, &c.

After the eleventh Day, the Seed Leaf, as yet sticking to the Plant, is crumpled, and almost corrupted; within, it is hollow; and about the Secundine, the mucous and white Substance of the Seed being continu'd to the Navel knot, forms a Cavity. All the Roots becoming longer, put forth new Branches out of their Sides: The Seed Leaf withers, and its Vesicles are empty'd: The Internodes, or Spaces between the Knots, grow longer; new Gems appear; and the middle Root grows several Inches long.

After a Month, the Roots and Stalk being grown much longer, new Buds break out at the first Knot, and little Tumors bunch out, which at length break into Roots.

For other Circumstances, see *GENERATION*, *SAP*, *SEED*, *RADICLE*, *PLUME*, *PERPENDICULARITY*, *PARALLELISM*, &c.

As to the Vegetable Matter, or the Food whereby Plants grow, there is some doubt: The common Opinion, among Naturalists, is, that Water is the great vegetable Food; which is confirm'd by many Experiments.

A Sprig of Balm, Mint, or the like Plant, is set in a Phil of pure Water, without any Mixture of Earth; yet the Sprig grows, puts forth Roots, Leaves, and Branches.

Agreeable to which, is another fam'd Experiment of *Van Helmont*; who drying 200 Pounds of Earth, and planting a Willow which weigh'd five Pounds therein, he water'd it only with Rain, or distill'd Water; and to secure it from any other Earth, cover'd it with a perforated tin Cover: At five Years end, weighing the Tree, with all the Leaves it had borne in that time, he found it to weigh 169 Pounds 2 Ounces; yet the Earth was only diminish'd two Ounces. See *WATER*.

To ascertain this Point, Dr. *Hoodward* has made some very good Experiments; which, at the same time, give light to many other Circumstances of *Vegetation*. His Experiments are most of 'em with Sprigs of Mint, and some other Plants,



Plants, nicely weigh'd, and inclos'd in equal glass Phials; well cover'd up with Parchment; leaving only room for the Stems to ascend thro' it; and fill'd with Water: some with Spring Water, others with Rain Water, others with *Thames* Water.

At the End of 77 Days he took 'em all out again; weigh'd 'em, as also the Water left; and computed the Weight of Water expended on 'em, and the Proportion of the Increase of the Plant, to the Expence of the Water.

The next Year, viz. 1692, he made fresh Experiments with the same Phials, and the same sort of Plants, weigh'd as before, only some were fill'd with *Hyde-Park* Conduit Water alone, others with the same Water, and a certain Proportion of Garden Earth dissolv'd in it; and others in the same Water dissolv'd.

At the End of 56 Days, he weigh'd the Plants, Water, &c. and computed what each Plant had gain'd, what Quantity of Water was expended on the Plant, and the Proportion of the Increase of the Plant, to the decrease of the Water.

The Result of all which Experiments, he gives us in the following Observations and Reflections:

1°. *In Plants of the same Kind, the less they are in bulk, the smaller Quantity of the fluid Mass, in which they are set, is drawn off; the Consumption, where the Mass is of equal thickness, being pretty nearly proportion'd to the Bulk of the Plant.*

In effect, the Water seems to ascend up the Vessels of Plants, in much the same manner as up a Filtre: and it is no great wonder that the larger Filtre should draw off more Water than the smaller; or that a Plant that hath more and larger Vessels, should take up a greater Share of the Fluid in which it is set, than one that has fewer can: Nor is this noted as a thing very considerable in it self, but chiefly with regard to what follows.

2°. *Much the greater Part of the fluid Mass thus drawn off, and convey'd into the Plant, does not settle or abide there; but passes thro' their Pores, and exhales up into the Atmosphere.* That the Water in these Experiments ascended only thro' the Vessels of the Plants, is certain; since some Glasses, which had no Plants in them, tho' disposed in like manner as the rest, remain'd at the end of the Experiment as at first, and without any Diminution of Water: and that the greatest Part of it flies off from the Plant into the Atmosphere, is as certain.

The least Proportion of the Water expended, was to the Augment of the Plant, as 46 or 50 to 1; and in some 100, 200, nay, in one, as 700 to 1.

This so continual an Emission of Water, in so great Plenty, from the Parts of the Plant, affords a manifest Reason, why Countries that abound with Trees, and the larger *Vegetables* especially, should be very obnoxious to Damps, great Humidity in the Air, and more frequent Rains, than others that are more open and free. The great Moisture in the Air, was a great Inconvenience and Annoyance to those who first settled in *America*; which, at that time, was overgrown with Woods and Groves: But as these were burnt and destroy'd, to make way for Habitations, and Culture of the Earth; the Air mended, changing into a Temper much more serene and dry than before.

Nor does this Humidity go off pure, and alone, but usually carries with it many Parts of the same Nature with those wherof the Plant, thro' which it passes, consists: The Cras-  
ser, indeed, are not so easily borne up into the Atmosphere, but are usually deposited on the Surface of Leaves, Flowers, and other Parts of the Plants; whence our Mannas, our Honies, and other gummous Exudations of *Vegetables*: But the finer and lighter Parts are with greater ease sent up into the Atmosphere; thence they are convey'd to our Organs of Smell, by the Air we draw in Respiration; and are pleasant or offensive, beneficent or injurious to us, according to the Nature of the Plants from whence they arise. And since these owe their Rise to the Water that ascends out of the Earth, thro' the Bodies of Plants; we cannot be far to seek for the Cause why they are more numerous in the Air, and a greater Quantity of Odours is found exhaling from *Vegetables*, in warm humid Seasons, than in any others.

3°. *A great Part of the terrestrial Matter that is mix'd with Water, ascends up into the Plant, as well as the Water.*

There was much more terrestrial Matter, at the End of the Experiment, in the Water of the Glasses that had no Plants in them, than in those which had Plants. The Garden-Mold dissolved in some of the Glasses, was considerably diminished, and carry'd off; nay, the terrestrial and vegetable Matter, was borne up in the Tubes filled with Sand, Cotton, &c. in that quantity, as to be evident, even to Sense: and the Bodies in the Cavities of the other Tubes, that had their lower Ends immers'd in Water, wherein Saffron, Cochineal, &c. had been infus'd, were ting'd with yellow, purple, &c. To look abroad a little towards our Shore, and Parts within the Verge of the Sea, these will present us with a large Scene of Plants, that along with the Vegetable,

take up into them mere Mineral Matter also, in great abundance; such as our Sea-Purflain, the several sorts of Algas, of Samphires, and other marine Plants: Those contain common Sea Salts, which are the same as the Fossil, in such plenty, as not only plainly to be distinguish'd on the Palate, but may be drawn out of them in considerable quantity: nay, some affirm, There are Plants found that will yield Nitre, and other Mineral Salts.

The *Vegetable* Matter being very fine and light, is surprizingly apt, and disposed to attend Water in all its Motions and follow it into each of its Recesses; as appears not only from the Instances above alledg'd, but many others: percolate it with all the Care imaginable, filtre it with never so many Filtrations, yet some terrestrial Matter will remain. Dr. *Woodward* has filter'd Water thro' several Sheets of thick Paper, and after that thro' very close fine Cloth, twelve times doubled; and this over and over, and yet a considerable Quantity of this Matter discover'd it self in the Water after all. Now, if it thus passes Interstices that are so very small and fine, along with the Water; it is the less strange, it should attend it in its Passage thro' the Ducts and Vessels of Plants: It is true, filtering and distilling of Water, intercepts, and makes it quit some of the earthy Matter it was before impregnated withal; but then, that which continues with the Water after this, is fine and light, and such, consequently, as is in a peculiar manner fit for the Growth and Nourishment of *Vegetables*. And this is the Case of Rain Water: the quantity of terrestrial Matter it bears up into the Atmosphere, is not great; but what it doth bear up, is chiefly of that light Kind, or Vegetable Matter, and that, too, perfectly dissolv'd, and reduc'd to single Corpuscles, all fit to enter the Tubules and Vessels of Plants: On which accounts it is, that this Water is so very fertile and prolifick.

The Reason why all the terrestrial Matter mix'd with the Water, does not ascend into the Plant, is, that the mineral Matter makes a great deal of it, which is not only gross and ponderous, but scabrous and inflexible; and so not dispos'd to enter the Pores of the Roots: Besides a great many of the simple Vegetable Particles, by degrees, unite, and form small Clods, or *Molecules*, which stick to the Extremities of the Roots of those Plants; and others of them, entangled in a looser manner, form the *Nubeculae*, or green Bodies, so commonly observed in stagnant Water: These, when thus conjoin'd, are too big to enter the Pores, or ascend up the Vessels of Plants; which singly they might have done.

Hence it is, that in Agriculture, be the Earth never so rich, good, and fit for the Production of Corn, or other *Vegetables*; little will come of it, unless the Parts of it be separated and loose: And 'tis on this account, such Pains are bestow'd in the digging, tilling, ploughing, fallowing, harrowing, and breaking the clodded Lumps of Earth: And 'tis the same way that Sea Salt, Nitre, and other Salts, promote *Vegetation*.

Some Authors imagine Nitre essential to Plants; and that nothing in the Vegetable Kingdom is transacted without it: But the Doctor assures us, that by all the Trials he has been able to make, the Thing seems to him quite otherwise; and when contiguous to the Plant, Nitre rather destroys than nourishes it. But Nitre, and other Salts, certainly loosen the Earth, and separate the concreted Parts thereof; by that means, fitting and disposing them to be assumed by the Water, and carried up into the Seed or Plant for its Formation and Increase. 'Tis every body's Observation, how apt all sorts of Salts are to be wrought upon by Moisture, how easily they run with it; and when these are drawn off, and have deserted the Lumps wherewith they were incorporated, those must moulder immediately, and fall asunder of course: The hardest Stone we meet with, if it happen, as it frequently doth, to have any sort of Salt intermix'd with the Sand of which it consists, upon its being expos'd to a humid Air, in a short time dissolves and crumbles all to pieces; and much more will clodded Earth, or Clay, which is not of so compact and solid a Constitution.

The same way is Lime likewise serviceable in this Affair: The Husbandmen say, It does not fatten, but only mellowes the Ground: by which they mean, it doth not contain any thing in it self that is of the same Nature with the Vegetable Mould, or afford any Matter fit for the Formation of Plants, but merely softens, and relaxes the Earth; by that means, rendring it more capable of entring the Seeds and Vegetables set in it, in order to their Nourishment, than otherwise it would have been. The Properties of Lime are well known, and how apt it is to be put in a Ferment and Commotion by Water; nor can such Commotion ever happen when Lime is mixed with Earth, however hard and clodded that may be, without opening and loosening it.

4°. *The Plant is more or less nourished, in proportion, as the Water in which it stands, contains a greater or smaller Quantity of proper terrestrial Matter in it.* The



Truth of this Proposition, is discernable thro' the whole Process of this Author's Experiments. The Mint in one of his Glasses, was of much the same Bulk and Weight with that of two or three others: But the Water in which the first was, being River Water, which was apparently stor'd more copiously with terrestrial Matter, than the Spring or Rain Water wherein the others stood, occasion'd it to arrive at almost double the Bulk that either of them had, and with a less expence of Water too: So likewise the Mint in another Glass, in whose Water was dissolv'd a small Quantity of good Garden-Mold; tho it had the Disadvantage to be less, when first set, than either of the Mints in two other Glasses whose Water was the very same with the first, only had none of the Earth mix'd with it; yet, in a short time, the Plant not only overtook, but much outstrip'd the others.

The Reason why the Proportion of the Increase of the Plant is limited to the quantity of proper terrestrial Matter in the Water, is, that all, even Vegetable Matter, is not proper for the Nourishment of every Plant: Nor do there want good Indications, that every Kind of Vegetable requires a peculiar and specifick Matter for its Formation and Nourishment; yea, each Part of the same Vegetable: and that there are very many and different Ingredients to go to the Composition of the same individual Plant. If, therefore, the Soil wherein any Vegetable or Seed is planted, contains all, or most of these Ingredients, and those in due quantity; it will grow and thrive there; otherwise it will not: If there be not as many sort of Corpuscles, as are requisite for the Constitution of the main, and more essential Parts of the Plant, it will not prosper at all; if there are these, and not in sufficient plenty, it will never arrive to its natural Stature: or, if there be any the less necessary and essential Corpuscles wanting, there will be some failure in the Plant; it will be defective in Taste, Smell, Colour, or some other way.

Indeed, 'tis inconceivable how one uniform, homogeneous Matter, having its Principles, or original Parts, of the same Substance, Constitution, Magnitude, Figure, and Gravity; should constitute Bodies so unlike in all those respects, as Vegetables of different Kinds are; nay even as the different Parts of the same Vegetable: That one should carry a resinous, another a milky, a third a yellow, a fourth a red Juice in its Veins; one afford a fragrant, another an offensive Smell; one sweet to the Taste, another acid, bitter, acerb, austere, &c. that one should be nourishing, another poisonous; one purging, another astringent. And this Argument makes equally strong against those who suppose mere Water the Matter out of which all Bodies are form'd. A Cataputia in one of the Glasses receiv'd but little increase, only  $3\frac{1}{2}$  Grains all the while it stood, tho 2501 Grains of Water were spent upon it: But this might possibly be owing not to the Water's wanting Matter fit for the Nourishment of that particular Plant; but to the Water's being an improper Medium for it to grow in: Too much of that Liquor, in some Plants, may probably hurry the terrestrial Matter thro' the Vessels, too fast for them to lay hold of it.

But a farther Proof of this Doctrine, is, That the Soil, once proper for the Production of some sort of Vegetable, does not ever continue to be so; but in tract of time loses its Property; and sooner in some Lands, and later in others: If Wheat, for Example, be sown upon Land proper for that Grain, the first Crop will succeed very well, and perhaps the second, and the third, as long as the Ground is in heart, as the Farmers call it; but in a few Years it will produce no more, if sow'd with that Corn: Some other Grain it may, as Barley; and after this hath been sown so oft, that the Land can bring forth no more of it, it may afterwards yield some good Oats; and perhaps Pease after them. At length it becomes barren; the Vegetative Matter that at first it abounded with, being reduced by the successive Crops, and most of it borne off: Each sort of Grain takes forth that peculiar Matter, that is proper for its own Nourishment.

It may be brought to bear another Series of the same Vegetables; but not till it is supplied with a new Fund of Matter, of the like sort with what it first contain'd; either by the Ground's lying fallow for some time, till the Rain hath pour'd a fresh Stock upon it; or by the manuring it. That this Supply is of the like sort, is evident from the several Manures found best to promote the *Vegetation*; which are, chiefly, either Parts of Vegetables, or of Animals: Of Animals, we say, which either derive their own Nourishment immediately from Vegetable Bodies, or from other Animals that do so; in particular, the Blood, Urine, and Excrements of Animals; shavings of Horns, and Hoofs; Hair, Wool, Feathers, calcin'd Shells, Lees of Wine and Beer, Ashes of all sorts of Vegetable Bodies, Leaves, Straw, Roots, and Stubble, turned into Earth by ploughing, or otherwise, to rot and dissolve there. These are our best Manures; and being vegetable Substances, when refunded back again into the Earth, serve for the Formation of other like Bodies. See MANURE, and COMPOST.

The like is observable in Gardens, where the Trees, Shrubs, and Herbs, after their continuing in one Station; till they have derived thence the greater Part of the Matter fit for their increase; will decay and degenerate; unless either fresh Earth, or some fit Manure be applied to them: 'Tis true, they may maintain themselves there for some time, by sending forth Roots farther and farther; to an Extent all around, to fetch in more Provision; but at last, they must have a fresh Supply brought to them, or they themselves remov'd or transplanted to some Place better furnish'd with Matter for their Subsistence. And accordingly, Gardiners observe, that Plants that have stood a long while in a place, have longer Roots than usual; part of which they cut off, when they transplant to a fresh soil, as not now of any farther use to them.

All these Instances point forth a particular Terrestrial Matter, and not Water, for the Subject to which Plants owe their Increase: Were it Water only, there would be no need of Manures, or transplanting; the Rain falls in all Places; in this Field and that, indifferently; on one side of an Orchard and Garden, as well as another: Nor could there be any Reason, why a Tract of Land should yield Wheat one Year, and not the next; since the Rain showers down alike on each.

5°. *Vegetables are not formed of Water, but of a certain peculiar terrestrial Matter.* A little Distillation shews; that there is a considerable Quantity of this Matter, contained both in Rain, Spring, and River Water: and the Experiments above mention'd, shew that the much greatest Part of the fluid Mass that ascends up into Plants, does not settle or abide there, but passes thro' the Pores of them; and exhales into the Atmosphere; and that a great Part of the terrestrial Matter, mixed with the Water, passes up into the Plant along with it; and that the Plant is more or less augmented, in proportion, as the Water contains a greater or smaller quantity of that Matter: From all which, we may reasonably infer, that Earth, and not Water, is the Matter that constitutes Vegetables.

One of the Sprigs of Mint drew up into it 2501 Grains of the fluid Mass, and yet had receiv'd but  $3\frac{1}{2}$  Grains of Increase from it: A second, tho it had at first the Disadvantage to be much less than the third; yet, being set in Water wherewith Earth was plentifully mixed, and the other in Water without any such Earth, it had vastly outgrown it; weighing at least 145 Grains more than that did: A fourth Plant, tho at first a great deal less than the fifth, yet being set in the foul crass Water, that was left in the Still, after that in which the last was set was drawn off, had gained in weight, at the end, above double what that in the finer and thinner Water had. The Proportion of the Augment of that Plant, which thrived most, was to the fluid Mass spent upon it, but as 1 to 46; in others, as 1 to 60, 100, 200, and in the Cataputia, but as 1 to 714. One of the Sprigs took up 39 Grains of Water a-day, one Day with another; which was much more than the whole Plant originally, and yet it gained not  $\frac{1}{4}$  of a Grain a-day in weight: And another took up 253 Grains a-day, which was near twice as much as its original weight; and after all, the daily Increase of the Plant was no more than  $2\frac{1}{3}$  Grains.

6°. *Spring and Rain Water contain near an equal Charge of Vegetable Matter; River Water more than either of them.* These Proportions hold in the main, but a strict and just Comparison is hardly to be expected; inasmuch as in all probability, the Water that falls in Rain, contains at some times a greater share of terrestrial Matter, than that which falls at other times; a more powerful and intense heat, of necessity, hurrying up a larger quantity of that Matter, along with the humid Vapours that form Rain, than one more feeble and remiss possibly can. The Water of one Spring may flow forth with an higher Charge of this Matter than that of another: this depending partly upon the quickness of the Ebullition of the Water, and partly upon the quantity of that Matter latent in the *Strata*, thro' which the Fluid passes; and the greater or less Laxity of those *Strata*: For the same Reason, the Water of one River may abound with it, more than that of another; nay, the same River, when much agitated and in Commotion, must bear up more of it, than when it moves with less Rapidity and Violence. That there is a great quantity of this Matter in Rivers, and that it contributes vastly to the ordinary Fertility of the Earth; we have an illustrious Instance in the Nile, the Ganges, and other Rivers, that yearly overflow the neighbouring Plains: their Banks shew the fairest and largest Crops of any in the World.

7°. *Water serves only for a Vehicle to the terrestrial Matter which forms Vegetables; and does not it self make any addition to them.* Where the proper terrestrial Matter is wanting, the Plant is not augmented, tho never so much Water ascend into it: Water, then, is not the Matter that composes Vegetable Bodies; it is only the Agent that conveys the Matter to them, that distributes it to their several Parts for their Nourishment: That Matter is sluggish and inactive,



inactive, and would lie eternally confin'd to its Beds of Earth, without advancing up into Plants; did not Water, or some like Instrument, fetch it forth, and carry it into them.

This Fluid is capacitated for the Office here assign'd it, several ways: By the Figure of its Parts, which, as appears from many Experiments, is exactly and mathematically spherical; their Surfaces being perfectly polite, and without any the least Irregularities. It is evident, Corpuscles of such a Figure are easily susceptible of Motion, and far above any others whatever; and consequently the most capable of moving and conveying other Matter that is not so active: then, the Intervals of Bodies of that Figure, are, with respect to their Bulk, of all others, the largest, and so the most fitted to receive and entertain foreign Matter in them; besides, as far as the Trials hitherto made inform us, the constituent Corpuscles of Water, are each singly consider'd, absolutely solid, and do not yield to the greatest external Force: This secures their Figure against any Alteration, and the Intervals of the Corpuscles must be always alike. By the latter, it will be ever disposed to receive Matter into it; and by the former, when once received, to bear it along with it. Water is farther capacitated to be a Vehicle to this Matter, by the Tenuity and Fineness of the Corpuscles of which it consists: We hardly know any Fluid in all Nature, except Fire, whose constituent Parts are so exceeding subtile and small, as those of Water are: they will pass Pores and Interstices, that neither Air nor any other Fluid will. This enables them to enter the finest Tubes and Vessels of Plants, and to introduce the terrestrial Matter, conveying it to all Parts of them; whilst each, by means of Organs it is endu'd with for the purpose, intercepts, and assumes into it self such Particles as are suitable to its own Nature, letting the rest pass on thro' the common Ducts.

8°. *Water is not capable of performing this Office to Plants, unless assisted by a due quantity of Heat.* This must concur, or *Vegetation* will not succeed. The Plants set in the Glasses in *October*, and the following colder Months, had not near the Quantity of Water sent up into them, or so great an additional Increase, by much; as those that were set in *June, July*, and the hotter Months. It is plain, Water has no power of moving it self, or rising to the vast height it doth, in the more tall and lofty Plants; so far from it, that it doth not appear from any Discovery yet made, that even its own Fluidity consists in the intestine Motion of its Parts; whatever the *Cartesians* think. Indeed, we need nothing more to solve all the Phenomena of Fluidity, than such a Figure and Disposition of Parts, as Water has: Spherical Corpuscles must stand so very ticklish upon each other, as to be susceptible of every Impression; and tho not perpetually in Motion, must be always ready and liable to be put into it, by any the slightest Force imaginable: 'Tis true, the Parts of Fire, or Heat, are not capable of moving themselves, any more than those of Water; but they are more subtile, light, and active, than those are, and so more easily put into Motion. See *FLUIDITY*.

That the Concourse of Heat in this Work is really necessary, appears not only from the Experiments before us, but from all Nature; from the Fields and Forests, Gardens and Orchards: We see in Autumn, as the Sun's Power is gradually less and less, so its Effects on Plants is remitted, and *Vegetation* slackens by little and little. Its Failure is first discernable in Trees; which being raised highest above the Earth, require a more intense heat, to elevate the Water charg'd with Nourishment, to their Tops; so that for want of fresh Support and Nutriment, they shed their Leaves, unless secured by a very firm and hard Constitution indeed, as our Ever-greens are: Next, the Shrubs part with theirs; and then the Herbs, and lower Tribes: the Heat being, at length, not sufficient to supply even these, tho so near the Earth, the Fund of their Nourishment. As the Heat returns the succeeding Spring, they all recruit again, and are furnish'd with fresh Supplies and Verdure: But first, those which are lowest, and nearest the Earth, and that require a lesser degree of Heat to raise the Water with its earthy Charge into them: then the Shrubs and higher Vegetables, in their turns; and lastly, the Trees. As the Heat increases, it grows too powerful, and hurries the Matter with too great Rapidity, thro' finer and more tender Plants: These, therefore, go off, and decay; and others that are more hardy and vigorous, and require a greater degree of heat, succeed in their Order. By which Mechanism, provident Nature furnishes us with a very various and differing Entertainment; and what is best suited to each Season, all the Year round.

As the Heat of the several Seasons affords us a different Face of Things, so the several distant Climates shew the different Scenes of Nature, and Productions of the Earth. The hotter Countries ordinarily yield the largest and tallest Trees, and those, too, in a much greater Variety than the colder; even those Plants common to both, attain to a much greater Bulk in the Southern, than the Northern Climes:

may, there are some Regions so cold, that they raise no Vegetables at all to a considerable size; this we learn from *Greenland, Iceland*, and other Places of like cold Situation and Condition: In these there are no Trees, and the Shrubs are poor, little, and low. Again, in the warmer Climates, and such as do furnish Trees, and the large Vegetables, if there happen a Remission or Diminution of the usual Heat, their Productions are impeded in proportion: Our cold Summers give us Proof enough of this; for tho at such times the Heat we have, is sufficient to raise the Vegetative Matter into the lower Plants, our Corns, Wheat, Barley, Pease, and the like; and we have plenty of Strawberries, Raspberries, Gooseberries, Currants, and the Fruits of such Vegetables as are low and near the Earth; and a moderate Store of Cherries, Mulberries, Plums, &c. and some others that grow at somewhat greater height; yet our Apples, Pears, Walnuts, and the Productions of the taller Trees, have been fewer, and those not so thoroughly ripen'd, and brought to that Perfection, as they are in more benign and warm Seasons: and indeed, in Trees of the same Kind; those that keep closest to the Earth, always produce the most and best Fruit: For which Reason it is, that the Gardeners check and restrain the Growth of their better Fruit-Trees, and prevent their running up to too great a height. As to our Grapes, Apricots, Peaches, Nectarins, and Figs, they being transplanted hither out of hotter Countries, it is the less wonder we have a Failure of them in cold Summers. Nor is it the Sun, or the ordinary Emission of the Subterranean Heat only, that promotes *Vegetation*, but any other indifferently according to its Power and Degree; as we find from our Stoves, Hot-Beds, &c. See *HEAT, COLD, WATER, EARTH, SOIL, TREE, DWARF, PRUNING, &c.*

*VEGETATIVE*, a Term applied to that Principle, or Part in Plants, by Virtue whereof they receive Nourishment, and grow, or *vegetate*. See *VEGETATION*.

The Philosophers speak of three Kinds of Souls, the *Vegetative, Sensitive, and Rational*. See *SOUL*.

The *Vegetative Soul*, is that Principle whereby Trees and Plants live, grow, produce their Kind, &c. See *PLANT*.

This *Vegetative Principle* is differently seated in different Plants: An ingenious Author observes, that, generally speaking, its Place is exactly between the Trunk, and Root; at least, this appears to be the Place in most of the Semiferous Tribe; which, if cut down near that Place, rarely shoot again.

In other Plants, as the Elm, and many edible Plants, it seems to reside wholly in the Roots; which, if cut into ever so many Parts, yet, those being planted in the Ground, soon grow. See *ROOT, and PLANTING*.

In others, as the Willow Kinds, it seems to be diffus'd all over, both Root, Trunk, and Branches; insomuch that if cut into a thousand Pieces, there is no destroying 'em without splitting 'em in the middle; and scarcely then. See *FOECUNDITY*.

Lastly, In others, as the *Cercus's, Ficus's, &c.* it is seated in the Body, Branches, and Leaves; any of which being put into the Ground, strike Root immediately, and grow.

The Office of this *Vegetative Principle*, is to concoct the indigested Salts which ascend thro' the Roots; and to assimilate 'em to the Nature of the Plant. See *VEGETATION*.

*VEHICLE*, in its literal Sense, signifies somewhat that carries, or bears a Thing along: Thus, in Anatomy, the Serum is said to be the *Vehicle* that conveys the Globules of the Blood. (See *BLOOD*.) And in Pharmacy, any Liquid to dilute another with, or to administer it in, to a Patient, is called a *Vehicle*. Water is the *Vehicle* of the nutritious Matter of Vegetables. See *VEGETATION*.

*VEIL*, a piece of Stuff, serving to hide, or prevent the Sight of any thing.

In this Sense, we read of a large *Veil*, or Curtain, in the Temple of *Jerusalem*, miraculously rent at the Passion of our Saviour. See *TEMPLE*.

In the *Romish Churches*, in time of *Lent*, they have *Veils*, or large Curtains over the Altar, Crucifix, Images of the Saints, &c.

The Term *Veil* is also used for a large piece of Crape, wore on the Head by the Nuns; as the Badge of their Profession: Hence, to *take the Veil*, is to commence Religious.

The Novices wear white *Veils*; and those who have made the Vows, black *Veils*. See *NOVICE*.

The Prelate before whom the Vows are made, blesses the *Veil*, and gives it the Religious. See *RELIGIOUS, BENEDICTION, &c.*

*VEIN, VENA*, in Anatomy, a Name given to several Vessels, or Canals, which receive the Blood from the divers Parts of the Body, to which the Arteries have convey'd it from the Heart; and carry it back to the Heart again. See *BLOOD, &c.*

The *Veins* are only a Continuation of the extreme Capillary Arteries, reflected back again towards the Heart. See *CAPILLARY, and ARTERY*.



In their Progress, uniting their Channels as they approach it, they, at last, all form three large *Veins*, or Trunks, viz.

The *Vena Cava descendens*, which brings the Blood back from all the Parts above the Heart. See CAVA.

The *Vena Cava ascendens*, which brings the Blood from all the Parts below the Heart. See HEART.

And the *Porta* which carries the Blood to the Liver. See PORTA, &c.

The *Anastomosis*, or Inosculation of the *Veins* and Arteries, was first seen by the Microscope, in the Feet, Tails, &c. of Frogs, and other amphibious Animals, by *Leeuwenhoek*; but has since been observ'd in other Animals, particularly the Omentum of a Cat, by Mr. *Cowper*, &c. See ANASTOMOSIS, CIRCULATION, &c.

The Coats of the *Veins* are four, the same with those of the Arteries; only the muscular Coat is as thin in all the *Veins*, as it is in the Capillary Arteries; the Pressure of the Blood against the Sides of the *Veins*, being less than that against the Sides of the Arteries; because the Force of the Heart is much broke in the Capillaries. See PHLEBOTOMY.

In the *Veins* there is no Pulse, because the Blood is thrown into them with a continued Stream, and because it moves from a narrow Channel to a wider. See PULSE.

But they have a Peristaltick Motion, which depends on their muscular Coat. See PERISTALTIC.

The Capillary *Veins* unite with one another, as has been said of the Capillary Arteries; only their Course is directly opposite: for instead of a Trunk distributed into Branches and Capillaries, a *Vein* is a Trunk form'd out of a Concourse of Capillaries. See CAPILLARY.

In all the *Veins* which are perpendicular to the Horizon, excepting those of the Uterus and the *Porta*, there are small Membranes, or Valves: sometimes there is only one, sometimes there are two, and sometimes three, placed together, like so many half Thimbles stuck to the Sides of the *Veins*, with their Mouths towards the Heart.

These, in the Motion of the Blood towards the Heart, are press'd close to the Sides of the *Vein*; but shut the *Veins*, against any re-flux of the Blood that way from the Heart, and thereby sustain the Weight thereof in the great Trunks. See VALVES.

The *Veins* are distinguish'd, with respect to their Situation, into *superior* and *inferior*, *ascending*, and *descending*; *right*, as the *Mesenteria*, and *left*, as the Splenic Branch; *internal*, as the *Basilica*; and *external*, as the *Humeral*.

Many of them, likewise, acquire Denominations from the Parts wherein they are found; as, the *Jugulars*, *Phrenic*, *Renal*, *Iliac*, *Hypogastric*, *Epigastric*, *Axillary*, *Crural*, *Umbilical*, *Sural*, *Sciaticæ*, *Saphenæ*, *Medianæ*, *Cephalic*, *Thoracic*, *Subclavian*, *Intercostal*, *Coronal*, *Diaphragmatic*, *Cecal*, *Hemorrhoidal*, *Cervical*, *Thymal*, *Mamillary*, *Gastric*, *Stomachic*, *Epiptic*, *Splenic*, &c.

They are also distinguish'd from their particular Offices, into *Spermatic*, *Emulgent*, &c. all which see exhibited in Plate Anatomy—and their particular Descriptions under their proper Articles—

VEIN is also apply'd to the Streaks, or Waves of divers Colours, appearing on several sorts of Woods, Stones, &c. as if they were really painted; and which the Painters frequently imitate in painting Wainscots, &c.

Marble is generally full of such *Veins*. See MARBLE.

*Lapis Lazuli* has *Veins* like Gold. See LAPIS.

*Ovid*, speaking of the Metamorphoses of Stones into Men, says,

*Quæ modo vena fuit, sub eodem nomine manfit.*

*Veins*, in Stones, are a Defect, proceeding usually from an Inequality in their Consistence as to *hard*, and *soft*; which makes the Stone crack, and shiver in those Parts.

VEIN, is also applied, in the same Sense with *Stratum*, to the different Dispositions and Kinds of Earth met withal in digging. See STRATUM.

Thus, we say, a *Vein* of Sand, another of Rock, &c. a *Vein* of Ocher, Vitriol, Allom, Calamine, Coal, &c.

Mineral Waters acquire their different Qualities by passing thro' *Veins* of Vitriol, Sulphur, &c. See MINERAL.

In the same Sense, we say, a *Vein* of Gold, Silver, Quick-silver, &c. meaning certain Parts of the Earth, wherein the Ore or Globe of those Metals is found; and which is distributed into divers Branches, like the *Veins* in the Body. See ORE, MINE, &c.

*Tavernier* gives us a Description of the *Veins* in the Diamond Mines in *Golconda*, with the manner of digging them. See DIAMOND.

In digging of Coal-Pits, they meet with a Variety of *Veins*, the Order, &c. of which, is different in different Places: In the *Philosophical Transactions*, N<sup>o</sup> 300. the *Veins* in those famous Coal Mines at *Atterbury*, in *Somersetshire*, are observed to be, (below the Turf, or Loam, or Malm, a reddish *Fire stone*; the Coal *Chree*, which is a blackish Rock;) the *stinking Vein*, a hard Coal for mechanic U<sup>s</sup>; five Foot below which, is the *Cuthead Vein*,

22 Foot thick, intermix'd with Lumps of Stone; at a like distance below which, is the *three Coal Vein*; divided into three Kinds of Coal, and about three Foot thick.

The *Veins* hitherto mention'd are frequently work'd in the same Pit.—The next is *Pearw Vein*, which is intermix'd with Cockle-shells and Fern Branches, usually wrought in a separate Pit: tho' its depth below the *three Coal Vein* be only about five Foot, yet the Cliff between is very hard, and liable to Water: This *Vein* is about a Yard thick; and the like distance below it, is the *Smith's Coal Vein*: beneath which is the *Shelly Vein*; and under that a *Vein* of ten Inches, little worth, and seldom wrought. See COAL.

The same *Veins* are found in a Place seven or eight Miles apart.—All the *Veins* lie obliquely, or shelving, like the side of a House: The Obliquity, or *Pitch*, as they term it, is about 22 Inches in a Fathom; which, when it rises to the Land, is call'd *Crop*, and in some Places *Basseting*.

In digging to the South-west, they oft meet with Ridges, which cause the *Vein* to *trap up*; i. e. being cut off by the Ridges, they find it over their Heads, when they are thro' the Ridge: On the contrary, working thro' a Ridge to the North-east, they say it *traps down*; i. e. they find it under their Feet.

VEJOURS, in Law, are those sent by the Court to take View of any Place in question, for the better Decision of the Right. See VIEW.

It is also used for those sent to view such as Effoign themselves *De malo lecti*; whether in truth they be such as that they cannot appear, or whether they counterfeit.

VELAMEN, in Surgery, the Bag, Skin, or Bladder of an Imposthume, or Swelling. See CYSTIS.

VELAMENTUM *Bombycinum*, a Name some Anatomists give to the velvet Membrane, or Skin of the Intestines. See INTESTINE.

VELARIUS, in Antiquity, an Officer in the Court of the Roman Emperors.

The *Velarii* were a kind of Ushers, whose Post was behind the Curtains, *Vela*, in the Prince's Apartments; as that of the Chancellors was at the Entry of the Balustrade, *Cancelli*; and that of the *Ostiarii* at the Door.

The *Velarii* had a Superior, of the same Name, who commanded them; as we find in two Inscriptions, quoted by *Salmasius* in his Notes on *Vopiscus*; and by a third in *Gruter*. The first is,

D. M.  
TI. CL. HALLUS  
PRÆPOSITUS VELARIORUM—  
DOMUS AUGUSTANÆ  
FEC. SIBI ET FILIIS SUIS L. L.  
POST. EORUM.

*Salmasius*, and others, for HALLUS, which is in the Stone whereon the Inscription is, at Rome, put THALLUS: Tho' we find mention of the same Hallus as a Samaritan by Nation, and *Tiberius's* Freedman, in *Josephus*; which shews that the *Velarii* and their Chief were very antient Officers, and in use among the first Emperors.

VELITES, in the Roman Army, a kind of antient Soldiery, who were arm'd with a Javelin, a Cask, Cuirasse, and Shield.

VELLEITY, in the School Philosophy, is defined by some, to be a languid, cold, and remiss Will. See WILL.

Others say, it implies an Impotency of obtaining what we require: Others will have it a slight Desire for something, which a Person does not matter much, or is too indolent to seek: as, *Catus amat Piscem, sed non vult tangere Lympham*.

VELLICATION, among Physicians, the Act of Twitching.

*Vellications* are particularly used for a sort of sudden Convulsions that happen to the Fibres of the Muscles. See FIBRE, and CONVULSION.

VELOCITY, in Mechanicks, *Swiftness*; is that Affection of Motion, whereby a Moveable is disposed to run over a certain Space in a certain Time. See MOTION.

It is also call'd *Celerity*; and is still proportional to the Space moved. See CELERITY.

The greatest *Velocity* wherewith a Ball can descend, by virtue of its specific Weight, in a resisting Medium, is that which the same Ball would acquire by falling in an unresisting Medium, thro' a Space which is to four thirds of its Diameter, as the Density of the Ball to the Density of the Fluid. See DESCENT.

*Huygens*, *Leibnitz*, *Bernoulli*, *Holms*, and the foreign Mathematicians, hold that the *Momenta*, or Forces of falling Bodies, at the End of their Falls, are as the Squares of their *Velocities* into the Quantities of Matter; the *English* Mathematicians, on the contrary, maintain 'em to be as the *Velocities* themselves into the Quantities of Matter. See MOMENTUM.



*Velocity* is conceiv'd either as *absolute*, or *relative*: The *Velocity* we have hitherto consider'd, is *simple*, or *absolute*, with respect to a certain Space mov'd in a certain Time.

*Relative*, or *respective Velocity*, is that wherewith two distant Bodies approach each other, and come to meet in a longer or a less time: Whether, only one of 'em moves towards the other at rest, or whether they both move; which may happen two ways; either by two Bodies mutually approaching each other in the same right Line, or by two Bodies moving the same way in the same Line, only the Foremost slower than the other; for by this means, this will overtake that. And, as they come to meet in a greater or less Time, the *relative Velocity* is greater or less.

Thus, if two Bodies come nearer each other by two Foot, in one Second of Time; their *respective Velocity* is double that of two others, which only approach one Foot in the same Time.

#### VELOCITIES of Bodies moving in Curves.

According to *Galileo's* System of the Fall of heavy Bodies, now admitted by all Philosophers, the *Velocities* of a Body falling vertically, are, each Moment of its Fall, as the Roots of the Heights from whence it has fallen; reckoning from the beginning thereof.

Hence that Author gather'd, that if a Body fall along an inclined Plane, the *Velocities* it has at the different Times, will be in the same Ratio: For since its *Velocity* is all owing to its Fall, and it only falls as much as there is perpendicular height in the inclined Plane; the *Velocity* should be measur'd by that height, as much as if it were vertical.

The same Principle likewise led him to conclude, That if a Body fall thro' two contiguous inclined Planes, making an Angle between them, much like a Stick when broke, the *Velocity* would be regulated after the same manner, by the vertical Height of the two Planes taken together: For 'tis only this height it falls; and from its Fall it has all its *Velocity*.

The Conclusion was universally admitted, till the Year 1693, when *M. Varignon* demonstrated it to be false: From his Demonstration, it should seem to follow, that the *Velocities* of a Body falling along the Cavity of a Curve, for instance, of a Cycloid; ought not to be as the Roots of the Height; since a Curve is only a Series of an Infinity of infinitely little contiguous Planes, inclined towards one another. So that *Galileo's* Proposition would seem to fail in this Case too, and yet it holds good; only with some Restriction.

All this Mixture of Truths and Errors, so near a-kin to each other, shew'd that they had not got hold of the first Principles; *M. Varignon*, therefore, undertook to clear what related to the *Velocities* of falling Bodies; and to set the whole Matter in a new light: He still supposes *Galileo's* first System, that the *Velocities* at the different times of a vertical Fall, are as the Roots of the correspondent Heights. The great Principle he makes use of to attain his End, is that of Compound Motion. See COMPOUND MOTION.

If a Body falls along two contiguous inclined Planes, making an obtuse Angle, or a kind of Concavity between 'em; *M. Varignon* shews, from the Composition of those Motions, that the Body, as it meets the second Plane, loses somewhat of its *Velocity*; and of consequence that it is not the same at the end of the Fall, as it would be, had it fell thro' the first Plane prolonged: So that the Proportion of the Roots of the Heights asserted by *Galileo*, does not here obtain.

The Reason of the loss of *Velocity*, is, that the Motion, which was parallel to the first Plane, becomes oblique to the second, since they make an Angle: This Motion, which is oblique to the second Plane, being conceived as compounded, that Part perpendicular to the Plane, is lost by the opposition thereof, and part of the *Velocity* along with it: Consequently, the less of the perpendicular there is in the oblique Motion, or, which is the same thing, the less the two Planes are from being one, *i. e.* the more obtuse the Angle is, the less *Velocity* does the Body lose.

Now, all the infinitely little, contiguous, inclined Planes, whereof a Curve consists, making infinitely obtuse Angles among themselves, a Body falling along the Concavity of a Curve, the loss of *Velocity* it undergoes each instant is infinitely little: But a finite Portion of any Curve, how little soever, consisting of an Infinity of infinitely little Planes, a Body moving thro' it, loses an infinite Number of infinitely little Parts of its *Velocity*: and an Infinity of infinitely little Parts, makes an Infinity of a higher Order, *i. e.* an Infinity of infinitely little Parts, makes a finite Magnitude, if they be of the first Order, or Kind; and an infinitely little Quantity of the first Order, if they be of the second; and so *in infinitum*. Therefore, if the Losses of *Velocity* of a Body falling along a Curve be of the first Order, they will amount to a finite Quantity, in any finite Part of the Curve, &c. See CURVE.

The Nature of every Curve is abundantly determin'd by the Ratio of the Differences of the Ordinates to the correspondent Portions of the Axis; and the Essence of Curves in general, may be conceiv'd as consisting in this Ratio, which is variable a thousand ways. Now this same Ratio, will be likewise that of two simple *Velocities*, by whose Concurrence a Body will describe any Curve: And of consequence, the Essence of all Curves in the general, is the same thing as the Concourse or Combination of all the Forces, which taken two by two, may move the same Body. Thus we have a most simple and general Equation of all possible Curves, and all possible *Velocities*. See CURVE.

By means of this Equation, as soon as the two simple *Velocities* of a Body are known, the Curve resulting from 'em is immediately determin'd. It is observable, that on the Foot of this Equation, an uniform *Velocity*, and a *Velocity* that always varies according to the Roots of the Heights, produce a Parabola, independent of the Angle made by the two projectile Forces that give the *Velocities*: Consequently, a Cannon Ball, shot either horizontally or obliquely to the Horizon, must always describe a Parabola. The best Mathematicians, till then, had much ado to prove, that oblique Projections form'd Parabolas, as well as horizontal ones. See PROJECTILE, and PARABOLA.

To have some measure of *Velocity*, the Space is to be divided into as many equal Parts, as the Time is conceiv'd to be divided into: For the quantity of Space corresponding to that Division of Time, is the Measure of the *Velocity*.

For an Instance; Suppose the Moveable A, (Tab. Mechanics, Fig. 45.) travel a Space of 80 Feet in 40 Seconds of Time; dividing 80 by 40, the Quotient 2 shews the *Velocity* of the Moveable to be such, as that it passes over an Interval of two Feet in one Minute: The *Velocity*, therefore, is rightly express'd by  $\frac{4}{3}$ ; that is, by 2.

Suppose, again, another Moveable, B, which in 30 Seconds of Time travels 90 Feet; the Index of its Celerity will be 3. Wherefore, since in each Case the measure of the Space is a Foot, which is supposed every where of the same length; and the measure of Time a Second, which is conceiv'd every where of the same Duration: the Indices of the *Velocities* 2 and 3, are homogeneal: And therefore, the *Velocity* of A is to the *Velocity* of B, as 2 to 3.

Hence, if the Space be  $= s$ , and the Time  $= t$ , the *Velocity* may be express'd by  $s : t$ ; the Space being in a Ratio of the Time and the *Velocity*. See MOTION.

VELOM, a kind of Parchment, finer, evenner, and whiter than the common Parchment. See PARCHMENT.

The Word is form'd from the French *Velin*, of the Latin *Vitellinus*, belonging to a Calf.

VELVET, a rich kind of Stuff, all Silk, cover'd on the outside with a close, short, fine, soft Shag; the other side being a very strong, close Tissue, or Web.

The Nap or Shag, call'd also the *Velveting*, of this Stuff, is form'd of part of the Threads of the Warp, which the Workman puts on a long narrow channel'd Ruler, or Needle; and which he afterwards cuts, by drawing a sharp steel Tool along the Channel of the Needle, to the Ends of the Warp.

The principal and best Manufactories of *Velvet* are in France: there are others in Italy, particularly at Venice, Milan, Florence, Genoa, and Lucca: others in Holland, set up by the French Refugees; whereof that at Haarlem is the most considerable: But they all come short of the Beauty of those of France; and accordingly are sold for 1. or 15 per Cent. less. There are even some brought from China but they are the worst of all.

The Word *Velvet* is form'd of the French *Velours*, which signifies the same thing; and which comes from *Vellus*, a thing cover'd with Hair.

There are *Velvets* of various Kinds; as, *Plain*, that is, uniform and smooth, without either Figures or Stripes: *Figured*, that is, adorn'd and work'd with divers Figures; tho' the Ground be the same with the Figures; that is, the whole Surface *velveted*. See FIGURED.

*Ramage*, or branch'd *Velvet*, representing long Rush Branches, &c. on a Satin Ground, which is sometimes of the same Colour with the *Velvet*, but more usually of a different one. Sometimes, instead of Satin, they make the Ground of Gold and Silver; whence the Denominations of *Velvet with Gold ground*, &c.

*Shorn Velvet*, is that wherein the Threads that make the *Velveting*, have been rang'd in the channel'd Ruler, but not cut there.

*Strip'd Velvet*, is that wherein there are Stripes of divers Colours, running along the Warp; whether those Stripes be partly *Velvet* and partly Satin, or all *velveted*.

Lastly, *Flower'd Velvet*, is that wherein the Ground is a kind of Tassery, and the Figures *Velvet*.

*Velvets* are likewise distinguish'd, with regard to the different Degrees of Strength and Goodness, into *Three* or *four* Threads, three Threads, two Threads, and a Thread.



and half: the first are those where there are eight Threads of Shag, or *Vetveting* to each Tooth of the Reed; the second have only six, and the rest four.

In general, all *Vetvets*, both work'd and figur'd, shorn and flower'd, are to have their Warp and Shag of Organfin, spun and twisted, or thrown in the Mill; and their Wool of boil'd Silk, not raw; and are of the same breadth.

VENA, VEIN, in Anatomy. See VEIN.

VENA Cava.

VENA Porta, &c.

VENA Pulmonalis.

VENÆ-Scētia, the opening of a Vein, call'd also *Phlebotomy*; and popularly *Bleeding*. See PHLEBOTOMY, &c.

VENÆ Lactææ.

VENÆ Lymphaticæ.

VENÆ Præputii, &c.

VENAL, or VENOUS, among Anatomists, something that bears a Relation to a Vein. See VEIN.

The Extremities of the Cava and Pulmonary Veins, where they enter the Auricles of the Heart, are call'd *Venous Sinus's*. See CAVA, and PULMONARY; see also HEART, and CIRCULATION.

VENAL, VENALIS, is also used for something bought with Money, or procur'd by Bribes.

Thus, we say, *Venal* Bards; Courtezans and Flatterers are *Venal*; Justice in *Turks* is *Venal*, it must be bought of the Bashaws.

In *England*, there are several Offices in the Revenue, Policy, &c. *Venal*: But this *Venality* of Offices is no where so considerable as in *France*, where all Offices of Judicature are bought of the King, and only municipal Officers are elective. See OFFICE.

Offices in *England* are *venal* only by a kind of Connivance; in *France* it is a thing solemn, and authoriz'd.

The *Venality* was first introduc'd by *Louis XII.* who, to clear those immense Debts contracted by his Predecessor *Charles VIII.* without burdening his People with new Taxes, bethought himself to sell the Offices; and, in reality, made a vast Sum thereby.

*Francis I.* made an advantage of the same Expedient to get Money, and sold his Posts openly: Under the same King, it was only accounted a kind of Loan; but that Loan was no more than a Name to disguise a real Sale. The Parliament not being able to relish the *Venality* of Offices, always made the Buyer take an Oath that he did not buy his Post, either directly or indirectly; but there was a tacit Exception made, of Monies lent the King for being put into them. At length, the Parliament finding its oppositions were in vain, and that the Traffick of Offices was publickly authoriz'd, abolish'd the Oath in 1597.

The Word is form'd from the Latin *Venalis*, to be sold.

VENDEE, in Law, the Person to whom any thing is sold; in contradistinction to *Vendor*, or the *Seller*.

VENDITIONI Exponas, is a Writ Judicial, directed to the Under-Sheriff; commanding him to sell Goods, which he hath formerly, by Commandment, taken into his Hands; for the satisfying a Judgment given in the King's Court.

VENEERING, or VANEERING, a kind of Marquetry, or Inlaying; whereby, several thin Slices, or Leaves of fine Woods of different kinds, are applied and fasten'd on a Ground of some common Wood.

There are two Kinds of Inlaying; the one, which is the more ordinary, goes no further than the making of Compartments of different Woods; the other requires a deal more Art, and represents Flowers, Birds, and the like Figures.

The first Kind is what we properly call *Veneering*; the latter we have already describ'd, under the Article MARQUETRY.

The Wood intended for *Veneering*, is first saw'd out into Slices, or Leaves about a Line thick: In order to saw 'em, the Blocks or Planks are placed upright, in a kind of Sawing-Press; the Description whereof may be seen under the Article PRESS.

These Slices are afterwards cut into narrow Slips, and fashion'd divers ways, according to the Design propos'd: Then the Joints being carefully adjusted, and the Pieces brought down to their proper thickness, with several Planes for the Purpose; they are glu'd down on a Ground or Block of dry Wood, with good strong *English* Glue.

The Pieces thus jointed and glu'd, the Work, if small, is put in a Press; if large, 'tis laid on the Bench, cover'd with a Board, and press'd down with Poles or Pieces of Wood, one end whereof reaches to the Ceiling of the Room, and the other bears on the Board.

When the Glue is quite dry, they take it out of the Press, and finish it; first with little Planes, then with divers Scrapers; some whereof resemble Rasps, which take off the Bumps, &c. left by the Planes.

When sufficiently scrap'd, the Work is polish'd with the Skin of a Sea-Dog, Wax, and a Brush and Polisher of Shave-grass: which is the last Preparation. See ENONIST.

VENEREAL, something belonging to *Venus*. See VENUS.

A *Venercal* Person, is one addicted to *Venery*, or *Venercal* Pleasures.

VENEREAL Disease, call'd also the *Lues Venerea*, *French Disease*, *Foul Disease*, *French Pox*, *Great Pox*, &c. is a contagious Disease, contracted by some impure Humor, generally receiv'd in Coition; and discovering it self in Ulcers and Pains, about the Genital and other Parts. See POX.

It is generally said to have made its first Appearance in *Europe*, in the Year 1493; tho others will have it much older, and contend for its being known to the Antients, only under other Names.

Mr. *Becket*, particularly, has attempted to shew, that it is the same with what among our Forefathers was call'd the *Leprosy*; and which in many of our ancient *English* Writings, Charters, &c. is called *Brenning*, or *Burning*.

In order to prove his Point, he has search'd the Records relating to the Stews antiently kept on the *Bankside*, *Southwark*, under the Jurisdiction of the Bishop of *Winchester*. See CREWS.

Among other Constitutions of these Stews, dated 1162, it was appointed, *That no Stew-holder should keep any Woman that hath the perillous Infirmity of BURNING*. And in another Vellom Manuscript, now in the Custody of the Bishop of *Winchester*, dated 1430, it is again order'd, *That no Stew-holder keep no Woman within his House that hath any Sickness of BURNING, but that she be putte out, upon the Payne of making a Fine unto the Lord of a hundred Shillings*. See BURNING, and BRENNING.

To confirm this Account, Mr. *Becket* quotes a Description of the Disease from a Manuscript of *John Arden* Esq; Surgeon to *K. Richard II.* and *K. Henry IV.* *Arden* defines the Disease called *Brenning*, *Incendium*, to be, *a certain inward Heat and Excoriation of the Urethra*: which Definition, Mr. *Becket* observes, gives us a perfect Idea of what we now call a *Clap*; agreeable to the latest and most exact anatomical Discoveries, and free of all the Errors of *Platerus*, *Rondeletius*, *Bartholin*, *Wharton*, and other later Writers on this Disease. See CLAP.

As to the Leprosy being the same with this *Venercal Disease*, it must be own'd, there are a good many Symptoms in the one Disease, which quadrate well enough with those in the other; but then the Symptoms in each are so precarious, that a great deal of Stress can't be laid hereon. See LEPROSY.

The common Tradition is, that the *Venercal Disease* first broke out in the *French* Army, when it lay encamp'd before *Naples*; and that it was owing to some unwholesom Food: On which account, the *French* call it the *Neapolitan Disease*; and the *Italians*, the *Mal Francese*.

But others go much higher, and suppose it to be the Ulcer *Job* complain'd of so grievously: and accordingly, in a Missal printed at *Venice* in 1542, there is a Mass in honour of *S. Job*, to be said by those recover'd of this Disease; as being supposed to owe their Deliverance to his Intercession.

But the Opinion which prevails most among the more knowing of our Physicians, is, that the Disease is of *Indian* Extraction; and that it was brought hither by the *Spaniards* from the *American* Islands, where it was very common, before ever the *Spaniards* set footing there: Whence the *Spaniards* call it *Sarva des Indias*, or *Las Buvas*: notwithstanding what *Herrera* says, that the *Spaniards* carry'd it to *Mexico*, instead of bringing it thence.

*Lister*, and others, take it to have had its first Rise from some of the Serpentine Kind; either from a Bite thereof, or from some of their Flesh taken as Food: This is pretty certain, that Men bitten or stung by Scorpions, are greatly eas'd by Coition; but the Woman, *Pliny* assures us, receives a deal of damage thereby: which is no slender Argument, of the Disease's arising from some Person so poison'd.

He adds, there is no room to doubt, but that the *Lues* arose from some such Cause; for upon any venomous bite, the Penis becomes vehemently extended; and the Patient being seiz'd with a *Satyriasis*, breaths nothing but Rage and Lust: Nature, in effect, seeming to direct him to Coition for a Remedy.

But what proves a Remedy to the wounded Person, proves a Disease to the Woman: And from Women thus infected, other Men, who have to do with 'em, become infected in their turns; and thus has the Disease been propagated.

The first Symptoms generally arising after an Affair with an infected Person, are a Heat, Swelling, and Inflammation about the Penis or Vulva, with a horness of Urine.

The second or third Day usually brings on a Gonorrhæa, or Dripping, which denominates it a *Clap*; and which in a few Days more is follow'd by a Cordee. See GONORRHEA, and CORDEE.

Tho sometimes there is no Gonorrhæa, or Clap; but the Poison rather makes its way thro' the Curis to the Groin; and there



there arises Bubos, with various malignant Pustles, in all Parts of the Body. See BUBO.

Sometimes, also, there happen callous Ulcers, call'd *Shankers*, in the *Scrotum* and *Perinæum*; and sometimes a cancerous and callous Ulcer between the Prepuce and Glans; and in some the Testicles swell. See SHANKER.

Add to these, violent nocturnal Pains, Nodes, Heats in the Palms of the Hands, and Soals of the Feet; and hence Fissures, Excoriations, Condylomata, &c. about the *Anus*; falling of the Hair; ruddy, yellow, or livid Spots, Hoarseness, Relaxation and Erosion of the Uvula, Ulcer of the Palate, Ozæna, tingling of the Ears, Deafness, Blindness, Itch, Consumption, &c. But 'tis rare all these Symptoms happen to the same Person.

The *Venereal Disease*, *Sydenham* observes, is communicated by Copulation, Lactation, Handling, Saliva, Sweat, the genital Mucus, and the Breath: And in whatever Part it is receiv'd, it there discovers it self first. When the Infection is receiv'd along with the Milk from the Nurse, it commonly shews it self in Soreness and Ulcers of the Mouth.

The Method of Cure is various, according to the various Symptoms and Stages: For the first Stage, viz. a *Gonorrhœa Virulenta*, or Clap. See CLAP, and GONORRHEA.

Dr. *Pitcairn's* Method is this: After two or three Vomits, he directs *Mercurius Dulcis*, for some Days, twice a-day; when the Mouth grows sore, let alone the Mercury for three or four Days, and purge every other Day. As the Mouth grows well again, repeat the use of Mercury; and thus alternately, till the Symptoms cease. See MERCURY.

For a confirm'd *Lues*, Mercurial Salivation is generally held the only effectual Cure: Tho Mercurial Frictions, applied in such Quantity, and at such Intervals as not to raise a Salivation, is held by some to be not only easier and safer, but even more successful, in this Disease, than Salivation it self. See SALIVATION.

Dr. *Sydenham* tells us, he uses to salivate immediately, without any preliminary Evacuation, or Preparation of the Body at all. His Method is this; He prescribes an Unguent of  $\mathfrak{z}$ ii of *Axang. Porcin.* Swines-seam, and  $\mathfrak{z}$ i of Mercury. With a third Part of this, he orders the Patient to anoint his Arms and Legs, for three Nights successively, with his own Hands; so as not to touch either the Arm-pits, the Groin, or the Abdomen.—After the third Uction, the Gums usually swell, and a Ptyalism comes on.—If it does not come in the time, he exhibits Turbith Mineral gr. viii. in Conserve of Red Roses; which occasioning a Vomiting, raises the Ptyalism. And if, afterwards, the Salivation abate, ere the Symptoms are quite disappear'd, he orders it to be promoted with a fresh Dose of *Mercurius Dulcis*. The Diet and other Regimen, to be the same as in a Catharsis.

*VENERIS Oestrum*, the *Transport of Love*, expresses the utmost Ecstasy of Desire, or Enjoyment, in Coition. See OESTRUM.

Some are of Opinion, that infectious Women are the most apt to communicate the Poison, when they are thus excited with Desire; whereas, with Indifference, they may admit the same Intercourse without giving the Infection.

*VENERIS Oestrum*, in Anatomy, the same as CLITORIS.

*VENERY*, is used for the Act of Copulation, or Coition of the two Sexes. See COITION, and GENERATION.

It takes its Name from *Venus*, the supposed Deity of the Passion of Love.

*VENERY*, is also the Art or Exercise of hunting wild Beasts; which are also call'd *Beasts of VenerY*, and *Beasts of Forest*. See HUNTING.

Such are the Hare, Hart, Hind, Boar, and Wolf. See BEASTS.

*VENIA*, among our ancient Writers, denotes a kneeling, or low Prostration on the Ground; used by Penitents. *Walsingham*, p. 196. *Rege interim prostrato in longa venia*.

*Per venias centum verrunt barbis pavimentum.*

*VENIAL*, a Term in the *Romish* Theology, applied to slight Sins, and such as easily obtain Pardon. See SIN.

In confessing to the Priest, People are not oblig'd to accuse themselves of all their *Venial* Sins.

The thing that gives the greatest Embarrass to the *Romish* Casuists, is to distinguish between *Venial* and *Mortal* Sins. The Reformed reject this Distinction of *Venial* and *Mortal* Sins; and maintain, that all Sins, how grievous soever, are *Venial*; and all Sins, how slight soever, are *Mortal*: And the Reason they urge, is, that all Sins, tho of their own Nature *Mortal*, yet become *venial*, or pardonable, by virtue of our Saviour's Passion, to all such as fulfil the Conditions on which it is offer'd in the Gospel.

To which the *Romanists* answer, that one of these Conditions is Confession. See CONFESSION.

*VENIRE Facias*, in Law, is a Judicial Writ, lying where two Parties plead, and come to Issue: for then, the Party Plaintiff, or Defendant, shall have this Writ directed to the Sheriff, to cause twelve Men of the same Country to say the Truth upon the Issue taken: And if this

Inquest come not at the Day of the Writ return'd; then shall go an *Habeas Corpus*, and after that a Distress, until they come.

*VENIRE Facias tot Matronas.* See VENTRE *Inspiciendo*.

*VENISON*, or *VENAISON*, the Flesh of Beasts of Game, or of Animals to be caught in the way of Gaming, i. e. by Hunting, &c. as Deer, Hare, &c. See GAME.

The Word is form'd of the Latin *Venatio*, Hunting. See HUNTING.

*Beasts of VENISON.* See BEAST.

*VENOM.* See POISON.

The Terms *Venom* and *Poison* only differ from each other in this, that the latter is used where the noxious Matter is taken inwardly, as in Foods, Drinks, &c. and the former, where it is applied outwardly, as in Stings, and Bites of Serpents, Scorpions, Vipers, Spiders, &c.

The Pike is said to have a *venomous* Tooth. All *venomous* Beasts, in the general, have that Quality in a greater degree, when bred in mountainous and dry Places, than when in wet and marshy Places; the Southern more than the Northern; those hungry and enraged, than others; and in Summer more than Winter.

*VENOUS, Venosus.* See VENAL.

*VENOUS Artery, Arteria VENOSA.* See ARTERY, LUNGS, CIRCULATION, &c.

*VENT, VENT-Hole, or Spiracle*, a little Aperture, left in the Tubes or Pipes of Fountains, to facilitate the Wind's escape; or, on occasion, to give them Air; as in frosty Weather, &c. for want of which they are apt to burst. See FOUNTAIN.

A *Vent*, taken in this Sense, is the End of a Pipe, placed erect, and reaching above ground; being usually folder'd to the Elbows of the Pipes.

The *Vents* of large Pipes, are always as high as the Surfaces of the Reservoir; unless there be a Valve in them.

The Word is form'd from the Latin *Ventus*, Wind.

*VENT* is also used for a little Hole, pierced in Vessels of Wine, Beer, &c. that are in tap; and which admits Air enough to make the Liquor run, but not so much as to corrupt and spoil it.

*VENT*, again, is apply'd to the Covers in Wind-Furnaces, whereby the Air enters, which serves them for Bellows; and which are stop'd with Registers, or Slices, according to the degree of heat requir'd; as in the Furnaces of Glass-Houses, Essayors, &c. See BELLOWS, FURNACE, &c.

Lastly, the Word *VENT* is used for a Pipe of Lead, or Potter's Ware; one end whereof opens into the Cell of a Necessary House, and the other reaches to the Roof of the House; to give room for the corrupt fetid Air to exhale.

There are also *Vents*, or Apertures made in the Walls which sustain Terrasses, to furnish Air, and give a Passage for the Waters.

This kind of *Vent* the *Italians*, and we from 'em, call a *Barbacane*. See BARBACANE.

*VENTER, Belly*, in Anatomy, a Cavity in the Body of an Animal, containing *Viscera*, or other Organs, necessary for the Performance of divers Functions. See VISCERA, &c.

Physicians divide the human Body into three *Venters*, Regions, or Cavities; the first the *Head*, containing the Brain, &c. See HEAD.

The second the *Breast*, or *Thorax*, as far as the Diaphragm; containing the Organs of Respiration. See THORAX.

The third, which is what we commonly call the *Venter*, or *Belly*, is that wherein the Intestines and the Organs of Generation, and Digestion, are contain'd; called by Anatomists the *Abdomen*. See ABDOMEN.

This last, call'd also the *lower Venter*, is subdivided into three Regions; the first and highest whereof, call'd the *Epigastric* Region, reaches from the *Cartilago Xiphoides* near to the Navel; the second, call'd the *Umbilical*, comprehends the Space of three or four Fingers breadth, about the Navel, containing the Reins and Loins; and the third, the *Hypogastric*, which reaches to the *Pudenda*, and is what we properly call the *lower Venter*: *Hippocrates* calls it *græva*. See HYPOGASTRIC, EPIGASTRIC, &c.

Its two Sides are call'd *Iliæ*, the *Flanks*; and its lowest Extreme the *Groin*; in Latin *Inguen*, and in Greek *ἰσχίον*.

*VENTER*, or *Belly*, is also popularly us'd for the exterior Part of the lower *Venter*: In which Sense, we say, the Navel is in the middle of the *Venter*, &c.

It is also used for the *Ventricle*, or Stomach; because that Part is enclosed in the Cavity thereof. See VENTRICLE.

In this Sense it is, that *Jonas* is said in Scripture to have been three Days in the Whale's Belly.

Lastly, *Venter* is also used for the Womb, or *Uterus* of Women: And hence the Writ *De Ventre Inspiciendo*.

Hence, also, in the Civil Law, we say, *Partus secundum Ventrem*, the Child follows the Belly; meaning, that its Condition is either free or servile, according to that of its Mother. See MARRIAGE.



They also say, to *appoint a Curator for the Belly*, with regard to posthumous Children yet in the Mother's Womb. See POSTHUMOUS.

With regard to Princes, the *Venter* or Belly has been sometimes crown'd, in form.

*VENTER*, or *Belly* of a Muscle, is the fleshy or body Part thereof; as contradistinguish'd from the two Tendons, its Extremes; one whereof is call'd the *Head*, and the other the *Tail* of the Muscle. See MUSCLE.

*VENTER Draconis*, *Dragon's Belly*, in Astronomy, the middle of a Planet's Orbit; or that Part most remote from the Nodes, *i. e.* from the *Dragon's-Head* and *Tail*; being the Part which has the greatest Latitude. See ORBIT, and NODE.

The Moon has five Degrees of Latitude, when in the *Dragon's Belly*, and is 90 Degrees distant from the Nodes. See LATITUDE.

Of these two Points, in each Orbit, that towards the South is also call'd the *Southern Limit*, and that towards the North, the *Northern Limit*. See LIMITS.

*VENTER Equinus*, or *Horse's Belly*, among Chymists, is a Dunghil, wherein are enclosed certain Vessels for particular Operations to be perform'd by means of the gentle heat thereof. See FIRE, and HEAT.

*VENTER*, in our Customs, is used for a Partition of the Effects of a Father and Mother, among Children born, or accruing from different Marriages.

This Partition is so order'd, as that a single Child of one Marriage, or *Venter*, takes as much as several of another Marriage, or *Venter*: In order to which, the Estate is divided into so many Parts as there have been *Venters*, or Marriages.

*VENTER* is also used for the Children whereof a Woman is deliver'd at one pregnancy.

Thus, two Twins are said to be of the same *Venter*.—Many People take for a Fable what is related of the Countess of *Holland*, *viz.* that she had 365 Children at one *Venter*, all living, and baptized: and yet the Story is very gravely related by abundance of Authors; and the Font or Basin is still shewn in the Church where they were baptiz'd; with a kind of Monument of the Fact, thereon. See FOETUS.

*VENTIDUCTS*, in Building, call'd by the Italians *Ventidotti*, and by the French *Prisons des Vents*, or *Palais d'Eole*; are Spiracles, or subterraneous Places, where fresh, cool Winds being kept, are made to communicate, by means of Ducts, Funnels, or Vaults, with the Chambers or other Apartments of a House; to cool them in sultry Weather.

These are much in use in *Italy*, &c. See BUILDING, HOUSE, &c.

*VENTOSITY*, in Medicine. See FLATULENCY.

*VENTRE Inspiciendo*, a Writ for the search of a Woman that says she is with Child, and thereby holds Land from him that is otherwise next Heir at Law.

*VENTRICLE*, *q. d.* *Little Belly*, in Anatomy, a Diminutive of *Venter*; signifying a Cavity smaller than what we express by a *Venter*; or rather, signifying a Division of a *Venter*; or some smaller Cavity, contain'd in a larger. See *VENTER*.

There are two Cavities in the Heart, adjoining to the Auricles; and four in the Brain; call'd *Ventricles*; which see explain'd under the Articles HEART, and BRAIN.

The right *Ventricle* of the Heart, in relaxing, admits the Blood by the right Auricle from the *Cava*; and contracting, drives it out into the pulmonary Arteries: The left, receiving the Blood by the left Auricle, from the Lungs, drives it out into the *Aorta*. See CAVA, AORTA, and LUNGS; see also SYSTOLE, DIASTOLE, CIRCULATION, &c.

*VENTRICLE*, or *VENTRICULUS*, by way of Eminence thus call'd, is the same thing with the Stomach. See STOMACH.

For the Action of the *Ventricle* in Vomiting, see VOMITING.

*VENTRILOQUOUS*, *VENTRILOQUUS*, call'd also *Gastriloquous*, and *Engastrimythus*, a Term applied to Persons who form their Speech by drawing the Air into the Lungs; so that the Voice proceeds out of the Thorax; and, to a By-stander, seems to come from a distance. See ENGASTRIMYTHUS, &c.

Such a Person we had lately in *London*, a Smith by Profession, who had the Faculty in such Perfection, that he'd make his Voice appear, now, as if it came out of the Cellar, and the next Minute, as if in an upper Room; and no body present perceive that he spoke at all: Accordingly, he has frequently call'd a Person first up, then down Stairs; then out of doors, then this way, then that, without stirring from his Seat, or appearing to speak at all.

*Rolandus*, in his *Aglossostomographia*, mentions, that if the *Mediastrinum*, which is naturally a single Membrane, be divided into two Parts, the Speech will seem to come out of the Breast; so that the By-standers will fancy the Person possess'd. See ENGASTRIMANDER.

The Word is a Compound of *Venter*, and *lognor*, I speak.

*VENTURINE*, in Natural History. See ADVENTURINE.

*VENTURINE*, or *ADVENTURINE*, is likewise used for the finest and slenderest Gold Wire, used by Embroiderers, &c. See GOLD WIRE.

When reduced into Poudre, as fine as it can be clip'd, or filed, this Poudre may be strew'd on the first Layer of pure Varnish, made use of in Japanning, after the Varnish is dry, in order to lay any Colour over it. See JAPANNING.

*VENUE*, or *VENUEW*, in Law, a neighbouring or near Place.—*Locus quem vicini habitant*.

Thus, we say, Twelve of the Assize ought to be of the same *Venuew* where the Demand is made. See ASSIZE.

—And also return in every such Pannel upon the *Venire Facias*, six sufficient Hundreders, at the least, if there be so many within the Hundred where the *Venire* lies. Stat. 25. Hen. VIII. See VISNE.

*VENUS*, in Astronomy, one of the inferior Planets; denoted by the Character ♀. See PLANET.

*Venus* is easily distinguish'd by her brightness, which exceeds that of all the other Planets, and which is so considerable, that in a very dark Place she projects a sensible Shadow. Her Place is between the Earth and Mercury.

She constantly attends the Sun, and never departs from him above 47 Degrees: When she goes before the Sun, that is, rises before him, she is call'd *Phosphorus*, or *Lucifer*, or the *Morning Star*; and when she follows him, that is, sets after him, *Hesperus*, or *Vesper*. See PHOSPHORUS, VESPER, &c.

The Semidiameter of *Venus*, is to that of the Earth, as 10 to 19; her Distance from the Sun is  $\frac{7}{10}$  of the Earth's distance from the Sun: her Excentricity  $\frac{1}{5}$ ; the Inclination of her Orbit  $3^{\circ} 23'$ . See INCLINATION, EXCENTRICITY, &c.

Her periodical Course round the Sun, is perform'd in 224 Days 17 Hours; and her Motion round her own Axis, in 23 Hours. See PERIOD, and REVOLUTION.

Her greatest Distance from the Earth, according to *Cassini*, is 38000 Semidiameters of the Earth; and her smallest 6000. See DISTANCE.

Her Parallax is 3 Minutes. See PARALLAX.

*Venus*, when view'd thro' a Telescope, is rarely seen to shine with a full Face, but has Phases just like those of the Moon; being now gibbous, now horned, &c. and her illum'd Part constantly turn'd towards the Sun, *i. e.* it looks towards the East when *Phosphorus*, and towards the West when *Hesperus*. See PHASES.

*De la Hire*, in 1700, thro' a Telescope of 16 Feet, discover'd Mountains in *Venus*; which he found to be larger than those in the Moon. See MOON.

And *Cassini* and *Campani*, in the Years 1665 and 1666, discover'd Spots in her Face: from the Appearances of which, he ascertain'd her Motion round her Axis. See SPOTS.

Sometimes she is seen in the Disk of the Sun, in form of a dark, round Spot. See TRANSIT.

In 1672, and 1686, *Cassini*, with a Telescope of 34 Feet, thought he saw a Satellite moving round this Planet, and distant from it about  $\frac{1}{3}$  of *Venus's* Diameter. It had the same Phases as *Venus*, but without any well defin'd Form; and its Diameter scarce exceeded  $\frac{1}{4}$  of that of *Venus*.

*Dr. Gregory* thinks it more than probable that this was a Satellite; and supposes the Reason why it is not usually seen, to be the unfitness of its Surface to reflect the Rays of the Sun's Light; as is the Case of the Spots in the Moon: of which, if the whole Disk of the Moon were compos'd, he thinks, that the Planet could not be seen as far as to *Venus*. See SATELLITE.

The Phenomena of *Venus*, evidently shew the Falsity of the *Ptolemaic* System: For that System supposes, that *Venus's* Orb, or Heaven, encloses the Earth; passing between the Sun and Mercury. And yet all our Observations agree, that *Venus* is sometimes on this side the Sun, and sometimes on that; nor did ever any body see the Earth between *Venus* and the Sun: which yet must frequently happen, if *Venus* revolved round the Earth in a Heaven below the Sun. See SYSTEM, EARTH, &c.

*VENUS*, in Chymistry, is used for the Metal Copper. See COPPER.

Its Character is ♀; which, say the *Adepti*, expresses it to be Gold, only join'd with some corrosive and arsenical Menstruum; which removed, Copper would be Gold. See GOLD.

*Venus* is universally allow'd, by the Chymists, &c. to be one of the most powerful Medicines in Nature: Of this, is said to have been compos'd the famous *Butler's Stone*, which cured most Diseases by only licking it.—Of this is compos'd that noble Remedy of *Pan Helmont*, *viz.* the Sulphur of Vitriol, or *Ins Vitrioli*, fix'd by Calcination, and Cohobation.—Of the *Ins Vitrioli* of *Venus*, is likewise compos'd *Mr. Boyle's Arcanum*, the *Colcothar Vitrioli*. See VITRIOL.

'Tis certain, Copper is a most excellent Emetic, and a noble Antidote against Poisons; for it is no sooner taken than it exerts its force: whereas other Vomitories lie a



good while in the Stomach : But one single Grain of Rust of *Venus* immediately vomits. See EMETIC.

Hence, Syrups that have stood over-night in Copper Vessels, create a vomiting.

It is also an excellent Medicine in Chronical Cases : Hence a famous Physician is recorded to have cur'd *Charles V.* of a Dropsy by the Use of *Copper*.

*Venus* is dissoluble by all the Salts known, both Acid, Alkaline, and Nitrous ; nay, even by Water and Air, consider'd as they contain Salt. See DISSOLUTION, SALT, &c.

'Tis from this common Reception of all Menstruums, that *Copper* is called *Venus*, q. d. *meretrix publica*, a common Prostitute : The others take the Denomination to have been occasion'd by its turning of a Sea-green Colour, when dissolved by Acids.

*Mount of VENUS*, *Mons VENERIS*, among Anatomists, is a little hairy Protuberance, in the middle of the *Pubes* of Women ; occasion'd by the more than ordinary Collection of Fat under the Skin in that Place. See PUBES.

Among Chiromancers, the *Mount of Venus* is a little Eminence in the Palm of the Hand, at the Root of one of the Fingers.

VERB, in Grammar, a Word serving to express what we affirm of any Subject, or attribute to it ; as the Words *is*, *understands*, *bears*, *believes*, &c. See WORD.

The *Verb* is thus called of the Latin *Verbum*, Word, by way of Eminence ; as being the principal Word of a Sentence. See SENTENCE.

The common Definition given by Grammarians, is, that a *Verb* is a Word which betokens being, doing, or suffering.

To conceive the Origin and Office of *Verbs*, it may be observed, that the Judgment we make of any thing, as when I say *the Earth is round*, necessarily includes three Terms. See TERM.

The first, called the *Subject*, is the Thing we affirm of, e. g. *Earth*. See SUBJECT.

The second, called the *Attribute*, is the Thing affirm'd, e. g. *round*. See ATTRIBUTE.

The third, *is*, connects those two Terms together, and expresses the Action of the Mind ; affirming the Attribute of the Subject. This last is what we properly call the *Verb*, and which some of our later Grammarians, particularly the Port Royalists, chuse to call by a more significant Word, *Affirmation*. See AFFIRMATION.

The Reason is, that its principal Use is to signify *Affirmation* ; that is, to shew that the Discourse wherein that Word is used, is the Discourse of a Man, who does not only conceive Things, but judges and affirms somewhat of them.

By this Circumstance, a *Verb* is distinguish'd from Nouns which also signify an Affirmation, as *affirmans affirmatio* ; those only signify an Affirmation, as that, by a Reflection of the Mind, is render'd an Object of Thought : so, that they don't shew that the Person who uses 'em affirms, but only that he conceives an *Affirmation*.

Tho the principal Use of *Verbs* be to signify Affirmation ; they also serve to express the other Motions of the Soul : as to desire, pray, command, &c. but this they only do by changing the Mood, or Inflection ; which we shall consider under the Article *Moon*.

Here, we only consider the *Verb* in its primary Signification, which is that it has in the *Indicative* Mood.

On this Footing, the *Verb* should have no other use, but to mark the Connection which we make in the Mind, between the two Terms of a Proposition ; but the *Verb esse*, *to be*, is the only one that has retain'd this Simplicity : nor, in strictness, has this retain'd it, but in the third Person ; as *est*, is.

In effect, Men being naturally inclin'd to shorten their Expressions, to the Affirmation they have almost always added other Significations, in the same Word : Thus, e. g. they add that of some Attribute, so as that two Words make a Proposition ; as in *Petrus vivit*, *Peter* lives : where *vivit* includes both the Attribute and Affirmation ; it being the same thing to say *Peter* lives, as that *Peter* is living. And hence the great Variety of *Verbs* in every Language.

For, had the People been contented to give the *Verb* its general Signification, without any additional Attribute, each Language would only have needed one *Verb*, viz. the *Verb Substantive est*, is.

Again, on some Occasions, they also superadd the Subject of the Proposition, as *Sum homo*, *I'm a Man* ; or *vivo*, *I live* : And hence the diversity of *Persons* in *Verbs*. See PERSON.

Again, we also add to the *Verb*, a Relation to the Time with regard to which we affirm ; so that one single Word, as *cenasti*, signifies that I attribute to the Person I speak, the Action of Supping, not for the present Time, but for the past : And hence the great diversity of *Tenses* in most *Verbs*. See TENSE.

The diversity of these Significations, or Additions in the same Word, has perplex'd and deceiv'd many of our best Authors in the Nature of a *Verb* ; and led 'em to consider it,

not according to what is essential to it, which is to affirm ; but according to some of its accidental Relations.

Thus, *Aristotle*, taking up with the third of those additional Significations, defines *Verb* to be *Vox significans cum tempore* ; a Word signifying something with Time.

Others, as *Buxtorf*, adding the second Relation, define it, *Vox flexilis cum tempore & persona* ; a Word admitting of divers Inflections, in respect of Time and Person.

Others, taking up with the first of the additional Significations, which is that of the Attribute, and considering that the Attributes Men ordinarily add to the Affirmation, were to consist in signifying *Actions*, or *Passions*.

Lastly, *Scaliger* imagin'd he had made a great Discovery in his Book of the *Principles of the Latin Tongue*, in saying, that the Distinction of Things into *Permanentes*, and *Fluentes*, into what remain, and what pass away, is the proper Source of the Distinction between Nouns, and *Verbs* ; the first being to signify what remains, and the second what passes.

But from what we have said, 'tis easy to perceive, that these Definitions are all false ; and that the only true Definition is, *Vox significans Affirmationem* : This Definition includes all that is essential to the *Verb* ; but if one would likewise include its principal Accidents, one might define it, *Vox significans Affirmationem, cum designatione Personae, Numeri, & Temporis* ; a Word which signifies an Affirmation, with a Designation of Person, Number, and Tense : which is what properly agrees to the *Verb Substantive est*.

For as to other *Verbs*, consider'd as becoming different by the union of certain Attributes, one may define 'em thus ; *Vox significans Affirmationem alicujus attributi, cum designatione Personae, Numeri, & Temporis* ; a Word which expresses the Affirmation of some Attribute, with a Designation of Person, Number, and Time.

*Verbs* are variously divided ; with respect to the Subject, they are divided into, *Active*, *Passive*, *Neuter*, &c. with respect to their Inflections, into *Regular*, and *Irregular* ; *Personal*, and *Impersonal* ; *Auxiliary*, *Substantive*, &c.

*Verb Active*, is a *Verb* which expresses an Action that falls on another Subject, or Object. See ACTIVE.

Such are *I love*, *I work*, &c. which signify the Action of Loving, Working, &c.

Of these, Grammarians make two Kinds ; the one call'd *Transitive*, and the other *intransitive*, or *reciprocal*. See TRANSITIVE, &c.

*Verb Passive*, is that which expresses a Passion ; or which receives the Action of some Agent ; and which is conjugated in the modern Tongues with the Auxiliary *Verb I am*, *je suis*, *jo so*, &c. See AUXILIARY.

Some don't allow of any *Verbs Passive* in these Languages : The Reason is, that what we call *passive*, is nothing but the Participle of the *Verb*, join'd with the Auxiliary *Verb to be* ; whereas the *Verbs Passive* of the *Latin*, &c. have their particular Terminations. See PASSIVE.

*Verb Neuter*, is that which signifies an Action that has no particular Object whereon to fall ; but which of it self takes up the whole Idea of the Action : as, *I sleep*, *thou yawn'st*, *he shores*, *we walk*, *you run*, *they stand*.

The *Latins* call 'em *Neuters*, by reason they are neither Active nor Passive ; tho they have the Force and Signification of both : as *I languish*, signifies as much as *I am languishing* ; *I obey*, as much as *I exercise Obedience*, &c. only that they have no Regimen to particularize this Signification.

Of these *Verbs* there are some which form their Parts by the Auxiliary *Verb to have* ; as, *I have slept*, *you have run*.

These, Grammarians call *Neuters Active*.

Others there are, which form their compound Parts by the Auxiliary *to be* ; as, *to come*, *to arrive*, &c. for we say, *I am come*, not *I come*, &c. These are call'd *Neuters Passive*.

*Verb Substantive*, is that which expresses the Being, or Substance which the Mind forms to it self, or supposes in the Object ; whether it be there, or not : as, *I am*, *thou art*. See SUBSTANTIVE.

*Auxiliary*, or *Helping Verbs*, are those which serve in conjugating Active and Passive *Verbs* : such are, *I am*, *I have*, &c. See AUXILIARY.

The Abbot de Dangeau distinguishes all *Verbs* into two general Kinds ; *Auxiliary Verbs*, and *Verbs* which make use of Auxiliaries.

This Distinction some may tax as not very just ; in regard, *Auxiliary Verbs* sometimes make use of Auxiliaries themselves ; but this does not destroy the Division : it only shews, that the *Auxiliary Verb* has two Formalities, or two different Qualities to be consider'd under ; in virtue whereof, it constitutes, as it were, two *Verbs*.

The *Verbs* which make use of Auxiliaries, he divides into *Active*, *Neuter*, and *Pronominal*.

*Verbs Neuter* he distinguishes into *Neuters Active*, and *Neuters Passive*. *Pronominals* he distinguishes into *Identic*, and *Relatives*.



*Reciprocal, Neutrized, and Passived.*—But several of these are peculiar to the *French Language*.

*Verbs*, in the *English*, and most modern Tongues, do not change their Endings, as in *Latin*, to denote the several Times, Modes, &c. of their being, doing, or suffering; but in lieu thereof, make use of *Auxiliaries*; as, *have, am, be, do, will, shall, may, can, &c.*

*Regular VERBS*, are those which are conjugated after some one Manner, Rule, or Analogy. See CONJUGATION.

*Irregular, or Anomalous VERBS*, are those which have something singular in the Terminations, or Formations of their Tenses.

The Irregularities in our *English Verbs*, lie wholly in the Formation of the Preter Tense, and Passive Participle.

The first, and most general Irregularity, took its Rise from the quickness of our Pronunciation, by changing the Consonant *d* into *t*; the Vowel *e*, in the regular Ending *ed*, being cut off, that the Pronunciation might be more ready: Thus, for *dwelled, kepted, sended*, we say, *dwelt, kept, sent*.

*VERBS Impersonal*, are those which have only a third Person; as, *it behoves, &c.*

There are also *Reduplicative Verbs*, as *resound, recall, &c. Frequentative Verbs, &c.*

*VERBAL*, something that belongs to *Verbs*, or even to Words, spoke with the Mouth.

Thus, *Verbal Nouns* are those form'd from *Verbs*. See NOUN.

So, a *Verbal Contract*, is that made merely by Word of Mouth; in opposition to that made in Writing. See CONTRACT, &c.

*VERBERATION*, *Smiting*, in Physicks, a Term used to express the Cause of Sound, which arises from a *Verberation* of the Air, when struck, in divers manners, by the several Parts of the sonorous Body first put into a vibratory Motion. See SOUND.

The Word is form'd from the Latin *Verbero*, I smite.

*VERDEGREASE*, *VER-DE-GRIS*, a kind of Rust of Copper, of great use among Painters, for a green Colour. See COLOUR.

*Verdegrease* is prepar'd from Copper Plates, and Husks of Grapes well saturated with Wine, put up in earthen Pots; and ranged, *stratum super stratum*, that is, first Husks, then Copper; and so alternately.

When the Pots are fill'd, they are set in the Cellar; whence, after some time, they are taken out, to gather the *Verdegrease*, which is a green Rust, covering the Plates all over. See RUST, and COPPER.

Some talk of *Verdegrease* made with Vinegar, and other corrosive Salts; but 'tis a Mistake: the best Wine being nothing too good for the purpose.

Accordingly, the greatest Part of the *Verdegrease* consum'd in *Europe*, is made in *Languedoc*, of the Wines of that Country; and is exported in Cakes, about 25 Pounds weight each.

There is but very little quite pure: To be good, it must be very dry, of a deep green, and pretty clear of white Spots.

The Word is form'd from the Latin *Viride æris*: 'Tis also called *Ærugo*. Others call it the *Flower*, and others the *Vitriolic Salt of Copper*; tho, in reality, it be the proper Substance thereof. See VITRIOL.

The Apothecaries use to dissolve *Verdegrease* in distill'd Vinegar, and then filtrate, and evaporate it in the Cellar; upon which it shoots into Crystals. These Crystals are used among Chirurgeons, &c. to eat off the fungous Flesh.

The Painters also use it for a green Colour; especially in Works of Miniature. See GREEN, &c.

*VERDERER*, or *VERDEROR*, a Judicial Officer of the King's Forest, whose Business is to look to the Vert, and see it well maintain'd. See VERT.

He is sworn to keep the Affizes of the Forest; as also to view, receive, and enroll the Attachments and Presentments of all manner of Trespasses, relating to Vert and Venison therein. See FOREST.

The Word is form'd from the Latin *Viridarius*, which *Ulpian* uses in the same Signification.

*VERDETER*. See *VERDITER*.

*VERDICT*, is the Answer of the Jury, made upon any Cause, Civil or Criminal, committed by the Court to their Examination. See JURY.

'Tis called *Verdict*, for *Vere dictum*, q. d. *dictum veritatis*, the Dictate of Truth.

A *Verdict* is either *General*, or *Special*.

A *General Verdict*, is that which is brought into the Court in like general Terms as the general Issue: As in Action of Disseisin, the Defendant pleadeth, No Wrong, no Disseisin. Then the Issue is general, whether the Fact be wrong, or not: which being committed to the Jury, they, upon Consideration of the Evidence, come in and say, either for the Plaintiff, That it is a wrong Disseisin; or for the Defendant, That it is no Wrong, no Disseisin.

A *Special Verdict*, is, when they say at large, that such and such a Thing they found to be done by the Defendant or Tenant; declaring the Course of the Fact, as in their Opinion it is proved; and as to the Law, upon the Fact, praying the Judgment of the Court.

This *Special Verdict*, if it contain any ample Declaration of the Cause from the beginning to the end, is also called a *Verdict at large*.

*Item utimur quod Balivi & Coronatores Burgi nostri us fuerint & adhuc utuntur recipere Verdictum duodecim Juratorum ex quacunque Causa, infra Burgum Nostrum prædictum, seu ejus Libertatem emergenti, sive contingenti, Seneschalli præsentia, nullo modo expectata.* MS. Cod. & Stat. Burg. Vill. de Mountgoner. See JUROR.

*VERDITER*, *VERDETER*, or *VERDITURE*, a Drug, used by the Painters, &c. for a green Colour. See GREEN.

*Verditer* is, properly, a native Mineral Substance, of a stony Consistence, and a blue Colour; but spangled with little shining Points like Gems; brought from the Mountains of *Hungary* and *Moravia*; called also *Lapis Armenius*.

Of this, well ground, and cleans'd by Lotion, should be made the Painter's green called *Verditer*. See COLOUR.

But this Stone is very rare; and the *Verditer* used, is not a native but a factitious Substance: the proper way of preparing it, we are told, is by casting Wine or Water upon new Copper, just as it comes red hot out of the Furnace, and catching the Steams which rise from it upon Copper Plates. Others say, 'tis prepar'd by dissolving Copper Plates in Wine; much after the manner of *Verdegrease*. But the Method in practise among us, is as follows:

Into an hundred Pounds weight of Whiting, the Refiners pour their Copper Water, and stir them together, every Day for some Hours, till the Water grows pale: Then they pour that away, and set it by for farther use; and pour on more of the green Water, and so till the *Verditer* be made: which being taken out, is laid on large pieces of Chalk in the Sun, till it be dry, for the Market.

The Water mention'd to be pour'd off from the *Verditer*, (which remains at the bottom of a Tub) is put into a Copper, and boil'd till it come to the thickness of Water-Gruel: now, consisting principally of Salt-petre reduced, most of the Spirit of Vitriol being gone with the Copper into the *Verditer*; and a Dish full of this being put into the other Materials for Aqua fortis; is re-distill'd, and makes what they call a double Water, which is near twice as good as that made without it.

*VERDOY*, in Heraldry, is applied to a Bordure of a Coat of Arms; charg'd with any Kinds, or Parts of Flowers, Fruits, Seeds, Plants, &c.

*VERDURE*, the Quality of Greenness. See GREEN.

The Word is *French*, form'd of *Verd*, green.

*VERGE*, a Rod, Switch, or Yard; particularly a Stick or Wand, which Persons are admitted Tenants by holding in their Hands, and swearing Fealty to the Lord of the Manor. See INVESTITURE.

On this account, they are call'd *Tenants by the Verges*. See TENANT.

Among Florists, a *denté Verges*, is a jagged edge or outside of a Leaf.

*VERGE* is also the Compass or Extent of the King's Court; within which is bounded the Jurisdiction of the Lord Steward of the King's Household, and of the Coroner of the King's House. See COURT, HOUSEHOLD, &c.

It is thus call'd, from the *Verge*, or Staff which the Marshal bears.

The Lord Steward, by virtue of his Office, without any Commission, judges of all Transgressions, as Treasons, Murders, Felonies, Bloodshed, &c. committed in the Court, or within the *Verge* thereof; which extends every way the Space of twelve Miles from the chief Tunnel of the Court; only *London* by Charter exempted. See LORD STEWARD.

This was antiently called *Pax Regis*, or the *King's Peace*. See PEACE.

*Court of VERGE*, is a Court or Tribunal, in manner of a King's-Bench; which takes cognizance of all Crimes and Misdemeanors committed within the *Verge*.

It is held in the Compting-House, by the Lord Steward, as Judge thereof, assisted by other Officers of the Household; as, the Treasurer, Comptroller, Cofferer, Clerks of the Green-Cloth, &c. See GREEN-CLOTH, &c.

*VERGE of Land*. See *YARD Land*.

*VERGERS*, call'd by *Bracton*, &c. *Vergatores Servientes*, are Officers who carry white Wands before the Justices of either Bench; by others call'd *Porters of the Verges*. See PORTER.

*VERGERS of Cathedral or Collegiate Churches*, are inferior Officers, who go before the Bishop, Dean, &c. with a *Verge*, or Rod tip'd with Silver.

*VERGILÆ*, Constellations, whose appearance denote the Approach of the Spring. See SPRING.

According



According to the Poets, they were the Daughters of *Atlas*; and by the *Greeks* were call'd *Pleiades*: but the *Romans* named them *Vergilæ*. See *PLEIADES*.

**VERIFICATION**, the Act of proving, or making a thing good.

In the *French Law*, *Verifying* is used for the recording of the King's Edicts and Decrees by the Parliament.

**VERISIMILITUDE**. See *PROBABILITY*.

**VERJUICE**, a Juice or Liquor, drawn from four Grapes, or Apples, unfit for Wine, or Cyder; or from sweet ones, while yet acid, and unripe. See *CYDER*.

Its chief use is in Sauces, Ragouts, &c. tho it is also an Ingredient in some Medicinal Compositions; and is used by the Wax-Chandlers to purify their Wax.

It has its Name from a large Grape, call'd *Verjus*, or *Bourdela*; which is said never to grow perfectly ripe; or rather, which in its utmost Maturity is too austere and sour to be us'd in Wine; whence it is commonly turn'd into *Verjuice*.

There is also a tolerable *Verjuice* made of Crabs, gather'd, laid in a heap to sweat, the Stalks, &c. separated, then stamp'd or ground, and the Crab-mash put in a hair Bag; the Juice squeez'd out in a Press, barrell'd up close, and set in a warm Place to work for ten or twelve Days.

**VERMES**, in Medicine, a Disease popularly call'd *Worms*; arising from some of those Reptiles being generated, and growing in the Body: whence, frequently, dire Symptoms proceed. See *WORMS*.

The ordinary Place of the Worms is the Intestines: Tho there is scarce any Part of the Body but is sometimes infected with 'em: For besides the *Vermes Intestinales*, there are *Dentales*, *Gingivales*, *Pulmonarii*, *Cardiaci*, *Sanguinari*, *Urinarii*, *Cutaneous*, *Umbilicales*, Worms in the Liver, the Saliva, &c.

They are all ingender'd from the Eggs of some Insect, deposited in something that is taken into the Body by way of Food, or some other way.

There are three Species of Worms, most frequent in the human Body: The *Teretes*, or round and long, mostly found in the *Duodenum*; the *Latus*, or flat, call'd *Tenia*; and the round and short, found in the *Rectum*, and call'd *Ascarides*. See *ASCARIDES*, &c.

Sometimes, indeed, there are anomalous Worms expell'd; as horned, hairy, four-footed, two-headed, &c.

The Symptoms of the Disease are, Vomiting, Head-ach, Heart-burn, Sighing, Swooning, feeble Pulse, heavy Sleep, Deliria, Squinancy, Pleurisy, canine Hunger, and innumerable others; occasion'd by the Animal's sucking, moving, vellicating, gnawing, consuming the Chyle; irritating the Nerves, wounding the Solids, &c.

As to the *Latus*, beside the other common Symptoms, those affected with this have one peculiar to 'em; which is, that with their Stools they discharge several little Bodies, like Gourd-Seeds.

Dr. *Tyson*, in the *Philosophical Transactions*, N<sup>o</sup> 146. gives a curious account of the flat Worm, or *Lumbricus latus*; call'd by *Hippocrates* *Tenia*, and in *English*, ordinarily, the *Tape-Worm*, or *Jointed Worm*.

This Worm is always single: It lies variously convoluted; being sometimes as long as all the Guts, and sometimes vastly exceeds that length.

*Olaus Borrichius* assures us, a Patient of his, in a Year's time, voided 800 Foot of this sort of Worm, tho he had not yet met with the Head: in voiding, the Patient always perceiv'd it to break off.

Dr. *Tyson* parallels this Case with that of a Patient of his, who voided vast Quantities of this Worm, for several Years together: but in various Pieces; some two, three, four, six, or more Yards long: But all put together, he says, would much exceed the length of that of *Borrichius*.

The Joints in this Worm are very numerous: In one of 24 Foot long, Dr. *Tyson* number'd 507 Joints. Above the middle of the Edges of each Joint, he observ'd a protuberant Orifice.—Those Orifices he takes for so many *Mouths*; the best Microscopes discovering no Mouth in the Head.

The Worm is frequent enough in most Kinds of Animals; as Dogs, Oxen, Crabs, Herrings, Pikes, &c.

Some Authors assert, that it is not one, but many Worms link'd together, and included in a *Spolium* of the Intestines; and that this *Spolium* is not animated, but receives its Sense and Motion from *Vermiculi*, or *Cucurbitini* inclosed in it. This, *Gabrielus de Lumb. Com.* says, he has plainly discover'd: But Dr. *Tyson* abundantly evinces the contrary.

**VERMICELLI**, or *VERMICELLI*, is, properly, a kind of Melt, prepar'd of Flower, Cheese, the Yolks of Eggs, Sugar, and Saffron; and reduc'd into little long Pieces, or Threads, like Worms, by forcing it with a Piston thro' a number of little Holes in the end of a Pipe made for the purpose.

It was first brought from *Italy*, where it is in great vogue. In effect, 'tis the great regale of the *Italians*. Other Nations are hardly brought into the Taste of it.

It is chiefly used in Soupes and Pottages, to provoke Veneries.—

The Word, in the original *Italian*, signifies little Worms: They also call it *Tagliarini*, and *Millefanti*.

**VERMICULAR**, an Epithet given to any thing that bears a relation, or resemblance to Worms, *Vermiculi*.

Anatomists particularly apply it to the Motion of the Intestines, and certain Muscles of the Body. See *INTESTINE*, &c.

The *Vermicular*, or Peristaltic Motion of the Intestines, is perform'd by the Contraction of the Fibres thereof, from above, downwards; as the Antiperistaltick Motion is by their Contraction from below, upwards. See *PERISTALTIC*.

The Contraction happening in the *Peristaltic*, which others call the *Vermicular* Motion, as resembling the Motion of Worms, does not affect all the Parts of the Intestines at once; but one part after another.

**VERMICULAR Work**, *Opus Vermiculatum*, in Sculpture, a sort of Ornaments used in Rustick Work; consisting of Frets, or Knobs, cut with Points, representing, in some sort, the Tracks made by Worms. See *MOAIC*.

**VERMIFORMIS**, in Anatomy, a Term applied to various Parts in the human Body; bearing some resemblance to Worms.

Such are the *Processus*, or *Apophyses Vermiformes*; which are the two Extremities of the *Cerebellum*, situate near the fourth Ventricle. See *CEREBELLUM*.

**VERMIFORMES Musculi**, are the four Muscles in each Hand and Foot, which bring the Fingers and Toes towards the Thumbs and great Toes; call'd also *Lumbricales*. See *LUMBRICALES*.

**VERMIFUGUS**. See *WORM-POUNDER*.

**VERMILION**, a very bright, beautiful, red Colour; in great esteem among the Antients, under the Denomination *Minium*. See *RED*, and *COLOUR*.

There are two Kinds of it; the one *Natural*, the other *Facitious*.

The *Natural* is found in some Silver Mines, in form of a ruddy Sand; which they prepare, and purify by several Lotions and Coctions.

The *Artificial* is made of Mineral Cinnabar, ground up with Aqua vitæ and Urine, and afterwards dry'd.

They also make it of Lead burnt and wash'd; or of Cerusse, prepared by Fire: But this is not properly denominated *Vermilion*, but *red Lead*. See *LEAD*.

'Tis this last, however, that seems to be the real *Minium* of the Antients; and accordingly, the Apothecaries and Painters still give it the Name, to enhance the Price. See *MINIUM*.

The antient *Greek* and *Latin* Authors, have given us strange fabulous Accounts of this *Minium*; and several of the Moderns have adopted their Dreams: *Theophrastus* attributes the first Invention of making it to *Callias the Athenian*; who hit upon it, in endeavouring to draw Gold by Fire out of a red Sand found in the Silver Mines, in the Year of Rome 249: But *Vitruvius* says, it was discover'd in the *Cilbian Fields*; where it was drawn from a red Stone, call'd by the *Greeks* *Anthrax*.

We have two Kinds of *Vermilion* from *Holland*; the one of a deep red, the other pale: But 'tis the same Stuff at bottom; the difference of Colour only proceeding from the Cinnabar's being more or less ground: when fine ground, the *Vermilion* is pale; and this is prefer'd to the coarser and redder.

It is of considerable use among the Painters in Oil, and Miniature; and likewise among the Ladies, as a *Fucus*, or Paint, to heighten the Complexion of such as are too pale. See *PAINTING*, *MINIATURE*, &c.

Among the Antients, the Images of the Gods were painted with *Vermilion* on the Feast-Days; and their Generals on the Days of Triumph. See *CINNABAR*.

*Vermilion* is sometimes also, tho improperly, used for what we otherwise call *Kermes*, or *Scarlet Grain*. See *KERMES*, &c.

**VERMINATION**, the Act of breeding of Worms, and other Vermine; particularly Bots in Cattel.

**VERMINATION**, is sometimes also used among Physicians, for a sort of *Tormina Ventris*, or wringing of the Guts; wherein the Patient is affected, as if Worms were gnawing his Intestines. See *GRIPES*.

**VERMINE**, a collective Name, including all Kinds of little Animals, or Insects, which are hurtful or troublesome to Men, Beasts, Fruits, &c. as Lice, Fleas, Bugs, Caterpillars, Ants, Flies, &c. See *INSECT*, *WORM*, *BLIGHT*, &c.

**VERMIVOROUS Animals**, are such as feed upon Worms. See *ANIMAL*.

**VERNACULAR**, is applied to any thing that is peculiar to some one Country.

Whence, Diseases which reign most in any particular Nation, Province, or District, are called *Vernacular Diseases*. See *DISEASE*.

Such are the *Plica Polonica*, *Scorbutus*, *Tarantism*, &c. See *PLICA*, *SCORBUTUS*, *TARANTISM*, &c.



VERNAL, something belonging to the Spring Season.

See SPRING.

Hence, *Vernal Leaves*, are those Leaves of Plants which come up in the Spring, &c. See LEAVES.

VERNAL Signs, are those which the Sun is in during the Spring Season, viz. Aries, Taurus, and Gemini. See SIGNS.

VERNAL Equinox, is that which happens when the Sun is ascending from the Equator towards the North Pole. See EQUINOX.

VERONICA, a Term abbreviated from *Vericonica*, of *Vericon*, q. d. true Image; and applied to Portraits or Representations of the Face of our Saviour on Handkerchiefs.

*Veronica's* are Imitations of that celebrated Original one, preserv'd with great Veneration at St. Peter's in Rome; and imagin'd by some to be the Handkerchief laid over our Saviour's Face in the Sepulchre.

The first mention we find of that celebrated Relick, is in a Ceremonial compiled in 1143, dedicated to Pope Celestin, by *Benedict* a Canon of St. Peter's: But there is no mention made of the Time when it was brought to Rome. A Feast is kept in honour thereof in most Churches, on the Tuesday in *Quinquagesima* Week.

It is to be observ'd, that the Name *Veronica* is only given to such Handkerchiefs as represent no more of our Saviour than his Face: For such as represent his whole Body, as that of *Besancon*, which shews his Fore-part at length, and that of *Turin*, which represents both his fore and hind Part, as having cover'd him all over; were never call'd by this Name.

The Painters sometimes make the *Veronica* to be held up by an Angel, but most commonly by a Woman; which Woman the common People imagine to be a Saint, call'd Saint *Veronica*.

On this Principle, some People, towards the Close of the IXth Century, began to fancy there might have been a Woman of that Name in *Jerusalem*, who had presented her Handkerchief to our Saviour, as he went to *Calvary*, to wipe his Face withal, besmear'd, as it was, with Sweat and Blood; and that the Picture of his Face had been miraculously impress'd thereon.

This was no sooner imagin'd by some, than it was believ'd by others: And accordingly, we find by the Travels of *Bernard de Bredembach* Dean of *Mentz*, to the Holy Land in 1483, printed in 1502, that it was not long ere her very House was found out.

From that time the Fiction gain'd ground, and became a current Legend.

It was at length added, that this same Woman, S. *Veronica*, was the Woman troubled with the Flux of Blood in the Gospel: and accordingly, she was soon join'd with S. *Fiacrius*, and invok'd together with him against the Hemorrhoids.—And hence the Establishment of Feasts in honour of S. *Veronica*, in the Churches dedicated to S. *Fiacrius*.

In some of these Churches, particularly at S. *Giles's* in *Valenciennes*, this Saint is commonly call'd S. *Venice*, by Abreviation from the Genitive *Veronica*: And the Women have a Custom at certain times of the Year, to hang linen Swathes, wherewith they had girt themselves for nine Days, near her Statue.—And 'tis thence, or rather, from our Saviour's Picture express'd on the linen Handkerchief, that the Milleners have taken S. *Veronica*, or, as they call her, S. *Venisse*, or S. *Venecia*, or *Venisa*, for their tutelary Saint.

VERRUCA, in Medicine. See WART.

Hence, *Verrucous* is applied to any Excrescencies which have a resemblance to Warts.

VERRY, in Heraldry. See VAIRY.

VERSE, in Poetry, a Line, or Part of a Discourse, consisting of a certain Number of long and short Syllables, which run with an agreeable Cadence; the like being reiterated in the Process of the Piece. See POETRY.

This Repetition, according to F. *Bosch*, is necessary to distinguish the Notion of *Verse* from that of *Prose*: for in *Prose*, as well as *Verse*, each Period and Member are Parts of Discourse, consisting of a certain Number of long and short Syllables; only, *Prose* is continually diversifying its Measures, and Cadences; and *Verse* repeats 'em. See PROSE.

This Repetition of the Poets, appears even in the manner of Writing; for one *Verse* being finish'd, they return to the beginning of another Line to write the *Verse* following: and 'tis to this Return, that *Verse* owes its Name; *Versus* coming from *Vertere*, to turn, or return.

Accordingly, we find the same Name used to signify any thing that is placed in a certain, regular Order: *Cicero* uses the Word for a Line in *Prose*; *Virgil* for a Row of Trees, and even of Oars in a Galley. But, as the Regularity of *Verse* carries with it more Charms, and requires a greater degree of Exactness, the Word has, in time, become appropriated to Poetry.

To make *Verse*, 'tis not enough that the Measures and Quantities of Syllables be observ'd, and six just Feet put, one after another, in the same Line: There are further re-

quir'd certain agreeable Cadences, particular Tenses, Moods, Regimens, and even some Words unknown in *Prose*.

But what is chiefly requir'd, is an elevated, bold, figurative Manner of Diction: This Manner, is a thing so peculiar to this kind of Writing, that without it, the most exact Arrangement of Longs and Shorts, does not constitute *Verse*, so much as a kind of measur'd *Prose*. See VERSIFICATION.

The Greek and Latin *Verses*, consist of a certain Number of Feet, of a certain Quantity. See FOOT.

Some have attempted to make French and English *Verses* on the same Foundation; but without Success. See QUANTITY, and HEXAMETER.

*Vossius* is very severe on the modern *Verse*, and makes it altogether unfit for Musick: Our *Verses*, says he, run all as it were on one Foot; without distinction of Members, or Parts, and without regard to the natural Quantities of Syllables. We have no *Rythmus* at all: and we mind nothing but to have a certain Number of Syllables in a *Verse*, of whatever Nature, and in whatever Order. See RYTHMUS.

But Mr. *Malcolm* vindicates our *Verse* from this Imputation. 'Tis true, we don't follow the Metrical Composition of the Antients; yet we have such a Mixture of strong and soft, long and short Syllables, as makes our *Verses* flow, smooth or rumbling, slow or rapid, agreeably to the Subject. Instances of all which we have in the following Lines:

- ' Soft is the Strain when Zephyr gently blows;
- ' The hoarse rough *Verse* should like the Torrent roar:
- ' The Line too labours, and the Words move slow,
- ' Flies o'er the unbended Ears, and skims along the Main.

By making a small Change, or Transposition of a Word or Syllable, in any of these *Verses*, any body who has an Ear will find, that we make a great Matter of the Nature and Order of the Syllables.

*Vossius* adds, that the antient Odes were sung, as to the *Rythmus*, in the same manner as we scan 'em: every *Pes* being a distinct Bar or Measure, separated by a distinct Pause: Tho, in reading, that Distinction was not accurately observ'd.

Lastly, he observes, that their Odes had a regular Return of the same kind of *Verse*; and the same Quantity of Syllables in the same Place of every *Verse*: whereas, in the modern Odes, to follow the natural Quantity of our Syllables, every Stanza would be a distinct Song. See ODE.

'Tis next to impossible to write *Prose*, without sometimes intermixing *Verse* with it; So that *Vaugelas's* Rule, which enjoins us to avoid 'em, is next to impracticable. This may be further said, that for short *Verses*, they are so little perceiv'd, that 'tis scarce worth while to strain one's self to avoid 'em; and as to long *Verses*, they are chiefly to be avoided in the Ends of Periods; for in the Middle they are scarce felt.

In the general, Rules of this kind must be consider'd as principally regarding numerous *Verses*, and such as are readily distinguish'd by their Cadence: Thus, in *Latin*, 'tis scarce possible to avoid Iambick *Verses*; but Hexameters must by all means be avoided, their Cadence being more sensible and more study'd. See RHIME, &c.

The Greek and Latin *Verses*, are *Hexameters*, *Pentameter*, *Iambicks*, *Heptasyllabs*, *Trochaicks*, &c. See each under its proper Article.

The Moderns have invented *Heroic*, or *Alexandrian Verses*, which consist of twelve or thirteen Syllables. See ALEXANDRIAN.

The Antients have likewise invented various Kinds of *Verses*, or Poetical Devices; as *Centos*; *Echos*; *Minorimes*; *Equivocal Verses*, where the same Words contain'd in two Lines carry a different Sense. See CENTO, ECHO, and EQUIVOCAL.

*Reciprocal Verses*, which read the same backwards as forwards. See RETROGRADE.

VERSE, is also a part of a Chapter, Section, or Paragraph, subdivided into several little Articles. See CHAPTER.

The whole Bible is divided into Chapters; and the Chapters subdivided into *Verses*. See BIBLE.

The Distinction of *Verses* in the New Testament, was only made by *Robert Stephens*: And so negligently was it done, that his Son *Henry Stephens* assures us, he work'd at it as he travell'd from *Paris* to *Lions*. Many learned Men find a great many Faults with that Division; and yet 'tis every where follow'd.

M. *Simon* observes, that the *Greeks* and *Latins* meant by *Verse*, a Line, containing a certain number of Words. He adds, that the Authors of those Days, to prevent any thing being added or taken away from their Works, used to mark at the End the number of *Verses* they contain'd; but the Books themselves were wrote all running, without any Divisions, Points, &c.

VERSED Sine, of an Arch, is the Segment of the Diameter of a Circle lying between the Foot of the right Sine, and the lower Extremity of the Arch. See ARCH.



Thus, S T, (Tab. *Trigonometry*, Fig. 7.) is the *Versed Sine* of the Arch R T; and A S the *Versed Sine* of the Arch A R, the Complement of the former. See *SINE*.

**VERSIFICATION**, the Art, or Manner of making *Verse*; also the Tune and Cadence of *Verse*. See *VERSE*.

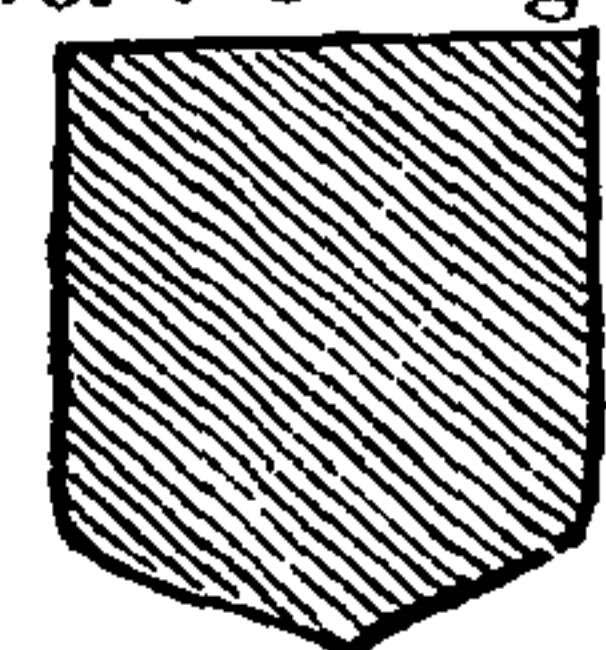
*Versification*, is properly applied to what the Poet does more by Labour, Art, and Rule, than by Invention, and the Genius or *Furor Poeticus*.

The Matter of *Versification* is long and short Syllables, and Feet compos'd of them; and its Form, the Arrangement of them in correct, numerous, and harmonious *Verses*: But this is no more than a mere Translator may pretend to, and which the *Catilinarian War*, put in *Verse*, might not merit.

'Tis with Reason, therefore, that these simple Matters are distinguish'd from the grand Poetry, and call'd by the Name *Versification*. See *POETRY*.

In effect, there is much the same difference between Grammar and Rhetorick, as between the Art of making of *Verses*, and that of inventing Poems.

**VERSION**, a *Translation* of some Book, or Writing, out of one Language into another. See *TRANSLATION*.



**VERT**, in Heraldry, the Term for a green Colour. See *GREEN*, and *COLOUR*.

It is called *Vert* in the blazon of the Coats of all under the Degree of Nobles; but in Coats of Nobles, 'tis call'd *Emerauld*; and in those of Kings, *Venus*.

In engraving, 'tis express'd by Diagonals, or Lines drawn a-thwart, beginning at the finister Corner of the Escutcheon; as in the Figure adjoining.

In lieu of *Vert*, the French Heralds use *Sinople*, or *Synople*. See *SINOPLE*.

**VERT**, or *green Hue*, in Forest Law, any thing that grows, and bears a green Leaf within the Forest, that may cover a Deer. See *FOREST*, *GAME*, &c.

It is either *Over-Vert*, or *Nether-Vert*; *Over-Vert* is the great Woods, which in Law-Books are usually called *Hault-Bois*.

*Nether-Vert* is the Under-Woods, otherwise call'd *Sub-Bois*.

We sometimes also meet with *Special Vert*, which denotes all Trees growing in the King's Wood, within the Forest; and those that grow in other Men's Woods, if they are such Trees as bear Fruit to feed the Deer.

**VERTEBRALES**, in Anatomy, a Pair of Muscles, serving to stretch out all the *Vertebrae* of the Back. See *VERTEBRÆ*.

**VERTEBRÆ**, a Chain of little Bones, reaching from the Top of the Neck, down the Back, to the *Os Sacrum*; and forming a third Part of the human Skeleton, call'd the *Spina Dorsæ*. See *SPINA*.

The *Vertebrae* have their Name *à vertendo*; because 'tis on them the Head and Trunk turn: The Greeks call them *Spondyli*, for the same Reason.

The *Vertebrae* are 24 in Number: Seven of 'em belong to the Neck, twelve to the Back, and five to the Loins. See *NECK*, *LOINS*, &c.

They lie not in a strait Line; those of the Neck bend inwards, and those of the Back outwards, for enlarging the Cavity of the Thorax; and those, again, of the Loins bend inwards, and those of the *Os Sacrum* outwards, to enlarge the Cavity of the Basin.

The Body of each *Vertebra* is spongy and cavernous; having in the middle a large Perforation, thro' which the *Medulla Spinalis* passes, and seven Apophyses, or Processes.

The Fore-part of this Body is round and convex; the Hind-part somewhat concave: its upper and lower Sides are plain; each cover'd with a Cartilage which is pretty thick forwards, but thin backwards, by means whereof it is, that we bend the Body forwards; the Cartilages yielding to the Pressure of the Bodies of the *Vertebrae*, which in that Motion come closer to one another: Which could not be effected, if the harder Bodies of the *Vertebrae* were close to one another.

The Processes of each *Vertebra* are of three sorts: Two transverse, or lateral; in each of which there is a Tendon of the *Vertebral Muscles* inserted: Four oblique ones; by which the *Vertebrae* are articulated to one another: and one acute, on the hindmost Part of the *Vertebra*.

These Processes, which are peculiarly call'd the *Spines*, form, with the hinder or concave Part of the Body of the *Vertebrae*, a large Hole in each *Vertebra*; and all the Holes answering one another make a Channel for the Descent of the Spinal Marrow, which sends out its Nerves to the several Parts of the Body by Pairs, thro' two small Holes, form'd by the jointing of four Notches in the Sides of each superior and inferior *Vertebra*. See *MEDULLA SPINALIS*.

The *Vertebrae* are articulated to one another by Ginglymus: For the two descending oblique Processes of each superior *Vertebra* of the Neck and Back, have a little dimple in their Extremities, wherein they receive the Extremities of the two ascending oblique Processes of the inferior *Verte-*

*brae*; so that the two ascending Processes of each *Vertebra* of the Neck and Back are received, and the two descending do receive, except the first of the Neck, and last of the Back; but the ascending Processes of each *Vertebra* of the Loins receive, and the two descending are received; contrary to those of the Neck and Back.

The *Vertebrae* are all tied together by a hard Membrane, made of strong and large Fibres: It covers the Body of all the *Vertebrae* forwards; reaching from the first of the Neck to the *Os Sacrum*.—There is another Membrane, which lines the Canal, made by the large Hole of each *Vertebra*; which also ties them all together: besides, the Bodies of each *Vertebra* are tied to one another by the Bodies of Cartilages; and the Tendons of the Muscles, which are inserted in their Processes, tie them together behind.

This Structure of the Spine is admirable; for had it been all one Bone, we could have had no Motion in our Backs; had it been of two or three Bones articulated for Motion, the *Medulla Spinalis* must have been necessarily bruised at every Angle, or Joint: besides, the whole would not have been so pliable for the several Postures we have occasion to put our selves in: If it had been made of several Bones, without intervening Cartilages, we should have had no more use of it, than if it had been but one Bone. If each *Vertebra* had had its own distinct Cartilages, it might have been easily dislocated.—Lastly, the oblique Processes of each superior and inferior *Vertebra*, keep the middle one, that it can neither be thrust backwards nor forwards, so as to compress the *Medulla Spinalis*.

The *Vertebrae* of the Neck differ from the rest, in that they are smaller and harder, their transverse Processes perforated for the Passages of the Vertebral Vessels, and their acute Processes forked and strait: Add, that the first and second have something peculiar to themselves. The first, called *Atlas*, is ty'd to the Head; and moves with it upon the second, semicircularly. See *ATLAS*.

The second is called *Epistropheus*, or *Vertebra Dentata*: In the middle, between its two oblique ascending Processes, it has a long and round Process like a *Tooth*, which is receiv'd into a Sinus of the *Atlas*; and upon it, the Head, with the first *Vertebra*, turns half round, as upon an Axis. The Extremity of this Process is knit to the Occiput, by a small but strong Ligament. A Luxation of this *Tooth* is mortal, because it compresses the *Medulla Spinalis*.

The third is call'd *Axis*: The rest have no particular Names.

The *Vertebrae* of the Back differ from the rest in this, that they are larger than those of the Neck, and smaller than those of the Loins: Their acute Processes slope downwards upon one another. They have in each side of their Bodies a small Dimple, wherein they receive the round Extremities of the Ribs: The uppermost of 'em is sometimes call'd the *Crest*; the second the *Axillaris*; and the rest *Costales*.

The *Vertebrae* of the Loins are the broadest; and the last of them, the largest of all the *Vertebrae*.

Tho each *Vertebra* has but a small Motion, yet the Motion of 'em all is considerable: The Head, we have observed, moves only backwards and forwards on the first *Vertebra*, and semicircularly on the second.

The Motion of the other *Vertebrae* of the Neck is not so manifest, yet it is greater than that of the *Vertebrae* of the Back; because their acute Processes are short and strait, and the Cartilages which are between their Bodies, thicker. The *Vertebrae* of the Back have the least Motion of any; because their Cartilages are thin, their acute Processes long, and very near to one another: And they are fixed to the Ribs, which neither move forwards nor backwards. The greatest Motion of the Back, is perform'd by the *Vertebrae* of the Loins; because their Cartilages are thicker, and their acute Processes are at a greater distance from one another: For the thicker the Cartilages are, the more we may bend the Body forwards; and the greater distance there is between the acute Processes, the more we may bend backwards.

Such is the Structure and Motion of the *Vertebrae*, when in their natural Position: but we frequently find 'em variously distorted. If the *Vertebrae* of the Back stick out, it constitutes what we call a *Bunch'd Back*: And in such Cases the Cartilages between the *Vertebrae* are very thin and hard, forwards, but considerably thick backwards where the oblique Processes of the superior and inferior *Vertebrae* are at a considerable distance from one another, which distance is fill'd up with a viscous Substance.

This Inequality of the thickness of the Cartilages happens either by a Relaxation, or a Weakness of the Ligaments and Muscles fasten'd to the backside of the *Vertebrae*: in which Cases, their Antagonists finding no opposition, remain in a continual Contraction.

The *Os Sacrum* does also consist of *Vertebrae* in Children; which grow so close together in Adults, that they make but one large and solid Bone, of the Figure of an Isosceles Triangle, whose Basis is ty'd to the last *Vertebra* of the Loins, and the upper Part of its Sides to the *Iliæ*, and its Point to the *Os Coccygis*. See *SACRUM OS*.



**VERTEX**, in Anatomy, the Crown of the Head ; or that Part situate between the *Sinciput* and *Occiput*. See **HEAD**.

Hence, also, *Vertex* is figuratively used for the Top of other Things.

Thus, the *Vertex* of a Cone, Pyramid, Conic Section, &c. is the Point of the upper Extremity of the Axis ; or the Top of the Figure. See **CONE**, **PYRAMID**, &c.

**VERTEX** of an Angle, is the angular Point ; or the Point A, (Tab. Geometry, Fig. 1.) wherein the Legs meet. See **ANGLE**.

**VERTEX** of a Figure, is the *Vertex* of the Angle opposite to the Base. See **FIGURE**.

Such is the Point M, (Tab. Geometry, Fig. 19.) opposite to the Base K L. See **BASE**.

**VERTEX** of a Curve, is the Point A, (Tab. Geom. Fig. 51.) from which the Diameter is drawn ; or the Intersection of the Diameter, and the Curve. See **CURVE**.

**VERTEX** of a Glass, in Opticks, the same with the Pole thereof. See **POLE**, **OPTIC GLASS**, &c.

**VERTEX** is also used in Astronomy, for that Point of Heaven perpendicularly over our Heads ; properly call'd the *Zenith*. See **ZENITH**.

**VERTICAL Circle**, in Astronomy, is a great Circle of the Sphere, passing thro' the Zenith Z, and Nadir N, (Tab. Astronomy, Fig. 6.) and any other given Point in the Surface of the Sphere. See **CIRCLE**, and **SPHERE**.

Thus, the Meridian of any Place is a *Vertical Circle*. See **MERIDIAN**, &c.

All the *Vertical Circles* intersect each other in the Zenith and Nadir. See **ZENITH**, and **NADIR**.

The use of the *Vertical Circles*, is to measure the Height of the Stars, and their Distances from the Zenith, which is reckon'd on these Circles ; and to find their Eastern and Western Amplitude, by observing how many degrees the *Vertical* wherein the Star rises, or sets, is distant from the Meridian. See **ALTITUDE**, **AMPLITUDE**, &c.

The *Vertical Circles* are also called *Azimuths*. See **AZIMUTH**.

**PRIME VERTICAL**, is that *Vertical Circle*, or *Azimuth*, which passes thro' the Poles of the Meridian ; or which is perpendicular to the Meridian, and passes thro' the Equinoctial Points. See **PRIME VERTICAL**.

**VERTICAL of the Sun**, is the *Vertical* which passes thro' the Centre of the Sun, at any Moment of Time.

Its use is in Dialling, to find the Declination of the Plane whercon the Dial is to be drawn ; which is done by observing how many Degrees that *Vertical* is distant from the Meridian, after marking the Point, or Line of the Shadow upon the Plane, at any time. See **DECLINATION**.

**VERTICAL Angles**. Two Angles, as  $\alpha$  and  $\alpha$ , (Tab. Geometry, Fig. 18.) are said to be *Vertical*, if the Legs of one of 'em, A E and E C, be only Continuations of the Legs of the other, D E and B E. See **ANGLE**.

**VERTICAL Plane**, in Perspective, is a Plane perpendicular to the Geometrical Plane ; passing thro' the Eye, and cutting the Perspective Plane at right Angles. See **PLANE**.

**VERTICAL Plane**, in Conicks, is a Plane passing thro' the Vertex of the Cone, and parallel to any Conic Section. See **PLANE**, and **CONE**.

**VERTICAL Line**, in Conicks, is a right Line drawn on the *Vertical Plane*, and passing thro' the Vertex of the Cone. See **LINE**.

**VERTICAL Dial**, is a Sun-Dial, drawn on the Plane of a *Vertical Circle* ; or perpendicular to the Horizon. See **DIAL**, and **DIAL-PLANE**.

These are particularly call'd *Oriental*, East, *Occidental*, West, *Meridional*, South, and *Septentrional*, or North *Verticals*, when oppos'd to one, or other of these Cardinal Points of the Horizon. See **EAST**, **WEST**, &c.

When they don't look precisely to any of them, they are call'd *Decliners* : And when their Plane, or Surface is not perfectly perpendicular, *Recliners*. See **DECLINER**, **RECLINER**, &c.

**VERTICAL Point**, in Astronomy, the same with **VERTEX**, or **ZENITH**.

Hence, a Star is said to be *Vertical*, when it happens to be in that Point which is just over any Place.

**VERTICAL Line**, in Dialling, is a Line on any Plane perpendicular to the Horizon.

This is best found and drawn on an erect and reclining Plane, by holding up a String and heavy Plumbsteadily, and then marking two Points of the Shadow of the Thread on the Plane, a good distance from one another ; and drawing a Line thro' those Marks. See **DIALLING**.

**VERTICILLATE Plants**, are such as have their Flowers intermix'd with small Leaves, growing in a kind of Whirls about the Joints of a Stalk ; as Penny-royal, Horehound, &c. See **PLANT**.

The peculiar Characteristick of this Genus of Plants, according to Mr. Ray, is, that their Leaves grow by Pairs, one just against another, on the Stalk : the Flower mono-

talous, but usually hanging down with a kind of Lip, or turned something like the form of an Helmet : Four Seeds after each Flower ; to which the Perianthium of the Flower serves instead of a *Capfula Seminalis*.

The same Author makes two Species of these *Verticillate* Plants.

1°. The *Fruticose*, or such whose Superficies is Perennial : These, again, have either a plain Flower, as the *Chamedrys Vulgaris*, *Thucrium*, and the *Marum Syriacum* ; or a Flower with a Lip, which they call a *Labiated Flower* ; or one something in the form of an Helmet, which they call *Galeated* ; as the *Sacria Stachas*, *Hyssopus*, *Rosmarinus*, *Satureia*, *Marum vulgare*, *Thymum vulgare*, and the *Polum Montanum*.

2°. The *Herbaceae*, or such whose Stalks are not Perennial ; these are the *Menthe*, *Verbena*, *Distannus Creticus*, *Origanum*, *Majorana*, *Ocimum*, *Horminum*, *Galeopsis*, *Nepeta*, *Betonica*, *Prunella*, *Stachys*, *Clinopodium vulgare*, *Lamium*, *Molucca Hedera Terrestris*, *Galericulata*, *Calamintha*, *Melissa*, *Marrubium Commune*, *nigrum* and *aquaticum* ; *Chamaepitys*, *Scarodonia*, *Scordium*, *Bugula*, *Syderitis*, *Cardiaca*.

**VERTICITY**, is that Property of the Loadstone, whereby it turns to some particular Point. See **MAGNET**.

The Attraction of the Magnet was known long before its *Verticity*. See **COMPASS**, **NEEDLE**, &c.

**VERTIGO**, in Medicine, an Indisposition of the Brain, wherein the Patient sees the Objects about him as if they turn'd round, and fancies he turns round himself ; tho' all the while at rest.

Physicians distinguish two Kinds, or rather, two Degrees of *Vertiges* : The first, call'd a *Simple Vertigo*, is when the Body and external Objects appear to turn round, without any great dimness of Sight.

The other, call'd *Scotomia*, or *Vertigo Tenebrosa*, is when the Eyes are darken'd, and as it were cover'd with a Mist. See **SCOTOMIA**.

Some make a third Stage, viz. a *Vertigo Caduca*, wherein the Patient actually falls down : But this seems scarce to differ from an Epilepsy. See **EPILEPSY**.

Sometimes the *Vertigo* is seated in the fore-part of the Head, and sometimes in the hind-part : whereof, the latter is much the more dangerous.

*Bellini* accounts for the *Vertigo* very well, from a preternatural Motion in the *Retina* : for 'tis evident, an Object will seem to move circularly, if the Images thereof, painted on the *Retina*, fall successively on different Parts of the *Retina*. See **RETINA**.

This they may do, either by the Objects moving while the Eye is at rest, or from the Eye moving while the Objects rest ; or, lastly, the Object and Eye being both at rest, the Rays falling on the same Place by the Optic Nerve's being alone in Motion. For since a right and an oblique Incidence do not excite the same Tremors in the Nerves, and the same Species of Motion ; if the Optic Nerve only be moved, and the Object be at rest, it will appear to shift its Situation, by the Change of Place in which it was represented. See **VISION**.

External Causes of *Vertigines*, are a continued turning round of the Body, Drunkenness, too long Fasting, immoderate Exercise, Surprise, Voracity, much use of Pulse, Onions, Leeks, Raddishes, Cabbage, Mustard, &c. and in the general, whatever may press, distend, or contract the Arteries.

The Word is form'd *a vertendo*, from turning.

The first Step in the Cure, is bleeding in the Jugular, or Cupping ; then they proceed to an Emetic ; then a Vesicatory on the Neck, or a perpetual Blister, or Issues ; with Sternutatories, and the other Medicines that obtain in the Apoplexy. See **APOPLEXY**.

**VERTILLAGE**, in Agriculture, the *Tilling*, or preparing of Ground to receive the Seed, by turning, stirring, or tossing it. See **TILLING**.

**VERTUE**. See **VIRTUE**.

**VERTUOSO**. See **VIRTUOSO**.

**VERU-MONTANUM**, in Anatomy, a Term compounded of the two Latin Words, *Vern*, and *Montanum* ; signifying a kind of little Valve, in the Place where the Ejaculatory Ducts enter the Urethra. See **VALVE**, **URETHRA**, &c.

Its use is, to prevent the Urine, in passing the Urethra, from getting in at those Ducts, and so mixing with the Semen. See **URINE**, &c.

**VERY Lord**, and **VERY Tenant**, are those that are immediate Lord and Tenant, to one another.

—And know ye, that in taking of Leases six things are necessary, viz. Very Lord, and Very Tenant ; Service behind ; the Day of the taking ; Scisin of the Services, and within his Fee ; and that a Man is not Very Tenant, until he have returned to the Lord by some Service. Old Nat. Brev. See **TENANT**, &c.



**VESICA**, in Anatomy, a *Bladder*; a membranous or skinny Part, in which any Humor is contain'd. See **BLADDER**.

**VESICA Biliaria**. See **VESICULA FELLIS**.

**VESICA**, among Chymists, is a large Copper Vessel, tinn'd on the inside; used in distilling Ardent Spirits: so called, as resembling the Figure of a blown Bladder. See **DISTILLATION**.

**VESICATORY**, an external Medicine, serving to raise a Blister; whence also it is itself, tho' improperly, call'd a *Blister*. See **BLISTER**.

*Vesicatories* are Unguents, Cataplasms, or Plaisters made of sharp, irritating Medicaments, which have a Faculty of drawing the Humours from within, outwards; inflaming and ulcerating the Skin, and raising *Vesicæ*, or Bladders; whence the Name of *Vesicatory*.

We have *Vesicatories* made of Cantharides, Euphorbium, Figs, Sublimate of Mercury, *Lapis Infernalis*, Mustard, Anacardium, Scillæ, Briony, Vinegar, Pepper, Leaven, &c. which are incorporated and made up with Honey, Gums, Resins, &c. to bring them to the Consistence requir'd. See **CANTHARIDES**, &c.

*Vesicatories* are a stronger sort of *Sinapisms*. See **SINAPISM**, **CAUSTIC**, &c.

**VESICULA**, *Vesicle*, a Diminutive of *Vesica*; signifying a little Bladder.

The Lungs consist of *Vesiculæ*, or *Lobules* of *Vesiculæ*, admitting Air from the *Bronchiæ*; and not only Air, but also of Dust, &c. See **LOBULE**, and **LUNGS**.

There are several Parts in the Body which bear this Appellation; as the,

**VESICULA FELLIS**, *Cistula FELLIS*, or *Gall-Bladder*; which is an oblong, membranous Vessel, not unlike a Pear both in form and size; situate in the hollow Part of the Liver. See **LIVER**.

It adheres to the Liver, not only by its Vessels, which it receives from it, but likewise by its Membranes, whereof the External is common to both. The lower Part, which hangs out of the Liver, rests on the *Pylorus* of the Stomach.

Its Trunks, or Membranes, are usually reckon'd five; an outer, or common one, from the *Peritonæum*; an inner one, on that side which adheres to the Liver from the *Capsula* of the *Porta*, and of the *Porus Biliaris*.

And three proper ones: The first whereof is Vascular; the second Muscular; and the third Glandulous.

But Dr. Drake, viewing a piece of dried Gall-Bladder with a Microscope, found but little Reason for this accurate Distinction; the several Orders of Fibres of the several Coats appearing to be no other than an infinite Perplexity of Vessels diversly ramified.

The Gall-Bladder is usually distinguish'd into the *Fundus*, which is the widest Part; and the *Collum*, or Neck, which is the narrowest.

The Neck of the *Vesicula FELLIS* being prolong'd, terminates in a Duct, called *Meatus Cysticus*, or *Biliaris*; which, at about two Inches distance from the Gall-Bladder, is join'd to the *Meatus Hepaticus*; these, together, form the *Ductus Communis*. See **DUCTUS**, **MEATUS**, &c.

The use of the Gall-Bladder, is to receive the Bile after its being secreted in the Glands of the Liver; and to discharge it by the common Duct into the *Duodenum*.

The Bile found in this Vessel is of a brighter yellow, a greater Consistence, and more bitter and acrimonious than that in the *Porus Biliaris*. See **BILE**.

**VESICULÆ SEMINALES**. ? See **SEMINALES**.

**VESICULÆ ADIPOSEÆ**. S See **ADIPOSEÆ**.

**VESPER**, in Astronomy, called also *Hesperus*; is the Planet *Venus*, when she is Westwards of the Sun. See **VENUS**.

**VESPER**, in the *Romish Church*, *Evening Songs*; that Part of the Office which is rehearsed after Noon: answering to our *Evening-Prayers*; except that it differs more from the Office of the Morning, call'd *Mattins*. See **MATTINS**.

*Sicilian VESPER*, is a famous *Era* in the *French History*; signifying a general Massacre of all the *French* in *Sicily*, in the Year 1282; to which the first Toll that call'd to *Vespers* was the Signal.

Some will have it to have happen'd on *Easter-Eve*: others on the Day of the *Annunciation*.

It was rais'd by one *Prochites* a Cordelier, at the Time when *Charles* of *Anjou*, Count of *Provence*, was King of *Naples* and *Sicily*.—The Women with Child by *Frenchmen* were not spared.

After the like manner, we say, the *Mattins* of *Moscow*, speaking of the *Muscovites* assassinating their Prince *Demetrius*, and all the *Poles* his Adherents at *Moscow*, the 27th of *May* 1600, under the Conduct of their Duke *Choursky*, at six a-clock in the Morning.

**VESPERTILIONUM** *Alæ*, q. d. *Bats Wings*, among Anatomists, two broad membranous Ligaments, with which the bottom of the Womb is ty'd to the Bones of the Flank;

so called, from their resembling the Wings of a Bat. See **UTERUS**.

**VESPERTINE**, in Astronomy. When a Planet sets after the Sun, it is said by some to be *Vesperine*.

**VESSEL**, *Vas*, *Vase*, a Thing proper to hold or contain Liquor.

Thus, a Tunn, Hoghead, &c. are *Vessels* fit to contain Ale, Wine, &c.

The Chymists use a great diversity of *Vessels* in their Operations; as *Matrasses*, *Pelicans*, *Retorts*, *Receivers*, &c. See **MATRASS**, **PELICAN**, &c.

Among Anatomists, &c. all the Tubes or Canals wherein the Blood and other Juices or Humours are secreted, convey'd, deposited, &c. as the Veins, Arteries, Lymphatics, Spermaticks, &c. are call'd *Vessels*. See **TUBE**, **CANAL**, **DUCT**, **VEIN**, **VESICULA**, &c.

Some even extend the Word to the Nerves; as supposing 'em the Conduits of the Animal Spirits. See **NERVE**.

*Vessels* consist of Membranes variously form'd and dispos'd for the Reception of the Fluids; and these Membranes, again, consist of lesser *Vesicles*, or *Vesiculæ*: And this, for what we know, without end. See **MEMBRANE**, **FLUID**, &c.

In the new System of many modern Philosophers and Physicians, *Vessel* is a Name common to all the solid Parts of the Body. See **SOLID**.

These Authors explain the whole Animal Oeconomy, Functions, &c. from the different Liquors diffus'd throughout the Body, and the Tubes, or *Vessels* which contain those Liquors. In effect, all we know in the human Body, is either *Vessel*, or Liquor. See **DIGESTION**.

The Antients, 'tis true, had a Notion, that some Parts of the Body, as the Heart, Spleen, &c. are mere *Parenchyma's*, i. e. a kind of Pulp, or Pith, void of all *Vessels*; but the Moderns, by the advantage of Microscopes, Injections, &c. find that these, and all other Parts of the Body, are mer Congeries, or Masses of *Vessels* interwove. See **PARENCHYMA**, **CARO**, &c.

Some Philosophers even extend the modern System to all Material Beings; owning, only, two Elements, viz. a Matter infinitely liquid, diffus'd thro' all Nature; and hard, or solid Parts; which are, as it were, the *Vessels* of that Matter. See **ELEMENT**, &c.

The *Vessels* have a considerable share in the vital Actions; all that is requir'd to the Maintenance of Life, being a due Quantity of a proper Humour, and its continued Motion along the *Vessels*: This Motion depends, in great measure, on the Action of the *Vessels* themselves; and the Action of the *Vessels* depend on the Contraction of the Fibres, whereby, when stretch'd and distended by the flowing Humour, they shorten themselves again, and dispose themselves into right Lines, still approaching towards the Axis of their Cavity; and thus, they propel their Contents: So that the Force of the *Vessels*, is chiefly to be determin'd from their Figure. See **FIBRE**, **ELASTICITY**, &c.

The Number of *Vessels*, some of our latest and best Anatomists observe, is greatest in Embryo's; and continually decreases as Age comes on. See **FOETUS**.

For, in the Actions whereby Nutrition, &c. are effected, the greater *Vessels* being much distended by their Humours, the smaller *Vesicles*, whereof the Membranes or Coats of the larger are wove, become compress'd and streighten'd, and at length quite dry, and void of Juices; so that growing together, the Fibres become the firmer and stronger by the loss of the *Vesicles*. And hence the Strength, Firmness, Stiffness, &c. of the solid Parts. See **SOLID**; see also **DISEASE**, and **DEATH**.

**VESSELS**, in Navigation, is a common Name for all sorts of Shipping, i. e. all floating Machines, or Vehicles that move in the Water. See **SHIP**.

*Vessels* are frequently distinguish'd into two general Classes, viz. *high-bottom'd*, or *deck'd Vessels*: which are those that move wholly with wind and Sail, and live in all Seas; as *Pinks*, *Galleons*, *Ships*, &c. See **SAILING**.

And *flat-bottom'd Vessels*, which go both by Oars and Sails: Such are *Boats*, *Galleys*, *Praws*, *Wherries*, &c. See **OARS**, **ROWING**, &c. see also **BOAT**, **GALLEY**, &c.

*Floating Vessels*, are usually distinguish'd into *Boats*, *Lighters*, *Barges*, *Barks*, *Fishing Vessels*, *Ships of Trade*, and *Vessels of War*; of each whereof there are divers Kinds and Denominations. See **BOAT**, **BARGE**, **LIGHTER**, **SHIP**, &c.

*Vessels of War*, are a *three-deck'd Ship*, first and second Rate; a *Frigate*, or *two-deck'd Ship*, third, fourth, and fifth Rate; a *one-deck'd Ship*, sixth Rate; (see **RATI**.) a *Boom-Vessel*, a *Fireship*, a *Ketch*, a *Machine-Vessel*, a *Smoker*.

A *Vessel* is said to be of *three or four hundred Tons*; meaning that it will carry three or four hundred times two thousand Weight: or, that when immerg'd in Water, it possesses the Space of three or four hundred Tonn of Water, which is equal to the Weight of the *Vessel*, and all the Loading it can carry. See **TUN**, and **BURDEN**.

A *Vessel* is said to *draw ten or fifteen Foot of Water*; meaning, that when loaden, it sinks so deep under Water.



The Form of *Vessels*, is a thing of great importance, with regard to their Motion, Sailing, &c. and in the determining what Form is most commodious, the new Doctrine of Infinites becomes of apparent Service to Navigation and Commerce.

A Body moving in an immoveable Fluid is obliged to sever the Parts thereof; and they resist such Separation. Now, setting aside a certain Tenacity, whereby they are glued together; and which is different in different Liquids; the whole Force of the Resistance depends on that of the Shock, or Impulse: For a Body that is struck, strikes at the same time; but a perpendicular Stroke is that a Liquid resists the most, as being the greatest: And for a Body to move freely therein, it must be of such Figure, as to present it self as obliquely as possible. If it were triangular, and moved Point foremost; 'tis certain all its Parts would strike the Fluid obliquely, but they would all strike it with the same Obliquity; and it were more advantageous, that each should strike more obliquely than its Neighbour.

Now, such a perpetual Augmentation of Obliquity, can no where be had but in a Curve Line; each Point whereof is consider'd as an infinitely small right Line, always inclined to the other little right Lines contiguous to it.

To find what Curve it is whose perpetual Change of Obliquity, or Inclination in all its Parts, renders it of all others the fittest to divide the Fluid easily; is a Problem much more difficult than it appears to be; and, in effect, only to be solved by the new Geometry: The Solution was first given by Sir I. Newton in his Investigation of the Solid of the least Resistance.

That Author, however, did not publish his Analysis; yet the Marquis de l'Hopital hit upon it: And afterwards M. Fatio resolv'd the same Problem; tho by a much longer and more perplex'd way. See SOLID of the least Resistance.

VEST, and VESTITURE. See INVESTITURE.

VESTALS, in Antiquity, Maids in ancient Rome, consecrated to the Service of the Goddess *Vesta*; and particularly, to watch the sacred Fire in her Temple. See VESTALIA.

*Numa* first instituted four *Vestals*; and *Plutarch* tells us, *Servius Tullius* added two more: which number, six; lasted as long as the Worship of the Goddess *Vesta*.—'Tis true, *S. Ambrose* reckons them seven; but without any Foundation.

The *Vestals* made a Vow of perpetual Virginity: Their Employment was, the Sacrificing to *Vesta*, and keeping up the Holy Fire in her Temple. If they violated their Chastity, they were punish'd with remarkable Severity; being shut up, or buried in a deep Pit, or Cavern, with a lighted Lamp, and a little Water and Milk, and there left to be devour'd by Hunger.—If they let out the Fire, they were whip'd by the *Pontifex Maximus*; and the Fire was re-kindled by the Sun-Beams collected, some say, in Burning-Glasses, and not otherwise.

To be secure of their Virginity, at their Admission, it was provided, That they should not be above six Years old.—They were chosen by Lot, out of twenty Virgins carried by the Pontiff to the *Comitia*, for that purpose.

They were only consecrated for 30 Years; after which time, they were at liberty to go out and be marry'd. If they continu'd in the House after that time, they were only to be assistant in point of Advice to the other *Vestals*.

The first ten Years they were to employ in learning their Functions; the ten following they were to exercise them; and the last ten, to teach them to others.

Their Order was very rich; both on account of the Endowments of the Emperor, and of Legacies of other Persons.

The *Vestals* had a particular Place allotted them at the Amphitheatres and Games of the Circus.—Their Vehicle was the *Carpentum*, or *Pilentum*. See CARPENTUM, &c.

The Veil wherein they sacrificed, was call'd *Suffibulum*.

At first, they were nominated by the Kings; but after the Extinction of Monarchy, by the *Pontifex Maximus*, or High Priest. The oldest of them was call'd *Maxima*, as the first Pontiff was *Maximus*. See PONTIFF.

They had divers Privileges: disposed of their Effects by Testament in their Father's Life-time; had the same Gratification as a Mother of three Children; and whenever they met a Criminal going to Execution, had a Power to pardon him.

The Fire which the *Vestals* were to watch, was not on an Altar, or a Hearth; but in little earthen Vessels with two Handles, call'd *Capaduncula*.

This Fire was held a Pledge of the Empire of the World. If it went out, 'twas held a very unlucky Prognostick; and was to be expiated with infinite Ceremonies. Among the Romans, *Festus* tells us, it was only to be re-kindled by the rubbing a kind of Wood, proper for the Purpose. But among the Greeks, *Plutarch*, in the Life of *Numa*, observes, it was to be re-kindled by exposing some inflammable Matter in the Centre of a concave Vessel held to the Sun.—For it is to be noted, the Romans were not the only People

who kept the perpetual Fire of *Vesta*, in imitation of the celestial Fires: but the Greeks were possess'd with the same Superstition; particularly the *Delphians*, *Athenians*, *Tenedians*, *Argives*, *Rhodians*, *Cyziceniens*, *Milefians*, *Ephesians*, &c.

VESTALIA, Feasts held in honour of the Goddess *Vesta*, on the fifth of the Ides of June, i. e. on the ninth Day of that Month. See FEAST.

On that Day, Banquets were made before the Houses; and Meats sent to the *Vestals*, to be offer'd by them to the Goddess.

The Asses that turn'd the Mills for grinding of Corn, were on this occasion led about the City crown'd with Flowers, and Chaplets form'd of pieces of Bread; and the Millstones were likewise deck'd with Garlands and Crowns.

The Ladies went barefooted in Procession to the Temple of *Vesta*; and an Altar was erected to Jupiter the Baker, *Jovi Pistori*, in the Capitol.

The *Vestalia* had their Name from that of their Goddess *Vesta*, whom the Greeks call'd *Esia*, Fire, or *Hearth*; whence *Cicero* derives the Latin Name.—Accordingly, the Poets frequently use *Vesta* for Fire, or Flame; as *Jupiter* for Air, *Ceres* for Corn, &c. See GOD, &c.

VESTIARIUS, VESTIARY, in Antiquity, a Master of a Ward-robe; or an Officer under the Greek Empire, who had the Care and Direction of the Emperor's Apparel, Robes, &c.

The *Provestiarius*, or first *Vestiary*, was the grand Master of the Ward-robe.—But, among the Romans, *Vestiarius* was only a Salesman, or Tailor.

VESTIBLE, VESTIBULUM, in Architecture, a kind of Entry into large Buildings; being an open Place before the Hall, or at bottom of the Staircase.

*Vestibles* only intended for Magnificence, are usually between the Court and the Garden: These are sometimes simple, that is, have their opposite Sides equally enrich'd with Arches; and sometimes their Plan is not contain'd under four equal Lines, or a circular one, but forms several Van-corps and Rear-corps, furnish'd with Pilasters, &c.

The Romans had Places call'd *Vestibles* at the Entrance of their Houses, to shelter People oblig'd to stand at the Door, from the Weather: We have still *Vestibles* of the like kind, in many old Churches, Houses, &c. call'd *Porches*. See PORCH.

*Martinius* derives the Word from *Vestæ stabulum*; by reason the Fore-part of the House was dedicated to *Vestæ*. *Daviler* derives it from *Vestis*, and *ambulo*; by reason People there begin to let their Trains fall.

VESTIBLE, in Anatomy, the Fore-part of the Labyrinth of the Ear. See EAR, and LABYRINTH.

The *Vestible* is a small Cavity, of an irregular Form, placed immediately above the Basis of the Stapes; between the semicircular Channels, and the Cochlea.

In it appear divers *Foramina*; as that of the *Fenestra Ovalis*; the five *Foramina* of the semicircular Canals; that of the Cochlea; and five other very small ones, thro' which so many Nerves pass. See FORAMEN, FENESTRA, &c.

VESTIGIA, a Latin Term, frequently used by English Writers, to signify the Traces, or Footsteps any thing has left behind it. See TRACE.

The Word is particularly applied to the Marks remaining of something Antique, gone to Ruin by Time. See RUINS.

VESTRY, VESTIARIA, a Room adjoining to a Church, where the Priests Vestments and sacred Utensils are kept. See VESTRY-MEN.

VESTRY-MEN, a select Number of the principal Persons of every Parish within the City of London, and elsewhere; who yearly chuse Parish-Officers, and take care of its Concernments. See PARISH.

They are thus called, because they usually meet in the Vestry of the Church. See SECRETARIUM.

VESTRY-Clerk, an Officer who keeps the Parish Accompts. See PARISH.

VESTURE, VESTMENT, a Garment, or Cloathing.

Sometimes, in our Law-Books, it is used metaphorically; as in *Vestura terre*, i. e. *Segetes quibus terra Vestitur*; the Corn wherewith the Earth is clothed, or cover'd.

—*Vesture of an Acre of Land*, is the Profit of it, or the Wood, Corn, &c. growing on it.

VESTURE also signifies a Possession, or admittance to a Possession: In which Sense it is borrow'd from the Feudists; with whom *Investitura* signifies a Delivery of Possession by a Spear, or Staff; and *Vestura*, Possession it self. See INVESTITURE.

VETERAN, VETERANUS, in the Roman Militia, a Soldier who was grown old in the Service; or who had made a certain number of Campaigns; and on that account was entitled to certain Benefits and Privileges.

Twenty Years Service, were sufficient to entitle a Man to the Benefits of a Veteran.



These Privileges consisted in being absolv'd from the Military Oath; in being exempted from all the Functions of a Soldier; in enjoying a certain Salary, or Appointment, &c.

In France, the Term *Veteran* is still retain'd to such Officers as have held their Posts 20 Years; and who enjoy certain of the Honours and Privileges affixed thereto, even after they have laid 'em down.

A *Veteran* Counsellor has a Voice and Seat at Audiences, tho not at Processes by Writing.—A *Veteran* Secretary of the King, acquires the Privileges, &c. of Nobility, to himself and his Children.

*VETERINARIA Medicina*, is sometimes used for Physick or Medicine applied to the Diseases of Cattel. Whence, *VETERINARIUS*, a Farrier, or Horse-Leech.

*VETERNUS*, is used by some Physicians for a Lethargy, or other drousy Disease. See *LETHARGY*, &c.

*VETITUM Namium*, in Law, a Phrase literally importing a *forbidden Distress*: as, when the Bailiff of a Lord distrains Beasts, or Goods, and the Lord forbids his Bailiff to deliver 'em when the Sheriff comes to replevy them; and to that End, drives 'em to Places unknown: or when, without any Words, they are so effoign'd, as they cannot be replevied. See *DISTRESS*.

Divers Lords of Hundreds and Courts-Baron, have Power to hold Plea *de Vetito Namio*.—*Mathilda de mortuo Mari clamat in Manerio de Mawerdon duos Law-days, & Infangenthest & placita de Namio vetito, sine breve domini Regis*. Int. Record. in Thesaur. Scac.

*VI & Armis*, q. d. *by Force and Arms*, a Law-term used in an Indictment; to denote the forcible and violent Commission of any Crime. See *TRESPASS*, and *INDICTMENT*.

*VI Laica Removenda*, a Writ, lying where debate being between two Parsons, or Provisors for a Church; one of 'em makes a forcible Entry into it, with a number of Laymen, and holds the other out.

*VI Laica Admovenda*, a Writ which is serv'd when a Bishop has certify'd into the Court of Chancery, that the Parson of any Church within his Jurisdiction, is kept out of his Church or Glebe by any Lay-Force.

*VIA, Way*. See *ROAD*.

*VIA Militaris*, in our Law-Books, is used for a *Highway*; *que publica dici poterit & ducit ad Mare & ad Portum, & quandoque ad Mercata*. Bracton, Lib. IV. c. 16.

*VIA Regia*, in *Leg. Hen. I.* is defined to be that *que semper aperta, & quam nemo concludere potest cum minis suis, quia ducit in Civitatem vel Burgum vel Portum Regis*. 'That which is always open, and which no body may shut by any Threats, as leading to a City, Port, or Town.'—Its Breadth the same Laws prescribe to be such, as that two Carts may meet each other, and sixteen Horsemen arm'd go a-breast.

*VIA Lactea*, in Astronomy, the *Milky Way*, or *Galaxy*. See *GALAXY*.

*VIA Solis*, the *Sun's Way*, in Astronomy, is used among some Astronomers for the *Ecliptic Line*; so called, because the Sun never goes out of it. See *ECLIP TIC*.

*VIAE Primæ*, among Physicians, are the Stomach and Guts; including the whole Length of the Alimentary Duct or Canal, from the Mouth to the *Sphincter Ani*. See *DUCT*; see also *STOMACH*, *INTESTINES*, &c.

In this Sense, we say, An Obstruction in the *Primæ Viæ*.—Purging and Emetic Medicines operate chiefly in the *Primæ Viæ*.—Sudorificks, Alteratives, Cardiacks, &c. suspend their Action till after they have pass'd the *Primæ Viæ*. See *MEDICINES*, *PURGATIVE*, *EMETIC*, &c.

*VIAL*, or *PHIOL*, a small thin glass Bottle. See *PHIOL*.

*VIALES*, in Mythology, a Name given, among the *Romans*, to the Gods who had the Care and Guard of the Roads, and Highways; call'd by the Latins *Vie*. See *GOD*.

The *Dii Viales*, according to *Labeo*, were of the Number of those Gods called *Dii Animales*; who were supposed to be the Souls of Men changed into Gods; and were of two Kinds, viz. the *Viales* and *Penates*. See *PENATES*.

The *Viales* were the same with those otherwise call'd *Lares*; at least, some of the *Lares* were denominat'd *Viales*, viz. such of them as had the more immediate Intendency of the Roads. See *LARES*.

Hence, the two Names are sometimes join'd, and those Highway Deities call'd *Lares Viales*: Witness that Inscription in *Gruter*.

FORTUNAE  
REDUCI LARI  
VIALI ROMAE  
AETERNAE  
Q. AXIUS AELIA  
NUS - VE. PROC.  
AUG.

IONI.

*VIATICUM*, among the ancient *Romans*, was the Allowance or Appointment which the Republick gave to such

of its Officers as were sent into any of the Provinces, to exercise any Office, or perform any Service, or Commission; as also to the Officers of the Army, and even the Soldiers, &c. See *PROVINCE*.

*Tacitus* makes mention of it, Lib. I. Annal. c. 37. *Viaticum amicorum ipsiusque Caesaris*; meaning the Appointments which the Republick paid to *Germanicus*, and his Officers.

This *Viaticum*, however, did not consist altogether in Money: The Ring given the Magistrates and Officers sent into the Provinces, was part of it; so were the Clothes, Baggage, Tents, and the rest of their Equipage.

In the *Romish Church*, *Viaticum* is still the Allowance made a Religious, to defray the Expences of a Journey, Mission, &c. See *MISSION*.

The Term is also used for the Communion, or Eucharist, which is given to People in the Pangs of Death; or who are about to make the Voyage of the other World.

The *Viaticum* is not given to Persons executed in course of Justice.

*VIATOR*, in Antiquity, an Officer of Justice among the *Romans*.

The Term, originally, had no other Signification than that of a publick Messenger, or Servant sent to advertise the Senators and Magistrates when Assemblies were to be held, where their Presence was requir'd. And because in the first Ages of that Empire, the *Roman* Magistrates lived mostly at their Country-Houses, these Officers being oblig'd to be frequently upon the Road, were called *Viatores*, Travellers; from *Via*, Highway.

In process of Time, the Name *Viator* became a common Name for all Officers of the Magistrates; *Lictors*, *Accensi*, *Scribes*, *Statores*, and *Cryers*: whether it were that these Names and Offices were confounded in one; or whether *Viator* was a general Name, and the rest particular ones, specifying the particular Functions they discharg'd, as *A. Gellius* seems to insinuate, when he says, that that Member of the Company of *Viatores* who binds a Criminal condemn'd to be whip'd, was called *Lictor*. See *ACCENSI*, *SCRIBE*, *LICTOR*, &c.

Be this as it will, the Names *Lictor* and *Viator* are often used indiscriminately for each other; and we as often meet with, *Send to seek, or advertise him by a Lictor*, as by a *Viator*.

None but the Consuls, Pretors, Tribunes, and Ediles, had a right to have *Viatores*.—They were not to be *Roman* Citizens, and yet were requir'd to be free.

*VIBEX*, is sometimes used by Physicians for a black and blue Spot, occasion'd by a Flux of Blood. See *PETECHIA*, &c.

*VIBRATION*, in Mechanicks, a regular, reciprocal Motion of a Body, e. g. of a Pendulum; which, being suspended at freedom, swings or vibrates, first this way, then that.

For the Bob being rais'd, falls again by its gravity, and with the Velocity thus acquir'd, rises to the same height on the other side: (See *PENDULUM*.) Whence its gravity makes it fall again: And thus its *Vibrations* are continued.

Mechanical Authors, in lieu of *Vibration*, frequently use the Term *Oscillation*. See *OSCILLATION*.

The *Vibrations* of the same Pendulum are all *Isochronal*; that is, perform'd in equal Time, at least in the same Climate; for towards the Equator they are found somewhat slower.

A Pendulum 3 Feet 3 Inches and 2 tenths of an Inch, according to *Huygens*, or 39,25 Inches, according to Sir *J. Moor* and Lord *Brouncker*, vibrates Seconds, or makes 3600 *Vibrations* in an Hour. See *SECOND*.

The *Vibrations* of a longer Pendulum, take up more time than those of a shorter one, in a subduple Ratio of the Lengths. Thus, a Pendulum 3 Foot long, will make 10 *Vibrations*; while another 9 Inches long makes 20.—For 10 is the half of 20, and 3 Feet, or 36 Inches, are the Square of 6 Inches; which is double of 3, whose Square is 9: so that 10 is to 20 in a Subduple Ratio of 36 to 9.

The same Thing is meant when we say, that the Number of *Vibrations* of Pendulums in a given Time, is in a reciprocal Ratio of their Lengths.

*M. Mouton*, a Priest of *Lyons*, wrote an express Treatise, to shew, that by means of the Number of *Vibrations* of a given Pendulum, in certain time, one might establish an universal Measure throughout the whole World; and fix the several Measures in use among us, in such manner as that they might be recover'd again, if at any time they should chance to be lost, as is the Case of most of the ancient Measures, which we now only know by conjecture. See *MEASURE*.

The *VIBRATIONS* of a stretch'd Cord, or String, arise from its Elasticity; which Power being of the same kind with that of Gravity, the *Vibrations* of a Cord follow the same Laws as those of Pendulums: Consequently, the *Vibrations* of the same Cord equally stretch'd, tho they be unequal in length, are equi-diurnal, or perform'd in equal Times; and the Squares of the Times of the *Vibrations* are among themselves, inversly, as the Powers whereby they are



are equally bent and inflected. See CHORD, ELASTICITY, FIBRE, &c.

The *Vibrations* of a *Spring*, too, are proportional to the Powers whereby it is bent: These follow the same Laws as those of the *Cord*, or *Pendulum*, and consequently are equi-diurnal; which is the Foundation of *Spring-Watches*. See *SPRING*, and *WATCH*.

*VIBRATION* is also used in *Physicks*, &c. for divers other regular alternate *Motions*.

Sensation is supposed to be perform'd by means of the *vibratory Motion* of the *Nerves*, begun by external Objects, and propagated to the *Brain*. See *SENSATION*, *VISION*, *NERVE*, &c.

The several sorts of *Rays of Light*, Sir *I. Newton* conceives to make *Vibrations* of several bignesses; which, according to those bignesses, excite Sensations of several Colours; much after the same manner as *Vibrations* of *Air*, according to their several bignesses, excite Sensations of several Sounds. See *COLOUR*, *SOUND*, &c.

Heat, according to the same Author, is only an Accident of *Light*, occasion'd by the *Rays* putting a fine, subtil, ethereal Medium which pervades all Bodies, into a *vibrative Motion*, which gives us that Sensation. See *MEDIUM*, and *HEAT*.

From the *Vibrations* or *Pulses* of this same Medium, he accounts for the alternate Fits of easy Reflexion and easy Transmission of the *Rays*. See *LIGHT*, *RAY*, *REFLEXION*, &c.

In the *Philosophical Transactions* it is observ'd, that the *Butterfly* into which the *Silkworm* is transform'd, makes 130 *Vibrations* or *Motions* of its Wings in one Coition.

*VICAR*, *VICARIUS*, a Person appointed as Lieutenant of another; to perform his Functions, in his Absence, and under his Authority. See *LIEUTENANT*.

The Pope pretends to be *Vicar* of *Jesus Christ* on Earth. He has under him a *Grand-Vicar*, who is a Cardinal, and whose Jurisdiction extends over all Priests, both Secular and Regular; and even over Laymen.

The Word is form'd from *Vicarius, qui alterius vices gerit*.

Among the antient *Romans*, *Vicarius*, *Vicar*, was properly a kind of Lieutenant, sent into the Provinces where there was no Governour: So that they were properly the Emperor's *Vicars*, not those of Governours. *Cod. de Offic. Vicar.*

*Italy*, in the Time of the Eastern Empire, was govern'd by two *Vicarii*: The one *Vicar of Italy*, who resided at *Milan*; the other of the City, who resided at *Rome*.

*Cujas* observes, that the Word *Vicar* was sometimes, tho rarely, attributed to the Lieutenant-Generals of Proconsuls, or Governours of *Roman Provinces*.

*VICAR*, in the Canon Law, a Priest of a Parish the predial Tithes whereof are impropriated, or appropriated; that is, belong either to a Chapter, Religious House, &c. or to a Layman, who receives 'em, and only allows the *Vicar* the small Tithes, or a convenient Salary, antiently call'd *Portio congrua*. See *TITHE*, *APPROPRIATION*, &c.

He is thus called *quasi vice fungens Rectoris*, as serving for, or in lieu of a Rector, who would be intitled to the great Tithes. See *RECTOR*.

These *Vicars* were antiently call'd *Perpetui Vicarii*; because not appointed by the Impropiator, and licens'd by the Bishop to read Service; but presented by the Patron, and Canonical Institution given 'em by the Hands of the Ordinary; and so having constant Succession, as Corporations, and never dying.

The Canonists mention four Species of *Vicars*: some *Perpetual*; others appointed for a certain Time, and on some special Occasion, call'd *Mercenarii*; others call'd *Speciales*, appointed not for the whole Cure, but for some certain Place, Article, or Act: others *Generales*, neither perpetual, nor appointed for any certain Act, but for all Things in the general.

*VICAR General*, was a Title given by King *Henry VIII.* to *Thomas Cromwell* Earl of *Essex*; with full Power to oversee the Clergy, and regulate all Matters relating to Church Affairs.

*VICE*, *VITIUM*, in *Ethicks*, is ordinarily defin'd an elective Habit, deviating, either in Excess, or in Defect, from a just Medium wherein Virtue is placed. See *VIRTUE*.

'Tis call'd a *Habit*, to distinguish it from *Sin*, which is only an Act: Hence, a *Sin* is look'd on as something transient; and a *Vice* as something permanent. See *SIN*, *HABIT*, &c.

Authors distinguish three States of *Vice*; the first *Incontinentia*, of Incontinence, wherein a Person sees, and approves the Good, but is hurried to Evil by the Violence of his Passions: The second, *Intemperantia*, of Intemperance; wherein even the Judgment is depraved, and perverted. The third, *Fortitudo*, of Obduracy; wherein the Person is totally immers'd in *Vice*, without any sense or feeling thereof.

The State of Incontinency is consider'd as Infirmary, wherein the Person feels the sharpest Stings of Conscience: That of Intemperance, as Malice, wherein the Remorse is not so lively. In that of Obduracy there is none. See *CONSCIENCE*.

*Vice*, in Smithery, and other Arts employ'd in Metals, is a Machine or Instrument, serving to hold fast the Pieces

to be filed, bent, riveted, &c. See *SMITHERY*, &c.

To file square, 'tis absolutely necessary the *Vice* be placed perpendicular, with its Chaps parallel to the Work-Bench. See *FILE*.

The Parts of the *Vice* are, the *Face*, or *Plane*, which is its uppermost Part; the *Chaps*, which are cut with a bastard Cut, and well temper'd; the *Screw-pin*, cut with a square strong Worm; the *Nut*, or *Screw-box*, which has a square Worm, and is brazed into the round Box; the *Spring*, which throws the Chaps open; and the *Foot*, on which the whole is mounted.

*Hand-VICE*, is a small kind of *Vice*, serving to hold the lesser Works in, that require often turning about.

Of this there are two Kinds, the *Broad chapt Hand-Vice*, which is that commonly us'd; and the *Square-nos'd Hand-Vice*, seldom us'd but for filing small round Work.

*VICE* is also a Machine used by the Glaziers, to turn or draw Lead into flat Rods, with Grooves on each side, to receive the Edges of the Glafs. See *LEAD*.

This Machine consists of two Iron Chaps, or Cheeks, join'd with two cross Iron Pieces.—In the Space between the Chaps, are two steel Wheels, with their Spindles or Axes pass'd thro' the middle; each of which has its Nut, or Pinion with Teeth, that catch into each other: To the lowest is fitted a Handle, whereby the Machine is turn'd.

There are some of these *Vices* double, and that will draw two Leads at once: These have three Wheels. Some Glaziers will turn Lead of different Sizes in the same *Vice*; by changing their Checks for each Size.

With another Pair of Spindles, whose Nuts almost meet, they turn Lead for Tiers; which when it comes out of the *Vice* is almost cut asunder, in two thicknesses easy to be parted.

Before the Invention of this *Vice*, which is but a late Thing, they used a Plane: Accordingly, in all the antient Windows, we find the Lead planed, and grooved that way. See *GLASS*.

*VICE* is also used in the Composition of divers Words, to denote the Relation of something which comes instead, or in the Place, of another.

In this Sense, the Word is Latin, *Vice*, stead, place, turn, &c.

*VICE-Admiral*, is one of the three principal Officers of the Royal Navy; who commands the second Squadron, and has his Flag set up in the Fore-top of his Ship. See *ADMIRAL*, *NAVY*, &c.

*VICE-Chamberlain*, call'd also in antient Statutes, *Under-Chamberlain*; is a great Officer in the Court, next under the Lord Chamberlain, and in his absence has command and controll of all Officers belonging to that part of the Household call'd the *Chamber*, or above Stairs. See *CHAMBERLAIN*.

*VICE-Chancellor* of an University, is an eminent Member, chose annually, to manage Affairs in the Absence of the Chancellor. See *UNIVERSITY*.

*VICE-Doge*, is a Counsellor of *Venice*, who represents the Doge when sick, or absent; that the Seignory may never be without a Chief.

This *Vice-Doge* never takes the Ducal Chair, nor bears the Horn, nor is address'd under the Title of *Serenissimo*: yet, the foreign Embassadors, speaking to the College, use the common Apostrophe of *Serenissimo Principe*: And he performs all the Offices of Doge; and gives Answers to Embassadors without moving his Cap. See *DOGE*.

*VICE-Dominus*, a Viscount, Sheriff, or Vidame. See *VICOUNT*, *VIDAME*, &c.

*VICE-Dominus Abbatie*, or *Ecclesie*, in the Civil and Canon Law, an Advocate, or Protector of an Abbey, or Church. See *ADVOCATE*, and *AVOUER*.

*VICE-Dominus Episcopi*, in the Canon Law, is the Official, Commissary, or Vicar-General of a Bishop. See *COMMISSARY*, &c.

*VICE-GERENT*, a Vicar, Deputy, or Lieutenant. See *VICAR*, *LIEUTENANT*, &c.

*VICE-Comes*, in Law, &c. See *VICOUNT*.

*VICE-Legate*, an Officer whom the Pope sends to *Avignon*, and some other Cities, to perform the Office of a Spiritual and Temporal Governour, at a time when there is no Legate or Cardinal to command there.

All the *Gaule Narbonnoise*, as *Dauphine*, *Provence*, &c. has recourse to the *Vice-Legate of Avignon*, for all Ecclesiastical Dispatches; in like manner as the other Provinces address themselves to *Rome*. See *LEGATE*.

*VICE-Roy*, a Governour of a Kingdom, who commands therein, in the Name and Stead of a King; with full and sovereign Authority.

*Naples*, *Sicily*, *Catalonia*, &c. are govern'd by *Vice-Roys*: See *KING*.

*Vice Versa*, a Latin Phrase, frequently retain'd in English Writings; signifying as much as *on the contrary*.

Thus, As the Sun mounts higher and higher above the Horizon, insensible Perspiration increases; and, *vice versa*, as he descends lower, diminishes.



**VICENNALIS**, in Antiquity, something of 20 Years, or that returns after 20 Years.

Among the *Romans*, *Vicennalia* was particularly used for the Funeral Feasts, held on the 20th Day after a Person's decease.

**VICENNALIA**, or **VICENNALES Ludi**, were also the Games, Feasts, and Rejoicings, held every 20th Year of the Reign of a Prince.

On Medals we frequently meet with *Vicennalia Vota*; the Vows put up on that Occasion, for the Safety of the Emperor, and Inlargement of the Empire.

These are express'd by **VOT. X & XX**, in the Medals of *Tacitus*, *Gallian*, and *Probus*; **VOT. X. M. XX**, in those of *Valerius Maximianus*, and *Galerius Maximianus*; **VOT. X. MUL. XX**, in those of *Constantine*, *Valentinian*, and *Valens*; **VOT. X. MULT. XX**, in those of *Dioclesian*, *Constantine*, *Julian*, *Valentinian*, *Theodosius*, *Arcadius*, *Honorius*; **VOTIS X. MULT. XX**, in those of *Julian*, *Valentinian*, *Gratian*; **VOT. X. SIC. XX**, in those of *Valerius Constantius*; **VOT. XII. FEL. XX**, in the younger *Licinius*; **VOT. XV. FEL. XX**, in *Constantine*. See **VOWS**.

**VICINAGE**, and **VICINETUM**. See **VENUE**, and **VISNE**.

**VICIS** & *Venellis Mundandis*, a Writ lying against a Mayor, Bailiff, &c. for not taking care that the Streets be well cleans'd.

**VICISSITUDE**, from the Latin *Vicissitudo*, a Change or Turn; the succeeding of one thing after another. As the *Vicissitude* of Seasons, Fortunes, &c.

**VICONTIEL**. } See **VICOUNTIEL**.

**VICONTIELS**. } See **VICOUNTIELS**.

**VICOUNT**, or **VISCOUNT**, or **VICE-COMES**, in our Law-Books, signifies the same with *Sheriff*; between which two Words, there seems to be no other difference, but that the one came from our Conquerors, the *Normans*; the other from our Ancestors, the *Saxons*. See **SHERIFF**.

**VICOUNT**, or **VISCOUNT**, is also used for a degree of Nobility next below a Count or Earl, and above a Baron. See **NOBILITY**.

*Camden* observes, that this is an antient Name of Office, but a new one of Dignity, never heard of among us till *Henry VIth's* Days, who, in his 18th Year, created in Parliament *John Lord Beaumont, Viscount Beaumont*: But it is much more antient in other Countries.

*Du Cange*, indeed, will have the Dignity to have had its first Rise in *England*; but 'tis much more probable, it was first brought over hither by the *Normans*.

The Privileges of a *Vicount*, are, that he may have a Cover of Affay held under his Cup when he drinks, and may have Travers in his own House.—And a *Vicountess* may have her Gown bore up by a Woman, out of the Presence of her Superiors; and in their Presence by a Man. See **CORONET**, &c.

**VICOUNTIELS**, **VICONTIELS**, *Vicecomitalia*, in our Law-Books, denotes Things belonging to the *Vice-Comes*, or Sheriff; particularly certain Farms, for which the Sheriff pays a Rent to the King, and makes what Profit he can of them.

*Writs* **VICOUNTIEL**, are such as are triable in the County or Sheriff's-Court.

**VICOUNTIELS**, or **VICONTIELS Jurisdiction**, is that Jurisdiction belonging to the Officers of a County; as Sheriffs, Coroners, Escheators, &c.

**VICTIM**, **VICTIMA**, a bloody Sacrifice, offer'd to some Deity, of a living Thing, either a Person, or a Beast, which is slain to appease his Wrath, or to obtain some Favour. See **SACRIFICE**.

The *Greeks* offer'd *Iphigenia* at *Aulis*, for a *Victim* to obtain a favourable Wind.

The Gods of the Heathens had each their proper *Victims*: Thus, the Goat was *Bacchus's Victim*; the Horse *Nephtune's*. See **GOD**, and **VICTIMARIUS**.

**VICTIMARIUS**, was a Minister, or Servant of the Priests; whose Office was to bind the *Victims*, and prepare the Water, Knife, Cake, and other things necessary to the Sacrifice. See **SACRIFICE**.

To the *Victimarii* it also belonged to knock down and kill the Victims: In order to which, they stood close by the Altar, naked to the Waist, but crown'd with Laurel; and holding a Hatchet or a Knife up, ask'd the Priest leave to strike; saying *Agone? Shall I strike?* Whence they were also called *Agones*, and *Cultellarii*.

When the *Victim* was kill'd, they open'd it, and after viewing the Entrails, took them away, wash'd the Carcase, sprinkled the Floor, &c.

The same *Victimarii* lighted the Fire wherein Books were condemn'd to be burnt. See *Liwy*, Lib. XV. cap. 29. and *A. Gellius*, L. I. c. 1.

**VICTORIAN Period**, in Chronology. See **PERIOD**.

**VICTORY**, **VICTORIA**, the Overthrow or Defeat of an Enemy, in War, Combat, Duel, or the like. See **WAR**, **BATTLE**, **COMBAT**, **DUEL**, &c.

Among the *Romans*, Crowns, Triumphs, &c. were decreed to their Generals for the *Victories* they gain'd. See **CROWN**, **TRIUMPH**, &c.

**VICTUALLING Office**, an Office kept on *Tower-Hill*, for the furnishing his Majesty's Navy with *Vittuals*. See **OFFICE**.

It is manag'd by seven Commissioners, who have their inferior Officers; as Secretaries, Clerks, &c. beside Agents in divers Parts of *Great Britain*, *Ireland*, &c. See **NAVY**.

**VICTUS Ratio**, among Physicians, a particular manner of living, for the Preservation of Health, and Prevention of Diseases. See **DIET**, **REGIMEN**, &c.

**VIDAME**, q. d. *Vice-Dominus*, was antiently the Bishop's Deputy in Temporals; as the *Comes* was the King's. *Vidame* is still a Title of Seignory, or Lordship; attributed to several Gentlemen in *France*: as the *Vidame* of *Chartres*, of *Amiens*, &c.

The Word, according to *Nicod*, comes from *Vicarius*; and according to *Pasquier*, from *Vice-Dominus*; *dam* signifying *Dominus*, or Lord.

The original Institution of *Vidames*, was for defence of the Temporalties of Bishopricks, while the Bishops themselves were taken up in Prayer, and other Spiritual Functions.—They also led the Bishop's Forces, when they were oblig'd to go to War, either to defend their Temporalties, or for the *Arrier-Ban*.

They also manag'd and pleaded their Causes in Courts of Justice; distributed Justice among their Tenants; prevented any body's pillaging or damaging the Houses of decess'd Bishops, &c.—In effect, they represented the Bishop, consider'd as a Temporal Lord. See **BISHOP**.

*Pasquier* says, they were the Bishop's Temporal Judges; and had the same Privileges as the *Vicounts*.

By degrees, the *Vidames* converted their Office into a Fee; and the Bishops their *Vidames*, or Judges, into Vassals, as Kings did their Counts, Dukes, &c. See **COUNT**, **VASSAL**, &c.

Accordingly, the *Vidames* of *Chartres*, &c. still hold Lands of the Bishops of those Places.

In some antient Charters, the *Vidames* are call'd *Advocates*, or *Advowees*. See **ADVOCATE**.

**VIDIMUS**, in Law, the same with *Innotescimus*; being Letters Patent of a Charter of Feoffement; or some other Instrument not of Record. See **INNOTESCIMUS**.

**VIDUITY**. See **WIDOWHOOD**.

**VIDUITATIS Professio**, the making a solemn Profession of living a chaste Widow; a Custom heretofore observ'd in *England*, and attended with divers Ceremonies. See **WIDOW**, and **WIDOWHOOD**.

**VIEW**, in Law, the Act of *Veiors*, or *Viewers*. See **VIEWER**.

When a real Action is brought, and the Tenant knows not well what the Land is the Demandant asks; he may pray the *View*: which is, that he may see the Land which is claim'd.

This Course of proceeding we receiv'd from the *Normans*, as appears by the *Grand Customary*.—It is used in various Cases; as in Affize of Rent-Service, Rent-Charge, Rent-Seck; in a Writ of Nufance; in a Writ *quo Jure*; in the Writ *de Rationabilibus divisis*, &c.

**VIEW of Franc-Pledge**, is the Office which the Sheriff in his County-Court, or the Bailiff in his Hundred, performs; in looking to the King's Peace, and seeing that every Man be in some Pledge. See **FRANC-Pledge**.

This is called by *Bracton*, *Res quasi sacra quia solam personam Regis respicit, & introducta pro pace, & communitate*.

**VIEW**, in Matters of Opticks, Perspective, &c. See **VISION**, **SIGHT**, **PERSPECTIVE**, &c.

**VIEW**, among Hunters, the print of the Feet of a fallow Deer on the Ground.

To **VIEW a Place**, in the Military Art, is to ride about it before the laying of a Siege, in order to observe the Strength or Weakness of its Situation and Fortification. See **FORTIFICATION**, &c.

**VIEWERS**, in Law, are Persons that are sent by a Court to view a Place or Person in question; as also the Situation of a Place where a Fact was committed; or a Person in case of Sickness, &c.

**VIGIL**, or **EVE**, in Church Chronology, the Day before any Feast, &c. See **FEAST**, and **EVE**.

Tho the Civil Day begin at Midnight, yet the Ecclesiastical, or Scriptural Day, begins at six a-Clock in the Evening, and holds till six in the Evening the ensuing Day. See **DAY**.

Hence, the Collect for every Sunday and Holy-Day, by Order of the Church, is to be read at the preceding Evening-Service at six a-Clock the Day before; from which time the Religious Day was supposed to begin.

And this first part of the Holy-day, from six a-Clock the Day before, was, by the primitive Christians, spent in Hymns and other Devotions; and being often continu'd till late in the Night, were call'd *Vigils*.



These *Vigils* came, by degrees, to be so enlarg'd, that at last all the Day preceeding the Holy-day was call'd by this Name.

**VIGILIA**, that State of an Animal which is opposite to Sleep, and popularly call'd *Waking*, or *Watching*. See SLEEP, and WAKING.

**VIGINTIVIRATE**, a Dignity among the antient Romans, establish'd by *Cæsar*.

This Dignity comprehended four others; for of the *Vigintiviri*, or twenty Men which compos'd the Company, there were three who sat and judg'd of all Criminal Affairs; three others had the Inspection of the Coins and Coinage; four took Care of the Streets of *Rome*; and the rest were Judges of Civil Affairs.

**VILL**. See **VILLAGE**.

**VILLA Regis**, a Title antiently given to those Villages where the Kings of *England* had a Royal Seat, and held the Manor in their own Demesne.

**VILLAGE**, **VILLA**, or **VILL**, an Assemblage of Houses, inhabited chiefly by Peasants and Farmers, having usually a Church, but no Market.

The want of a Market distinguishes it from a *Town*, as the Church does from a *Green*, *Street*, &c. See **TOWN**, &c.

The Word is *French*, form'd of *vil*, or *vilis*, low, mean, contemptible.

Among our *Saxon* Ancestors, *Vill* or *Village* was used in the Sense of the Roman *Villa*; viz. for a Country Farm or Seat, furnish'd with convenient Out-houses, &c. for repositing the Fruits thereof.

Afterwards it came to be taken for a *Manor*, then for part of a Parish, or the Parish it self. See **PARISH**.

Hence, in several antient Law-Books, *Vill* and *Parish* are the same thing: Accordingly, *Fortescue, de Laudibus Leg. Ang.* writes, That the Boundaries of Villages, are not by Houses, Streets, or Walls, but by a large Circuit of Ground, within which may be divers Hamlets, Waters, Woods, &c.

*Ileta* makes this difference between a *Mansion*, a *Village*, and a *Manor*; that a *Mansion* may consist of one, or more Houses; tho it is only to be one Dwelling-place, without any other very near it: for if other Houses be contiguous, 'tis then a *Village*. A *Manor* may consist of one or more Villages. See **MANSION**, and **MANOR**.

For the better Government of Villages, the Lord of the Soil has usually a Power to hold a Court-Baron, every three Weeks. See **COURT-BARON**.

**VILLAIN**, in our antient Customs, the same with *Bondman*. See **BONDMAN**.

In *Doomsday Book* he is call'd *Servus*, Servant, Slave. See **SERVANT**, **SLAVE**, &c.

A *Villain* was one who held Lands in *Villennage*, or on condition of rendering base Services to his Lord. See **SERVICE**.

There were antiently in *England* two sorts of Villains, viz. Villains in *Gross*, who were bound immediately to the Persons of their Lords, and to their Heirs; and Villains regardant to a *Manor*: These the Civilians call *Glebe Ascripti*; and they were bound to their Lord, as Members belonging to such a *Manor*, of which he was owner.

This latter was a pure Villain, of whom the Lord took Redemption to marry his Daughter, and to make him free; and he might put him out of his Lands and Tenements at his Will; might beat and chastise him, but not maim him.

There are not properly any such Villains now, tho the Law concerning them stands unrepeal'd.

The Lands before held in *Villennage*, are now held in free and common Socage. See **TENURE**, **SOCAGE**, &c.

They were call'd Villains from *Villa*; because they dwelt in Villages: The same were also call'd *Pagenses*, and *Rustici*; and of such servile Condition were they, that they were usually sold with the Farm to which they respectively belong'd.

**VILLAIN Estate**, or **Condition**, is contradistinguish'd to Free Estate. See **FREE Estate**.

**VILLAINOUS Judgment**, is that which casts the Reproach and Stain of Villany and Shame on him against whom it is given. See **JUDGMENT**.

Such is that against a Conspirator, &c.

*Lambard* calls it *Villainous Punishment*; and says, it may well be call'd Villainous, in regard the Judgment, in such Case, shall be like the antient Judgment in attain, viz. that the Criminals shall not be of any Credit afterwards; nor shall it be lawful for them, in Person, to approach the King's Court: That their Lands and Goods shall be seiz'd into the King's Hands, their Trees rooted up, their Bodies imprison'd, &c.

**VILLENAGE**, or **VILLAINAGE**, a servile kind of Tenure of Lands or Tenements; whereby the Tenant was bound to do all such Service as the Lord commanded, or were fit for a Villain to perform. See **VILLAIN**.

This *Bracton* expresses by, *Sciri non poterit vespere, quale servitium fieri debet manere*.

*Villennage* is divided into that by *Blood*, and that by *Tenure*.

*Tenure* in *Villennage*, could make no Freeman a Villain, unless it were continu'd time out of Mind; nor could free Land make a Villain free. See **TENURE**.

*Villennage* is also divided by *Bracton* into *Pure Villennage*, where the Services to be perform'd were indeterminate and arbitrary, as above express'd; and *Socage Villennage*, which was to carry the Lord's Dung into his Fields, to plough his Ground on certain Days, sow and reap his Corn, &c. and even to empty his Jakes; as the Inhabitants of *Bickton* were bound to do to the Lord of *Clun-Castle* in *Shropshire*: which was afterwards turn'd into a Rent, now call'd *Bickton Silver*; and the Villainous Service excus'd.

**VILLI**, *Coarse Hair*, in Anatomy, is used in the same Sense as *Fibres*, or *Fibrille*. See **FIBRE**.

In Botany, *Villi* denotes a sort of *Tomentum*, or Down, like the Grain or Shag of Plush; with which, as a kind of Excrecence, some Trees do abound.

**VILLOUS**, **VILLOSA**, is particularly apply'd to one of the Coats or Membranes of the Stomach, call'd *Crusta Villosa*. See **STOMACH**, &c.

It takes its Name from innumerable *Villi*, or fine *Fibrille*, wherewith its inner Surface is cover'd. See **CRUSTA VILLOSA**.

**VINALIA**, in Antiquity, a Name common to two Feasts among the antient Romans; the one in honour of *Jupiter*, and the other of *Venus*. See **FEAST**.

The first was held on the 19th of *August*, and the second on the 1st of *May*.

The *Vinalia* of the 19th of *August* were call'd *Vinalia Rustica*, and were instituted on occasion of the War of the *Latins* against *Mezentius*; in the Course of which War, that People vow'd a Libation to *Jupiter* of all the Wine of the succeeding Vintage.

On the same Day likewise fell the Dedication of a Temple of *Venus*; whence some Authors have fallen into a Mistake, that these *Vinalia* were sacred to *Venus*. But *Varro*, **LLL. V.** and *Festus*, in *Verbo Rustica*, distinguish between the two Ceremonies; and expressly assert the *Vinalia* to be a Feast of *Jupiter*.

**VINCULUM**, in Fluxions, denotes some compound Surd Quantity's being multiply'd into a Fluxion, &c.

Thus, in this Expression,  $a x \sqrt{a x} - o a$ , the *Vinculum* is the compound Surd,  $\sqrt{o x} - a a$ , which is  $x^{\frac{1}{2}}$  into  $a x$ .

**VINDEMIATING**, the gathering of Grapes, or other ripe Fruits; as Apples, Pears, Cherries, &c.

The Word is form'd of the Latin *Vindemia*, Vintage. See **VINTAGE**.

**VINDEMIATRIX**, a Fixed Star of the third Magnitude, in the Constellation *Virgo*; whose Longitude, Latitude, &c. see among the rest of those of *Virgo*.

**VINDICATION**, *Claiming*, in the Civil Law, an Action arising from the Property a Person has in any thing: or a Permission to take or seize a thing as one's own, out of the Hands of a Person whom the Law has doom'd not to be the true Proprietor.

**VINE**, a Noble Plant or Shrub, of the Reptile Kind; famous for its Fruit, or *Grapes*, and for the Liquor they afford. See **WINE**.

The Kinds of *Vines* are almost infinite; denominated, either from the Soil and Place where they grow; as the *Bourguignon*, *Bourdela*, *Italian*, *Mantua Vine*, &c. or from the Form, Colour, Taste, &c. of their Grapes; as the *Acorn*, *Apricot*, *Damask*, *Birds-bill*, *Muscadine*, &c. See **GRAPE**.

Our Gardeners find, that *Vines* are capable of being cultivated in *England*, so as to produce large Quantities of Grapes; and those ripen'd to such a degree, as may afford a good substantial vinous Juice. Witness the Vineyards in *Somersetshire*; particularly that famous one at *Barb*.

In effect, it does not seem so much owing to the Inclemency of our *English* Air, that our Grapes are generally inferior to those of *France*, &c. as to the want of a just culture.

Those fittest for the *English* Climate, Mr. *Mortimer* finds to be the small black Grape, the white Muscadine, Parsley Grape, Muscadilla, white and red Frontigniac.—Mr. *Bradley* recommends the *Fuly* Grape, the early sweet Water Grape lately brought from the Canaries; the *Arbois*, or *French* sweet Water Grape: All which, if well manag'd, and the Weather favourable, are ripe by the middle of *August*. He also recommends the *Claret* and *Burgundy* Grapes.

The best Soil for *Vines*, according to *Mortimer*, is the hottest Gravel, Sand, or dry rocky Ground; provided it be well water'd and shaded. — At first planting, Mr. *Bradley* recommends chalky Hills, as proper for *Vines*.

To mend a Soil that wants those Qualities, 'tis good to throw in the rubbish of old Buildings, well mix'd with twice as much Earth and sifted about the Roots of the *Vines*. See **VINEYARD**.



*Vines* are propagated either by Layers, or Cuttings; that is, either by laying down the young Branches as soon as the Fruit is gather'd, or by making Plantations of Slips, or Cuttings, at that time. See PROPAGATION.

Mr. Mortimer says, it may be done any time in the Winter before *January*; tho *Bradley* says, he has done it with success in *March* and *April*.

For the Pruning of VINES. } See PRUNING.  
For the Planting of VINES. } See VINEYARD.

VINEA, in Fortification. See MANTELET.

VINEGAR, *Acetum*, an agreeable, acid, penetrating Liquor, prepar'd from Wine, Cyder, Beer, and other Liquors; of considerable use, both as a Medicine, and a Sauce. See ACETUM.

Wine, and other vinous Liquors, are said to gain a grateful sharpness, *i. e.* to become *Vinegar*, by having their Salts exalted by Insolation, or other means; and their Sulphurs weaken'd and depress'd.

Others ascribe the Conversion of vinous Liquors into *Vinegar*, to the grinding or sharpening of the longitudinal Particles thereof; by which means, they become more tart and pungent.

The Method of making *Vinegar* has long been kept a Secret among the People of the Profession; who, 'tis said, oblige themselves to each other by Oath not to reveal it. But notwithstanding this, the *Philosophical Transactions*, and some other later Writings, furnish us with approved Accounts thereof.

#### Method of making VINEGAR of Cyder.

The Cyder, (the meanest of which will serve the Purpose) is first to be drawn off fine into another Vessel, and a quantity of the Must, or Pouz of Apples to be added: The whole is set in the Sun, if there be a Conveniency for the Purpose, and at a Week or nine Days end it may be drawn off. See CYDER.

#### Method of making VINEGAR of Beer.

Take a middling sort of Beer, indifferently well Hopp'd; into which, when it has work'd well, and is grown fine, put some Rapes, or Husks of Grapes, usually brought home for that purpose: Mash them together in a Tub; then letting the Rape settle, draw off the liquid Part, put it into a Cask, and set in the Sun as hot as may be; the Bung being only cover'd with a Tile, or Slate-stone: and in about thirty or forty Days, it will become a good *Vinegar*, and may pass in use as well as that made of Wine, if it be refined, and kept from turning musty.

Or thus: To every Gallon of Spring Water, add three Pounds of Malaga Raisins; which put into an earthen Jar, and place them where they may have the hottest Sun from *May* till *Michaelmas*: then pressing all well, tun the Liquor up in a very strong iron hoop'd Vessel, to prevent its bursting: It will appear very thick and muddy when newly press'd; but will refine in the Vessel, and be as clear as Wine. Thus let it remain untouch'd for three Months, before it be drawn off, and it will prove excellent *Vinegar*.

#### To make VINEGAR of Wine, or vinous Liquors.

Any sort of vinous Liquor, being mixed with its own Faeces, Flowers, or Ferment, and its Tartar, first reduced to Powder; or else with the acid and austere Stalks of the Vegetable from whence the Wine was obtain'd, which hold a large proportion of Tartar; and the whole being kept frequently stirring in a Vessel which has formerly held *Vinegar*, or set in a warm place full of the Steams of the same, will begin to ferment anew, conceive heat, grow sour by degrees, and soon after turn into *Vinegar*.

The remote Subjects of acetous Fermentation, are the same with those of vinous; but the immediate Subjects of it, are all kinds of vegetable Juices, after they have once undergone that Fermentation which reduces 'em to Wine: for 'tis absolutely impossible to make *Vinegar* of Must, the crude Juice of Grapes, or other ripe Fruits, without the assistance of the vinous Fermentation.

The proper Ferments of this Operation, whereby *Vinegar* is prepar'd, are, 1<sup>st</sup>, The Faeces of all acid Wines: 2<sup>d</sup>, The Lees of *Vinegar*: 3<sup>d</sup>, Pulveriz'd Tartar; especially that of Rhenish Wine, or the Cream or Crystals thereof: 4<sup>th</sup>, *Vinegar* it self: 5<sup>th</sup>, A wooden Vessel, well drench'd with *Vinegar*, or one that has long been employ'd to contain it: 6<sup>th</sup>, Wine that has often been mix'd with its own Faeces: 7<sup>th</sup>, The Twigs of Vines, and the Stalks of Grapes, Currants, Cherries, or other Vegetables of an acid austere Taste: 8<sup>th</sup>, Bakers Leaven, after it's turn'd acid: 9<sup>th</sup>, and lastly, All manner of Ferments, compounded of those already mention'd.

*Vinegar* is no Production of Nature, but a Creature of Art: For Verjuice, the Juices of Citrons, Lemons, and the like native Acids, are improperly said to be natural *Vinegars*; because, when distill'd, they afford nothing but vapid

Water: whereas it is the Property of *Vinegar* to yield an acid Spirit by Distillation.

#### Method of making VINEGAR in France.

In *France* they use a Method of making *Vinegar* different from that above describ'd.—They take two very large oaken Vessels, the larger the better, open at the top; in each whereof they place a wooden Grate, within a Foot of the bottom: upon these Grates, they first lay Twigs, or Cuttings of Vines, and afterwards the Stalks of the Branches, without the Grapes themselves, or their Stones; till the whole Pile reaches within a Foot of the brims of the Vessels: Then they fill one of these Vessels with Wine to the very top, and half fill the other; and with Liquor drawn out of the full Vessel, fill up that which was only half full before; daily repeating the same Operation, and pouring the Liquor back from one Vessel to the other; so that each of them is full, and half full by turns.

When this Process has been continued for two or three Days, a degree of heat will arise in the Vessel which is then but half full, and increase for several Days successively, without any appearance of the like in the Vessel which happens to be full during those Days; the Liquor whereof will still remain cool: and as soon as the heat ceases in the Vessel that is half full, the *Vinegar* is prepar'd: Which, in the Summer, happens on the fourteenth or fifteenth Day from the beginning; but in the Winter, the Fermentation proceeds much slower; so that they are oblig'd to forward it by artificial warmth, or the use of Stoves.

When the Weather is exceeding hot, the Liquor ought to be pour'd off from the full Vessel into the other twice a day: otherwise, the Liquor would be over-heated, and the Fermentation prove too strong; whence the spirituous Parts would fly away, and leave a vapid Wine, instead of *Vinegar* behind.

The full Vessel is always to be left open at the top, but the Mouth of the other must be closed with a Cover of Wood; in order the better to keep down and fix the Spirit in the Body of the Liquor; for otherwise, it might easily fly off in the heat of Fermentation.—The Vessel that is only half full seems to grow hot, rather than the other, because it contains a much greater Quantity of the Vine-twigs and Stalks than that, in proportion to the Liquor; above which the Pile rising to a considerable height, conceives heat the more, and so conveys it to the Wine below.

VINEGAR of Antimony, is an acid Spirit, drawn by Distillation from the *Marcasite* of Antimony. See ANTIMONY.

Its use is commended in continued and malignant Fevers.—The Apothecaries likewise make a kind of Theriacal *Vinegar* of Dittany, Angelico, Valerian, Cardimums, Oranges, &c. See ACETUM.

The Word *Vinegar* is French; form'd from *Vin*, Wine, and *aigre*, sour. See WINE.

VINEYARD, a Plantation of Vines. See VINE.

The best Situation of a *Vineyard*, is on the Declivity of an Hill lying to the South. See EXPOSURE.

The *Vine* is propagated by Slips, Layers, or Suckers, planted in a Nursery, and thence transplanted, about *February*, into the *Vineyard*.

As to the Soil, it is agreed, nothing can be too dry for them: And as to the sorts of *Vines*, none but the forward ones to be planted in *England*.—These are found to ripen very well in open Borders without Walls.

They are to be planted in Lines running North and South five or six Foot apart; only two *Vines* in each Hole.—The *September* following, the Shoots of that Summer to be pruned shorter, according to their Strength; and the Summer following, the strongest will begin to shew a little Fruit. They are now to be supported with Stakes, &c. so as they may run about a Foot above ground: The higher they run, the less danger they are in of being spoil'd with Wet; but the lower, the sweeter Grapes, and the stronger Wine.

If, notwithstanding due pruning, they don't seem inclinable to bear large Bunches, the Ground to be help'd with a Mixture of Rubbish of some old Building, with Sea-coal Ashes, or Drift Sand.—Thus manag'd, a *Vineyard*, in five or six Years, will produce good store of Grapes.

The celebrated *Vineyard* at *Bath*, containing about six Acres of Ground, planted with White, Muscadine, and Black cluster Grapes, Mr. *Bradley* assures us, by such Management, four or five Years ago, yielded 60 Hogsheads of Wine at a Vintage: Tho in the Year 1721, it only yielded three Hogsheads.

The same Author mentions a little *Vineyard* of a private Gardener at *Rotherhithe*; which, tho only consisting of 12 *Vines*, and some of them only of the second Year's growth, yielded at a Vintage 95 Gallons of Wine; which, he adds, had the true *Burgundy* Flavour, as being made from that sort of Grape: and exceeded any made from any *Vineyard* on this side *Paris*. See WINE.

VINTAGE, the Crop of Wine, or what is got from the Vines each Season. See WINE.



The Word is also used for the Time or Season of gathering or pressing the Grapes.

In France, a Decree or Ordonnance of the proper Judge, and a solemn Publication thereof, are requir'd, ere the *Vintage* can be begun.

VINOUS, VINOSUS, something that relates to Wine; particularly the Taste, and Smell thereof. See WINE.

All Vegetables, by a due Treatment, afford a *Vinous* Liquor; as Corn, Pulse, Nuts, Apples, Grapes, &c. See MALT, BREWING, &c.

And a second Fermentation, duly manag'd, turns any *Vinous* Liquor into an acetous one. See VINEGAR.

The proper Character and Effect of Fermentation, is to produce either a *Vinous* or an acetous Quality in the Body fermented. See FERMENTATION.

Some of our Countrymen, bound on a Voyage to the *East Indies*, having fill'd several Casks with *Thames-Water*, to carry along with 'em; observ'd an intestine Motion in it, when they came to the Equator; and found it afterwards turn'd into a kind of *Vinous* Liquor, capable of affording an inflammable Spirit by Distillation.

This, without dispute, proceeded from the Flowers, Leaves, Roots, Fruits, and other vegetable Matters, continually falling or wash'd down into that River.—Such Waters are always found in a State of Putrefaction, ere they put on a *Vinous* Nature. See PUTREFACTION.

VINUM, a Liquor, or Drink, popularly call'd *Wine*. See WINE.

VINUM, in Medicine, or VINUM Medicatum, is particularly applied to several medicated Wines, i. e. Medicinal Preparations, whereof that Liquor is the Basis; such as the *Vinum Marinum*, Sea-Wine; made by casting Sea-Water on the Grapes in the Vat.

*Vinum Cydonites*, Quince-Wine; made of Slices of that Fruit, steep'd in Must, or new Wine.

*Vinum Rosatum*, Rose-Wine; made by steeping Roses for three Months in Wine.

*Vinum Strobilites*, or Pine-Apple Wine:—*Vinum Hyssopites*, Hyssop-Wine.

*Vinum Aromaticum*, made by infusing Aromatics, or Spices, in new Wine or Must.

*Vinum Picatum*, pitch'd Wine; made of Pitch infus'd in Must.

*Vinum*, call'd also *Acetum*, *Scilliticum*. See SCILLITICUM.

*Vinum Absynthites*, or Wormwood-Wine; is made of the great or little *Absynthium*, by taking the Apices or Tops of the Flowers, putting them in a *Sacculus*, or Bag, and suspending it in the middle of a Vessel of Wine; which fermenting, extracts the Taste, Smell, and Virtues of the Wormwood.

*Vinum Emeticum*, Emetic Wine; is Wine wherein Glass, Regulus of Antimony, and Crocus Metallorum have been steep'd. See EMETIC.

It only takes a certain degree of Efficacy from the Matters; nor is it found any stronger at three Months end, than at the end of eight Days.—It purges both upwards and downwards.

*Vinum Hippocraticum*, or Hippocras; so called of *Manica Hippocratus*, or *Hippocrates's* Sleeve, thro' which it is strain'd; is a sort of spiced Wine, in which Sugar and Spices have been steeped for sometime. See CLARET, &c.

VIOL, a Musical Instrument, of the same Form with the *Violin*; and struck, like that, with a Bow. See VIOLIN.

There are *Viols* of divers Kinds: The first, and the principal, among us, is the *Bass-Viol*, call'd by the *Italians* *Viola di Gamba*, or the *Leg-Viol*; because held between the Legs.

'Tis the largest of all; and is mounted with six Strings, having eight Stops, or Prets, divided by Semi tones.

Its Sound is very deep, soft, and agreeable.—The *Tablature*, or Musick for the *Bass-Viol*, is laid down on six Lines, or Rules.

What the *Italians* call *Alto Viola*, is the Counter-Tenor of this; and their *Tenore Viola* the Tenor. They sometimes call it simply the *Viol*: Some Authors will have it the *Lyra*, others the *Cithara*, others the *Chelis*, and others the *Toludo* of the *Antients*. See LYRA, &c.

2<sup>o</sup>, The *Love Viol*, which is a kind of Triple *Viol*, or *Violin*; having six brass or steel Strings, like those of the *Harp*.—It yields a kind of silver Sound, which has something in it very agreeable.

3<sup>o</sup>, A *Large Viol*, with 44 Strings, call'd by the *Italians* *Viola di Bardone*; but little known among us.

4<sup>o</sup>, The *Viola Bastarda*, or *Bastard Viol*, of the *Italians*; not used among us: *Brossard* takes it to be a kind of *Bass-Viol*, mounted with six or seven Strings, and tuned as the common one.

5<sup>o</sup>, What the *Italians* call *Viola di Braccio*, *Arm-Viol*; or simply *Braccio*, *Arm*; is an Instrument answering to our Counter-Tenor, Treble, and Fifth Violin.

6<sup>o</sup>, Their *Viola Prima*, or *First Viol*, is really our Counter-Tenor Violin; at least, they commonly use the *Cliff* of

*C sol ut* on the first Line, to denote the Piece intended for this Instrument.

7<sup>o</sup>, Their *Viola Secunda*, is much the same with our Tenor Violin; having the Key of *C sol ut* on the second Line.

8<sup>o</sup>, Their *Viola Terza*, is nearly our Fifth Violin; the Key *C sol ut* on the third Line.

9<sup>o</sup>, Their *Viola Quarta*, or Fourth *Viol*, is not known in *England* or *France*: Tho we frequently find it in the *Italian* Compositions; the Key on the fourth Line.

Lastly, their *Violetta*, or little *Viol*; is, in reality, our Triple *Viol*: Tho Strangers frequently confound the Term with what we have said of the *Viola Prima*, *Secunda*, *Terza*, &c.

Viol is also a Term used among Mariners, when a strand Rope is bound fast with Nippers to the Cable, and brought to the Jeer-Capstan, for the better weighing of the Anchor. See ANCHOR.

VIOLATION, the Act of *Violating*, i. e. forcing a Woman, or committing a Rape upon her. See RAPE.

Ammon, *David's* Son, violated his Sister, who was aveng'd by *Abshalom*: *Tereus* violated his Sister-in-Law *Philomela*.

—To violate the Queen, the King's Eldest Daughter, or the Princess of *Wales*, is High Treason. See TREASON.

VIOLATION is also used in a Moral Sense for a Breach or Infringment upon a Law, Ordinance, or the like.—Thus, we say, A *Violation* of the Law of Nature, of a Treaty of Peace, of one's Oath, &c.—The Law of Nations was violated in the Insult offer'd to Mr. S—the King's Ambassador at *Madrid*.

The Word is also used for a Profanation.—In this Sense, we say, to violate a Church, &c. See PROFANATION.

VIOLENT, in the Schools. A Thing is said to be *violent*, when effected by some external Principle; the Body that undergoes it contributing nothing thereto, but struggling against it.

The Body, in such Case, is said to *struggle*, by reason whatever is *Violent*, discomposes and distracts a thing from its natural Constitution, and tends to destroy it.

The Schoolmen all allow, that Man, as being endu'd with Reason, is capable of suffering such *Violence*; but brute and inanimate Bodies are not: *In Brutum*, &c. *Violentum non cadit*.

VIOLIN, or *Fiddle*, a Musical Instrument, mounted with four Strings, or Guts; and struck, or play'd with a Bow.

The *Violin* consists, like most other Instruments, of three Parts; the Neck, the Table, and the Soundboard.

At the Sides are two Apertures, and sometimes a third towards the Top, shaped like a Heart.

Its Bridge, which is below the Apertures, bears up the Strings, which are fasten'd to the two Extremes of the Instrument; at one of them, by a Screw, which stretches, or loosens 'em at pleasure.

The Style and Sound of the *Violin*, is the gayest and most sprightly of all other Instruments; and hence it is of all other the fittest for dancing. Yet there are ways of touching it, which render it grave, soft, languishing, and fit for Church or Chamber Musick.

It generally makes the Treble, or highest Part in Consorts.—Its Harmony is from Fifth to Fifth. Its play is composed of Bass, Counter-Tenor, Tenor, and Treble; to which may be added, a Fifth Part: Each Part has four Fifths, which rise to a greater Seventeenth.

In Compositions of Musick, *Violin* is express'd by V: two V V denote two *Viols*.

The Word *Violin*, alone, stands for *Treble Violin*: When the *Italians* prefix *Alto*, *Tenore*, or *Basso*, it then expresses the Counter-Tenor, Tenor, or Bass *Violin*.

In Compositions where there are two, three, or more different *Viols*, they make use of *primo*, *secondo*, *terzo*, or of the Characters 1<sup>o</sup> 2<sup>o</sup> 3<sup>o</sup>, or 1<sup>o</sup> 2<sup>o</sup> 3<sup>o</sup>, &c. to denote the difference.

The *Violin* has only four Strings, each of a different thickness, the smallest whereof makes the *E si mi* of the highest Octave of the Organ; the second, a Fifth below the first, makes the *A mi la*; the third, a Fifth below the second, is *D la re*; lastly, the fourth, a Fifth below the third, is *G re sol*.

Most Nations, ordinarily, use the Key *G re sol* on the second Line, to denote the Musick for the *Violin*; only in *France*, they use the same Key as the first Line at bottom: The first Method is best where the Song goes very low, the second where it goes very high.

The *Violoncella* of the *Italians*, is properly our Fifth *Violin*; which is a little Bass *Violin* with five or six Strings.

And their *Violone* is a Double Bass, almost twice as big as the common Bass *Violin*, and the Strings bigger and longer, in proportion; and consequently, its Sound an Octave lower than that of our Bass *Violin*, which has a noble Effect in great Concerto's.

VIPER, in Natural History, a kind of Serpent, famed not only for the exceeding Venomousness of its Bite, which is one of the most dangerous Poisons in the Animal Kingdom,



dom, but also for the great usefulness of its Flesh in Medicine: Whence *Vipers* come to make a considerable Article in divers Arts.

This remarkable Reptile has the biggest and flattest Head of all the Serpent-kind. Its usual length is about half an Ell; and its thickness an Inch: Its Snout is not unlike that of an Hog.

It has sixteen small immoveable Teeth in each Jaw; and, besides, two other large, sharp, hooked, hollow, transparent, canine Teeth, situate at each side of the upper Jaw, which are those that do the Mischief: These are flexible in their Articulation; and are ordinarily laid flat along the Jaw, the Animal never raising 'em but when it would bite.

The Roots or Bases of these Teeth are encompass'd with a Vesicle, or Bladder, containing the quantity of a large drop of a yellow insipid salivous Juice.

It has only one Row of Teeth; whereas all other Serpents have two: Its Body is not at all fetid; whereas the inner Parts of the Bodies of other Serpents are intolerable.—It creeps very slowly, and never leaps like other Serpents; tho' 'tis nimble enough to bite when provok'd.

Its Body is of two Colours, ash-colour'd, or yellow, and the ground speckled with longish brown Spots.—The Scales under its Belly are of the Colour of well-polish'd Steel.

The Male has two Sets of Genital Instruments, and the Female two Matrixes, &c. She brings forth her young living; whereas other Serpents lay Eggs and hatch 'em: On which account, the *Viper* is rank'd among the Viviparous Animals. See VIVIPAROUS.

Her young ones come forth wrap'd up in thin Skins, which break on the third day, and set the Animal at liberty.—She brings forth to the Number of 20 young; but only one each Day.

The Antients, particularly *Pliny*, *Galen*, &c. believ'd that the young kill'd their Mother in the Delivery; but this is not the only Mistake they were guilty of on the Subject of the *Viper*. They held that it eat Cantharides, Scorpions, &c. which render'd its Poison so very dangerous.

Dr. *Mead* observes, that the Antients esteem'd the *Viper* sacred; and that one of the Kings of the *East Indies* caused Cottages to be built for their Entertainment, and their Killers to be punish'd with Death.—On Medals, the *Viper* is frequently represented as a Symbol of divine Power; and as such, used by way of attribute to the antient Physicians.

As to the manner wherein the *Viper* conveys its Poison, Authors are a little disagreed.—*Francisco Redi*, and *Moise Charras*, have each of 'em wrote very curious Pieces on the Subject, but their Result is very different.

*Redi* maintains, that all the Venom of the *Viper* is contain'd in the two *Vesiculae*, or Bags which cover the Base of the two canine Teeth; whence, upon biting, the yellowish Liquor is squeez'd out into the Wound: where, mixing with the Blood and other Juices, it produces those dreadful Symptoms.

This Hypothesis he maintains by a good number of Experiments, as of Animals, viz. Cocks, &c. being bit with *Vipers* after these *Vesiculae* and their Juice had been taken out; without any Signs of Poison, or any ill Consequence at all.

*Charras*, on the other hand, maintains, that this yellow Liquor is not poisonous; that he has given it to Pidgeons as Food, without their being at all disorder'd thereby; that the *Viper's* bite he has always found mortal to Animals, even after the Bag has been taken clear out, as well as before: And lastly, that the Poison must lie in the irritated Spirits of the *Viper*, which it exhales in the Ardor of its biting; and which are so cold, that they curdle the Blood, and stop the Circulation.

The Controversy between these two ingenious Authors is very extraordinary: Their Systems are opposite; yet both maintain'd by a great number of well attested Experiments.—The Publick, however, generally give into the Sentiment of Sig. *Redi*; as answering best to the Mechanism of the Parts.

Dr. *Mead* supposes it the true one, in his Essay on the Poison of the *Viper*; and adds to *Redi's* Account, that the Poison in the *Viper's* Bag is separated from the Blood by a conglomerated Gland, lying in the lateral anterior part of the *Os Sincipitis*, behind the Orbit of the Eye; from which Gland is a Duct that conveys the Poison to the Bags at the Teeth. The Teeth, he adds, are tubulated for the Conveyance and Emission of the Poison into the Wound; but their hollownels does not reach to the Apex or Tip of the Tooth, but ends in a long Slit below the Point, out of which the Poison is emitted.

These Slits, or Perforations of the Teeth, *Galen* says, the Mountebanks of his Days used to stop with some kind of Pattle; after which, they would publicly expose themselves to be bitten, without danger.

### Account of the Effects of the Bite of the Viper, from Dr. Mead.

The Symptoms following the Bite of a *Viper*, are an acute Pain in the Place wounded; Swelling, first red, afterwards livid, spreading by degrees; great Faintness; a quick, low, and sometimes interrupted Pulse; Sickness at the Stomach; bilious convulsive Vomiting; cold Sweats; sometimes Pains about the Navel; and Death it self, if the Strength of the Patient, or slightness of the Bite do not overcome it.

If he do overcome it, the Swelling continues inflam'd for some time; and the Symptoms abating, from the Wound runs a sanious Liquor, little Pustles are rais'd about it, and the Colour of the Skin is as if the Patient were Icteric.

By the Microscope, the *Virus* was found to consist of minute Salts in continual Motion; after which, a Number of *Spicula* or Darts appear'd, resembling, but much finer, a Spider's Web.—This, when mixed with *Syr. Vichr.* inclined to red, no ways to green; so that the Juice is not alkalious: But Mr. *Boyle* and Dr. *Pitcairn* prove the Blood to be only an Alkaly.

Such a small Quantity of the *Virus* seems to have its Effect by wounding the Fibres, and altering the Cohesion of the Globules of Blood, which by the elastic Matter thereof proves a nimble Vehicle to carry the Viperine *Spicula* almost every where suddenly.—They will also stimulate and stir the sensible Membranes; whereupon, a more than usual Afflux of the Animal Juices will be carried to the Parts.

The Cure seems very unsettled: Mr. *Boyle* found a hot Iron held near the Place successful; but it proved otherwise with Monsieur *Charras*.—Again, the Snake-stone from the *East Indies*, immediately applied to the Place, is much commended: But Signior *Redi* and Monsieur *Charras* found it of no use; yet *Baglivi* and Dr. *Havers* give Instances of its good Success.

Dr. *Mead* adds, that the same Stone directly applied to a Pigeon when bitten, saved its Life four Hours; whereas, most of the other Pigeons bitten died in half an Hour.

This Stone is not Natural, but Factitious; its Virtue lies in its Porosity, which is supposed to imbibe the *Virus*.

The *Viper*-Catchers have a Specifick, in which they can so far confide, as not to be afraid of being bitten.—That Specifick is the *Auxungia* of the *Viper* presently rubb'd into the Wound; which consisting of clammy, viscid, penetrating, and active Parts, sheaths the Salts of the *Virus*.

The same Author, applying it to the Nostrils of a Dog bitten, found it well the next Day: When this is not timely applied, and the *Virus* has insinuated into the Blood, the *Sil Viper.* is excellent, given and repeated till Sweats be produced. This succeeded well with Monsieur *Charras*; and Dr. *Mead* relates, that it recover'd one, after the *Virus* had induc'd an universal Icterus.

*Vipers* make a considerable Article in Medicine.—Most Authors agree, that there is no Part, Humour, or Element, not even the Gall it self, of a *Viper*, but may be swallow'd without much harm.—Accordingly, the Antients, and, as several Authors assure us, the *Indians* at this day, both of the East and West, eat 'em as we do Fish.

*Caro Viperina*, *Viper's* Flesh, either roasted or boild, the Physicians unanimously prescribe as an excellent Restorative; particularly in the Elephantiasis, incurable Consumptions, Leprosy, &c. and Dr. *Mead* thinks they might be sparing in the Quantity than they are; instead of a line *Viper's* Flesh, he recommends the Broth or Gelly of *Viper's*; or, as the Antients did, to boil and eat them as Fish, or at least to drink *Vinum Viperinum*, i. e. Wine wherein they have been long infus'd.

*Viper's* *Tess* is an Ingredient in several of our best Antidotes; as the *Theriac Andromach.* &c. See *Theriac*.

The Apothecaries also sell the *Pulvis Viperinus*, which is only dried *Vipers* pulveriz'd, Heart Liver and all, and pass'd thro' a Sieve.—This, to heighten the Price we suppose, they call *Animal Bezoard*. See *Bezoard*.

The Salts of *Vipers*, whether volatile or fix'd, also the Fat or *Auxungia*, and their Oil, chymically drawn, are Dyes in good repute.

VIRAGO, a Maid, or Woman of extraordinary Strength, and who, with the Mien and Air of a Man, performs Actions and Exercises thereof. See *Antea*.

Such were *Semiramis* and *Penthesilea*, antient Heroines, &c. *Jeune à Pucelle*, commonly call'd *Jeune à Orlans* among the Moderns.

In the Vulgate Version of the Bible, *Virago* is used because made of the Rib of the Man.—The *Virago* is a word, by this, aim'd to preserve the Etymology which the *Hebreze*, and of *Vir*, form'd *Virago*; as *Virago* in the *Hebreze* Text, call'd *Eve Ichad*, of *Ichad*, Man.

The Word is pure *Latin*, and seldom used but in the way of Derision.

VIRGA. See YARD.



**VIRGA**, is particularly used in Law, for a Verge, or Rod, such as Sheriffs and Bailiffs carry as a Badge of their Office. See **VERGE**.

—*Ranf. ap Howel, prepositus de Lantiffin, amerciatu pro eo quod habuit in manu sua coram Justiciariis hic virgam nigram & inhonestam, ubi habere debuisset virgam albam & honestam certæ longitudinis, prout decet.* In sess. Itin. de Cardiff. 7 Hen. VI.

**VIRGÆ**, in Physiology, a Meteor, call'd also *Columellæ*, and *Funes Tentorii*; being an Assemblage of several Streams of Light, representing a Bundle of Rods, or Ropes. See **METEOR**.

It is supposed owing to the Streaming of the Sun-beams thro' certain *Rimulæ* or Chinks, at least thro' the more lax and open Parts of a watry Cloud; happening chiefly in the Morning and Evening.

There is also another Kind, consisting, not of Streams of mere white Light; but, as it were, painted, of various Colours; like those of the Rainbow. See **RAIN-BOW**.

**VIRGATA Terræ**, or **VIRGA Terræ**, a Yard Land. See **YARD Land**.

*Virgata Terræ ex 24 constat acris; quatuor Virgatæ Hidam faciunt, quinque Hidæ feodum Militis.* See **HIDE**, and **KNIGHT'S Fee**.

**VIRGATORES Servientes**, in *Fleta*, are Virgers or Tip-slaves that attend the Judges. See **VERGER**, and **SERGEANT at Arms**.

**VIRGIN**, a Female who has had no commerce with Man; or, more properly, who has still the *Flos Virginis*, or Maiden-hood. See **VIRGINITY**.

In the *Roman Breviary*, there is a particular Office for *Virgins* departed, answering to those for Saints, Martyrs, and Confessors. See **OFFICE**.

Criticks and Antiquaries are much divided about a Feast held in that Church, in honour of *S. Ursula* and her Companions, who are said in the Ritual, Legend, &c. to have been eleven thousand *Virgins*.

Some imagine there has been a Mistake in reading the antient Rituals, wherein *XI. M. V.* which was only an Abbreviation of *Eleven Virgin Martyrs*, was read according to the Numeral Letters, *Eleven thousand Virgins*. *F. Sirmond* conjectures, that in the antient Lists of Martyrs, there were found *S. S. Ursula* and *Undecimilla V. M.* and that in lieu of *Undecimilla*, which is the Name of a *Virgin Martyr*, the Copists had made *Undecimillia*, which is Eleven Thousand.

By the *Mosaic Law*, the Priests are enjoind to take none to Wife but those that are *Virgins*: The Widow, the Divorced, and the Harlot are to be refrain'd from.

**VIRGIN** is also applied, by way of Eminence, to *Mary* the Mother of our Saviour; as conceiving and bringing him forth, without any Breach of her Chastity.

*Nestorius* and his Adherents, maintain'd, That the *Virgin* could not with any Propriety be called the *Mother of God*; as being really no more than the *Hostess of God*: For that the eternal Word could not be conceiv'd and born of the Womb of a *Virgin*. See **NESTORIANS**.

This Heresy was condemn'd at the Council of *Ephesus*; yet has it been lately reviv'd in *Holland*, chiefly by a Refugee Monk, one *Renoult*.

**VIRGIN** is also used, figuratively, for several Things that retain their absolute Purity, and have never been made use of.

Thus, *Virgin Wax*, is that which has never been wrought, but remains as it came out of the Hive. See **WAX**.

*Virgin Oil*, is what oozes spontaneously from the Olive, &c. without pressing. See **OIL**.

*Virgin Gold*, is that Metal such as it is got out of the Ore, without any Mixture or Alloy; in which State it is so soft, that it will take the Impression of a Seal. See **GOLD**.

*Virgin Copper*, is that which has never been melted down. See **COPPER**.

*Virgin Mercury*, is that found perfectly form'd, and fluid, in the Veins of Mines; or at least, is got from the Mineral Earth, by mere Lotion, without Fire. See **MERCURY**.

*Virgin Parchment*, is, properly, that made of a kind of Cap, or Caul, which Children bring into the World on their Heads.—But the Word is also used for that made of the Skin of an abortive Lamb, or Calf. See **PARCHMENT**, and **VELUM**.

*Virgin's Milk*. See **LAC Virginale**.

*Virgin's Thread*, is a sort of Dew, that flies in the Air, like small untwisted Silk; and which falling upon the Ground, or upon Plants, changes it self into a Form like a Spider's Web. See **METEOR**.

The Matter of it is supposed to be of an earthy slimy Nature. In these Northern Climates, it is most frequent in Summer; the Days being then temperately warm, the Earth not exceeding dry, nor yet over-charg'd with Moisture.

**VIRGINALE Claustrum**, in Anatomy, the same as **Hymen**. See **HYMEN**.

**VIRGINEUS Morbus**, the *Virgin's Disease*; the Green-Sickness, or *Chlorosis*. See **CHLOROSIS**.

**VIRGINITY**, the Character or Criterion of a *Virgin*; or that which entitles her to the Denomination. See **VIRGIN**.

In the first Ages of the Christian Church, *Virginity* grew into great Honour and Esteem; insomuch, that the Women were admitted to make solemn Vows thereof in publick.—Yet was it held infamous among the *Jews*; for a Woman to die a *Maid*.

The Vestals, among the Antients, and the Nuns or Religious among the Moderns, found guilty of a Breach of the Vow of *Virginity*, are allotted a severe Punishment; the first to be buried alive, the latter to be immur'd. See **VESTAL**, &c.

The Physicians, both antient and modern, are exceedingly divided upon the Subject of *Virginity*: Some holding that there are no certain Marks, or Testimonies thereof, and others that there are.

*Solomon* says expressly, there are four Things too wonderful for him to know: 'The way of an Eagle in the Air; of a Serpent on the Rock; of a Ship in the midst of the Sea; and the way of a Man in a Maid;' which our Translators have render'd, less justly, *the way of a Man with a Maid*.

Yet *Moses* establish'd a Test, which was to be conclusive among the *Jews*.—The Nuptial Sheets, it seems, were to be view'd by the Relations on both Sides; and the Maid's Parents were to preserve them as a Token of her *Virginity*; to be produced, in case her Husband should ever reproach her on that score.

In case the Tokens of *Virginity* were not found thereon, she was to be stoned to Death at her Father's Door.

This Test of *Virginity* has occasion'd abundance of Speculation about the Parts concern'd; but the nicest Inquiries cannot settle any thing certain about 'em.—*Dr. Drake* says expressly, that whatever might be expected among the *Jews*, there is not the same Reason to expect those Tokens of *Virginity* in these Countries: For, besides that the *Hebrews* marry'd extremely young, as is the Custom in all the Eastern Countries; there are several Circumstances which may here frustrate such Expectations, even in Virgins not vitiated either by any Male Contact, or any Wantonness of their own.

In effect, in these Northern Climates, the inclemency of the Air exposes the Sex to such Checks of Perspiration, as gives a great turn to the Course of the Humours, and drives so much Humidity thro' the Parts, as may extraordinarily supple and relax those Membranes from which the Resistance is expected; and from which, in hotter Countries, it might more reasonably be depended on.

What most commonly passes among us for a Test of *Virginity*, is the *Hymen*: And yet the most curious among the Anatomists are greatly divided, not only about the figure, Substance, Place, and Perforations of this famous Membrane; but even about the Existence thereof; some positively affirming, and others as flatly denying it. See **HYMEN**.

As nice a Point as that of *Virginity* is among Anatomists, the Midwives and Matrons treat it with less diffidence.—In the Statutes of the sworn Matrons of *Paris*, containing likewise divers *Formula's* of Reports and Depositions made in Court upon their being call'd to visit Girls that made their Complaint of being deflower'd, they lay down fourteen Marks, whereon to form a Judgment.

*Laur. Jobert*, a famous Physician of *Montpellier*, has transcrib'd three of these Reports: one made to the Provost of *Paris*; another in *Languedoc*; and a third in *Bearn*.—These Reports are very consistent with each other; and contain fourteen Marks of *Virginity*, express'd in their proper Terms; such as were receiv'd among the Women of that Profession, and authoriz'd in Court.

*Monsieur Jobert* does not explain those Terms; nor do we find any Explanation of them any where, but in another Report of the 23d of *October*, 1672, inserted in the *Picture of Love of Venette* a Physician of *Roche*; a Copy of which, we shall here give in *English*.

"We, *Mary Miran*, *Christophlette Reine*, and *Jeanne Porte Poulet*, Sworn Matrons of the City of *Paris*, certify to all those whom it may concern, that on the 22d of *October*, in this present Year, at the Appointment of *Monsieur* the Provost of *Paris*, we went into the Street *de Pompiere*, to a House next the Sign of the Silver Key; to view and visit *Olive Ysserand* of the Age of 30 Years, on a Complaint made by her in Court against *James Audont*, Citizen of *Roche sur Mer*; for forcing and violating her the said *Olive*: And having view'd and examin'd the whole with the Eye and Finger, we find,

"*Les Tonsons devoyez*, that is, the Breasts loose and flaccid, *Mamme marcidæ & flaccidæ*: *Les Barres froissées*, i. e. the Os Pubis bruised, *Os Pubis collisum*: *Le Lippion recoquille*, i. e. the Hair curl'd up, *Pubes in Orbem sinuata*: *L'Entrepet ridé*, i. e. the *Perineum* or Scam wrinkled, *Perineum corrugatum*: *Le Pouvant debiffé*, i. e. the *Vulva* or *Pudendum* tumbled and disorder'd, *Vulva dissoluta & marcescens*: *Les Balunaux pendants*, i. e. the *Labia* hanging down, *Labia pendentia*: *Le lippion pilé*, i. e.



" i. e. the Edge of the *Labia* bared of Hair, *Labiorum*  
 " *Ora Pilis defecta* : les *Baboles abbatues*, i. e. the *Nymphæ*  
 " beat down, *Nymphæ depressæ* : Les *Halerons demis*, i. e.  
 " the *Carunculae* undone, or open'd, *Carunculae dissolutæ* :  
 " *l'Entrecenat retourné*, i. e. the Membranes which con-  
 " nect the Caruncles inverted : *Membrana connectens in-*  
 " *versa* : le *Barbidau ecorché*, that is, the *Clitoris* excori-  
 " ated, *Clitoris excoriata* : le *Guilboquet fendu*, i. e. the  
 " Neck of the Womb torn, *Collum uteri dilaceratum* : le  
 " *Guillenard elargi*, i. e. the *Vagina* stretch'd, or widen'd :  
 " *Vagina dilatata* : la *Dame du Milieu retirée*, i. e. the  
 " *Hymen* broke and gone, *Hymen deductum* : l'*arriere fosse*  
 " *ouverte*, i. e. the inner Orifice of the Womb open'd, *Os*  
 " *Internum Matricis apertum*.—*Le tout vu et visité*  
 " *feuille par feuille nous avons trouve qu' il, y avoit trace*  
 " *de*—The Whole view'd and examin'd Part by Part, we  
 " find plainly the Track or Foot-step of—*Omnibus si-*  
 " *gillatim perspectis & perscrutatis*, &c.—Accordingly  
 " we, the said Matrons, do certify it to be true, to you,  
 " Monsieur le *Prevost*, on the Oath we have taken. Done  
 " at *Paris* the 23d of *October*, 1672."

In *Peru*, and several other Provinces of *South America*,  
 we are assured by *Pedro de Cieca*, the History of the *Incas*,  
 &c. that the Men never marry but on Condition that the  
 next Relation, or Friend of the Maid's, shall undertake to  
 enjoy her before him, and take away her Virginity. And  
 our Countryman *Larson*, relates the like of some of the  
*Indian Nations of Carolina* : So little is the *Flos Virginis*,  
 prized so much among us, valued by them.

**VIRGO**, in Astronomy, one of the Southern Signs, or  
 Constellations of the Zodiac, into which the Sun enters in  
 the beginning of *August*. See **SIGN**, and **CONSTELLATION**.

The Stars in the Constellation *Virgo*, in *Ptolemy's* Cata-  
 logue, are 32 ; In *Tycho's*, 39 ; in *Flamsted's*, 89. The  
 Longitudes, Latitudes, Magnitudes, &c. whereof, are as  
 follows :

Stars in the Constellation VIRGO.

| Names and Situations of the Stars.       | Signs. | Longitude. | Latitude. | Magn. |
|--|--------|------------|-----------|-------|
| That preced. <i>Virgo's</i> Head         | ♊      | 17 30 05   | 5 19 13   | 6     |
| North, in the Top of the Head            |        | 19 00 29   | 6 06 21   | 5     |
| South                                    |        | 19 49 35   | 4 35 39   | 5     |
| Subseq. and lefts in the top of the Head |        | 19 37 15   | 6 21 33   | 6     |
| In the bend of the South Wing            |        | 22 46 14   | 0 40 47   | 3     |
| 5  |        | 21 09 47   | 7 14 53   | 6     |
| South, in the Face                       |        | 24 12 31   | 3 20 31   | 5 6   |
| North                                    |        | 23 13 29   | 6 8 52    | 5     |
|  |        | 23 23 06   | 8 31 29   | 5     |
|  |        | 27 08 22   | 2 42 52   | 6     |
| 10                                       |        | 25 39 56   | 6 19 31   | 6     |
|  |        | 24 38 13   | 10 44 24  | 6 7   |
| Preced. in the South Wing                | ♊      | 0 16 44    | 1 8 8     | 6     |
|  |        | 3 39 31    | 6 16 20   | 7     |
|  |        | 0 30 52    | 1 22 1    | 4 3   |
| 15                                       |        | 29 2 17    | 5 4 22    | 5     |
| That in the Neck                         | ♊      | 28 44 8    | 7 7 4     | 6     |
|  |        | 29 7 52    | 12 43 12  | 6     |
| In the South Arm                         | ♊      | 7 9 52     | 5 19 47   | 6     |
|  |        | 6 29 0     | 1 42 25   | 6     |
| 20                                       |        | 7 50 38    | 3 27 21   | 5     |
| First of 3 under South Arm               | ♊      | 1 3 5      | 13 41 37  | 6     |
|  |        | 8 15 49    | 2 44 25   | 6     |
| Second of the South Wing                 |        | 5 52 11    | 2 48 53   | 3     |
| Preced. of 3 in the North Wing           |        | 1 10 33    | 13 32 49  | 5     |
| 25                                       |        | 2 36 19    | 10 24 41  | 6     |
| South of the North Wing                  |        | 3 6 26     | 11 34 19  | 5 6   |
|  |        | 2 28 51    | 13 22 45  | 6 7   |
|  |        | 1 42 23    | 15 38 52  | 6     |
|  |        | 1 10 31    | 17 47 57  | 6     |
| 30                                       |        | 6 20 45    | 7 55 15   | 7     |
| Middle under the South Arm               |        | 11 31 30   | 3 3 16    | 6     |
|  |        | 11 52 25   | 3 25 22   | 5     |
| In the North Side, against the Girdle    |        | 3 3 20     | 16 43 39  | 6     |
|  |        | 7 9 54     | 8 38 27   | 3     |
| 35                                       |        | 10 52 55   | 2 21 50   | 6     |
| Third of the South Wing                  |        | 10 55 41   | 2 51 56   | 7     |
| Upper of North Wing, <i>Vindemiatrix</i> |        | 5 37 40    | 16 12 34  | 3     |
|  |        | 11 47 47   | 2 55 7    | 7     |
| Third under the South Arm                |        | 25 25 09   | 3 15 3    | 5     |
| 40                                       |        | 14 44 20   | 1 26 51   | 6     |
|  |        | 15 41 28   | 2 42 31   | 6     |
| Fourth and last of the South Wing        |        | 13 54 23   | 1 45 29   | 4     |
| First of three under <i>Spica</i>        |        | 18 25 56   | 7 53 20   | 4 5   |
|  |        | 19 46 20   | 10 12 6   | 6     |
| 45                                       |        |            |           |       |

Names and Situations of the Stars.

That follow. *Vindemiatrix*  
 That follow. North Wing  
 Middle under *Spica*

50

In South Hand  
 Underneath *Spica*  
 Last, and North of 3 under *Spica*

55

North of preced. in square of Thigh

Second  
 60

South of preced. in square of Thigh

Another follow. North Wing  
 Under the Girdle, as in the Hip

65

Third in square of Thigh

North of those follow. in square of  
 That over the Girdle

70

In South Knee

75

In North Thigh

That over the North Thigh

80

South of 3 in the Border of Garment  
 Middle in the Border  
 In Extrem. of South Foot

North of three in the Garment

85

A bright one follow. these  
 In Extrem. of the North Foot

89

**VIRGULA Divina**, or *Bacculus Divinatorius*, a forked  
 Branch in form of a Y, cut off a Hazle-tree ; by means  
 whereof People have pretended to discover Mines, Springs,  
 &c. under Ground. See **MINE**, &c.

The Method of using it is this : The Person who bears it  
 walking very slowly over the Places where he suspects Mines  
 or Springs may be, the Effluvia exhaling from the Metals  
 or the Water, impregnating the Wood, makes it dip or  
 incline ; which is the Sign of a Discovery.

We find no mention made of this *Virgula* in any Author  
 before the eleventh Century : but from that time it has been  
 in Use ; Divers fine Names have been invented for it, some  
 calling it *Caduceus*, others, *Aaron's Rod*, &c.

Some dispute the matter of fact, and deny it to be possi-  
 ble ; others, convinc'd with the great number of Experi-  
 ments alledg'd in its behalf, look out for the natural Causes  
 thereof.—The Corpuscles, say these Authors, rising from  
 the Springs, or Minerals, entering the Rod, determine it to  
 bow down, in order to render it parallel to the vertical Lines  
 which the Effluvia describe in their rise.

In Effect, the mineral, or watery Particles are supposed  
 to be emitted by means of the subterraneous Heat, or of  
 the Fermentations in the Entrails thereof ; Now the *Virgula*  
 being of a light, porous Wood, gives an easy Passage to  
 those Particles, which, withal, are very fine and subtle ;  
 the Effluvia then driven forwards by those that follow them,  
 and oppress'd at the same time by the Atmosphere incum-  
 bent on them, are forced to enter the little Interstices be-  
 tween the Fibres of the Wood, and by that Effort oblige it  
 to incline, or dip down perpendicularly, to become parallel  
 with the little Columns which those Vapours form in their  
 rise.

**VIRGULA**, in Grammar, a Term which the *Latin*,  
*French*, and many other Authors, use for a Point in Wri-  
 ting, usually call'd by us *Comma*. See **COMMA**.

*Virgula's*, *Fa. Simon* observes, are an Invention of the  
 modern Grammarians, to give the greater Clearness to Dis-  
 course.—The Use thereof was unknown to the ancient *Greeks*  
 and *Romans*, who wrote all without taking off the Pen, is

| Signs. | Longitude. | Latitude. | Magn. |
|--------|------------|-----------|-------|
| ♊      | 20 30 30   | 11 6 24   | 6     |
|        | 9 41 24    | 16 13 6   | 7     |
|        | 11 27 17   | 12 39 30  | 5     |
|        | 20 43 10   | 9 9 50    | 4 5   |
|        | 21 29 8    | 8 19 33   |       |
|        | 13 52 05   | 9 58 50   | 7     |
|        | 12 39 6    | 12 48 11  | 6     |
|        | 19 31 24   | 2 1 59    | 1     |
|        | 20 26 48   | 3 18 24   | 6     |
|        | 21 49 15   | 6 17 54   | 5 6   |
|        | 10 38 12   | 21 24 25  | 6     |
|        | 12 4 17    | 18 42 49  | 6     |
|        | 18 39 18   | 2 47 25   | 6     |
|        | 23 52 19   | 8 26 42   | 5     |
|        | 19 16 27   | 3 8 55    | 5     |
|        | 22 48 30   | 5 14 34   | 6     |
|        | 20 55 51   | 0 24 7    | 6     |
|        | 19 44 11   | 2 55 30   | 7     |
|        | 16 3 48    | 12 33 1   | 6     |
|        | 17 49 50   | 8 39 9    | 3     |
|        | 19 46 12   | 4 15 21   | 6     |
|        | 21 10 4    | 2 9 18    | 6     |
|        | 22 23 31   | 1 43 45   | 6     |
|        | 18 15 4    | 13 16 45  | 6     |
|        | 25 44 18   | 4 59 23   | 7     |
|        | 25 50 19   | 4 30 31   | 6     |
|        | 24 43 6    | 1 21 46   | 5     |
|        | 26 39 34   | 6 18 29   | 6     |
|        | 23 16 7    | 4 4 4     | 6     |
|        | 27 39 20   | 6 21 27   | 5 6   |
|        | 22 52 23   | 9 37 22   | 6     |
|        | 23 21 36   | 12 9 45   | 6     |
|        | 23 24 56   | 13 4 10   | 5     |
|        | 28 10 30   | 3 41 47   | 6     |
|        | 28 25 25   | 3 19 59   | 6     |
| ♊      | 0 10 40    | 2 55 40   | 4     |
| ♊      | 29 27 27   | 7 15 37   | 4     |
| ♊      | 2 38 13    | 0 31 4    | 4     |
| ♊      | 29 4 41    | 11 3 1    | 5     |
| ♊      | 29 33 5    | 11 30 3   | 5     |
| ♊      | 1 8 14     | 11 47 25  | 4     |
|        | 5 47 23    | 9 43 8    | 4     |
|        | 4 22 44    | 15 56 52  | 6     |
|        | 4 10 50    | 17 7 21   | 4     |



that their Books lie all together without any Distinction of Points and *Virgula's*. See POINTUS.

VIRGULTUM, in our antient Law-books, is used for an Holt, or Plantation of Twigs, or Oziers.

Sometimes also for a Coppice of young Wood: *Et præterea concedo Virgultum meum & totam communiam Domini mei*. Mon. Angl.

In another place of the same Work, it may be taken for *Virgata*, viz.—*Dedit prædictæ Ecclesiæ unam Virgultam Terræ in Manerio de Cumptone*.

VIRIDARIO eligendo, a Writ that lies for the Choice of a Verderor in the Forest. See VERDEROR.

VIRIDE Æris, the same as Ærugo, or Verdegrease. See VERDEGREASE.

VIRILE, something that belongs or is peculiar to Man.

Thus *Virile Member*, *Membrum Virile*, is frequently used for the Penis. See PENIS.

The *Virile Age*, *Ætas Virilis*, is the Strength and Vigour of a Man's Age, viz. from thirty to forty-five Years, which is an Age wherein we are equally remov'd from the Extremes of Youth and old Age. See AGE.

The Civil Lawyers only make one Age of Youth and Virility; and yet their different Temperatures seem to require a Distinction; for which Reason some compare Youth to Summer, and Virility to Autumn. See PUBERTY.

At Rome, the Youth quitted the *Prætecta* at fourteen or fifteen Years of Age, and took the *Virile Gown*, *Toga virilis*, to shew, it seems, that they then entred on a serious Age. See PRÆTEXTA and Toga.

M. Dacier will have it, the Children did not take the *Prætecta* till thirteen Years of Age, nor quit it for the *Toga Virilis*, till seventeen.

VIRILIA, a Man's privy Members, including the Penis and Testes. See PENIS, &c.

The cutting off the *Virilia*, according to *Bracton*, was Felony by Common Law, and that whether the Party were consenting or not. See EUNUCH.

—*Henricus Hall & A. Uxor ejus capti & detenti in prisona de Eynchester, eo quod reſtati fuerunt quod ipſi abſciderunt Virilia Johannis Monachi, quem idem Henricus deprehendit cum prædicta A. Uxore ejus*. Rot. Clause 13 Hen. III. See CASTRATION.

VIRSUNGIANUS Ductus, or *Ductus Virtsungii*, in Anatomy, a Canal, more usually call'd, *Ductus Pancreaticus*. See PANCREATICUS. It took its Name, *Virtsungianus*, from the Inventor, *Virtsung*.

VIRTUAL, *Potential*, something that has a Power or Vertue of acting or doing. See VIRTUALLY.

The Term is chiefly understood of something that acts by a secret invisible Cause; in Opposition to actual, and sensible. See POTENTIAL.

VIRTUAL Focus, in Opticks, is a Point from which Rays, before converging, begin to diverge, or divaricate. See Focus.

Hence it is also call'd, *Point of Dispersion*, or *Divergence*; in Opposition to the *Focus*, which is call'd the *Point of Concurrence*. See POINT, DISPERSION, DIVERGENT, &c.

Suppose, e. g. the Concavity of a Glas to be *a b c* (Tab. Opticks Fig. 11.) and its Axis *d e*; let *f g* be a Ray of Light falling on the Glas parallel to the Axis *d e*, and let *d* be the Centre of the Ark *a b c*.

This Ray *f g*, after it has passed the Glas, at its Emerſion at *g*, will not proceed directly to *b*, but be refracted from the Perpendicular *d g*, and become the Ray *g k*.

Draw then directly *g k*, so that it may croſs the Axis in *e*.—The Point *e* so found, Mr. *Molyneux* calls the *Virtual Focus*, or *Point of Divergence*. Dioptr. Nov.

VIRTUALITY, VIRTUALITAS, in the Schools, is some Mode or Analogy in a Object, which in reality is the same with some other Mode; but out of regard to contradictory Predicates, is look'd on as if really distinct therefrom.

Thus the divine Nature, and the Person of the Word, are two *Virtualities*; for tho in reality they be the same, yet are they consider'd as things different.—For the Person of the Word is said to have been begotten, and his Nature is said not to be begotten: now begotten, and not-begotten, are contradictory Predicates.

And hence arise what we call *virtual Distinctions*, whereby one *Virtuality* is distinguish'd from another, not one Thing from another.

Thus it is the divine Nature is distinguish'd from the divine Person, and the divine Understanding from the divine Will. See TRINITY.

VIRTUALLY, VIRTUALITER, in the Schools, is applied to a Mode of Existence.—Thus a thing is said to be *Virtually* any where, when it is deem'd to be there by some *Virtue*, Influence, or other Effect produc'd by it.

As the Sun is *Virtually* on Earth, i. e. by his Light, Heat, &c.

A thing is also said to be *Virtually* present when the Virtues or Properties belonging to it, and issuing from it, re-

main.—In which Sense the Forms of the Elements are held to be *Virtually* in mix'd Bodies.

A thing is also said to be a Cause *Virtually*, or a *Virtual Cause*, and that two Ways: the first, when there is no real Distinction between it, and the Effect attributed to it; and yet it is conceived by us as if it were really the Cause thereof:—Thus, Immutability in God, is the Cause of Eternity.

Secondly, when an Effect is not of the same kind with the Cause, and yet the Cause has the Power, or *Virtue* of producing the Effect: thus the Sun is not *formally*, but *Virtually* hot; and Fire is not contain'd *formally*, but *Virtually* in Heat.

VIRTUE, VIRTUS, a Term used in various significations.

In the General, it denotes Power, or Perfection of any Thing, whether Natural or Super-natural, Animate or Inanimate, Essential or Accessary: hence the *Virtues* of God, Angels, Men, Plants, Elements, &c. See POWER, and FACULTY.

In its more proper and restrain'd Sense, *Virtue* signifies a Habit, which improves and perfects the Haver or Possessor, and his Actions. See HABIT, PERFECTION, &c.

In this Sense, *Virtue* is a Principle of acting, or doing well and readily; and that, either infused from above, such as are the *Theological Virtues*; or acquired by our own Application, as the *Intellectual* and *Moral Virtues*.

For, as there are two Things in Man from which all his Actions proceed, viz. the Understanding, and the Will; so the *Virtue* by which he is perfected, or whereby he is disposed to do all Things rightly, and to live happily, must be two-fold: the one, of the Understanding; the other, of the Will.

That which improves the Understanding is call'd *Intellectual* or *Dianoetic*; and that, the Will, *Moral* or *Ethic*.

For, since there are two Things requir'd in order to live a-right, viz. to know what should be done; and, when known, readily to perform it: And since Man is apt to err various Ways in each respect, unless regulated by Discipline, &c. he alone can deport himself rightly in his whole Course of Life, whose Understanding and Will have attain'd their utmost Perfection.

An *Intellectual VIRTUE*, then, according to *Aristotle*, is a Habit of the reasonable Soul, whereby it conceives, or speaks the Truth; either in affirming, or denying. See TRUTH.

The *Virtues* which come under this Class, are divided into *Speculative*; which are those conversant about necessary Things, that can only be known, or contemplated; and *Practical*, which are conversant about contingent Things, that may likewise be practised.

*Aristotle* has another Division of *Intellectual Virtue*, fetch'd from the Subject; as some of 'em are seated in the *ἐπιστημονικῇ*, or *Contemplative Part*, viz. those conversant about necessary things, as *Science*, *Wisdom*, *Intelligence*. See SCIENCE, UNDERSTANDING, &c.

And others, in the *λογικῇ*, or *Practical Part*; such as those conversant about contingent Things, as *Prudence*, *Art*, &c. See ART, &c.

*Moral VIRTUE* is defined by *Aristotle* to be an elective Habit, placed in a Mediocrity, determin'd by Reason, and as a prudent Man would determine.

The *Stoicks* maintain every moral Habit to be indifferent as to good or evil, and capable of becoming, successively, either *Virtue* or *Vice*: *Virtue*, if it have a relation of conformity with right Reason; and *Vice*, if it have not. See VICE.

According to them, therefore, *Virtue* is a Habit subjectively, but not entitatively, good: as it is only a relation of Conformity, &c. which is separable from the Entity of the Habit.

The *Thomists*, on the contrary, assert *Virtue* to be a Habit essentially good; nor capable of ministering any thing to any Act positively bad.—And they philosophize thus: Every Habit essentially good, inclines to Acts like those whereby it was acquired; thus, by doing justly we become just; and, by abstaining from forbidden Pleasures, we become temperate. But *Moral Virtue* is produced, or acquired by Acts essentially good; good, we mean, both in respect of our Duty, and of the Motive and End: therefore *Moral Virtue* inclines only to good Acts.

Others disallow the *Peripatetic* Notion of *Virtue* as placed in a Habit; for a Habit, or Habit, say they, includes two Things; a Custom, and Facility; the first as a Cause, and the second as an Effect: so that a Habit is nothing but a Facility acquired by Custom.—They therefore who make *Virtue* a Habit of doing well, must of necessity ascribe it to a frequent Exercise of good Actions.—But this can't be; for the *Virtue* must be before the good Actions; and the Habit, after 'em.—Indeed, whence shou'd the Actions proceed but from *Virtue*? *Virtue* therefore is before the good Actions, and certainly before a Habit resulting from a frequency of good Actions.

Hence



Hence, they define *Virtue* to be a firm Purpose or Resolution of doing whatever right Reason demands to be done. For tho a Custom of doing well be requir'd to make a Person esteem'd good among Men; yet it does not follow, that that Custom or Habit is the formal Cause of that Denomination, or the Goodness it self.

Moralists usually distinguish four *Principal*, or, as they are vulgarly call'd, *Cardinal Virtues*, viz. *Prudence*, *Justice*, *Fortitude*, and *Temperance*: The Reason of which Division is founded in this, That for a Man to live *virtuously* and honestly, 'tis necessary he know what is fit to be done; which is the Business of *Prudence*.

That he have a constant and firm Will to do what he judges best; which will perfect the Man, either as it restrains too violent Perturbations, the Office of *Temperance*.

Or, as it spurs and urges on those that are to flow and languid, which is the Business of *Fortitude*.

Or, lastly, comparatively, and with regard to human Society; which is the Object of *Justice*.

To these four all the other *Virtues* are refer'd, either as Parts, or as Concomitants.

**VIRTUES**, in the Hierarchy, the third Rank, or Choir of Angels; being that in order between *Dominations* and *Powers*. See **HIERARCHY**.

To these is attributed the Power of working Miracles, and of strengthening and reinforcing the inferior Angels in the Exercise of their Functions. See **ANGEL**.

**VIRTUOSO**, an *Italian* Term, lately introduced into *English*; signifying a Man of Curiosity and Learning; or one who loves and promotes the Arts and Sciences.

In *Italy*, *Virtuosi* are properly such as apply themselves to the polite Arts of Painting, Sculpture, Turning, Mathematicks, &c.—A Person who makes Profession thereof, is call'd *Virtuoso*, *questa è un Virtuoso*.

Among us, the Term seems affected to those who apply themselves to some curious and quaint, rather than immediately useful Art or Study: As Antiquaries, Collectors of Rarities of any kind, Microscopical Observers, &c.

**VIRULENT**, a Term apply'd to any thing that yields a *Virus*; that is, a corrosive or contagious Pus. See **PUS**.

The *Gonorrhœa Virulenta*, is what we popularly call a *Clap*. See **GONORRHEA**.

**VIS**, a *Latin* Word, signifying *Force*, or *Power*; adopted by physical Writers, to express divers Kinds of Natural Powers: as the

*Vis Inertiæ*, or *Power of Inactivity*, which is defin'd by Sir *I. Newton* to be a Power implanted in all Matter, whereby it resists any Change endeavour'd to be made in its State, *i. e.* whereby it becomes difficult to alter its State, either of Rest, or Motion. See **INERTIA**.

This Power, then, coincides with the *Vis resistendi*, Power of resisting, whereby every Body endeavours, as much as it can, to persevere in its own State whether of Rest, or uniform rectilinear Motion: Which Power is still proportional to the Body, and only differs from the *Vis Inertiæ* of the Mass in the manner of conceiving it.

Bodies only exert this Power in Changes brought on their State by some *Vis Impressa*, Force impress'd on 'em. And the Exercise of this Power, is, in different respects, both *Resistance*, and *Impetus*: Resistance, as the Body opposes a Force impress'd on it to change its State; and *Impetus*, as the same Body endeavours to change the State of the resisting Obstacle.—*Phil. Nat. Princ. Math. Lib. I.* See **REACTION**.

The *Vis Inertiæ*, the same great Author elsewhere observes, is a passive Principle, by which Bodies persist in their Motion or Rest; receive Motion, in proportion to the Force impressing it, and resist as much as they are resisted. See **MOTION**.

For the Effect of the *Vis Inertiæ* in resisting and retarding the Motion of Bodies, &c. see **RESISTANCE**, and **RETARDATION**.

*Vis Impressa*, is defined by Sir *I. Newton* to be the Action exercis'd on any Body, to change its State, either of resting, or moving uniformly in a right Line.

This Force consists altogether in the Action; and has no place in the Body after the Action is ceased.—For the Body perseveres in every new State by the *Vis Inertiæ* alone.

This *Vis Impressa* may arise from divers Causes, as from the Percussion, Pressure, and Centripetal Force. See **PERCUSSION**, &c.

*Vis Centripeta.*

*Vis Centrifuga.*

*Vis Motrix.*

*Vis Stimulans.*

CENTRIPETAL Force.

CENTRIFUGAL Force.

MOTION.

STIMULANT.

**VISCERA**, in Anatomy, a Term of equal Import with *Entrails*, or *Bowels*; including the Heart, Liver, Lungs, Spleen, Intestines, and other inward Parts of the Body. See **BODY**.

The Word is also frequently used singularly, *Viscus*, to express some particular part of the Entrails; by reason the Word *Entrails* has no Singular.

The Term *Viscus* is pure *Latin*, being form'd of *Vesci*, to feed; by reason, the Foods, call'd in *Latin* *Vesca*, undergo divers Preparations in the *Viscera*.

**VISCIDITY**, or **VISCOSITY**, the Quality of something that is *viscid*, or *viscous*, *i. e.* glutinous, or sticky; like Birdlime, which the *Latins* call by the Name *Viscus*. See **BIRDLIME**.

*Viscid Bodies*, are those which consist of Parts so implicated within each other, that they resist a long time a complete Separation, and rather give way to the Violence done them by stretching or extending each way. See **PARTICLE**, and **COHESION**.

The too great *Viscidit*y of Foods has very ill Effects: Thus, Meals, or *Farinæ* not fermented, Gellies, &c. of Animals, tough Cheese, or Curd too much press'd, produce a Weight or Oppression in the Ventricle; Winds, Yawnings, Crudities, Obstructions of the minuter Vessels in the Intestines, &c. Hence, an Inactivity of the Intestines themselves, a Swelling of the Abdomen; and, hence, a *Viscidit*y of the Blood, from the re-union of the *viscid* Particles; Obstructions of the Glands; Paleness, Coldness, Tremors, &c.

**VISCOUNT**. See **VICOUNT**.

**VISCUS**, **VISCOUS**, **VISCOSITY**, in Anatomy. See **VISCERA**, and **VISCIDITY**.

**VISCUS**, in Natural History, &c. See **MISLETOE**.

**VISIBLE**, something that is an Object of Sight, or *Vision*; or something whereby the Eye is affected, so as to produce a Sensation. See **VISION**.

The School Philosophers make two Kinds of *Visibles*, or *Visible Objects*: the one *proper*, or *adequate*; which are such as are no other way perceivable, but by Sight alone: The other *common*; which are subject to divers Senses, as the Sight, Hearing, Feeling, &c.

Again, the first, or *proper Object of Vision*, is of two Kinds, viz. *Light*, and *Colour*; for these two are only sensible by Sight.—The first and primary, viz. *Light*, they make the *formal*, and *Colour* the *material Object*. See **OBJECT**.

The *Cartesians* think they philosophize better, when they say, That *Light* alone is the proper Object of Vision; whether it flow from a luminous Body thro' a transparent Medium, and retain its first Name, *Light*: or whether it be reflected from opaque Bodies, under a certain new Modification, or Habit, and exhibit their Images: or, lastly, whether in being reflected, it is likewise refracted after this or that manner; and affects the Eye with the Appearance of *Colour*.

But, agreeably to Sir *I. Newton's* Sentiments, *Colour* alone is the proper Object of Sight: *Colour* being that Property of *Light*, whereby the *Light* it self is *visible*; and whereby the Images of opaque Objects are painted on the *Retina*. See **LIGHT**, and **COLOUR**.

*Aristotle, de Anima, Lib. II.* enumerates five Kinds of common *Visibles*, which are usually received for such in the Schools, viz. *Motion*, *Rest*, *Number*, *Figure*, and *Magnitude*: Others maintain nine, as in the Verses,

*Sunt objecta novem Visus communia: Quantum,  
Inde Figura, Locus, sequitur distantia, situs,  
Continuumque & Discretum, motusque, quiesque.*

Authors reason very variously as to these common Objects of Vision: There are two principal Opinions among the Schoolmen.—The Adherents to the first, hold, That the common *Visibles* produce proper Representations of themselves, by some peculiar Species or Image whereby they are formally perceiv'd independently of the proper *Visibles*.

But the second Opinion prevails most, which maintains, That the common *Visibles* have not any such formal peculiar Species to become *visible* by; but that the proper Objects are sufficient to shew themselves in this or that Place or Situation; and in this or that Distance, Figure, Magnitude, &c. by the Circumstances of their conveyance to the Sensory.

In effect, since these common *Visibles* cannot be represented alone, (for who ever saw Place, Distance, Figure, Situation, &c. of it self) but are always convey'd along with the Images of *Light* and *Colour* to the Organ; what necessity is there to conceive any such proper Images, whereby the common *Visibles* should be formally perceiv'd by the Soul? 'Tis much more probable, that from the peculiar manner wherein the Sensitive Faculty perceives a proper Object, it is appriz'd of its being in this or that Situation, or Place; in this or that Figure, Magnitude, &c. How this is effected, may be conceiv'd from what follows.

1. *The Situation and Place of visible Objects, are perceiv'd without any intentional Species thereof, merely by the Impulse being made from a certain Place and Situation, either above or below, on the right or left, before or behind; whereby the Rays of the proper Visibles are thrown upon the Retina, and their Impression convey'd to the Sensory.*



For since an Object is seen by those Rays which carry its Image to the *Retina*, and in that Place to which the *visive* Power is directed by the Rays it receives; as it perceives the Impulse of the Rays to come from any Place, &c. it is abundantly admonish'd of the Object's being in that Place and Situation. See *PLACE*.

From this Principle, several remarkable Phenomena of Vision are accountable for; as,

1<sup>o</sup>, That if the Distance between two *visible* Objects, be seen under an Angle that is insensible; the distant Bodies will appear as if contiguous: Whence, a continuous Body being the Result of several contiguous ones; the Distances of several *Visibles* appearing under an insensible Angle, they will appear one continuous Body: which gives a pretty Illustration of the Notion of a *Continuum*. See *CONTINUITY*.

2<sup>o</sup>, If the Eye be placed above a horizontal Plane, the remoter Parts will appear as if higher and higher, till the last be seen in a level with the Eye. Whence it is, that the Sea, to Persons standing a-shore, seems to rise higher and higher the further they look.

3<sup>o</sup>, If any number of Objects be placed below the Eye; the most remote will appear the highest: If they be above the Eye, the most remote will appear the lowest.

4<sup>o</sup>, The upper Parts of high Objects, appear to stoop, or incline forwards; as the Fronts of Churches, Towers, &c. And Statues a-top of Buildings, to appear upright, must recline, or bend backwards. See further under the Article *HOROPTER*, &c.

II. *The Mind perceives the Distance of Visible Objects, from the different Configuration of the Eye, and the manner wherein the Rays strike the Eye and the Image is impress'd thereon.*

For the Eye disposes it self differently, according to the different Distances it is to see, *viz.* for remote Objects, the Pupil is dilated, and the Crystalline brought nearer the *Retina*, and the whole Eye made more globous: on the contrary, for near Objects, the Pupil is contracted, the Crystalline thrust forwards, and the Eye lengthen'd. See *PUPIL*, *CRYSTALLINE*, &c.

The Distance, again, is judg'd of by the Angle the Object makes, from the distinct or confus'd Representation of the Object; and the Briskness or Feebleness, the Rarity or Spikitude of the Rays.

To this it is owing, 1<sup>o</sup>, that Objects which appear obscure or confus'd, are judg'd to be the more remote: a Principle which the Painters use, to make some of their Figures appear farther distant than others on the same Plane. See *PERSPECTIVE*, &c.

To this it is likewise owing, that Rooms whose Walls are whiten'd, appear the smaller: That Fields cover'd with Snow, or white Flowers, show less than when clothed with Grass: That Mountains cover'd with Snow, in the Night-time, appear the nearer: That opaque Bodies, appear the more remote in the Twilight, &c. See *DISTANCE*.

III. *The Magnitude or Quantity of Visible Objects, is known chiefly by the Angle comprehended between two Rays drawn from the two Extremes of the Object, to the Centre of the Eye.* See *OPTIC Angle*.

An Object appears so big as is the Angle it subtends; or Bodies seen under a greater Angle appear greater; and those under a less, less, &c.—Hence, the same thing appears now bigger, and now less, as it is less or more distant from the Eye.

This we call *Apparent Magnitude*. See *MAGNITUDE*.

Now, to judge of the real Magnitude of an Object, we consider the distance: For since a near and a remote Object may appear under equal Angles, the Distance must necessarily be estimated; that if it be great, and the Optic Angle small, the remote Object may be judg'd great, and *vice versa*.

The Magnitude of *Visible* Objects, is brought under certain Laws, demonstrated by the Mathematicians: as,

1<sup>o</sup>, That the apparent Magnitudes of a remote Object, are as the Distances, reciprocally.

2<sup>o</sup>, That the Co-tangents of half the apparent Magnitudes of the same Objects, are as the Distances: Hence, the apparent Magnitude and Distance being given, we have a Method of determining the true Magnitude: The Canon is this, As the whole Sine is to the Tangent of half the apparent Magnitude; so is the given Distance to half the real Magnitude.—The same Canon, inverted, will from the Distance and true Magnitude given, determine the apparent one.

3<sup>o</sup>, Objects seen under the same Angle, have their Magnitudes proportional to their Distances.

4<sup>o</sup>, The Subtense AB, (Tab. *Opticks*, Fig. 51.) of any Arch of a Circle, appears of equal Magnitude in all the Points D C E G; tho' one Point be vastly nearer than another: and the Diameter D G, appears of the same Magnitude in all the Points of the Periphery of the Circle.—Hence we take a pretty Hint for the most commodious Form of Theatres. See *THEATRE*.

5<sup>o</sup>, If the Eye be fix'd in A, (Fig. 52.) and the right Line BC be moved in such manner, as that the Extremes thereof always fall on the Periphery; it will always appear of the same Magnitude.—Hence, the Eye being placed in any Angle of a regular Polygon, the Sides will appear equal.

6<sup>o</sup>, If the Magnitude of an Object directly opposite to the Eye, be equal to its distance from the Eye; the whole Object will be taken in by the Eye, but nothing more: Whence, the nearer you approach an Object, the less part you see of it. See *FLAME*.

IV. *The Figure of Visible Objects is estimated chiefly from our Opinion of the Situation of the several Parts thereof.*

This Opinion of the Situation, &c. enables the Mind to apprehend an external Object under this or that Figure, more justly than any Similitude of the Image in the *Retina* with the Object can; the Images being frequently elliptical, oblong, &c. when the Objects they exhibit to the Mind are Circles, Squares, &c.

The Laws of Vision, with regard to the Figures of the *Visible* Objects, are,

1<sup>o</sup>, That if the Centre of the Pupil be exactly against, or in the Direction of a right Line; the Line will appear as one Point.

2<sup>o</sup>, If the Eye be placed in the Direction of a Surface, so that only one Line of the Perimeter can radiate upon it; it will appear as a Line.

3<sup>o</sup>, If a Body be oppos'd directly towards the Eye, so as only one Plane of the Surface can radiate on it; it will appear as a Surface.

4<sup>o</sup>, A remote Arch, view'd by an Eye in the same Plane, will appear as a right Line.

5<sup>o</sup>, A Sphere, view'd at a distance, appears a Circle.

6<sup>o</sup>, Angular Figures at a distance appear round.

7<sup>o</sup>, If the Eye look obliquely on the Centre of a regular Figure, or a Circle, the true Figure will not be seen; but the Circle will appear Oval, &c. See *FIGURE*.

V. *The Number of Visible Objects is perceiv'd, not only by one or more Images form'd in the Fund of the Eye; but also by such a Position of those Parts of the Brain, whence the Optic Nerves spring, as the Mind has been used to, in attending to a certain Place, and that either single, or manifold.*

Accordingly, when either of the Eyes, with the contiguous Part of the Brain, are forced out of their just Parallelism with the other, *v. g.* by pressing it with the Finger, &c. all Things appear double: But when they are in their requisite Parallelism, tho' there be two Images in the Fund of the two Eyes; yet the Object will appear single.—Again, one thing may appear double, or even manifold, not only with both Eyes, but even with only one of them open: By reason, the common Concourse of the Cones of Rays reflected from the Object to the Eye, either falls short of the *Retina*, or goes much beyond it. See *NUMBER*.

VI. *Motion and Rest are seen, when the Images of the Objects represented in the Eye, and propagated to the Brain, are either moved, or at rest: And the Mind perceives these Images either moving or at rest, by comparing the moved Image to another, with respect to which it changes place; or, by the Situation of the Eye to the Object being continually chang'd*

So that Motion is only perceiv'd, in perceiving the Images to be in different Places and Situations: Nor are these Situations perceiv'd, unless effected in time. So that to perceive Motion, a sensible Time is requir'd.—But Rest is perceiv'd by the *visive* Faculty, from the Perception of the Image in the same Place of the *Retina*, and the same Situation for some sensible Time.

Hence, the Reason why Bodies moving exceedingly fast, appear at rest: Thus, a live Coal, swung briskly round, appears a continued Circle of Fire; the Motion not being commensurate with *visible* Time, but much swifter than the same: So that in the Time the Soul requires to judge of any Change of Situation of the Image on the *Retina*, or that it is moved from this Place to that, the Thing it self performs its whole Circuit, and is in its former Place again.

*The Laws of Vision, with regard to the Motion of the Visibles, are,*

1<sup>o</sup>, That if two Objects unequally distant from the Eye, move from it with equal Velocity; the more remote one will appear the slower: Or, if their Celerities be proportionable to their Distances, they will appear to move equally swift.

2<sup>o</sup>, If two Objects, unequally distant from the Eye, move with unequal Velocities in the same Direction; their apparent Velocities are in a Ratio compounded of the direct Ratios of their true Velocities, and the reciprocal one of their Distances from the Eye.



3°, A *visible* Object moving with any Velocity, appears to be at rest, if the Space described in the Interval of one Second, be imperceptible at the distance of the Eye.—Hence it is, that a near Object moving very slowly, as the Index of a Clock; or a remote one very swiftly, as a Star; seem at rest.

4°, An Object moving with any degree of Velocity, will appear to rest, if the Space it runs over in a Second of Time be to its distance from the Eye, as 1 to 1400: Nay, in fact, if it be as 1 to 1300.

5°, The Eye proceeding strait, from one Place to another; a lateral Object, either on the right or left, will seem to move the contrary way.

6°, If the Eye and the Object move both the same way, only the Eye much swifter than the Object, that last will appear to go backwards.

7°, If two or more Objects move with the same Velocity, and a third remain at rest; the Moveables will appear fix'd, and the quiescent in motion the contrary way.—Thus, Clouds moving very swiftly, their Parts seem to preserve their Situation, and the Moon moves the contrary way.

If the Eye be moved with a great Velocity, lateral Objects at rest, appear to move the contrary way.—Thus, to a Person sitting in a Coach, and riding briskly thro' a Wood, the Trees seem to retire the contrary way; and to People in a Ship, &c. the Shores seem to recede.

*VISIBLE Species.* See SPECIES.

**VISION**, the Act of *Seeing*; or of perceiving external Objects by the Organ of Sight. See SEEING, and SIGHT.

*Vision* is well defin'd to be a Sensation, whereby, from a certain Motion of the Optic Nerve, made in the bottom of the Eye, by the Rays of Light emitted, or reflected from Objects, and hence convey'd to the common Sensory in the Brain; the Mind perceives the luminous Object, its Quantity, Quality, Figure, &c. See VISIBLE.

The Phenomena of *Vision*, the Causes thereof, and the Manner wherein it is effected, make one of the greatest and most important Articles in the whole System of Natural Knowledge.—Indeed, a great Part of the Physical, Mathematical, and Anatomical Discoveries and Improvements of the Moderns terminate here; and only tend to set the Business of *Vision* in a clearer Light.

Hitherto, refer what Sir *I. Newton* and others have discover'd of the Nature of Light, and Colours; the Laws of Inflexion, Reflexion, and Refraction of the Rays; the Structure of the Eye, particularly the *Retina*, and Optic Nerves, &c.

It is not necessary we should here give a minute Detail of the Process of *Vision* from its first Principles: The greatest Part is already deliver'd under the respective Articles.—The Eye, the Organ of *Vision*, we have describ'd under the Article EYE; and its several Parts, Tunics, Humours, &c. under their proper Heads, CORNEA, CRYSTALLINE, &c.

The immediate and principal Organ of *Vision*, viz. the *Retina*, according to some, and the *Choroides*, according to others, are distinctly consider'd: as also, the Structure of the *Optic Nerve*, which conveys the Impression to the Brain; and the Texture and Disposition of the *Brain* it self, which receives them, and represents 'em to the Soul. See RETINA, CHOROIDES, OPTIC NERVE, BRAIN, SENSORY, &c.

Again, the Nature of *Light*, which is the Medium, or Vehicle whereby Objects are carried to the Eye, is laid down at large under the Article LIGHT, and COLOURS; and the chief Properties thereof concern'd in *Vision*, under REFLEXION, REFRACTION, &c. And many of its Circumstances under RAY, MEDIUM, &c.—What remains for this Article, therefore, is only to give a general Idea of the whole Process; in which all the several Parts are concern'd.

#### *Opinions or Systems of VISION.*

The *Platonists* and *Stoicks* held *Vision* to be effected by the Emission of Rays out of the Eyes; conceiving, that there was a sort of Light thus darted out, which with the Light of the external Air, taking, as it were, hold of the Objects, render'd 'em visible; and thus returning back again to the Eye alter'd and new modify'd by the Contact of the Object, made an Impression on the Pupil, which gave the Sensation of the Object.

The Reasons whereby they maintain their Opinion, are fetch'd, 1°, from the Brightness and Lustre of the Eye: 2°, From our seeing a remote Cloud, without seeing one which we are compass'd withal; (the Rays being supposed too brisk and penetrating to be stop'd by the near Cloud, but growing languid at a greater distance, are return'd to the Eye:) 3°, From our not seeing an Object laid on the Pupil: 4°, From the Eye's being weary with seeing, i. e. by emitting great Quantities of Rays: And lastly, from Animals which see in the Night; as Cats, Lions, Moles, Owls, and some Men.

The *Epicureans* held *Vision* to be perform'd by the Emanation of corporeal Species, or Images from Objects; or, a sort of Atomical Effluvia, continually flying off from the intimate Parts of Objects to the Eye.

Their chief Reasons are, 1°, That the Object must necessarily be united to the visive Faculty; and since it is not united by it self, it must be so by some Species that represents it, and that is continually flowing from Bodies: 2°, That it frequently happens, that old Men see remote Objects better than near ones; the distance making the Species thinner, and more commensurate to the Debility of their Organ.

The *Peripateticks* hold, with *Epicurus*, that *Vision* is perform'd by the Reception of Species; but differ from him in the Circumstances: For they will have the Species, (which they call *Intentionales*) to be incorporeal.

'Tis true, *Aristotle's* Doctrine of *Vision*, deliver'd in his Chapter *de Aspectu*, amounts to no more than this; That Objects must move some intermediate Body, that by this they may move the Organ of Sight: To which he adds, in another Place, That when we perceive Bodies, 'tis their Species, not their Matter, that we receive: as a Seal makes an Impression on Wax, without the Wax's retaining any thing of the Seal.

But this vague and obscure Account, the *Peripateticks* have thought fit to improve.—Accordingly, what their Master call'd *Species*, the Disciples understanding of real proper Species, assert, That every visible Object expresses a perfect Image of it self, in the Air contiguous to it; and this Image another, somewhat less, in the next Air; and the third another, &c. till the last Image arrives at the Crystalline, which they hold for the chief Organ of Sight, or that which immediately moves the Soul.—These Images they call'd *Intentional Species*. See SPECIES.

The modern Philosophers, as the *Cartesians* and *Newtonians*, give a better account of *Vision*.—They all agree, that it is perform'd by Rays of Light reflected from the several Points of Objects, received in at the Pupil, refracted and collected in their passage thro' the Coats and Humours, to the *Retina*; and thus striking, or making an Impression on so many Points thereof: which Impression is convey'd by the correspondent Capillaments of the Optic Nerve to the Brain, &c.

As for the *Peripatetick* Series or Chain of Images, 'tis a mere Chimera, and *Aristotle's* meaning is better understood without than with 'em.—In effect, setting these aside, the *Aristotelian*, *Cartesian*, and *Newtonian* Doctrines of *Vision* are very consistent: For Sir *I. Newton* imagines, that *Vision* is perform'd chiefly by the Vibrations of a fine Medium which penetrates all Bodies, excited in the bottom of the Eye by the Rays of Light; and propagated thro' the Capillaments of the Optic Nerves, to the *Sensorium*. And *Des Cartes* maintains, that the Sun pressing the *Materia Subtilis*, wherewith the World is fill'd, every way; the Vibrations or Pulses of that Matter reflected from Objects, are communicated to the Eye, and thence to the Sensory: So that the Action or Vibration of a Medium is equally suppos'd in all. See MEDIUM.

#### *Modern Theory of VISION.*

In order to *Vision*, we are certain, it is required that the Rays of Light be sent from the visible Objects to the Eye.—What befalls them in the Eye, will be conceiv'd from what follows.

Suppose, e. g. Z the Eye, and ABC the Object, (Tab. *Opticks*, Fig. 53.) Now, tho every Point of an Object be a radiant Point, that is, tho there be Rays reflected from every Point of the Object to every Point of the circumambient Space; each carrying with it its respective Colour, (which we falsely imagine to be those of the Object;) yet, as only those Rays which pass thro' the Pupil of the Eye affect the Sense, we shall here consider none else.

And, again, tho there be a great number of Rays passing from one radiant Point, as B, thro' the Pupil, yet we shall only consider the Action of a few of 'em; as BD, BE, BF.

Now then, the Ray BD, falling perpendicularly on the Surface EDF, will pass out of the Air into the aqueous Humour, without any Refraction, and proceed right to H; where falling perpendicularly on the Surface of the crystalline Humour, it will go on without any Refraction to M; where, again, falling perpendicularly on the Surface of the vitreous Humour, it will proceed strait to the Point O, in the Fund or bottom of the Eye.

Again, the Ray BE passing obliquely out of Air upon the Surface of the watery Humour EDF, will be refracted, and approach towards the perpendicular EP: Thus, proceeding to the Point G, in the Surface of the Crystalline, it will be there refracted still nearer to the Perpendicular.—So also EG, falling obliquely out of Air into a harder Body, will be refracted towards the Perpendicular GR; and falling on the Point L of the Surface of the vitreous Humour, it will still be brought nearer to M.

Lastly, GL, falling obliquely out of a denser, upon the Surface of a rarer Body LMN, will be refracted, and recede from the Perpendicular LT; in receding from which, it is evident it approaches towards the Ray BDO, and it may be so refracted, as to meet the other in O.—In like manner, the Ray BF being refracted in B, will turn to I, and



and thence to N, and thence to the others in O.—But the Rays between BE and BF, being somewhat less refracted, will not meet precisely in the same Point O.

Thus will the radiant Point B affect the Fund of the Eye, in the same manner as if the Pupil had had no breadth, or as if the Radiant it self had only emitted one single Ray, such as were equal in Power to all those between BE and BF.

In like manner, the Rays proceeding from the Point A, will be so refracted in passing thro' the Humours of the Eye, as to meet near the Point X : And the Rays from any intermediate Point between A and B, will nearly meet in some other Point in the Fund of the Eye, between X and O.

Upon the whole, it may be asserted universally, that every Point of an Object affects only one Point in the Fund of the Eye ; and on the contrary, that every Point in the Fund of the Eye, only receives Rays from one Point of the Object.—Tho this is not to be understood in the utmost rigour. See RADIANT.

Now, if the Object recede from the Eye, in such manner as that the radiant Point B does not decline from the Line BD ; the Rays which would proceed from B not enough divaricated, would be so refracted in passing the three Surfaces, as that they would meet ere they reach'd the Point O : On the contrary, if the Object should be brought nearer the Eye, the Rays passing from the Point B to the Pupil, too much divaricated, would be refracted so, as not to meet till beyond the Point O. Nay, the Object may be so near, that the Rays proceeding from any Point may be so divaricated, as that they shall never meet at all.—In all which Cases, there would be no Point of the Object but would move a pretty large Portion of the Fund of the Eye ; and thus the Action of each Point would be confounded with that of the contiguous one.

And this would commonly be the Case, but that Nature has provided against it ; either by contriving the Eye so as its Bulb may be lengthen'd, or shorten'd, as Objects may be more or less distant ; or, as others will have it, so as that the Crystalline may be made more convex or more flat ; or, according to others, so as that the distance between the Crystalline and the *Retina* may be lengthen'd or shorten'd.

The first Expedient is the most probable ; on the footing of which, when we direct our Eyes to an Object so remote as that it can't be distinctly view'd by the Eye in its accustomed Figure, the Eye is drawn back into a flatter Figure, by the Contraction of four Muscles ; by which means, the *Retina* becoming nearer the crystalline Humour, receives the Rays sooner : and when we view an Object too near, the Eye being compress'd by the two oblique Muscles, is render'd more globular ; by which means, the *Retina* being set further off from the Crystalline, does not receive the Rays of any Point before they meet.

It may be here added, that this access and recess of the Crystalline, is so necessary to *Vision*, that whereas in some Birds the Coats of the Eye are of such a bony consistence, that Muscles would not have been able to contract and distend 'em ; Nature has taken other means, by binding the Crystalline down to the *Retina*, with a kind of blackish Threads, not found in the Eyes of other Animals.—Nor must it be omitted, that of the three Refractions above mention'd, the first is wanting in Fishes ; and that to remedy this, their Crystalline is not lenticular, as in other Animals, but globular. Lastly, since the Eyes of old People are generally worn flatter than those of young ones ; so that the Rays from any Point fall on the *Retina* ere they become collected into one ; they must exhibit the Object somewhat confusedly : nor can such Eyes see any but remote Objects distinctly. See PRESBYTÆ.

In others, whose Eyes are too globular, the Case is just the reverse. See MYOPES.

From what has been shewn, that every Point of an Object moves only one Point of the bottom of the Eye ; and, on the contrary, that every Point in the Fund of the Eye, only receives Rays from one Point of the Object ; 'tis easy to conceive, that the whole Object moves a certain Part of the *Retina* ; that in this part there is a distinct and vivid Collection of all the Rays receiv'd in at the Pupil ; and that as each Ray carries its proper Colour along with it, there are as many Points painted in the Fund of the Eye, as there were Points visible in the Object.—Thus is there a Species or Picture on the *Retina*, exactly like the Object ; all the difference between 'em, is, that a Body is here represented by a Surface ; a Surface frequently by a Line, and a Line by a Point : that the Image is inverted, the right hand answering to the left of the Object, &c. and that 'tis exceedingly small, and still the more so, as the Object is more remote. See VISUAL.

What we have shewn under other Articles, of the Nature of Light, and Colours, readily accounts for this painting of the Object on the *Retina*.—The matter of Fact is proved by an easy Experiment, first try'd by *Des Cartes* ; thus : The Windows of a Chamber being shut, and Light only

admitted at one little Aperture ; to that Aperture apply the Eye of some Animal newly kill'd, having first dextrously pull'd off the Membranes that cover the bottom of the vitreous Humour, viz. the hind Part of the *Sclerotica*, *Choroides*, and even part of the *Retina* ; then will the Images of all the Objects without Doors be seen distinctly painted on any white Body, as on an Egg-shell, that the Eye is laid upon.—The same thing is better shewn by an Artificial Eye, or a *Camera Obscura*. See EYE, and CAMERA Obscura.

The Images of Objects, then, are represented on the *Retina* ; which is only an Expansion of the fine Capillaments of the Optic Nerve, and from which the Optic Nerve is continu'd into the Brain.—Now, any Motion or Vibration impress'd on one extreme of the Nerve, will be propagated to the other : Hence, the Impulse of the several Rays sent from the several Points of the Object, will be propagated as they are on the *Retina*, (i. e. in their proper Colours, &c. or in particular Vibrations or manners of Pressure, corresponding thereto) to the Place where those Capillaments are interwoven into the Substance of the Brain.—And thus is *Vision* brought to the common Case of Sensation.

For such, we know, is the Law of the Union between the Soul and Body ; that certain Perceptions of the first, do necessarily follow certain Motions of the last : But the different Parts of the Object do separately move different Parts of the Fund of the Eye ; and those Motions are propagated to the Sensory : it follows, therefore, that there must arise so many distinct Sensations at the same time. See SENSATION.

Hence, 1<sup>o</sup>, we easily conceive, that the Perception, or Image in the Mind, must be the clearer, and more vivid, the more Rays the Eye receives from the Object : Consequently, the largeness of the Pupil will have some share in the clearness of *Vision*. See PUPIL.

2<sup>o</sup>, Considering only one radiant Point of an Object, we may say, that that Point would move the Sense more weakly, or be seen more obscurely, as it is more remote ; by reason the Rays coming from any Point, like all Qualities propagated in *Orbem*, are always diverging ; and therefore the more remote, the fewer of 'em will be receiv'd in at the Pupil.—But, as 'tis not a single Point of an Object, but all of them together, that affect the Organ of Sense ; and as the Image of the Object still possesses a less part of the *Retina* as 'tis more remote ; therefore, tho the Rays that flow from any Point of an Object two Miles off, into the Pupil, be rarer or fewer by half than those flowing from the same Point at a Mile's distance ; yet the same Capillament of the Optic Nerve, which in the latter Case would only be mov'd by that one Point, in the former, will be affected with the joint Action of the neighbouring Points ; and therefore the Image be as clear as in the other Case.—Add, that the Pupil dilating it self more, as the Object is more remote, takes in more Rays than it would otherwise do.

3<sup>o</sup>, The Distinctness of *Vision* is somewhat concern'd in the Size of the Image exhibited in the Fund of the Eye.—For there should be, at least, as many Extremes of Capillaments, or Fibres of the Optic Nerve in the Space that Image possesses, as there are Particles in the Object that sends Rays into the Pupil : otherwise, every Particle will not move its separate Capillament : And if the Rays from two Points fall on the same Capillament, 'twill be the same as if only one Point had fell there ; since the same Capillament cannot be differently moved at the same time.—And hence it is, that the Images of very remote Objects being very small, they appear confus'd, several Points of the Image affecting each Capillament : And hence also, if the Object be of different Colours, several Particles affecting the same Capillament at the same time, only the brightest and most lucid will be perceiv'd : Thus, a Field furnish'd with a good number of white Flowers among a much greater quantity of green Grass, &c. at a distance appears all white.

Our seeing of Objects single, tho with two Eyes, in each of which is a several Image, or Picture ; and our seeing of 'em erect, whereas the Picture is inverted ; are two great Phenomena in *Vision* : which see consider'd under the Article SIGHT.

For the Manner of seeing and judging of the Distance and Magnitude of Objects. See DISTANCE, and MAGNITUDE.

VISION, in Opticks.—The Laws of *Vision*, brought under Mathematical Demonstrations, make the Subject of *Opticks*, taken in the greatest Latitude of that Word : For among the Writers of Mathematicks, Opticks is generally taken, in a more restrain'd Signification, for the Doctrine of *Direct Vision* ; *Catoptricks*, for the Doctrine of *Reflected Vision* ; and *Dioptricks*, for that of *Refracted Vision*. See OPTICKS, CATOPTRICKS, and DIOPTRICKS.

*Direct*, or *Simple Vision*, is that perform'd by means of direct Rays ; that is, of Rays passing directly, or in right Lines, from the radiant Point to the Eye. See DIRECT.

Such is that explain'd in the preceding Article VISION ; see also RAY.

*Reflected Vision*, is that perform'd by Rays reflected from *Specula*, or Mirrors. See REFLEXION.



*The Laws heretof, see under REFLEXION, and MIRROR.*

*Refracted VISION*, is that perform'd by means of Rays *refracted*, or turn'd out of their way, by passing thro' Mediums of different density; chiefly thro' Glasses and Lenses.

*The Laws of this, see under the Articles REFRACTION, LENS, &c.*

*VISION*, among Divines, is used for an Appearance which God occasionally sent his Prophets and Saints; either by way of Dream, or in reality. See PROPHECY, REVELATION, &c.

Such were the *Visions* of *Ezekiel*, *Amos*, &c. the *Vision* of *St. Paul*, lifted up to the third Heaven, &c. of *Joseph*, by which he was assur'd of the Purity of the Virgin, &c.

Many among the *Romish* Saints still pretend to *Visions*: the *Revelations* of *S. Bridget* are so many *Visions*.

Hence the Word has come into disrepute, and become a common Name for all Chimeras, or Spectres, which either our own Folly or Fear possesses us with: And hence, a Person that frames to himself wild romantic Notions, is called a *Visionary*.

*Quevedo's Visions*, are Descriptions of what pass'd in the Imagination of that Author.

The *Beatific Vision*, is the Act whereby the Angels and blessed Spirits see God in Paradise. See BEATIFIC.

*VISIR*, or *VISIER*, or *VIZER*, an Officer or Dignitary in the *Ottoman* Empire.

There are two Kinds of *Visirs*, the first called by the *Turks*, *Visir Azem*, that is *Grand Visir*; first created in 1370, by *Amurath I.* in order to ease himself of the chief and weightier Affairs of the Government.

The *Grand* or *Prime Visir*, is the first Minister of State in the whole Empire.—He commands the Army in chief, and presides at the *Divan*, or great Council.—Renegado Christians, have been frequently rais'd to the *Visirate*: Such were *Khairedain*, *Ulug Ali*, &c.

Next to the *Grand Visir* are six other subordinate *Visirs*, call'd *Visirs of the Bench*, who officiate as Counsellors or Assessors in the *Divan*. See *DIVAN*.

*VISITATION*, an Act of Jurisdiction, whereby a Superior, or proper Officer, *visits* some Corporation, College, Church, or other publick or private House, to see that the Regulations thereof be duly observ'd.

Among us, the Bishop of each Diocese is oblig'd to hold a *Visitation* every three Year, and the Archdeacon every Year; to see that the Discipline be well observ'd, the People well instructed, and take care that neither the Church, nor the Pastors thereof receive any detriment. See *BISHOP*, *ARCHDEACON*, &c.

Antiently, the *Regarder's* Office was express'd to be the *Visitation of Manners*. See *REGARDER*.

The Lawyers hold it a Branch of the King's Prerogative, to *visit* the Universities; to inquire into the Statutes, and Observation of them; to expel Delinquents, &c. But some of the Colleges disallow this Privilege; and plead themselves, by Royal Charters, exempt from all Civil and Royal *Visitations*. See *UNIVERSITY*.

Among the *Romanists*, the General of each Religious Order, is oblig'd to *visit* the several Monasteries of the Order. See *GENERAL*, and *ORDER*.

In Abbies that are Chiefs of their Orders, there are particular Officers, call'd *Visitors*; who are dispatch'd into all the Houses and Congregations depending on them, to see that the regular Discipline is observ'd.

In *Spain*, there is a *Visitor* and *Inquisitor General*.—The *Visitation* of the Cloister belongs to the Ordinary.—At *Paris*, the Parliament *visit* the several Prisons and Prisoners four times a Year.

In a Moral and Religious Sense, *Visitation* is also used for the Afflictions that befall Mankind; as coming from the Hand of God, to try or prove them.—In this Sense, the last Plague among us is frequently call'd the *Visitation*.

*VISIVE*, in the School Philosophy, a Term applied to the Power of Seeing. See *SEEING*.

Authors are exceedingly divided about the Place where the *Visive Faculty* resides: Some will have it in the *Retina*; others in the *Choroides*; others in the Optic Nerve; others, as *Sir I. Newton*, in the Place where the Optic Nerves meet, before they come to the Brain; and others in the Brain itself. See *SIGHT*, and *SENSORY*.

*VISNE*, in Law, a neighbouring Place, or Place near at hand. See *VENUE*.

*VISUAL*, something belonging to the Sight, or Seeing. See *SIGHT*, and *SEEING*.

*VISUAL Rays*, are Lines of Light, imagin'd to come from the Object to the Eye. See *RAY*.

All the Observations of Astronomers and Geometers, are perform'd by means of the *Visual Rays*, receiv'd in at the Sights, or *Pinnula* of Alhidades. See *OBSERVATION*, *SIGHT*, *QUADRANT*, *LEVELLING*, &c.

*VISUAL Point*, in Perspective, is a Point in the horizontal Line, wherein the ocular Rays unite. See *POINT*.

Thus, a Person standing in a strait long Gallery, and looking forwards, the Sides, Floor, and Ceiling seem to meet,

and touch one another in a Point, or common Centre.

*VITA*, *Life*, is a very ambiguous Term: For both God and Man, and a Soul, and an Animal, and a Plant, are said to live: yet there is not any thing common to all these, beside a kind of active Existence, which, however, is very different. See *ANIMAL*, *VEGETABLE*, &c.

Life, then, in the general, expresses a kind of active, operative Existence; and is therefore conceiv'd to consist in Motion.—But, particularly,

*VITA Corporis*, the *Life of a Body*, consists in an uninterrupted Motion therein.—A Body, therefore, said to be living, must consist of various Parts or Members, both internal and external, so framed and put together, as to constitute one Whole. And these Members must be moved and warm'd by some fluid Substance, permeating the whole Frame; by which Heat and Motion, the vital Functions are to be perform'd.—Such are Nutrition, Generation, Local Motion, &c. See *BLOOD*, *CIRCULATION*, &c.

*VITA Mentis*, the *Life of a Mind*, is held by the *Cartesians* to consist in a perpetual Cogitation, or uninterrupted Course of Thinking; which seems likewise to have been *Aristotle's* meaning, when he call'd the Soul *εντελεχεια*; which his Interpreters call *Actus*: Thinking being the only proper Act of the Mind. See *ENTELECHEIA*.

But *Mr. Lock* endeavours to refute this Principle. See *THINKING*.

*VITA Hominis*, *Life of a Man*, consists in a continued Communication of Body and Mind; or in Operations to which both the Motions of the Body, and Ideas of the Mind, contribute.

Thus, e. g. the Mind now thinking of something, on occasion of that Thought, there arises a certain Motion in the Body: And now, again, the Body moves first, which Motion is follow'd by some Thought of the Mind.

In such alternate or reciprocal Operation does the Life of Man consist; consider'd as he is a Compound of Body and Mind. See *SENSATION*, *MOTION*, &c.

*VITAL*, in Anatomy, something that ministers principally to the constituting or maintaining of Life in the Bodies of Animals.

Thus, the Heart, Lungs, and Brain, are called *Vital Parts*. See *PART*.

*VITAL Functions*, or *Actions*, are those Actions of the *Vital Parts*, whereby Life is effected; so as that it can't subsist without 'em.—Such are the musculous Action of the Heart; the secretory Action of the *Cerebellum*; the respiratory Action of the Lungs; the Circulation of the Blood and Spirits, thro' the Arteries, Veins, and Nerves. See *FUNCTION*.

*VITAL Spirits*, are the finest and most volatile Parts of the Blood. See *SPIRITS*.

*VITELLIANI*, in Antiquity, a kind of Tablet or Pocket-Book, wherein People antiently used to write down their ingenious, humorous, and wanton Fancies and Impertinencies: The same as what in *English* we may call a *Trifle-Book*. See *Martial*, Lib. XIV. Epig. viii.

Some will have them to take their Name from *Vitellus*, a Yolk of an Egg; by reason, the Leaves were rubb'd therewith: Others derive it from one *Vitellius* their Inventor.

*VITRIFICATION*, or *VITRIFICATION*, the Act of converting a Body into Glass, by Fire. See *GLASS*.

Of all Bodies, Fern-Ashes, Sand, Bricks, and Pebbles, *vitriify* the most easily. Accordingly, it is of the first of these that Glass is principally made.

Gold, held by *M. Homberg* near the *Focus* of the Duke of Orleans's large, burning, concave Mirror, at first smok'd, then changed, all of it that did not go off in Fumes, into Glass, of a deep violet Colour.—The Glass of Gold weighs less than Gold. *Memoirs of the French Academy*, 1702. See *GOLD*.

All Metals, and even almost all Natural Bodies, sufficiently heated, *vitriify*: And this *Vitrification* is the last Effect of the Fire; after which the most intense heat of the largest Burning-Glass, will make no further Alteration. See *BURNING-GLASS*, *MIRROR*, and *FIRE*.

*Vitrification*, some Authors will have to be chiefly effected by the Salts uniting and incorporating with the metalline Particles. See *CALCINATION*.

But, according to *M. Homberg*, all *Vitrification* results from the Earth, which being exposed to a violent Fire, and intimately penetrated by some other Dissolvent, commences Glass.—Thus, supposing the Principle of Gold to be Mercury, a metallick Sulphur, and an Earth; the *Vitrification* of Gold is easily conceived: the Mercury, being volatile, exhales in Smoke, and leaves behind it the Earth, and Sulphur, which are fix'd; the Sulphur dissolves the Earth and *vitriifies* it.

*VITRIOL*, in Natural History, a kind of Fossil, or mineral Salt, chiefly found in Copper-Mines. See *SALT*, and *COPPER*.



*Vitriol* is more properly rank'd among the Class of *Semi-metals*, as having a metallic Matter mixt or combin'd with its Salt: See SEMI-METAL:

*Vitriol* is defined by *Boerhaave*, a saline, metallic, transparent Glebe; dissoluble in Water, and fusible and calcinable by Fire.

It acquires different Names, according to the different Places where it is dug: and the *Vitriols* of those also, differ from each other in Denomination and Colour, some being *White*, others *Blue*, and others *Green*.

*Roman Vitriol*, for Instance, is *White*; that of *Cyprus*, *Blue*; and that of *Pisa* and *Germany*, greenish.

*White Vitriol* partakes but little of any Metal, *Blue* partakes of Copper, and *Green* of Iron. See IRON, &c.

*Monsieur Geoffroy*, the elder, observes, that they all consist of an acid Salt, like that found in Alum and Sulphur; excepting that in Alum, the Acid is mixt with an absorbent Earth, or Calx: in Sulphur it is united with certain fat, bituminous Parts; and in *Vitriols*, with metallic Parts.

According to *Boerhaave*, *Vitriols* consist of a metallic Part with a Sulphur adhering, a menstruous Acid, and Water.

In *Blue Vitriol*, the Metal, wherewith the Acid, &c. is join'd, is Copper. See VENUS.

In *White Vitriol*, commonly call'd *White Copperas*, it is mixt with *Lapis Calaminaris*, or some ferruginous Earth, intermix'd with Lead or Tin. See COPPERAS.

In *Green Vitriol*, the Acid is join'd with Iron. See MARS.

The Antients give the Name *Chalcitis*, or *Chalcite*, to native *Vitriol*; or that which acquires its full Perfection in the Entrails of the Earth, and which is a kind of mineral Stone, of a reddish Colour.—Of this they observ'd three different States, or Transformations: *Chalcitis*, in its first State, they call'd *Misti*; this afterwards turn'd into *Melanteria*, and that into *Sori*. See CHALCITIS.

The Moderns take this *Chalcitis* to be the same with the *Colcothar* brought from *Sweden* and *Germany*, the best whereof is of a brownish-Red Colour, and a *vitriolic* Taste, and dissolves easily in Water; and, when broke, is of the Colour of shining Copper. See COLCOTHAR.

All the other *Vitriols* above-named, are really factitious, being only a kind of Crystals, drawn, by means of Water, from a sort of Marcasite ordinarily found in Mines, and call'd, by Naturalists, *Pyrites*, or *Quis*. See PYRITES.

*Roman Vitriol* is made by exposing these *Pyrites* to the Air, till such time as they calcine, and change into a greenish, acid, *vitriolic* Calx, or Dust; in such State they are thrown into the Water, and are afterwards, by boiling and evaporation, reduced into that kind of Crystals sent us from *Italy*.

All the other *Vitriols* are made after the same manner, that is, much after the same manner as Alum is made in *England*, or Salt-petre in *France*. See ALUM, and SALT-PETRE.

For *Green Vitriol*, they add a great number of pieces of Iron to the Liquor in the boiling; these raise a great Ebullition. As soon as the Iron is dissolved, they evaporate the Dissolution to a certain Degree; and so let it crystallize.—The Crystals being form'd, there remains a thick, reddish, unctuous Styptic, and astringent Liquor, which *Monsieur Geoffroy* calls *Eau-mere de Vitriol*, as containing all the Principles of the Mineral, tho' dis-united.

The Powder of this *Vitriol* is exceeding styptic, and excellent for the cure of Wounds, and the stopping of Blood.—Its Effects this Way, have been rais'd by the knavery of some, and the credulity of others, to a kind of Miracle; it being this that makes the Basis of the famous *Sympathetic Powder*. See SYMPATHETIC.

The medicinal Virtues of *Vitriol* are very great; but all owing to the Iron, or other metallic Parts mixt with it, and therefore follow the kind of Metal.

Thus, those of *Green Vitriol* depend on the stypticity or astringency of Iron, or Mars. See MARS, &c.

The *Eau-mere* drawn from *Green Vitriol*, *Monsieur Geoffroy* observes, does not differ any way, essentially, from a great Number of Preparations which the Chymists have given us of *Vitriol*, *Iron*, and the *Lapis Hematites*: As the fix'd and anodyne Sulphurs of *Vitriol* or *Mars*; Arcana, and Magisteries of *Vitriol*; Tinctures, &c. of *Vitriol*, *Mars*, &c. The common Basis of all which is Iron exceedingly subtilized and attenuated. See IRON.

A Solution of *Vitriol* mix'd with a Tincture of Galls, becomes instantly exceeding Black: and 'tis this is the common Writing-Ink. See INK.

*Monsieur Lemery*, the younger, has a pretty Hypothesis to account for this Blackness: he imagines, that as the *Vitriol* whereof Ink is made, is Iron dissolved by an Acid, and intimately mix'd therewith; and as Gall is an Alkali, or Absorbent, this Alkali meeting the Acids which hold the Iron dissolved, unites with them, and makes them let the Iron loose, which thereupon revivifies, and resumes its natural Blackness. So that in strictness, 'tis Iron we write withal.

This System is confirm'd hence: that of the five sorts of *Vitriol*, that of *Cyprus* or *Hungary* is the only one whose

Base is Copper; that of the rest is Iron: and accordingly they all serve to make Ink withal, excepting that:

*Vitriol* also enters the Composition of *Aquafortis*. See AQUAFORTIS.

What we call *Calcanthum* is only *Vitriol* rubified, and is not the same with *Colcothar*, as some have imagined. See CALCANTHUM.

Some take the Word *Vitriolum* to be used; *quasi vitreum oleum*, because of its shining Colour; but *Menage* rather derives its Name, à *vitreo colore*: the *Latins* call it, *Atramentum*; and the *Greeks*, *Calcanthus*.

Some Naturalists hold *Vitriol* to be the Root, or Matrix of Copper; because in the Copper-Mines they never dig deeper than the Glebe out of which the *Vitriol* is drawn.

*Vitriol* affords several Chymical Preparations, as—*Spirit of Vitriol*, procured by first Calcining, then Distilling it.—*Oil of Vitriol*, which comes out after the *Spirit*, by heightning the Fire wherewith that had been rais'd.

—What remains after both, is the *Colcothar of Vitriol*.

—*Tartar of Vitriol* is had by mixing *Oil of Vitriol* with *Oil of Tartar per deliquium*; a Salt precipitating to the bottom, which being set to exhale and crystallize, is the *Tartar of Vitriol*. See TARTAR.

From the *Colcothar of Vitriol* is prepared the *Ens Veneris*. See ENS VENERIS.

**METALLIC VITRIOLS**: All Metals, it is to be observed, may be converted into *Vitriols*, by dissolving 'em with acid Spirits, and letting 'em stand; tho' 'tis very difficult to obtain *Vitriol* of Gold or Silver, by reason these Metals are not easily dissolved by the Spirit; but *Vitriols* of Iron and Copper are easily had.

**VITRIOL of Mars**, is a Preparation made by dissolving Iron, or Steel, in a proper acid Menstruum, then evaporating or drawing off the Moisture, and bringing the Matter to crystallize, viz. by setting it in a cool place. See MARS.

It is also call'd *Salt of Steel*. See STEEL.

**VITRIOL of Luna**, or the Moon, is the Body of Silver chymically opened, and reduced into the Form of Salt by the sharp Points of *Spirit of Nitre*. See LUNA, and SILVER.

**VITRIOL of Venus**, is a Preparation made by a solution of Copper in the *Spirit of Nitre*, evaporated and crystallized, to gain the Salt; call'd also *Vitriol of Copper*. See COPPER, &c.

These factitious *Vitriols* being only Metals dissolved and crystallized in saline Menstruums, are frequently call'd, by way of distinction, *Metallic Vitriols*, and *Metallic Salts*.

**VITRIOLATED**, among Chemists, turned into *Vitriol*, or having *Vitriol* infused in it.

*Tartar Vitriolated*. See TARTARUM VITRIOLATUM.

**VITRIOLIC**, something that has the Quality of *Vitriol*, or partakes of the Nature of *Vitriol*.

In this Sense we say, a *Vitriolic Spring*, *Vitriolic Stone*, *Vitriolic Spirits*, &c.

If Iron be thrown into a *Vitriolic Water*, and the red Rust arising on the Surface of the Iron be melted down, it will be found real Copper; which is an Instance of the Transmutation of one Body into another. See TRANSMUTATION.

**VITRIOUS Humour**, in Anatomy, is the third Humour of the Eye, call'd *Vitrious*, i. e. glassy, from its resemblance to-melted Glass. See HUMOUR.

It lies under the Crystalline; by the Impression of which, its fore-part is rendred concave. See CRYSTALLINE, and EYE.

For the Office of the *Vitrious Humour*, see VISION.

Some Authors call the Coats or Membranes that contain this Humour, the *Vitrious Tunics*.

**VITTA**, among Anatomists, a Fillet or Head-band; is used for that part of the Amnion which sticks to the Infant's Head when it is just born. See AMNION.

**VITUS's Dance**, in Medicine. See CHOREA SANCTI VITI.

**VIVA Pecunia**, was antiently used for live Cattle. See PECUNIA.

**VIVA Voce**, q. d. by Word of Mouth. See DEPOSITION.

**VIVARY**, in our Law-Books, is sometimes used for a Park, Warren, or Fish-pond, wherein living Creatures are kept, &c. See PARK, WARREN.

**VIVIFICATION**, in Medicine, the Art of *Vivifying*, that is, of contributing to the Action that gives Life, or maintains Life. See LIFE.

The Chymists also use the Word in speaking of the new Force, Vigour, and Lustre which by this Art they give to natural Bodies, particularly to Mercury; which after having been fix'd or amalgamated, they restore to its first State. See REVIVIFICATION.

**VIVIPAROUS**, in Natural History, an Epithet applied to such Animals as bring forth their Young alive, and perfect: in contradistinction to such as lay Eggs; which are call'd, *Oviparous Animals*. See ANIMAL, OVIPAROUS, and EGG.

*Vipers* are distinguished from Snakes, in that the latter lay Eggs in Dunghills, to be hatch'd by the Warmth thereof; but the former are *Viviparous*, that is, lay their Eggs



within their Bellies, and bring forth live Vipers. See VIPER.

In the *Philosophical Transact.* we have an Account of a *Viviparous Fly*, of the *Oestrus* or Gad kind.—Dr. Lister tells us he open'd several Females of this Class, and found, in each, two Bags of live white Worms. The like is hinted by *Aldrovandus*.

Dr. Lister suspects, that all of this Tribe are, in some measure, *Viviparous*. See INSECTS.

VIVO, in Architecture, the Shaft, or Fust of a Column. See SHAFT, and COLUMN.

The Term is also used in a more particular Sense, for the Naked of a Column, or other Part. See NAKED.

VIZARD, or VIZOR. See MASK.

VIZOR, or VIZARD, in Heraldry. See GARDEVISURE.

ULCER, ULCUS, in Medicine, a Solution or Discontinuity of Texture, or a loss of Substance in the fleshy Parts of the Body, proceeding from an internal Cause. See SOLUTION.

Galen defines it an inveterate Erosion of the soft Parts of the Body, by which, instead of Blood, they are brought to yield a kind of Pus, or Sanies; which prevents the Consolidation.

Emmuller defines an *Ulcer*, a Solution of Continuity from some corrosive Sharpness or Acidity, that takes away from the Parts, and turns the proper Nourishment of the Body into a sanious Matter.—A like Solution of Continuity happening in a bony Part, is call'd a *Caries*. See CARIES.

Galen commonly uses the Words *Ulcer* and *Wound*, indifferently; but the *Arabs*, and the Moderns after them, distinguish between the two. See WOUND.

Spontaneous *Ulcers*, are generally supposed to proceed from Acrimony, or a corrosive Disposition of the Humours of the Body, whether brought on by Poisons, the venereal Taint, or other Causes.

*Ulcers* are divided into *simple*, and *complicated*: They are again divided, with regard to their Circumstances, into *Putrid*, or *Sordid*, wherein the Flesh all around is corrupted and fetid; *Vermineous*, where the Matter being thick, does not flow away, but generates Worms, &c. *Virulent*, which instead of Pus, or Sanies, yield a malignant *Virus*, &c.

They are again distinguish'd, with regard to their Form, into *Sinuuous*, *Fistulous*, *Varicous*, *Carious*, &c.

When an *Ulcer* happens in a good Constitution, and proves easy of Cure, 'tis said to be *Simple*.

When attended with other concurring Symptoms, as a Cacoehymic Habit, which greatly retards or obstructs the Cure, it is called a *Compound Ulcer*.

A *Simple Ulcer* is attended with no other Sign than that of Erosion; but *Compound Ulcers*, happening in a Scorbutic, Dropsical, or Scrophulous Constitution, may be attended with Pain, a Fever, Convulsions, a large and emaciating Discharge of Matter, Inflammation and Swelling of the Part, Callosity of the Lips, a Caries of the Bones, &c.

A *Putrid* or *Sordid Ulcer*, is that whose Sides are lined with a tough, viscous Humour, and is also attended with Heat, Pain, Inflammation, and a large Flux of Humours to the Part: With time the *Sordes* increase and change Colour, the *Ulcer* corrupts, its Matter grows fetid, and sometimes the Part gangrenates.—Putrid Fevers often give rise to this kind of *Ulcer*.

A *Phagedenic Ulcer*, is an *Ulcer* of a corrosive Nature, eating away the adjacent Parts all a-round; the Lips thereof remaining tumefied. When this kind of *Ulcer* eats deep, and spreads wide, without being attended with a Tumour, but putrifies and grows foul and fetid, 'tis call'd *Noma*; and both, on account of the Difficulty wherewith they heal, are also termed *Dyssepulora*.

*Varicous Ulcers*, are such as being seated in the Veins, and becoming painful and inflammatory, swell up the Part they possess.—These, when recent, being occasion'd by the Use of Corrosives, or proceeding from a ruptured Varix, are often attended with an Hæmorrhage.—The Veins adjacent to the *Ulcers* are, in this case præter-naturally distended, and may sometimes be felt interwoven together, like network, about the Part.

*Sinuuous Ulcers*, are such as run a-slant or side-ways from their Orifice, and may be known either by searching with the Probe, Wax-Candle, &c. or the Quantity of Matter they discharge in proportion to their apparent magnitude.—These sometimes lie deep, and have several Turnings: they are distinguished from *Fistulas* only by their want of Callosity, except in the very Orifice.

*Fistulous Ulcers*, are such as are sinuous, or winding, and attended with great Callosity, and discharge a thin, serous, and fetid Matter.

Old *Ulcers* are rarely cured without the Use of Internals, which are to be such as absorb and destroy the Acidity; Sudorificks especially, Decoctions of the Woods, Antimonials, Viperines, and Volatiles; but above all things Vomitorics often repeated: In the most obstinate *Ulcers*, mercurial Salivation is often required; Old *Ulcers* are frequently incurable without making an Issue in the opposite Part.

The Cure of simple, shallow *Ulcers*, is commonly affected by applying a Pledget armed with *Liniment. arcei*, or *Bastlic. flav.* to the Part, a Plaister of *Diachyl. simp.* or *de Minio*, being laid over it, and repeating the dressing once a-day, or seldomer.

If only the Cuticula be lost or eat away, nothing more than a little *Unguent. de Siccativ. Rub.* or *Diapomphol.* &c. spread thin upon Linen, need be applied.

If spongy Flesh should grow up, in either case it may be kept down with a little *Roman Vitriol*, &c. as in case of healing up the *Simple Ulcers* made by the breaking of the common Tumors.

Evacuations are indispensibly necessary in the Cure of *Ulcers* of the compound kind, where the Constitution will admit thereof.

If the *Ulcer* be fistulous, sinuous, cancerous, &c. and the Matter fetid, thin, or sanious, it is found proper to join Calomel with the Purgatives, or to give it in small Doses, between the Repetitions thereof, so as not to salivate.

Besides the Use of evacuating Medicines, it will here also be proper to order a Course of Diet-drink, made with the Sudorifick Woods, especially where the *Ulcer* is suspected to be Venereal.—In the mean time proper Dressings are to be used.

When the *Ulcer* obstinately resists this Treatment, a Salivation is generally proposed, and seldom fails to promote the Cure, tho' all other Remedies should have been tried in vain. If the Patient be too weak to undergo the Fatigue of a thorough Salivation, it may be moderated, and kept up the longer, in Proportion to his Strength. See SALIVATION.

External Medicines for *Ulcers*, are Digestives, Cleansers, Sarcoticks, and Epuloticks.—Monsieur Belloste gives us a Medicine of singular Efficacy in the Cure of *Ulcers*; and it is no more than a Decoction of Walnut Leaves in Water, with a little Sugar; in which a Linen Cloth being dipp'd, is to be laid on the *Ulcer*, and this to be repeated every second or third Day. This simple and vulgar Medicine he finds suppurates, deterges, incarnates, resists Putrefaction, &c. more than any other Medicine known.

An *Ulcer* in the Lungs makes what we call a *Phthisis*. See PHTHISIS.

The *Venereal Disease* is a grand Source of *Ulcers*; particularly in the Præpuce and Glans, in Men; the Vagina, &c. in Women; and in the Mouth and Palate in both. See VENEREAL Disease.

*Venereal Ulcers* are of various kinds; those that grow callous and cancerous, are call'd *Shankers*. See SHANKER.

ULCERATION, a little Aperture, or Hole in the Skin, caused by an *Ulcer*.

Caustic Medicines sometimes occasion *Ulcerations* in the Skin. See CAUSTICS.

Arsenic always *Ulcerates* the Parts it sticks to.—A Flux at the Mouth *Ulcerates* the Tongue and Palate. See SALIVATION.

ULIGINOUS, ULIGINOSUS, implies as much as moist, moorish, fenny. See FEN, BOG, MORASS, &c.

ULLAGE of a Cask, is so much as a Vessel wants of being full.

ULNA, in Anatomy, a long, hard Bone in the Arm, with a Cavity in the Middle; call'd also *Focile Majus*, and *Cubitus*. See ARM, and CUBITUS.

The *Ulna* lies on the inside of the Fore-Arm, reaching from the Elbow to the Wrist; is big at its upper-end, and grows smaller to its lower-end.

At its upper it has two Processes, which are received into the fore and hind *Sinuses* of the Extremity of the *Humerus*. The foremost Process is small and short; the hindmost, called *Ὀλέκρον*, is bigger and longer: it stays the Fore-Arm, when it comes to a strait Line with the Arm. See OLECRANON.

Between these Processes it has a semi-circular *Sinus*, which receives the inner Protuberance of the lower-end of the *Humerus*, upon which we bend and extend our Fore-Arm; and along the middle of that there runs a small Ridge, by which this Bone is articulated to the *Humerus* by *Ginglymus*.—Had the Articulation here been an *Artrodia*, the Joint must have been much weaker; but the Hand could have received no more Motion from it than it has now from the Shoulder.

The inside of this upper-end has a small *Sinus*, which receives the Circumference of the round Head of the *Radius*. Its lower Extremity, which is round and small, is received into a *Sinus*, in the lower-end of the *Radius*; and upon this Extremity, it has a short and small Process, from which the Ligaments which tie it to the Bones of the Wrist arise: this Process serves to keep the Bones of the Wrist in their place.

ULNA, an Ell in measure. See ELL, and MEASURE.

ULNA Ferrea, is an old Law-word for the Standard Iron Ell, kept in the Exchequer. See STANDARD.

ULNAGE. See ALNAGE.



**ULNARIS Extensor**, in Anatomy, a Muscle, call'd also *Extensor Carpi*. See **EXTENSOR**.

**ULNARIS Flexor**. See **FLEXOR Carpi**.

**ULTERIOR**, in Geography, is apply'd to some part of a Country, or Province, which, with regard to the rest of that Country, is situate on the farther Side of a River, Mountain, or other Boundary which divides the Country into two Parts.

Thus, *Africa*, with regard to *Europe*, is divided by Mount *Atlas*, into *Citerior*, and *Uterior*, i. e. into two Portions, the one on this side Mount *Atlas*, and the other on that.

The Word is pure *Latin*.

**ULTIMA Basia**, q. d. *last Kisses*, is a Phrase used among some Painters, for the last finishing Touches with the Pencil. See **PAINTING**.

**ULTRAMARINE**, a beautiful blue Colour, used by the Painters, prepared from *Lapis Lazuli*. See **BLUE**, and **LAPIS**.

This Blue is one of the richest and most valuable Colours used in Painting.—The Preparation consists in first calcining the *Lapis* in an Iron Mortar, then grinding it very fine on a Porphyry Stone; then mixing it up with a Paste made of Wax, Pitch, and Oil; and at last washing the Paste well in clear Water, to separate the colouring Part from the rest, which precipitates to the bottom, in form of a subtile, beautiful, blue Powder.

The Water is then pour'd off; and the Powder at bottom dried in the Sun: which is the true *Ultramarine*.

Those who prepare this Colour, have usually four Kinds, which they get by so many different Lotions: The first is still the best; and the rest worse and worse, to the last.

There is *Ultramarine* of the first Kind, sold for 11 l. Sterling per Ounce; and of the last, for about 12 or 15 s.

Some derive its Name, *Ultramarine*, q. d. *beyond Sea*, from its being first brought into *Europe* out of *India* and *Persia*: Others say, 'tis because its Colour is deeper than that of the Sea.

The common Opinion is, that the Method of making it was first discover'd in *England*; and that a Member of the *East India Company*, having a Quarrel with his Associates, to be reveng'd of them, made the Secret publick.

*Ultramarine* must be chosen of a high Colour, and well ground which is known by putting it between the Teeth, where, if it feel gritty, 'tis a Sign the Triture is not sufficient.

To know whether it be pure and unmix'd, put a little of it in a Crucible, and heating it red hot, if the Powder han't chang'd its Colour after this Trial, 'tis certainly pure: On the contrary, if you perceive any change, or any black Specks in it, 'tis falsify'd.

Beside this, there is another Kind, call'd *Common* or *Dutch Ultramarine*; which is only *Lapis* or *Smalt* well ground, and pulveriz'd; the Colour whereof, when used by the Painters, is much like that of the true *Ultramarine*, tho much less valued.

**ULTRAMONTANE**, something beyond the Mountains.

The Term is principally used in relation to *Italy* and *France*, which are separated by the Mountains of the *Alps*.

In *France*, the Opinions of the *Ultramontane* Canonists, i. e. of those of *Italy*, are not receiv'd.

The Painters, particularly those of *Italy*, call all those that are not of that Country, *Ultramontanes*; or, simply, *Tramontanes*. *Poussin* is the only *Tramontane* Painter that the *Italians* seem to envy. See **TRAMONTANE**.

**ULTRAMUNDANE**, *Ultramundanus*, q. d. *beyond the World*; is that Part of the Universe, supposed to be without, or beyond the Limits of our World, or System. See **UNIVERSE**, **WORLD**, &c.

**UMBELICUS**. } See { **UMBILICUS**.

**UMBELICAL**. } See { **UMBILICAL**.

**UMBELLA**, or **UMBRELLA**. See **PARASOL**.

**UMBELLÆ**, among Botanists, &c. is applied to the round Tufts or Heads of certain Plants, set thick together, and all of the same height.—But *sparsed* or *thin Umbelle*, is when they stand at a distance from one another, yet all of an equal height. See **UMBELLIFEROUS**.

**UMBELLIFEROUS Plants**, are such as have their Tops branched, and spread out like an *Umbrella*; on each little Subdivision of which, there is growing a small Flower; such are *Fennel*, *Dill*, &c. See **PLANT**.

This Flower is always *Pentapetalous*; and is succeeded by two naked Seeds adjoining to each other, which are the true Characteristics that distinguish these Plants from others.

The *Umbelliferous* are a very large Genus of Plants, and are distinguish'd by Mr. Ray as follows:

1°. Such as have a compounded Leaf, of a triangular and pinnate Form.—The Seeds of these are either broad, flat, and plain, almost like Leaves, as the *Sphondylium*, *Pastinaca Latifolia*, *Panax Heracleum Tordylium*, *Orcoselinum*, *Thysselinum*, *Apium Cicuta foliis*, *Daucus Asfaticus carvi-folia*, *Anethum*, *Pucedanum*, *Thapsia*, *Ferula*, &c. Or with a Seed more tumid, and less compressed and flat than

the former; as the *Cachrys*, *Laserpitium*, *Cicutaria vulgaris*, *Scandix*, *Cerefolium*, *Myrrhis Sativa Angelica*, *Levisticum*, *Siler Montanum*, *Bulbocastanum*, *Sisium*, *Oenanthe*, *Sium*, *Pimpinella*, *Apium*, *Cicuta*, *Vishnaga*, *Saxifraga*, *Critbnum*, *Feniculum*, *Daucus vulgaris*, *Anisum*, *Caucalci*, *Coriandrum*, *Pastinaca Marina*, &c.

2°. Such as have a simple, or undivided Leaf, or at least one only a little jagged; as the *Persoliata*, *Buplerum*, *Astrantia nigra*, *Sanicula*, and the *Seseli Æthiopicum*.

**UMBER**, among Painters, &c. a kind of Earth, which, diluted with Water, serves to make a dark brown Colour.

It is called *Umbre* from *Umbra*, Shadow; as serving chiefly for the Shadowings of Objects. See **SHADOW**.

**UMBILICAL**, **UMBILICALIS**, or **UMBELICAL**, in Anatomy, something that relates to the *Umbilicus*, or Navel. See **UMBILICUS**, &c.

**UMBILICAL Vessels**, are a Set or Assemblage of Vessels belonging to a *Fœtus*; constituting what we call the *Funiculus Umbilicalis*, or Navel-string. See **Fœtus**, and **UMBILICALIS**.

These *Vessels* are two Arteries, a Vein, and the *Urachus*.

The *Umbilical Arteries* arise from the *Iliacs*, near their Division into external and internal; and pass thence on each side of the Bladder, thro' the Navel, to the *Placenta*.

By the Number of Contortions, or Convolutions of these Arteries in the Navel-string, our Midwives superstitiously reckon the Number of Children the Woman is to have.

The *Umbilical Vein*, from innumerable Capillaries united into one Trunk, descends from the *Placenta* to the Liver of the *Fœtus*; where it is partly distributed into the *Porta*, and partly into the *Cava*.

The *Urachus* is only plainly found in Brutes; tho there is no doubt but it has place likewise in Mankind. See **URACHUS**.

The Use of these *Vessels*, is to maintain a Continuity and Communication between the Mother and the *Fœtus*.—Some Authors will even have it, that the *Fœtus* receives its Food and Increase this way; and that it grows, like a Vegetable, from the Mother as the Root, of which the *Umbilical Vessels* are the Stem; and the Child the Head or Fruit of this Plant-Animal. See **CIRCULATION**, **NUTRITION**, **Fœtus**, &c.

**UMBILICAL Region**, is that Part of the Abdomen lying round about the *Umbilicus*, or Navel. See **ABDOMEN**, and **REGION**.

*Funiculus UMBILICALIS*, popularly call'd the Navel-string, is a kind of String, form'd of the *Umbilical Vessels*; which being ty'd up in a common Coat, or Membrane, traverse the *Secundines*, and are inserted at one end into the *Placenta* of the Mother, and at the other into the Abdomen of the *Fœtus*. See **UMBILICAL Vessels**.

The Navel-string is membranous, wreathed, and unequal; arising out of the middle of the Abdomen, and reaching to the *Placenta Uterina*: 'Tis usually half an Ell in length, and as thick as one's Finger.—It was necessary it should be so long and lax, that when the *Fœtus* in the Womb grows strong, it might not break it by its sprawling and tumbling about; and that after it is born, the *Secundine*, or After-Birth, might be drawn out the better by it.

The way that it passes from the Navel to the *Placenta*, is very unconstant; for sometimes it goes upon the right Hand to the Neck, which having incompt'd, it descends to the *Placenta*; and sometimes it goes on the left Hand up to the Neck, &c. Sometimes it comes not to the Neck at all, but goes first a little up towards its Breast, and then turns round its Back, and from thence passes to the *Placenta*.

This Part, at the Birth, is either broke, or cut away to the Navel; so that its *Vessels*, viz. two Arteries, a Vein, and *Urachus*, become perfectly useless, as *Vessels*; and drying up, become impervious, and serve only as Ligaments to suspend the Liver.

**UMBILICAL Points**, in Mathematicks, the same with *Foci*. See **FOCUS**.

**UMBILICUS**, the Navel, in Anatomy, the middle of the Mid-part of the lower Venter, or Belly; being the Place thro' which the *Umbilical Vessels* pass out of the *Fœtus* to the *Placenta* of the Mother.

The Word is pure *Latin*, form'd of *Umbo*, the little bunch in the middle of a Buckler; by reason of its resemblance to the Navel. See **UMBILICAL Vessels**.

**UMBILICUS**, in Mathematicks, the same with *Focus*. See **FOCUS**.

**UMBONE**, or *Horn*, among Florists, signifies any pointed Style, or Pistil, in the middle of a Flower. See **PISTIL**.

There is also an *Umbone* call'd *doubly-pointed*, or *by-parted*, as in the Peony; and sometimes the *Umbone* has four sharp Points, in which Case it is termed, an *Umbone* divided into so many Heads, or cut into three or four Parts.

**UMBRELLO**. See **UMBELLA**.

**UMPIRE**, a third Person, chosen to decide a Controversy left to an Arbitration, in case the Arbitrators should not agree. See **ARBITRATOR**.

This,



This, some call a *Sur-Arbitrator*.

*Minsbew* supposes the Word form'd of the French *un père*, a Father.

UNCASING, among Hunters, the cutting up, or fleaing of a Fox.

UNCIA, a Term generally us'd for the twelfth Part of a Thing.—In this Sense, the Word occurs in *Latin* Writers, both for a Weight, call'd an *Ounce*; and a Measure, call'd an *Inch*. See OUNCE, and INCH; see also WEIGHT, and MEASURE.

UNCIA *Terræ*, or *Agri*, is a Phrase frequently met withal in the ancient Charters of the *British* Kings; but what the Quantity of Ground was, is a little obscure.—All that we know for certain, is, that it signify'd a large Quantity, as much as 12 *Modii*. See *MODIUS Terræ*.

UNCIAE, in Algebra, are the Numbers prefix'd to the Letters of the Members of any Power, produced from a Binomial, Residual, or Multinomial Root. See ROOT.

Thus, in the fourth Power of  $a + b$ , that is,  $a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$ , the *Unciæ* are 4, 6, 4. See POWER, &c.

Sir *I. Newton* gives a Rule for finding the *Unciæ* of any Power arising from a Binomial Root. Thus:

Let the Index of the Power be called  $m$ ; then will the *Unciæ* arise from such a continual Multiplication as this, *vis.*  $1 \times \frac{m-0}{1} \times \frac{m-1}{2} \times \frac{m-2}{3} \times \frac{m-3}{4} \times \frac{m-4}{5}$ , &c. Thus, if the *Unciæ* of the Biquadrate, or fourth Power, were requir'd; the Rule is,  $1 \times \frac{4-0}{1} (=4) \times \frac{4-1}{2} (=6) \times \frac{4-2}{3} (=4) \times \frac{4-3}{4} (=1)$ ; which shews, that the *Unciæ* are 1, 4, 6, 4, 1. See POLYGONAL Number.

Or thus: The Terms of any Powers are compounded of certain literal *Factums*, with Numbers call'd *Unciæ*, prefix'd; and the *Factums* are found, by making two Geometrical Progressions; the first of them beginning from the requir'd Power of the first Part of the Root, and ending in Unity; and the second beginning with Unity, and ending in the requir'd Power of the second Part: Thus, for a sixth Power of  $a + b$ ;

$a^6 \ a^5 \ a^4 \ a^3 \ a^2 \ a^1$  first Series,  
 $1 \ b \ b^2 \ b^3 \ b^4 \ b^5$  second Series,

and multiplying the Terms of the same Order in either Series into one another: as,  $a^6 + a^5b + a^4b^2 + a^3b^3 + a^2b^4 + ab^5 + b^6$ , out of which the sixth Power of  $a + b$  is compounded.

The *Unciæ*, then, are found by writing the Exponents of the Powers of the second Series, *i.e.* of  $b$ , under the Exponents of the Powers of the first Series, *i.e.* of  $a$ ; and taking the first Figure of the upper Series for the Numerator, and the first of the lower for the Denominator of a Fraction, which is equal to the *Uncia* of the second Power; and so for the rest. Thus, for the sixth Power we have,

$\begin{array}{cccccc} 6 & 5 & 4 & 3 & 2 & 1 \\ 1 & 2 & 3 & 4 & 5 & 6 \end{array}$

Accordingly,  $\frac{6}{1} = 6$  is the *Uncia* of the second Term of the sixth Power;  $\frac{6 \cdot 5}{1 \cdot 2} = \frac{30}{2} = 15$ , the *Uncia* of the third Term;  $\frac{6 \cdot 5 \cdot 4}{1 \cdot 2 \cdot 3} = \frac{120}{6} = 20$ , the *Uncia* of the fourth Term;  $\frac{6 \cdot 5 \cdot 4 \cdot 3}{1 \cdot 2 \cdot 3 \cdot 4} = \frac{360}{24} = 15$ , the *Uncia* of the fifth Term;  $\frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5} = \frac{720}{120} = 6$ , the *Uncia* of the sixth Term;  $\frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6} = 1$ , the *Uncia* of the last Power. See PYRAMIDAL Numbers.

UNCIAL, UNCIALIS, an Epithet which the Antiquaries give to certain large-siz'd Letters, or Characters, antiently us'd in Inscriptions and Epitaphs. See LETTER, CAPITAL, &c.

The Word is form'd from the Latin *Uncia*, the twelfth Part of any thing; and which in geometrical Measure signify'd the twelfth Part of a Foot, *vis.* an Inch; which was supposed the Thickness of one of these Letters.

UNCORE, or UNQUES *Prist*, q. d. *still ready*, in Law, a Plea for the Defendant, being sued for a Debt due on a Day past, to save the Forfeiture of his Bond, &c. by affirming, that he tender'd the Debt at the Time and Place, and that there was none to receive it; and that he is yet also ready to pay the same.

UNCTION, the Act of anointing, or smearing with Oil, or other fatty Matter.

Mercurial *Unction*, properly applied brings on a Salivation. See SALIVATION.

The Surgeons cure divers Wounds, Ulcers, &c. by repeated *Unctions* with Oils, Unguents, Cerats, &c. See OIL, UNGUENT, LINIMENT, &c.

UNCTION, in Matters of Religion, is used for the Character confer'd on sacred Things, by anointing 'em with Oil.

Such is the *Unction* of Kings, Prophets, Priests, &c.—The *Unction* of Kings is suppos'd to be a Ceremony introduc'd very late among Christian Princes: *Onuphrius* says, none of the Emperors were ever anointed before *Justinian* or *Justin*. The Emperors of Germany took up the Prac-

tice from those of the Eastern Empire.—King *Pepin* of France was the first King who receiv'd the *Unction*. See CORONATION.

In the *Romish* Church, besides an *Unction* at Baptism, on the Forehead, and at Confirmation, on the Head; they have an *Extreme Unction*, given to People in the Pangs of Death, on the Parts where the five Senses reside, being the Parts by which the Person might have sinn'd. See EXTREME UNCTION.

UNCUTH, q. d. *unknown*, is used in the antient *Saxon* Laws, for him that comes to an Inn, Guest-wife, and lies there but one Night: In which Case, his Host was not bound to answer for any Offence he committed, whereof he was guileless himself.

—*Prima nocte potest dici Uncuth, secundo vero*, Guest, *tertia nocte* Hoghenehine. *Bracton*, Lib. III. See THIRD Night *even Hine*.

UNDECAGON, is a regular Polygon of eleven Sides. See POLYGON.

UNDECIMVIR, by the Greeks call'd *OIENAEKA*, and by *Jul. Pollux*, *Eparcha*; a Magistrate among the antient Athenians, who had ten other Collegues, or Fellows in the same Post.

The Functions of the *Undecimviri* at Athens, were much the same as those of the *Prevots de Marechaussee* in France. They took care of the apprehending of Criminals; secur'd 'em in the Hands of Justice; and when they were condemn'd, took 'em again into Custody, that the Sentence might be executed against 'em.

They were chose by the Tribes; each Tribe naming its own: And as the Number of Tribes after *Callisthenes* was but ten, which made but ten *Eparchæ*, a Scribe or Notary was added, which made the Number eleven: Whence their Name *OIENAEKA*, or *Undecimviri*, as *Cornelius Nepos* calls 'em in the Life of *Phocion*.

UNDEE, or UNDY, in Heraldry. See WAVY.

UNDER the Sea, in the Sea Language.—A Ship is said to be so when she lies still, or waits for some other Ships, with her Helm lashed, or ty'd up a-I-ec.

UNDER-CURRENTS—Distinct from the *upper*, or *apparent* Currents of the Seas. Some Naturalists conclude, there are in divers Places *Under-Currents*, which set or drive a contrary way. See CURRENT.

Dr. *Smith*, in the *Philosophical Transactions*, brings the Hypothesis of *Under-Currents* to solve that remarkable Phenomenon, the Sea's setting strongly thro' the *Streights* into the *Mediterranean*, with a constant Current 20 Leagues broad.—What should become of the vast Quantity of Water pour'd in this way; as also, of that running from the *Euxine*, thro' the *Bosphorus* into the *Hellepont*, and thence into the *Archipelago*; is a Speculation that has long employ'd the Philosophers.

This Author's Conjecture is, That there is an *Under-Current*, whereby as great a Quantity of Water is carried out as comes in.

To confirm this, he observes, that between the North and South Foreland, it is either high or low Water upon the Shore three Hours before it is so off at Sea: A certain Sign, that tho' the Tide of Flood runs aloft, yet the Tide of Ebb runs under-foot, or close by the Ground.

He adds an Account from an able Sailor in the *Baltick* Sound; that going with their Pinnace into the middle Stream, they were carry'd violently away by the Current: But that sinking a Bucket with a large Cannon Bullet to a certain Depth of Water, it gave check to the Boat's Motion; and sinking it still lower, the Boat was driven a-head to the Windward, against the upper Current, which was not above four or five Fathom deep.

Dr. *Halley* solves the Current's setting in at the *Streights*, without overflowing the Banks, from the great Evaporations; without supposing any *Under-Current*. See VAPOUR, and EVAPORATION.

UNDER-WOOD, is Coppice, or any Wood that is not accounted Timber. See COPPICE, and TIMBER.

UNDER-Chamberlain of the Exchequer, is an Officer there that cleaves the Tallies, and reads the same; so that the Clerk of the Pell, and the Comptrollers thereof, may see that the Entries are true. See EXCHEQUER, TALLY, PELLs, &c.

He also makes Searches for all Records in the Treasury, and hath the Custody of the *Doomsday Book*.—There are two Officers of this Name.

UNDER-Treasurer of England, *Vice-Thesaurarius Angliæ*, an Officer mention'd in the Stat. 39 *Eliz.* and whom several other Statutes confound with Treasurer of the Exchequer. See EXCHEQUER.

In the Vacancy of the Lord Treasurer's Office, he did every thing in the Receipt, that the Lord Treasurer himself does. He also chested up the King's Treasure at the End of every Term, and noted the Content of Money in each Chest, and saw it carried to the King's Treasury in the Tower, for the use of the Lord Treasurer, &c. See TREASURER.

UNDR-



**UNDER-Sheriff**, *Sub vice comes*. See **SHERIFF**.

**UNDER-Setter**, is an *Inmate*. See **INMATE**.

**UNDER-TAKERS**, were antiently such Persons as were employ'd by the King's Purveyors, and acted as their Deputies. See **PURVEYORS**.

At present, the Name is chiefly used for *Upholders*, or Persons who furnish out Funerals: And for such as undertake any great Work, as the draining of Fens, &c. Stat. Eliz.

**UNDER-MINING**. See **SAPPING**.

**UNDERSTANDING**, or *Intellect*, is defined, by the Peripatericks, to be a Faculty of the reasonable Soul, conversant about intelligible Things, consider'd as intelligible. See **FACULTY** and **SOUL**.

They also make it twofold, viz. *Active* and *Passive*.

*Active Understanding*, they hold, that Faculty of the Soul by which the Species and Images of intelligible Things are framed, on occasion of the presence of Phantasms or Appearances thereof.—For maintaining the Intellect to be Immaterial, they hold it impossible it should be disposed to think by any disproportionate Phantasms of mere Body, and therefore is obliged to frame other proportionate Species of it self; and hence its Denomination *active*.

*Passive Understanding*, is that which receiving the Species framed by the *Active Understanding*, breaks forth into actual Knowledge. See **KNOWLEDGE**.

The Moderns set aside the *Peripatetic* Notion of an *act ve Understanding*.—The *Cartesians* then define the *Understanding* to be that Faculty, whereby the Mind conversing with, and as it were intent on, itself, evidently knows what is true in any thing not exceeding its Capacity. See **JUDGMENT**.

The *Corpuscular* Philosophers define the *Understanding* to be a Faculty, expressive of Things which strike on the external Senses, either by their Images, or their Effects, and so enter the Mind.—Their great Doctrine is, *Nihil esse in Intellectu quod non prius fuerit in sensu*; and to this Doctrine our famous Mr. *Locke*, and most of our latest *English* Philosophers subscribe.

The *Cartesians* cry out aloud against it, between whom and the *Corpuscularians* there is this farther Difference, that the latter make the Judgment to belong to the *Understanding*; but the former to the Will. See **WILL**.

Hence, according to the most approved Opinion of the *Corpuscularians*, the *Understanding* has two Offices, viz. *Perception* and *Judgment*; according to the *Cartesians* only one, viz. *Perception*. See **PERCEPTION**.

*Understanding* is also used for the Act, Exercise, or Exertion of this Faculty; or the Action whereby the Mind knows Things, or represents 'em in Idea to it self.

**UNDULATION**, in Physicks, a kind of tremulous Motion, or Vibration, observable in a Liquid; or a sort of wavy Motion, whereby a Liquid alternately rises and falls, like the Waves of the Sea.

And hence it is that this Term takes its rise, *Unda* signifying *Wave*. See **WAVE**.

This *Undulatory* Motion, if the Liquid be smooth and at rest, is propagated in Concentrick Circles, as most People have observed upon throwing a Stone or other matter upon the Surface of a stagnant Water, or even upon touching the Surface of the Water lightly with the Finger, or the like.

The Reason of these circular Undulations is, that by touching the Surface with the Finger there is produced a Depression of the Water in the place of Contact. By this Depression the subjacent Parts are moved successively out of their place, and the other adjacent Part thrust upwards, which lying successively on the descending Liquid, follow it; and thus the Parts of the Liquid are alternately rais'd and depress'd, and that circularly.

When a Stone is thrown into the Liquid, the reciprocal Vibrations are more conspicuous: Here the Water in the Place of Immersion, rising higher, by means of the Impulse or Rebound, till it comes to fall again, gives an Impulse to the adjoining Liquid, by which means that is likewise rais'd about the place of the Stone, as about a Centre, and forms the first undulous Circle; which falling again, gives another Impulse to the Fluid next to it further from the Centre, which likewise rises in a Circle; and thus, successively, greater and greater Circles are produced.

*Undulatory Motion*, is likewise applied to a Motion in the Air, whereby its Parts are agitated after the like manner as Waves in the Sea; as is supposed to be the Case when the String of a musical Instrument is struck. See **CHORD**.

This *Undulatory* Motion of the Air, is supposed the Matter or Cause of Sound. See **SOUND**.

Instead of the *Undulatory*, some Authors chuse to call this a *vibratory Motion*. See **VIBRATION**.

**UNDULATION** is also used, in Chirurgery, for a Motion ensuing in the Matter contain'd in an Abscess, upon squeezing it.—A Tumor is said to be in a condition for opening, when one perceives the *Undulation*. See **TUMOR**.

**UNGELD**, in our antient Customs, *si Frithman*, i. e. *Homo pacis, fugiet & repugnet, & se nolit indicare; si occidatur jaceat Ungeld*, i. e. no pecuniary Compensation shall be made for his Death, Skinner.—*Ungilda Aker*, mention'd in *Brompton*, has much the same Signification, viz. where any Man was kill'd attempting any Felony, he was to lie in the Field unburied, and no pecuniary Compensation to be made for his Death. From the *Saxon*, *an*, without, *gilda solutio*, & *acera*, *ager*, Field.

**UNGUENT**, **UNGUENTUM**, in Chirurgery, a topical Remedy, or Composition, used in the dressing of Wounds and Ulcers. See **WOUND**, &c.

*Unguents*, Liniments, and Cerats, are external Forms applied on divers Parts of the Body, both to cure, and to ease and relieve 'em.—They only differ from each other in Consistence, with regard to which Unguents hold the Medium; being stiffer than *Liniments*, but softer than *Cerats*. See **LINIMENT**, and **CERAT**.

Oils are ordinarily the Bases of all three; to which are added Wax, *Axungia*, and several Parts of Plants, Animals, and Minerals, both in respect of the Virtues they furnish, and to give a Consistence to the Oils, and to keep 'em longer on the Part, that they may have more time to act.

The Principal *Unguents* are *Unguentum Rosatum*, *Unguentum Album*, or white Unguent of Cerufs; the *Populeum* made of the Buds of the Poplar Tree; the *Unguentum Apostolorum*, so call'd from the twelve Drugs it consists of, a Cleanser; the *Unguentum Basilicum*, a Suppurative; the *Unguentum Egyptiacum*, Caustic; the *Unguentum Aureum*, Incarnative and Cicatrizing; the *Unguent. de Abio*, Mundicative; the *Unguent. Agrippæ*, said to be discover'd by King *Agrippa*. See each under their proper Articles, **POPULEUM**, **EGYPTIACUM**, **APOSTOLORUM**, &c.

*Pomatus* are also rank'd in the Number of *Unguents*. See **POMATUM**.

**UNGUIS**, a *Latin* Term, signifying a Nail of the Hand or Foot. See **NAIL**.

**UNGUIS**, in Medicine, a Disease of the Eye, occasion'd by a nervous Excrecence on the *Conjunctiva*, beginning at the great *Canthus* and spreading insensibly till it reach the *Pupil*, and at last quite cover it. See **CONJUNCTIVA**.

The ordinary Cause of the *Unguis* is an excessive Acrimony in the Tears, which corrode the *Conjunctiva*, as is often the Case in an *Ophthalmia*, or after the Small Pox.

The *Greeks* call it *αλεξυγιν*. See **PTERYGIUM**.

**UNGUIS**, in Anatomy, is applied to two Bones of the Nose, being as thin as Scales, and resembling the Nail; whence their Name. See **NOSE**.

The *Ungues* are the smallest Bones in the upper Jaw, and are situate close to the great *Canthus* of the Eyes. See **MAXILLA**.

Some Authors call them *Offa Lachrymalia*, but improperly; there being no *Glandula Lachrymalis* in the *Canthus*. Others call 'em *Orbitaria Offa*.

They are contiguous to four other Bones, viz. the Coronoid, that of the Nose, the Maxillary, and that part of the *Ethmoides* which forms the Orbit.

**UNGUIS**, or *Unguiculus*, among Botanists and Florists, is a little Stick, of a different Colour from the rest of the *Petala*, or Leaves of Flowers. See **PETALA**.

It has the figure of a Nail of the Hand: Its place is at the Origin, or Root of those Leaves; as we see in the Rose, Poppy flowers, and divers others.

In preparing of Medicines, the *Ungues*, or *Unguiculi*, are pull'd off the Flowers that enter the same.

**UNGUIS Odoratus**. See **BEATTA Bizantia**.

**UNGULA**, in Geometry, is the Section of a Cylinder cut off by a Plane passing obliquely thro' the Plane of the Base, and part of the cylindrick Surface. See **MOTION**.

**UNGULA**, in Natural History, the Claw, or Hoof of a Quadruped. See **HOOF**.

**UNGULA Alci**, the Elk's Claw. See **ELK**.

**UNGULA**, among Surgeons, a sort of hooked Instrument where with to extract a dead Fetus out of the Womb.

**UNICORN**, in Natural History, an Animal famous among the *Greek* Authors, and the Name of *Μονόκερος*, and among the *Latins*, *Englisch*, *French*, &c. under those of *Unicornis*, *Unicorn*, *Lucorne*, &c.

All these Names it takes from its distinguishing Characteristic, the having one Horn only, which is represented as five Palms long, growing in the middle of the Forehead.

This Animal claims a place here, not only as it makes a curious Article in Natural History, but also as it furnishes something to Medicine, Commerce, and Heraldry.

The popular Account is, that it is about the size of a Horse, its Hair short and of a dark brown colour; very timorous, and therefore keeping mostly in the Woods; and that its true Place is the Province of *Agcas* in the Kingdom of *Dametes*, in *Ethiopia*.

*And. Marin*, a learned Physician of *Venice*, has wrote an express Treatise on the *False Opinion of the Unicorn*.



The first Author, according to *Pliny*, who wrote of the *Unicorn*, was one *Cresius*, whom *Aristotle* mentions as a very suspicious Author. *Ælian* only speaks of it in very doubtful Terms. The other Authors on the Subject are *Philostrius*, and *Solinus*; *Æneas Sylvius*, who is Pope *Pius II.* *Marcus Paulus*, *Aloesius*, *Gesner*, *Garcias ab Horto*, &c. Of these, some say it resembles a Horse, others an Ass, others a Goat, by its Beard; others an Elephant, others a Rhinoceros, others a Grey-hound, &c.

*Munster* and *Thevet* will have it an amphibious Animal, and its Horn to be moveable at pleasure. Others make all its Strength to consist in its Horn, and add, that when pursued by the Hunters it precipitates its self from the tops of the highest Rocks, and pitches upon its Horn, which sustains the whole Effort of its Fall so that it receives no damage thereby. In effect, the several Authors do all give several Accounts of the Figure and Colour, both of the Animal and of its Horn, and all its Parts.—And hence the more knowing among the Moderns do unanimously hold it a fabulous Animal.

The Legend adds, that it is wonderful fond of chaste Persons; and therefore, in order to take it, a Virgin is placed in its way, whom when the *Unicorn* spies, he lies down by her, and lays his Head on her Lap, and so falls asleep; upon which the Virgin making a Signal, the Hunters come in and take the Beast; which could never be caught any other way, because it would either cast it self head long from a Rock, or die.

What ordinarily passes among us for *Unicorn's Horn*, and is shewn for such in the Collections of Curiosities, and used for such by several Physicians, we are assured by *Pereyra*, in his Account of *Greenland*, to be the Tooth of a large Fish of the Whale Kind, call'd by the Islanders *Narwal*; and, in other Places, *Walrus* and *Robart*; frequent enough in the icy Sea.

This Tooth, or Horn, turn'd, channel'd, and terminating in a Point, as it is, springs out of the middle of the forepart of the upper-Jaw, where it has a Root a Foot long, as thick as the Horn itself: 'tis the only Tooth the Animal has in the upper-Jaw; and serves it as a Weapon of Defence, wherewith it dares to attack the largest Whale.—It can strike it with such violence as even to pierce the Side of a strong built Ship.

There is a fine Horn of this kind preserv'd in the Repository of St. *Denis* at *Paris*, given by *And. Thevet*, and pretended to have been a Present to him from the King of *Monomotapa*, who carried him to hunt the *Unicorn*; which is frequent in that Country: This Horn some have suspected to be an Elephant's Tooth, carved in that manner. At *Strasbourg* there is another, between seven and eight Foot long. In the Repository at *Venice*, there is a good Number; all different from each other.

The Antients held the *Unicorn's Horn* to be a Counterpoison; and, that the Animal used to dip it in the Water, to purify and sweeten it ere it wou'd drink: 'Tis added, that for the same reason other Beasts wait to see it drink before 'em. Thence, as also from the Rarity of the Thing, People have taken Occasion to attribute divers medicinal Vertues thereto.

But *Amb. Paré* has proved it a mere piece of Charletanery, and all the Virtues attributed to it to be false; and yet the Price it has bore is almost incredible: *Andrea Racci*, a Physician of *Florence*, affirms, the Pound of 16 Ounces, to have been sold in the Apothecaries Shops for 1536 Crowns, when the same weight of Gold was only worth 148 Crowns.

UNICORN, in Heraldry, is represented *passant*, and sometimes *rampant*: When in this last Action, as in the *English* Arms, it is properly said to be *sullanti*, Argent: an *Unicorn* sejant sable, armed and unguled, Or. Borne by the Name of *Harding*.

The *Unicorn* is one of the Supporters of the Arms of *England*. See SUPPORTER.

UNIFORM, UNIFORMIS, denotes a thing to be similar, or consistent either with another thing or itself, in respect of Figure, Structure, Proportion, and the like.—In which sense it stands opposed to *Difform*. See SIMILITUDE.

UNIFORM, or *Equable Motion*. See MOTION.

UNIFORM Flowers of Plants, are such as are of the same Figure all a round, having their fore and back-parts, as also their right and left-parts exactly alike. See FLOWER.

When they are otherwise, they are term'd *difform Flowers*. See DIFFORM.

UNIFORMITY, *Regularity*, a Similitude or Resemblance between the Parts of a Whole.—Such is that we meet withal in Figures of many Sides and Angles respectively equal and answerable to each other. See REGULAR.

A late Ingenious Author makes Beauty to consist in Uniformity, join'd or combined with Variety. See BEAUTY.

Where the Uniformity is equal in two Objects, the Beauty, he contends, is as the Variety; and where the Variety is equal, the Beauty is as the *Uniformity*. See DEFORMITY.

UNIFORMITY, is particularly used for one and the same Form of Public Prayers, and Administration of Sacraments, and other Rites, &c. of the Church of *England*, prescribed by the famous Stat. 1 *Eliz.* and 14 *Car. II.* call'd the *Act of Conformity*.

UNION, a Junction, Coalition, or Assemblage of several Things in one.

Philosophers are exceedingly to seek about the manner of the *Union* of Soul and Body, or by what Medium it is that two such heterogeneous Beings are kept so closely together.—'Tis one of the great Laws of this *Union*, that such and such an Impression on the Brain be follow'd by such and such a Sensation, or Perception in the Soul. See SOUL, SENSATION, MOTION, &c.

UNION, in an Ecclesiastical Sense, is a combining or consolidating of two Churches into one. See CHURCH, BENEFICE, CONSOLIDATION, &c.

This is not done without the Consent both of the Bishop, the Patron, and the Incumbent. See PATRON, &c.

The Canonists distinguish three kinds of *Union*, that of *Accession*, that of *Confusion*, and that of *Equality*.

The *Union* of *Accession* is the most usual: by this the united Benefice becomes a Member, and accessory of the Principal.

The *Union* by *Confusion*, is that where the two Titles are suppress'd, and a new one created including both.

In the *Union* of *Equality* the two Titles subsist; but equal, and independent.

By Stat. 37 *Hen. VIII.* it is enacted, That an *Union*, or Consolidation of two Churches may be admitted, provided the annual Value of one of them, in the King's Books, don't exceed 6 *l.* and the distance between them, be not above one Mile.—And by another, Stat. 17 *Car. II.* it is enacted, That the *Union* of two Churches or Chapels in any City or Town, shall be valid, unless the Value of the Churches, so united, exceed 100 *l.*

UNION, or the *Union* by way of Eminence, is particularly used, among us, to express the Act whereby the two separate Kingdoms of *England* and *Scotland* were incorporated into one, under the Title of the *Kingdom* of Great Britain.

This happy *Union*, in vain attempted by King *James I.* was at length effected in the Year 1707, by the general Consent of the Queen, and the Estates of each Realm.

The Act, or Treaty of *Union*, consists of Twenty-five Articles; which eleven *English* Commissioners and eleven *Scottish* ones, examin'd, approved, and sign'd on the 3d of *August*, 1706. The Parliament of *Scotland* approved it on the 4th of *February*, 1707; and the Parliament of *England*, the 10th of *March* in the same Year.—On the 1<sup>th</sup> following, the Queen went to Parliament, where she approved the same Treaty, with the Act of Ratification.

Since that time, there is only one Privy-Council and one Parliament for the two Kingdoms: The *Scottish* Parliament is suppress'd, or, rather super-added to the *English*, both of them only constituting one, under the Title of the Parliament of *Great Britain*.

The Number of Members which by the Articles of the *Union* the *Scots* are to send into the House of Commons, to represent the Commons of that Country, are 45; and the Number of Peers whereby their Peerage is to be represented, is 16.

The great Officers of the Crown of *Scotland*, before the *Union*, were the Lord High Chancellor, Lord High Treasurer or Treasurer, Lord Privy-Seal, and Lord Register. Their lesser Officers of State were, the Lord Register, Lord Advocate, Lord Treasurer Depute, and Lord Justice-Clerk.

The four first Officers are dissolv'd by the *Union*, and instead thereof new Officers are erected, serving for both Countries under that Title of *Lord High Chancellor* of Great Britain, &c. See CHANCELLOR, TREASURER, &c.

The four latter Offices still subsist. See ADVOCATE, REGISTER, &c.

UNION, in a philosophic Sense, is used, by Dr. *Grew*, for one of the three ways of Mixture; being the Joining together of Atoms or insensible Particles so as to touch in a Plane, as is supposed to be the Case in the Crystallizations of Salts, and the like Bodies. See MIXTURE, CRYSTALLIZATION, &c.

UNION-Pearls, are such Pearls as grow in the Couples; the best sort of Pearls. See PEARL.

UNION, in Architecture, is particularly used for a Harmony between the Colours in the Materials of a Building.

UNION, among Painters, expresses a Symmetry and Agreement between the several Parts of a Painting; when, e.g. there is a deal of Relation and Connexion between them, both as to the Figures, and the Colouring: so that they apparently conspire to form one thing. See SYMMETRY.

When this *Union* is finely manag'd, some call it *Snazity*. UNISON, in Musick, is the Effect of two Sounds, which are equal in degree of Tune, or in point of Gravity and Acuteness. See TUNE.



Or, *Unison* may be defined a Consonance of two Sounds, produced by two Bodies of the same Matter, Length, Thickness, Tension, equally struck, and at the same time; so that they yield the same Tone, or Note. See NOTE.

Or, it is the *Union* of two Sounds, so like each other, that the Ear perceiving no difference, receives them as one and the same Sound. See SOUND.

What constitutes *Unisonance*, is the Equality of the Number of Vibrations of the two sonorous Bodies in equal Times: Where there is an Inequality in that respect, and of consequence an Inequality in degree of Time; the unequal Sounds constitute an *Interval*. See INTERVAL, and VIBRATION.

*Unison* is the first and greatest of Concords; and the Foundation, or, as some call it, the *Mother* of all the rest: Yet some deny it to be any Concord at all; maintaining it to be only that in Sounds, which Unity is in Numbers. See UNITY.

Others restrain the Word *Concord* to Intervals, and make it include a difference of Tune; but this is precarious: for as the Word *Concord* signifies an Agreement of Sounds, 'tis certainly applicable to *Unisons* in the first degree.

But the *Unisonance*, or an Equality of Tune, makes the most perfect Agreement of Sound; it is not true that the nearer any two Sounds come to an Equality of Tune, they are the more agreeable.—The Mind is delighted with Variety; and the Reason of the Agreeableness or Disagreeableness of two Sounds, must be ascrib'd to some other Cause than the Equality or Inequality of the Number of their Vibrations. See CONCORD.

'Tis a fam'd Phenomenon in Musick, that an intense Sound being rais'd, either with the Voice or a sonorous Body, another sonorous Body near it, whose Tune is either *Unison* or Octave above that Sound, will sound its proper Note *Unison* or Octave to the given Note.—The Experiment is easily try'd by the Strings of two Instruments, or by a Voice and a Harpsichord, or a Bell, or even a drinking Glass.

This our Philosophers account for thus: One String being struck, and the Air put in Motion thereby; every other String within the reach of that Motion, will receive some Impression therefrom: But each String can only move with a determinate Velocity of Recourses, or Vibrations; and all *Unisons* proceed from equal or equidiurnal Vibrations; and other Concords from other Proportions. The *Unison* String, then, keeping equal pace with the sounded String, as having the same Measure of Vibrations, must have its Motion continued and still improv'd, till its Motion become sensible, and it give a distinct Sound. Other concurring Strings have their Motions propagated in different Degrees, according to the frequency of the Coincidence of their Vibrations with those of the sounded String: The Octave, therefore, most sensibly; then the fifth: after which, the crossing of the Motions prevents any effect.

This they illustrate by the Pendulum; which being set a-moving, the Motion may be continu'd and augmented by making frequent, light, coincident Impulses; as blowing on it when the Vibration is just finish'd: But if it be touch'd by any cross or opposite Motion, and this, too, frequently; the Motion will be interrupted, and cease altogether.—So, of two *Unison* Strings, if the one be forcibly struck, it communicates Motion by the Air to the other: and being equidiurnal in their Vibrations, that is, finishing them precisely together, the Motion of that other will be improv'd and heightened, by the frequent Impulses receiv'd from the Vibrations of the first; because given precisely when that other has finish'd its Vibration, and is ready to return: But if the Vibrations of the Chords be unequal in Duration, there will be a crossing of Motions, less or more, according to the Proportion of the Inequality; by which the Motion of the untouched String will be so check'd, as never to be sensible. And this we find is the Case in all Consonances, except *Unison*, Octave, and the Fifth. See CHORD.

UNITARIANS, a Name assumed by the new Antitrinitarians; as making Profession to preserve the Glory and Attribute of Divinity to the *One*, only great and supreme God, and Father of our Lord Jesus Christ. See ARIANS, SOCRINIANS, &c.

UNIT, UNITÉ, in Arithmetick, the Number *One*; or one single, individual Part of discrete Quantity. See NUMBER.

If a Number consist of four or five Places, that which is outermost towards the right hand, is called the Place of *Unites*. See NUMERATION.

Number, in general, is by *Euclid* defin'd to be *μὲν δὲ τὸ πᾶν*, a Multitude, or Aggregate of *Unites*; in which Sense *Unity* is not a Number. See UNITY.

UNITY, the Abstract or Quality, which constitutes or denominates a Thing *unum*, or one.

The School Philosophers generally define *Unity*, by a Thing's being undivided in it self, and divided from every thing else.—Others, more accurately, define it, a Mode of Being, whereby it agrees to any particular being, once; and

make two Kinds of *Unity*, viz. *Unity of Simplicity*, which is both undivided and indivisible; such as is that of God, Angels, and human Souls: The other *Union of Composition*; which, tho undivided, is divisible in the Being, as consisting of divers Parts: such is that of Man, &c.

Hence, *Unity* is also divided into that *per se*, which agrees to any Being whose Parts are collected into one *Substratum*; and *Unity per accidens*, whose Parts are not united into one *Substratum*; as that of a Flock of Sheep, &c.

Some also make a *Singular*, or *Numerical Unity*, and an *Universal Unity*; a *Real*, and an *Imaginary Unity*, &c.

'Tis disputed among Mathematicians, whether or no *Unity* be a *Number*.—The generality of Authors hold the Negative; and make *Unity* to be only inceptive of Number, or the Principle thereof; as a Point is of Magnitude, and *Unison* of Concord.

*Stevinus* is very angry with the Maintainers of this Opinion: and yet, if Number be defin'd a Multitude of *Unites* join'd together, as many Authors define it, 'tis evident *Unity* is not a Number. See NUMBER.

UNITY, among Divines.—The *Romanists* and the Reform'd dispute whether or no the Church be one single Body, all the Members whereof are join'd together, either really, or in Inclination; so that whatever does not appertain to that Body, is no part of the Church: Which is what they call the *Unity of the Church*; and which the *Romanists* maintain is restrain'd to one single Society, or one Communion, under one visible Head; and out of which the Protestants are excluded.

These last, on the contrary, hold, That the *Unity* of the Church may still subsist, without being united under any one visible Head; it being sufficient that all Christians be united by the Bonds of mutual Love, and Charity; and that they be agreed in the Fundamental Points of Religion.

All the difficulty is to fix what those Fundamentals are; some inclining to make the Door of the Church wider than others. See TOLERATION.

UNITY, in Poetry.—In the *Drama* there are three *Unities* to be observ'd; the *Unity of Action*, that of *Time*, and that of *Place*. See DRAMA.

In the Epic Poem, the great and almost only *Unity*, is that of the Action.—Some regard, indeed, ought to be had to that of Time: That of Place there is no room for. The *Unity* of Character is not reckon'd among the *Unities*. See CHARACTER.

The *Unity* of the Dramatic Action, consists in the *Unity* of the Intrigue in Comedy, and that of the Danger in Tragedy; and this, not only in the Plan of the Fable, but also in the Fable extended and fill'd with Episodes. See ACTION.

The Episodes are to be work'd in, without corrupting the *Unity*, or forming a double Action; and the several Members are to be so connected together, as to be consistent with that Continuity of Action so necessary to the Body; and which *Horace* prescribes, when he says, —*sit quodvis simplex dumtaxat & unum*. See EPISODE.

The *Unity of the Epic Action*, M. *Dacier* observes, does not consist in the *Unity* of the Hero, or in the *Unity* of his Character, and Manners; tho those be Circumstances necessary thereto. The *Unity of Action*, requires that there be but one principal Action, of which all the rest are to be Incidents or Dependencies. See HERO, MANNERS, &c.

F. *Bosfu* assigns three Things requisite thereto: The first, That no Episode be used but what is fetch'd from the Plan, and Ground of the Action, and which is a natural Member of that Body: The second, that these Episodes and Members be well connected with each other: The third is, Not to finish any Episode, so as it may appear a whole Action; but to let each be always seen in its quality of Member of the Body, and an unfinish'd Part.

The same excellent Critick examines the *Aeneid*, *Iliad*, and *Odyssey*, with respect to these Rules, and finds 'em strictly observ'd.—Indeed, it was from the Conduct of those divine Poems, that he took the Hint of the Rules themselves. Instances wherein these Rules are all neglected, he gives us in *Stannus's Teichard*.

To the *Unity of Time* it is requir'd, in the Drama, that the Action be included in the Space of a Day.

*Aristotle* says expressly, It must not exceed the Time the Sun is making one Revolution, which is a Natural Day, under pain of Irregularity: Some Criticks will even have it included in the Space of twelve Hours, or an Artificial Day.

Indeed, the ancient Tragic Poets sometimes dispens'd with this Rule; and the modern *English* ones many of 'em disallow it: few of 'em practise it.

In the Epic Poem, the *Unity of Time* is still less established: In effect, there is no fixing the Time of its Duration; in regard, the warmer and more violent it is, the less must be its Continuance: Whence it is that the *Iliad*, representing the Anger of *Achilles*, only contains forty seven Days at most; whereas the Action of the *Odyssey* holds eight



Years and an half, and that of the *Æneid* almost seven Years.

But the length of the Poem *Aristotle* gives us a Rule for ; which is that it be such as it may be read over in one Day : pretending, that if it exceeds that compass, the Sight will be bewilder'd in it, and that one can't see the End, without having lost the Idea of the Beginning.

As to the *Unity of Place* and *Scene*, neither *Horace* nor *Aristotle* give us any Rules relating thereto.—It were to be wish'd, indeed, that what is presented to the Audience on the same Stage, which is never shifted, might be supposed to have pass'd in the same House, and the same Apartment. But as such a Constraint would cramp the Poet too much ; and as such an Uniformity would suit very ill with abundance of Subjects ; it has been agreed that what passes any where in the same Town or City, shall be allow'd for *Unity of Place*.—At least, if two different Places be unavoidable ; yet the Place is never to be chang'd in the same Act. See SCENE.

*UNITY of Possession*, in Law, signifies a joint Possession of two Rights, by several Titles : Thus, if I take a Lease of Land upon a certain Rent, and afterwards buy the Fee Simple ; this is an *Unity of Possession*, whereby the Lease is extinguish'd : by reason I, who before had only the Occupation for my Rent, am now become Lord of the same, and am to pay Rent to none but my self.

*Unity of Possession*, in the Civil Law, is the same with *Consolidation*. See CONSOLIDATION.

UNIVERSAL, something that is common to many Things, or it is one Thing belonging to many.

The Word is compounded of *unum* versus *alia*.

The *Romanists* are divided among themselves about the Title of *Universal Bishop*, which the Popes have arrogated to themselves ; the others of 'em have declined it.—*Baronius* holds the Appellation to belong to the Pope *Jure Divino* ; and yet *S. Gregory*, opposing the same Quality given by a Council in 586 to *John* Patriarch of *Constantinople*, asserted expressly, that it did not belong to any Bishop ; and that the Bishops of *Rome* could not nor ought not to take it. Accordingly, *S. Leo* refused to accept it, when offer'd him by the Council of *Chalcedon* ; for fear, lest giving something particular to one Bishop, they should take from all ; since there could not be an *Universal Bishop*, but the Authority of the rest must be diminish'd. See BISHOP, OECUMENICAL, &c.

An *UNIVERSAL Dial*, is that whereby the Hour may be found by the Sun all over the Earth ; or under any Elevation of the Pole. See DIAL.

There are also *Universal Instruments*, for measuring all kinds of Distances, as Heights, Lengths, &c. call'd also *Pantometers*, and *Holometers*. See PANTOMETER.

Several learned Authors have had it in view to establish an *Universal Character* ; by which the different Nations might understand each others Writings, without learning their Language. See CHARACTER.

UNIVERSAL, UNIVERSALE, in Logick, is either *Complex* or *Incomplex*.—A *Complex Universal*, *Universale Complexum*, is either an *universal Proposition*, as, *Every Whole is greater than its Part* ; or whatever raises a manifold Conception in the Mind ; as the Definition of a reasonable Animal.

An *Incomplex Universal*, *Universale Incomplexum*, is what produces one only Conception in the Mind, and is a simple thing respecting many ; as Human Nature, which relates to every Individual wherein it is found.

According to the various Order and Respect this Universe has to many ; there are seven Modes thereof assign'd : viz.

*Universals in causing*, such are the common efficient Causes of divers Effects ; as *God*, the *Sun*, &c. See CAUSE, &c.

*Universals in distributing*, such are common or *universal Signs* ; as *all*, *none*, &c.

*Universals in knowing*, which know all things ; as the Understanding, &c.

*Universals in representing*, such are Images, or Ideas of *universal Things* ; as the Idea of a House, of a Man, &c.

*Universals in signifying*, such are common Words, signifying many things ; as *Animal*, *Stone*, &c.

*Universals in being*, or *existing*, are Natures existing in several ; as Humanity in *Peter*, *Paul*, &c. And,

*Universals in predicating*, which exsisting in many things, are separately predicated of 'em all ; as, *ens*, and *unum* : These are also call'd *Logical Universals*.

All these Kinds of *Universals*, the two last only excepted, are not *Universals* in themselves, but only with respect to their Objects caused, represented, &c. So that what we chiefly consider as *Universals*, are the *Universalia in essendo*, and *predicando*.

Now in an *Universal*, they distinguish two things, the *Matter*, call'd the *Material Universal*, *Universale Materiale*, which is the one Nature multipliable in many ; as Humanity in *Peter*, *Paul*, &c. and the *Form*, call'd the *Formal Universal*, which is the Unity of that Nature.

Wherefore, to constitute an *Universal*, 'tis requisite the Nature be one, yet multipliable : But what such a Nature is, has proved Matter of great Controversy, both among the antient and modern Philosophers.

The *Platonists* will have *Universals* to be nothing but divine Ideas.—Now by Idea they mean the Pattern or Form which the Artificer has in view, when he makes any thing : But as this is twofold, *internal*, which is a sort of Image of the Thing to be done, which the Artificer frames in himself ; and *external*, which is something out of himself, which the Artificer imitates : the Philosophers have been infinitely perplex'd, to find which of the two *Plato* meant.—The *Peripateticks* insist he meant the *External* ; but the *Platonists*, and most of the Christian Divines, hold for the *Internal*.

The *Stoicks* and *Nominalists* hold this in common with the *Platonists*, That *Universals* are not in the Things themselves, but out of 'em : The *Stoicks*, particularly, for *Universals*, put a kind of formal Conceptions, or Acts of knowing ; by reason they represent many things at the same time : e. g. Knowledge, representing all Men, is, according to the *Stoicks*, an *Universal*.

The *Nominalists* make Words *Universals* ; by reason the same Word represents many things, as the Word *Man* represents all Men : But both *Stoicks* and *Nominalists* make *Universals* to be something extrinsic to Things themselves ; by reason whatever exists, or is produced, is singular : so that there is no *Universal* really in Things.

The *Peripateticks*, however, contend that there are *Universal* and *Common* Natures in Things themselves ; or that Things and Natures, like each other, form a *Material Universal*.—But as to the Manner wherein they are *universal*, or whence they derive their *Universality*, that is, their Unity and Aptitude of being in many, whether from Nature, or from our Understanding, is matter of dispute among 'em.—If they derive that Unity, wherein their *universal* Form is placed, from Nature ; then, there is an *Universal à parte Rei* ; which is the Opinion of the *Scotists*. See SCOTISTS.

If they don't derive it from Nature, but only from our Minds or Understandings, then the Doctrine of the *Thomists* is allow'd ; who contend that a formal *Universal* has no other Existence, but by an Act of the Intellect. See THOMISTS.

UNIVERSALISTS, in Polemical Divinity, an Appellation given to such as hold *universal* Grace : In like manner as *Particularists* is given to those who hold *particular* and *efficacious* Grace. See GRACE, &c.

The *Arminians* are particularly denominated *Universalists*. See ARMINIAN, and REMONSTRANT.

UNIVERSALITY, the Quality that denominates a thing *Universal*.

The *Catholicks* assert the *Universality* of their Church, both as to Time, and Persons ; and maintain this to be a Mark of the true Church ; which distinguishes it from all other Societies that pretend to the Name. See UNIVERSAL.

UNIVERSALITY, in the Schools.—Logicians make two Kinds of *Universality* ; the one *Metaphysical*, the other *Moral*.

*Metaphysical Universality*, is that which excepts nothing ; as this Proposition, *Every Man is mortal*.

*Moral Universality*, is that which admits of some Exception ; as, *All old Men praise the Times past*. In such-like Propositions, 'tis enough the Thing be ordinarily so ; it not being strictly requir'd that every old Man should be of that Sentiment.

UNIVERSE, a collective Name, signifying the whole World, or the Assemblage of all Bodies ; call'd by the *Greeks* τὸ πᾶν ; and by the *Latins*, *Mundus*, and *Universum* ; as being no other than an University of Bodies. See WORLD.

The Antients, and after them the *Cartesians*, imagin'd the *Universe* to be infinite.—The Reason they give, is, That it implies a Contradiction to suppose it finite, or bounded ; since it is impossible not to conceive Space beyond any Limits that can be assign'd it : Which Space, according to the *Cartesians*, is Body ; and consequently part of the *Universe*. See SPACE.

But that the *Universe* is finite, appears from the two following Considerations—1st, That whatever consists of Parts cannot be infinite ; since the Parts that compose it, must be finite either in Number or Magnitude ; which if they be, what they compose must be so too : Or, 2dly, they must be infinite in Number or Magnitude ; but an infinite Number is a Contradiction ; and to suppose the Parts infinitely big, is to suppose several Infinities, one bigger than another ; which tho it may pass among Mathematicians, who only argue about Infinities *in posse*, or in Imagination, will not be allow'd in Philosophy.

UNIVERSITY, a collective Term, applied to an Assemblage of several Colleges establish'd in a City, wherein are Professors in the several Sciences, appointed to teach them to Students ; and where Degrees, or Certificates of Study



Study in the divers Faculties are taken up. See ART, and SCIENCE.

In each *University*, four Faculties are usually taught; Theology, Medicine, Law, and the Arts and Sciences. See FACULTY.

They are call'd *Universities*, or *Universal Schools*, by reason the four Faculties are supposed to make the World or *Universe* of Study.

In the Eye of the Law, an *University* is held a mere Lay Body, or Community; tho, in reality, it be a mix'd Body, compos'd partly of Laymen, and partly of Ecclesiasticks. See COMMUNITY, COMPANY, &c.

*Universities* had their first Rise in the XIIth and XIIIth Centuries.—Those of *Paris* and *Boulogne* pretend to be the first that were set on foot; but then they were on a different Footing from the *Universities* among us. See SEMINARY, and SCHOOL.

The *University* of *Paris* is said to have commenced under *Charlemagn*, and to owe its Rise to four *Englishmen*, Disciples of Venerable *Bede*; who going to that City, made a Proposal to set up and sell Learning; and accordingly held their first Lectures in Places assign'd 'em by that Prince: Such is the Account given by *Gaguin*, *Gilles*, *de Beauvais*, &c. Tho the Authors who wrote in those Days, as *Eginard*, *Aemon*, *Rheginon*, *Sigebert*, &c. make not the least mention thereof.

Add, that *Pasquier*, *du Tillet*, &c. declare openly against the Opinion; and assert, that its first Foundations were not laid till *Louis* the Young, and *Philip Auguste*, in the XIIth Century.—The earliest mention we find made of it, is in *Regardus*, who lived in that Age; and who was Cotemporary with *Peter Lombard*, the Master of the Sentences, the great Glory of that *University*; in Memory of whom, an Anniversary is to this Day observ'd by that Body, in the Church of *S. Marcel*, where he lies buried.

But 'tis certain it was not establish'd all at once: It appears to have been at first no other than a publick School in the Cathedral Church; from which it grew, by little and little, under the Favour and Protection of the Kings, into a regular Body.

In effect, our own *Universities*, *Oxford* and *Cambridge*, seem intitled to the greatest Antiquity of any in the World; and *University*, *Baliol*, and *Merton* Colleges in *Oxford*, and *St. Peter's* in *Cambridge*, all made Colleges in the XIIIth Century, may be said to be the first regular Endowments of this kind in *Europe*.

For the *University* College in *Cambridge* had been a Place for Students ever since the Year 872; yet this, like many of the other antient Colleges beyond Sea, and *Leyden* to this Day, was no proper College; but the Students, without any Distinction of Habit, liv'd in Citizens Houses; having only Meeting-Places to hear Lectures, and dispute.

In After-times, there were Houses built for the Students to live in Society; only each to be at his own Charge, as in the Inns of Court. See INN.

These, at first, were call'd *Inns*; but now *Halls*. See HALL.

At last, plentiful Revenues were settled on several of these Halls, to maintain the Students in Diet, Apparel, &c. and these were call'd *Colleges*. See COLLEGE.

The *Universities* of *Oxford* and *Cambridge* are govern'd, next under the King, by a *Chancellor*, who is to take care of the Government of the whole *University*, to maintain the Liberties thereof, &c. See CHANCELLOR.

Under him is the *High Steward*, whose Office is to assist the Chancellor and other Officers, when requir'd, in the Execution of their Offices; and to hear and determine capital Causes, according to the Laws of the Land, and the Privileges of the *University*.

The next Officer is the *Vice-Chancellor*, who officiates for the Chancellor in his absence.—There are also two *Proctors*, who assist in the Government of the *University*; particularly in the Business of School-Exercise, taking up Degrees, punishing Violaters of the Statutes, &c. See PROCTOR.

Add, a *publick Orator*, *Keeper of Records*, *Register*, *Beaules*, and *Virger*.

For the Degrees taken up in each Faculty, with the Exercises, &c. requisite thereto, see DEGREE; see also DOCTOR, BACHELOR, &c.

UNIVOCAL, in the Schools, is applied to two or more Name or Terms, that have but one Signification. In Opposition to *Equivocal*; which is, where one Term has two or more Significations.

Or, *Univocal Terms*, are such whose Name, as well as Nature, is the same; in opposition to *Equivocals*, whose Names are the same, but their Natures very different. See EQUIVOCAL.

For a thing to be predicated *univocally* of any others, it is to be attributed to all of them alike, and in the same proper Sense. See PREDICATE, and PREDICABLE.

UNIVOCAL Generation.—The Doctrine of the Antients with respect to Propagation, was, That all perfect Animals were produced by *Univocal Generation*, that is, by the sole Uni-

on or Copulation of a Male and Female of the same Species or Denomination: and, that Insects were produced by *Equivocal Generation*, without any Seed, and merely of the Corruption of the Earth exalted, and as it were impregnated by the Sun's Rays. See EQUIVOCAL, INSECT, &c.

Some Philosophers make a kind of *Intermediate Generation*, between *Equivocal* and *Univocal*, which they call *Analogous Generation*. See GENERATION.

UNIVOCALS, call'd by the *Greeks*, *Synonyma's*, are defined by *Aristotle* to be those Things whose Name is common, and the Reason corresponding to the Name, that is, the Definition of the Idea affix'd to it, the same.

Thus, under the Name and Definition of *Animal*, Man and Brute are equally included; and Circle and Square in the Reason or Definition of a *Figure*.

Here, the word, as *Figure*, they use to call *Univocum univocans*, or *univocating Univocal*; and the Things included under the univocal Name, *Univoca univocata*, *univocated Univocals*.

UNIVOCATION, in Logicks and Metaphysicks.—The School-men have long disputed about the *Univocation* of Being, *i. e.* whether the general Idea of *Being* agree in the same manner, and in the same sense, to the Substance and the Accident; to God, and the Creature.

UNLAWFUL, *Illegal*, something prohibited by, or contrary to, the Terms of a Law, either divine or human. See LAW.

UNLAWFUL Assembly, is particularly used for the meeting of three or more Persons together by Force, to commit some unlawful Act; as to assault any Person, to enter his House, or Land, &c. and thus abiding together, tho not attempting the Execution thereof. See ASSEMBLY, RIOT, &c.

By the Stat. 16 Car. II. if five Persons, or more, shall be assembled together, above those of the Family, at any Conventicle or Meeting, under colour of any exercise of Religion, it is *unlawful*, and punishable by Fines, and otherwise, as in that Statute is provided.

UNLIKE Quantities, and Signs in Algebra. See LIKE Signs and Quantities; see also SIGN, and QUANTITY.

UNLIMITED or *Indeterminate Problem*, is such a one as is capable of infinite Solutions.—As, to divide a Triangle given into two equal Parts, to make a Circle pass thro' two Points assign'd, &c. See PROBLEM.

UNLUTING, in Chymistry, the taking away of the Lute, Loam, or Clay, where-with a Vessel is closed, join'd to another, or the like. See LUTE.

UNMOOR, a Term used at Sea, when a Vessel that before rid, or was held by two Anchors, is begun to get them up, and prepared to weigh. See ANCHOR and MOOR.

UNQUESPRIST, a Plea in Law suit, by which a Man professes himself always ready to perform what the Demandant requires.

UNREEVING a Rope. See REEVE.

UNRIGGING of a Ship, is the taking away the Rigging or Cordage. See RIGGING.

UNSEELING, in Falconry, a taking away the Thread that runs thro' the Hawk's Eye-lids and hinders her Sight. See HAWK, and FALCONRY.

Drawing the Strings of the Hood, to be in Readiness to pull off, is call'd, *Unstriking the Hood*.

VOCABULARY, in Grammar, a Term signifying, a Collection of the Words of a Language, with their Significations; otherwise call'd a *Dictionary*, *Lexicon*, or *Nomenclature*. See WORD.

The *Vocabulary* is, properly, a lesser kind of Dictionary, which does not enter so minutely into the Origins and different Acceptations of Words. See DICTIONARY.

The *Italian Vocabulary* of the Academy *de la Crusca*, was forty Years in compiling.

The Word is *French*, form'd of the obsolete term *Vocable*; of the *Latin*, *Vocabulum*, word.

VOCAL, something that relates to the Voice. See VOICE.

Thus, *Vocal Prayer* is that spoke out, or delivered in words: In contra-distinction to *mental Prayer*. See PRAYER.

In our antient Customs, *Vocalis* is frequently used for *scall'd*—*Post hæc Morganus de tribu Walensium, & alter nomine Madocus vocalis princeps eorum*. Matt. Paris.

The Term is sometimes also used substantively, in speaking of Matters of Election, to signify a Person who has a right to vote.—A Man must have been a Religious a certain number of Years, to be a *Vocal*. See VOTE.

VOCAL Music, is Music set to Words, especially Verses; and to be perform'd with the Voice. In contra-distinction to *Instrumental Music*, compos'd only for Instruments, without Singing. See MUSIC.

Poetry then makes a necessary Part of *Vocal Musick*; and this appears to have been the chief, if not the only Practice of the Antients, from the Definitions which they gave us of Music. See HARMONY, &c.

Their *Vocal Music* seems to have had some Advantage over ours, in that the *Greek* and *Latin* Languages were better contrived to please the Ear than the modern ones.—In effect, *Vossius* taxes all the later Languages as unfit for Music,



and says, ' We shall never have any good *Vocal Music* till our Poets learn to make Verses on the Model of the Antients,' *i. e.* till the antient metrical Feet and Quantities are restored. See *VERSE*, and *QUANTITY*.

But it is to be observ'd, that the *Rythmus* of their *Vocal Music*, was only that of their Poetry; and had no other Forms and Mutations than what the metrical Art afforded. See *MUTATION*.

Their Changes were no other than from one kind of *Metrum* or Verse, to another; as from *Iambic*, to *Choric*. See *MEASURE*, and *RYTHMUS*.

Their *Vocal Musick*, then, consisted of Verses set to musical Tunes, and sung by one or more Voices, in Chorus, or alternately; sometimes with, and sometimes without the Accompaniments of Instruments. See *SYMPHONY*.

For Instrumental Musick, in the manner we have defin'd it, 'tis not very clear they ever had any. See *SYNAULIA*, &c.

*VOCATION*, or *Calling*, among Divines, the Grace or Favour which God does any one in calling him out of the way of Death, and putting him into the way of Salvation.

In this Sense, we say, the *Vocation* of the *Jews*; *Vocation* of the *Gentiles*, &c.

There are two Kinds of *Vocation*; the one *external*, the other *internal*.

The first consists in a simple and naked proposing of Objects to the Will.—The second is that which renders the first effectual, by disposing our Faculties to receive those Objects.

*VOCATION* is also used for a Destination to any State or Profession.—'Tis a Rule, that none are to enter the Ecclesiastick or Monastick State, without a particular *Vocation*, or Call. See *ORDERS*, *ORDINATION*, &c.

The *Romanists* hold the *Vocation* of the Reformed Divines null and invalid.—Among our selves, some hold an uninterrupted Succession necessary for the Validity of the *Vocation* of a Priest.

*VOCATIVE*, in Grammar, the fifth Case, or State of Nouns. See *CASE*.

When we name the Person we are speaking to, or address our selves to the Thing we are speaking of, as if it were a Person; the Noun or Name acquires a new Relation, which the *Latins* and *Greeks* express by a new Termination, call'd the *Vocative*.

Thus, of *Dominus*, Lord, in the Nominative, the *Latins* have made *Domine*, O Lord, in the *Vocative*; of *Antonius*, *Antoni*, &c.—But as this was a thing not absolutely necessary, and as the Nominative Case might serve on such Occasions; this new Case, or Termination, was not universal: in the Plural, for Instance, it was the same with the Nominative; and even in the Singular, it was only practis'd in the second Declension among the *Latins*; and in *Greek*, where it is the most common, it is frequently neglected, and the Nominative us'd instead of it: as in that Passage in the *Greek Psalms*, quoted b. *St. Paul* to prove the Divinity of Jesus Christ, *Θεὸς εἶ, ὁ Θεός, ἡ θύ τῆς θρόνου, O God*.

In *English*, and most of the modern Tongues, this Case is ordinarily express'd in Nouns that have an Article in the Nominative, by suppressing that Article: as, *The Lord is my hope—Lord, thou art my hope*: Tho on many Occasions we use an Interjection.

*VOCIFERATIO*, in our old Law-Books, the same with *Hue and Cry*.

—*Qui furem plegiatum dimiserit, qui ei obviaverit & gratis sine Vociferatione dimiserit*, &c. *Leg. Hen. I.*

*VOICE*, *Vox*, a Sound produced in the Throat and Mouth of an Animal, by an Apparatus of Instruments for that purpose. See *SOUND*.

*Voices* are either *Articulate*, or *Inarticulate*.

*Articulate Voices*, are those whereof several conspire together to form some Assemblage, or little System of Sounds: such are the *Voces* expressing the *Letters* of an Alphabet, numbers of which join'd together form *Words*. See *LETTER*, and *WORD*.

*Inarticulate Voices*, are such as are not organiz'd, or assembled into Words: Such is the barking of Dogs, the braying of Asses, the hissing of Serpents, the singing of Birds, &c.

The Formation of the *human Voice*, with all the Varieties thereof observ'd in Speech, Musick, &c. make a very curious Article of Inquiry; and the Apparatus and Organism of the Parts ministering thereto, is something exceedingly surprising.

Those Parts are, the *Trachea*, or Wind-pipe, thro' which the Air passes and repasses into the Lungs; the *Larynx*, which is a short cylindric Canal, at the Head of the *Trachea*; and the *Glottis*, which is a little oval Cleft or Chink, left between two semicircular Membranes, stretch'd horizontally within the *Larynx*; which Membranes, tho capable of joining close together, do generally leave an Interval, either greater or less, between 'em, call'd the *Glottis*.—See particular Descriptions of each of these Parts, under the Articles *TRACHEA*, *LARYNX*, and *GLOTTIS*.

The long Canal of the *Trachea*, terminated a-top with the *Glottis*, appears so like a Flute, that the Antients made no doubt but the *Trachea* contributed the same to the *Voice*, as the Body of the Flute does to the Sound of that Instrument.—*Galen* himself fell, in some measure, into the Mistake: He perceived, indeed, that the principal Organ of *Voice* was the *Glottis*; but he still allow'd the *Trachea* a considerable share in the Production of Sound.

*Galen's* Opinion was follow'd by all the Antients after him; and even by all the Moderns, before *M. Dodart*.—But that Author, observing that we don't either speak or sing, when we inspire, or take in the Air, but only when we expire, or expel it; and this the Air coming out of the Lungs, passes always out of the minuter Vesicles of that Part into larger; and at last into the *Trachea* it self, which is the largest of all: that th' its Passage becoming still more free and easy, and this more than ever in the *Trachea*, it can never undergo such a Violence, and acquire such a Velocity in that Canal, as is requir'd to the Production of Sound.—But that, as the Aperture of the *Glottis* is very small, in comparison with the Width of the *Trachea*, the Air can never get out of the *Trachea* by the *Glottis*, without a vast Compression and Augmentation of its Velocity; and that by this means, in passing, it communicates a brisk Agitation to the minute Parts of the two Lips of the *Glottis*, gives 'em a kind of Spring, and occasions 'em to make Vibrations; which communicated to the passing Air, occasions the Sound. See *VIBRATION*.

This Sound, thus form'd, proceeds into the Cavity of the Mouth and Nostrils; where 'tis reflected, and resounds: And on this Resonance, *M. Dodart* shews, it is, that the Agreeableness of the Voice entirely depends.—The different Constitutions, Forms, &c. of the divers Parts of the Mouth, contribute to the Resonance, each in their way; and from this Mixture of so many different Resonances in their due Proportion, results a Harmony in the human *Voice*, inimitable by any Musician.

Hence it is, that when any of these Parts is disorder'd, *e. g.* the Nose stop'd, the *Voice* becomes displeasing.

This Resonance of the Cavity of the Mouth, does not seem to consist in a simple Reflexion, such as that of a Vault, &c. but in a Resonance proportionate to the Tones of the Sound sent into the Mouth from the *Glottis*; and accordingly, we find this Cavity to lengthen and shorten it self, according to the Depth or Acuteness of the Tone.

Now, for the *Trachea* to effect this Resonance, as it was the common Opinion it did; it would be requir'd, that the Air, after its being modify'd and turn'd into Sound by the *Glottis*, instead of continuing its Course from within outwards, should return from without inwards, and thus strike on the Sides of the *Trachea*: Which can never happen, except in those who have a violent Cough, and in ventiloquous Persons. Indeed, in most River-Fowl, which have a very strong *Voice*, the *Trachea* does resound; but the reason is, that the *Glottis* is placed at the bottom of the *Trachea*, and not at the top, as in Men.

That Canal, then, which at first pass'd for the principal Organ of *Voice*, is found not to be so much as the secondary one, *i. e.* not that which occasions the Resonance.—It does not serve the *Glottis*, as the Body of a Flute does its Plug; but instead of that, the Mouth serves the *Glottis* as the Body of some other Wind Instrument not yet known in Musick.—In effect, the Office of the *Trachea*, is no other than that of the Port-Vent in an Organ, *viz.* to furnish Wind.

For the Cause of the different Tones of *Voice*—As the Organs that form the *Voice* make a kind of Wind-Instrument, one might expect to find some Provision therein, answerable to that which produces the difference of Tones in some other Wind-Instruments. But in the divers Kinds of Wind-Instruments, the Hautboy, Organ, Clarion, &c. there is none.—The Tone, therefore, must be attributed either to the Mouth and Nostrils, which occasion the Resonance, or to the *Glottis*, which produces the Sound: And as all the different Tones are produced in Man by the same Instrument; it follows, that the Part which produces 'em must be capable of Changes answerable thereto.

Now, for a grave Tone, we know, there is more Air requir'd than for an acute one.—The *Trachea*, therefore, to let this greater quantity pass, must dilate and shorten it self; by which shortening, the External Canal, that is, the Canal of the Mouth and Nose, reckon'd from the *Glottis* to the Lips, or Nostrils, is lengthen'd.—For, the shortening of the internal Canal, *i. e.* of the *Trachea*, brings the *Larynx* and *Glottis* lower down; and of consequence makes its distance from the Mouth, &c. greater: And there is a Change in the length of each Canal, for every change of Tone, and Semitone.—Accordingly, 'tis easy to observe, that the Knot of the *Larynx* alternately rises and falls in all Quaverings, or Shakings of *Voice*, how small soever the difference of Tone may be.



Hence, as the Depth of the Tone of a Hautboy is answerable to the Length of the Instrument; the longest Fibres of the Wood, whose Vibrations make the Resonance, making always the slowest Vibrations, and consequently the deepest Tone: It may appear probable, that the Concavity of the Mouth, by its lengthening for grave Tones, and shortening for acute ones, might serve very well for the Production of the divers Tones: but M. *Dodart* observes, that in that play of the Organ call'd the *human Voice*, the longest Pipe is six Inches, and yet with all that length it does not make any difference of Tone, but the Tone of the Pipe is precisely that of the Plug; whereas the Concavity of the Mouth of a Man of the gravest *Voice*, not being above six Inches deep; 'tis evident that can't modify, vary, and give the Tone. See *TUNE*.

'Tis the Glottis, then, that forms the Tone, as well as the Sound; and the manner of forming the various Tones, is by varying its Aperture.—A piece of Mechanism too admirable not to be here particularly inquir'd into.

The human Glottis, then, represented in *Tab. Nat. Hist.* *Fig. 11.* is only capable of one proper Motion, *viz.* that of an Approach of its Lips, A D B and A B D.—Accordingly, the dotted Lines A E B, A F B, A G B, exhibit three different degrees of Approach.—These different Apertures of the Glottis, Anatomists usually attribute to the Action of the Muscles of the Larynx; but M. *Dodart* shews, from their Position, Direction, &c. that they have other Uses; and that the opening and shutting of the Glottis is effected by other means, *viz.* by two tendinous Cords, or Strings, inclosed in the two Lips of that Aperture.

In effect, each of the two semicircular Membranes, whose Interstice forms the Glottis, is doubled back upon it self; and within each Duplication is a Chord or String, which is fasten'd at one End to the fore-part of the Larynx, and to the hind-part at the other.—'Tis true, they appear more like Ligaments than Muscles; as consisting of white and membranous Fibres, not of red and fleshy ones: But the vast Number of minute Changes in this Aperture, necessary to form the vast Variety of Tones, make an extraordinary kind of Muscle, by whose Contraction they should be effected, absolutely necessary. Common fleshy Fibres, wherein the Blood is receiv'd in large quantity, had been infinitely too coarse for such delicate Motions.

These Strings, which in their State of Relaxation make each a little Arch of an Ellipsis; as they contract more and more, become longer, but less and less curve; and at last, with the greatest Contraction they are capable of, degenerate into two right Lines applied close to each other; so close and so firm, that an Atom of Air can't escape out of the Lungs, how full soever they may be, and how great an Effort soever all the Muscles of the lower Venter may make against the Diaphragm, and by the Diaphragm against these two little Muscles.

The different Apertures of the Lips of the Glottis, then, produce all the different Tones in the six Parts of Musick, *viz.* *Bass*, *Common pitch*, *Tenor*, *Counter-tenor*, *Treble-Bass*, and *Treble*; and the Manner is thus:

The *Voice*, we have shewn, can only be form'd by the Glottis; but the Tones of the *Voice* are Modifications of the *Voice*; and can only be produced by the Modifications of the Glottis.—Now the Glottis is only capable of one Modification, which is, the mutual Approach or Recess of its Lips: 'Tis this, therefore, produces the different Tones.—Now that Modification includes two Circumstances: the first, and principal, is, that the Lips are stretch'd more and more, from the lowest Tone to the highest; the second is, that the more they are stretch'd, the nearer they approach.

From the first it follows, that their Vibrations will be so much the quicker, as they come nearer their highest Tone; and that the *Voice* will be just when the two Lips are equally stretch'd, and false when unequally; which agrees perfectly well with the Nature of String Instruments.

From the second it follows, that the higher the Tones are, the nearer will they approach each other; which agrees perfectly well with Wind Instruments, govern'd by Reeds, or Plugs.

The Degrees of Tension of the Lips, are the first and principal Cause of Tones; but their Differences are insensible.—The degrees of Approach, are only Consequences of that Tension; but their Differences are more easily assign'd.

To give a precise Idea of the thing, therefore, we had best keep to that; and say, that this Modification consists in a Tension, from whence results a very numerous Subdivision of a very small Interval; which yet, small as it is, is capable, physically speaking, of being subdivided infinitely. See *DIVISIBILITY*.

This Doctrine is confirm'd from the different Apertures found in dissecting Persons of different Ages of both Sexes.—The Aperture is less, and the exterior Canal always shallower in the Sex and Ages fittest to sing Treble.—Add, that the Reed of a Hautboy, separated from the Body of the

Instrument, being a little press'd between the Lips, will yield a Tone somewhat higher than its natural one; and if press'd still more, will yield another still higher: And thus an able Musician may run successively thro' all the Tones and Semitones of an Octave.

'Tis different Apertures, then, that produce, or at least accompany different Tones, both in Natural Wind Instruments; and Artificial ones; and the Diminution of the Aperture, raises the Tones both of the Glottis and the Reed.

The Reason why lessening the Aperture heightens the Tone, is, that the Wind passes thro' it with the greater Velocity; and from the same Cause it is, that if any Reed, or Plug of an Instrument be too weakly blown, its Tone will be lower than ordinary.

Indeed, the Contractions and Dilatations of the Glottis, must be infinitely delicate: By an exact Calculation of the ingenious Author abovemention'd, it appears, that to perform all the Tones and Semitones of a common *Voice*, which is computed to reach to 12 Tones to perform all the Particles and Subdivisions of those Tones, into Commas and other minuter tho' still sensible Parts; to perform all the Shades, or the Differences in a Tone when sounded more or less strong, without changing the Tone: the little Diameter of the Glottis, which does not exceed  $\frac{1}{8}$  of an Inch, but which varies within that Extent at every Change, must be actually divided into 9632 Parts; which Parts are yet very unequal, and therefore many of 'em much less than the  $\frac{1}{9632}$  Part of an Inch.—A Delicacy scarce to be match'd by any thing but a good Ear, which has so just a Sense of Sounds, as, naked, to perceive Differences in all these Tones; even those whose Origin is much less than the  $\frac{1}{9632}$  Part of an Inch. See *HEARING*.

VOICE, in Grammar, is a Circumstance in Verbs, whereby they come to be consider'd as either *active* or *passive*, *i. e.* either as expressing an Action impress'd on another Subject, as *I beat*; or receiving it from another, as *I am beaten*. See *VERB*; see also *ACTIVE*, and *PASSIVE*.

VOICE, in Matters of Elections, denotes a *Vote*, or *Suffrage*. See *VOTE*, &c.

In this Sense, a Man is said to have a *deliberate Voice*, when he has a Right to give his Advice and Opinion in a Matter of debate, and his Suffrage is taken.—An *active Voice*, when he gives his Vote for the Election of any one; and a *passive Voice*, when the Suffrages may fall on him to be elected.—An *excitative Voice*, when he may act to procure another to be elected.—A *consultative Voice*, when he can only offer Reasons and Remonstrances, whereon the Chief or Head determines at his own Discretion: Such the Cardinals have, with regard to the Pope; the Masters of Chancery, with regard to the Lord Chancellor, &c.

VOID Space, in Physicks. See *VACUUM*.

VOID, in Common Law. See *ANNULLING*.

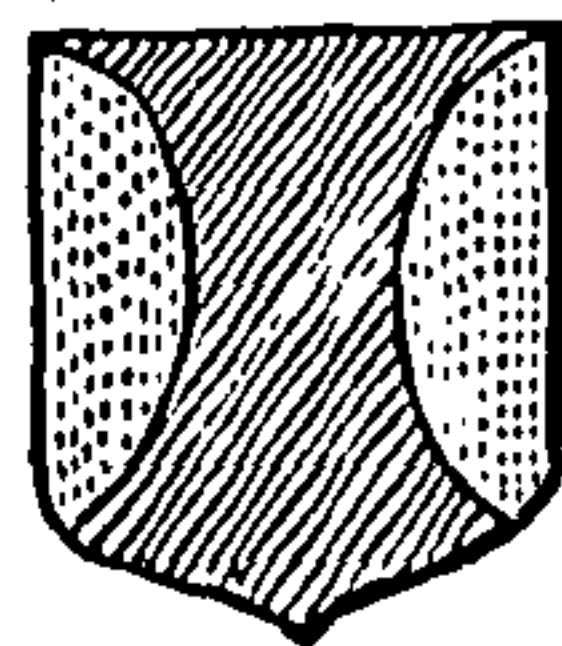
VOIDANCE, VACANCY, in the Canon Law, a Want of an Incumbent upon a Benefice. See *VACANCY*, &c.

This is twofold, either *in Law*, *de Jure*; as when one holds several Benefices that are incompatible: or *de Facto*, *in Deed*; as when the Incumbent is dead, or actually depriv'd.

VOIDED, UVIDE, in Heraldry, is understood of an Ordinary whose inner or middle Part is cut out; leaving nothing but its Edges to show its Form; so that the Field appears thro' it.

Hence it is needless to express the Colour or Metal of the voided Part; because it must of course be that of the Field.

Thus, the *Cross voided* differs from the *Cross fimbriated*, in that this latter does not shew the Field thro' it, as the other does.—And the same is used in other Ordinaries.



VOIDER, in Heraldry, one of the Ordinaries, whose Figure is much like that of the Flaque, or Flanch; only that it doth not bend so much. See *FLANCH*.

This Armoury, they say, is properly the Reward of a Gentlewoman that has well served her Prince.—It is always born by Pairs.

VOIDING, in Medicine. See *EVACUATION*.

In the *Philosophical Transactions*, we have an account of one *Matt. Milford*, who voided a Worm by Urine, supposed to have come from the Kidneys. See *WORMS*.

Dr. *Lister* mentions true Caterpillars voided by a Boy of nine Years old.—Mr. *Jessop* saw Hexapods vomited up by a Girl.

*Catherina Geilaria*, who dy'd in 1662, in the Hospital of *Altenburg*, for 20 Years voided by Vomit and Stool, Toads, and Lizards. *Ephem. German.* T. I. Obs. 103.

In the same *Ephem.* is an Instance of a Kitten, bred in the Stomach, and vomited up.—Of Whelps, Frogs, *Lacerte Aquatica*, and other Animals, bred the like way.—*Bartholine* gives us an Instance of a Worm, bred in the Brain, and voided by the Nose of O. IV. See *VERMES*.

VOIR DIRE, in Law—When, upon a Trial at Law, it is prayed that a Witness may be sworn upon a *Voir dire*; the



the meaning is, he shall upon his Oath speak or declare the Truth, whether he shall get or lose by the Matter in Controversy.—If he be unconcern'd, his Testimony, is allow'd; otherwise, not. See OATH, WITNESS, &c.

VOL, among the *French* Herald's, signifies the two Wings of a Fowl born in Armoury as being the whole that makes the Flight: Accordingly, a *Demivol* is a single Wing.

VOLA, the Palm of the Hand. See HAND.

VOLANT, in Heraldry, is when a Bird in a Coat of Arms is drawn flying, or having its Wings spread out.

VOLATILE, in Physicks, is commonly used to denote a mix'd Body whose integral Parts are easily dissipated by Fire, or other heat; but is more properly used for Bodies whose Elements, or first component Parts, are easily separated from each other, and dispers'd in Air. See BODY, COHESION, ELEMENT, &c.

For, as any mix'd Body is said to be fix'd in a double Sense; so may it be said to be *Volatile* two ways: whence the same Body, e. g. Mercury, is both *volatile* and fix'd at the same time.

Since, as its integral Parts, or those which still retain the Nature of Mercury, are easily separable by Fire, and readily fly away; it is said to be *Volatile*: And yet as 'tis very difficult to destroy its Contexture, and resolve it by Fire, or any other Menstruum, into its first Elements, it is said to be *fix'd*.—The same may be said of Sulphur, Antimony, &c.

Minerals, for the generality, are less *volatile* than Vegetables, and Vegetables less than Animals. See FIX'D.

The Chymists distinguish between *Volatile* Salts, and Fix'd Salts. See SALTS.

The Capitals of Alembicks stop and collect the *Volatile* Parts of Substances in Sublimation; and make what we call *Flowers*. See FLOWERS.

The Particles of Fluids which do not cohere very strongly together, and are of such Smallness, as renders them most susceptible of those Agitations which keep Liquors in a Fluor, are easily rarify'd into Vapour; and, in the Language of the Chymists, are *Volatile*.—Those which are grosser, and so less susceptible of Alterations; or cohere by a stronger Attraction, do not evaporate without a stronger Heat, or perhaps not without Fermentation: These are what the Chymists call *Fix'd Bodies*. *Newton. Optic.* p. 371.

VOLATILE, in Chymistry—When the Fire decomposes any mix'd Body, the Parts most disposed to receive a great Motion, are soonest loosen'd, and rise up in the Order which the differences of that Disposition give them; the rest remaining immoveable at the bottom of the Vessel. See ANALYSIS, FIRE, &c.

Those that rise first, are called *Volatile Parts*; such are *Phlegm*, *Oil*, *Spirits*, and *Salts*, both urinous and alkalious. See SPIRIT, PHLEGM, and SALT.

The Parts remaining, viz. *Earth*, and *Lixivial Salts*, are call'd *Fix'd*. See EARTH, and VOLATILISATION.

For the making of *Fix'd Salts* volatile; see VOLATILISATION.

VOLATILISATION, the Act of rendering *Fix'd* Bodies *Volatile*; or of resolving 'em by Fire into a fine, subtle Vapour, or Spirit, which easily dissipates, and flies away. See VOLATILE.

All Bodies, even the most fix'd, as Gold may be *volatiliz'd*; either of themselves, or with the Admixture of some *volatile* Substance, or Spirit; by Distillation, or Sublimation. See DISTILLATION, and SUBLIMATION; see also GOLD, BURNING-GLASS, &c.

In the *Memoirs of the French Academy*, we have a Discourse on the *Volatilisation of the fix'd Salts of Plants*, by M. *Homberg*.—That admirable Chymist, it seems, by an odd Accident, found fix'd Salts spontaneously *volatiliz'd* in Soap: Now Soap, we know, is a Composition of Oil, and the alkalous lixivial Salts of the Plant *Kali*.—Upon this, M. *Homberg* conjectur'd, that the Oil from which the volatile Salts seem to derive their Volatility, being intimately mix'd with the fix'd Salts of the *Kali* in the Soap, had render'd them *Volatile*: So that they cease to be Alkalious, by reason their Pores are now fill'd with the Oil which they have absorb'd.—Oil, in effect, has always somewhat of an Acid in it; which Acid, being join'd to the Alkali, the whole is render'd a kind of intermediate Salt; which yet, as the Acid and Alkali were only join'd by means of the Oil, is still oily or sulphureous.

In consequence of this View, he made divers chymical Operations, whereby he found, that to dispose the fix'd Salts of Plants to *volatilise*, the Process is to be begun by making them into a Sapa, and letting that Sapa shoot out little saline Points, or Crystals on its Surface; which Crystals are no other than fix'd Salts already *volatiliz'd*.—Then, the Remainder of the Matter is to be set over the Fire, after being well imbib'd and penetrated by some new Liquor, proper to assist in a new Sublimation of more fix'd Salts to be *volatiliz'd*; and this to be repeated till no more Salts will rise.

The Choice of the Liquor wherewith the Sapa is to be saturated, is not indifferent—Water is, of all other, the least fit for the Effect: Oil does well; yet distill'd Oil better than that drawn from Expression: and Spirit of Wine best of all.

By such means, M. *Homberg* *volatiliz'd* almost half a Quantity of Salt of Tartar, which is a fix'd Vegetable Salt. See TARTAR.

VOLATILITY. See SUBLIMATION.

VOLCANO, or VULCANO, in Natural History, a Name given to Mountains that belch, or vomit Fire, Flame, Ashes, Cinders, Stones, &c. See MOUNTAIN.

Such are Mount *Ætna* in *Sicily*, Mount *Vesuvius* near *Naples*, &c. See ERUPTION.

Near *Guatemala* in *South America*, are two Mountains, the one call'd *Volcano of Fire*; the other of *Water*.—Out of the first, huge pieces of Rocks are frequently hurl'd with as much vehemence as Balls out of a Canon; and a written Letter may be read by the Light of its Flames, at the distance of three Miles.

Out of the other, vast Quantities of Water are continually spued up. See EARTHQUAKE.

*Volcanos* and Ignivomous Mountains, tho some of the most terrible Phenomena in Nature, have their Uses; being a kind of Spiracles, or Tunnels, whereby to vent the Fire and Vapour, that would otherwise make a more dreadful Havock by Convulsions and Earthquakes.

Nay, if the Hypothesis of a central Fire and Waters, be admitted; these Outlets must be absolutely necessary to the Peace and Quiet of the terraqueous Globe.—Accordingly, Dr. *Woodward* observes, there is scarce any Country much annoy'd with Earthquakes, but has one of these fiery Vents; which are constantly observed to be all in Flames, whenever an Earthquake happens; by which means, they disgorge that Fire, which while it was underneath, was the Cause of the Disaster.—He adds, that were it not for these *Diocretula*, whereby the central Fire has an Exit, 'twould rage in the Bowels of the Earth much more furiously, and make much greater Havock than it does; and that there are not wanting Instances of Countries that have been wholly freed from Earthquakes, by the Eruption of a new *Volcano* there, See EARTHQUAKE.

VOLERY, a great Bird-Cage, so large, that the Birds have room to fly up and down in it. See AVIARY.

VOLITION, the Act of Willing. See WILL.

VOLLEY, a military Salute, made by discharging a great number of Fire-Arms at the same time.

In the *Philosophical Transactions*, Mr. *Robert Clarke* gives us an Account of a very remarkable Effect of firing some *Volley*s of small Shot: 'Upon proclaiming the Peace in 1697, two Troops of Horse were drawn in a Line, the Centre whereof was against a Butcher's Door, who kept a very large, courageous, Mastiff Dog, the biggest in the Town.

'Upon firing of the first *Volley*, the Dog, who before lay a-sleep by the Fire, started up, ran into an upper Room, and hid himself under the Bed.—The Servant being about to beat him down, (as he had never used to go up Stairs) a second *Volley* came; which made the Dog rise, run several times about the Chamber, with violent Tremblings, and strange Agonies.—But immediately a third *Volley* came; upon which the Dog run once or twice about, fell down, and died immediately; throwing out Blood at Mouth and Nose.'

VOLO, in Antiquity, a Name which the Romans gave the Slaves, who, in the second *Punic* War, offer'd themselves to serve in the Army; upon a want of a sufficient Number of Citizens. See SLAVE.

The Names *Volo*, *Volones*, they are said to have had from their offering themselves voluntarily.

*Festus* says, 'twas after the Battle of *Cannæ* that this happen'd: *Macrobius*, *Sat. Lib. I. cap. ii.* places it before that Battle.

*Capitolinus* tells us, that *Marcus Aurelius* form'd Troops or Legions of Slaves, which he call'd *Voluntarii*; and that the like Forces in the second *Punic* War had been call'd *Volones*.—But before *M. Aurelius*, *Augustus* had given the Name *Voluntarii* to Forces which he had raised out of *Liberti*, or Freedmen; as we are assur'd by *Macrobius*, *Sat. Lib. I. cap. ii.*

VOLUME, VOLUMN, VOLUMEN, a Book, or Writing of a just bulk to be bound by it self.

The Library of *Ptolemy* King of *Egypt*, contain'd, according to *Aulus Gellius*, three hundred thousand Volumes; and according to *Sabellicus*, seven hundred thousand. See LIBRARY.

*Raymond Lully* wrote above four thousand Volumes; whereof we have divers Catalogues extant.—'Tis held, that *Trismegistus* wrote six thousand five hundred twenty five Volumes; others say, thirty six thousand five hundred twenty nine: But 'tis much more rational to suppose, with *la Croix*, that



that it was the Custom of the *Egyptians* to put all the Books they compos'd under the Name of *Trismegistus*.

The Word had its rise à *volvendo*; the ancient way of making up Books being in Rolls of Bark, or Parchment. See ROLL.

This manner lasted till *Cicero's* Time, and long after that Paper was invented, and Books wrote thereon—The several Sheets were glued, or pasted End to End, wrote only on one side; and at the bottom a Stick fasten'd, call'd *Umbilicus*; and at the other end a piece of Parchment, whereon was the Title of the Book in Letters of Gold.

And yet, we are assured, King *Attalus* had, long before, done up some of his Books in the square form; as having found the Secret of Parchment, which would bear writing on both sides. See PARCHMENT.

At present, *Volume* is chiefly used in the same Sense with *Tome*, for a Part or Division of a Work, bound separately.—In this Sense, we say, the *Councils* are printed at the *Leopore* in 37 *Volumes*. See *TOME*.

The *VOLUME* of a *Body*, is sometimes also used among Philosophers, for its *Bulk*, or the Space inclosed within its Surfaces.

*VOLT*, in the Manage, signifies a round or circular Motion, consisting of a Gate of two Treads, made by an Horse going sideways round a Centre; the two Treads marking parallel Tracks, one by the Fore-feet, larger; and the other by the Hind-feet, smaller: the Shoulders bearing outwards, and the Croup approaching towards the Centre.

*Demi-VOLT*, is a Round of one Tread, or two, made by the Horse at one of the Angles or Corners of the *Volt*, or at the End of the Line of the Passade; so as when he is near the End of this Line, or near one of the Corners of the *Volt*, he changes Hands, to return by a Semicircle.

A *Reverféd Volt*, is a Track of two Treads, which the Horse makes with his Head to the Centre, and his Croup out; going sideways upon a Walk, Trot, or Gallop, and tracing out a larger Circumference with his Shoulders, and a smaller with his Croup.

*VOLUMUS*, in Law, the first Word of a Clause in the King's Writs of Protection, and Letters Patent. See PROTECTION.

*VOLUNT*, in Law, is when the Tenant holds Land, &c. at the Will of the Lessor, or Lord of the Manor. See TENANT, VASSAL, &c.

*VOLUNTARY*, in the Schools—The generality of Philosophers use *Voluntary* in the same Sense with *Spontaneous*; and apply it to any thing arising from an internal Principle, attended with a due Knowledge thereof.—In which Sense, they say, a Dog moves *Voluntarily* when he runs to the Pot. See SPONTANEOUS.

*Aristotle* and his Followers, restrain the Term *Voluntary* to those Actions that proceed from an inward Principle which knows all the Circumstances of the Action.

There are two Things, therefore requir'd to the *Voluntariness* of an Action: The first, that it proceed from an inward Principle; thus, walking for pleasure-sake is a *Voluntary* Action; as arising from the Will commanding, and the moving Faculty obeying, which are both internal.—On the contrary, the Motion of a Man drag'd to Prison is not *Voluntary*.

The second, that the Action be perform'd with a perfect Intelligence of the End, and Circumstances thereof: In which Sense, the Actions of Brutes, Children, sleeping People, &c. are not properly *Voluntary*. See WILL.

Anatomists distinguish between the *Voluntary*, and Natural, or *Involuntary* Motions in the Body: Of the first Kind are those of the Heart, Lungs, Pulse, &c. See MUSCULAR Motion.

*VOLUTE*, *VOLUTA*, in Architecture, a kind of Scrowl, or spiral Contortion, used in the *Ionic* and *Composite* Capitals; whereof it is the principal Character and Ornament. See CAPITAL.

Some call it the *Ram's-Horn*, from its Figure, which bears a near resemblance thereto.

Most Architects suppose, that the Antients intended it to represent the Bark or Rind of a Tree, laid under the Abacus, and twisted thus at each Extreme where it is at Liberty: Others will have it a sort of Pillow, or Bolster laid between the Abacus and Echinus, to prevent the latter being broke by the Weight of the former, and the Entablature over it; and accordingly call it *Pulvinus*.

Others, after *Vitruvius*, will have it to represent the Curls or Tresses of a Woman's Hair. See *IONIC* Order.

There are also eight angular *Volutes* in the *Corinthian* Capital, accompany'd with eight other smaller ones, called *Helices*.

There are several Diversities in the *Volute*.—In some, the List or Edge, throughout all the Circumvolutions, is in the same Line, or Plane: such are the antique *Ionic* *Volutes*, and those of *Vignola*.—In others, the Spires or Circumvolutions fall back; in others project, or stand out.—Again, in some the Circumvolutions are oval; in others, the Canal of one Circumvolution is detach'd from the List of another, by a Vacuity or Aperture.—In others, the Round is parallel to the

Abacus, and springs out from behind the Flower thereof.—In others, it seems to spring out of the Vase, from behind the Ovum, and rises to the Abacus, as in most of the fine *Composite* Capitals.

Consoles, Modillions, and other sorts of Ornaments, have likewise their *Volutes*. See CONSOLE, &c.

The *Volute* is a Part of great Importance to the Beauty of the Column.—Hence Architects have invented divers ways of delineating it.—The principal are that of *Vitruvius*, which was long lost, and at last restor'd by *Gouldman*; and that of *Palladio*.—*Daviler* prefers the former as the easier.—The manner thereof is as follows.

Divide the Altitude A B, (Tab. *Architect.* Fig. 12 *Volute*) into eight equal Parts, and assuming the Fifth Q P, for a Diameter, from the Centre G, with half the Diameter G P, describe a Circle for the Eye of the *Volute*.—Bisect the Radii G P and G Q in 1 and 4, and subdivide the half Parts G 1 and G 4 each into three equal Parts: Then, upon the right Line 1 4, construct a Square 1, 2, 3, 4; one of whose Sides 2, 3, continue on to D; another 3, 4, to E; and the third 1, 2, to C. From G draw right Lines, G 2 and G 3; which divide into three equal Parts.—Then, thro' 6 and 10, draw 6 L and 10 N, parallel to 2 D. And thro' 11 and 7 draw 11 O and 7 K, parallel to 3 E; and thro' 5 and 9 draw 5 H, and 9 M, parallel to 1 C.—Lastly, from 12, 11, 10, 9, 8, &c. strike the Quadrants P O, O N, N M, M L, L K, &c. which will form the *Volute*.

*VOLVULUS*, in Medicine, a *Latin* Name, which some Authors have given to a Disease otherwise call'd the *Iliac Passion*; and by others the *Miserere mei*. See ILIAC PASSION, &c.

'Tis a kind of Cholic, wherein the Patient voids his Excrements by the Mouth, instead of the *Anus*; by reason the Membranes of the Intestine *Ileon* are drawn within one another, and form Knots, which prevent the ordinary Course of the *Fæces*. See CHOLIC.

*VOMER*, in Anatomy, a *Latin* Name, signifying, literally, a *Ploughshare*; used by Authors to denote the eleventh Bone of the upper Jaw: by reason of the Resemblance it bears to that Utensil. See MAXILLA.

The *Vomer*, or *Vomer Aratri*, is a thin Bone, placed in the middle of the Nose, over the Palate, serving to part the two Nostrils from each other. See NOSTRIL.

'Tis small, but hard, and is join'd to the *Sphenoides* and *Ethmoides*, which have each of them little Eminences that are received into the Cavities of the *Vomer*; by which means it is fasten'd in its Place. See NOSE.

*VOMICA*, in Medicine, a Collection of Pus in any Part of the Body. See Pus.

When this Mass or Collection is in the Lungs, 'tis called *Vomica Pulmonum*.—When in the Kidneys, *Vomica Renum*, &c. See LUNGS.

The *Vomica* of the Lungs differs from an *Empyema*, which is a Collection of Pus in the Cavity of the Thorax. See EMPYEMA.

*Nux Vomica*, *Vomiting Nut*, is a little round, flat, woolly Fruit, half the bigness of a Farthing; hard as Horn, of a Mouse-colour without, but of various Colours within: sometimes yellow, sometimes white, and sometimes brown.

'Tis not known what the Plant is that bears it.—'Tis a Poison for Dogs, and divers Quadrupeds, which it kills presently, thro' excessive *Vomiting*. See POISON.

*VOMITING*, *VOMITUS*, the Act of casting up, or evacuating by the Mouth what is contain'd in the Stomach. See EVACUATION.

This Action has been generally allow'd to be owing principally, to the Contraction of the Fibres of the Stomach, when irritated by the acrimonious Quality, or oppress'd with the Quantity, of its Contents. See STOMACH.

But M. *Chirac*, and after him M. *du Verney*, and others, set aside the Fibres of the Stomach; and advance, That *Vomiting* is produced wholly by the extraordinary Motions of the Diaphragm, and the Muscles of the lower Venter.—So that the Stomach is here supposed destitute of all Action, and calls back its Contents only by its being compress'd and flatt'd, from some foreign and accidental Causes.

However, *Boerhaave*, and most of our latest Writers, allow both the Stomach, the Diaphragm, and the Muscles of the Abdomen, to have their share in the Action of *Vomiting*: Accordingly, that excellent Author makes *Vomiting* to consist in a convulsive and retrograde Motion of the muscular Fibres of the Gullet, Stomach, and Intestines; as well as those of the Abdomen, and the *Septum Transversum*; which, when in a less degree, produce a *Nausea*, and in a greater a *Vomiting*. See NAUSEA.

By the Contraction of so many Parts, the Stomach comes to be squeez'd, as in a Press; whence it is obliged to give up what is contain'd in its Cavity, and the neighbouring Parts; just as Water is in a Bladder or Sponge, when squeez'd between the Hands.

The Evacuation, too, must be upwards, rather than downwards; by reason the Passage is more open and easy that way,



way, and that the Intestines are press'd by the Diaphragm, and the Muscles of the lower Venter.

The primary Cause of *Vomiting*, uses to be the too great Quantity, or too much Acrimony of the Contents, arising from Poisons, Contusions, Compressions, Inflammations, and Wounds in the Brain, Inflammations of the Diaphragm, Stomach, Intestines, Spleen, Liver, Kidneys, Panchreas, and Mesentery; unusual Agitations in Coaches, at Sea, &c. and vomitive or emetic Medicines. See Emetics.

VOMITIVE, or *Vomiting Medicines*. See Emetics.

VOPISCUS, a *Latin* Term, used in respect of Twins in the Womb, for that which comes to the perfect Birth. See TWINS.

VORTEX, *Whirlwind*, in Meteorology, a sudden, rapid, violent Motion of the Air, in Gyres or Circles. See WHIRLWIND.

VORTEX, *Vorago*, is also used for an Eddey, or *Whirlpool*; or a Body of Water in certain Seas and Rivers, which runs rapidly around, forming a sort of Cavity in the middle.

The ordinary Cause of these *Vortices*, is a Gulph, or Outlet, whereby the Water of the Sea, &c. is absorbed, or precipitates itself into some other Receptacle; sometimes to some other communicant Sea, and sometimes, perhaps, into the vast Abyss of central Water. See WHIRLPOOL, and ABYSS.

An *artificial Vortex*, expressive of the Phenomena of the natural ones, may be made with a cylindric Vessel, placed, immovable, on a horizontal Plane, and fill'd to a certain height with Water.—In this Water a Stick being plunged, and turn'd round as briskly as may be, the Water is necessarily put into a pretty rapid circular Motion, and rises to the very Edge of the Vessel, and when there arrived, ceases to be further agitated.

The Water thus rais'd forms a Cavity in the Middle, whose Figure is that of a truncated Cone; its Base is the same with the upper Cavity of the Vessel, and its *Vertex* in the Axis of the Cylinder.

What raises the Water at the side of the Vessel, which occasions the Cavity in the Middle, is its centrifugal Force.—For the Motion of the Water being circular, it respects a Centre taken in the Axis of the Vessel, or, which is the same, in the Axis of the *Vortex* form'd by the Water; the same Velocity, then, being impress'd on all the Water, the Circumference of a smaller Circle of Water, or a Circle less remote from the Axis, has a greater centrifugal Force than another that is greater, or more remote from the Axis. The smaller Circle therefore drives the greater towards the side of the Vessel, and from this Pression or Impulsion which all the Circles receive from the smaller ones that precede them, and convey to the greater which follow them, arises that Elevation of the Water along the Edge of the Vessel to the very top, where we suppose the Motion to cease.

With a *Vortex* thus form'd, M. *Saulmon*, of the Royal Academy of Sciences, made divers Experiments by putting several solid Bodies therein, to acquire the same circular Motion; with Intent to discover which of them, in making their Revolutions round the Axis of the *Vortex*, approach towards, or recede from it, and with what Velocity.—The Result was, that the heavier the Body, still the greater was its Recess from the Axis.

M. *Saulmon's* View in this Attempt, was to shew how the Laws of Mechanicks produce the celestial Motions; and that it is probably to those Motions that the Gravity or Weight of Bodies is owing.—But, unhappily, the Experiments shew just the contrary of what they should do, to confirm the *Cartesian* Doctrine of Gravity. See GRAVITY.

VORTEX, in the *Cartesian* Philosophy, is a System or Collection of Particles of Matter moving the same way, and round the same Axis.

Such *Vortices* are the Grand Machines whereby these Philosophers solve most of the Motions and other Phenomena of the heavenly Bodies.—Accordingly, the Doctrine of these *Vortices* makes a great part of the *Cartesian* Philosophy. See CARTESIANISM.

The Matter of the World, they hold to have been divided at the Beginning into innumerable little equal Particles, each endow'd with an equal Degree of Motion, both about its own Centre and separately, so as to constitute a Fluid. See FLUID.

Several Systems, or Collections of this Matter, they further hold to have been endow'd with a Motion about certain Points, as common Centres, placed at equal Distances; and that the Matters moving, round these, compos'd so many *Vortices*.

Then, the primitive Particles of Matter they suppose, by these intestine Motions, to be as it were ground into spherical Figures, and so to compose Globules of divers Magnitudes; which they call the Matter of the Second Element: and the Particles rubb'd or ground off them, to bring them to that Form, they call the Matter of the First Element. See ELEMENT.

And since there would be more of this First Element than would suffice to fill all the Vacuities between the Globules of the Second, they suppose the remaining Part to be driven towards the Centre of the *Vortex*, by the circular Motion of

the Globules; and that being there amass'd into a Sphere, it would produce a Body like the Sun. See SUN.

This Sun being thus form'd, and moving about its own Axis with the common Matter of the *Vortex*, would necessarily throw out some Parts of its Matter, thro' the Vacuities of the Globules of the Second Element constituting the *Vortex*; and this especially at such Places as are farthest from its Poles; receiving, at the same time, in by these Poles, as much as it loses in its equatorial Parts. And by this means it would be able to carry round with it those Globules that are nearest, with the greater Velocity, and the remoter, with less. And by this means those Globules which are nearest the Centre of the Sun must be least; because were they greater, or equal, they would, by reason of their Velocity, have a greater centrifugal Force, and recede from the Centre. See LIGHT.

If it should happen that any of these Sun-like Bodies in the Centres of the several *Vortices*, should be so incrustated and weakened, as to be carried about in the *Vortex* of the true Sun; if it were of less Solidity, or had less Motion than the Globules towards the Extremity of the *Solar Vortex*; then it would descend towards the Sun, till it met with Globules of the same Solidity, and capable of the same Degree of Motion with itself; and thus, being fix'd there, it would be for ever after carried about by the Motion of the *Vortex*, without either approaching any nearer to, or receding from the Sun; and so become a Planet. See PLANET.

Supposing then all this, we are next to imagine that our Sytem was at first divided into several *Vortices*, in the Centre of each of which was a lucid spherical Body; and that some of these being gradually incrustated, were swallowed up by others which were larger and more powerful, till at last they were all destroy'd and swallow'd up by the biggest *Solar Vortex*, except some few which were thrown off in right Lines from one *Vortex* to another, and so became Comets. See COMET.

But this Doctrine of *Vortices*, is at best merely hypothetical.—It does not pretend to shew by what Laws and Means the celestial Motions are really effected, so much as by what Means they possibly might, in case it should have so pleas'd the Creator.—But we have another Principle which accounts for the same Phenomena as well, nay better than that of *Vortices*; and which we plainly find has an actual Existence in the Nature of Things: And this is Gravity, or the weight of Bodies. See GRAVITY.

The *Vortices*, then, should be cast out of Philosophy, were it only that two different adequate Causes of the same Phenomena are inconsistent. See NEWTONIAN Philosophy.

But we have other Objections against it.—For 1<sup>o</sup>, If the Bodies of the Planets and Comets be carried round the Sun in *Vortices*, the Bodies of the Parts of the *Vortex* immediately investing 'em, must move with the same Velocity, and in the same Direction; and besides, must have the same Density, or the same *vis Inertiae*.—But it is evi'ent, that the Planets and Comets move in the very same Parts of the Heavens with different Velocities, and in different Directions. It follows, therefore, that those Parts of the *Vortex* must revolve at the same time in different Directions, and with different Velocities; since one Velocity and Direction will be required for the Passage of the Planets, and another for that of the Comets.

2<sup>o</sup>, If it were granted, that several *Vortices* are contain'd in the same Space, do penetrate each other, and revolve with divers Motions; since those Motions must be conformable to those of the Bodies, which are perfectly regular, and perform'd in Conic Sections; it may be ask'd, How they should have been preserv'd entire so many Ages, and not disturb'd and confounded by the adverse Actions and Shocks of so much Matter as they meet withal?

3<sup>o</sup>, The Number of Comets is very great, and their Motions perfectly regular, observing the same Laws with the Planets, and moving in conical Orbits, that are exceedingly excentric. Accordingly they move every Way, and to all Parts of the Heavens, freely pervading the planetary Regions, and going frequently contrary to the Order of the Signs; which were impossible, unless these *Vortices* were away.

4<sup>o</sup>, If the Planets moved round the Sun in *Vortices*, those Parts of the *Vortices* next the Planets, we have already observed, would be equally dense with the Planets themselves: Consequently the vortical Matter contiguous to the Perimeter of the Earth's Orbit, would be as dense as the Earth itself: And that between the Orbits of the Earth and Saturn, must be as dense, or denser.—For a *Vortex* cannot maintain it self, unless the more dense Parts be in the Centre, and the less dense towards the Circumference: And since the periodical times of the Planets are in a sesquialterate Ratio of their Distances from the Sun, the Parts of the *Vortex* must be in the same Ratio. Whence it follows, that the centrifugal Forces of the Parts will be reciprocally as the Squares of the Distances.—Such, therefore, as are at a greater distance from the Centre, will endeavour to recede therefrom.



from with the less Force. Accordingly, if they be less dense, they must give way to the greater Force, whereby the Parts nearer the Centre endeavour to rise. Thus, the more dense will rise, and the less dense descend; and thus there will be a change of places, till the whole fluid Matter of the *Vortex* be so adjusted, as it may rest in *equilibrio*.

Thus will the greatest part of the *Vortex* without the Earth's Orbit, have a Degree of Density and Inactivity not less than that of the Earth itself.—Whence the *Comets* must meet with a very great resistance; contrary to all Appearances. *Cotes. pref. ad Newt. princip.* See COMET, RESISTANCE, MEDIUM, &c.

The Doctrine of *Vortices*, Sir I. Newton observes, labours under many Difficulties: For a *Planet* to describe Areas proportional to the Times, the periodical Times of the *Vortex* should be in a duplicate Ratio of their Distances from the Sun; and for the periodical Times of the *Planets* to be in a sesquuplicate Proportion of their Distances from the Sun, the periodical Times of the Parts of the *Vortex* should be in the same Proportion of their Distances; and, lastly, for the lesser *Vortices* about *Jupiter*, *Saturn*, and the other *Planets*, to be preserved and swim securely in the Sun's *Vortex*, the periodical Times of the Parts of the Sun's *Vortex* should be equal.—None of which Proportions are found to obtain in the Revolutions of the Sun and Planets a-round their Axes. *Phil. Nat. prin. Math. apud Schol. Gen. in Calce.*

Besides, the *Planets*, according to this Hypothesis, being carried about the Sun in Ellipses, and having the Sun in the *Umbilicus* of each Figure, by Lines drawn from themselves to the Sun, do always describe Areas proportionable to the Times of their Revolutions; which that Author shews the Parts of no *Vortex* can do. *Schol. Prop. ult. lib. 2. Princip.*

Again, Dr. Keil proves in his *Examination* of Burnet's *Theory*, That if the Earth were carried in a *Vortex*, it would move faster in the Proportion of 3 to 2, when it is in *Virgo*, than when it is in *Pisces*; which all Experience proves to be false.

VOTE, or Voice. See SUFFRAGE, and VOICE.

—In the House of Peers they give their *Votes* or Suffrages, beginning at the Puisse or lowest Baron, and so to the rest seriatim, every one answering, a-part, *Content* or *not Content*; and if the Affirmatives and Negatives are equal, *semper presumitur pro negante*; the Speaker having no casting Vote unless he be a Peer.

In the House of Commons they Vote by *Yea's* and *No's*, promiscuously. See PARLIAMENT.

VOTUM, in our antient Law-books, is used for *Nuptiæ*; so *Dies votorum*, is the Wedding-day, *Fleta*, lib. 4. cap. 2. par. 16. *Si donatorius ad alia vota convolverit*, &c.

Vorum, or Vow. See Vow.

VOUCH,—A Person is said to *Vouch* for another, when he undertakes to maintain or warrant him in a thing, or passes his Word in his behalf.

In Law, to *Vouch*, is to call such Person or *Vouchee* into Court, to make good his Warrant. See WARRANT.

VOUCHEE, a Person who is to warranty, or *Vouch* for another, who in respect hereof is call'd *Voucher*. See VOUCHER.

VOUCHER, in Law, the Tenant who calls another Person into Court, bound to warranty him, and either to defend the Right against the Demandant, or to yield him other Lands, &c. to the value. See WARRANT.

This seems in some measure to agree to the Contract, in Civil Law, whereby the Vendee binds the Vendor, sometimes in the Simple Value of the Things bought, sometimes in the Double; to warrant the secure enjoying of the Thing bought.

Yet there is this Difference between the Civil and Common Law in this Point, That the Civil Law binds every Man to warrant the Security of that which he selleth; which the Common Law doth not, unless it be specially covenanted.

The Process whereby the *Vouchee* is call'd, is a *Summons ad Warrantandum*; and if the Sheriff return upon that Writ, that the Party hath nothing whereby he may be summon'd, then goes out another Writ call'd, *Sequentur sub suo periculo*.

A Recovery with a *single Voucher*, is when there is but one *Voucher*; and with a *double Voucher*, is when the *Vouchee* voucheth over; and so a *treble Voucher*. See RECOVERY.

There is also a *foreign Voucher*, when the Tenant is impleaded in a particular Jurisdiction of that Court; more pertinently call'd a *Voucher of a Foreigner*.

VOUCHER, also signifies a Leiger-book, or Book of Accounts, wherein are enter'd the Warrants for the Accountant's Discharge. See BOOK-KEEPING.

VOUSSOIR, *Vault-stone*, in Architecture, a Stone proper to form the sweep of an Arch, being cut somewhat in manner of a truncated Cone, whose Sides, were they prolonged, would terminate in a Centre, to which all the Stones of the Vault are directed. See VAULT.

VOW, *Vorum*, a solemn Promise or Offering of a Man's self to God. See OATH.

A Person is constituted a Religious by taking three *Vows*, that of Poverty, that of Chastity, and that of Obedience. See RELIGIOUS.

Authors are divided as to the Antiquity of these *Vows*.—'Tis agreed, the antient Anchorites, and Hermits of the *Thebæide* made none; they did not consecrate themselves to God by an indissoluble Obligation, but were at liberty to quit their Retirement, and return into the World, whenever the Fervor that drove 'em out of it, came to abate. See ANCHORITE, &c.

*Vows* were not introduced till long after; and that, to fix the too frequent Inconstancy of such as, after retiring from the World, repented themselves too soon, or too slightly; and by that means scandaliz'd the Church, and disturb'd the Quiet of Families by their Return.

*Erasmus* will have it, that solemn *Vows* were not introduced till the thirteenth Century, under the Pontificate of *Boniface VIII.*—Others hold 'em as antient as the Council of *Chalcedon*: But the Truth is, before *Boniface VIII.* there were none but simple *Vows*, and such as might be dispensed withal.—Their *Vows*, till that time, were not deem'd eternal Chains; they were not indissoluble. 'Tis true, they were obligatory Promises, as to Conscience, and the Inconstancy of such as violated them was held an odious Desertion: But as to Law, the Persons were not held to be civilly dead, so as, upon their Return, to render 'em incapable of all Acts of civil Society.

The most common *Vow* was that of Poverty, but this only regarded the Convent, on account of which every Person divested himself of all Property; but the making of *Vows* did not at all exclude 'em from the Rights of Blood, or render 'em incapable of Inheriting.

No Religious, 'tis true, acquired the Property of the Effects that fell to him; they all belong'd to the Monastery, in favour of which he had divested himself of every thing; and the Monastery only left him the Usufruct and Direction of them.—The Popes have frequently confirm'd this Privilege to divers Orders, and permitted the Monks to inherit as much as if they were Seculars, and had made no *Vows*.

At present, the civil Death of a Religious is dated from the Day he makes the *Vows*; and from that time he is utterly incapable of inheriting.—A Religious may reclaim, or protest against his *Vows* within five Years; but, after that, 'tis no longer admitted.—The Failures in the Profession are esteem'd to be purged by his Silence and Perseverance for five Years.—Indeed, to be reliev'd from his *Vows*, 'tis not enough the Party reclaim within the five Years; but he must likewise prove, he was forced to take the Habit.

*Vows*, *Vota*, among the Romans, signify the Sacrifices, Offerings, Presents, and Prayers, made for the Emperors and *Cæsars*, particularly for their Prosperity, and the Lastingness of their Empire.

These were, at first, made every five Years, then every fifteen, and then every thirty, call'd *Quinquennialia*, *Decennialia*, and *Vicennialia*.

In divers antique Medals and Inscriptions, we read, *Vot. X.* *Vot. XX.* *Vot. mult.* signifying *Votis Decennialibus*, *Vicennialibus*, *Multis*, &c.

VOTIVE Medals, are those whereon the Vows of the People for the Emperors or Emperresses are express'd. See MEDAL.

The Public Vows, made every five, ten, or twenty Years, are more often found round the Edges of the Medal, than on the Faces thereof, at least in the Western Empire; for in the Eastern the Case is different; witness the Medal of *M. Aurelius* the younger, where the Reverse represents the Vows made at the time of his Marriage, *VOTA PUBLICA*. And on Greek Medals, *ΔΗΜΟΤΕΥΧΑΙ*, which they sometimes express by the two initial Letters, Δ. Ε. according to *F. Hardouin's* Conjecture, which may be admitted, in certain Medals, where the ΔΕΜ. ΕΞ that is, ΔΕΜΑΡΧΙΚΗΣ ΕΞΟΥΣΙΑΣ, does not well agree. Witness also the Medal of *Antoninus*, *VOTA SUSCEPTA DECENNALIA*.

The Origin of *Votes*, and *Votive Medals*, is given by *M. du Cange*, thus:—*Augustus* feigning himself willing to quit the Empire, and having twice, at the Prayers of the Senate, condescended to hold it for ten Years longer, it grew into a Custom, to make fresh Public Prayers, Sacrifices, and Games, for his continuing it, at the ten Years end; and these they call *Decennalia*, or *Vota Decennalia*.

Under the Eastern Emperors, these Vows were repeated every five Years: Hence it is that, after *Dioclesian's* Time, we find on Medals *VOTIS V. XV.* &c. which Practice continued till the Time of *Theodosius*, when Christianity being well establish'd, a Ceremony that had some Remains of Heathenism in it, was set aside. So that the *VOTIS MULTIS*, on a Medal of *Majorianus*, must be a very different Thing; and no other, doubtless, than a kind of Acclamation, like that, *PLURA NATALIA FÆLICITER*.

VOWEL, in Grammar, a Letter which affords a complete Sound of it self; or a Letter so simple as only to need a bare opening



opening of the Mouth to make it heard, and to form a distinct Voice. See LETTER.

Such are *a, e, i, o, u*; which are call'd *Vocales, Vowels*, in contradistinction to certain other Letters, which depending on a particular Application of some part of the Mouth, as the Teeth, Lips, or Palate, can make no perfect Sound without an opening of the Mouth, that is, without the addition of a *Vowel*; and are therefore call'd *Consonants*. See CONSONANT.

Tho we ordinarily only reckon five *Vowels*, yet, besides that each of these may be either long or short, which occasions a considerable Variety in the Sound: To consider only their Differences resulting from the different Apertures of the Mouth, one might add four or five more *Vowels* to the Number.—For the *e* open, and the *e* close, are different enough to make two *Vowels*, as in *Sea*, and *Depth*; so also the *o* open, and *o* close, in *Hest*, and *Organ*.—Add that the *u* pronounced *ou*, as the *Latins* did, and as the *Italians* and *Spaniards* still do, has a very different Sound from the *u*, as pronounced by the *Greeks*, and as at this Day by the *English* and *French*.—Again, *eo*, in *People*, make but one simple Sound, tho we write it with two *Vowels*.

Lastly, the *e* mute is originally no more than a *Surd* join'd to a Consonant when that is to be pronounced without a *Vowel*, as when it is immediately follow'd by other Consonants, as in the Word *Scammum*.—This is what the *Hebrews* call *Sebeva*, especially when it begins the Syllable: And this *Sebeva* is found in all Languages, tho over-look'd in many of them, particularly the *English*, *Latin*, &c. by reason it has no proper Character to design it; tho in some of the *Vulgar Tongues*, particularly *French* and *High-Dutch*, it is express'd by the *Vowel e* adding its Sound to the rest.

Thus, without regarding the Differences of the same Sound or *Vowel* as to length or shortness, one may distinguish ten several Sounds or *Vowels*, express'd by the following Characters, *a, e, i, o, u, eu, ou, u, e*, mute. See ALPHABET.

VOX, in Law—*Vocem non habere*, is a Phrase used by *Bracton* and *Fleta*, for an infamous Person; one who is not admitted to be a Witness.

UP-LAND, is high Ground, or, as some call it, *Terra firma*; opposite to such as is moorish, marshy, or low: or it is Pasture-land, which lies so high as not to be overflow'd with Rivers, or Land-floods.

UPRIGHT, in Architecture, a Representation or Draught of the Front of a Building; call'd also, an *Elevation*. See ELEVATION.

UPRIGHT, in Heraldry, is used in respect of Shell-Fishes, as *Crevices*, &c. when standing upright in a Coat.—Inasmuch as they want Fins, they cannot according to *Gullim*, be properly said to be *Hauriant*; that being a Term appropriated to scaly Fishes.

URACHUS, in Anatomy, a membranous Canal in a *Fœtus*, proceeding from the Bottom of the urinary Bladder, thro' the Navel to the *Placenta*, along with the umbilical Vessels, whercof it is esteem'd one. See UMBILICAL VESSELS.

The Termination of the *Urachus* in the *Placenta*, forms a little oval *Vesica*, or Bladder, which serves to receive the Urine secreted in the Kidneys of the *Fœtus*, and that could not make its way thro' the *Urethra*, by reason of the resistance of the *Splintter* of the Bladder, which is not to be overcome but by Inspiration.

The Humour found in the *Vesica* of the *Urachus*, is still in the greater Quantity, the higher colour'd, and the more like Urine; as the *Fœtus* is nearer the time of the Birth.

The *Urachus* is not plainly found any where but in Brutes; but there is no dispute but that it exists in an Human *Fœtus*. See FœTUS.

M. *Dislincourt*, a celebrated Professor of Anatomy at *Leiden*, and some others after him, deny the *Urachus* to be hollow: On which Supposition it would not be easy to assign its Use, untill to keep the Bladder suspended to the Navel. But the former Opinion seems the best warranted. See URINE.

URANIBOURG, a Term often heard among Astronomers, being the Name of a celebrated Observatory, in a Castle on the little Island *Veena*, or *Huena*, in the *Sound*; built by that noble *Dane*, *Tycho Brake*, and furnish'd with Instruments for observing the Course and Motions of the heavenly Bodies. See OBSERVATORY.

This famed Observatory, finish'd about the Year 1580, did not subsist above seventeen Years; when *Tycho*, who little thought to have erected an Edifice of so short a Duration, and who had even publish'd the Figure and Position of the Heavens which he had chose for the Moment to lay the first Stone in, was obliged to abandon his Country.

Soon after this, those to whom the Property of the Island *Huena* was given, made it their Business to demolish *Uranibourg*: Part of the Ruins were dispers'd into divers Places, the rest served to build *Tycho* a handsom Seat upon his ancient Estate, which to this Day bears the Name of

*Uranibourg*.—For as to the antient *Uranibourg*, there is now no Footsteps remaining. 'Twas here *Tycho* compos'd his Catalogue of the Stars. See CATALOGUE.

M. *Picart*, making a Voyage to *Uranibourg*, found *Tycho's* Meridian-Line drawn thereon, to deviate from the Meridian of the World; which confirms the Conjecture of some, That the Position of the Meridian-Line may vary. See MERIDIAN.

URBICARY *Provinces*. See SUBURBICARY.

URDEE, in Heraldry.—A *Cross urdee*, seems to be the same with what we otherwise call *clechee*. See CLECHEE.

URED, the Blasting or Blighting of Trees or Herbs. See BLAST and BLIGHT.

URED, is sometimes used by Physicians for an Itching or Burning in the Skin. See ITCH.

URENTIA, are sometimes used for Medicines of a hot or burning Quality. See CAUSTIC.

URETERS, in Anatomy, two long and small Canals, which come from the Basin of the Kidneys, one on each side, and terminate in the Bladder; serving to convey the Urine, secreted in the Glands of the Kidneys, into the Bladder. See KIDNEY, and BLADDER.

They lie between the doubling of the *Peritoneum*; and descending in the form of an S, pierce the Bladder near its Neck, where they run, first, some space betwixt its Coats, and then o, en into its Cavity.

They are compos'd of three Coats.—The first is from the *Peritoneum*; the second is made of small oblique muscular Fibres; and the third, which is very sensible, has several small Glands, which separate a slimy Liquor, to defend it against the Acrimony of the Urine.

The neighbouring Parts furnish them with Blood-Vessels; and they have Nerves from the Intercostals and the *Vertebra* of the Loins.—Their Cavity is sometimes contracted in three or four places, especially towards the Bladder.

Such as are subject to the Gravel, and given to excessive drinking, have them sometimes so much dilated, that one may put the End of ones little Finger into them. See STONE and GRAVEL.

Their Obstruction causes a Suppression of the Urine. See URINE.

The Word is form'd from the *Greek* *ὑρῖν, meiere*, to make Water.

URETHRA, in Anatomy, call'd also *Meatus Urinarius*, a Tube or Canal arising from the Neck of the Bladder, and continued to the *Pudendum*; serving to discharge or carry off the Urine out of the Bladder. See URINE.

Some will have it to be only a Production of the Neck of the Bladder itself.—Its length is very different in the two Sexes.—In Man it terminates in the Extremity of the Glans, and is ordinarily a Foot long.—In Woman, 'tis but two Fingers breadth long, and terminates in the *Vulva*; but it is much wider, and more easily dilated here than in the other Sex.

Mr. *Cowper* gives us an Instance of a Woman, wherein the *Hymen* was so firm and impervious, that her Husband finding no Passage thro' it, had open'd himself another thro' the *Urethra*. See HYMEN.

The *Urethra* is compos'd of two Membranes, and a little spongy Substance like that of the *Corpora Cavernosa*, except at the End which joins the Neck of the Bladder, where the distance between the Membranes is small, and fill'd up with a thin and red glandulous Substance, whose excretory Ducts piercing the inner Membrane, pour into a Pipe a mucilaginous Liquor which lines and lubricates its Cavity, and prevents the Salts of the Urine from galling it; as having a farther Office in the Male Sex, viz. the Emission of the Seed. See PENIS, and SEED.

URIGO, a burning with a Caustic or Caustery. See CAUSTIC, and CAUTERY.

URIM and *Thummim*, אֲרִיִּים וְתֻמִּיִּים, q. d. *Light and Perfections*, the Name of a kind of Ornament belonging to the Habit of the High-Priest, in virtue whereof he gave oracular Answers to the People. See PROPHECY, &c.

The High-Priests of the *Jews*, we are told, consulted God in the most important Affairs of their Commonwealth, and received Answers by the *Urim and Thummim*.—What these were is disputed among the Criticks: Some take them to be the twelve precious Stones in the Breast-Plate of the High-Priest, which shone like a Flame of Fire. See PICTORUM.

Others will have them, the antient *Teraphim*, or like human Figures carried by the Priest, hid in the Fold of his Robe or Gown, and by which he answer'd the Questions of the *Jews*. See TERAPHIM.

*Diodorus Siculus* relates, that there was a like Ceremony in use among the *Egyptians*, whose principal Minister of Justice carried an Image of precious Stones about his Neck, which was call'd *Truth*.

URINAL, in Medicine, a Vessel fit to receive and hold Urines; and used accordingly, for the convenience of sick Persons.



'Tis usually of Glass, and crooked; and sometimes fill'd with Milk, to assuage the Pain of the Gravel.

URINARIA *Fistula*, is the same as *Urethra*; so call'd from its Office, to convey the *Urine*. See URETHRA.

URINARY Passage. } See URETHRA.

Meatus URINARIUS. } See URETHRA.

URINARY Bladder. } See BLADDER.

Vesica URINARIA. } See BLADDER.

URINE, a liquid Excrement, or Humour, separated from the Blood in the Kidneys, convey'd thence into the Bladder, and discharg'd by the *Urethra*. See EXCREMENT.

The *Urine* is secreted from the Arterial Blood in the Glands of the *Kidneys*; from which arise numerous little pellucid Pipes, and Veins, which receiving the secreted *Urine*, at length join into twelve *Papillæ*; out of which the *Urine* oozes into a Cavity call'd the *Pelvis*, from whence it runs into the *Ureters* of either side, and thro' them into the *Bladder*; and from that, at length, thro' the *Urethra*, out of the Body. See KIDNEYS, PAPILLÆ, PELVIS, URETER, BLADDER, and URETHRA.

The Secretion of the *Urine*, then, is not perform'd by any Attraction, as some will have it; or by any Emulsion, as others; or any Fermentation, as others; or any Precipitation, as others: but by the Force of the Heart, and Arteries, whereby the Blood is driven thro' innumerable Turnings and Windings of the Vessels; attenuated by Resistances, opposite Motions, violent Concussions, and various Mixtures, till the more liquid and serous Part thereof, is forc'd thro' Canals smaller than the Blood-Vessels, and so collected and discharg'd. See SECRETION.

The Word *Urine* is form'd from the Greek *ὑρῖν*, which signifies the same thing.

'Tis more than probable, that the Blood of the Emulgent Artery, convey'd thro' all the little Branches that spread thro' the exterior Membranes of the *Vesicula* whereof the Kidneys are compos'd, being by this means exceedingly divided, and as it were attenuated, enters the *Vesicula* themselves, and gives them their red Colour; that it is there filtrated, and the serous or *urinous* Parts secreted; and that this Filtration is promoted by the alternate Contractions and Dilatations of the fleshy Fibres that inclose the little *Vesicles*; and that after the Filtrations, the Parts that remain Blood are resum'd by the Capillary Branches of the Veins; the rest entering the excretory Ducts of the *Vesicula*, which are the first Receptacle of the *Urine*. *Hist. Acad. de Sciences*, An. 1705.

Monsieur *Morin*, in the *Memoirs of the French Academy*, marks out a new Rout or Course for the *Urine*.—The ordinary one, which is the Passage of any Liquor we drink thro' the Stomach, into the Intestines, thence into the Lacteals, thence into the Receptacle of the Chyle, thence into the Subclavian Vein, thence into the *Cava*, thence into the right Ventricle of the Heart, thence into the Lungs, and thence into the left Ventricle of the Heart; thence into the *Aorta*, thence into the Emulgent Artery, thence into the Kidneys, thence into the *Ureters*, and at last into the Bladder; seems too long and circuitous; considering how readily Mineral Waters pass, and what a speedy effect *Asparagus* is found to have.—Besides, that on this Principle, the Liquors we drink mixing with so many other Liquors in their way, should be greatly alter'd thereby; whereas we frequently find a Tincture of *Cassia*, render'd by *Urine* almost as black as when first taken: and the like is observ'd of divers other Liquors.

M. *Morin*, therefore, maintains, that a good part of the Liquor we drink, oozes thro' the Membranes of the Stomach, and falls into the *Pelvis*; where it enters the Bladder thro' the Pores thereof, without getting into the Intestines, which are lined with too thick and viscid a Humour to allow it Ingress.

This System is confirm'd hence, That both the Stomach and Bladder, even of a dead Animal, are found easily permeable to Water.

Accordingly, Dr. *Morgan* assures us, that if the Contents of the Abdomen be taken out of an animal Body, after it is just open'd; and the Stomach be fill'd with warm Water, while the Parts are yet reaking; the Liquor will pass into the Bladder, which will visibly receive it, and be fill'd in proportion as the Stomach empties.

The same Author adds, that if a Ligature be made upon the *Ureters*, while the Animal is yet living, and the Blood continues to circulate; tho' this must cut off all Communication from the Kidneys to the Bladder; yet any Liquor with which the Stomach is fill'd will pass into the Bladder.

From the whole, tho' some of our best Anatomists hold that a Circulation of the whole Mass of Blood is effected in five Minutes, and others in two; which might account for the quick Passage of the *Urine*; 'tis hard to conceive, but that part of it must go immediately from the Stomach into the Bladder.

The general Design of Nature in this new *Urinary Drain*,

is supposed to be to prevent any sudden Plethora, or immoderate Distension of the Vessels upon drinking.

As a necessary Consequence of this System, the Author establishes two kinds of *Urines*; the one filtrated immediately out of the Stomach into the Bladder; the other making the long Course of the Circulation.

In the *Philosophical Transactions*, we have an Instance given us, by Mr. *Young*, of a Boy six Years old, that piss'd off almost all his *Urine* by his Navel.

In the same *Transactions*, Dr. *Richardson* gives an Account of a Boy at *North Bierly* in *Yorkshire*, who liv'd to seventeen Years of Age without ever making Water; yet was in perfect Health.—He had constantly a *Diarrhæa* on him, but without much uneasiness.—The Obstruction, that Author observes, must have been in his Kidneys; for he had never any Inclination to make Water.

*Urines* are of various Kinds and Properties.—After drinking plentifully of any aqueous Fluid, the *Urine* is crude, insipid, void of Smell, and easily retain'd.—That yielded by Chyle well concocted, is sharper; more saline, less copious, somewhat fetid, and more stimulating.—That from Chyle already converted into Serum, is redder, sharper, saltier, and more fetid and stimulating.—And that secreted after long Abstinence, from Humours well concocted and wore off the solid Parts, is the least copious, sharpest, saltiest, reddest, most fetid, almost putrid, and of all others the hardest to retain.

The *Urine*, therefore, contains the watery Part of the Blood, its sharpest, subtilest, and most volatile Salt, and that nearest to the alkaline Kind; its sharpest, smallest, and most volatile Oil; and that nearest to Putrefaction; and its smallest most volatile Earth. See BLOOD.

The *Sal Armoniac* of the Antients was prepar'd from Camels *Urine*. See ARMONIAC.

And the *Phosphorus*, in use among us, from human *Urine*. See PHOSPHORUS.

Salt-petre is likewise prepar'd from the *Urine*; and other Excrements of Animals. See SALT-PETRE.

The *Indians* scarce use any other Medicine but Cow's *Urine*.—The *Spaniards* make great use of *Urine* to clean their Teeth withal: So did the *Celtiberians* of old.

*Urine* is also used in Dying, to ferment and warm the Wood.—Old *Urine*, tinges Silver with a fine gold Colour.

The Disorders in the *Urine* are various. See STRANGURY, RETENTION, DIABETES, STONE, NUBECULA, &c.

URINE, in Medicine.—The *Urine* affords one of the principal Criteria, or Signs whereby Physicians judge of the State of the Patient, and the Course of the Disease. See SIGN, SYMPTOM, DISEASE, &c.

In casting, or examining *Urine*, the Things to be consider'd, are, its Quantity, Colour, Smell, Taste, Fluidity, and the Matters swimming therein.

An abundance of *Urine*, indicates a Looseness of the Renal Pipes; a Diminution of Perspiration; Sweat; Saliva; an imperfect Mixture of the Blood, whereby the watery Parts separate easily from the rest; a nervous Indisposition; a copious drinking of some aqueous Liquid, or some Diuretic taken.—Such *Urine* presages a Thickness of what is left behind, and its Acrimony; Thirst, Anxiety, Obstructions, and their Effects, a dry, thirsty, hot Consumption.

A contrary State of the *Urine* indicates the Contraries; and presages future Repletions, Heaviness, Drowsiness, Convulsive Tremors, &c.

A thin, limpid, insipid, colourless, tasteless *Urine*, denotes a great Constriction of the Renal Vessels, and at the same time, a brisk Agitation of the Humours; a strong Cohesion of the Oil, Salt, and Earth in the Blood it self, and an imperfect Mixture of the aqueous Parts therewith; some grievous Indisposition of the Mind, a hysteric or hypochondriac Fit; a Debility of the *Viscera*; Crudity, Pituita, Obstructions of the Vessels; and, in acute Diseases, a want of a Coction and Crisis.—Such *Urine* portends much the same as a too copious *Urine*; and in acute inflammatory Diseases, a bad Condition of the *Viscera*, Deliria, Phrenies, Convulsions, Death.

Ruddy *Urine*, without any Sediment, in acute Diseases, indicates a violent Motion and Attrition among the Parts that constitute the Humours, and between the Vessels and the Humours; a close intimate Mixture of the Oil, Salt, Earth and Water in the Humours; and hence a great Crudity of the Disease, and its long Duration, and great Danger.—Such *Urine* presages gangrenous Destructions of the finest Vessels; chiefly those of the Brain and *Cerebel*, and thence Death: a difficult Coction; a slow, doubtful Crisis: And all these the worse, as the *Urine* is redder, and freer of Sediment. If there be a heavy copious Sediment, it shews a strong antecedent Attrition; loose Vessels; sharp, saline, colligated Blood, unfit for Nutrition; intermitting Fevers, and Scurvy.

The Presages are, the Durableness of the Disease, wearing of the Vessels, Weakness, colligative Sweats, Saliva, &c. Atrophy, and Dropsy.—If the Sediment in such *Urine*



be branny, italy, filmy, &c. it presages the like, only worse.

A yellow Urine, with a Sediment as before, denotes a Jaundice, and the Symptoms thereof in the Cutis, Stools, Hypochondriums, &c.

A green Urine, with a thick Sediment, denotes an atrabiliary Temperature, and that the Matter thereof is resolved; and now excreted: consequently Anxieties about the Præcordia, Perturbations of Stool, Iliac and Colic Pains.

Black Urine, denotes the same with green, only in a greater and worse degree.

Blood, Pus, Caruncles, Filaments, Hairs, Anguillæ, Grume, Sand, Parts of Stone, and a Mucus at the bottom of the Urine, denote some Disorder in the Kidneys, Ureters, Bladder, Testicles, Seminal Vesicles, Prostate, and Urethra.

Fatty Urine, generally breeds small Sands, adhering to some viscid Matter, and thus produces a sort of oily Membrane, or Pellicle, which denotes an abundance of Earth, and a heavy Salt in the Blood, and presages the Scurvy, Stone, &c.

A Fætid Urine, denotes the Salts and Oils to be attenuated, dissolv'd, and almost putrify'd; whence very great danger, both in chronic and acute Diseases.

Urine which when shook, retains its Froth long, denotes a Tenacity of the Mixture, and thence a difficulty of Crisis; and pulmonick Diseases, or Catarrhs in the Head.

But the Urine is chiefly consulted in acute Fevers, where 'tis a very sure Sign: For, 1<sup>o</sup>, Urine with a white, light, equable, turbidated, inodorous Sediment, thro' the whole Course of the Disease to the Crisis, is a very good Presage. 2<sup>o</sup>, Copious, white, strangurious Urine, with much white Sediment, emitted, at the Time of the Crisis, cures and takes away Abscesses. 3<sup>o</sup>, A thin, ruddy Urine, that does not subside; a white, thin, watery Urine; a thin, equable, yellow Urine; a turbid Urine that does not subside, denotes, in very acute Diseases, a great Crudity, a difficult Crisis, and a durable dangerous Disease.

URINE, in Agriculture, is of excellent Use as a Manure. See MANURE.

The knowing in Agriculture and Gardening, prefer Urine for Land, Trees, &c. before Dung; as penetrating better to the Roots; and removing divers Infirmities of Plants.

The Decay of the ancient Kentish Pippins, is a thing much complain'd of; and Mr. Mortimer observes, they will be quite lost, unless some Persons set themselves to the ancient way of Culture; which, as all ancient Graziers and Gardeners know, was by washing the mossy, worm-eaten, canker'd, and unsound Trees, two or three times in the Month of March, with the Urine of Oxen, &c. gather'd in earthen Vessels, plac'd under the Planks of the Stalls wherein they were fatted.

In Holland, and in divers other Parts, they preserve the Urine of their Beasts, &c. with as much Care as their Dung.

Mr. Hartlib, Sir Hugh Plat, Mr. Mortimer, &c. make a common Complaint, that so great an Improver of Land, and so remarkable a Strengthenr of Manure, should be so much disregarded among us.

URINOUS Salts, are the same with what we otherwise call Alkali Salts, or Alkalies. See ALKALI.

There are two Kinds of Urinous Salts, the one fix'd; the other volatile.—The fix'd prevail in Plants, and the volatile in Animals. See SALT.

They are called Urinous, in respect of their Taste and Smell, which bear some resemblance to those of Urine.

URN, URNA, a kind of Vase, of a roundish form, but biggest in the middle, like the common Pitchers; now seldom used, but as Ornaments over Chimney-pieces, in Buffets, &c. or by way of Aeroters, a-top of Buildings, Funeral Monuments, &c. See VASE, and AEROTER.

The great use of Urns among the Antients, was to preserve the Ashes of the Dead, after they were burnt: For which Reason they were call'd Cineraria, and Urne Cineraria; and were placed sometimes under the Tomb-stone, whereon the Epitaph was cut; and sometimes preserved in Vaults in their own Houses. See SEPULCHRE, TOMB, and FUNERAL.

Urns were also used at their Sacrifices, to put liquid things in. See SACRIFICE.

They were also of use in the Sortes Prænestinae, or Casting of Lots. See SORTES.

At Rome, too, the Custom was to absolve or condemn the Accused, by the Suffrages, or Calculi, which the Judges cast into the Judicatory Urn. See ABSOLUTION, &c.

Virgil represents Minos the Judge of Hell, shaking the Urn, to decide the Lots of Mankind—Quæstor Minos urnam movet.

The Urn is still the attribute of Rivers, which are painted leaning on Urns, representing their Sources by the Water flowing therefrom.—We find them represented in the same manner on antique Medals, and Relievo's. See RIVER, and ATTRIBUTE.

URN, URNA, was also a Roman Measure, for liquid Things; containing about three Gallons and a half of our Measure. See MEASURE.

UROCRITERIUM, a Casting of Water; a giving Judgment of Diseases by the Sight of the Urine. See URINE.

The Word is compounded of *Uro*, Urine, and *critērion*, Criterion, Mark, Sign.—Hence also the Words *Uromancy*, *Uroscopy*, &c.

URSA, in Astronomy, the Bear, Triones, a Name common to two Constellations of the Northern Hemisphere, near the Pole; distinguish'd by Major, and Minor. See CONSTELLATION.

URSA Major, or the Great Bear, according to Ptolemy's Catalogue, consists of 35 Stars; according to Tycho's of 56; but in the Britannic Catalogue we have 215: The Longitudes, Latitudes, Magnitudes, &c. whereof, are as follow.

Stars in the Constellation Ursa Major.

| Names and Situations of the Stars.                                  | Sign. | Longitude | Latitude North. | Magn. |
|---|-------|-----------|-----------------|-------|
| Inform. between Perseus and the Head of the great Bear              | II    | 10 41 11  | 31 34 4         | 6     |
|   |       | 11 57 20  | 30 56 54        | 5 6   |
|   |       | 11 52 15  | 30 33 50        | 5     |
|   |       | 13 54 32  | 34 1 38         | 6     |
| A Star of Ursa Minor in Tycho                                       |       | 16 38 38  | 43 23 17        | 4 5   |
| 5   |       |           |                 |       |
|   |       | 14 49 45  | 32 23 17        | 6     |
| Of Ursa Minor   |       | 14 58 14  | 30 50 59        | 5     |
| Of Ursa Minor   |       | 16 59 57  | 37 23 19        | 4 5   |
|   |       | 17 12 5   | 35 53 15        | 5 6   |
| 10  |       | 16 20 4   | 28 33 30        | 5     |
| Inform. between the Pole and Auriga Preced. the great Bear.         |       | 17 10 6   | 30 35 42        | 6     |
|   |       | 19 12 3   | 34 52 27        | 6     |
|   |       | 19 47 39  | 34 15 39        | 6     |
|   |       | 21 13 55  | 33 52 0         | 5 6   |
|   |       | 22 28 51  | 40 44 23        | 6     |
| 15  |       |           |                 |       |
|   |       | 22 47 57  | 38 30 25        | 6 7   |
|   |       | 23 20 0   | 38 1 8          | 6     |
|   |       | 22 54 41  | 33 8 33         | 6     |
|   |       | 23 27 45  | 32 39 56        | 5 6   |
| 20  | II    | 23 33 43  | 33 47 40        | 6 7   |
|   |       |           |                 |       |
|   | II    | 24 29 32  | 35 29 38        | 6     |
|   |       | 24 56 5   | 36 24 34        | 5     |
|   |       | 25 39 24  | 31 51 2         | 6     |
|   |       | 27 31 56  | 42 15 18        | 5 6   |
|   |       | 27 17 9   | 35 28 5         | 5 6   |
| 25  |       |           |                 |       |
| 37th of Cassiopeia in Tycho   |       | 27 26 38  | 35 42 25        | 6 7   |
|   |       | 28 10 15  | 45 52 52        | 4 5   |
|   |       | 28 9 27   | 36 33 18        | 6 7   |
|   |       | 28 26 36  | 38 4 30         | 5 6   |
| Perhaps, 32d of Cassiopeia in Tycho                                 |       | 28 40 56  | 35 34 58        | 4 5   |
| 30  |       |           |                 |       |
|   |       | 29 3 43   | 38 20 59        | 6     |
|   |       | 29 11 0   | 35 57 43        | 5 6   |
|   |       | 29 44 35  | 35 3 3          | 7     |
|   |       | 29 51 0   | 35 13 1         | 6 7   |
|   |       | 29 59 35  | 35 2 30         | 6     |
| 35  |       |           |                 |       |
|   | ♄     | 0 30 30   | 34 50 33        | 7     |
|   |       | 1 27 12   | 38 13 19        | 5 6   |
|   |       | 1 33 53   | 38 12 16        | 6     |
|   |       | 1 51 12   | 33 34 54        | 6     |
|   |       | 2 57 37   | 36 15 26        | 5 6   |
| 40  |       |           |                 |       |
| 35th of Cassiopeia  |       | 2 31 17   | 44 23 21        | 4 5   |
| 36th  |       | 2 39 13   | 45 43 33        | 4 5   |
| 33d   |       | 3 28 17   | 34 0 47         | 6     |
| 34th  |       | 4 2 18    | 36 21 17        | 5 6   |
|   |       | 4 50 22   | 35 24 22        | 4 5   |
| 45  |       |           |                 |       |
|   |       | 6 35 11   | 22 9 27         | 4 5   |
|   |       | 6 0 2     | 36 54 46        | 5 6   |
|   |       | 6 23 32   | 37 57 49        | 6     |
|   |       | 7 34 35   | 36 58 2         | 5     |
|   |       | 8 7 50    | 36 17 15        | 6 7   |
| 50  |       |           |                 |       |
|   |       | 8 30 23   | 37 20 15        | 6     |
|   |       | 9 58 58   | 26 58 23        | 5 6   |
|   |       | 9 31 29   | 32 47 55        | 6     |
|   |       | 11 18 5   | 26 53 54        | 5     |
|   |       | 11 19 26  | 37 25 55        | 6     |
| Inform. following Auriga, between the Head of Ursa Major and Gemini | 55    |           |                 |       |
|   |       | 12 3 53   | 35 1 55         | 5 6   |
|   |       | 12 1 5    | 36 41 20        | 4 5   |
|   |       | 11 24 1   | 40 48 30        | 5 6   |
|   |       | 14 46 52  | 34 56 45        | 6     |
|   |       | 16 42 59  | 25 58 1         | 6     |
| 60  |       |           |                 |       |
|   |       | 16 42 47  | 26 9 39         | 5 6   |
|   |       | 14 27 40  | 38 40 0         | 5 6   |
|   |       | 16 2 49   | 33 56 31        | 5 6   |
|   |       | 12 54 8   | 36 58 28        | 5 6   |
|   |       | 16 37 18  | 39 21 1         | 6     |
| 65  |       |           |                 |       |

Nam



| Names and Situations of the Stars.  | Sign. | Longitude. | Latitude. North. | Magn. | Names and Situations of the Stars.  | Sign. | Longitude. | Latitude. North. | Magn. |
|---|-------|------------|------------------|-------|---|-------|------------|------------------|-------|
|   |       | 17 11 39   | 38 38 24         | 5 6   | In the preced. poster. Knee   |       | 24 29 32   | 35 31 46         | 4 3   |
|   |       | 16 18 8    | 41 30 16         | 6 7   | South. in the subseq. poster. Knee  | ♊     | 3 0 37     | 24 46 5          | 4     |
|   |       | 18 13 48   | 36 58 19         | 5 6   | North. in the same Knee   | ♊     | 2 20 15    | 26 9 3           | 4     |
|   |       | 17 33 11   | 39 50 13         | 6 7   |   | ♊     | 29 52 42   | 30 46 34         | 5     |
| Inform. between Gemini and the fore-foot of the Bear                          | ♊     | 23 6 54    | 23 2 58          | 4 5   |   | ♊     | 27 38 30   | 35 46 45         | 6     |
| 70  |       |            |                  |       | 150   |       |            |                  |       |
| In the Tip of the Nose  | ♊     | 18 39 28   | 40 12 47         | 4 3   |   | ♊     | 1 16 32    | 32 41 24         | 5     |
| Preced. of 2 against the Eyes   | ♊     | 17 19 32   | 44 33 1          | 4 5   |   | ♊     | 29 21 41   | 36 12 0          | 6     |
|   |       | 18 0 47    | 44 35 29         | 6     |   | ♊     | 15 44 57   | 31 14 49         | 6     |
| Subseq. of the same   |       | 18 29 23   | 43 59 38         | 4     |   | ♊     | 0 36 32    | 37 17 9          | 6     |
|   |       | 27 25 19   | 17 6 52          | 6     |   | ♊     | 28 33 40   | 40 4 3           | 6     |
| 75  |       |            |                  |       | 155   |       |            |                  |       |
| Against the Jaw   |       | 21 36 0    | 42 17 49         | 5     |   | ♊     | 20 1 48    | 49 27 1          | 6     |
|   |       | 20 41 31   | 44 53 29         | 6     |   | ♊     | 6 30 15    | 29 15 46         | 6     |
|   |       | 28 37 48   | 25 2 44          | 5 6   |   | ♊     | 10 43 46   | 56 11 51         | 6 7   |
| Preced. of 2 in the Forehead  |       | 19 39 10   | 47 54 43         | 4     |   | ♊     | 7 54 52    | 27 6 16          | 6     |
| North. in the preced. anterior Foot   |       | 28 30 18   | 29 34 29         | 3     | South. in the Thigh   | ♊     | 29 21 15   | 41 32 23         | 4 5   |
| 80  |       |            |                  |       | 160   |       |            |                  |       |
| North. of the Informes under the anterior Feet                                | ♊     | 0 58 20    | 23 41 53         | 4 5   | Bright Star in the Thigh; the South. of the following in Square   | ♊     | 23 14 2    | 48 6 52          | 6     |
| South. of the preced. Foot  | ♊     | 20 53 39   | 47 28 38         | 6     |   | ♊     | 26 6 35    | 47 7 26          | 2     |
| Posterior in the Forehead   |       | 29 37 3    | 28 57 11         | 3     |   | ♊     | 23 43 54   | 49 34 37         | 6 7   |
| Preced. in the Triangle of the Neck   |       | 20 58 41   | 47 48 5          | 5     |   | ♊     | 1 51 41    | 41 10 22         | 6 7   |
| 85  |       |            |                  |       |   | ♊     | 5 44 25    | 38 58 35         | 5     |
| Second of the Informes  | ♊     | 3 12 10    | 20 51 27         | 5     | 165   |       |            |                  |       |
| That under the preced. Knee   | ♊     | 28 47 53   | 33 25 55         | 4 5   |   | ♊     | 25 35 54   | 51 6 44          | 7     |
| South. in the Triangle of the Neck  | ♊     | 24 57 27   | 42 47 58         | 5     | In the Root of the Tail; North. of Square of the following  | ♊     | 0 5 37     | 48 46 41         | 7     |
|   |       | 27 39 29   | 38 85 45         | 5 6   |   | ♊     | 26 40 40   | 51 39 36         | 3 2   |
|   |       | 2 57 59    | 25 49 20         | 5 6   | In the South. Hip   | ♊     | 10 52 24   | 38 34 36         | 6     |
| 90  |       |            |                  |       | 170   |       |            |                  |       |
| That over the preced. Knee  | ♊     | 28 58 12   | 36 4 34          | 5     |   | ♊     | 4 51 53    | 45 37 34         | 5 6   |
| Nor. of the brighter among 5 Informes   | ♊     | 6 13 2     | 20 4 22          | 4     |   | ♊     | 26 34 28   | 52 41 36         | 6 7   |
| South. of the same  |       | 7 31 1     | 17 55 58         | 3 4   | North. in the Hip   | ♊     | 10 28 30   | 40 35 50         | 6     |
|   |       | 0 34 53    | 36 36 21         | 6 7   |   | ♊     | 3 29 14    | 48 6 48          | 5 4   |
|   |       | 20 4 2     | 53 16 39         | 7     |   | ♊     | 28 27 25   | 52 13 50         | 7     |
| 95  |       |            |                  |       | 175   |       |            |                  |       |
| In Extrem. of the Ear   |       | 22 0 38    | 51 13 2          | 4 5   |   | ♊     | 13 13 35   | 37 46 0          | 5     |
| Poster. in the Triangle of the Neck   | ♊     | 26 29 5    | 45 7 19          | 4 3   |   | ♊     | 29 59 48   | 51 38 32         | 6 7   |
|   |       | 0 26 16    | 38 26 25         | 6     |   | ♊     | 27 30 45   | 53 53 12         | 6     |
|   |       | 4 51 16    | 28 58 26         | 6     | That prec. the Inform. under the Tail   | ♊     | 4 40 31    | 48 40 22         | 6     |
| In the 2d anterior Knee   |       | 3 0 30     | 34 56 30         | 3 4   |   | ♊     | 13 26 26   | 40 33 13         | 4 5   |
| 100   |       |            |                  |       | 180   |       |            |                  |       |
| A left over this  |       | 3 6 16     | 35 20 16         | 4 5   |   | ♊     | 14 45 13   | 40 37 42         | 7     |
|   |       | 20 54 4    | 53 39 16         | 6     |   | ♊     | 23 53 31   | 57 57 46         | 6     |
| Last of 5 Informes under the anterior Feet                                    | ♊     | 9 27 57    | 20 42 32         | 4 5   |   | ♊     | 17 12 4    | 39 51 39         | 6     |
|   |       | 10 1 37    | 20 17 29         | 6     |   | ♊     | 18 30 28   | 61 3 41          | 6     |
|   |       | 8 48 39    | 24 40 0          | 6     |   | ♊     | 19 27 18   | 38 51 12         | 6     |
| 105   |       |            |                  |       |   | ♊     | 4 31 25    | 54 20 16         | 2     |
|   |       | 28 8 57    | 46 25 7          | 5     | 1st of the Tail   |       |            |                  |       |
|   |       | 9 44 48    | 24 24 4          | 6 7   | 185   |       |            |                  |       |
|   |       | 28 38 28   | 46 9 35          | 5     | Bright Star under the Tail Informis   |       |            |                  |       |
|   |       | 2 21 49    | 40 39 18         | 6     |   | ♊     | 20 14 22   | 40 7 53          | 2 3   |
|   |       | 1 56 55    | 42 39 11         | 4 3   |   | ♊     | 21 43 1    | 60 52 51         | 6     |
| North. of 2 in the Breast   |       |            |                  |       | That following the 1st of the Tail  |       |            |                  |       |
| 110   |       |            |                  |       |   | ♊     | 25 45 10   | 33 57 20         | 4 5   |
| South. of the same  |       | 5 0 20     | 38 14 10         | 4     |   | ♊     | 5 16 3     | 55 14 19         | 5 6   |
|   |       | 7 52 11    | 34 37 7          | 6     |   | ♊     | 24 1 51    | 38 54 37         | 5     |
|   |       | 4 41 45    | 41 11 33         | 6     | 190   |       |            |                  |       |
|   |       | 12 18 14   | 26 43 16         | 5 6   |   | ♊     | 23 7 8     | 41 39 50         | 7     |
|   |       | 16 42 35   | 18 32 33         | 5 6   | Inform. prec. Bootes between the Tail of the Bear, and Coma Berenices   | ♊     | 23 4 4     | 41 51 18         | 7     |
| 115   |       |            |                  |       |   | ♊     | 23 13 27   | 41 40 11         | 6     |
| Preced. of Informes under the posterior Feet                                  | ♊     | 16 40 51   | 22 4 14          | 4 5   |   | ♊     | 21 42 23   | 43 40 31         | 7     |
| North. in the preced. poster. Foot  |       | 1 28 23    | 49 27 46         | 5     |   | ♊     | 22 54 28   | 43 27 29         | 5 6   |
|   |       | 15 13 22   | 29 52 27         | 4 3   | 195   |       |            |                  |       |
|   |       | 1 53 10    | 50 11 42         | 5     |   | ♊     | 22 48 7    | 44 14 22         | 7     |
| South. and poster. in the same Foot   | ♊     | 16 54 2    | 28 57 46         | 4 3   | 1st of the 2 preceding the last of the Tail   | ♊     | 23 28 15   | 44 12 28         | 6     |
| 120   |       |            |                  |       |   | ♊     | 15 54 8    | 51 47 4          | 5     |
|   |       | 2 34 45    | 50 35 12         | 6     | Middle of 3 bright ones in the Tail   | ♊     | 24 23 21   | 44 6 33          | 6     |
| 2d of the Informes under the post. Feet                                       | ♊     | 21 5 21    | 22 13 20         | 5 4   | 200   |       |            |                  |       |
| 3d and North. of the same   |       | 20 13 16   | 25 3 44          | 4 5   | That resting, as it were, on the former   | ♊     | 11 29 36   | 56 33 28         | 5     |
|   |       | 10 16 5    | 42 30 35         | 5     |   | ♊     | 5 22 51    | 60 22 20         | 5     |
|   |       | 10 13 49   | 43 45 37         | 6     | That preced. the last of the Tail   | ♊     | 20 0 55    | 52 52 3          | 5     |
| 125   |       |            |                  |       |   | ♊     | 12 48 0    | 57 41 5          | 7     |
|   |       | 19 33 52   | 28 51 47         | 5     | Prec. in Δ over the last of the Tail  | ♊     | 16 53 28   | 56 26 27         | 6     |
|   |       | 4 5 57     | 51 23 45         | 5 6   | 205   |       |            |                  |       |
| Prec. in the Base of an Oxygonous Triangle of Informes, under the Bear's Feet | ♊     | 24 31 37   | 21 36 55         | 4 3   |   | ♊     | 14 55 49   | 57 51 10         | 6     |
|   |       | 11 31 51   | 44 28 41         | 6     | North. in the same Triangle   | ♊     | 1 38 22    | 45 17 23         | 7     |
|   |       | 18 21 58   | 34 49 14         | 5     |   | ♊     | 1 47 34    | 45 23 40         | 6     |
| 130   |       |            |                  |       |   | ♊     | 6 58 9     | 39 6 27          | 6     |
|   |       | 12 5 54    | 44 23 38         | 6     |   | ♊     | 16 25 24   | 58 14 26         | 6     |
|   |       | 11 49 42   | 44 49 12         | 6     | 210   |       |            |                  |       |
| Subseq. in the Base of the Oxygon   |       | 26 35 38   | 21 3 23          | 4     | Last of the Tail  | ♊     | 22 34 24   | 54 24 0          | 2     |
|   |       | 11 5 14    | 46 48 33         | 6     |   | ♊     | 5 20 16    | 42 31 4          | 7     |
|   |       | 13 11 35   | 44 29 4          | 6     | Informes towards Bootes's Belt  | ♊     | 5 25 42    | 42 25 12         | 7     |
| 135   |       |            |                  |       |   | ♊     | 5 43 42    | 42 18 3          | 6     |
|   |       | 15 1 41    | 42 57 58         | 5 6   | Last of the Triangle over the Tail  | ♊     | 18 51 20   | 58 25 13         | 6     |
|   |       | 26 31 49   | 24 56 4          | 4     | 215   |       |            |                  |       |
| In the Apex of the Oxygonous Triang.  |       | 22 10 5    | 33 3 5           | 5 4   |   |       |            |                  |       |
| In the preced. poster. Leg  |       | 26 59 12   | 24 54 27         | 6     | Ursa Minor, the little Bear, call'd also Charles's Wain, and by the Greeks, Cynosura; by its neighbourhood to the North Pole, gives the Denomination αρκτος, Bear, thereto. See POLE, ARCTIC, &c. |       |            |                  |       |
|   |       | 27 23 30   | 24 29 35         | 6     | Ptolemy and Tycho make it to consist of 8 Stars; but Mr. Flamsteed of 14: The Longitudes, Latitudes, Magnitudes, &c. whereof, as laid down in the Britannic Catalogue, follow.                    |       |            |                  |       |
| 140   |       |            |                  |       |   |       |            |                  |       |
|   |       | 24 46 14   | 31 3 16          | 6     |   |       |            |                  |       |
| South in □ of preced. or in the Side  |       | 15 4 12    | 45 6 16          | 2     |   |       |            |                  |       |
|   |       | 25 39 15   | 30 4 51          | 6 5   |   |       |            |                  |       |
| North, of preced. in the Back   |       | 10 49 58   | 49 40 5          | 2     |   |       |            |                  |       |
|   |       | 26 53 23   | 29 31 30         | 6     |   |       |            |                  |       |



Stars in the Constellation URSA Minor.

| Names and Situations of the Stars.    | Sign | Longitude |    |    | Latitude North |    |    | Mag. |
|---------------------------------------|------|-----------|----|----|----------------|----|----|------|
|                                       |      | °         | '  | "  | °              | '  | "  |      |
| A small one contiguous to the Polar   | II   | 23        | 26 | 40 | 66             | 08 | 04 | 7    |
| That over the Polar                   |      | 17        | 06 | 32 | 65             | 16 | 00 | 6    |
| The last of the Tail; the Pole-Star   |      | 22        | 14 | 41 | 66             | 04 | 11 | 2    |
| Preced. of two before the Shoulder    | ♄    | 28        | 26 | 51 | 70             | 18 | 17 | 5    |
| Subseq. and more South                |      | 04        | 00 | 09 | 71             | 25 | 04 | 5    |
| 5                                     |      |           |    |    |                |    |    |      |
| Bright one in Shoulder, preceded. of  | □    | 08        | 54 | 40 | 72             | 58 | 10 | 2    |
| In the Breast, the most South of the  | □    | 17        | 11 | 56 | 75             | 13 | 15 | 3    |
| Preced. of two in the Loins           |      | 25        | 45 | 45 | 74             | 41 | 52 | 6    |
| Subseq. of the same, North of the     | □    | 23        | 02 | 10 | 75             | 05 | 45 | 4 5  |
| Preced. of two in the Side            |      | 26        | 27 | 42 | 77             | 24 | 10 | 5 6  |
| 10                                    |      |           |    |    |                |    |    |      |
| Brighter in the Side, subseq. of the  | □    | 25        | 56 | 25 | 77             | 49 | 28 | 4 5  |
| In the Root of the Tail               |      | 04        | 45 | 05 | 73             | 53 | 36 | 4    |
| Last but one of the Tail              | II   | 26        | 50 | 39 | 69             | 54 | 37 | 4    |
| Another follow. this, nearer the Pole |      | 26        | 45 | 00 | 69             | 31 | 27 | 7    |
| 14                                    |      |           |    |    |                |    |    |      |

URSULINES, an Order of Nuns, which observe the Rule of St. Augustin; and are chiefly noted for taking on them the Education and Instruction of young Maids. See ORDER, and RELIGIOUS.

They take their Name from their Institutress St. Ursula; and are cloth'd in White and Black.

The Ursulines have spread exceedingly in France, &c. within these few Years.—Few Maids but are put out to School to them.

USAGE, in Law. } See { PRESCRIPTION.

USAGE, in Language. } See { LANGUAGE.

USANCE, in Commerce, in Italian, *Uso*, is a determinate time for the Payment of Bills of Exchange, reckon'd either from the Day of the Bills being accepted, or from the Day of their date; and thus call'd, because regulated by the Usage and Custom of the Places whereon they are drawn. See BILL, and EXCHANGE.

Bills of Exchange are drawn at one or more Usances, either from sight or from date.—The Italians say *Uso doppio*, for double Usance, or two Usances.

This Term is longer or shorter, according to the different Countries.—In France, Usance is fix'd at thirty Days.—At London, Usance is a Calendar Month; and double Usance, two Months.—In Spain, Usance is two Months.—At Venice, Genoa, and Leghorn, three Months.

At Hamburgh, Usance of Bills drawn from England, France, and Venice, is two Months after date.—From Antwerp and Nurenberg, fifteen Days after sight.

At Venice, Usance of Bills drawn at Ferrara, Boulogne, Florence, Lucca, and Leghorn, is five Days after sight.—From Naples, Augsbouurg, Genoa, and Vienna, fifteen Days after sight.—From Mantua, Modena, and Milan, twenty Days after date.—From Amsterdam, Antwerp, and Hamburgh, two Months after date; and from London, three Months after date.

At Milan, Usance of Bills drawn from Genoa, is eight Days after sight.—From Rome, ten Days after sight. And from Venice, twenty Days after Date.

At Florence, Usance of Bills drawn from Boulogne, is three Days after sight.—From Rome ten Days after sight.—From Venice and Naples, twenty Days after Date.

At Rome, Usance of Bills of Exchange drawn in Italy, was, originally, ten Days after sight; but by an Abuse this Term has been extended to fifteen.

At Leghorn, Usance of Bills drawn from Genoa, is eight Days after sight: From Rome, ten Days: From Naples, three Weeks: From Venice, twenty Days after date: From London, three Weeks; and from Amsterdam, forty Days.

At Amsterdam, Usance of Bills drawn from England and France, is a Month after date: From Venice, Madrid, Cadix, and Sevil, two Months.

At Genoa, Usance of Bills from Milan, Florence, Leghorn, and Lucca, is eight Days after sight: From Venice, Rome, and Boulogne, fifteen Days: From Naples, twenty two Days: From Sicily a Month after sight, or two Months after date: From Sardinia, a Month after sight: From Antwerp, Amsterdam, and other Places in the Low Countries, three Months after date.

USE, in Law, the Profit of Lands and Tenements.

A Deed consists of two principal Parts.—The *Premises*, which includes all that comes before the *Habendum*, or Limitation of the Estate; and the *Consequent*, which is the *Habendum* itself; wherein are two Limitations.—The one of the *Estate*, or Property the Party shall receive by the Deed. The other of the *Use*, expressing to, or for what Use and Benefit he shall have the same. See DEED.

The Uses were invented upon the Stat. of *Westm. quia Emptores terrarum*; before which Statute, no such Uses were known.—And because, in course of time, many Deceits were invented by settling the Possession in

one Man, and the Use in another, it was enacted, Anno 27 Hen. VIII. That the Use and Possession of Lands should always stand united.

USE, and Custom, in the antient Law-Books, is the ordinary Method of acting or proceeding in any Case, which by length of Time has obtain'd the force of Law. See CUSTOM, PRESCRIPTION, LAW, &c.

USER *de Action*, in Law; is the pursuing, or bringing an Action. See ACTION, and PROSECUTION.

USES and Customs of the Sea, are certain Maxims, Rules, or Usages, which make the Base or Ground-work of the Maritime Jurisprudence; by which the Policy of Navigation, and Commerce of the Sea, are regulated. See NAVIGATION, COMMERCE, &c.

These Uses and Customs consist in three kinds of Regulations:

The first, call'd *Laws or Judgments of Oleron*, were made by order of Queen Eleanor, Dutches of Guienne, at her return from the Holy War; and that chiefly from Memoirs which she had gather'd in the Levant, where Commerce was at that time in a very flourishing Condition.

She call'd them *Rolls of Oleron*, by reason she then resided in an Island of that Name in the Bay of Aquitaine.—They were much augmented about the Year 1266, by her Son Richard, King of England, on his return from the Holy Land.

The second Regulations were made by the Merchants of Visbuy, a City in the Island of Gothland in the Baltic, antiently much famed for Commerce, most of the Nations of Europe having their Quarters, Magazines, and Shops therein.

These were compiled in the Teutonic Language, and are still the Rule in the Northern Countries. Their Date does not appear; but 'tis probable they were made since the Year 1288, that the City of Visbuy was destroy'd the first time, afterwards restored by Magnus, King of Sweden.

The third Regulations were made at Lubeck, about the Year 1597, by the Deputies of the Hans Towns. See HANS.

USHER, *Ostearius*, from the French, *Huissier*; signifies an Officer, or Servant, who has the Care and Direction of the Door of a Court, Hall, Chamber, or the like.

In the King's Household there are four Gentlemen-Ushers of the Privy-Chamber, appointed to attend the Door, give Entrance, &c. to Persons that have admittance thither.—Four Gentlemen-Ushers, Waiters; and an Assistant Gentleman-Usher.—Eight Gentlemen-Ushers, Quarter-Waiters in Ordinary. See CHAMBER.

In the French Court there are two Ushers of the Anti-Chamber, or Hall where the King dines in publick.—They wait Sword by side, all the Year, and open the Door to such as are to come in.—There are above sixteen Ushers of the Chamber, two of the Cabinet, and one of the Order of the Holy Ghost.

The Ushers of the Inquisition in Spain and Portugal, are Persons of the prime Quality, who think themselves highly honour'd by only looking to the Doors of the sacred Tribunal. See INQUISITION.

USHER is also used for an Officer in the Exchequer; of which sort three or four do attend the chief Officers and Barons, at the Court at Westminster, and Juries, Sheriffs, and other Accomprants; at the pleasure of the Court. See EXCHEQUER.

USHER of the Black-Rod, is an Officer constituted by the Founder of the Order of the Garter. See GARTER.

In a Chapter held at White-hall, 13 Car. II. it was ordain'd, that it should be fix'd to one of the Gentlemen-Ushers, daily Waters at Court; the eldest of which always holds the Place; and is call'd Gentleman-Usher, and Black-Rod.

In relation to the Order of the Garter, he is appointed to carry the Rod at the Feast of St. George, and other Solemnities, which he makes use of as an Authority to attach Delinquents, who have offended against the Statutes of the Order, which he frequently doth by touching them therewith.—He wears a Gold Badge, embellished with the Ensigns of the Order.—He has an House in Windsor-Castle, and other Privileges. See BLACK-ROD.

USNEA, in Natural History, a sort of Plant of the Moss Kind, growing on the Oak, Cedar, and divers other Trees. See MOSS.

USNEA Humana, is a small greenish Moss, growing on human Skulls, that have lain a long time exposed to the Air.

'Tis very astringent, and held proper to stop Hemorrhages.—It is also an Ingredient in the *Weapon-Salve* of *Paracelsus*, and *Crollius*.

USQUEBAUGH, a strong, rich, compound Liquor, chiefly taken by way of Dram; its Basis being Brandy, or rectified Spirit of Wine.

The Process is somewhat various, and the Ingredients numerous.—We shall give one much commended formerly, as a Specimen.



To two Gallons of Brandy, or Spirits, put a Pound of *Spanish* Liquorice, half a Pound of Raisins of the Sun, four Ounces of Currants; three of Dates sliced; Tops of Thyme, Balm, Savory, and Mint, and Tops or Flowers of Rosemary, of each two Ounces; Cinnamon and Mace, bruised, Nutmegs, Anis Seeds and Coriander Seeds, bruised likewise, of each four Ounces; Citron, or Lemon and Orange Peel, scraped, of each an Ounce.

All these to be left to infuse 48 Hours in a warm place, often shaking them together: Then set them in a cool place, for a Week; after which the clear Liquor is to be decanted off, and to it an equal Quantity of neat white Port-Wine, and a Gallon of Canary are to be added—The whole to be sweetened with a proper Quantity of double refined Sugar.

USTION, in Pharmacy, the preparing of certain Substances by burning them. See BURNING.

The Antients made use of the *Ustion* of Horns, Nails, Feathers, and other Parts of Animals, for divers Remedies: And the Moderns still use *Æs Ustum*, which is burnt Copper, or Copper that has undergone the *Ustion*, with Sulphur. See *Æs Ustum*.

The *Ustion* of Minerals, is a more imperfect kind of Calcination. See CALCINATION.

The Word is form'd from the Latin *urere*, to burn.

USUCAPTION, *USUCAPTION*, in the Civil Law, is an Acquisition of the Property of a Thing by a Possession and Enjoyment thereof for a certain term of Years prescribed by Law. See POSSESSION.

Some make a Difference between *Prescription* and *Usucaption*, maintaining that the latter is only used with regard to Moveables, and the former with regard to Immoveables.—But there is no essential Difference between 'em, and accordingly, *Prescription* and *Usucaption*, are generally held Synonyma's. See PRESCRIPTION.

USUFRUIT, *USUS-FRUCTUS*, in the Civil Law, the Enjoyment or Possession of any Effect; or the right of receiving the Fruits and Profits of an Inheritance, or other Thing, without a Faculty of alienating or damaging the Property thereof. See POSSESSION, &c.

When the *Usufructuary* dies, the *Usufruit* returns to the Proprietor.

The Dowry or Jointure of a Widow is only an *Usufructuary* due, that is, she only enjoys the *Usufruit* thereof, and cannot dispose of the Principal. See DOWER.

All mutual Presents between Man and Wife, only import the *Usufruit* of the Goods of the first that dies, to the Profit of the Survivor.

The Incumbents of Benefices are only *Usufructuary*. See BENEFICE.

An *Usufructuary* has full Right over the Coppice; but can't fell Timber-Trees.

USURER, a Person charged with a Habit or Act of *Usury*. See USURY.

The Laws of our antient Saxon and Norman Kings, are very severe upon *Usurers*, or Letters-out of Money upon Interest.—*Usurarios quoque descendit Rex Edvardus (Confessor,) ne remaneret aliquis in toto regno suo; & si quis inde convictus esset, quod scelus exigerat, omni substantia propria careret & postea pro exlege habeatur, quoniam Usura radix omnium malorum.* Leg. Edv. Confess. cap. 37.

They were indeed allowed to dispose of their Goods before Conviction, and whilst they were living; but after their Death they were confiscated, if it could be proved they lent Money to *Use* within a Year before their death. *Matt. Paris.*

If a Clergyman were an *Usurer*, his Goods were not to be confiscated; but to be distributed to pious Uses.

In those Days *Usury* was thus defin'd:

*Est Usura suos quisquis tradit mihi nummos  
Spc lucri, scelus duplex Usura vocatur.*

USURIOUS Contract, is any Bargain or Contract, whereby a Man is obliged to pay more Interest for Money than the Statute allows. See INTEREST and USURY.

USURPATION, in Law, the Enjoyment of a thing for continuance of time, or receiving the Profits thereof. See USUCAPTION.

USURY, *USURA*, in the general, is an Interest, Gain, or Profit which a Person makes of his Money or Effects, by lending the same; or it is an Increase of the Principal, exacted for the Loan thereof; or the Price a Borrower gives for the *Use* of a Sum credited to him by the Lender; call'd also *Use* and *Interest*, and in some antient Statutes, *dry Exchange*. See INTEREST, and EXCHANGE.

The Word *Usury* is usually taken in an evil Sense, viz. for an unlawful Profit which a Person makes of his Money; in which Sense it is, that *Usury* is forbidden by the Civil and Ecclesiastical Law, and even by the Law of Nature: In this Sense it also is, that it is held *Usury* to lend Money on Pawns, to exact Interest for Money without surrendering the Principal, and to stipulate Interest for Money which is not employ'd in Trade, nor brings any Profit to the Person who receives it: But as the Latin Word *Usura*, at least the Plural thereof *Usuræ*, may be understood of a lawful Interest, we

don't see why *Usury* mayn't be used in *English*, in the same harmless Sense.

By the antient Roman Law, People were allow'd to lend out their Money at one *per Cent*, *per Month*; which was 12 *per Cent*. *per Annum*.—If they received more, they incur'd the Note of Infamy, and the Overplus was charged on the Principal.

This Rate of *Usury* was allow'd of as low as the Time of *Justinian*, who moderated it a little by the 26th Law in the Code *de Usuris*. And not long after, the Canon Law forbid all sort of *Usury* whatever.—In compliance with which Prohibition, the customary Laws don't allow any Interest to be exacted for Money lent on a simple Promise or Obligation; but only by Contract, and upon Alienating the Principal, which the Debtor is to reimburse at Pleasure: Which is a kind of buying an annual Revenue.

So that in Propriety, *unlawful Usury* consists in extorting an excessive Rate for one's Money, beyond what is prescribed by Law.

*Du Moulin* indeed makes *Usury*, taken in the ill Sense, to be a *Profit exacted for a Loan made to a Person in want*; intimating, That it is unlawful to extort Gain from the Assistance given to the Unhappy, or to convert an Office of Humanity into a mercenary one.—The Reason is, that Money is a barren and fruitless Thing in the Hands of a Person whom Necessity obliges to borrow; and that being lent him to be spent, he can make no Advantage of it: Whereas the principal Pretext for requiring lawful Interest, is, that the Person who lends, may share in the Profits thereof with the Person to whom it is lent.

Notwithstanding, most of the antient Canonists insist on a rigorous Observation of that Precept in *Deuteronomy*, *Non fœneraberis fratrituo*, Thou shalt not lend Money to thy Brother, on *Usury*: And plead that nothing be required further than the Principal.

However, in Life, we call nothing *Usury* but what exceeds the Bounds prescribed by the Laws: So that when a Person does not alienate his Principal, or takes Interest beyond what is limited by Statute, these alone are *Usury*.

By the Stat. 12 *Car. I.* no Man is allow'd to take above six Pounds for the Forbearance of one hundred Pounds for one Year, under certain Penalties therein enjoin'd.—And by a later Stat. 1<sup>o</sup> *Georgii*, no Man must take above five Pounds for the like Occasion.

UT, a Latin Term signifying, literally, *as*; much used in the Stating of Ratios and Proportions. See RATIO, and PROPORTION.

Sir *I. Newton* assigns its Use thus: If indeterminate Quantities of divers kinds be compared together, and one of 'em be said to be *Ut, as*, any other directly or inversely; the meaning is, that the first is increas'd or diminish'd in the same Ratio as the latter.—And if one of 'em be said to be, *ut, as*, two or more others directly, or inversely, the meaning is, that the first is increased or diminished in a Ratio compounded of the Ratios in which the others are increased or diminished.

Thus, if A be said to be *as* B directly, and *as* C directly, and *as* D inversely, the Meaning is 'tis increased or diminished in the same Ratio with  $\frac{B \times C \times D}{D}$ , that is, A and  $\frac{BC}{D}$ , are to each other in a given Ratio. *Phil. Nat. Princ. Math.*

Ut, in Music, the first of the musical Notes. See NOTE.

Ut, *re, mi, fa*; the Clef of G, *re, sol, ut*; of C, *sol, ut*, &c.

This Note, with the rest, were taken out of the Hymn of St. John Baptist. *Ut queant laxis*, &c. See MUSIC.

Ut *sangthes*, an antient Royalty, or Privilege, granted to the Lord of a Manor by the King, giving him a Power to punish a Thief dwelling, and committing Theft out of his Liberty; if he be taken within the Lord's Fee.—*Ut sangthes dicitur extraneus Lairo veniens aliunde de terra aliena, & qui captus fuit in terra ipsius qui tales habet libertates.* *Bracton.*

UTENSIL, a little domestic Moveable, belonging principally to the Kitchen.—Such are Pots, Pans, Plates, &c.

*Utensil* is particularly used in War for the Moveables which the Host is obliged to furnish the Soldiers quarter'd with him; which are, a Bed with Bed-clothes, a Pot and a Spoon.—They are likewise to have a place at their Host's Fire, and Candle.

*Utensils* are sometimes furnish'd in Money, and sometimes in Kind. The Word is form'd from the Latin *Utensile*, which signifies the same thing.

UTERINE, *UTERINUS*, something belonging to the Uterus, or Womb of Women. See UTERUS.

Thus *Uterine* Brothers or Sisters, are those born of the same Mother, but different Fathers. See BROTHER, &c.

*Furor Uterinus*, in Medicine, is a kind of Madness, attended with lascivious Speeches and Gestures, and an invincible Inclination to Venery.

The *Furor Uterinus*, is a Complication of hysterical Symptoms, arising from a Turgescentcy or Inflation of the *Uterine Vessels*. See HYSTERIC.



It is usually supposed to consist in some irregular Motion of the Spirits, occasion'd by a hot, lustful Temperament, the Conversation of debauch'd Persons, or the reading of wanton Books, hot Foods, the Abundance and Acrimony of the ferous Matter which moistens the *Pudendum*, Suppression of the Menses, large Doses of Cantharides, &c.

It has been frequently found, that Maids that were held to be possess'd, were only seiz'd with the *Uterine Fury*.

Before the Paroxysm, the Patient often appears silent and sorrowful, with a Flushing in the Face, and a Respiration and Pulse frequently intermitting, and suddenly varying.—During the Paroxysm they burst sometimes into Laughter, and then into a Fit of Tears, &c.

Bleeding, farid Suffiments, and other hysterical Medicines, are proper during the Fit.

Men are subject to the Disease as well as Women; so that it might with more Propriety be call'd, the *Furor Venereus*, or *Venerical Fury*.

It had its Name *Furor Uterinus*, from an Opinion, that it proceeded from Vapours rising from the Womb to the Brain.

UTERUS, in Anatomy, the *Matrix* or *Womb* of a Woman; or that Organ of Generation wherein the Business of Conception is perform'd, and wherein the Embryo or *Fœtus* is lodg'd, fed, and grows, during the time of Gestation, or till its Delivery.—Its Description see under the Article-MATRIX.

Its Office, &c. under GENERATION, CONCEPTION, GESTATION, PARTUS, &c.

Vagina UTERI. See VAGINA.

UTILE, a *Latin* Term signifying profitable or useful; sometimes used by *English* Authors in the same Sense.

The *Utile* and the *Dulce*, Profit and Delight, are both to be aim'd at in Poetry; but it is disputed which of them is to be aim'd at in the first place.—*Cornelle* says expressly, *Dans la Tragedie l'utile n'entre que sous la forme du delectable*. See POETRY.

In the Language of the Philosophers, there is nothing *Utile* but what is just and honest: *Nihil bonum nisi honestum: nihil malum nisi turpe*. Cic. de Fin. lib. 2.

UTLAGATIO, in Law-Term, an Out-lawry. See OUT-LAWRY.

UTLAGATO *capiendo, quando utlagatus in uno comitatu postea fugit in Alium*, a Writ for the apprehending a Man who is outlaw'd in one Country, and flies into another. See OUTLAWRY.

UTLAGH, UTLAGHUS. See OUTLAW.

UTLAND. See INLAND.

UTLARY, or UTLAWRY. See OUTLAWRY.

UTRUM. See ASSISE.

UTTER, or *Outer Barristers*, are such Candidates as, in regard of their long Study and great Industry bestow'd upon the Knowledge of the Common Law, are call'd out of their Contemplation to Practice, and in the View of the World to take upon 'em the Protection and Defence of Clients. See BARRISTER.

In most other Countries they are call'd *Licentiates*. See LICENTIATE.

They have their Name *Utter Barristers*, q. d. Pleaders *ouster the Bar*, to distinguish 'em from Benchers, who have been *Readers*, and are sometimes admitted to plead within the Bar; as the King's Council are. See BENCHER, &c.

UVEA, in Anatomy, the third Tunic, or Membrane of the Eye; thus call'd, as resembling a Grape-stone. See EYE.

The hind-part of this Coat, or that next the Orbit of the Eye on each side, is call'd the *Choroides*; and is derived from the *Pia Mater*. See CHOROIDES.

The fore-part is, like the former, transparent, but thinner; and is by Authors reckon'd as a different Tunic, and call'd *Uvea*.

Of the Duplicature of this Part, is form'd that striped, variegated Circle, call'd the *Iris*. See IRIS.

And in its middle is a Perforation, thro' which appears a little black Speck, which is the Sight, or *Pupil* of the Eye; and about which the Iris forms a Ring. See PUPIL.

From the inside of this Membrane, spring certain Fibres, which spread themselves round the crystalline Humour; serving to contract or dilate the Sight at pleasure; and call'd the *Ligamentum Ciliare*. See CILIARE, and CRYSTALLINE.

VULVA, a Name some Physicians give to the Uterus, or Womb.

The Word *Uvea*, is *Latin*, thus call'd, *quasi Valva*, a Door. See UTERUS.

*Uvea* is sometimes also, tho less properly, used for the *Pudendum Muliebre*. See PUDENDUM.

VULVA *Cerebri*, is an oblong Furrow in the Brain; so called from its likeness, in Figure, to a Female *Vulva*.

VULCANO, among Naturalists. See VOLCANO.

VULGAR *Fractions*. See FRACTION.

VULGATE, a very ancient *Latin* Translation of the Bible; and the only one the Church of *Rome* acknowledges authentick. See BIBLE.

The antient *Vulgate* of the *Old Testament*, was translated almost Word for Word, from the *Greek* of the Seventy. The Author of the Version is not known, nor so much as guess'd at. See SEPTUAGINT.

It was a long time known by the Name of the *Italic*, or *Old Version*; as being of very great Antiquity in the *Latin* Church.—It was the common, or *vulgar* Version before S. *Jerom* made a new one; whence its Name *Vulgate*.

*Nobilius* in 1588, and F. *Morin* in 1628, gave new Editions of it; pretending to have restored, and recolated it from the Antients who had cited it.—The *Vulgate* was held by S. *Augustine* to be preferable to all the other *Latin* Versions then extant; as rendering the Words and Sense of the sacred Text, more closely and justly than any of the rest. It has since been re-touch'd from the Corrections of S. *Jerom*; and 'tis this Mixture of the antient *Italic* Version and some Corrections of S. *Jerom*, that is now called the *Vulgate*, and which the Council of *Trent* has declar'd to be authentick.

'Tis this *Vulgate* alone is used in the *Romish* Church, excepting for some Passages of the antient *Vulgate* left in the Missal, and the Psalms; which are still sung according to the old *Italic* Version. See BIBLE.

*Vulgate* of the *New Testament*.—This the *Romanists* generally hold preferable to the common *Greek* Text; in regard 'tis this alone, and not the *Greek* Text, that the Council of *Trent* has declar'd authentick: Accordingly, that Church has, as it were, adopted this Edition. The Priests read no other at the Altar, the Preachers quote no other in the Chair, nor the Divines in the Schools.

Yet some of their best Authors, F. *Bouhours* for instance, own, that among the Differences that are found between the common *Greek* and the *Vulgate*, there are some wherein the *Greek* reading appears the more clear and natural than that of the *Latin*; so that the second might be corrected from the first, if the Holy See should think fit.—But those Differences, for the generality, only consist in a few Syllables or Words: They rarely touch the Sense. Besides, in some of the most considerable, the *Vulgate* is authoriz'd by several antient Manuscripts.

*Bouhours* spent the last Years of his Life, in giving a *French* Translation of the *New Testament*, according to the *Vulgate*.

In 1675, a new Edition of the *Greek* Testament was publish'd by the *University of Oxford*; and great Care taken therein, to compare the common *Greek* Text with all the most antient Manuscripts in *England*, *France*, *Spain*, and *Italy*; and to note the Differences observ'd therein.

In the Preface to this Work, the Editors speaking of the divers Versions of the Bible in the vulgar Tongues, observe of the *Vulgate*, that there is no Version in any Language to be compar'd with it.—And this they justify, by comparing Passages that occur in the most celebrated *Greek* Manuscripts, with the same Passages in the *Vulgate*, where there is no difference between that and the common printed *Greek* Copy.

In effect, 'tis probable, that at the Time the antient *Italic*, or *Vulgate* Version of the *New Testament* was made, and at the Time it was afterwards compar'd with the *Greek* Manuscripts by S. *Jerom*; as they were then nearer the Times of the Apostles, they had juster *Greek* Copies, and those better kept than any of those used when Printing was first set on foot, two Centuries ago.

M. *Simon* calls the *Greek* Version of the Seventy, before it was revis'd and reformed by *Origen*, *The antient Vulgate Greek*.—*Origen's* Correction got the upper hand of the antient *Greek*, and jostled it out of use; so that we have now scarce any Copies thereof. See SEPTUAGINT.

VULNERARY, in Medicine, an Epithet given to Remedies proper for the Cure of Wounds, and Ulcers. See WOUND, and ULCER.

There are divers *Vulnerary* Herbs; as *Arisæma*, or Birthwort; *Sanicle*, or Self-heal; *Plantain*, *Moss*, &c. *Veronica*, or *Fluellin*, *Agrimony*, *Vervain*, or Holy Herb, &c.

There are also *Vulnerary* Potions, composed of various Simples.—*Vulnerary* Balms, Unguents, Plaisters, &c. See BALM, &c.

The Word is form'd from the *Latin* *Vulnus*, Wound.

VULTUS *de Luca*. See VERONICA.

UVULA, in Anatomy, a round, soft, spongy Body, like the End of a Child's Finger; suspended from the Palate, near the *Foramina* of the Nostrils, perpendicularly over the Glottis.

Its use is to break the Force of the cold Air, and prevent its entering too precipitately into the Lungs. See RESPIRATION, &c.

Its form'd of a Duplicature of the Membrane of the Palate; and is called by some Authors *Columella*, and by others *Gurgulio*.

It is moved by two Pair of Muscles, and suspended by as many Ligaments.—The Muscles are, the *External*, call'd the *Sphenostaphylinus*, which draws the *Uvula* upwards and



and backwards; and hinders the masticated Aliment from passing into the *Foramina* of the Nostriis in Deglutition. See SPHENOSTAPHILINUS.

And the *Internal*, call'd the *Pterygostaphilinus*; which draws the *Uvula* upwards and forwards. See PTERYGOSTAPHILINUS.

Both Muscles move the *Uvula* upwards, to give room for swallowing; and serve to raise it, when relax'd and fallen down.—In which Case, 'tis usual to promote its rising, by ap-

plying a little beaten Pepper on the End of a Spoon to it. See DEGLUTITION.

*Bartholin* says, that such as have no *Uvula* are subject to the Phthisic, and usually die thereof; by reason the cold Air, entering the Lungs too hastily, corrupts 'em.

UXORIUM, in Antiquity, a Fine or Forfeit paid by the Romans for not marrying. See MARRIAGE, POLITICAL Arithmetic, &c.

UZIFUR, in Chymistry, a Name some Authors give to Cinnabar. See CINNABAR.

## W A G

**W**,

A Letter peculiar to the Northern Languages, and People; as the *English*, *Dutch*, *Polsk*, and others of *Teutonic* and *Sclavonic* Original. See LETTER, and ALPHABET.

The *W* is also admitted into the *French*, *Italian*, &c. in proper Names, and other Terms borrow'd from the Languages where it is us'd.

In *English*, the *W* is usually a Consonant; and as such, may go before all the Vowels, except *u*; as in *Want*, *Weapon*, *Winter*, *World*, &c. See CONSONANT.

It is sometimes also a Vowel; and as such, follows any of the Vowels *a*, *e*, *o*, and unites with them into a kind of double Vowel, or Diphthong; as in *Law*, *Ewe*, *Sow*, &c.

The *English w* is founded as the *Latin u*, in *quantum*, *suadeo*, *lingua*.—Its Sound is also commonly like the gross, or full *U* rapidly pronounc'd.—In *French*, the Sound of the *W*, does not differ from that of the single *V*.

WADDING, in Gunnery, a Stopple of Paper, Hay, Straw, old Clouts, &c. forc'd into a Gun upon the Powder, to keep it close in the Chamber; or put up close to the Shot, to keep it from rolling out. See CHARGE.

WAFT.—To waft a Ship, is to convoy her safe, as Men of War do by Merchant Ships. See CONVOY.

To make a Waft, is to hang out some Coat, Sea-Gown, or the like, in the main Shrouds of the Ship; as a Sign for the Men to come on board, &c. Such Waft is also frequently intended to shew that a Ship is in distress by a Leak, &c. and therefore wants help from the Shore, or from other Ships.

WAFORS.—King *Edward* IV. constituted a triumvirate of Officers with Naval Power, whom the Patent styles *Custodes*, *Conductores*, and *Wafors*; whose business chiefly was to guard our Fishermen on the Coasts of *Norfolk*, and *Suffolk*.

WAGA, or VAGA. See WRIGHT.

WAGE, in Law, *Vadiare*, from the French *Gager*, *dare pignus*, to pledge; signifies, the giving Security for the Performance of any thing. See PLEDGE.—Thus, to wage Law, is to put in Security that you will make Law, at the Day assign'd; and to make Law, is to take an Oath, that a Man owes not a Debt which is claimed of him, and also to bring with him so many Men as the Court shall assign, who shall avow upon their Oaths that they believe he swears truly.

WAGGON, a kind of Vehicle, or Carriage in common use.

There are divers Forms of Waggon accommodated to the divers Uses they are intended for.

The common Waggon consists of the *Shafts*, or *Rads*, which are the two Pieces the hind Horse bears up; the *Welds*; the *Slates*, which are the cross Pieces that hold the Shafts together; the *Bolster*, being that Part on which the fore Wheels and Axletree turn, in wheeling the Waggon a-cross the Road; the *Chest*, or *Body* of the Waggon, having the *Staves* or *Rails* fix'd thereon; the *Balls*, or *Hoops* which compose the Top; the *Tilt*, the Place cover'd with Cloth at the End of the Waggon: besides the *Wheels*, *Axletree*, &c.

The greater the Wheels of the Waggon, and their circumference; the easier the Motion; and the less, the heavier, and more uneasy and jogging they go.—The only Reason why the fore Wheels of Waggon, &c. are made less than the hind Wheels, is for the Convenience of turning. See WHEEL.

But still, the higher a Waggon, &c. is set, the apter it is to over-turn.

The more upright or square the Spokes of the Wheels are from the Box, or Centre, the weaker they are when they

## W A K

come to bear on either side: on which account, as also to secure a Wheel from breaking in a fall, they are made concave, or dishing.

WAGGONER, in Astronomy, a kind of Constellation; call'd also *Charles's Wain*. See CHARLES'S WAIN.

WAGGONER is also used for a Router, or Book of Charts, describing the Seas, their Coasts, &c. See CHART, and ROUTTER.

WAIF, or WAFE, a Term primarily applied to stolen Goods, which a Thief, being pursu'd or overburden'd, flies, and leaves behind him.

The King's Officer, or the Bailiff of the Lord within whose Jurisdiction such *Waifs* or *Wais* Goods were left, (who by Grant, or Prescription, hath the Franchise of *Waif*) may seize the Goods to his Lord's use; except the Owner come with fresh Suit after the Felon, and sue an Appeal within a Year and a Day, or give in Evidence against him, and he be attainted.—In which Cases, the Owner shall have his Goods again.

The *Waif* be properly spoken of Things stolen, yet it may also be understood of Goods not stolen: As, if a Man be pursu'd with Hue and Cry, as a Felon, and he flies and leaves his own Goods; these shall be forfeit as Goods stolen; and are properly call'd *Fugitive Goods*. See FUGITIVE.

*Waifs*, *Things lost*, and *Estrays*, are said to be *Pecus vagrans*; and are nullius in bonis ubi non apparet dominus. And therefore belong to the Lord of the Franchise where they are found; who must cause them to be cried and publish'd in the Markets and Churches near about: else the Year and Day does not run to the prejudice of him that lost them.

WAINSCOT, in Building, the Timber-Work serving to line the Walls of a Room; being usually in Pannels, and painted, to serve in lieu of Hangings. See WALL, &c.

Even in Halls, 'tis common to have *Wainscot* breast high; by reason of the natural Humidity of Walls. See HALL.

Some Joiners put Charcoal behind the Pannels of the *Wainscot*, to prevent the Sweating of Stone and Brick-Walls from ungluing the Joints of the Pannels.—Others use Wool for the same purpose.—But neither the one nor the other is sufficient in some Houses: The only sure way, is by priming over the back-sides of the Joints with White Lead, Spanish Brown, and Linseed Oil.

*Wainscotting with Norway Oak*, the Workman finding Stuff, is valu'd at six or seven Shillings per Yard square.—*Plain square Wainscotting*, the Workman finding Deal, is valu'd at three Shillings, or three Shillings six Pence per Yard.—*Large biflection Wainscotting*, with *Dantzick* Stuff, is valued at six or seven Shillings per Yard; and *ordinary Biflection* Work at three Shillings six Pence per Yard.

Note, In taking Dimensions, they use a String, which they press into all the Mouldings; it being a Rule that they are to be paid for all where the Plane goes.

WAIVE, in Law, a Woman that is outlaw'd. See OUTLAW.

She is called *Waive*, as being forsaken of the Law: and not *Outlaw*, as a Man is; by reason Women cannot be of the *Decenna*, are not sworn in Leets to the King, nor to the Law, as Men are; who therefore are within the Law: whereas Women are not; and so cannot be outlaw'd, since they never were within it.

In this Sense, we read, *Waviaria Mulieris*, as of the same Import with *Utilegatio Viri*.

WAKE of a Ship, is the smooth Water that runs from a Ship's Stern, when she is under sail.

By this, a good Guess may be made of the Speed she makes. See RECKONING.

They also judge from this, whether the Ship goes as she looks; that is, whether she makes her way right a-head, as she



she lies ; as she doth when her *Wake* is right à-stern : But if this *Wake* be a Point or two to Leeward, they judge that she falls to the Leeward of her Course.

When, in a Ship's staying, she is too quick ; they say she does not fall to the Leeward upon a Tack, but when tack'd, her *Wake* is to the Leeward ; which is a Sign she feels her Helm well, and is nimble of Steerage.

Also, when one Ship giving chase to another, is got as far into the Wind as she, and sails directly after her; they say, she is got into her *Wake*.

WAKEFULNESS, WATCHFULNESS, *Insomnia*; a Disorder whereby a Person is disabled from going to sleep. See SLEEP.

It is occasion'd by a continual and excessive Motion of the Animal Spirits in the Organs of the Body, whereby those Organs are prepared to receive, readily, any Impressions from external Objects, which they propagate to the Brain; and furnish the Soul with divers Occasions of Thinking. See SPIRIT.

SPiRiT.

This extraordinary Flux of Spirits may have two Causes: For, 1<sup>o</sup>, the sensible Objects may strike the Organ with too much Force. In which Case, the Animal Spirits being violently agitated, and those Agitations continued by the Nerves to the Brain, they give a like Motion to the Brain it self; the necessary Consequence of which, is, that the Animal must wake. See VIGILIA.

Thus, a loud Shriek, Pains, Headach, Gripes, Coughing, &c. cause *waking*. Add, that the Soul's being oppress'd with Cares, or deeply engag'd in Thinking, contributes to the same: Since, as it acts by the ministry of the Spirits, any Cares or Meditations that keep those in motion, must produce *Watchfulness*.—Of this Kind are those inveterate *Wakings* of melancholick Persons; some of whom have been known to pass three or four Weeks without a wink of Sleep. See MELANCHOLY.

2<sup>o</sup>, The other Cause is in the Spirits themselves; which have some extraordinary Disposition to receive Motion, or to persist in it: As, from their too great heat, or that of the Brain in burning Fevers, &c. Hence it is, that the Disorder is most frequent in Summer, in the heat of Youth, &c.

Long Fasting has the same Effect; the want of Food subtilizing the Spirits, and drying the Brain.—The same is likewise an ordinary Symptom in old Age, by reason the Pores of the Brain and the Nerves, having been much widen'd by the continual Passage of Spirits, for a great number of Years; the Spirits now pass and repass thro' 'em with too much ease; and need not any extraordinary Motion to keep the Mind awake. See HABITUDE.

There are Instances of *waking* for 45 Nights successively: And we even read of a melancholy Person, who never slept once in 14 Months.—Such Watchings usually degenerate into Madness. See NARCOTICS, and OPIATE.

WAKES, VIGILS, or *Country-WAKES*, are certain ancient Anniversary Feasts, in the several Parishes; wherein the People were to be awake at the several Vigils, or Hours to go to prayer. See VIGIL.

They are usually observed in the Country, on the Sunday next after the Saint's Day to whom the Parish-Church is dedicated.

*Cowel*, who derives the Word from the Saxon *Wac*, *remulgentia*; defines 'em to be the Vigils in the Dedications of Churches, where Men sat drinking in the Choir all Night. See DEDICATION.

See DEDICATION.  
WALKERS, a sort of Forest-Officers, appointed by the King to walk about a certain space of Ground, committed to their Care and Inspection. See FOREST.

*Walkers* are the same with what we otherwise call *Fo-reflers*. See FORESTER.

WALKS, in Gardening. See ALLEYS.

To keep the Weeds from growing upon *Walks*, Mr. *Sweetzer* directs, that the Bottoms thereof be fill'd with Lime-Rubbish, or coarse Gravel, Flint-stones, or other rocky Stuff, eight or ten Inches deep; over which may be laid a like depth of Gravel, not too fine.

To keep 'em the drier, they are to be made round, or convex.—The usual Proportion is, that a *Walk* 20 Foot wide, be four Inches higher in the Middle, than at the Sides; a *Walk* 25 Foot wide, 5 Inches, &c.

After laying a *Walk*, it is to be roll'd, both lengthwise, and cross-wise; and to lay it the firmer, it must have three or four Water-Rollings; that is, when it rains so very fast, that the *Walk* swims with Water: which, when dry Weather comes, will bind as hard as Terrace.

To make the Gravel bind the better, some mix a little Lime with it; which being apt to stick to the Heels of the Shoes in wet Weather, others grind or pound Sea-shells, and lay a thin Coat thereof on the Gravel; which being roil'd, incorporates with the Gravel, and hinders its hanging to the Shoes. Others beat Smiths Cinders to Dust, and others Bricks; strewing the Dust on the *Walks*, which dries up the Moisture, and gives 'em a Colour.

up the Mollusks, and gives em a Colour  
for Terrass-WALKS. See TERRASS.

**WALL**, in Architecture, &c. a Work of Stone, Brick, Wood, or the like; making the principal Part of a Building; as serving both to inclose it, and to support the Roof, Floors, &c. See BUILDING, HOUSE, &c.

*Walls*, tho built very thick and strong, and their Foundations laid deep, yet, if carried on strait in a Line, are inclined to lean, or fall; and such as are built crooked, tho thin and weak, are much more lasting. A *Wall* rais'd over a River, on Arches of Pillars, stands as firm as others, whose Foundation is entire.

Hence it appears, that a *Wall* built much thinner than usual, by only having at every 20 Foot's distance an Angle set out about two Foot, or more, in proportion to the Height of the *Wall*; or by having at the like distance, a Column or Pillaster erected along with it, six or eight Inches on each side over and above the thickness of the rest of the *Wall*: Such *Wall* will be much stronger than if five times the quantity of Materials were used in a strait *Wall*.

*Walls* are distinguish'd into divers Kinds, from the Matter whereof they consist; as *Plaster'd*, or *Mud-Walls*, *Brick-Walls*, *Stone-Walls*, *Flint* or *Boulder-Walls*, and *Boarded Walls*.—In all which, these general Rules are to be regarded.

1st, That they be built exactly perpendicular to the Ground-work.

2d, That the massiest and heaviest Materials be the lowest: as fitter to bear than be borne.

3d, That the Walls, as they rise, diminish proportionally in Thickness, for ease both of Weight and Expences.

4th, That certain Burfes, or Lodges, of more strength than the rest, be interlaid, like Bows, to strengthen the whole Fabrick.

*Mud and Plaster'd Walls* are chiefly in ordinary Timber Buildings.—These *Walls*, being quarter'd and lath'd between the Timber, or sometimes lath'd over all, are plaster'd with Lome, (see LOME ;) which being almost dry, is plaster'd over again with white Mortar. See MORTAR.

*Brick Walls*, are the most important and usual among us.—In these, particular Care is to be taken about the laying of the Bricks, *viz.* That in Summer they be laid as wet, and in Winter as dry as possible; to make them bind the better with the Mortar: That in Summer, as fast as they are laid, they be cover'd up, to prevent the Mortar, &c. from drying too fast: that in Winter they be cover'd well to protect them from Rain, Snow, and Frost, which are all Enemies to the Mortar: That they be laid Point and Joint in the middle of *Walls*, as seldom as may be; but, good Bond made there, as well as on the outsides.—Care is likewise to be taken, that the Angles be firmly bound: In order to which, in working up the *Walls* of a Building, 'tis not advisable to raise any *Wall* above three Foot high, ere the next adjoining *Wall* be wrought up to it; that good Bond may be made in the progress of the Work.

Lastly, in Building a House in the City of *London*, the Walls are to be of such thickneses as are enjoined by the Act of Parliament for rebuilding that City. See House.

*Flint*, or *Boulder-Walls*, are frequently used in divers Parts for Fence-Walls round Courts, Gardens, &c. and even for Walls of Out-houses.—Sir *Henry Wotton* observes, that the building of *Walls* of *Flint*, is a thing utterly unknown to the Ancients; who observing in that Material a kind of metallic Nature, at least a Fusibility, reserv'd it for nobler Uses.

These *Walls* are usually rais'd by a right and left-handed Man, who have a Hod of Mortar pour'd down on the Work, which they part betwixt them; each spreading it towards himself, and so they lay in the Flints.—The Mortar for this Work is to be very stiff.

Board-WALLS. }  
 Stone-WALLS. } See { WEATHER-Boarding.  
 Party-WALLS. } { STONE.  
 Fence-WALLS. } { PARTITION.  
 } { FENCE.

WALL, in Fortification, &c. See RAMPART.

**WALLS**, in Gardening, &c.—The Position, Matter, and Form of *Walls* for Fruit-Trees, are found to have a great Influence on the Fruit: The Authors differ as to the Preference. See GARDEN, ORCHARD, &c.

The Rev<sup>d</sup>. Mr. *Lawrence* directs, that the *Walls* of a Garden be not built directly to face the four Cardinal Points, but rather between 'em, *viz.* South-East, South-West, North-East, and North-West: In which, the two former will be good enough for the best Fruit, and the two latter for Plums, Cherries, and baking Pears.

Mr. Langford, and some others, propose Garden-Walls to consist chiefly of Semicircles; each about six or eight Yards in Front, and including two Trees; and between every two Semicircles, a Space of two Foot of plain Wall.—By such a Provision, every Part of a Wall will enjoy a share of the Sun, one time with another; besides that the Warmth will be increas'd, by the collecting and reflecting of the Rays in the Semicircles; and the Trees within be screen'd from injurious Winds.



As to the Materials of *Walls* for Fruit-Trees, Brick, according to Mr. *Switzer*, is the best; as being the warmest, and kindest for the ripening of Fruit, and affording the best convenience for nailing.

Mr. *Lawrence*, however, affirms, on his own Experience, that *Mud-Walls*, made of Earth and Straw temper'd together, are better for the ripening of Fruit than either Brick or Stone *Walls*: He adds, that the Copping of Straw laid on such *Walls*, is of great advantage to the Fruit, in sheltering 'em from perpendicular Rains, &c.

M. *Fatio*, in a particular Treatise on the Subject, instead of the common perpendicular *Walls*, proposes to have the *Walls* built sloping, or reclining from the Sun; that what is planted against 'em may lie more expos'd to his perpendicular Rays; which must contribute greatly to the ripening of Fruit in our cold Climate.

The Angle of Reclination is to be that of the Latitude of the Place; that when the Sun is in the Meridian at the Equinoxes, his Rays may strike just perpendicularly. See *HEAT*.

Yet some others prefer perpendicular *Walls*, and even inclining ones, or such as hang forwards to the Sun; as such receive the Sun's Rays perpendicularly when he is low; as in Spring and Autumn, or in the Evening and Morning: which they imagine of more service than the greatest Heats of the Sun at Midsummer, upon reclining *Walls*.

Add, that in Autumn the Sun is most wanted to ripen Winter Pears; in order to which, they should be kept dry; which against sloping *Walls* cannot be; the Dews, &c. lying much longer thereon, than on those that are perpendicular.

One great advantage, however, of M. *Fatio's* sloping *Walls*, is, that Fruit-Trees, as Vines, &c. being planted against 'em, Melon-Glasses may be set on the Fruit; which will much forward its ripening.

*Sea-Walls*, See *WATERGAGE*.

*WALOON*, or *WALLOON*, a kind of old *French*; being the Language spoke by the *Walloons*, or the Inhabitants of a considerable Part of the *Spanish Low-Countries*, viz. those of *Artois*, *Hainault*, *Namur*, *Luxemburg*, and part of *Flanders*, and *Brabant*.

The *Walloon* is held to be the Language of the antient *Gauls*. See *GAULISH*.

The *Romans* having subdu'd several Provinces in *Gaul*, establish'd *Prætors* or *Proconsuls*, &c. to administer Justice in the *Latin Tongue*.—On this Occasion, the Natives were brought to apply themselves to learn the Language of the Conquerors; and thus introduc'd abundance of the *Roman Words* and *Phrases* into their own Tongue.

Of this Mixture of *Gaulish* and *Latin* was form'd a new Language, call'd *Roman*; in contradistinction to the antient unadulterated *Gaulish*, which was call'd *Wallon*, or *Walloon*.

This Distinction is kept up to this Day; for the Inhabitants of several of the *Low-Country Provinces*, say, that in *France* they speak *Roman*; whereas they speak the *Walloon*, which comes much nearer the Simplicity of the antient *Gaulish*. See *ROMAN*, and *FRENCH*.

*WANLASS*, in Hunting.—Driving the *Wanlass*, is the driving of Deer to a stand. See *HUNTING*.

*WAPENTAKE*, or *WEAPENTAKE*, a Division of certain Counties, particularly *Nottingham*, and those beyond the *Trent*; answering to what in other Places is call'd a *Hundred*, or *Cantred*. See *HUNDRED*.

Authors differ as to the Origin of the Word.—*Hoveden* brings it from the Saxon *Weapen*, and *taken*, to take; by reason the Tenants antiently deliver'd their Arms to every new Lord, as a Token of their Homage.

Sir *Thomas Smith* gives a different Account.—He says, that antiently *Musters* were taken of the Armour and Weapons of the several Inhabitants of every *Wapentake*; and that from such as could not find sufficient Pledges for their good abearing, their Weapons were taken away, and deliver'd to others.

Others suppose the Word of *Danish* Original; and give a different account of its Rise, viz. That when first the Kingdom was divided into *Wapentakes*; he who was the Chief of the Division, and whom we now call *High-Constable*, as soon as he enter'd upon his Office, appear'd in the Field, on a certain Day, on Horse-back, with a Pike in his Hand, and all the chief Men of the Hundred met him with their Lances; who alighting, touch'd his Pike with their Lances, as a Signal they were firmly united to each other, by the touching their Weapons: The Saxon *Weapen* signifying *Weapon*, and *tac*, *touching*.

*WAR*, *Bellum*, a Contest, or Difference between Princes, States, or large Bodies of People; which not being determinable by the ordinary Measures of Justice and Equity, is refer'd to the Decision of the Sword.

*Hobbes's* great Principle, is, That the Natural State of Man is a State of *Warsfare*; most other Politicians hold *War* to be a preternatural and extraordinary State.

*Civil*, or *Intestine WAR*, is that between Subjects of the

same Realm; or between Parties in the same State.—In this Sense, we say, The *Civil Wars* of the *Romans* destroy'd the Republick: The *Civil Wars* of *Granada* ruin'd the Power of the *Moors* in *Spain*: The *Civil Wars* in *England* begun in 1641, ended in the King's Death, 1649.

*King's WAR*, *Bellum Regis*.—At the Time when particular Lords were allow'd to make *War* with one another, to revenge Injuries, instead of prosecuting them in the ordinary Courts of Justice; the Appellation *King's War* was given to such as the King declared against any other Prince, or State; on which Occasion, the Lords were not allow'd to make *private War* against each other; as being oblig'd to serve the King, with all their Vassals. See *VASSAL*, &c.

*Religious WAR*, is a *War* maintain'd in a State, on account of Religion; one of the Parties refusing to tolerate the other.

The *Holy War*, is that antiently maintain'd by Leagues and *Croisades*, for the Recovery of the Holy Land. See *CROISADE*.

*Council of WAR*, is an Assembly of great Officers, call'd by a General or Commander, to deliberate with him on Enterprizes, and Attempts to be made. See *COUNCIL*.

On some Occasions, *Council of War* is also understood of an Assembly of Captains, sitting in Judgment on delinquent Soldiers, Deserters, Coward-Officers, &c.

*Place of WAR*, is a Place fortified on purpose to cover and defend a Country, and stop the Incurfion of an Enemy's Army: Or, it is a Place, wherein are dispos'd the Provisions of *War*, for an Army incamp'd in the Neighbourhood; or whither an Army retires into Winter Quarters. See *PLACE*.

*Art of WAR*. } See { *MILITARY Art*.

*Man of WAR*. } See { *SHIP*.

*WARBLING* of the *Wings*, in Falconry, is when a Hawk, after having mantled herself, crosses her Wings over her Back. See *HAWK*, and *FALCON*.

*WARD*, a Word used in our Law-Books in divers Significations.—Thus, a *Ward*, in *London*, is a part of the City, committed to the special Charge of one of the Aldermen of the City.—There are 26 *Wards* in *London*, which are as Hundreds, and the Parishes thereof as Towns. See *ALDERMAN*, *HUNDRED*, &c.

A Forest is also divided into *Wards*. See *FOREST*, and *HOSPITAL*.

A Prison is also call'd a *Ward*. See *PRISON*, and *GOAL*.

The Heir of the King's Tenant, who held by Knights-Service or *in Capite*, was also call'd a *Ward* during his Nonage. But this last is taken away by the Statute, 12 *Car. II.* cap. 24. See *GUARD*, and *GUARDIAN*.

*WARD-HOOK*, in Gunnery, a Rod, or Staff, with an Iron-end turned Serpent-wise, or like a Screw, to draw the Wads or Ockam out of a Gun, when it is to be unloaded.

*WARD*, or *WARDA*, call'd also *WARDAGIUM*, is used in our antient Writers for the Custody of a Town or Castle, which the Tenants and Inhabitants were bound to keep at their own charge. See *WARDAGE*.

*WARDA Ecclesiarum*, denotes the Guardianship of Churches; which is in the King during the Vacancy, by reason of the *Regalia*, or *Temporalities*. See *REGALIA*, and *TEMPORALITIES*.

*WARDAGE*, *WARDAGIUM*, is sometimes used in our antient Law-Writers, in the same Sense with *Wardpenny*. See *WARDPENNY*.

Sometimes it also seems to denote a being free from *Wardship*.

*WARDECORNE*, among our antient Writers, a Duty incumbent on the Tenants, to guard the Castle, by sounding a Horn upon the approach of an Enemy; call'd also *Cornage*. See *CORNAGE*.

*WARDEN*, one who has the Charge or Keeping of any Person or Thing, by Office.—Such is the *Warden of the Fleet*, the Keeper of the Fleet Prison; who has the Charge of the Prisoners there; especially such as are committed from the Court of Chancery for Contempt. See *FLEET*.

Such also are, the *Warden* of the Fellowships, *Warden* of the Marches, *Wardens* of Peace, *Warden* of the West Marches, *Warden* of the Forest, *Warden* of the Almshouse, *Warden* of the King's Wardrobe, &c. See *GUARDIAN*; see also *JUSTICE*, *MARCH*, *WARDROBE*, &c.

*WARDEN*, in an University, is the Head of a College; answering to what in other Colleges we call the *Master* thereof. See *COLLEGE*.

*WARDEN*, or *Lord WARDEN of the Cinque-Ports*, is the Governour of those noted Havens; who has the Authority of an Admiral, and sends out Writs in his own Name. See *CINQUE-PORTS*.

*WARDEN of the Mint*, is an Officer whose Business is to receive the Gold and Silver Bullion brought in by the Merchants; to pay them for it, and oversee the other Officers. See *MINT*.

He is also call'd Keeper of the Exchange and Mint.

*WARDER*.—The *Yeomen Warders of the Tower*, are Officers, forty in Number, who are accounted the King's domestic.



domestick Servants, and are sworn by the Lord Chamberlain: Their Duty is to attend Prisoners of State, and wait at the Gates. See TOWER.

Ten of 'em are usually upon the Day's-wait, to take an account of all Persons who come into the Tower; to enter their Names, and the Names of the Persons they go to, in a Book to be perused by the Constable or Lieutenant.

WARDFOH, or WARDFEGH, of the Saxon *Weard*, a *Ward*, and *feoh*, *Fee*; denotes the Value of a *Ward*, or Heir under Age; or the Money paid to the Lord of the Fee for his Redemption.

WARDMOTE, in *London*, is a Court so call'd, which is kept in every *Ward* of the City. See MOTE.

WARD-PENNY, WARPEN, WARTH-PENNY, was formerly a customary Due, antiently paid to the Sheriff, and other Officers, for maintaining Watch and *Ward*. See PENNY.

It was payable at the Feast of St. Martin; and is still paid within the Manor of *Sutton Colfield* in *Warwickshire*; and with some very singular Ceremonies.

WARDROBE, a Closet, or little Room, adjoining to a Bed-Chamber; serving to dispose and keep a Person's Apparel in; or for a Servant to lodge in, to be at hand to wait, &c.

WARDROBE, in a Prince's Court, is an Apartment wherein his Robes, wearing Apparel, and other Necessaries, are preserv'd; under the Care and Direction of proper Officers.

His Majesty has a *Great Wardrobe*; a *Removing Wardrobe*; and divers *Standing Wardrobes*, belonging to his Bed-chambers in each of his Palaces, viz. at *Whitehall*, *Kensington*, *Windsor*, *Hampton-Court*, and the *Tower*; each under its respective Keeper.

The *Removing Wardrobe* always attends on the King's Person; as also on Embassadors, at Christenings, Masques, Plays, &c.—It is under the Command of the Lord Chamberlain: The under-Officers are, a Yeoman, two Grooms, and three Pages.

The *Great Wardrobe*, is of great Antiquity—Antiently, it was kept near *Puddle-Wharf*, in a House purchas'd for that purpose by King *Edward III.* but since the Fire of *London*, it has been kept in *York-Buildings*.

The Master or Keeper thereof, is an Officer of great Dignity: high Privileges were confer'd on him by *Henry VI.* King *James I.* enlarg'd the same, and erected the Office into a Corporation.

The Officers are, the *Master or Keeper*, his *Deputy*, and his *Clerk*; beside several under-Officers; and above sixty Tradesmen, all sworn Servants to the King.

This Office is to provide for Coronations, Marriages, and Funerals of the Royal Family; to furnish the Court with Beds, Hangings, Carpets, &c. to furnish Houses for Embassadors, at their first arrival here; Presents for foreign Princes and Embassadors; Furniture for the Lord Lieutenant of *Ireland*, and our Embassadors abroad; Robes for the Knights and Officers of the Garter, Herald, Pursuivants, Ministers of State, Liveries for the Officers of the Bedchamber, and other Servants; Liveries for the Lord Chief Justices, and Barons of the Exchequer; and other Officers in those Courts: As also Yeomen, Warders, Trumpets, Kettledrums, Messengers, Coachmen, Grooms, &c. with Coaches, Harnesses, Saddles, &c. The Watermen, Game-keepers; Linnen and Lace for the King's Person; Tilts, &c. for his Barge, &c.

WARDS and Liveries, a Court first erected by King *Henry VIII.* and after augmented by him with the Office of *Liveries*: But it is now absolutely taken away and abolish'd, by a Statute made 12 *Car. II.* cap. 24. See LIVERY.

WARD-STAFF.—The Manor of *Lambourn* in *Essex*, is held by Service of the *Ward-staff*, viz. the carrying a Load of Straw in a Cart with six Horses, two Ropes, two Men in Harness, to watch the said *Ward-staff*, when it is brought to the Town of *Abridge*, &c. *Cam. rit. Essex.*

WARD-WIRE, is defined by *Fleta*, as signifying a being exempted from the Duty of Watching.—Others rather take it for a Duty paid towards the Charge thereof.

The Word is compounded of the Saxon *Weard*, *Vigilia*, Watch; and *Wite*, Mule.

WARECTUM, and *Terra WARECTA*, in antient Writers, signifies Land that has lain long neglected, and untill'd.

In antient Records we meet with *Tempus Warecti*, for the Time wherein Land lies fallow, the following Year; or else the Season of Fallowing. See FALLOW.

WARREN. See WARREN.

WARMTH. See HEAT.

WARN, in Law, to summon a Person to appear in a Court of Justice. See SUMMONS.

WARNING Wheel, in a Clock, is the third or fourth, according to its distance from the first Wheel. See CLOCK.

WARP, in the Manufactures, is the Threads, whether of Silk, Wool, Linnen, Hemp, Cotton, or the like, that are extended lengthwise on the Weaver's Loom; and across which the Workman, by means of his Shuttle, passes the Threads of the Wool, to form a Cloth, Ribband, Pustian, or other Matter. See WEAVING.

For a woollen Stuff, &c. to have the necessary Qualities, 'tis requir'd that the Threads of the *Warp* be of the same kind of Wool, and of the same Fineness throughout; that they be sized with *Flanders* or Parchment Size, well prepar'd; and that they be in sufficient Number, with regard to the Breadth of the Stuff to be wrought. See WOOL, CLOTH, &c.

To WARP a Ship, is to hale her to a Place, when the Wind is wanting, by means of a Hawser, a Cable, and an Anchor fix'd thereto.

WARRANT, an Act, Instrument, or Obligation, whereby a Person authorizes another to do something, which he had not otherwise a right to do. See WARRANTY, and GUARANTY; see also VOUCHER.

WARRANT of Attorney, is that whereby a Man appoints another to do something in his Name, and warrants his Action. See ATTORNEY.

It seems to differ from a *Letter of Attorney*, which passes under Hand and Seal of him that makes it, before creditable Witnesses; whereas *Warrant of Attorney*, in personal, mix'd, and some real Actions, is put in of course by the Attornies for the Plaintiffs, or Defendants.

Tho, a *Warrant of Attorney*, to suffer a common Recovery by the Tenant or Vouchee, is acknowledg'd before such Persons, as a Commission for the doing thereof directs. See RECOVERY, &c.

In the Court of Common Pleas there is a *Clerk of the Warrants*, who enters all *Warrants of Attorney* for Plaintiff and Defendant. See CLERK.

WARRANTY, WARRANTIA, a Promise, or Covenant by Deed, made by the Bargainer for himself and his Heirs, to warrant and secure the other Party and his Heirs, against all Men, for the enjoying of the Thing agreed on between them.

This *Warranty* passeth from the Seller to the Buyer; from the Feoffer to the Feoffee; from him that releaseth, to him that is released from an Action real.

The form of it is thus: *Et ego vero prefatus A. & heredes mei predictas quinque acras terre cum pertinentiis suis prefato B. heredibus & assignatis suis contra omnes gentes Warrantizabamus, in perpetuum per presentes.*

Note, under *Heredes*, Heirs, are compris'd all such as the first *Warranter's* Lands come to, whether by Descent, Purchase, or the like.

*Warranty* is either *Real*, or *Personal*.—*Real*, when it is annex'd to Lands and Tenements granted for Life, &c. which, again, is either in *Deed*, or in *Law*. See FACTO, &c.

*Personal*, either respects the Property of the Thing sold, or the Quality of it. See PERSONAL, &c.

*Real Warranty*, again, in respect of the Estate, is either *Lineal*, *Collateral*, or *commencing by Disseisin*.

WARRANTIA Chartæ, a Writ that lies for a Person who is infeoffed in Lands and Tenements, with Clause of *Warranty*; and is impleaded in an Affize, or Writ of Entry, wherein he cannot Vouch, or call to *Warranty*.

WARRANTIA Diei, a Writ which lies in Case where a Man having a Day assign'd personally to appear in Court to an Action wherein he is sued, is, in the mean time, by Commandment employ'd in the King's Service; so that he cannot come at the Day assign'd.

WARREN, or WARREN, a Franchise or Place privileg'd, either by Prescription, or Grant from the King, to keep Beasts and Fowl of *Warren* in; as *Rabbits*, *Hares*, *Partridges*, *Pheasants*, &c. See BEAST, GAME, HUNTING, &c.

By a Statute 21 *Edw. III.* a *Warren* may lie open, and there is no need of closing it in; as there is of a Park. See PARK, &c.

If any Person be found an Offender in any such *Fee-Warren*, he is punishable for the same at Common Law.

Beasts of WARREN. See BEASTS of WARREN.

WART, *Verruca*, a little round, hard Excrecence, arising on the Flesh, like a Pea.

Warts are more frequent on the Hands than any other Part.—There are divers sorts: The most usual are call'd *Porraceæ*; as having Heads like Leeks, and consisting of little Threads, resembling the Roots thereof.

Another sort is call'd *Myrmecia*, which is a little round, callous Eminence on the Hands of young Children; rising suddenly, and disappearing again.

Some Physicians also rank the Corns growing on the Toes under the Class of *Warts*: which the *Latins* call *Clavi*; because occasioning shooting Pains, as if one were pricked with the Point of a Nail. See CLAVUS.

Warts, if only rooted in the Cutis, are easily taken away; but if they arise from the Tendons underneath, there is scarce any extirpating 'em without great danger.—The Juice of *Chelidon. Maf.* or *Efula*, or *Dens Leonis*, or *Tithymal*, frequently applied, takes off Warts.

*Borelli* commends Water wherein Sal Armoniac has been dissolv'd; which Dr. *Maplerosi*, late Professor of Physick at *Gresham College*, makes no scruple to say, is the only sure Remedy he knows of in all Medicine.

WASH-



WASHING. See LOTION, ABLUTION, &c.

The *Washing of the Feet* was a common piece of Civility among the *Jews*, practis'd upon Strangers, Visitors, &c. at their arrival.

The *Washing of the Feet* of twelve poor People, is an anniversary Ceremony, perform'd both by the Kings of *England* and *France*; in commemoration of our Saviour's *washing* the Feet of his Apostles.

*Arnobius*, *adv. Gentes*, Lib. VII. mentions a Feast in use among the Antients, call'd *Lavatio Matris Deum*, the *Washing* of the Mother of the Gods, held on the 30th of *March*.

WASHING of a *Ship*, in the Sea Language, is when all the Guns are brought to one side, and the Men, getting up on the Yards, *wash* her other side, and scrape her as far as they can reach.

WASHING, in Painting, is when a Design drawn with a Pen, or Crayon, has some one Colour laid over it with a Pencil, as Indian Ink, Bistre, or the like; to make it appear the more natural, by adding the Shadows of Prominences, Apertures, &c. and by imitating the particular Matters whereof the Thing is supposed to consist.

Thus, they *wash* with a pale red to imitate Brick and Tyle; with a pale Indian blue to imitate Water and Slate; with green for Trees and Meadows; with Saffron or *French Berries*, for Gold and Brass; and with several Colours for Marbles.

These *Washes* are usually given in equal Tints, or Degrees, throughout; which are afterwards brought down and soften'd over the Lights with fair Water, and strengthen'd with deeper Colours for the Shadows. See LIGHT, and SHADOW.

WASHINGS, or WASHES, among Goldsmiths, Coiners, &c. are the Lotions whereby they draw the Particles of Gold and Silver out of the Ashes, Earths, Sweepings, &c.

This is either perform'd by simply *washing* 'em again and again, or by putting 'em in the *Washing Mill*.

To make one of these *Washes*, they not only gather together the Ashes of the Furnaces, and the Sweepings of the Places where the Works are; but they also break and pound the old earthen Crucibles, and the very Bricks whereof the Furnaces are built: little Particles of Gold, &c. being found to stick to 'em by the crackling natural to those Metals, when in their last degree of heat.

These Matters being all well ground, and mix'd together, are put in large wooden Basons, where they are wash'd several times and in several Waters, which run off, by Inclination, into Troughs underneath; carrying with 'em the Earth, and the insensible Particles of the Metals, and only leaving behind 'em the larger and more considerable ones, which are visible to the Eye, and taken out with the Hand; without more trouble.

To get out the finer Parts, gone off with the Earth, they use Quicksilver, and a *Washing Mill*.—This Mill consists of a large wooden Trough, at bottom of which are two metalline Parts, serving as Mill-stones; the lower being convex, and the upper, which is in form of a Cross, concave.

A-top is a Winch, placed horizontally, which turns the upper piece round; and at bottom a Bung, to let out the Water and Earth when sufficiently ground.

To have a *Wash*, then, the Trough is fill'd with common Water, into which they cast thirty or forty Pounds of Quick-silver, and two or three Gallons of the Matter remaining from the first Lotion.—Then turning the Winch, they give Motion to the upper Mill-stone; which grinding the Matter and the Quicksilver violently together, the Particles of Gold and Silver become the more easily amalgamated therewith: This Work they continue for two Hours; when opening the Bung, the Water and Earths run out, and a fresh quantity is put in.

The Earths are usually pass'd thus thro' the Mill three times; and the same quantity of Mercury usually serves all the three times.—When there is nothing left in the Mill but the Mercury, united with the Gold or Silver which it has amalgamated; they take it out, and *washing* it in divers Waters, they put it in a Ticken Bag, and lay it in a Press, to squeeze out the Water and the loose Quicksilver: the remaining Quicksilver they evaporate by Fire, in a Retort, &c. See GOLD, and SILVER; see also LAVADERE.

WASSALE, or WASSIL, a Festival Song, sung heretofore from door to door, about the Time of *Epiphany*. See WASSIL-BOWL.

WASSIL-BOWL, was a large Cup or Bowl, of Silver or Wood, wherein the *Saxons* at their publick Entertainments drank a Health to one another, in the Phrase *Was-beal*; that is, *Health be to you*.

This *Wassil-Bowl*, seems plainly to be meant by the Word *Vasellum*, in the Lives of the Abbots of *St. Albans*, by *Matt. Paris*; where he saith, *Abbas solus prandeat supremus in Refectorio habens Vasellum*: 'He had set by him the *Wassil-Bowl*, to drink an Health to the Fraternity; or the *Poculum Charitatis*.

And hence the Custom of going a *Wasseling*, still used in *Suffex* and some other Places, seems to have taken its Name.

WAST, or WASTE, in Law, has divers Significations.—1st, It is used for a Spoil, made either in Houses, Woods, Lands, &c. by the Tenants for Life, or for Years, to the prejudice of the Heir, or of him in Reversion.—Upon this, the Writ of *Waste* is brought for recovery of the Thing *wasted*, and treble Damages.

*Waste of the Forest*, is, properly, where a Man cuts down his own Woods within the Forest, without Licence of the King, or Lord-Chief-Justice in Eyre. See FOREST, and PURLIEU.

WASTE is also taken for those Lands which are not in any Man's Occupation; but lie common. See COMMON.

They seem to be so called, because the Lord cannot make such Profit of them as of his other Lands; by reason of the use others have thereof, for passing to and fro.—Upon this none may build, cut down Trees, dig, &c. without the Lord's Licence.

*Year, Day, and WASTE*, is also a Punishment or Forfeiture belonging to Petit Treason, or Felony. See YEAR, DAY, &c.

WASTE of a *Ship*, is that Part of her between the two Masts; that is, between the Main-mast, and the Fore-mast. See SHIP, and MAST.

WASTE-Boards, are Boards sometime set upon the side of a Boat, to keep the Sea from breaking into her.

WATCH, a small portable Movement, or Machine, for the measuring of Time; having its Motion regulated by a Spiral Spring. See WATCH-WORK.

*Watches*, strictly taken, are all such Movements as shew the Parts of Time; as Clocks are such as publish it, by striking on a Bell, &c. But commonly, the Name *Watch* is appropriated to such as are carried in the Pocket; and *Clock* to the larger Movements, whether they strike the Hour or not. See CLOCK.

*Spring*, or *Pendulum Watches*, stand pretty much on the same Principle with Pendulum Clocks; whence their Denomination.—If a Pendulum, describing little Arches of a Circle, makes Vibrations of unequal Lengths in equal Times; 'tis by reason it describes the greater with a greater Velocity. For the same Reason, a Spring put in Motion, and making greater or less Vibrations, as it is more or less stiff, and as it has a greater or less degree of Motion given it; performs them nearly in equal Times. Hence, as the Vibrations of the Pendulum had been applied to large Clocks, to rectify the Inequality of their Motions; so, to correct the unequal Motions of the Balance of *Watches*, a Spring is added; by the Isochronism of whose Vibrations, the Correction is to be effected. See PENDULUM.

The Spring is usually wound into a Spiral; that, in the little compass allotted it, it may be as long as possible; and may have Strength enough, not to be master'd and drag'd about by the Inequalities of the Balance it is to regulate.

The Vibrations of the two Parts, *viz.* the Spring and Balance, should be of the same length; only so adjusted, as that the Spring, being the more regular in the length of its Vibrations than the Balance, may, on occasion, communicate its Regularity thereto. See SPRING.

The Invention of *Spring* or *Pocket-Watches*, is owing to the Felicity of the present Age.—'Tis true, we find mention made of a *Watch* presented to *Charles V.* in the History of that Prince: But this, in all probability, was no more than a kind of Clock to be set on a Table; some Footsteps whereof, we have still remaining in the ancient Pieces made before the Year 1670.

In effect, 'tis between *Dr. Hook* and *Mr. Huygens*, that the Glory of this excellent Invention lies: but to which of them it properly belongs, is greatly disputed: The *English* ascribing it to the former; and the *French, Dutch, &c.* to the latter.

*Mr. Derham*, in his *Artificial Clockmaker*, says roundly, that *Dr. Hook* was the Inventor; and adds, that he contriv'd various ways of Regulation.—One way was with a Load-stone.—Another with a tender strait Spring, one end whereof play'd backwards and forwards with the Balance; so that the Balance was to the Spring, as the Bob to a Pendulum; and the Spring as the Rod thereof.—A third Method was with two Balances, of which there were divers sorts; some having a Spiral Spring to the Balance for a Regulator, and others without.

But the way that prevail'd, and which continues in Mode, was with one Balance, and one Spring running round the upper Part of the Verge thereof. Tho this has a Disadvantage, which those with two Springs, &c. were free from; in that a sudden jerk, or confused shake, will alter its Vibrations, and put it in an unusual hurry.

The Time of these Inventions was about the Year 1658; as appears, among other Evidences, from 'an Inscription on one of the double Balance *Watches*, presented to *K. Charles II.* *viz. Rob. Hook Inven. 1658. T. Tompion fecit, 1675.*—The Inven-



Invention presently got into Reputation both at home and abroad; and two of 'em were sent for by the Dauphin of France.

Soon after this, Mr. *Huygens's Watch* with a Spiral Spring got abroad, and made a great noise in England, as if the Longitude could be found by it.—'Tis certain, however, that his Invention was later than the Year 1673, when his *Book de Horol. Oscillat.* was publish'd; wherein he has not one word of this, tho he has of several other Contrivances in the same way.

One of these the Lord *Brouncker* sent for out of France, where Mr. *Huygens* had got a Patent for 'em.—This *Watch* agreed with Dr. *Hook's* in the Application of the Spring to the Balance; only Mr. *Huygens's* had a longer Spiral Spring, and the Pulses and Beats were much slower. The Balance, instead of turning quite round, as Dr. *Hook's*, turns several rounds every Vibration.

Mr. *Derham* suggests, that he has reason to doubt Mr. *Huygens's* Fancy was first set to work by some intelligence he might have of Dr. *Hook's* Invention, from Mr. *Oldenburg*, or some other of his Correspondents in England: tho Mr. *Oldenburg* vindicates himself against that Charge, in *Philosophical Transactions*, N<sup>o</sup> 118. and 129.

*Huygens* invented divers other Kinds of *Watches*, some of them without any String or Chain at all; which he call'd particularly *Pendulum Watches*.

As it was in England that *Watches* had their first rise; so 'tis there, too, they have arriv'd at their greatest Perfection.—Witness that exceeding Value put on an *English Watch* in all foreign Countries, and that vast Demand made for 'em.

Monsieur *Savary*, in his *Diction. de Commerce*, pretends to match the French Watchmakers against the English.—He asserts, "That if the English be in any Condition to dispute it with 'em, they owe it entirely to the great Number of French Workmen, who took shelter here upon the Revocation of the Edict of Nantz." He adds, "That three fourths of the *Watches* made in England, are the Work of Frenchmen." From what Authorities he says this, we know not: But it need not be told Englishmen that it is false; there not being one French Name, that we know of, among all our fam'd Watchmakers: nor, in the Body of Watchmakers, is there one eighth part French.

'Tis certain the French People prefer our *Watches* vastly to their own; insomuch, that to have 'em with the more ease, a number of English Workmen were invited over in 1719, and establish'd with great countenance at Versailles, under the Direction of the famous Mr. *Lave*.—But the Establishment, tho every thing promis'd well for it, and the French Watch and Clockmakers seem'd undone by it, fell to the Ground in less than a Year's time.—Mr. *Savary* imputes its Fall, intirely, to that strong Prejudice of the French People in behalf of the English Workmen, and to the Opinion that the *Watches* did not come from England. But the Truth is, the Workmen sent over being most of 'em Men of loose Characters, grew dissolute, quarrell'd with the Priests, insulted the Magistrates, and were dismiss'd, of necessity.

Striking *Watches*, are such, as besides the proper *Watch-part*, for measuring of Time, have a *Clock-part*, for striking the Hours, &c.

These are real Clocks; only moved by a Spring instead of a Weight.—Properly speaking, they are call'd *Pocket-Clocks*. See *CLOCK*.

Repeating *Watches*, are such as by pulling a String, &c. do repeat the Hour, Quarter, or Minute, at any time of the Day or Night.

This Repetition was the Invention of Mr. *Barlow*, and first put in practice by him in larger Movements, or Clocks, about the Year 1676.—The Contrivance first set the other Artills to work, who soon contriv'd divers ways of effecting the same. But its application in *Pocket Watches* was not known before King *James* the Second's Reign; when the ingenious Inventor abovemention'd, having directed Mr. *Thompson* to make a *Repeating Watch*, was soliciting a Patent for the same.

The Talk of a Patent engag'd Mr. *Quare* to resume the Thoughts of a like Contrivance, which he had had in view some Years before: He now effected it; and being press'd to endeavour to prevent Mr. *Barlow's* Patent, a *Watch* of each kind was produc'd before the King and Council; upon Trial of which, the Preference was given to Mr. *Quare's*.

The Difference between 'em was, that *Barlow's* was made to Repeat by pulling in two pieces on each side the *Watch-Box*; one of which repeated the Hour, and the other the Quarter: Whereas *Quare's* was made to repeat by a Pin that stuck out near the Pendant; which being thrust in, (as now 'tis done by thrusting in the Pendant it self) repeated both the Hour and Quarter with the same thrust.

WATCH-WORK, is that Part of the Movement of a Clock or *Watch*, which is designed to measure, and exhibit the Time on a Dial-Plate; in contradistinction to that Part which contributes to the striking of the Hour, &c. which is call'd *Clock-work*. See *WATCH*.

The several Members of the *Watch-part*, are, 1<sup>o</sup>, The *Balance*, consisting of the *Rim*, which is its circular Part; and the *Verge*, which is its Spindle; to which belong the two *Pallets* or *Leves*, that play in the Teeth of the Crown-Wheel.

2<sup>o</sup>, The *Potence*, or *Pottance*, which is the strong Stud in *Pocket-Watches*, wherein the lower Pivot of the *Verge* plays, and in the middle of which, one Pivot of the *Balance-Wheel* plays; the bottom of the *Pottance* is the *Foot*, the middle part the *Nose*, and the upper part the *Shoulder*.

3<sup>o</sup>, The *Cock*, which is the piece covering the Balance.

4<sup>o</sup>, The *Regulator*, or *Pendulum Spring*, which is the small Spring in the new *Pocket-Watches*, underneath the Balance.

5<sup>o</sup>, The *Pendulum*; whose Parts are, the *Verge*, *Pallets*, *Cocks*, and the *Bob*.

6<sup>o</sup>, The *Wheels*; which are, the *Crown-Wheel*, in *Pocket Pieces*, and the *Swing-Wheel* in *Pendulums*; serving to drive the Balance or Pendulum.

8<sup>o</sup>, The *Contrate Wheel*, which is that next the *Crown-Wheel*, &c. and whose Teeth and Hoop lie contrary to those of other Wheels; whence the Name.

9<sup>o</sup>, The *great*, or *first Wheel*; which is that the *Fusee*, &c. immediately drives: after which are the *second Wheel*, *third Wheel*, &c.

Lastly, between the Frame and Dial-Plate, are, the *Pinion of Report*, which is that fix'd on the Arbor of the great Wheel; and serves to drive the *Dial Wheel*, as that serves to carry the *Hand*.

#### Theory, and Calculation of WATCH-WORK.

Preliminaries necessary to the calculating the *Watch-part* of a Movement, are laid down under the Articles MOVEMENT and CLOCK-WORK.

Preliminary Rules common to the Calculation of all Movements, the *Clock* as well as the *Watch-parts*; see under the Article MOVEMENT.

Particular Rules for the *Striking-part*; see under the Article CLOCK-WORK.

Those for the *Watch-part* we have from the Rev. Mr. *Derham*, as follow.

1<sup>o</sup>, The same Motion, 'tis evident, may be perform'd either with one Wheel and one Pinion, or many Wheels and many Pinions; provided the Number of Turns of all the Wheels bear the Proportion to all the Pinions, which that one Wheel bears to its Pinion: or, which is the same thing, If the Number produced by multiplying all the Wheels together, be to the Number produc'd by multiplying all the Pinions together, as that one Wheel to that one Pinion.—Thus, suppose you had occasion for a Wheel of 1440 Teeth, with a Pinion of 28 Leaves; you may make it into three Wheels and Pinions, viz. 4) 36, 7) 8, 1) 5. For the three Wheels, 36, 8, and 5, multiply'd together, give 1440 for the Wheels; and the three Pinions 4, 7, and 1, multiplied together, give 28 for the Pinions.—Add, That it matters not in what order the Wheels and Pinions are set, or which Pinion runs in which Wheel; only for Contrivance-sake, the biggest Numbers are commonly put to drive the rest.

2<sup>o</sup>, Two Wheels and Pinions of different Numbers may perform the same Motion.—Thus, a Wheel of 36 drives a Pinion of 4, the same as a Wheel of 45 a Pinion of 5; or a Wheel of 90 a Pinion of 10.—The Turns of each being 9.

3<sup>o</sup>, If in breaking the Train into Parcels, any of the Quotients should not be liked; or if any other two Numbers to be multiplied together, are desir'd to be varied; it may be done by this Rule.—Divide the two Numbers by any other two Numbers which will measure them; multiply the Quotients by the alternate Divisors; the Product of these two last Numbers found, will be equal to the Product of the two Numbers first given.—Thus, if you would vary 36 times 5, divide these by any two Numbers which will evenly measure them: So, 36 by 4, gives 9; and 8 by 1, gives 8; now, by the Rule, 9 times 1 is 9, and 8 times 4, 32; so that for 36 x 8, you have 32 x 9; each equal to 288. If you divide 36 by 6, and 8 by 2, and multiply as before, you have 24 x 12 = 36 x 8 = 288.

4<sup>o</sup>, If a Wheel and Pinion fall out with cross Numbers, too big to be cut in Wheels, and yet not to be alter'd by these Rules; in seeking for the Pinion of Report, find two Numbers of the same, or a near Proportion, by this Rule: As either of the two given Numbers is to the other; so is 360 to a fourth. Divide that fourth Number, as also 360, by 4, 5, 6, 8, 9, 10, 12, 15, (each of which Numbers exactly measures 360) or by any of those Numbers that brings a Quotient nearest an Integer.—As suppose you had 147 for the Wheel, and 170 for the Pinion; which are too great to be cut into small Wheels, and yet cannot be reduc'd into less, as having no other common measure but Unity: viz. as 170:147::360:311. Or, as 147:170::360:416. Divide the fourth Number, and 360 by one of the foregoing Numbers; as 311 and 360 by 6, it gives 52 and 60; divide them by 8, you have 39 and 45; and, if you divide 360 and 416



416 by 8, you have 45 and 52 exactly. Wherefore, instead of the two Numbers 147 and 170, you may take 52 and 60, or 39 and 45, or 45 and 52, &c.

5. To come to Practice in calculating a piece of *Watch-work*, first pitch on the Train or Beats of the Balance in an Hour; as whether a swift one, of about 20000 Beats, (the usual Train of a common 30 hour Pocket-Watch) or a slower of about 16000, (the Train of the new Pendulum Pocket-Watches) or any other Train.—Next resolve on the Number of Turns the Fusy is intended to have, and the Number of Hours the Piece is to go: Suppose, e. g. 12 Turns, and to go 30 Hours, or 192 Hours, (i. e. 8 Days) &c. Proceed now to find the Beats of the Balance or Pendulum in one Turn of the Fusy, by the Direction given under the Word BEAT.—Thus in Numbers; 12 : 16 :: 20000 : 26666. Wherefore, 26666 are the Beats in one Turn of the Fusy, or great Wheel, and are equal to the Quotients of all the Wheels into the Balance multiplied together. Now this Number is to be broken into a convenient parcel of Quotients; which is to be done thus: First, halve the Number of Beats, viz. 26666, and you have 13333; then pitch on the Number of the Crown-Wheel, suppose 17: Divide 13333 by 17, and you have 784 for the Quotient (or Turns) of the rest of the Wheels and Pinions; which being too big for one or two Quotients, may be best broken into three. Chuse therefore three Numbers, which when multiplied all together continually, will come nearest 784: As suppose 10, 9, and 9, multiplied continually, gives 810, which is somewhat too much; therefore try again other Numbers, 11, 9, and 8: these drawn one into another continually, produce 792; which is as near as can be, and convenient Quotients.—Having thus contrived the Piece from the great Wheel to the Balance; but the Numbers not falling out exactly, as you first proposed; correct the Work thus: First, (by the Direction given under the Word BEATS) multiply 792, the Product of all the Quotients pitch'd upon, by 17, (the Notches of the Crown-Wheel) the Product is 13464, which is half the Number of Beats in one Turn of the Fusy; then, (by a Rule given under the Word BEAT) find the true Number of Beats in an Hour. Thus, 16 : 12 :: 13464 : 10098; which is half the Beats in an Hour. Then find what Quotient is to be laid upon the Pinion of Report, (by the Rule given under that Word.) Thus, 16 : 12 :: 12 : 9, the Quotient of the Pinion of Report.—Having thus found your Quotients, 'tis easy to determine what Numbers the Pinions shall have; for, chusing what Numbers the Wheels shall have, and multiplying the Pinion by their Quotients, the

Produce is the Number for the Wheels. Thus, the Number of the Pinion of Report is 4, and its Quotient 9; therefore the Number for the Dial-Wheel must be  $4 \times 9$ , or 36: so the next Pinion being 5, its Quotient 11, therefore the great Wheel must be  $5 \times 11 = 55$ , and so of the rest.

Such is the Method of calculating the Numbers of a 16 hour Watch.—Which Watch may be made to go longer, by lessening the Train, and altering the Pinion of Report. Suppose you would conveniently slacken the Train to 16000; then by the Rule given under the Word BEAT, say, As 16000, or 8000 : 13464 :: 12 : 20. So that this Watch will go 20 Hours. Then for the Pinion of Report, say, (by the Rule given under that Word) As 20 : 12 :: 12 : 7. So that 7 is the Quotient of the Pinion of Report. And as to the

Numbers, the Operation is the same as before; only the Dial-Wheel is but 28, for its Quotient is alter'd to 7.—If you would give Numbers to a Watch of about 10000 Beats in an Hour, to have 12 Turns of the Fusy, to go 170 Hours, and 17 Notches in the Crown-Wheel: The Work is the same, in a manner, as in the last Example; and consequently thus: As 12 : 170 :: 10000 : 141666, which

fourth Number is the Beats in one Turn of the Fusy; its half, 70833, being divided by 17, gives 1467 for the Quotients: And because this Number is too big for three Quotients, therefore chuse four, as 10, 8, 8, 6; whose Product into 17 makes 71808, nearly equal to half the true Beats in one Turn of the Fusy.—Then say, As 170 : 12 :: 71808 : 5069, which is half the true Train of your Watch. And again, 170 : 12 :: 12 :  $\frac{1}{17}$ , (or 170) 144, which expresses the Pinion of Report, and the Number of the Dial-Wheel. But these Numbers being too big to be cut in small Wheels, they must be varied by the fourth Rule, above, thus;

As 144 : 170 :: 360 : 425.

Or 170 : 144 :: 360 : 305.

Then dividing 360, and either of these two fourth Proportionals, (as directed by the Rule) suppose by 15, you'll have  $\frac{1}{4}$  or  $\frac{1}{5}$ ; then the Numbers of the whole Movement will stand as in the Margin.

24) 20 (  $\frac{20}{74}$   
6) 60 ( 10  
6) 48 ( 8  
5) 40 ( 8  
5) 33 (  $6\frac{1}{2}$   
17

Such is the Calculation of ordinary Watches to shew the Hour of the Day: In such as shew Minutes and Seconds, the Process is thus.

1. Having resolved on the Beats in an Hour; by dividing the designed Train by 60, find the Beats in a Minute; and accordingly, find proper Numbers for the Crown-Wheel and Quotients, so as that the Minute-Wheel shall go round once in an Hour, and the Second-Wheel once a Minute.—

Suppose, e. g. you should chuse a Pendulum of six Inches to go eight Days, with 16 Turns of the Fusy; a Pendulum of 6 Inches vibrates 9368 in an Hour; and consequently, dividing it by 60, gives 156, the Beats in a Minute. Half these Sums are 4684 and 78. Now the first work is to break this 78 into a good proportion which will fall into one Quotient, and the Crown-Wheel. Let the Crown-Wheel have 15 Notches, then 78 divided by 15, gives 5; so a Crown-Wheel of 15, and a Wheel and Pinion, whose Quotient is 5, will go round in a Minute to carry a Hand to shew Seconds.—For a Hand to go round in an Hour to shew Minutes; because there are 60 Minutes in an Hour, 'tis but breaking 60 into good Quotients, (suppose 10 and 6, or 8 and 7, &c.) and 'tis done. Thus 4684 is broken, as near as can be, into proper Numbers. But since it don't fall out exactly into the abovemention'd Numbers, you must correct, (as before directed) and find the true Number of Beats in an Hour, by multiplying 15 by 5, which makes 75; and 75 by 60, makes 4500, which is half the true Train. Then find the Beats in one Turn of the Fusy; thus, 16 : 192 :: 4500 : 54000; which last are half the Beats in one Turn of the Fusy. This 54000 being divided by 4500, (the true Numbers already pitch'd on) the Quotient will be 12; which not being too big for a single Quotient, needs not be divided into more; and the Work will stand as in the Margin.—As to the Hour-hand, the great Wheel which performs only one Revolution in 12 Turns of the Minute-Wheel will shew the Hour: or it may be done by the Minute-Wheel.

WATCH, at Sea, signifies a measure or space of four Hours; because half the Ship's Crew watch and do Duty in their turns so long at a time.

The Ship's Company is divided into two Parts, the *Tar-board Watch*, and the *Starboard Watch*.—The Master of the Ship commands the latter, and the chief Mate the former.

Sometimes, when a Ship is in Harbour, they watch but a *Quarter-watch*, as they call it; that is, but a quarter of the Company watch at a Time.

The *Watch-Glass* being four Hours, is used at Sea to shift or change their Watches.—There are also *Half-watch* Hour-Glasses; Minute and Half-minute Glasses; by which last they count the Knots when they heave the Log, in order to find the Ship's Way. See *Log-Line*.

WATER, *Aqua*, in Physicks, a simple, fluid, and liquid Body; reputed the third of the four vulgar Elements. See *ELEMENT*.

Sir I. Newton defines *Water* to be a fluid Salt; volatile, and void of Taste: But this Definition *Boerhaave* sets aside, inasmuch as *Water* is a Menstruum or Dissolvent of Salts and saline Bodies, which does not agree with the Notion of its being a Salt it self; inasmuch as, we don't know of any Salt that dissolves another. See *SALT*.

*Whether Water be originally fluid?*—The *Water* be defin'd a *Fluid*, 'tis a Point controverted among Philosophers, whether Fluidity be its Natural State, or the Effect of Violence: We sometimes find it appear in a fluid, and sometimes in a solid form; and as the former in our warmer Climate is the more usual, we conclude it the proper one, and ascribe the other to the extraneous Action of Cold.—*Boerhaave*, however, asserts the contrary, and maintains *Water* to be of the Crystalline Kind; since, wherever a certain degree of Fire is wanting to keep it in fusion, it readily grows into a hard Glebe, under the Denomination of *Ice*. See *ICE*.

Mr. Boyle is much of the same Sentiment.—Ice, he observes, is commonly reputed to be *Water* brought into a preternatural State by Cold: But, with regard to the Nature of Things, and setting aside our arbitrary Ideas, it might as justly be said, That *Water* is Ice, preternaturally thawed by Heat. If it be urg'd that Ice, left to it self, will, upon the Removal of the freezing Agents, return to *Water*: It may be answer'd, that, not to mention the Snow and Ice which lie all Summer long on the *Alps* and other high Mountains, even in the Torrid Zone, we have been assur'd, that in some Parts of *Siberia*, the Surface of the Ground continues more Months of the Year frozen by the natural Temperature of the Climate, than thaw'd by the Heat of the Sun; and a little below the Surface of the Ground, the *Water* which

T t t

chances



chances to be lodg'd in the Cavities there, continues in a state of Ice all the Year round : So that when in the heat of Summer the Fields are cover'd with Corn, if you dig a Foot or two deep, you shall find Ice, and a frozen Soil.

*No pure Water in all Nature.*—*Water*, if it could be had alone, and pure, *Boerhaave* argues, would have all the requisites of an Element, and be as simple as Fire ; but there is no expedient hitherto discover'd for making it such. *Rain-Water*, which seems the purest of all those we know of, is replete with infinite Exhalations of all kinds, which it imbibes from the Air : So that filter'd and distill'd a thousand times, there still remains *Fæces*.—Further, the *Rain-Water* gather'd from the Roofs of Houses, is a Lixivium of Tyles, Slate, or the like, impregnated with the Dungs and *Fæces* of the Animals, Birds, &c. deposited thereon ; and the Exhalations of numerous other Things.—Add, that all the *Rain-Water* gather'd in Cities, must at last be saturated with the Smoke of a thousand Chimnies, and the various Effluvia of Numbers of Persons, &c. Beside that there is Fire contained in all *Water* ; as appears from its Fluidity, which is owing to Fire alone. See FIRE.

As what is in the Air necessarily mixes it self with *Water*, it hence appears impossible to have such a thing as pure *Water*.—If you percolate it thro' Sand, or squeeze it thro' Pumice, or pass it thro' any other Body of the like kind, you will always have Salt remaining.—Nor can Distillation render it pure ; since it leaves the Air therein, which abounds in Corpuscles of all sorts. See AIR.

The purest of all *Waters* we can any way arrive at, is that distill'd from Snow, gather'd in a clear, still, pinching Night, in some very high Place ; taking none but just the outer or superficial Part thereof.—By a Number of repeated Distillations hereof, the greatest part of the Earth and other *Fæces*, may be separated herefrom : And this is what we must be contented to call *pure Water*.

Mr. *Boyle*, indeed, relates, that a Friend of his, by distilling a quantity of *Water* an hundred times, found at length that he had got six tenths of the first Quantity in Earth : Whence he concludes, that the whole *Water*, by further prosecuting the Operation, might be converted into Earth. See EARTH.

But it should be consider'd, that the *Water* cannot be removed, or poured into a Vessel, without the Mixture of some Dust therewith ; so, neither can the Luting of the Vessel be distill'd, without losing something every time. *Boerhaave*, therefore, rather concludes, that the *Water* thus often distill'd, might acquire still new Earth from the Dust floating in the Air, and the Instruments employ'd in the Operation.

That Author assures us, that after distilling some very pure *Water*, by a gentle Fire, the space of four Months, it appear'd perfectly pure ; and yet leaving it to rest in Vessels exactly closed, it would conceive a slender kind of weedy Matter, somewhat like the *Stamina* of Plants, or the little Tufts of a Mucilage : and yet, *Schottus* saw *Water*, in *Kircher's Museum*, that had been kept in a Vessel hermetically seal'd, upwards of fifty Years, yet still remained clear and pure, and stood to the same height in the Vessel as at first, without the least Sign of Sediment.

*Boerhaave* adds, that he is convinced no body ever saw a Drop of pure *Water* ; that the utmost of its purity known, only amounts to its being free of this or that sort of Matter ; and that it can never, for instance, be quite deprived of Salt ; since Air will always accompany it, and Air has always Salt. See AIR.

*Water in all Places and Bodies.*—*Water* seems to be diffused every where, and to be present in all Space where there is Matter.—Not a Body in all Nature but will yield *Water* : 'Tis even asserted that Fire it self is not without *Water*. A single Grain of the most fiery Salt, which in a Moment's Time will penerate thro' a Man's Hand, readily imbibes half its weight of *Water*, and melts, even in the driest Air imaginable.—Thus, Salt of Tartar, placed near the hottest Fire, will attract or imbibe *Water* ; and by that means, increase considerably its weight in a small time : So in the driest Summer's Day, a pewter Vessel with Ice in it, brought up from some cold subterraneous Place into the hottest Room, will immediately be cover'd over with little Drops of *Water*, gather'd from the contiguous Air, and condens'd by the Coldness of the Ice.

'Tis surprizing to consider the plenteous Stock of *Water* which even dry Bodies afford.—Oil of Vitriol, being exposed a long time to a violent Fire, to separate all the *Water*, as much as possible, from the same ; will afterwards, by only standing a few Minutes in the Air, contract fresh *Water* so fast, as soon to afford it as plenteously as at first.—Hartshorn, kept forty Years, and turn'd as hard and dry as any Metal ; so, that if struck against a Flint, it will yield Sparks of Fire ; yet, being put into a glass Vessel, and distill'd, will afford one eighth of its Quantity of *Water*. Bones dead and dried twenty five Years, and thus become almost as hard as Iron ; yet, by Distillation, have afforded

half their weight of *Water*. And the hardest Stones, ground and distill'd, do always discover a Portion thereof.

Eels, by Distillation, yielded Mr. *Boyle* some Oil, Spirit, and Volatile Salt, besides the *Caput Mortuum* ; yet all these were so disproportionate to the *Water*, that they seemed to have been nothing but that coagulated : The same strangely abounds in Vipers, tho' esteemed very hot in operation ; and will, in a convenient Air, survive for some Days the loss of their Heads and Hearts. Human Blood it self, as spirituous and elaborate a Liquor as it is reputed, so abounds in *Water*, that out of seven Ounces and an half, the same Author, by Distillation, drew near six of Phlegm ; before ever any of the other Principles began to rise. See PHLEGM.

*Whether Water be the common Matter of all Bodies ?*—From Considerations of this kind, *Thales*, and some other Philosophers, have been led to hold, That all Things were made of *Water* : Which Opinion, probably, had its rise from the Writings of *Moses*, where he speaks of the Spirit of God moving upon the Face of the *Waters*.—But Mr. *Boyle* does not conceive the *Water* here mention'd by *Moses* as the Universal Matter, to be our Elementary *Water* : we need only suppose it an agitated Congeries of a great Variety of seminal Principles, and of other Corpuscles fit to be subdu'd and fashion'd by them ; and it may yet be a Body fluid like *Water*, in case the Corpuscles it was made up of, were, by their Creator, made small enough, and put into such an actual Motion, as might make them roll, and glide easily over one another.—However, *Basil Valentine*, *Paracelsus*, *Van Helmont*, *Contiucoglio*, and others, have maintained the same Principle, viz. That *Water* is the Elemental Matter or *Stamen* of all things, and suffices alone for the Production of all the visible Creation.—Thus, Sir *I. Newton*, ' All Birds, ' Beasts, and Fishes, Insects, Trees, and Vegetables, with ' their several Parts, do grow out of *Water*, and watery ' Tinctures, and Salts ; and by Putrefaction return again into ' watery Substances.'

*Helmont* endeavours to prove this Doctrine from an Experiment ; wherein, burning a quantity of Earth, till all the Oil was consum'd, and then mixing it up with *Water*, to draw out all the Salt ; and putting this Earth, thus prepared, into an earthen Pot, which nothing but *Rain Water* could enter ; yet a Willow, planted therein, grew up to a considerable height and bulk, without any sensible Diminution of the Earth : Whence he concluded, that the *Water* was the only Nutrimet of the Vegetable Kind, as Vegetables are of the Animal. The same thing is infer'd by Mr. *Boyle* from a parallel Experiment : And the whole is countenanc'd by Sir *I. Newton*, who observes, that *Water*, standing a few Days in the open Air, yields a Tincture, which, like that of Malt, by standing longer, yields a Sediment, and a Spirit ; but before Putrefaction, is fit Nourishment for Animals and Vegetables.

But Dr. *Woodward* endeavours to shew the whole a Mistake : *Water* containing extraneous Corpuscles, some of these, he shews, are the proper Matter of Nutrition ; the *Water* being still found to afford so much the less Nourishment, the more it is purify'd by Distillation. Thus, a Plant in distill'd *Water* will not grow so fast as in *Water* not distill'd ; and if the *Water* be distill'd once or four times over, the Plant will scarce grow at all, or receive any Nourishment from it. So that *Water*, in fact, does not seem the proper Nutrimet of Vegetables ; but only the Vehicle thereof, which contains the nutritious Particles, and carries them along with it, thro' all the Parts of the Plant. See VEGETATION.

Hence, a *Water-Plant*, e. g. a *Nasturtium*, brought up in a Vessel of *Water*, will be found to contain the more Salt and Oil, the muddier the *Water* is : In effect, *Water* nourishes the less, the more it is purged of its saponaceous Salts ; in its pure State, it may suffice to extend or swell the Parts, but affords no new Vegetable Matter. See VEGETABLE NUTRITION, &c.

*Helmont*, however, carries his System still further, and imagines, that all Bodies may be re-converted into *Water*. His Alkalest, he affirms, adequately resolves Plants, Animals, and Minerals, into one Liquor, or more, according to their several internal Differences of Parts : And the Alkalest, being abstracted from these Liquors, in the same Weight and with the same Virtues as when it dissolv'd them ; the Liquors may, by frequent Cohobations from Chalk, or some other proper Matter, be totally depriv'd of their seminal Endowments, and return at last to their first Matter, impure *Water*.

Thus much is confess'd, that mix'd Bodies do all resolve by Fire, into Phlegm or *Water*, Oil, Spirit, Salt, and Earth ; each of which is found to contain *Water*.

Spirits, for instance, cannot be better represented than by Spirit of Wine, which of all others seems freest from *Water* ; yet, *Helmont* affirms, it may be so united with *Water*, as to become *Water* it self. He adds, that 'tis materially *Water* ; only under a sulphurous Disguise.—According to him, in making



making *Paracelsus's Balsamus-samech*, which is nothing but *Sal Tartari* dulcify'd by distilling Spirit of Wine from it till the Salt be sufficiently saturated with its Sulphur, and till it suffers the Liquor to be drawn off as strong as it was poured on; when the Salt of Tartar, from which it is distill'd, hath retained, or deprived it of the sulphurous Parts of the Spirit of Wine, the rest, which is incomparably the greatest Part of the Liquor, will turn to Phlegm. In effect, corrosive Spirits, according to Mr. Boyle's Observation, abound in *Water*; which may be observed, by entangling, and so fixing their saline Parts, as to make them corrode some proper Body; or else by mortifying them with some contrary Salt: which will turn them into Phlegm.

And as to Salts; Salt of Tartar well calcin'd, being laid to liquify in the Air, will deposite an Earth; and if it be then committed to Distillation, will yield a considerable Quantity of insipid *Water*; insomuch, that if it be urg'd with a vehement Fire, the Salt will almost all vanish, and nothing saline remain, either in the *Water*, or the Earth.—Whence *Helmont* concludes, that all Salts might be converted into *Water*. Add, that Sea Salt, recover'd from its own acid Spirit and Oil of Tartar, melts into *Water*, as much as into Oil of Tartar.

Lastly, Oils run, in great measure, into *Water*; and 'tis probable, might be converted wholly into the same. See OIL, SULPHUR, &c.

*No Standard for the Weight and Purity of Water.*—*Water* scarce ever continues two Moments exactly of the same weight, being always varying, by reason of the Air and Fire contained therein. Thus, a piece of pure limpid Ice, laid in a nice balance, never continues in *Æquilibrio*.—In effect, the Expansion of *Water* in boiling, shews what effect the different degree of Fire has on the Gravity of *Water*.—This makes it difficult to fix the specific Gravity of *Water*, in order to settle its degree of Purity; but this we may say in the general, That the purest *Water* we can procure, is that which is 880 times as heavy as Air. However, neither have we any tolerable Standard in Air; for *Water* being so much heavier than Air, the more *Water* is contain'd in the Air, the heavier of course must it be: As, in effect, the principal Part of the Weight of the Atmosphere, seems to arise from the *Water*. See AIR, and ATMOSPHERE.

#### *Properties and Effects of Water.*

1°, *Water* is found the most penetrative of all Bodies, after Fire, and the most difficult to confine; so that a Vessel thro' which *Water* cannot pass, may retain any thing. Nor is it any Objection, that Syrups and Oils will sometimes pass thro' Bodies which will hold *Water*; this not being owing to the greater Subtlety and Penetration of their Particles, but to the Resin wherewith the Wood of such Vessels abounds, to which Oils and Syrups are as Menstruums; so that dissolving the Resin, they make their way thro' the Spaces left thereby; whereas *Water*, not acting on Resins, is retained. See RESIN.

And yet, *Water* gradually makes its way, even thro' all Woods, and is only retainable in Glass and Metals; nay, it was found by Experiment at *Florence*, that when shut up in a spherical Vessel of Gold, and then press'd with a huge force, it made its way thro' the Pores even of the Gold; so that the most solid Body in Nature is permeable to *Water*. See GOLD.

*Water* is even found more fluid than Air; a Body being reputed more fluid than another, when its Parts will find way thro' smaller Pores: now Air, 'tis known, will not pass thro' Leather, as is evident in the Case of an exhausted Receiver cover'd therewith; whereas *Water* passes with ease.—Again, Air may be retain'd in a Bladder, but *Water* oozes thro'. In effect, 'tis found, that *Water* will pass thro' Pores ten times smaller than Air will. See PORE.

It must not be omitted, however, that M. *Homborg* accounts for this passage of *Water* thro' the narrow Pores of animal Substances which will not admit the Air, on another Principle, viz. its moistening and dissolving the glutinous Matter of the fine Fibres of the Membranes, and rendering them more pliable and distensible; which are things that the Air, for want of a wetting Property, cannot do.—As a Proof of this Doctrine, he filled a Bladder, and compress'd it with a Stone, and found no Air to come out; but placing the Bladder thus compress'd in *Water*, the Air easily escap'd. *Hist. de l'Acad. Ann. 1700. p. 45.*

2°, *Water*, then, may even hence, viz. from its penetrative Power, be argu'd to enter the Composition of all Bodies, both Vegetable, Animal, and Fossil; with this peculiar Circumstance, That it is easily, and with a gentle heat, separable again from Bodies it had united with; which cannot be said of any other Body.—Fire, indeed, will penetrate more than *Water*; but 'tis difficult to procure it again from the Bodies it is once fixed in, as is evident in Red Lead, &c. See MINIMUM, &c.

This Property of *Water*, join'd with its Smoothness and Lubricity, fits it to serve as a Vehicle, for the commodious

and easy Conveyance of the Nutritious Matter of all Bodies: being so fluid, and passing and repassing so readily; it never stops up the Pores, but leaves room for the following *Water*, to bring on a new Supply of nutritious Matter: See NUTRITION.

3°, And yet the same *Water*, as little cohesive as it is, and as easily separated from most Bodies, will cohere firmly with some others, and bind them together into the most solid Masses: Tho it appears wonderful, that *Water*, which will be shewn an almost universal Dissolvent, should withal be a great Coagulator.

*Water*, we see, mixed up with Earth or Ashes, gives them the utmost Firmness and Fixity.—The Ashes, e.g. of an Animal, incorporated with pure *Water* into a Paste, and bak'd by a vehement Fire, grow into a Coppel; which is a Body remarkable for this, that it will bear the utmost Effort of a Refiner's Furnace.—'Tis, in effect, upon the glutinous Nature of *Water* alone that our Houses stand; for take but this out of Wood, and it becomes Ashes; or out of Tyles, and they become Dust.

Thus, a little Clay dry'd in the Sun, becomes a Powder, which mix'd with *Water* sticks together again, and may be fashion'd at pleasure; and this dried again by a gentle Fire, or in the Sun, and then baked in a Potter's Oven, by an intense Fire, becomes little other than a Stone.—So the Chinese or Japan Earth, whereof our Porcelain Vessels are made, which hold all Liquors, and even melted Lead it self, is diluted and wrought up with *Water*. See PORCELAIN.

To say no more, all the Stability and Firmness seen in the Universe is owing to *Water* alone.—Thus, Stone would be an incoherent Sand, did not *Water* bind it together; and thus, again, of a fat gravelly Earth, wrought up with *Water* and baked or burnt, we make Bricks, Tyles, and earthen Vessels, of such exceeding Hardness and Closeness, that *Water* it self cannot pass thro' them. And these Bodies, tho to appearance perfectly dry, and destitute of *Water*, yet, being pulveriz'd and put in a Retort, and distill'd, yield an incredible quantity of *Water*.

The same holds of Metal; for the Parings or Filings of Lead, Tin, Antimony, &c. by Distillation, yield *Water* plentifully; and the hardest Stones, Sea Salt, Nitre, Vitriol, Sulphur, &c. are found to consist chiefly of *Water*, into which they resolve by force of Fire.

The *Lapis Calcarinus*, or Lime-stone, being expos'd to the Fire, affords a prodigious Quantity of pure *Water*; and the more of this *Water* is express'd, the more friable does it become, till at length it commences a dry Calx or Lime; wherein, in lieu of the *Water* so expell'd, the Fire, in the Course of Calcination, enters; which is expell'd again, in its turn, by pouring on cold *Water*. Yet, the same *Water* and Calx, temper'd together, produce a Mass, scarce inferior, in point of Solidity, to the primitive Lime-stone. See HEAT.

4°, That *Water* is not elastic, is evident hence, that it is incompressible, or incapable, by any Force, of being reduced into less compass: This easily follows from that famous Experiment abovemention'd, made by order of the great Duke of Tuscany.—The *Water*, being incapable of Condensation, rather than yield, transfused thro' the Pores of the Metal, so that the Ball was found wet all over the outside; till at length, making a Cleft in the Gold, it spun out with great vehemence.—From this last Circumstance, indeed, some have weakly concluded it was elastic. For the *Incubitus* wherewith the *Water* doted forth, was more probably owing to the Elasticity of the Gold, which communicated that Impression to the *Water*.

And hence we see the Reason why Blocks of Marble sometimes burst in cold weather; and why a Vessel fill'd with *Water*, and afterwards, by any means, reduced to a less compass, bursts the Vessel, tho ever so strong.—This is observable in a piece of brass Canon, which being filled with *Water*, and the Mouth exactly stop'd, so as to prevent all egress of *Water*; if a cold Night happens, sufficient to contract and constrict Bodies; the metallic Matter undergoing the common Fate, and the *Water* refusing to give way, the Cannon is burst asunder with incredible violence.

Some bring an Argument for the Elasticity of *Water* hence, that hot *Water* takes up more room than cold; but no legitimate Conclusion can be form'd from hence: for in the hot *Water* there is a good quantity of Fire contain'd, which interposing between the Particles of the *Water*, makes it extend to a greater Space, without any Expansion of Parts from its own Elasticity. This is evident hence, that if *Water* be once heated, there is no reducing it to its former Dimensions, but by letting it cool again: which plainly shews, that the Expansion depends not on the Elasticity of Parts, but on the Presence of Fire.—*Water*, then, tho incapable of Compression or Condensation, may yet be rarefied by Heat, and contracted by Cold. See RAREFACTION, &c.

It may be added, that a further degree of Cold, that is, such a one as congeals *Water*, or turns it into Ice, does expand it.—There are other ways to manifest this Expansion of



of *Water* by Freezing.—Mr. Boyle having poured a proper quantity of *Water* into a strong cylindrical earthen Vessel, exposed it, uncover'd, both to the open Air in frosty Nights, and the Operation of Snow and Salt; and found, that the Ice produced in both Cases, reach'd higher than the *Water* before 'twas froze. Add, that it has been found, that the Rain soaking into Marble, and violent Frosts coming on, have burst the Stones: And even Implements made of Bell-Metal, carelessly expos'd to the wet, have been broken and spoiled by the *Water*; which entering at little Cavities of the Metal, was there afterwards froze, and expanded into Ice.

From the whole, we may be enabled to settle something as to the Nature of the component Particles of *Water*; and, 1<sup>o</sup>, That they are, as to our Senses, infinitely small; whence their penetrative Power: 2<sup>o</sup>, Exceeding smooth and slippery, void of any sensible Asperities; witness their Fluidity, and their being so easily separable from other Bodies which they adhere to: 3<sup>o</sup>, Extremely solid: 4<sup>o</sup>, Perfectly transparent, and as such invifible; which we gather hence, that pure *Water*, inclos'd in a Vessel hermetically seal'd, projects no Shadow; so that the Eye shall not be able to discover whether the Vessel have *Water* in it or not; and in that the Crystals of Salts, when the *Water* is separated from them, lose their Transparency.—5<sup>o</sup>, Hard, rigid, and inflexible; as appears from their not being compressible.—If it be ask'd, How a Body so light, fluid, and volatile, and which so easy a Fire suffices to rarefy, should be so stubborn and incompressible? We see no other Cause to assign, but the Homogeneity of its Parts. If *Water* be consider'd as consisting of spherical or cubical Particles, hollow within, and of a firm Texture; here will be enough to account for the whole: Its Firmness and Similarity will make it resist sufficiently; and its Vacuity render it light enough, &c.—The little Contact between Spherules, will account for the Weakness of its Cohesion, &c. See PARTICLE, COHESION, &c.

Salt melted in *Water*, does not fill the Vessel in proportion to its own bulk: Whence it follows, that there are little Spaces between its Particles, to admit those of the Salt.—And hence, again, we gather, that the watry Particles are extremely solid, and inflexible; since, tho they have intermediate Spaces, no force or weight can compress, or crowd them nearer. See SALT.

5<sup>o</sup>, *Water* is the most insipid of all Bodies; the Taste we sometimes observe therein, arising not from the mere *Water*; but from Salt, Vitriol, or other Bodies mixed therewith: And accordingly, all the sapid Waters recommended for Medicinal Uses, are found to deposite a Quantity of some of those Fossils.

6<sup>o</sup>, *Water* is perfectly inodorous, or void of the least Smell.—*Water*, then, neither affects Sight, Taste, nor Smell, provided it be pure; and consequently might remain for ever imperceptible to us, but for the Sense of Feeling.

#### Whether Water be convertible into Air?

It has been disputed, whether or no *Water* be convertible into Air; there being numerous Instances of, at least, an apparent Transmutation.—In the Vapours daily raised, we find *Water* rarefy'd to such a degree, as to take place in the Atmosphere, and help to compose a considerable part of what we call Air; and even to contribute to many of the Effects ascribed to the Air. See VAPOUR, AIR, and ATMOSPHERE.—But such a Vapour-Air has not the Characters of true permanent Air, being easily reducible into *Water* again. So, in Digestions and Distillations, tho *Water* may be rarefied into Vapours, yet it is not really changed into Air, but only divided by Heat, and diffused into very minute Parts; which meeting together, presently return to such *Water* as they constituted before.

Yet, *Water* rarefy'd into Vapour in an Æolipyle, will, for a while, have an elastick Power, the great and last Characteristick of true Air, and stream out perfectly like a Blast of Air: The elastick Power of this Stream, is manifestly owing to nothing else but the Heat, that expands and agitates the aqueous Particles thereof; and when the Heat is gone, the Elasticity and other aerial Properties disappear likewise. See ELASTICITY.

Rapid Winds thus made, seem to be no more than mere *Water*, broke into little Parts, and put into motion; since, by holding a solid, smooth, and cold Body against it, the Vapours condensing thereon, will presently cover the Body with *Water*.—Indeed, tho no heat intervenes, Motion alone, if vehement, may perhaps suffice to break *Water* into minute Parts, and make them ascend upwards, in form of Air.—Mr. Boyle observes, that between Lyons and Geneva, where the Rhone is suddenly straiten'd by two Rocks very near each other, that rapid Stream, dashing with great impetuosity against them, breaks part of its *Water* into minute Corpuscles, and gives it such a Motion, that a Mist may be observ'd at a considerable distance, arising from the Place, and ascending high into the Air.

**WATER**, in Geography, Hydrography, &c. is a common, or general Name applied to all liquid transparent Bodies, gliding or flowing on the Earth. See FLUID, LIQUID, &c.

In this Sense, *Water* and Earth are said to constitute one terraqueous Globe. See EARTH.

Some Authors have rashly and injuriously taxed the Distribution of *Water* and Earth in our Globe as unartful, and not well proportion'd: Supposing that the *Water* takes up too much room. See TERRAQUEOUS.

An Inundation, or Overflowing of the Waters, makes a Deluge. See DELUGE.

#### Various Kinds of WATERS.

*Water* is distinguish'd, with regard to the Places where it is found, into Marina, Sea-Water; Pluvialis, Rain-Water; Fluvialis, River-Water; Fontana, Spring-Water; Putralis, Well-Water; Cisternina, those of Cisterns; Pallustris, that of Lakes, Morasses, &c.

These sorts of *Water* are each more impure, and heterogeneous than other.

Sea-WATER. See SEA, and OCEAN.

Sea-Water, is an Assemblage of Bodies, wherein *Water* can scarce be said to have the principal Part: 'Tis an universal Colluvies of all the Bodies in Nature, sustain'd and kept swimming in *Water*, as a Vehicle.—Dr. Lister considers it as the Fund or Source, out of which all Bodies arise. He gives, in some measure, into the Opinion of Thales and Van Helmont; and imagines the Sea-Water to have been the only Element created at the Beginning, before any Animal, or Vegetable; or even before the Sun himself.—Fresch-Water, he supposes to have arose accidentally after the Creation of these; and to owe its Origin to the Vapours of Plants, the Breath of Animals, and the Exhalations raised from the Sun. De Font. Med. Ang.—Dr. Halley is of another Opinion—He takes it for granted, that the Saltiness of the Sea, arises from the saline Matter dissolved and imbib'd by the Rivers in their progress, and discharg'd, with their Waters, into the Ocean; and consequently, that the degree of Saltiness is continually and gradually increasing.—On this Hypothesis, he even proposes a Method for determining the Age of the World: For two Experiments of the degree of Saltiness, made at a large Interval of Time, will, by the Rule of Proportion, give the Time wherein it has been acquiring its present degree. Philos. Transact. N<sup>o</sup> 344.

The *Water* of the Sea is liable to several periodical Changes. See TIDES.

High-WATER.

Low-WATER.

Ebb-WATER.

Rain-WATER.

See FLUX, EBB, &c.

See RAIN.

Rain-Water, is the *Water* of the Sea, purified by a sort of Distillation: or rather, it is the watery Vehicle, separated from the saline, and other Matters residing therein, by Evaporation. See EVAPORATION.

The *Water* which descends in Rain, is, of all others, the purest, in a cold Season, and a still Sky; and this we must be contented to take for Elementary *Water*.

The Rain *Water* in Summer, or when the Atmosphere is in Commotion, 'tis certain, must contain infinite Kinds of heterogeneous Matter: Thus, gathering the *Water* that falls after a Thunder-Clap, in a sultry Summer Day, and letting it settle, a real Salt is found sticking at the bottom.—But in Winter, especially when it freezes, the Exhalations are but few, so that the Rain falls without much Adulteration: and hence, what is thus gather'd in the Morning-time, is found of good use for taking away Spots in the Face; and that gathered from Snow, against Inflammation of the Eyes. See SNOW.

Yet this Rain-Water, with all its purity, may be filter'd and distill'd a thousand times, and it will still leave some Faces behind it.

Spring-WATER. See SPRING.

The *Water* of Springs is the next, in point of Purity.—This, according to Dr. Halley, is collected from the Air it self; which being saturated with *Water*, and coming to be condensed by the Evening's Cold, is driven against the cold Tops of the Mountains; where being further condensed and collected, it gleets down, or distills, much as in an Alembic.

This *Water*, which before floated in the Atmosphere in form of a Vapour, being thus brought together, at first forms little Streams; several of which meeting together, form Rivulets; and these, at length, Rivers.

River-WATER. See RIVER.

This, on some occasions, is to be esteem'd purer than that of Springs.—If the Stream, in descending from its Spring, chance to flow over Strata, or Beds, wherein there is Salt, Sulphur, Vitriol, Iron, or the like, it dissolve and imbibes part thereof.—Otherwise, Spring-Water becomes purer and better; for while the River drives on its Course in an interrupted Stream, all its Salts, with the Vegetable and Animal Matters drained into it either from Exhalations, or from



from the Ground it washes, gradually either sink to the bottom, or are driven to the Shore: And hence the ancient Poets and Painters represent the Deities of Springs and Rivers, as combing and carding their Waters.

With regard to the Qualities of *Water*, it is further distinguish'd into *Salina*, Salt-Water; *Dulcis*, Fresh-Water, &c. Salt WATER, or Sea-WATER. See SALT, and Sea-WATER.

*Fresh-WATER*.—It is generally granted that those Waters, *ceteris paribus*, are the best, as well for wholesomeness, as other various æconomical Uses, &c. that are free from Saltiness; which is an adventitious, and in most Cases a hurtful Quality in Waters.—Mr. Boyle therefore contrived a very extraordinary Method of examining the Freshness and Saltiness of Waters, by a Precipitant, which could discover one Part of Salt in 1000, nay 2 or 3000 Parts of Water. See FRESH WATER.

The thaw'd Ice of Sea-Water is often used in *Amsterdam* for brewing; and *Bartholine*, in his Book *de Nivis Usu*, confirms the Relation: 'Tis certain, says he; that if the Ice of the Sea-Water be thawed, it loses its Saltiness; as has been lately tried by a Professor in our University.

#### Uses of Water.

The Uses of *Water* are infinite; in Food, in Medicine, in Agriculture, in Navigation, in divers of the Arts, &c.

As a Food, 'tis one of the most universal Drinks in the World; and if we may credit many of our latest and best Physicians, one of the best too.—For this Use, that which is purest, lightest, most transparent, simple, colourless, void of Taste and Smell, and which warms and cools fastest, and wherein Herbs and Pulse infuse and boil the soonest, is best. See DRINK.

*Hippocrates*, in his Treatise *de Aere, Aquis & Locis*, speaks much in behalf of light Water.—*Herodotus* relates, That among the Antients, some Nations drank a Water so very light, that all Woods readily sunk therein. And Mr. Boyle mentions some Water brought out of *Africa* into *England*, which was specifically lighter than ours, by four Ounces in a Pint, *i. e.* by one third. See WATERPOISE.

'Tis esteem'd a good Quality in Water, to bear Soap, and make a Lather therewith. This our River-Waters readily do, but the Pump and Spring-Waters are found too hard for it; yet may these be remedy'd, by barely letting 'em stand for four or five Days.

As a Medicine, 'tis found, internally, a powerful *Febrifuge*; excellent against Colds, Coughs, Stone, Scurvy, &c. See FEBRIFUGE, &c.

Externally, its Effects are no less considerable. See BATH, and BATHING.

In Agriculture and Gardening, Water is allow'd absolutely necessary to Vegetation; whence *Varro* places it in the Number of the Divinities he invokes in his first Book *de Re Rustica*: *Etiā, says he, precor Lympha, quoniam sine aqua omnis misera est agricultura.* See WATERING.

The Changes Water is liable to, and the different Forms it appears under, are numerous.—Sometimes as Ice, then as Vapour, then as a Cloud, Shower, Snow, Hail, Fog, &c. See ICE, VAPOUR, CLOUD, SHOWER, SNOW, HAIL, FOG, &c. see also FREEZING, THAWING, &c.

Many Naturalists have even maintain'd Water to be the Vegetable Matter, or the only proper Food of Plants; but Dr. Woodward has overturn'd that Opinion, and shewn, that the Office of Water in Vegetation, is only to be a Vehicle to a terrestrial Matter, whereof Vegetables are form'd; and does not it self make any Addition to 'em.—All Water, he allows, contains more or less of this terrestrial Matter; Spring and Rain-Water near an equal quantity, and River-Water more than either of 'em. See VEGETATION.

Water is of the last Use in Chymistry; being one of the great Instruments by means whereof its Operations are all perform'd. See CHYMISTRY, and OPERATION.

It acts in various Manners and Capacities, as a Menstruum, a Ferment, a Putrescent, a Vehicle, a Medium, &c.

1<sup>o</sup>, As a Menstruum, it dissolves all Kinds of Salts. See SALT, &c.

Air also seems to dissolve Salts; but 'tis only in virtue of the Water it contains.—Nor has any other Body the Power of dissolving Salts, further than as it shares of this Fluid. See AIR, &c.

The Particles of Salts, we have observed, insinuate themselves into the Interstices between the Particles of Water; but when those Interstices are once filled, the same Water will not any longer dissolve the same Salt; but it will dissolve a Salt of another Kind, by reason of the different Figure of the Particles, which enter and occupy the Vacancies left by the former: And thus it will dissolve a third, or fourth Salt, &c.—So, when Water has imbib'd its fill of common Salt, it will still dissolve Nitre; and when saturated with Nitre, it will dissolve Sal Ammoniac, and so on.

Water also dissolves all saline Bodies, it being the constituent Character of this Class of Bodies, that they are unin-

flammable and dissoluble in Water.—Hence, Water may dissolve all Bodies, even the heaviest and most compact, as Metals; inasmuch as those are capable of being reduced into a saline form: in which State they may be so intimately dissolved by Water, as to be sustained therein.

Water dissolves all saponaceous Bodies, *i. e.* all alkalious Salts and Oils blended together: Tho Oil it self be not dissoluble in Water, the Admixture of Salt herewith, rendering it saline, brings it under the Power of Water.

Now, all the Humours in the human Body are apparently saline, tho none of them are Salt it self; and the same may be said of the Juices of all Vegetables, excepting the Oils; and accordingly, they all dissolve in Water.

Water dissolves Glass it self.—This being melted with Salt of Tartar, becomes soluble in Water. See GLASS.

It dissolves all Gums and guminous Bodies; it being a Characteristick of a Gum, that it dissolves in Water; in contradistinction from a Resin. See GUM, &c.

Yet, Water mix'd with alcali Salts, dissolves Oils and oily Bodies.—Thus, tho mere Water pour'd on greasy Wool, be repelled thereby; yet a strong Lixivium, or alcali Salt being mix'd with the Water, it readily dissolves and absorbs all that was greasy and oleaginous; and thus it is that woollen Cloths are scour'd.

Again, Water does not dissolve Resins; as we conceive a Resin to be no other than an inspissated, or concentrated Oil. See RESIN.

Oils and Sulphurs Water leaves untouched; and what is more extraordinary, it repels them; and by repelling, drives the oily Particles into Eddies.—Add, that it seems to repel all oleaginous, sulphurous, fatty, and adipous Bodies, wherein Oil predominates; and hence also it is, that the fatty Parts in our Bodies escape being dissolved by Water.—And 'tis, in all probability, by this means, that Fat is collected in the adipose Cells of all Animals. See FAT.

Nor does it dissolve terrene or earthy Bodies, but rather unites and consolidates them; as we see in Tyles, &c. See EARTH.

After dissolving a Body, the Water unites and hardens together with it; and, if the Body be of the saline Kind, forms Crystals, and retains the Salts in that form. See CRYSTAL.

Salts, while thus join'd with Water, assume various Figures; the Crystals of Sea-Salt, *e. g.* are pyramidal; those of Nitre, prismatical; those of Sal Gemme, cubical, &c. But, that Water is the Cause of these Salts being in Crystals, is evident hence, That upon separating the Water, the Crystals are no more; their Form is lost, and their Transparency ceases. See CRYSTALLIZATION.

2<sup>o</sup>, Without Water there can no Fermentation be rais'd.—Thus, if you grind a Plant into a Dust or Farina, it will never ferment; even tho you add Yeast or Spirit of Wine thereto: but Water being pour'd on it, the Fermentation readily arises. See FERMENTATION.

3<sup>o</sup>, All Putrefactions, both of Animal and Vegetable Bodies, are likewise perform'd by means of Water alone; and without it there would be no such Effect in all Nature. See PUTREFACTION.

4<sup>o</sup>, Water is indispensibly requir'd to Ferrescence; which is an intestine Motion, arising between contrary Salts: for no such Motion can arise from a Mixture of contrary Salts, unless there be Water to dissolve and keep 'em in Solution.

5<sup>o</sup>, A farther Use is in the making Separations of oily from saline Parts, which is a thing of the last Service: Thus, any oleaginous Substance, incorporated with Salt, being shook sometime in a proper quantity of Water; the Salts dissolving, will be extracted from the Oil, and imbib'd by the Water; and thus is the Body dulcify'd.—So Butter, by a continued Lotion in fair Water, becomes insipid; and aromatick Oils, agitated a long time in warm Water, lay aside their saline spirituous Parts, and become inert and inodorous.

Spirit of Wine, mix'd with Oil, makes one Body therewith; but if you pour Water thereon, it will repel the Oil, and draw all the Spirit to it self; nay, frequently, what the Spirit had dissolved in other Bodies, Water will separate from 'em, by attenuating the Spirit, and letting the other Matters precipitate.

6<sup>o</sup>, Water is of great service in directing and determining the Degree of Fire, or Heat.—This was first discover'd by M. Amontons, from an Observation that Water over the Fire grows gradually more and more hot, till it comes to boil; but then ceases to increase, and only maintains its present degree of heat, even tho the Fire were ever so much enlarg'd, or were continu'd ever so long.—This, therefore, affords a Standard or fixed Degree of Heat all over the World; boiling Water, provided it be equally pure, being of the same Heat in *Greenland* as under the Equator.

By means hereof, they make Baths of divers Degrees of Heat, accommodated to the various Occasions. See BATH, FIRE, HEAT, &c.



*Water* is of the utmost Use in divers of the *Mechanical Arts* and Occasions of Life ; as, in the Motion of Mills, Clocks, and other Machines—And the Laws, Properties, &c. of this Fluid with respect thereto ; as its *Motion, Gravitation, Pressure, Elevation, Action, &c.* And the Construction of divers Engines subservient thereto, or founded thereon ; as *Syphons, Pumps, &c.* make the Subject of *Hydraulicks* and *Hydrostaticks*. See *HYDRAULICKS* ; see also *FLUID, ASCENT, &c.*

The Quantity of *Water* on this side our Globe, Dr. *Cheyne* suspects to be daily decreasing ; ' some part thereof being continually turned into Animal, Vegetable, Metalline, or Mineral Substances ; which are not easily dissolv'd again into their component Parts.—Thus, if you separate a few Particles of any Fluid, and fasten them to a solid Body, or keep them asunder one from another, they are no more fluid ; to produce Fluidity, a considerable Number of such Particles is requir'd.' See *FLUIDITY*.

' Most of the Fluids or Liquors we know of, are form'd by the Cohesion of Particles of different Figures, Magnitudes, Gravities, and attractive Powers, swimming in pure *Water*, or an aqueous Fluid ; which seems to be the common Basis of all. Wine is only *Water* impregnated with Particles of Grapes ; and Beer with Particles of Barley : All Spirits seem to be nothing but *Water*, saturated with saline or sulphurous Particles : and all Liquors are more or less fluid, according to the greater or smaller Cohesion of the Particles, which swim in the aqueous Fluid. And there is hardly any Fluid without this Cohesion of Particles : not even pure *Water* it self ; as is apparent from the Bubbles which sometimes will stand on its Surface, as well as on that of Spirits and other Liquors.' *Philos. Princip. of Relig.*

*Ascent of WATER.* See *ASCENT*, and *CAPILLARY*.

|                   |       |             |
|-------------------|-------|-------------|
| WATER-Clock.      | } See | CLEPSYDRA.  |
| WATER-Level.      |       | LEVEL.      |
| WATER-Organ.      |       | ORGAN.      |
| WATER-Mill.       |       | MILL.       |
| WATER-Spout.      |       | SPOUT.      |
| WATER-Bearer.     |       | AQUARIUS.   |
| WATER-Microscope. |       | MICROSCOPE. |

*WATER*, in Natural History, &c. is distinguish'd into *Pure*, call'd also *Elemental* ; *Mineral* ; and *Artificial*, or *Factitious*.

As to the *Pure*, we have already observ'd, that there is, perhaps, none absolutely so ; all *Water* being found to contain more or less Particles, such as are in terrestrial Bodies ; not earthy Particles, we mean, but Oils, Salts, &c.

*Mineral WATERS*, are those which contain such and so many Particles of different Nature from *Water*, as thence to derive some notable Property beyond what common *Water* has : Or, *Mineral Waters* are those which have contracted some Virtue extraordinary, by passing thro' Beds of Minerals, as *Alumn, Vitriol, Sulphur, &c.* or by receiving the Fumes thereof. See *MINERAL*.

The Kinds of *Mineral Waters* are various, as are the Kinds of Compositions of the Minerals they are impregnated withal. See *FOSSIL*.

Some are *Simple*, as only containing mineral Particles of one sort ; others *Mix'd*, of two, three, four, or more sorts.

Hence, we have, 1°, *Metallick Waters*, viz. in different Parts, *Golden, Silver, Copper, Tin, Lead, and Iron Waters*. See *METAL, FERRUGINOUS, CHALYBEAT, &c.*

2°, *Saline Waters*, viz. *Nitrous, Aluminous, Vitriolate*, and those of common Salt. See *SALT*.

3°, *Bituminous, Sulphurous, Antimonial, Carbonaceous*, and *Amber Waters*. See *BITUMEN, &c.*

4°, *Earthy and Stony Waters*, viz. *Lime, Chalk, Oker, Cinnabar, Marble, and Alabaster Waters*.

5°, *Mercurial Waters*. See *MERCURY, QUICKSILVER, &c.*

This Division of *Mineral Waters* is taken from their Essences ; that is, from the Mineral Particles they contain : but the most usual and celebrated Division, is borrow'd from the manner wherein they affect our Senses ; with regard to which there are ten Kinds ; viz. *acid, bitter, hot, very cold, oily and fat, poisonous, colour'd, boiling, petrifying, incrusting, and saline*.

*Acid Waters*, called also *Acidulae*, arise from the Admixture of *Vitriol, Nitre, Alumn, and Salt*.—These are cold, and very frequent, there being not reckon'd less than 1000 in *Germany* alone : Some of which are sower as *Vinegar*, and used instead thereof ; others vinous, and serving for *Wine* ; others astringent, &c. See *ACIDULAE*.

*Hot Waters*, called *Thermæ*, arise from the Admixture of sulphurous Particles and Fumes.—Of these, the hottest is that in *Japan*, which no Fire can bring *Water* to equal ; and which keeps hot thrice as long as our boil'd *Water*. See *THERMÆ, &c.*

*Oily and Fat Waters*, arise from a bituminous and sulphu-

reous Matter ; as *Amber, Petroleum, Pitch, Naphtha, &c.* See *NAPHTHA, PETROL, &c.*

*Bitter Waters* are produced from an impure *Sulphur, Bitumen, Nitre, and Copper*.—Such is the *Lacus Asphaltites*.

*Very cold Waters*, have their rise from a Mixture of *Nitre and Alumn* ; or of *Mercury, Iron, &c.* The Depth of the Source or Spring too, has some effect.

*Waters which change the Nature of Bodies*.—Of these there is great Variety.

1°, Near *Armagh* in *Ireland*, is a Lake, wherein a Staff being fix'd some Months, the Part that stuck in the Mud will be turn'd into Iron ; and that Part incompass'd with the *Water* into Hone ; the rest remaining as before.—Thus *Gyraldus*, and *Maginus* ; but *Brietius* denies it.

2°, In the Northern Part of *Ulster* is a Spring, which in the Space of seven Years petrifies Wood, or converts it into Stone.—The like are found in divers other Parts, as in *Hungary, Burgundy, &c.* *Vitruvius* mentions a Lake in *Capadocia*, which converts Wood into Stone in one Day. See *PETRIFICATION*.

3°, There are *Waters* supposed to transmute or turn Iron into Copper. See *TRANSMUTATION*.

4°, Others are said to change the Colour of the Hair.—*Gyraldus* mentions a Spring in *Ireland*, wherein if a Person were wash'd he instantly became grey.

*Poisonous Waters* are occasion'd by their creeping thro' *Arsenical, Antimonial, and Mercurial Earths*, or being impregnated by their Fumes.—Such is the *Lacus Asphaltites*, and divers others about the *Alps, &c.* which immediately kill those who drink : But these are most of 'em fill'd up with Stones ; which is one Reason so few are known.

*Saline Waters* are generated two ways ; either they are deriv'd from the Sea, by some subterraneous Passage ; or are generated from Mineral Salts, which they meet withal in their passage ere they arrive at their Springs. See *SEA*, and *SALT*.

*Boiling or Bubbling Waters*, are produced either by a sulphureous, or a nitrous Spirit, mix'd with the *Water* in the Earth : If it be sulphurous, the *Water* is hot ; if nitrous, cold. For all the *Waters* that boil as if hot are not so, but some few are cold : We read both of *Thermæ* and *Acidulae* that boil.

There are divers other *Waters* that have very singular Properties, not reducible to any of these Classes : Such, 1°, is that Spring in *Portugal*, which absorbs all Bodies cast into it, tho the lightest : And not far from it there was antiently another, in which no Bodies, not the heaviest, could sink.—2°, In *Andalusia*, we are assur'd by *Euseb. Nicembergensis*, there is a Lake which foretels approaching Storms, by making a terrible bellowing, that may be heard 18 or 20 Miles distance.—3°, In *Granada* is a Well whose *Water* dissolves Stones.—4°, We read of a Spring in *Arcadia*, which render'd those who drank of it abstemious.—5°, In the Island of *Chio* is a Spring, which converts those who drink of it into Fools.—6°, There are Springs in divers Parts of *England, Wales, Spain, &c.* which ebb and flow daily with the Flux and Reflux of the Sea ; and some are even said to ebb and flow against the Tide.—Add, 7°, *Stalactical Waters*. See *STALACTICAL*.

|                   |       |                    |
|-------------------|-------|--------------------|
| Bath-WATER.       | } See | BATH, and BATHING. |
| Spaw-WATER.       |       | SPAW.              |
| Petrifying-WATER. |       | PETRIFYING.        |

*WATER*, in Chymistry, by the Chymists called more usually *Phlegm* ; is the fourth of the five chymical Principles, and one of the passive ones. See *PRINCIPLE*, and *PHLEGM*.

It is never drawn pure and unmix'd ; which, Dr. *Quercet* observes, makes it usually a little more deterfive than common *Water*.

This Principle, probably, contributes much to the Growth of Bodies, in that it both renders and keeps the active Principles fluid ; so that they are capable of being convey'd by Circulation into the Pores of the mixed : and also because it tempers their exorbitant Motion, and keeps them together ; so that they are not so easily and soon dissipated.

In all such Bodies whose active Substances are join'd and united pretty closely together, as in common Salt, Tartar, all Plants that are not odoriferous, and in many animal Bodies ; this Principle is the first that comes in Distillation : But when *Water* is mixed with volatile Salts, or with Spirit of Wine, or is in any odoriferous Mixture ; then the volatile Particles will rise and come away first. See *PRINCIPLE*, *ELEMENT, &c.*

*WATERS*, in Medicine, Pharmacy, Chymistry, &c. call'd also *Artificial, Medicinal, &c. Waters* ; are a kind of Liquors, procured or prepared by Art from divers Bodies, principally of the Vegetable Tribe ; having various Properties, and serving various Purposes.

These *Waters* are either *Simple*, or *Compound*.



*Simple Waters*, are those procur'd from some one Vegetable Body. See VEGETABLE.

A *Simple Water*, is not supposed to be the mere *Water* or Phlegm of the Body it is drawn from, as is evident from the Taste and Smell thereof.—The Intention of making such *Water*, is to draw out the Virtues of the Herb, Seed, Flower, Root, or the like, so as it may be more conveniently given in that form than any other. But the Phlegm, or watery Parts of any Medicinal Simple, is no better than common *Water* undistill'd: So that all those Ingredients which in Distillation raise nothing but Phlegm, as may be discover'd from the Scent and Taste of what comes over, are not fit for the Still.—On this Principle, a great part of the *Waters* retained in the Dispensatories will appear good for nothing, at least not worth distilling.

The Means whereby this Separation is effected, are either *Evaporation*, *Infusion*, *Decoction*, or *Distillation*.

The first is perform'd by exposing the Vegetable in a cold Still to a gentle Heat, like that of a Summer's Sun; and catching the Effluvia which exhale from it. See HEAT, EVAPORATION, &c.

The Effect of this Operation, is a *Water*, or fluid Matter, which is the most volatile, fragrant, and aromattick Part of the Plant; and that wherein its specifick Virtue resided.

And thus is it that the aromattick or odoriferous *Waters* of Vegetables are procured. See AROMATTICK, and ODORIFEROUS.

The second Means, viz. *Infusion*, is perform'd by putting the Vegetable in hot Rain-*Water*, below the degree of boiling; keeping it to this degree by an equable heat, for the space of half an Hour; and then straining or pouring it off. See INFUSION.

The only *Waters* procur'd this way in much use in the modern Practice, are those of Frog-spawn, and Oak-buds.

The third Means, viz. *Decoction*, only differs from the second in this, that the *Water* is kept to the degree of boiling. See DECOCTION.

The fourth Means, viz. *Distillation*, is perform'd by infusing the Subject in an Alembick, by a gentle warmth, for some time, and then increasing the Heat so as to make it boil; and lastly, catching and condensing the Steam or Vapour arising therefrom. See DISTILLATION.

This Process furnishes what we call the *Distill'd Waters*, of so much use in Medicine, &c.

The Vegetable Subjects best fitted for it, are the sapid and odorous, or those of the aromattick Tribe; as Angelica, Aniseed, Baum, Carraway, Coriander, Cumin, Dittany, Fennel, Hyssop, Marjoram, Mint, Roses, Rosemary, Saffron, Sage, Scurvygrass, Thyme, Cinnamon, Citron, Juniper, Lime, Myrtle, Orange, Peach, &c.

The Medicinal Virtues of *Waters* prepared after this manner, are the same as those of the respective Plants, &c. they are drawn from.—Thus, the distill'd *Water* of Mint is Stomachic; that of Wormwood, Vermifugous, &c.

The *Materia Medica*, it may be observ'd, affords no Remedies in this way, but for the Intentions either of Cordials, Diureticks, or Diaphoreticks.—Were it practicable to raise a Balsamick, Cathartick, or Opiate in this way, yet would those Properties be much more conveniently brought forth by other Processes; so that nothing is to be look'd for in a distill'd *Water*, but such subtile and light Parts of a Medicinal Simple, as may fall in with the foremention'd Intentions: Indeed, very little comes over under that Division, weighty enough to affect even the urinary Secretions.

The *Simple Waters* of chief Virtue are the following ones, viz. Dill-*Water*, *Aqua Anethi*; Baum-*Water*, *Aqua Melissa*; Angelica-*Water*, *Aqua Angelicæ*; Mint-*Water*, *Aqua Minthe*; Rosemary-*Water*, *Aqua Rosmarini*; Orange-Flower-*Water*, *Aqua Naphæ*; Black-Cherry-*Water*, *Aqua Cerasorum*; Parsly-*Water*, *Aqua Petroselinæ*; Camomile, *Chamomilla*; Pennyroyal, *Pulegium*; Fennel-*Water*, *Aqua Feniculi*; Damask-Rose-*Water*, *Aqua Rosarum dam.*; Hyssop-*Water*, *Aqua Hyssopi*; Rue-*Water*, *Aqua Rutæ*; Juniper-*Water*, *Aqua Juniperi bac.*; Eldar-*Water*, *Aqua Sambuci flor.*; Lovage-*Water*, *Aqua Levistici*; Carminative-*Water*, *Aqua Carminativa*, &c.

It may be here proper to note, That whatever Properties any Simple has from the Grossness or Solidity of its Parts, which make it act as an Emetick, Cathartick, or Astringent; the Residue left after Distillation will remain in full possession thereof.—Thus, the purging Syrup of Roses, is as well made after the Damask-Rose-*Water* is drawn off, as if the Flowers were juiced, or put into Infusion; because nothing of a Cathartick Quality rises with the *Water*.

Sometimes, the Subject is fermented by the Addition of Yeast, Honey, or the like Ferment, to the hot *Water*, before the Distillation begin: In which Case, if the Ferment added were in sufficient quantity to effect a thorough Fermentation, the Liquid afterwards exhal'd and drawn off would be thin and inflammable; which makes what we call a *Spirit*; otherwise, thick, white, sapid, &c. and call'd a *Water*. See FERMENTATION, SPIRIT, &c.

The *Waters* procur'd in this manner, contain the Oil of the Plant in great Perfection; which makes 'em of considerable use in Medicine, further than those rais'd without Fermentation; beside that they keep better and longer; the Spirit in 'em preventing their corrupting or growing mothery.

The *Compound Waters*, or those wherein several Ingredients are used, are very numerous, and make a large Article in Commerce; some prepared by the Apothecaries, according to the Dispensatory Prescripts, for medicinal Uses; others by the Distillers, to be drank by way of Dram, &c. and others by the Perfumers, &c.

They are distinguish'd by different Epithets, taken from the *Latin*, *Greek*, *Arabick*, *English*, &c. in respect either of the specifick Virtues of the *Waters*; or the Parts of the Body for the Cure whereof they are intended; or the Diseases they are good against; or the Ingredients they are compounded of; or their different Uses, &c.

The most considerable among the Class of *Compound Waters*, we shall here enumerate.—The manner of making 'em, 'tis true, is not always the same; especially those intended for drinking; for which, every one gives his own Method as the best.—Those we here deliver, are taken from such as have the greatest Reputation in preparing these things; or from those who have wrote best of 'em.

We have only three general Remarks to add, with regard to those intended for drinking: 1<sup>o</sup>, That such wherein any thing is infused, as broken Fruits, pounded Herbs, or ground Spices, are always pass'd thro' a Strainer, to make 'em finer and purer.—2<sup>o</sup>, That those made with Brandy or Spirit of Wine, are usually distill'd after the mixing of their Ingredients; which renders those Liquors exceeding strong and dangerous, and confirms the Proverb; *Plures occidit Gula quam Gladius*. In effect, some of 'em are so penetrating, that they burn the Tongue when taken.—3<sup>o</sup>, That the *Waters* that take their Name from any particular thing, as Cinnamon, &c. have always some other Ingredients joined with 'em, according to the Taste or Smell requir'd.

*Alexipharmackic*, or *Alexiterial Waters*, are *Waters* that resist Poisons and the Plague.—Such are those of Angelica, Scorzonera, Citron, Orange, Scordium, Rue, &c. See ALEXIPHARMACKIC.

Such also are Treacle-*Water*, Plague-*Water*, Milk *Water*, Poppy-*Water*, &c.

*Alumn Water*, is a vulnerary *Water*, thus call'd, by reason the Basis or principal Ingredient thereof is Alumn. See ALUMN, and VULNERARY.

*Angelica Water*, is usually prepar'd of Brandy, Angelica-Roots and Seeds, Carduus, Baum, Fennel-Seed, &c. the whole beat together in a Mortar; infused for a Night, and then distill'd.—It is reputed a good carminative, and Cordial, as also a Cephalic, &c.

*Aniseed-Water*.—To eight Parts of Essence of Aniseed distill'd, put three Parts of Brandy, with one of *Water* boil'd; mix the whole together: and if you require it sugar'd, add half a Pint of clarify'd Sugar; but many prefer it without: and strain the whole.

*Apricot Water*.—To a Quart of *Water* put six or eight Apricots, sliced; boil the whole, to extract the Taste; and when cold, add four or five Ounces of Sugar.—When that is dissolved strain it.

*Aromattick Waters*, we have already spoke of among the *Simple Waters*.

*Arthritic Waters*, are *Waters* good against the Gout, Palsy, Tremors, Pains in the Joints, &c.—Such are those of Piony, Chamæpetis, Betony, Rosemary, &c. See ARTHRITIC.

*Bryony Water*, is one of the *Compound Waters* prescrib'd in the College Dispensatory; prepared from Bryony-Roots, Rue, Mugwort, Savin, Feverfew, Dittany, &c.—It is a good Hysteric, opens Menstrual Obstructions, &c.

*Carduus Water*, is made from *Carduus Benedictus* pounded in a Mortar, and put in an Alembick.—Then, a sufficient quantity of the Juice of the same sort of Plant, drawn by Expression, is pour'd into the Alembick, that the Herbs swimming in the Juice may be in no danger of sticking to the bottom of the Cucurbit in Distillation. Lastly, sitting on a Capital, and luting the Joints, distil half as much Juice as you put in.—This *Water* is sudorifick; and good against the Plague, Malignant Fevers, &c. See CARDUUS.

*Water of Separation*, or *Depart*, is only *Aqua fortis*; thus called, because serving to separate Gold from Silver. See DEPART. It is also called

*Caustic*, *Burning*, or *Strong Water*, and is prepared of a Mixture of Spirits of Nitre and Vitriol, drawn by force of Fire; to which are sometimes added Alumn and Arsenic.

It dissolves all Metals, Gold only excepted.—The Invention of *Aqua fortis*, is usually refer'd to the XIIIth Century: Tho some hold it to have been known in the Time of Moses. See *Aqua Fortis*, *Aurum Potabile*, &c.



**Cephalic Waters**, are *Waters* proper to strengthen and comfort the Brain.—Such are those of Rosemary, Marjoram, Sage, Pyony, Bettony, Baum, &c. See CEPHALIC.

**Chalybeat Water**, is a *Water* wherein red-hot Steel has been quenched.—It is astringent, and good, like Ferruginous or Iron-Waters, for Diarrhæas, &c. See CHALYBEAT, and MARTIAL.

**Cherry Water**.—In a Quart of *Water* crush half a pound of Cherries, with four or five Ounces of Sugar. Strain the whole thro' a Cloth, till it be very clear.

**Cinnamon Water**.—In a Quart of *Water* boil half an Ounce of broken Cinnamon; and taking it off the Fire, add a quarter of a Pound of Sugar: Let it cool, and strain it.—Or thus: Take a Pound of Cinnamon, three Pounds of Rose-Water, and as much White-wine: bruise the Cinnamon, infuse it fourteen Days, then distil it.—The first *Water* that rises is the best; then the second; then the third. See CINNAMON.

**Clary Water**, is composed of Brandy, Sugar, and Cinnamon, with a little Ambergrease dissolved in it.—It helps Digestion, and is Cardiack.—This *Water* is render'd either purgative or emetick, by adding Resins of Jallap and Scammony, or *Crocus Metallorum*.—Some make *Clary Water* of Brandy, Juice of Cherries, Strawberries and Gooseberries, Sugar, Cloves, White Pepper, and Coriander-Seeds; infused, sugar'd, and strain'd.

**Clove Water**, is prepared of Brandy, and Cloves bruised therein, and distill'd. See CLOVE.

**Cordial or Cardiac Waters**, are *Waters* proper to strengthen, and comfort the Heart.—Such are those of Endive, Chicory, Bugloss, Burrage, Marigolds, &c. See CARDIAC, and CORDIAL.

**Cosmetic Waters**, are *Waters* proper to cleanse, smoothen and beautify the Skin. See COSMETIC.

**Fennel Water**.—Infuse a Handful of Fennel in a Pint of cold *Water*, for an Hour or an Hour and an half: add three or four Ounces of Sugar. Strain it, and drink it.

**Gentian Water**.—Take four Pounds of Gentian Roots, either green or dry'd; mince them small, infuse them in White-wine, or only sprinkle them therewith; then distil them, with the Addition of a little Centaury the lesser. See GENTIAN.

It is frequently used as a Stomachic, and is also commended for a Deterger; serving in Dropsies, Jaundice, Obstructions of the *Viscera*, &c.

**Gum Water**, is that made by letting Gum-Arabick, inclos'd in a linen Rag, infuse in common *Water*.—The Ladies also make *Water* to gum their Hair, of Quince-Kernels steep'd in *Water*. See GUM.

**Hepatic Waters**, are those used to cleanse, strengthen, and refresh the Liver.—Such are those of Chicory, Capillaries, Purslain, Agremoney, Fumitory, &c. See HEPATIC.

**Honey Water**, is a *Water* prepar'd in Places where much Honey is made, by washing out the Honey-Combs, and the Vessels they have been in, in common *Water*.—This gives it a Honey-Taste, and it afterwards becomes very clear, and the People use it as their common Drink. See HONEY.

**Horse-raddish Water**, *Aqua Raphani*, is prepar'd of the Juices of Scurvygrass, Brook-Lime, Water-Cresses, White-wine, Lemon-Juice, Bryony-Root, Horse-raddish, Winter's Bark and Nutmeg, digested and distill'd.—It is a good Diuretic; cleansing, and removing Obstructions of the *Viscera*, promoting Perspiration, &c.

**Hungary Water**, is a Liquor distill'd in *Balneo Mariæ*, from Rosemary-Flowers, and Spirit of Wine well rectify'd.—It has its Name from the wonderful Effects it is said to have had on a Queen of Hungary, at the Age of 72 Years.—'Tis good against Paintings, Palsies, Lethargies, Apoplexies, and hysterical Disorders.—There are divers ways of preparing it. See HUNGARY.

**Hysterie Waters**, are those proper to strengthen the Matrix, or Womb, and remedy the Disorders that befall it.—Such are those of Bryony, Matricary or Motherwort, Hyssop, Fennel, Baum, Mugwort, Smallage, &c. See HYSTERIC.

**Iced, or Frozen Waters**, are certain agreeable and wholesom *Waters*, as Orange *Water*, or the like, artificially froze in Summer-time, particularly in hot Countries, to be used in Collations, &c. as Coolers.—The way of making 'em is thus: The Vessels containing the Liquors design'd to be froze, are first set in a Pail, in such manner as not to touch each other; then cover'd up, and the void Space in the Pail fill'd with common Ice, beaten, and mix'd with Salt.—Every half Hour they clear out what *Water* the thawing Ice sends to the bottom of the Pail, by means of a Hole at bottom; and at the same time stir up the Liquors with a Spoon, that they may freeze into Snow: For were they to shoot in form of Ice, or Icicles, they would have no Taste.—Then, covering the Vessels again, they fill up the Pail with more beaten Ice, and Salt, in lieu of that dissolved and evacuated. The more expeditious the Freezing is requir'd to be, the more Salt to be mix'd with the Ice. See FREEZING.

**Imperial Water**, *Aqua Imperialis*, is a *Water* distill'd from Cinnamon, Nutmeg, Citron-Bark, Cloves, *Calamus Aromaticus*, Santal, and divers other Simples, infus'd in White-wine and Baum-*Water*.—It is a pleasant Cordial-Dram, good against Diseases of the Brain, Stomach, and Womb.

**Juniper Water**, is a Compound *Water*, made of Brandy, and Juniper-Berries beaten therein, and distill'd. See BRANDY, and GENEVA.

**Lime Water**, is common *Water*, wherein Quick-lime has been slak'd; and afterwards filter'd. See LIME.

**Milk Water**, *Aqua Lactis*, is prepared of Mint, Worm-wood, Carduus Benedictus, Goats-Rue, and Meadow-sweet, bruised, infused in Milk, and drawn off by Infusion.—It is held Alexipharmic and Cephalic.

**Aqua Mirabilis**, or the *Wonderful Water*, is prepared of Cloves, Galangals, Cubebs, Mace, Cardomums, Nutmeg, Ginger, and Spirit of Wine, digested 24 Hours, then distill'd.—It is a good and agreeable Cordial; Carminative, &c.

**Nephritic Waters**, are such as strengthen the Reins, and help 'em to discharge by Urine any Impurities therein.—Such are those of the Honeysuckle, Pellitory, Raddish, Beans, Mallows, &c. See NEPHRITIC.

The *Nephritic Water* of Dr. Radcliff, popularly called Dr. Radcliff's *Water*, is taken into the last Edition of the College Dispensatory. It is prepar'd from the Kernels of Black Cherries, Peaches, and Bitter Almonds, beaten in a Mortar into a Paste, with Rhenish Wine; and Seeds of Smallage, Treacle, Mustard, Gromwel and Parsley, beaten likewise, and added thereto: To the Mixture are put Juniper-Berries, Garlick, Onions, Leeks, Pimpernel, Horse-raddish, *Calamus Aromaticus*, Cinnamon, Wall-Rue, Mace, and Nutmegs: the whole macerated in Rhenish, Spirit of Black Cherries, &c. and thus distill'd.—It is one of the most powerful Detergers and Cleansers known; good in the Dropsy, Jaundice, Asthma, Pleurisy, &c.

**Ophthalmic, or Eye Waters**, are such as are good in Disorders of the Eyes.—Such are those of Eyebright, Fennel, Vervain, Plantain, Celandine, Cyanus, &c. See OPHTHALMIC.

**Orange-Flower Water**, is made of common *Water*, Sugar, and Orange-Flowers, infused for about two Hours.—After the like manner, one may make *Waters* of divers other Flowers; as Violets, Jonquils, Jessamins, Tuberoses, &c.

**Peach Water**, is made after the same manner as *Apricot Water*; only with Peaches.

**Phagedenic Water**, is *Lime-Water*, to every Pound whereof is added twenty or thirty Grains of Corrosive Sublimate, in Pouder.—It serves to cleanse old Ulcers, to eat off fungous Flesh, &c. See PHAGÆDENIC.

**Plague Water**, *Aqua Epidemica*, is prepar'd from the Roots of Masterwort, Angelica, Pyony, and Butter-bur; Viper-Grass, *Virginia Snakeroot*, Rue, Rosemary, Baum, Carduus, Water Germander, Marigolds, Dragons, Goats-Rue, and Mint; the whole infus'd in Spirit of Wine and distill'd.—It is of frequent Use as an Alexipharmic: It revives the Spirits, and promotes a Diaphoresis. It is the Basis of most Juleps now prescrib'd, especially in feverish Cases.

**Poppy Water**, is prepared from the Flowers of wild Poppies, infus'd in White-wine, or Brandy, and drawn off in a cold Still.—It is a Cordial, good against the Colic, and by some call'd *Red Plague-Water*.

**Pyony Water**, is made of Pyony and Lime-Flowers, Lilly of the Valley steep'd in Canary, and distill'd: To the *Water* thus procur'd, are added the Root of Male Pyony, White Dittany, Birthwort, Mistletoe, Rue, Castor, Cubebs, Cinnamon, Betony, &c.—It is a good Cordial, and much used in nervous Cases.

**Rose Water**.—Take of Roses three Parts, and of Fennel and Rue each, one Part; chop 'em small, and mix 'em well together; then distil 'em.—This *Water* is excellent for the Eyes, &c.

**Scordium Water**, is prepared from the Juices of Goats-Rue, Sorrel, Scordium, Citrons and Treacle, digested and distill'd.—It is an Alexipharmic.

**Second Water**. See SECUNDA *Aqua*.

**Specific Waters**, are such as have some peculiar Virtue, appropriate to certain Diseases.—Thus Purslain *Water*, wherein Mercury has been infused, is a Specific against Worms in young Children. See SPECIFIC.

**Splenetic Waters**, are those proper against Diseases of the Spleen.—Such are those of the Tamarisk, Cuscuta, Hart-tongue, Hops, &c. See SPLEEN.

**Stephens's Water**, *Aqua Stephani*, is made from Cinnamon, Ginger, Galangals, Cloves, Nutmegs, Paradise Grains, Anis-seeds, Sweet Fennel, Carraway, Thyme, Mint, Sage, Pennyroyal, Pellitory, Rosemary, Red Roses, Camomile, Origanum and Lavender, steep'd in Gascoign Wine, or Spirit of Wine, distill'd.—It is a good Cephalic and Cardiack, and is also reputed Hysterical.



**Stomachic Waters**, are such as have the Virtue to cleanse, strengthen, and confirm the Stomach.—As Red Rose-Water, Mint-Water, Aniseed-Water, &c. See STOMACH.

**Stygian WATER**. See *Aqua Regalis*.

**Styptic WATER**, is a Dissolution of red Vitriol, or the Colcothar remaining in the Retort after the Spirit has been extracted; with burnt Alumn and Sugar-candy.—With thirty Grains of each of these three Drugs, they mix half an Ounce of Urine of a young Man, as much Rose-Water, and two Ounces of Plantain-Water.—Its use is to stop Bleeding. See STYPTIC.

**Treacle WATER**, *Aqua Theriacalis*, is directed by the College Dispensatory to be made of green Walnuts, Rue, Carduus, Marigold, Baum, Butter-bur-Roots, Burdock, Angelica, Masterwort, Water-Germander, Venice Treacle, Mithridate, Canary, Vinegar, and Lemon-Juice, steep'd and distill'd.—It is the most used of any in the Shops; tho Dr. Quincy decries it as one of the worst concerted of all. Its Intention is to be an Alexipharmachic and Sudorific.

Other Dispensatories give a more simple *Treacle-Water*, made from Treacle, with an equal quantity of Brandy and Vinegar.—It is good for Ulcers, and Erosions of the Mouth; especially if a little *Armenian Bole* be dissolv'd therein. See TREACLE.

**Vulnerary WATER**, is a Water proper for the healing of Wounds, prepared from the Juice of Vulnerary Plants. See VULNERARY.

**WATER**, in Anatomy, &c. is applied to divers Liquors or Humours in the human Body. See HUMOUR.

Such is the *Aqua Phlegmatica*, Phlegmatic Water; which is a soft serous Humour, contained in the *Pericardium*, and wherein the Heart swims. See PERICARDIUM.

Anatomists are divided about it: Some will not have it natural, but suppose it separated forcibly during the Pangs of Death: Their Reason is, the difficulty they meet withal in tracing its Passage, or how it is carried off.—The latest Anatomists, however, seem to agree to its being a natural and necessary Humour: and one Reason is, that it is found even in the Pericardiums of *Fœtus's*.

It has likewise been disputed whence it should be separated.—The freshest Opinion is, that it is secreted by some Glands about the Basis of the Heart; and that it distils thence drop by drop, into the Cavity of the Pericardium, in such Quantity, as just to supply what is expended daily by the Motion and Warmth of the Heart; and so needs no Evacuation. Its Use is, to moisten, lubricate, and cool the Heart, and prevent any Inflammation that might arise from the dry Friction of the Heart and Pericardium. So that it does the same Office to the Heart, that the Water does wherein the *Fœtus* swims; which without it would not have liberty to move at all. See HEART.

**WATER** is also used in divers Ceremonies, both Civil and Religious.—Such is the *Baptismal Water*, *Holy Water*, &c. See BAPTISM, &c.

**Holy WATER**, is a Water prepared every Sunday in the *Romish* Church, with divers Prayers, Exorcisms, &c. used by the People to cross themselves withal at their entrance, and going out of Church; and pretended to have the Virtue of washing away venial Sins, driving away Devils, preserving from Thunder, dissolving Charms, securing from, or curing Diseases, &c.

The Use of *Holy Water* appears to be of a pretty ancient standing in the Church: witness S. Jerom, in his Life of S. Hilarion, and *Gretser de Benedict.* Cap. x, &c.

M. Godcau attributes its Original to Pope Alexander, a Martyr under the Emperor Adrian.

Many of the Reformed take the Use of *Holy Water* to have been borrow'd from the *Lustral Water* of the ancient Romans. See LUSTRALIS.—Tho it might as well be borrow'd from the Sprinklings in use among the *Jezes*. See NUMBERS xix. 17.

Urban Godfrey Siber, a German, has a Dissertation printed at *Leipsic*, to shew, by Proofs brought from Church-History, that one may give *Holy Water* to drink to Brutes.

**Bitter WATERS of Jealousy**.—In the *Levitical Law*, we find mention made of a Water, which serv'd to prove whether or no a Woman were an Adulteress.—The Formula was this: The Priest, offering her the Holy Water, denounced,—“If thou hast gone aside to another, instead of thy Husband, and if thou be defiled, &c. the Lord make thee a Curse and an Oath among thy People, by making thy Thigh to rot, and thy Belly to swell: And this Water shall go into thy Bowels, to make thy Belly to swell, and thy Thigh to rot.” And the Woman shall say, Amen.—“These Curses the Priest shall write in a Book, and blot 'em out with the bitter Water.”—“When he hath made her drink the Water, it shall come to pass, that if she be defiled, the Water shall enter into her and become bitter, and her Belly shall swell, &c.”—“If

“she be not defiled, she shall be free, and conceive Seed.” Numbers ch. v.

**WATER Ordeal**, or Trial was of two Kinds; by hot, or by cold Water.

**Trial or Purgation by boiling, or hot Water**.—Among our Ancestors, there was a way of proving Crimes, by immersing the Body or the Arm in hot Water, with divers Religious Ceremonies. See TRIAL, PURGATION, &c.

In the Judgment by *boiling Water*, the Accused, or he who personated the Accused, was oblig'd to put his naked Arm into a Cauldron full of boiling Water; and to draw out a Stone thence, placed at a greater or less depth according to the Quality of the Crime.—This done, the Arm was wrap'd up, and the Judge set his Seal on the Cloth; and at the end of three Days they returned to view it; when, if it were found without any Scald, the Accused was declared Innocent.

The Nobles and great Persons purg'd themselves thus by hot Water; and the Populace by cold Water.

F. Mabillon will have this Ceremony introduced by Pope Eugenius II. in lieu of making Oath with the Hand laid on the Relicks of some Saint; which having been abused, was prohibited by Innocent III. at the Council of the *Lateran*.

“*Theotberge*, Wife of *Lethaire* of France, having been accused of Incest, committed before Marriage with her Brother Duke *Hubert*; as she could not be convicted by any Witnesses, certain of the Bishops were consulted as to the manner wherein the Judges should proceed in an Affair where the Crime, tho very dubious, did dishonour to the King.—The Bishops were of Opinion they should have recourse to the Proof by boiling Water; which consisted in this, That the Accused, to prove her Innocence, should plunge her Hand into a Basin of boiling Water, and take out a Ring put therein. Sometimes, indeed, they substituted another Person to make the Trial, in the room of the Accused: Accordingly, the Rank and Quality of *Theotberge* excusing her from making the Proof her self, she chose a Man to do it for her; who either out of Zeal for the Life and Honour of the Princess, or for Money, stood the Test, and drew out his Hand and the Ring, without harm.” F. Daniel's *Hist. of France*.

**Trial or Purgation by cold Water**.—After certain Prayers, and other Ceremonies, the Accused was swaddled, or ty'd up all in a Pelatoon or Lump; and thus cast into a River, Lake, or Vessel of cold Water; where, if he sunk, he was held criminal; if he floated, innocent. See JUDICIUM, PURGATION, PROOF, ORDEAL, COMBAT, &c.

**WATER**, among Jewelers, is properly the Colour or Lustre of Diamonds, and Pearls; thus call'd, by reason these were anciently supposed to be form'd, or concreted, of Water. See GEM, &c.

Thus, they say, such a Pearl is of a fine Water. See PEARL.—The Water of such a Diamond is muddy. See DIAMOND.

The Term is sometimes also used, tho less properly, for the Colour or Hue of other precious Stones. See PRECIOUS Stone.

**WATER-Bailiff**, is an Officer anciently establish'd in all Port-Towns, for the searching of Ships; as appears from 28 Hen. VI. cap. v.

There is such an Officer still on foot in the City of London, who supervises and searches all Fish brought thither; and gathers the Toll arising from the River of *Thames*.—He attends also on the Lord-Mayor, and hath the principal Care of marshalling the Guests at the Table.

He also arrests Men for Debt, or other Personal or Criminal Matters, on the River of *Thames*, by Warrant of his Superiors, &c.

**WATER Born**, in the Sea Language.—A Ship is said to be *Water born*, when she is where there is no more Water than will barely bear her from Ground; or when lying even with the Ground, she first begins to float or swim.

**WATER-Colours**, in Painting, are such Colours as are only diluted and mix'd up with Gum-Water.—In contradistinction to *Oil Colours*. See COLOUR.

The Use of *Water Colours*, makes what we call *Limning*; as that of *Oil Colours* does *Painting* properly so called. See LIMNING, and PAINTING.

**Dead-WATER**, in the Sea Language, is the Eddy Water that follows the Stern of the Ship; not passing away so fast as that which slides by her Sides.

**WATER-Ferret**. See FERRIN.

**WATER Gage**, an Instrument to measure the Depth or Quantity of any Water. See GAGE, SOUNDING, &c.

**WATER-Gang**, from the Saxon *Watergang*, a Course or Trench, to convey a Stream of Water. See CANAL, TRENCH, &c.

**WATER-Line**, of a Ship, is that Line which distinguishes that part of her under Water, from that above; when she is duly laden.



**WATER-Measure.**—Salt, Sea-Coal, &c. while aboard Vessels in the Pool, or River, are measur'd with the Corn-Bushel heap'd up; or else five striked Pecks are allow'd to the Bushel.—This is called *Water-Measure*; and exceeds *Winchester-Measure* by about three Gallons in the Bushel. See MEASURE, CHALDRON, &c.

**WATER-Poise.** See HYDROMETER.

Dr. Hook has contriv'd a *Water-poise*, which may be of good service in examining the Purity, &c. of *Water*. It consists of a round glass Ball, like a Bolt-head, about three Inches in Diameter, with a narrow Stem or Neck,  $\frac{1}{4}$  of an Inch; which being poised with red Lead, so as to make it but little heavier than pure sweet *Water*, and thus fitted to one end of a fine Balance, with a Counterpoise at the other; upon the least Addition of even  $\frac{1}{1000}$ th Part of Salt to a quantity of *Water*, half an Inch of the Neck will immerse above the *Water*, more than did before. *Philosoph. Transact.* N<sup>o</sup> 197.

**WATER-Scape,** of the Saxon *Waterschap*, denotes an Aqueduct. See AQUEDUCT.

**WATER-Shoot,** a young Sprig, which springs out of the Root or Stock of a Tree. See SHOOT, STOCK, &c.

**WATER-Shot,** in the Sea Language, a sort of riding at Anchor; when a Ship is moored neither cross the Tide, nor right up and down; but quarter'd betwixt both.

**WATER-Table,** in Architecture, is a sort of Ledge, left in Stone or Brick Walls, about 18 or 20 Inches from the Ground: from which Place, the Thickness of the Wall begins to abate. See WALL.

**WATER-Wet,** in a Ship, is a small Ledge of Timber, lying on the Deck, close by the Sides; to keep the *Water* from running down there.

**WATER-Wheel,** an Engine for raising *Water* in great quantity out of a deep Well. See PERSIAN Wheel.

**WATERING,** in Gardening, &c. the Application of *Water* to the Soil of Plants, &c. when not sufficiently moisten'd with Rain, Dew, &c. See SOIL, VEGETATION, &c.

After sowing Seed of any kind, tho' the Ground be ever so dry, they should never be *water'd* till they have been 48 Hours in the Ground; and the Ground is a little settled about 'em; otherwise, a too great glut of Nourishment at first will be apt to burst 'em. See SEED, and SOWING.

Care is to be taken, that the Leaves of young and tender Plants ben't *water'd* at all while the Weather is cold; only the Ground to be wet about 'em.

For hardy Plants and Seeds, if the Nights be cold, *water* in the Forenoon; otherwise in the Evening.

*Water* that comes out of deep Pits, or Wells, should stand a Day in an open Vessel, ere it be applied to tender Plants in the Spring. Dung of Sheep, Pidgeons, or Hens, or Ashes, Lime, &c. infused in the *Water*, will forward the Growth of Plants. See MANURE.

**WATERING,** in the Manufactures.—To *Water a Stuff*, is to give it a Lustre, by wetting it lightly, and then passing it thro' the Press, or the Calendar, whether hot or cold. See CALENDAR, TABB, PRESSING, &c.

**WATTLIES,** among Husbandmen, Grates or Hurdles, or Folds for Sheep. See PARK.

The Word is also used for the Gills of a Cock: and the naked red Flesh that hangs under a Turkey's Neck.

**WAVE, Unde,** in Physics, &c. a Cavity in the Surface of *Water* or other Fluid, with an Elevation aside thereof. See FLUID, and WATER.

The Origin of *Waves* may be thus conceived.—The Surface of a Pounding *Water* being naturally Plain, and parallel to the Horizon; if by any means it be render'd hollow, as at A, (Tab. *Hydrostatics*, Fig. 2.) its Cavity will be surrounded with an Elevation B B; this rais'd *Water* will descend by its Gravity, and with the Celerity acquir'd in descending, form a new Cavity; by which Motions, the *Water* will ascend at the Sides of this Cavity, and fill the Cavity A, while there is a new Elevation towards C; and when this last is depress'd, the *Water* rises anew towards the same Part. Thus arises a successive Motion in the Surface of the *Water*; and a Cavity, which carries an Elevation before it, is moved along from A towards C. This Cavity, with the Elevation next it, is called a *Wave*; and the Space taken up by the *Wave* on the Surface of the *Water*, and measur'd according to the Direction of the *Wave's* Motion, is called the *Breadth of the Wave*. See RIVER, and UNDOULATION.

The Motion of *Waves*, makes an Article in the New Philosophy; and the Laws thereof being now pretty well determin'd, we shall give the Reader the Substance of what is taught thereon.

1<sup>o</sup>, Then, the Cavity, as A, is compass'd every way with an Elevation; and the Motion abovemention'd expands it self every way; therefore the *Waves* are moved circularly.

2<sup>o</sup>, Suppose, now, A B, (Fig. 31.) an Obstacle, against which the *Wave*, whose beginning is at C, strikes; and we are to examine what Change the *Wave* suffers in any Point, as E, when it is come to the Obstacle in that Point. In all

Places thro' which the *Wave* passes in its whole Breadth, the *Wave* is rais'd; then a Cavity is form'd, which is again fill'd up; which Change, while the Surface of the *Water* undergoes, its Particles go and return thro' a small Space: The Direction of this Motion is along C E, and the Celerity may be represented by that Line.—Let this Motion be conceived to be resolv'd into two other Motions, along G E and D E, whose Celerities are respectively represented by those Lines. By the Motion along D E, the Particles do not act against the Obstacle; but after the Stroke, continue their Motion in that Direction with the same Celerity; and this Motion is here represented by E F, supposing E F and E D to be equal to one another: But by the Motion along G E, the Particles strike directly against the Obstacle, and this Motion is destroy'd; for tho' the Particles are not stick; yet, as in the Motion of the *Waves* they run thro' but a small Space, going backward and forward, they proceed so slowly, that the Figure of the Particles cannot be changed by the Blow; and so are subject to the Laws of Percussion of Bodies perfectly hard. See PERCUSSION.

But there is a Reflexion of the Particles, from another Cause: The *Water* which cannot go forward beyond the Obstacle, and is push'd on by that which follows it, gives way where there is the least Resistance; that is, ascends: And this Elevation, which is greater in some than other Places, is caused by the Motion along G E; because it is by that Motion alone that the Particles come against the Obstacle.—The *Water*, by its Descent, acquires the same Velocity with which it was rais'd; and the Particles of *Water* are repell'd from the Obstacle, with the same Force in the Direction E C, as that with which they struck against the Obstacle.—From this Motion, and the Motion abovemention'd along E F, arises a Motion along E H, whose Celerity is express'd by the Line E H, which is equal to the Line C E; and by the Reflexion, the Celerity of the *Wave* is not changed; but it returns along E H, in the same manner, as if taking away the Obstacle, it had moved along E h.

If from the Point C, C D be drawn perpendicular to the Obstacle, and then produced, so that D e shall be equal to C D; the Line H e continued, will go thro' e: And as this Demonstration holds good in all Points of the Obstacle; it follows, that the reflected *Wave* has the same Figure on that side of the Obstacle, as it would have had beyond the Line A B, if it had not struck against the Obstacle.—If the Obstacle be inclined to the Horizon, the *Water* rises and descends upon it, and suffers a Friction, whereby the Reflexion of the *Wave* is disturb'd, and often wholly destroy'd: And this is the Reason why very often the Banks of Rivers do not reflect the *Waves*.

If there be a Hole, as I, in the Obstacle B I, the Part of the *Wave* which goes thro' the Hole, continues its Motion directly, and expands it self towards Q Q; and there is a new *Wave* formed, which moves in a Semicircle whose Centre is the Hole. For, the rais'd Part of the *Wave*, when first goes thro' the Hole, immediately flows down along the Sides; and by descending, makes a Cavity, which is surrounded with an Elevation on every Part beyond the Hole, which moves every way in the same manner as was rais'd down in the Generation of the first *Wave*.

In the same manner, a *Wave* to which an Obstacle, as A O, is oppos'd, continues to move between O N, and expands it self towards R, in a Part of a Circle, whose Centre is not very far from O.—Hence we may easily deduce, what must be the Motion of a *Wave* behind an Obstacle, as M N.

*Waves* are often produced by the Motion of a tremulous Body, which also expand themselves circularly, tho' the Body goes and returns in a right Line; for the *Water* which is rais'd by the Agitation, descending, forms a Cavity, which is every where surrounded with a Rising.

Different *Waves* do not disturb one another, when they move according to different Directions.—The Reason is, that whatever Figure the Surface of the *Water* has acquir'd by the Motion of the *Waves*, there may in that be an Elevation and Depression; as also such a Motion as is requir'd in the Motion of a *Wave*.

To determine the Celerity of the *Waves*, another Motion, analogous to theirs must be examin'd.—Let there be a Liquid in the recurve cylindric Tube E H, (Fig. 32.) and let the Liquid in the Leg E E, be higher than in the other Leg, by the Distance I E; which difference is to be divid'd into two equal Parts at Z. The Liquid, by its Gravity, descends in the Leg E E, while it ascends equally in the Leg E H; so that when the Surface of the Liquid is arriv'd at I, it is at the same height in both Legs, which is the only Position wherein the Liquid can be at rest: But by the Celerity acquir'd in descending, it continues its Motion, and ascends higher in the Tube G H; and in E E is depress'd quite to I, except so much as it is hinder'd by the Friction against the Sides of the Tube. The Liquid in the Tube G H, which is higher, also descends by its Gravity, and to the



the Liquid in the Tube rises and falls, till it has lost all its Motion by the Friction.

The Quantity of Matter to be moved, is the whole Liquid in the Tube; the moving Force, is the Weight of the Column *E*, whose weight is always double the Distance *Ei*; which distance, therefore, increases and diminishes in the same Ratio with the moving Force.—But the Distance *Ei* is the Space to be run thro' by the Liquid, in order to its moving from the Position *EH*, to the Position of Rest; which Space, therefore, is always as the Force continually acting upon the Liquid: But it is demonstrated, that it is on this account that all the Vibrations of a Pendulum, oscillating in a Cycloid, are Isochronal; and therefore, here also, whatever be the Inequality of the Agitations, the Liquid always goes and returns in the same Time. The Time in which a Liquid thus agitated ascends or descends, is the Time in which a Pendulum vibrates, whose length is equal to half the Length of Liquid in the Tube, or to half the Sum of the Lines *EF*, *FG*, *GH*. This length is to be measur'd in the Axis of the Tube. See PENDULUM.

From these Principles, to determine the Celerity of the Waves, we must consider several equal Waves following one another immediately; as *A*, *B*, *C*, *D*, *E*, *F*, (Fig. 53.) which move from *A* towards *F*: The Wave *A* has run its breadth, when the Cavity *A* is come to *C*; which cannot be, unless the Water at *C* ascend to the height of the Top of the Wave, and again descends to the depth *C*; in which Motion, the Water is not agitated sensibly below the Line *bi*: Therefore this Motion agrees with the Motion in the Tube abovemention'd, and the Water ascends and descends, that is, the Wave goes thro' its Breadth, while a Pendulum of the Length of half *BC* performs two Oscillations, or whilst a Pendulum of the Length *BCD*, that is, four times as long as the first, performs one Vibration. Therefore, the Celerity of the Wave depends upon the Length of the Line *BCD*; which is greater, as the Breadth of the Wave is greater, and as the Water descends deeper in the Motion of the Waves.—In the broadest Waves, which do not rise high, such a Line as *BCD*, does not much differ from the Breadth of the Wave; and in that Case, a Wave moves its breadth, while a Pendulum equal to that Wave oscillates once. See OSCILLATION.

In every equable Motion, the Space gone thro' increases with the Time and the Celerity; wherefore, multiplying the Time by the Celerity, you have the Space gone thro': whence it follows, that the Celerity of the Waves are as the square Roots of their Breadth: For as the Times in which they go thro' their Breadths are in that Ratio, the same Ratio is requir'd in their Celerities, that the Products of the Times by their Celerities may be as the Breadth of the Waves, which are the Spaces gone thro'.

WAVED, or WAVY, a Term in Heraldry, when a Bordure, or any Ordinary or Charge in a Coat of Arms, has its Out-lines indented, in manner of the rising and falling of Waves.

This is also called *Undy*. See UNDY.

To WAVE, is also used in the Sea Language, for the making Signs for a Vessel to come near, or keep off. See SIGNAL.

WAVESON, in the Admiralty Law, a Term used for such Goods, as after Shipwreck do appear swimming on the Waves. See FLOTSON, JETSON, &c.

WAX, *Cera*, a soft yellowish Matter, whereof the Bees form Cells to receive their Honey. See CELL.

Wax is not the Excrement of this laborious Insect, as the Antients, and after them many of the Moderns, have imagin'd.

'Tis properly a Juice, exuding out of the Leaves of Plants, and adhering to the Surface thereof; from which it is scrap'd off by the Bees with their rough Thighs, to build their Combs withal.—It is chiefly afforded by Lavender and Rosemary; from which last, any body may gather Wax; and, with the assistance of the Microscope, the Wax may be plainly seen sticking on the Leaves of the Plant.—So that Wax is not an Animal, but a Vegetable Substance.

Naturalists have generally imagin'd the Wax to be gather'd from the Flower, some from the Petals, and others from the Apices; but *Boerhaave* affirms it a Juice peculiar to the Leaves, and not afforded by the Flowers, which only yield Honey. See HONEY.

The Honey is form'd of a liquid Matter suck'd into the Body; and only seems to arrive at its Perfection in the Portraits of the little Animal: Whereas the Wax, being a hard Substance, is gather'd only with the fore Legs and Chaps; convey'd thence to the middle Legs, and thence to the middle Joint of the hind Legs, where there is a small Cavity, like the bowl of a Spoon, to receive it; and where it is collected into Heaps, of the shape and size of Lentils.

The Bee arrived at the Hive with its Load of Wax, finds some difficulty in unburdening himself of so tenacious a Matter.—Frequently, being unable to lay it down himself, he calls for Assistance, by a particular Motion of the Legs and Wings; upon which, a number of his Companions strait run

to his succour, and each with his Jaws takes off a small quantity of the Wax; others succeeding; till their laden Fellow be quite disburden'd. See HONEY-COMB.

Wax makes a very considerable Article in Commerce; the Consumption thereof, throughout the several Parts of Europe, being incredible.—There are two Kinds, *white*, and *yellow*; the yellow is the native Wax just as it comes out of the Hive, after expressing the Honey, &c. the white is the same Wax, only purify'd, wash'd, and expos'd to the Air. The Preparation of each follows.

#### Yellow Wax.

To procure the Wax from the Combs for use; after separating the Honey from them, in the manner describ'd under the Article HONEY; they put all the Matter remaining in a large Kettle, with a sufficient quantity of Water; where, with a moderate Fire, they melt it, and then strain it thro' a linen Cloth, by a Press: ere cold, they scum it with a Tyle, or a piece of wet Wood, and cast it, while yet warm, in wooden, earthen, or metalline Molds; having first anointed 'em with Honey, Oil, or Water, to prevent the Wax from sticking.—Some, to purify it, make use of *Roman* Vitriol, or *Copperas*; but the true Secret is to melt, scum it, &c. properly, without any Ingredients at all.

The best is that of a high Colour, an agreeable Smell, brittle, and that does not stick to the Teeth when chew'd. 'Tis often sophisticated with Rosin, or Pitch colour'd with Rocou, or Turmeric.

By Chymistry, Wax yields a white thick Oil, resembling Butter; whence the Chymists call it *Butter of Wax*.—From this Oil is drawn a second, as clear as Water: Both the one and the other are excellent for Chilblains.—The Faeces remaining in the Bag after expressing the Wax, is used both by Farriers and Surgeons, with success against Strains.

#### White Wax.

The whitening or blanching of Wax, is perform'd by reducing the yellow sort, first, into little bits or grains, by melting it, and throwing it, while hot, into cold Water; or else by spreading it into very thin Leaves, or Skins. This Wax, thus granulated, or flatted, is exposed to the Air on linen Cloths; where it rests Night and Day, having equally need of Sun and Dew. Then they melt and granulate it over again several times; still laying it out to the Air in the Intervals between the Meltings.

When the Sun and Dew have at length perfectly blanch'd it, they melt it for the last time in a large Kettle; out of which they cast it with a Ladle, upon a Table cover'd over with little round Dents or Cavities, of the form of the Cakes of white Wax sold by the Apothecaries, &c. having first wet those Molds with cold Water, that the Wax may be the easier got out. Lastly, they lay out these Cakes to the Air for two Days and two Nights, to render it more transparent and drier.

This Wax is used in the making of Torches, Tapers, Flambeaux, Figures, and other Wax works. See TAPER, TORCH, &c.

It is also an Ingredient in Plasters, Cerats, and divers Pomatums and Unguents for the Complexion. See CERAT, &c.

Yellow Wax is made soft with Turpentine, yet retains its natural Colour.—Red Wax, is only the white melted with Turpentine and reddened with Vermilion or Orcanette.—Verdegrease makes it green; and burnt Paper or Lampblack, black.—Some Travellers tell us of a natural black Wax; assuring us there are Bees, both in the *East* and *West Indies*, that make an excellent Honey, included in black Cells. Of this Wax it is that the *Indians* make those little Vases, wherein they gather their Balsam of *Tiru*.

Virgin Wax, or *Propolis*, is a sort of reddish Wax, used by the Bees to stop up the Clefts or Holes of the Hive: 'Tis applied just as taken out of the Hive, without any Art, or Preparation of boiling, &c.—'Tis the most tenacious of any, and is held good for the Nerves. See PROPOLIS.

Sealing Wax, or *Spanish Wax*, is a Composition of Gum Lacca, melted and prepar'd with Rosin and Chalk, and colour'd red with ground Camabar. See LACCA.

Wax Candles. See CANDLE.

WAX-WORK.—Here we must not forget that pretty Invention of *M. Beaucell*, a Man famous at Paris for his Figures of Wax.—Being by Profession a Painter, he found the Secret of forming Molds on the Faces of living Persons, even the fairest and most delicate, without any danger either to Health or Complexion: In which Molds he cast Marks of Wax; to which by his Colours, and glass Eyes imitated from Nature, he gave a sort of Life: insomuch, as when cloth'd in proper habits, they bore such a resemblance, that it was difficult distinguishing between the Copy and the Original.

Grafting Wax, is a Composition serving to bind or fix the Bud or Graft in the Cleft of the Stock. See GRAFTING.

Instead



Instead of *Grafting Wax*, the Country Gardeners, &c. only use Clay, which they lay over a piece of linen Cloth, and so keep it moist; and to prevent its cracking with the heat of the Sun, tie Moss over it. But the *Wax* ordinarily used, is a Compost of one Pound and an half of Pitch, a quarter of a Pound of *Wax*, and an Ounce of Oil of Almonds, melted and mix'd together; with the Addition, in Spring or Autumn, of a moderate quantity of Turpentine.

For Cleft-Grafting, Whip-Grafting, and Grafting by Approach, Mr. *Astortimer* recommends temper'd Clay, or soft *Wax*; but for Rind-Grafting, Clay and Horse-dung.

*WAX SCOT*, or *WAX-SHOT*, *Ceragium*, in our ancient Customs, Money paid twice a Year towards the Charge of maintaining Lights, or Candles in the Church. See *LUMINARY*.

*WAY, Via.* See *ROAD*, and *VIA*.

*Roman Ways*, are divided into *Consulares*, *Prætorias*, *Militares*, and *Publicas*. See *MILITARY*, &c.

We have four notable ones in *England*; antiently call'd *Chimini quatuor*, and entitled to the Privileges of *Pax Regis*.

The first, *Watling-street*, or *Warlam-street*, leading from *Dover* to *London*, *Dunstable*, *Toucester*, *Atterston*, and the *Severn*, near the *Wrekin* in *Shropshire*, extending as far as *Anglesea* in *Wales*.

The second call'd *Ikenild-street*, stretches from *Southampton* over the River *Itis* at *Nevebridge*, thence by *Camden* and *Litchfield*, then passes the *Derwent* near *Derby*, so to *Bolsover Castle*, and ends at *Linnmouth*.

The third, call'd *Fosse-Way*, because in some Places it was never perfected but lies as a large Ditch; leads from *Cornwall* thro' *Devonshire*, by *Tisbury* near *Stow* in the *Wolds*; and beside *Coventry* to *Leicester*, *Newark*, so to *Lincoln*, &c.

The fourth, call'd *Ermin* or *Erminage-street*, stretches from *S. David's* in *West Wales*, to *Southampton*.

*Milky WAY.* See *GALAXY*.

*WAY of a Ship*, is sometimes used for the same with the *Rake*, or *Run* of her forward and astward on. See *RAKE*.

But the Term is more commonly understood in respect of her sailing.—When she goes apace, they say, she hath a good *Way*; and they call the Account how fast she sails by the *Log*, *Keeping an Account of her Way*. See *LOG*.

And because most Ships are apt to fall a little to the Lee-ward of their true Course, they always, in calting up the *Log-board*, allow something for her *Lee-ward Way*; which is one Point, or more, according to her *Way* of sailing. See *RECKONING*.

*WAY of the Rounds*, in Fortification, is a Space left for the Passage of the Rounds, between the Rampart, and the Wall of a fortify'd Town. See *ROUND*.

This is not now much in use; because the Parapet not being above a Foot thick, it is soon overthrown by the Enemy's Cannon.

*WAY-WISER*, an Instrument for measuring of the Road, or Distance gone; call'd also *Perambulator*, and *Pedometer*. See *PERAMBULATOR*, and *PEDOMETER*.

*WAYWODE*, is properly a Title given the Governours of the chief Places in the Dominions of the Czar of *Muscovy*.

The *Palatines*, or Governours of Provinces in *Poland*, also bear the Quality of *Waywodes*, or *Waiswodes*. See *PALATINE*.

The *Peles* likewise call the Princes of *Walachia* and *Moldavia*, *Waywodes*; as esteeming them no other than on the Foot of Governours: Pretending that *Walachia* and *Moldavia* are Provinces of *Poland*; which have withdrawn themselves from the Obedience of the Republick.

Every where else they are call'd *Hospodars*. See *HOSPODAR*.

*De Cange* says, that the Name *Waywode* is used in *Dalmatia*, *Croatia*, and *Hungary*, for a General of an Army: And *Leunclavius*, in his *Pandeects of Turkey* tells us, it usually signifies Captain.

*WEALD*, or *WELD*, the woody Part of a Country; as the *Weald of Kent*.—It is mis-printed in some Books and Maps, the *Wolds of Kent*, *Suffex*, and *Surry*.

*WEANEL*, a Country Word, for a young Beast newly weaned, or taken from sucking its Dam.

*WEANING*, *Ablactation*. See *ABLACTATION*.

*WEAPONS*. See *ARMS*, and *ARMOUR*.

*WEAPON-SORE*, a kind of Unguent, supposed to cure Wounds sympathetically, by being applied, not to the Wound, but to the *Wetson* that made it. See *SYMPATHETIC Pouder*, *TRANSPANTATION*, &c.

*WEAR*, or *WARE*, a great Stank, or Dam in a River; fitted for the taking of Fish, or for conveying the Stream to a Mill. See *FISHING*.

*WEATHER*, the State or Disposition of the Atmosphere, with regard to Moisture or Drought, Heat or Cold, Wind or Calm, Rain, Hail, Frost, Snow, Fog, &c. See *ATMOSPHERE*, *RAIN*, *HEAT*, *WIND*, *HAIL*, *FROST*, &c.

As 'tis in the Atmosphere that all Plants and Animals live and breathe, and as that appears to be the great Principle

of most Animal and Vegetable Productions, Alterations, &c. (See *AIR*.)—There does not seem any thing in all Philosophy of more immediate Concernment to us, than the State of the *Weather*.—In effect, all living Things are only Affsemblages or Bundles of Vessels, whose Juices are kept moving by the Pressure of the Atmosphere; and which, by that Motion, maintain Life. So that any Alterations in the Rarity or Density, the Heat, Purity, &c. of that, must necessarily be attended with proportionable ones in these.

What vast, yet regular Alterations, a little Turn of *Weather* makes in a Tube fill'd with Mercury, or Spirit of Wine, or in a piece of String, &c. Every body knows, in the common Instance of Barometers, Thermometers, Hygrometers, &c. and it is owing partly to our Inattention, and partly to our unequal, intemperate Course of living, that we don't feel as great and as regular ones in the Tubes, Chords, and Fibres of our own Bodies.

'Tis certain, a great part of the Brute Creation have a Sensibility, and Sagacity this way beyond Mankind; and yet, without any Means or Disposition thereto more than we; except that their Vessels, Fibres, &c. being in other respects in one equable Habitude; the same, or a proportionable Cause from without, has always a like, or proportionable Effect on them: that is, their Vessels are regular Barometers, &c. affected only from one external Principle, viz. the Disposition of the Atmosphere; whereas, ours are acted on by divers from within, as well as without; some of which check, impede, and prevent the Action of others. See *BAROMETER*, *THERMOMETER*, *HYGROMETER*, &c.

We know of nothing more wanting than a just Theory of the *Weather* on Mechanical Principles.—But in order to that, a compleat History of the *Weather* will be requir'd.

Were Registers carefully kept in divers Parts of the Globe, for a good Series of Years, we should be enabled to determine the Directions, Breadth, and Bounds of the Winds, and of the *Weather* they bring with them; the Correspondence between the *Weather* of divers Places, and the Dependence between one sort and another at the same Place.—In time, no doubt, we might learn to foretel divers great Emergencies; as, extraordinary Heats, Rains, Frosts, Droughts, Dearth, Plagues, and other epidemical Diseases, &c.

The Members of our *Royal Society*, the *French Academy of Sciences*, and divers other Authors of note, have made some Essays this way; but the Dryness and Quaintness of the Subject, induc'd them all to drop it.

*Eraf. Baribelin*, for instance, has Observations of the *Weather* of every Day throughout the Year 1671: Mr. *W. Merle* made the like at *Oxford*, for seven Years, viz. the Years 1337, 1338, 1339, 1340, 1341, 1342, 1343. Dr. *Plot* did the same at the same Place, for the Year 1684; Mr. *Hillier*, at *Cape Corse*, for the Years 1686, 1687; Mr. *Hunt*, &c. at *Gresham College*, for the Years 1695, 1696; Mr. *Derham*, at *Upminster* in *Essex*, for the Years 1691, 1692, 1697, 1698, 1699, 1703, 1704, 1705; Mr. *Towney* in *Lancashire*, 1697, 1698; Mr. *Cunningham*, at *Emm* in *China*, for the Years 1698, 1699, 1700, 1701; Mr. *Luke* at *Oats* in *Essex*, 1692; Dr. *Schenckzer* at *Zurich*, in 1708; and Dr. *Tilly* at *Pisa*, the same Year. See the *Philosoph. Transact.*

The Form of Mr. *Derham's* Observations, we give as a Specimen of a Journal of this kind; observing that he notes the Strength of the Winds by 0, 1, 2, 3, &c. and the Quantity of Rain, as it fell thro' a Tunnel, in Pounds and Centesimals.

*Phænomena of the Weather, October 1697.*

| Day. | Hour. | Weather. | Wind.       | Barometer. | Rain.   |
|------|-------|----------|-------------|------------|---------|
| 27   | 7     | Fair     | S. W.       | 29         | 37.1 52 |
|      | 12    | Rain     | S. W. b. W. | 29         | 34      |
|      | 9     | Stormy   |             | 29         | 88.0 21 |

As a Specimen of the Use of such Histories, we shall add some general Remarks drawn from them by Mr. *Derham*; and,—1<sup>o</sup>, That *Foggy Weather* makes the Mercury rise in the Barometer, as well as the North Wind.—The Cause, he suggests, probably enough, to be the Accession of the Load of Vapour to the former Weight of the Atmosphere. See *FOG*.

*Misting Weather*, he likewise observes to have the like Effect. See *BAROMETER*.

2<sup>o</sup>, The Colds and Heats in *England* and *Switzerland* begin and end nearly about the same time: Nay, and any remarkable *Weather*, especially if it continue any while, affects one Place as well as another. See *HEAT*.

3<sup>o</sup>, That the remarkably cold Days in *June*, Anno 1708, were found in *Switzerland* to precede ours, commonly by about five Days or more; and that the remarkable Heats in the following Months, began to abate in both Places about the same time; only somewhat sooner here than there. See *COLD*.



4°, That tho the Winds in both Places frequently agree, yet they often differ. See WIND.

5°, That the Barometer is always lower at *Zurich* than at *Upminster*, by sometimes one, and sometimes above two *English* Inches; but the common difference is about half an Inch. Which may be solved either by supposing *Zurich* situate one fourth of a Mile higher above the Level of the Sea, than *Upminster*; or else, by supposing that Part of the terraqueous Globe, as lying nearer the Line, to be higher, and more distant from the Centre than ours is, which lies nearer the Pole. See EARTH, MOUNTAIN, &c.

6°, That the Barometer generally rises and falls together at far distant Places: Tho this Agreement of the Barometer is not so constant between *Zurich* and *Upminster*, as in Places nearer home, viz. at *London* and *Paris*; where, again, the Agreement is not so great as between *Upminster* and *Lancashire*.

7°, That the Variations of the Barometer are greatest, as the Places are nearest the Pole.—Thus, e. g. the Mercury at *London* has a greater Range by two or three Lines than at *Paris*; and at *Paris* a greater than at *Zurich*. In some Places near the Equinoctial, there is scarce any Variation at all. See BAROMETER.

8°, That the Rain in *Switzerland* and *Italy* is much greater in Quantity, throughout the Year, than that in *Essex*; yet the Rains are more frequent, i. e. there are more rainy Days in *Essex*, than at either of those Places.—The Proportion of the annual Rains that fall in the several Places we have any good Observations of stand thus: At *Zurich* the Depth of the annual Rain, at a Medium, is about 32 $\frac{1}{2}$  *English* Inches; at *Pisa* 43 $\frac{1}{4}$ ; at *Paris* 23; at *Lille* in *Flanders* 23 $\frac{1}{2}$  Inches; at *Torvenley* in *Lancashire* 42 $\frac{1}{2}$ ; at *Upminster* 19 $\frac{1}{4}$ . See RAIN.

9°, That Cold contributes greatly to Rain; and that, apparently, by condensing the suspended Vapours, and making 'em descend.—Thus, very cold Months or Seasons are generally follow'd immediately by very rainy ones; and cold Summers are always wet ones. See COLD, and VAPOUR.

10°, That high ridges of Mountains, as the *Alps*, and the Snows they are cover'd withal, not only affect the neighbouring Places by the Colds, Rains, Vapours, &c. they produce; but even distant Countries, as *England*, often partake of their Effects.—Thus, the extraordinary Colds *Decemb.* 1708, and the Relaxations thereof, were felt at *Italy* and *Switzerland*, several Days ere they reach'd us: An Indication, Mr. *Derham* thinks, that they were derived from them to us.

#### Indications or Prognosticks of the Weather.

We don't here mean to obtrude the idle, arbitrary Observations of fanciful People upon our Reader.—That Cloud of popular Predictions from the Brute World, which partly the Sagacity, and partly the Credulity of our Countrymen have establish'd, we set aside, as not flowing from any natural, necessary Relations, that we know of, in the Things themselves.—Such is the foretelling of Rain and Wind from Water-Fowls flocking to Land, or Land-Fowls to the Water; from Birds pruning their Feathers, Geese gagging, Crows cawing loud, and flying in Companies, Swallows chattering, and flying low, Peacocks crying much, Asses braying, Deer fighting, Foxes and Wolves howling, Fishes playing, Ants and Bees keeping within Doors, Moles calling up Earth, Earth-Worms creeping out, &c.—We shall offer nothing on this Head, but what has some visible Foundation in the Nature of Things; and which lets some Light into the Cause and Reason of *Weather* it self, or discovers some notable Effects thereof.

1°, Then, a thick dark Sky, *sudum cœlum*, lasting for some time, without either Sun or Rain, always becomes first fair, then foul, i. e. changes to a fair clear Sky, ere it turns to Rain.—This, the Rev. Mr. *Clarke*, who kept a Register of the *Weather* for 30 Years, since put into Mr. *Derham's* Hands by his Grandson the learned Dr. *Sam. Clarke*; this, he says, he scarce ever knew to fail: at least, when the Wind was in any of the Easterly Points: But Mr. *Derham* has observ'd the Rule to hold good, be the Wind where it will. And the Cause is obvious.—The Atmosphere is replete with Vapours, which, tho sufficient to reflect and intercept the Sun's Rays from us, yet want Density to descend; and while the Vapours continue in the same State, the *Weather* will do so too. Accordingly, such *Weather* is generally attended with moderate warmth, and with little or no Wind to disturb the Vapours, and an heavy Atmosphere to sustain 'em; the Barometer being commonly high.—But when the Cold approaches, and by condensing drives the Vapours into Clouds or Drops, then, way is made for the Sun-beams; till the same Vapours, being by further Condensation form'd into Rain, fall down into Drops.

2°, A Change in the Warmth of the *Weather*, is generally follow'd by a Change in the Wind.—Thus, the Northerly and Southerly Winds, commonly esteem'd the Causes of cold and warm *Weather*, are really the Effects of the Cold or Warmth of the Atmosphere: Of which, Mr. *Derham* as-

ures us he has had so many Confirmations, that he makes no doubt of it. Thus, it is common to see a warm Southerly Wind suddenly chang'd to the North, by the fall of Snow or Hail; or to see the Wind in a cold frosty Morning, North, when the Sun has well warm'd the Earth and Air, wheel towards the South; and again turn Northerly or Easterly in the cold Evening.

3°, Most Vegetables expand their Flowers and Down in Sunshiny Weather, and towards the Evening; and against Rain, close 'em again; especially at the beginning of their flowering; when their Seeds are tender and sensible.—This is visible enough in the Down of Dandelion, and other Downs: and eminently in the Flowers of Pimpernel; the opening and shutting of which, *Gerard* observes, are the Countrymen's *Weather-wiser*, whereby he foretels the *Weather* of the following Day.—The Rule is, if the Flowers be close shut up, it betokens Rain and foul *Weather*: if they be spread abroad, fair *Weather*. *Ger. Herb. Lib. II.*

*Est & alia [arbor in Tylis] similis, foliosior ramem, roseique floris; quam noctu comprimens, aperire incipit solis exortu, meridie expandit. Incolæ dormire eam dicunt. Plin. Nat. Hist. Lib. II. cap. 11.*

The Stalk of Trefoil, my Lord *Bacon* observes, swells against Rain, and grows more upright: and the like may be observ'd, tho not so sensibly, in the Stalks of most other Plants.—He adds, that in the Stubble Fields there is found a small red Flower, call'd by the Country People *Wincoppe*; which opening in a Morning, is a sure indication of a fine Day.

That Vegetables should be affected by the same Causes that affect the *Weather*, is very conceivable; it we consider them as so many Hygrometers and Thermometers, consisting of an infinite Number of *Tracheæ*, or Air-Vessels; by which they have an immediate Communication with the Air, and partake of its Moisture, Heat, &c. These *Tracheæ* are very visible in the Leaf of the Scabiose, Vine, &c. See PLANT, VEGETABLE, &c.

Hence it is, that all Wood, even the hardest and most solid, swells in moist *Weather*; the Vapours easily insinuating into the Pores thereof; especially of that which is lightest and dryest.—And hence we derive a very extraordinary use of Wood, viz. for breaking Rocks and Mill-stones. See WOOD.

Their Method at the Quarries is this.—Having cut a Rock into a Cylinder, they divide that into several lesser Cylinders, by making Holes at proper distances round the great one: These Holes they fill with so many pieces of fallow Wood, dried in an Oven; which, in moist *Weather*, becoming impregnated with the humid Corpuscles of the Air, swell, and, like Wedges, break or cleave the Rock into several Stones.

Indications and Predictions of the Weather from the Barometer. See BAROMETER.

WEATHER-Cock, or WEATHER-Vane, a moveable Vane, in form of a Cock, or other shape; placed on high, to be turn'd round according to the Direction of the Wind, and point out what Quarter the Wind blows from. See WIND.

WEATHER-Glasses, are Instruments contriv'd to indicate the State, or Disposition of the Atmosphere, as to Heat, Cold, Gravity, Moisture, &c. to measure the Changes befalling in those respects; and by those means to predict the Alteration of *Weather*, as Rains, Winds, Snow, &c.

Under the Class of *Weather-Glasses*, are comprehended Barometers, Thermometers, Hygrometers, Manometers, and Anemometers, of each whereof there are divers Kinds: See their Theories, Constructions, Uses, Kinds, &c. under the respective Articles, BAROMETER, THERMOMETER, HYGROMETER, &c.

WEATHER-Board, in the Sea Language, that side of a Ship which is to the Windward.

WEATHER Gage, at Sea.—A Ship is said to have the *Weather-Gage* of another, when she is to the Windward of her. See GAGE.

WEATHERING, a Doubling, or getting to the Windward of a Point or Place.

The WEATHERING of a Hawk, among Falconers, is the setting her abroad to take the Air. See HAWK, and HAWKING.

WEAVING, the Art or Act of working a Web of Cloth, Silk, Linen, or other Stuff, on a Loom, with a Shuttle. See LOOM, SHUTTLE, STUFF, &c.

'Tis difficult to say, with any Assurance, who it is we owe this admirable Invention to, unless we chuse to ascribe it to the Spider, that poisonous, but ingenious little Insect, which draws certain infinitely fine Threads from its own Substance thro' its *Spins*. See Spider's-WEB.

WEAVING of Cloth. } See CLOTH.  
WEAVING of Tapestry, &c. } See TAPESTRY, &c.  
Stocking WEAVING. } See STOCKINGS.

WEB, a sort of Tissue, or Texture, form'd of Threads interwove with each other; some whereof are extended in length,

Y y y y



length, and called the *Warp*; and others drawn a-cross them, call'd the *Woof*. See TEXTURE, WOOF, WARP, &c.

*Spider's-Web*, or *Cob-Web*, is a very delicate and wonderful Tissue, which that Insect spins out of its own Bowels; serving it as a sort of Toil, or Net to catch Flies, &c. withal.

For the manner wherein the Spider spins his Web; the admirable Mechanism of the Parts subservient thereto, and the Uses thereof; see SILK.

Dr. Lister tells us, that attending nearly to a Spider weaving a Net, he observ'd it suddenly to desist in the mid-work, and turning its Tail to the Wind, darted out a Thread, with the violence and stream we see Water spout out of a Jet: This Thread, taken up by the Wind, was immediately emitted some Fathoms long; still issuing out of the Belly of the Animal.—By and by the Spider leap'd into the Air; and the Thread mounted her up swiftly.—After this Discovery, he made the like Observation in near thirty different sorts of Spiders; and found the Air fill'd with young and old, sailing on their Threads, and doubtless seizing Gnats and other Insects in their passage: there being often, manifest Signs of Slaughter, Legs and Wings of Flies, &c. on these Threads, as well as in their Webs below.

Dr. Hulse discover'd the same thing about the same time.—In a Letter of Dr. Lister to Mr. Ray, he thinks there is a fair Hint of the darting of Spiders in *Aristotle, Hist. An. Lib. IX. cap. 39.* and in *Pliny, Lib. II. cap. 24.* But for their sailing, the Antients are silent, and thinks it was first seen by him.—In another Letter to Mr. Ray, dated Jan. 1670, speaking of the Height Spiders are apt to fly to, he says, "Last October, &c. I took notice that the Air was very full of Webs; I forthwith mounted to the Top of the highest Steeple on the Minster, [in York] and could there discern 'em yet exceeding high above me."

WEDGE, *Cuneus*, in Mechanicks, the last of the five Powers or simple Machines. See MECHANICAL POWER.

The *Wedge* is a triangular Prism, whose Bases are equilateral acute-angled Triangles. See PRISM.

Authors are divided about the Principle whence the *Wedge* derives its Power.—*Aristotle* considers it as two Levers of the first kind, inclined toward each other, and acting opposite ways.—*Guido Ubaldo*, *Mersennus*, &c. will have 'em Levers of the second kind.—But *Fr. de Lanis* shews, it cannot be reduced to any Lever at all. See LEVER.

Others refer the *Wedge* to the inclined Plane.—Others, again, with *de Stair*, deny the *Wedge* to have scarce any Force at all; and ascribe much the greatest Part to the Mallet that drives it.

But the latest Authors agree to refer the Effect of the *Wedge* to the *Cochlea*, or *Screw*. See SCREW.

Its Doctrine is contain'd in this Proposition.—If a Power be applied to a *Wedge*, in such manner as that the Line of Direction C D, (Tab. Mechanicks, Fig. 53.) perpendicular to A B, is to the Resistance to be overcome, as A B to C D; the Power will be equal to the Resistance.

Or thus: If the Power directly applied to the Head of the *Wedge*, be to the Resistance to be overcome by the *Wedge*, as the Thickness of the *Wedge* is to its Height; then the Power will be equivalent to its Resistance; and if increased, will overcome it.

For the Firmness whereby the Parts of the Obstacle, suppose Wood, adhere to one another, is the Resistance to be overcome by the *Wedge*. See FIRMNESS, and RESISTANCE.

Now, it is evident, that while the *Wedge* is drove into the Wood, the Way or Length it has gone is B A, (Fig. 54.) and D C is the Way or Length gone in the same time by the Impediment; that is, the Parts C and D of the Wood, are to be divided asunder: and according as the *Wedge* is drove down further and further along its Height; so the Parts C and D of the Wood, are divided more and more along the Thickness of the *Wedge*.

Hence, if the Thickness of the *Wedge* (that is, the Way of the Impediment, and consequently its Velocity) be to the Height of the *Wedge*, (that is, the Way, and consequently the Velocity of the Power) as the Power to the Impediment or Resistance; then the Momentum of the Power and the Impediment, will be equal the one to the other; and consequently, the Power, being increased, will overcome the Resistance.

Hence, 1<sup>o</sup>, As the Power equivalent to half the Resistance, is to it as *ab* to A b, that is, as the whole Sine to the Tangent of half the Angle of the *Wedge*, a A b.—And, 2<sup>o</sup>, as the Tangent of a less Angle is less than that of a greater, the Power must have a greater Proportion to half the Resistance if the Angle be greater, than if less.—Consequently, the acuter the *Wedge* is, the more does it increase the Power.

To the *Wedge* may be refer'd all Edge-Tools, and Instruments which have a sharp Point, in order to cut, cleave, slit, chop, pierce, bore, or the like; as *Knives, Hatchets, Swords, Bedknives*, &c.

WEDLOCK. See MARRIAGE, WIFE, HUSBAND, &c.

WEDNESDAY. See MONTH, DAY, &c.

ASH-WEDNESDAY. See ASH-Wednesday.

WEED, a common Name for all rank and wild Herbs, that grow of themselves, to the Detriment of other useful Herbs they grow among. See PLANT, HERB, &c.

Fuller's-WEED. See THISTLE, or TEAZLE.

WEED, in the Miners Language, is the Degeneracy of a Load or Vein of fine Metal, into an useless Marcasite. See VEIN, MINE, METAL, MARCASITE, &c.

WEEDS, are also a peculiar Habit, wore by the Relicts of Persons deceas'd, by way of Mourning. See MOURNING.

WEEK, *Septimana, Hebdomada*, in Chronology, a Division of Time, comprising seven Days. See TIME, and DAY.

The Origin of this Division of *Weeks*, or of computing Time by Sevenths, is greatly controverted.—Some will have it to take its rise from the four Quarters or Intervals of the Moon, between her Change of Phases, which being about seven Days distant, gave occasion to the Division. See MOON, QUARTER, &c.

Be this as it will, the Division is certainly very antient.—The *Syrians, Egyptians*, and most of the Oriental Nations, appear to have used it from all Antiquity: tho it did not get footing in the West, till Christianity brought it in: The *Romans* reckoning their Days, not by Sevenths, but by Nincths; and the antient *Greeks* by Decads, or Tenth.

Indeed, the *Jews* divided their Time by *Weeks*, but it was upon a different Principle from the other Eastern Nations. God himself having appointed 'em to work six Days, and to rest the Seventh; in order to keep up the Sense and Remembrance of the Creation, which being effected in six Days, he rested the seventh. See SABBATH.

Some Authors will even have the use of *Weeks* among the other Eastern Nations, to have proceeded from the *Jews*; but with little Appearance of Probability.—'Tis with better Reason that others suppose the Use of *Weeks* among the Heathens of the East, to be a Remain of the Tradition of the Creation, which they had still retain'd with divers others.

This is the Opinion of *Grotius, De Veritat. Relig. Christ. Lib. I.* who likewise proves, that not only thro'out the East, but even among the *Greeks, Italians, Celts, Slavi*, and even the *Romans* themselves, the Days were divided into *Weeks*; and that the seventh Day was in extraordinary Veneration.—This appears from *Joseph. ant. Appionem II. Philo de Creatione, Clem. Alexand. Strom. Lib. V.*—Tho *Helmoldus, Lib. I. cap. 84. Philostratus, Lib. III. cap. 13. Dion. Lib. XXXVIII. Tibullus, Lucian, Homer, Callimachus, Suetonius, Herodotus*, &c. who mention the Custom as very antient, suppose it to have been deriv'd from the *Egyptians*.

The *Days of the Week* were denominated by the *Jews* from the Order of their Succession from the Sabbath.—Thus, the Day next after the Sabbath they call'd the first of the Sabbath, the next the second of the Sabbath, and so of the rest; except the sixth, which they call'd *Parasceve* or Preparation of the Sabbath. See PARASCEVE.

The like Method is still kept up by the Christian *Arabs, Persians, Ethiopians*, &c.—The antient Heathens denominated the Days of the *Week* from the seven Planets; which Names are still generally retain'd among the Christians of the West.—Thus, the first Day was call'd *Sun-day, Dies Solis*; the second *Mon-day, Dies Luna*, &c. a Practice the more natural on *Dion's* Principle, who says, The *Egyptians* took the Division of the *Week* it self from the seven Planets.

In effect, the true Reason of these Denominations is founded in Astrology.—For the Astrologers, distributing the Government and Direction of all the Hours in the *Week* among the seven Planets, 1. ♄ ♀ ☉ ♁ ♃ ♅ and ♄; so as that the Government of the first Hour of the first Day fell to *Saturn*, that of the second to *Jupiter*, &c. They gave each Day the Name of the Planet which presid'd over the first Hour thereof: and that, according to the Order specified above; and which is included in the following Technical Verse.

Post S I M S U M sequitur, pallida Luna sub?

Wherein, the Capital Letters, S I M S U M and L, are the initial Letters of the Planets.—Thus, the Order of the Planets in the *Week*, has little Relation to the Order in which they follow in the Heavens: The former being founded on an imaginary Power each Planet has in its turn on the first Hour of each Day. See PLANET, HOUR, HOUSE, ASCENDENT, HOROSCOPE, &c.

*Dion. Cassius* gives another Reason of the Denomination fetch'd from the celestial Harmony.—For it being observ'd that the Harmony of the Diatessaron, which consists in the Ratio of 4 to 3, is of great force and effect in Music: it was judg'd meet to proceed directly from *Saturn* to the *Sun*; because there are three Planets between *Saturn* and the *Sun*, and four from the *Sun* to the *Moon*. See DIATESSARON, HARMONY of the Spheres, &c.



To find the Accomplishment of *Daniel's Prophecy* of the Messiah, the Destruction, Rebuilding, &c. of the Temple, C. IX. v. 24, &c. the Criticks generally agree to understand *Weeks of Years*, instead of *Weeks of Days*. See PROPHECY, YEAR, &c.

*Passion WEEK*, or the *Holy WEEK*, is the last *Week* in *Lent*, wherein the Church celebrates the Mystery of our Saviour's Death and Passion. See LENT, and PASSION.

It is sometimes also called the *great Week*.

Its Institution is generally refer'd, both by Protestants and Papists, to the Times of the Apostles.—All the Days of that *Week* were held as Fasts: no Work was done on 'em; no Justice distributed; but the Prisoners were ordinarily set at liberty, &c. even Pleasures otherwise allowed, were now prohibited.

The *Osculum Charitatis* was now forborn; and divers Mortifications practis'd by all sorts of People, and even the Emperors themselves.

*WEEK*, or *WIECK* of a *Candle*, &c. the *Cotton Match* in a *Candle*, or *Lamp*. See CANDLE, LAMP, &c.

WEeping. See TEARS.

WEFT, a kind of Web, or Thing woven; as a *West* or Tress of Hair. See WEB, HAIR, TRESS, &c.

WEIF. See WAIF.

WEIGH, WEY, WAGA, a Weight of Cheese, Wool, &c. containing 256 Pounds Averdupois—of Corn, the *Weight* contains 40 Bushels; of Barley or Malt, six Quarters. In some Places, the *Weight* of Cheese is 300 Pounds. See MEASURE.

—*Et decimam casci sui de Herting, præter unam peisam que pertinet ad Ecclesiam de A. Mon. Angl.* where *peisa* seems to be used for a *Weight*.

*Coke* mentions eighty *Weights* of Bay-Salt. See WAGA.

WEIGHER, an Officer in divers Cities, appointed to weigh the Commodities bought or sold, in a publick Balance, &c.

These *Weighers* are generally oblig'd by Oath to do Justice to both Parties; and to keep a Register of the Things they weigh.—In *Amsterdam* there are twelve *Weighers* establish'd into a kind of Office.

As it was formerly allow'd 'em to touch the Strings of the Balance in weighing, it was easy for 'em to favour either the Buyer or Seller, according as the one gave 'em more Money than the other.—To prevent which Abuse, it was charg'd on 'em, by an Ordonnance of the Bourguemaisters in 1719, not to touch the Balance in any manner whatever.

WEIGHING, the Act of examining a Body in the Balance, to find its weight. See BALANCE, and WEIGHT.

The Distillers in *London* weigh their Vessels when full; and for half a Hogshead, which is 31 Gallons and an half, allow 200 one quarter and 11 Pounds for the Cask and Liquor.—For a Puncheon, they allow 600 one quarter and two Pounds: For a Canary Pipe 800 a half and 17 Pounds.

WEIGHING-CHAIR, a Machine contriv'd by *Sanctorius*, to determine the Quantity of Food taken at a Meal; and to warn the Feeder when he had eat his *Quantum*.

That ingenious Author having observed, with many others, that a great part of our Disorders arise from the Excess in the Quantity of our Foods, more than in the Quality thereof; as also how much a fix'd Portion, once well adjusted, would, if kept regularly, contribute to Health; bethought himself of an Expedient to that purpose.—The Result was the *Weighing-Chair*: which was a Chair fix'd at one Arm of a sort of Balance, wherein a Person being seated at meat, as soon as he had eat his Allowance, the increase of *Weight* made his Seat preponderate: So that descending to the Ground, he left his Table, Victuals, and all out of reach. See PERSPIRATION.

WEIGHING of the Air. See WEIGHT of Air.

WEIGHING Anchor, in the Sea Language, is the drawing up the Anchor out of the Ground it had been cast into; in order to set sail, or quit a Port, Road, or the like. See ANCHOR.

The Anchor is weigh'd or recover'd, by means of the Capstan. See CAPSTAN.

WEIGHT, Gravity, Pondus, in Physicks, a Quality in Natural Bodies, whereby they tend downwards, towards the Centre of the Earth. See BODY, DESCENT, EARTH, &c.

Or, *Weight* may be defined, in a less limited manner, to be a Power inherent in all Bodies, whereby they tend to some common Point, call'd the Centre of *Weight*, or Gravity; and that with a greater or less Velocity, as they are more or less dense, or as the Medium they pass thro' is more or less rare. See CENTRE, DENSITY, &c.

In the common Use of Language, *Weight* and *Gravity* are consider'd as one and the same thing.—Some Authors, however, make a difference between 'em; and hold *Gravity* only to express a *Nisus*, or endeavour to descend; but *Weight* an actual Descent.

But there is room for a better Distinction.—In effect, one may conceive *Gravity* to be the Quality, as inherent in the Body; and *Weight* the same Quality exerting it self, either against an Obstacle, or otherwise. See QUALITY, &c.

Hence *Weight* may be distinguish'd, like Gravity, into *Absolute*, and *Specific*. See GRAVITY.

Sir I. Newton demonstrates, that the *Weights* of all Bodies, at equal distances from the Centre of the Earth, are proportionable to the Quantity of Matter each contains.—Whence it follows, that the *Weights* of Bodies have not any dependance on their Forms, or Textures; and that all Spaces are not equally full of Matter. See VACUUM.

Hence also it follows, that the *Weight* of the same Body is different, on the Surface of different Parts of the Earth; by reason its Figure is not a Sphere, but a Spheroid. See SPHEROID.

The Law of this Difference, the same Author gives in the following Theorem.—'The Increase of *Weight*, as you proceed from the Equator to the Poles, is, nearly, as the Versed Sine of double the Latitude; or, which amounts to the same, As the Square of the right Sine of the Latitude.

Therefore, since the Latitude of *Paris* is  $48^{\circ} 50'$ , that of a Place under the Equator  $00^{\circ} 00'$ ; and that of a Place under the Pole  $90^{\circ} 00'$ ; and the Versed Sines of the double Latitudes are 11334,00000 and 20000, the Radius being 10000; and the *Weight* at the Pole is to the *Weight* at the Equator as 230 to 229; and the Excess of *Weight* at the Pole to that at the Equator, as 1 to 229: The Excess of Gravity in the Latitude of *Paris*, to that under the Equator, will be as  $1 \times \frac{11334}{20000}$  to 229, or 5667 to 2290000; and therefore, the whole *Weights* in those Places, will be to each other as 2295667 to 2290000.

Hence, also, as the Lengths of Pendulums that perform their Vibrations in equal Times, are as their *Weights*; and the Length of a Pendulum which in the Latitude of *Paris* vibrates Seconds, is three *Paris* Feet and eight Lines: The Length of a Pendulum that vibrates Seconds under the Equator, will be short of a Synchronous Pendulum at *Paris*, by one Line and an 87000th Part of a Line. *Phil. Nat. Princ. Math. Lib. III. p. 382, &c.* See PENDULUM.

A Body immerg'd in a Fluid specifically lighter than it self, loses so much of its *Weight*, as is equal to the *Weight* of a Quantity of the Fluid of the same Bulk with it self. See FLUID.

Hence, a Body loses more of its *Weight* in a heavier than in a lighter Fluid; and therefore weighs more in a lighter than a heavier Fluid. See SPECIFIC Gravity.

To find the Weight of any Quantity of a Fluid, e. g. of the Wine contain'd in a Hogshead.—Find the Bulk or Quantity of the Liquor by the Rules of Gauging. See GAUGING.

Suspend a cubick Inch of Lead therein by a Horse-hair; and by a Balance note the *Weight* lost.—This will be the *Weight* of a cubick Inch of the Fluid.

Wherefore, since in a homogeneous Fluid the *Weight* is proportionable to the Bulk; the *Height* of the Fluid will be found by the Rule of Three.—Thus, if the Capacity of the Hogshead be 88 cubic Feet, and the cubic Foot of Wine 68 Pounds; the whole *Weight* of the Wine will be 88 : 68 :: 1 : 5984.

The *Weight* of a cubic Foot of Water, has been determin'd by several; but as in different Springs, &c. the *Weight* of the Water is different, and there is even a difference in the same Water at different times; 'tis no wonder the Observations of the several Authors should be found very different.—Sir Sam. Morland, by repeated Experiments, found a cubic Inch of Water to weigh 70 Pounds 2 Ounces. See WATER.

WEIGHT, Pondus, in Mechanicks, is any thing to be rais'd, sustain'd, or mov'd by a Machine; or any thing that in any manner resists the Motion to be produc'd. See MOTION, &c.

In all Machines, there is a natural Ratio between the *Weight* and the moving Power.—If the *Weight* be increased, the Power must be so too; that is, the Wheels, &c. are to be multiplied, and so the Time increas'd, or the Velocity diminish'd. See POWER, and MACHINE.

The Centre of Gravity F, (Tab. Mechanicks, Fig. 55.) of a Body I H, together with the *Weight* of a Body, being given; to determine the Point M, in which, lying on an horizontal Plane, a given *Weight* G, hung in L, cannot remove the Body I H out of its horizontal Situation.

Conceive a *Weight* hang in the Centre of Gravity F, equal to the *Weight* of the whole Body I H, and find the common Centre of Gravity M, of that and the given *Weight* G. If the Point M be laid on the horizontal Plane; the *Weight* G will not be able to move the Body I H out of its Place.

Suppose, e. g. F the Centre of Gravity of the Staff, which is distant from its Extremity by the Space I F = 2 Inches; the Bucket of Water to weigh 24 Pounds, and the *Height* of the Staff to be 2 I. F = 18 Inches: We shall find I. M = I. F. F. (G + F) = 18. 2 : 22 :: 18 : 11 = 16  $\frac{1}{2}$ ; so that 'tis no wonder the Bucket hung on the Staff I H, laid on the Table, does not fall.



The Centre of Gravity C, (Fig. 56.) of a Body A B, together with its Weight G, being given; to determine the Points L and M, wherein Props M, N, are to be placed, that each may bear any given Proportion of the Weight.

In the horizontal Line A E, passing thro' the Centre of Gravity C, assume the right Lines M C and C L in the given Ratio.—Props, then, M, N, placed in these Points, will be press'd in the given Ratio.

Hence, if in the Points M, L, in lieu of Props, you place the Shoulders, or Arms of Porters, &c. They will be able to bear the Burden alike; if their Shares be proportion'd to their Strengths.—Thus we have a way of distributing a Burden in any given Ratio.

WEIGHT, in Commerce, &c. is a Body of a known Weight, appointed to be put in the Balance against other Bodies, whose Weight is requir'd. See WEIGHING, BALANCE, &c.

These Weights are usually of Lead, Iron, or Brass; tho in divers Parts of the East-Indies they are common Flints, and in some Places a sort of little Beans.

The Security of Commerce depending, in good measure, on the Justness of these Weights; there is scarce any Nation but has taken proper Measures to prevent the Falsification thereof.—The surest Means are the stamping, or marking 'em by proper Officers, from some Original or Standard, deposited where recourse may be had to 'em.

This expedient is very antient; and many Authors are of Opinion, that what among the Jews was called *Shekel of the Sanctuary*, was not any particular Kind of Weight, different from the common one; but a Standard or original Weight, preserv'd by the Priests in the Sanctuary, See SHEKEL, and SANCTUARY.

Thus, also, in England, the Standard of Weights is kept in the Exchequer by a particular Officer, call'd the Clerk or Comptroller of the Market.—In France, the Standard Weight is kept under several Keys in the Cabinet of the *Cour des Monnoyes*. See STANDARD.

Most Nations, wherein there is any thing of Commerce flourishing, have their particular Weights; and even sometimes different Weights in the different Provinces, and for the different Kinds of Commodities.

This Diversity of Weights, makes one of the most perplexing Articles in Commerce; but it is irremediable.—The reducing the Weights of different Nations to one, is not only impracticable; but even the Reduction of those of the same Nation: Witness those vain Attempts made for the reducing the Weights in France, by so many of their Kings, *Charlemain, Philip the Long, Louis XI. Francis I. Henry II. Charles IX. Henry III. Louis XIV.*

Weights may be distinguish'd into *Antient and Modern, Foreign, and Domestic.*

#### Modern WEIGHTS.

Weights used in the several Parts of Europe and the Levant.

English WEIGHTS.—By the XXVIIth Chapter of *Magna Charta*, the Weights are to be the same all over England; but for different Commodities there are two different sorts, viz. *Troy Weight*, and *Averdupois Weight*.

The Origin from which they are both rais'd, is the Grain of Wheat, gather'd in the middle of the Ear. See GRAIN.

In *Troy Weight*, 24 of these Grains make a Penny-weight Sterling; 20 Penny-weight make an Ounce; and 12 Ounces a Pound. See OUNCE, POUND, &c.

By this Weight we weigh Gold, Silver, Jewels, Grains, and Liquors. See TROY.

The Apothecaries also use the Troy Pound, Ounce, and Grain; but they differ from the rest, in the intermediate Divisions.—They divide the Ounce into 8 Drachms; the Drachm into 3 Scruples; and the Scruple into 20 Grains. See DRACHM, SCRUPLE, &c.

In *Averdupois Weight*, the Pound contains 16 Ounces; but the Ounce is less by near  $\frac{1}{7}$  than the Troy Ounce; this latter containing 480 Grains, and the former only 448.—The Ounce contains 16 Drachms—80 Ounces Averdupois, are only equal to 73 Ounces Troy; and 17 Pounds Troy, equal to 14 Pounds Averdupois. See POUND.

By Averdupois Weight, are weigh'd Mercery and Grocery Wares, base Metals, Wool, Tallow, Hemp, Drugs, Bread, &c. See AVERDUPUIS.

Table of Troy Weight, as used by the Goldsmiths, &c. Apothecaries.

| Grains. |               |        |        | Grains. |          |         |           |
|---------|---------------|--------|--------|---------|----------|---------|-----------|
| 24      | Penny-weight. |        |        | 20      | Scruple. |         |           |
| 48      | 2             | Ounce. |        | 60      | 3        | Drachm. |           |
| 576     | 24            | 12     | Pound, | 480     | 24       | 8       | Ounce.    |
|         |               |        |        | 5760    | 288      | 96      | 12 Pound. |

Table of Averdupois Weight.

| Scruple. |         |        |        |                      |
|----------|---------|--------|--------|----------------------|
| 3        | Drachm. |        |        |                      |
| 24       | 8       | Ounce. |        |                      |
| 384      | 128     | 16     | Pound. |                      |
| 43008    | 14336   | 1792   | 112    | Quintal, or Hundred. |
| 860160   | 286720  | 35840  | 2240   | 20 Tun.              |

The Moneyers, Jewellers, &c. have a particular Class of Weights for Gold and Precious Stones, viz. *Caract, Penny-weight, and Grain*; and for Silver the *Penny-weight and Grain*. See CARACT; see also GOLD, and SILVER.

The Moneyers have also a peculiar Subdivision of the Grain Troy: Thus;

|     |       |        |             |
|-----|-------|--------|-------------|
| The | Grain | } into | 20 Mites.   |
|     | Mite  |        | 24 Droites. |
|     | Droit |        | 20 Perits.  |
|     | Perit |        | 24 Blanks.  |

The Dealers in Wool have likewise a particular Set of Weights, viz. the *Sack, Weigh, Tod, Stone, and Clove*. See WEIGH, &c.

The Proportion of these, see under the Article WOOL.

French WEIGHTS.—Their common or *Paris Pound*, is 16 Ounces; which they divide two ways: The first Division is into two *Mars*, the Marc into eight Ounces; the Ounce into eight Gros; the Gros into three Penny-weights; the Penny weight into 24 Grains; the Grain equivalent to a Grain of Wheat.—The second Division of the Pound, is into two *Half-pounds*; the Half-pound into two Quarters; the Quarter into two Half-quarters; the Half-quarter into two Ounces; and the Ounce into two Half-ounces.

The Weights of the first Division are used to weigh Gold, Silver, and the richer Commodities: and the Weights of the second Division for Commodities of less Value.

| Grains. |               |       |        |          |
|---------|---------------|-------|--------|----------|
| 24      | Penny-weight. |       |        |          |
| 72      | 3             | Gros. |        |          |
| 576     | 24            | 8     | Ounce. |          |
| 1008    | 192           | 64    | 8      | Marc.    |
| 9216    | 384           | 128   | 16     | 2 Pound. |

| Half-ounce. |        |                    |                |             |              |
|-------------|--------|--------------------|----------------|-------------|--------------|
| 2           | Ounce. |                    |                |             |              |
| 4           | 2      | Half-quart. Pound. |                |             |              |
| 8           | 4      | 2                  | Quarter Pound. |             |              |
| 16          | 8      | 4                  | 2              | Half Pound. |              |
| 32          | 16     | 8                  | 4              | 2           | Pound.       |
| 3200        | 1600   | 800                | 400            | 200         | 100 Quintal. |

But the Pound is not the same throughout France.—At Lyons, e. g. the City Pound is only 14 Ounces: So that 100 Lyons Pounds make only 88 Paris Pounds.—But beside the City Pound, they have another at Lyons for Silk, containing 15 Ounces.—At *Tboloufe*, and throughout the *Upper Languedoc*, the Pound is 13 Ounces and  $\frac{1}{2}$  of Paris Weight.—At *Marseilles*, and throughout *Provence*, the Pound is 13 Ounces of Paris Weight.—At *Rouen*, beside the common Paris Pound and Marc, they have the Weight of the *Normans*; which is 16 Ounces and  $\frac{1}{2}$  and  $\frac{1}{4}$  to the Paris Pound.

The Weights enumerated under the two Articles of English and French Weights, are the same that are used throughout the greatest Part of Europe; only under somewhat different Names, Divisions, and Proportions. See POUND, GROS, MARC, PENNY-WEIGHT, &c.

Particular Nations, however, have also certain Weights peculiar to themselves: Thus, Spain has its *Arobas*, containing 25 Spanish Pounds, or  $\frac{1}{3}$  of the common Quintal: Its *Quintal Macho*, containing 150 Pounds, or  $\frac{1}{7}$  common Quintal, or 6 Arobas: Its *Adarme*, containing  $\frac{1}{16}$  of its Ounce.—And for Gold, it has its *Castilian*, or  $\frac{1}{155}$  of a Pound.—Its *Tomin*, containing 12 Grains, or  $\frac{1}{4}$  of a Castilian.—The same are in use in the Spanish West-Indies.



Portugal has its *Arata*, or *Aroba*, containing 32 *Lisbon* Pounds: Its *Faratelle*, containing two *Lisbon* Pounds: Its *Rottoli*, containing about 12 Pounds. And for Gold, its *Chego*, containing four *Carats*.—The same are used in the *Portuguese East-Indies*.

*Italy*, and particularly *Venice*, have their *Migliaro*, containing four *Mirzes*; the *Mirze* containing 30 *Venice* Pounds: The *Saggio*, containing a sixth Part of an Ounce.—*Genoa* has five Kinds of *Weights*, viz. *Large Weights*, whereby all Merchandizes are weigh'd at the Custom-house: *Cash-Weights*, for *Piastres* and other Species: The *Cantara*, or *Quintal*, for the coarsest Commodities: The *Large Balance*, for raw Silks; and the *Small Balance* for the finer Commodities.—*Sicily* has its *Rottolo*, 32 and a half Pounds of *Messina*.

*Germany*, *Flanders*, *Holland*, the *Hans Towns*, *Sweden*, *Denmark*, *Poland*, &c. have their *Schippondt*, which at *Antwerp* and *Hamburgh* is 300 Pounds, at *Lubeck* 320; and at *Coningsberg* 400 Pounds.—In *Sweden*, the *Schippondt* for Copper is 320 Pounds; and the *Schippondt* for Provisions 400 Pounds. At *Riga* and *Revel*, the *Schippondt* is 400 Pounds; and at *Dantzic* 340 Pounds: In *Norway* 300 Pounds: At *Amsterdam* 300; containing 20 *Lyspondts*, each weighing 15 Pounds.

In *Muscovy*, they weigh their large Commodities by the *Bercheroff*, or *Berkewits*, containing 400 of their Pounds.—They have also the *Poer*, or *Pode*, containing 40 Pounds, or  $\frac{1}{10}$  of the *Bercheroff*.

In *Turky*, at *Smirna*, &c. they use the *Batman*, or *Battemant*, containing six *Ocquos*; the *Ocquo* weighing 3 Pounds  $\frac{1}{2}$  *English*.—They have another *Batman*, much less, consisting as the former of six *Ocquos*, but the *Ocquo* only containing 15 Ounces *English*: 44 *Ocquos* of the first Kind, make the *Turkish Quintal*.—At *Cairo*, *Alexandretta*, *Aleppo*, and *Alexandria*, they use the *Rotte*, *Rotton*, or *Rottoli*. The *Rottoli* at *Cairo*, and other Parts of *Egypt*, is 144 Drachms; being somewhat over an *English* Pound.—At *Aleppo* there are three sorts of *Rottos*; the first 720 Drachms, making about seven Pounds *English*, and serving to weigh Cottons, Galls, and other large Commodities: The second is 624 Drachms, used for all Silks but white ones, which are weigh'd by the third *Rotte* of 700 Drachms. At *Seyda* the *Rotto* is 600 Drachms.

The other Ports of the *Levant*, not named here, use some of these *Weights*; particularly the *Occo*, or *Ocqua*, the *Rottoli* and *Rotte*.

To shew the Proportion of these several *Weights* to one another, we shall add a Reduction of the divers Pounds used throughout *Europe*, by which the other *Weights* are estimated, to one Standard Pound, viz. the Pound of *Amsterdam*, *Paris*, and *Bordeaux*; as calculated with great Accuracy by Monsieur *Ricard*, and publish'd in the new Edition of his excellent *Traite de Commerce*, in 1722.

#### Alphabetical Table of the Proportion of the Weights of the chief Cities in Europe, to those of Amsterdam.

|   |  |
|---|--|
| An hundred Pounds of <i>Amsterdam</i> , are equal to    |  |
| 108 Pounds of <i>Alicant</i> .                          | 163 l. of <i>Genoa</i> , <i>Cash-Weight</i> .                |
| 105 l. of <i>Antwerp</i> .                              | 102 l. of <i>Hamburg</i> .                                   |
| 120 l. of <i>Archangel</i> , or 3 <i>Poedes</i> .       | 106 l. of <i>Leiden</i> .                                    |
| 105 l. of <i>Arshot</i> .                               | 105 l. of <i>Leipsic</i> .                                   |
| 120 l. of <i>Avignon</i> .                              | 105 l. and $\frac{1}{2}$ of <i>Liege</i> .                   |
| 98 l. of <i>Basil</i> in <i>Switzerland</i> .           | 114 l. of <i>Lisse</i> .                                     |
| 100 l. of <i>Bayonne</i> in <i>France</i> .             | 116 l. of <i>Lyons</i> , <i>City-Weight</i> .                |
| 166 l. of <i>Bergamo</i> .                              | 106 l. and $\frac{1}{2}$ of <i>Lisbon</i> .                  |
| 97 l. of <i>Berg ap Som</i> .                           | 143 l. of <i>Leghorn</i> .                                   |
| 95 l. $\frac{1}{2}$ of <i>Bergen</i> in <i>Norway</i> . | 109 l. of <i>London</i> , <i>Averdupois-Weight</i> .         |
| 111 l. of <i>Bern</i> .                                 | 105 l. of <i>Lovaine</i> .                                   |
| 100 l. of <i>Besancon</i> .                             | 105 l. of <i>Lubeck</i> .                                    |
| 100 l. of <i>Bilboa</i> .                               | 141 $\frac{1}{2}$ l. of <i>Lucca</i> , <i>Light-Weight</i> . |
| 105 l. of <i>Bois le duc</i> .                          | 114 l. of <i>Madrid</i> .                                    |
| 151 l. of <i>Boulogne</i> .                             | 105 l. of <i>Malines</i> .                                   |
| 100 l. of <i>Bordeaux</i> .                             | 123 l. and $\frac{1}{2}$ of <i>Marseilles</i> .              |
| 104 l. of <i>Bourg en Bresse</i> .                      | 154 l. of <i>Messina</i> , <i>Light-Weight</i> .             |
| 103 l. of <i>Bremen</i> .                               | 168 l. of <i>Milan</i> .                                     |
| 125 l. of <i>Breslaw</i> .                              | 120 l. of <i>Montpellier</i> .                               |
| 105 l. of <i>Bruges</i> .                               | 125 <i>Bercheroffs</i> of <i>Muscovy</i> .                   |
| 105 l. of <i>Brussels</i> .                             | 100 l. of <i>Nantes</i> .                                    |
| 105 l. of <i>Cadiz</i> .                                | 106 l. of <i>Nancy</i> .                                     |
| 105 l. of <i>Cologne</i> .                              | 169 l. of <i>Naples</i> .                                    |
| 125 l. of <i>Coningsberg</i> .                          | 98 l. of <i>Nuremberg</i> .                                  |
| 107 l. and $\frac{1}{2}$ of <i>Copenhagen</i> .         | 100 l. of <i>Paris</i> .                                     |
| 87 <i>Rottes</i> of <i>Constantinople</i> .             | 112 l. and $\frac{1}{2}$ of <i>Revel</i> .                   |
| 113 l. and $\frac{1}{2}$ of <i>Dantzic</i> .            | 109 l. of <i>Riga</i> .                                      |
| 100 l. of <i>Dort</i> .                                 | 100 l. of <i>Roche</i> .                                     |
| 97 l. of <i>Dublin</i> .                                | 146 l. of <i>Rome</i> .                                      |
| 97 l. of <i>Edinburgh</i> .                             | 100 l. of <i>Rotterdam</i> .                                 |
| 143 l. of <i>Florence</i> .                             | 96 l. of <i>Rouen</i> , <i>Vicountry-Weight</i> .            |
| 98 l. of <i>Francfort</i> , on the <i>Maine</i> .       | 100 l. of <i>S. Malo</i> .                                   |
| 105 l. of <i>Ghent</i> .                                | 100 l. of <i>S. Sebastian</i> .                              |
| 89 l. of <i>Geneva</i> .                                |  |

An hundred Pounds of *Amsterdam* is equal to

158 l. and  $\frac{1}{2}$  of *Saragoza*.

106 l. of *Seville*.

114 l. of *Smirna*.

110 l. of *Stetin*.

81 l. of *Stockholm*.

118 l. of *Tbolouse* and *Upper Languedoc*.

151 l. of *Turin*.

158 l. and  $\frac{1}{2}$  of *Valencia*.

182 l. of *Venice*, *Small-Weight*.

WEIGHTS used in the several Parts of the East-Indies, China, Persia, &c.

The *Chinese* WEIGHTS, are—The *Pic* for large Commodities; it is divided into 100 *Catis*, or *Cattis*, tho some say into 125: the *Cati* into 16 *Taels*; each *Tael* equivalent to  $\frac{1}{16}$  of an Ounce *English*, or the Weight of one *Rial* and  $\frac{1}{16}$ , and containing 10 *Mas*, or *Masses*; and each *Mas* 10 *Condorins*. So that the *Chinese* *Pic* amounts to 137 Pounds *Eng*. *Averdupois*, and the *Cati* to 1 Pound 8 Ounces.—The *Picol*, for Silk, containing 66 *Catis* and  $\frac{1}{4}$ : The *Babar*, *Bakaire*, or *Barre*, containing 300 *Catis*.

*Tunquin* has all the same *Weights*, Measures, &c. as *China*.

*Japan* has only one *Weight*, viz. the *Catti*; which, however, is different from that of *China*, as containing 20 *Taels*.—At *Surat*, *Agra*, and throughout the States of the Great *Mughl*, they use the *Man*, or *Mero*, whereof they have two Kinds; the *King's Man*, or *King's Weight*; and the *Man* simply: The first used for the weighing of common Provisions, containing 40 *Sers*, or *Serris*; and each *Ser* a just *Paris* Pound. The *Tavernier* will have the *Ser* near a Seventh less than the *Paris* Pound.—The common *Man*, used in the weighing of Merchandise, consists likewise of 40 *Serres*, but each *Serre* is only estimated at 12 *Paris* Ounces, or  $\frac{1}{4}$  of the other *Ser*.

The *Man* may be look'd on as the common *Weight* of the *East Indies*, tho under some difference of Name, or rather of Pronunciation; it being call'd *Mao* at *Cambaya*, and in other Places *Mein*.—The *Ser* is properly the *Indian* Pound, and of universal use: The like may be said of the *Babar*, *Tael*, and *Catti* abovemention'd.

The *Weights* of *Siam*, are the *Pic*, containing 2 *Schans* or *Catis*; but the *Siamese* *Cati* is only half the *Japane*, the latter containing 20 *Taels* and the former only 10: Tho some make the *Chinese* *Cati* only 16 *Taels*, and the *Siamese* 8.—The *Tael* contains 4 *Baats* or *Ticals*; each about a *Paris* Ounce: The *Baat* 4 *Sclings*, or *Mayons*: The *Mayon* 2 *Fouangs*: The *Fouang* 4 *Payes*: The *Paye* 2 *Clams*: The *Sompaye*, half a *Fouang*.

It is to be observed, that these are the Names of their Coins, as well as *Weights*; Silver and Gold being, there, Commodities, sold, as other things, by their *Weights*. See *COIN*, &c.

In the Isle of *Java*, and particularly at *Bantam*, they use the *Gantan*, which amounts to near 3 *Dutch* Pounds.—In *Golconda*, at *Visapour* and *Goa*, they have the *Furatelle*; containing 1 Pound 14 Ounces *English*: The *Margalis*, or *Mangelin*, for weighing Diamonds and Precious Stones; weighing at *Goa* 5 Grains, at *Golconda*, &c.  $5\frac{1}{2}$  Grains.—They have also the *Rottolo*, containing 14  $\frac{1}{2}$  Ounces *English*: The *Metricol*, containing the sixth Part of an Ounce: The *Val*, for *Piastres* and *Ducats*; containing the 73d Part of a *Real*.

In *Persia*, they use two Kinds of *Batmans* or *Mins*; the one called *Cabi* or *Cheray*, which is the *King's Weight*, and the other *Batman* of *Tauris*, from the Name of one of the chief Cities of *Persia*.—The first weighs, according to *Tavernier*, 13 Pounds 10 Ounces *English*; the second, 6 Pound  $\frac{1}{2}$ . According to Sir *J. Chardin*, the *King's Batman* is 13 Pounds 14 Ounces, and the *Batman* of *Tauris* 6 Pounds  $\frac{1}{2}$ .—Its Divisions are, the *Ratel*, or a 16th; the *Derhem*, or *Drachm*, which is the 50th; the *Meschal*, which is half the *Derhem*; the *Dung*, which is the 6th Part of the *Meschal*; being equivalent to 6 *Carat-Grains*; and lastly the *Grain*, which is the 4th Part of the *Dung*.—They have also the *Vakie*, which exceeds a little, our Ounce: The *Sub-cheray*, equal to the 1175th Part of the *Derhem*: And the *Toman*, used to weigh out large Payments of Money, without telling: its *Weight* is that of 50 *Abassis*. See *TOMAN*.

#### African and American WEIGHTS.

We have little to say as to the *Weights* of *America*: The several *European* Colonies there, making use of the *Weights* of the States or Kingdoms of *Europe* they belong to. For as to the *Arouc* of *Pern*, which weighs 27 Pounds, 'tis evidently no other than the *Spanish Aroba*, with a little difference in the Name.

As to the *Weights* of *Africa*; there are few Places have any, except *Egypt* and the Coasts of *Africa*, whose *Weights* are enumerated among those of the Ports of the *Levant*, &c.

As to the Coasts beyond *Cape Verde*, viz. *Guinea*, *Congo*, to *Siffela*, *Mosambica*, &c. they have no *Weights*; only,



the *English, French, Dutch, Portuguese and Danes*, have introduc'd their own *Weights* in their respective Settlements.

The Isle of *Madagascar*, indeed, has its particular *Weights*; but it has none that exceed the *Drachm*, nor are they us'd for any thing but *Gold and Silver*.—Other Commodities they never weigh.

Antient WEIGHTS.

Jewish WEIGHTS reduc'd to English Troy Weights.

| Shekel | Maneh | Talent | l. oz. pwt. gr.                  |
|--------|-------|--------|----------------------------------|
| 100    | 50    | 5000   | 00 : 00 : 09 : 02 $\frac{4}{7}$  |
|        |       |        | 03 : 09 : 10 : 17 $\frac{5}{7}$  |
|        |       |        | 180 : 08 : 15 : 17 $\frac{5}{7}$ |

Note, In reckoning Money, 60 *Shekels* made a *Maneh*, but in weight 100 *Shekels*.

Grecian and Roman WEIGHTS reduc'd to English Troy Weight.

| Lentes |         |        |            |                |                |                |        |       |       | l. oz. pwt. gr.                 | The Subdivisions of the Roman <i>As</i> , <i>Libra</i> , or Pound. |
|--------|---------|--------|------------|----------------|----------------|----------------|--------|-------|-------|---------------------------------|--|
| 4      | Siliquæ |        |            |                |                |                |        |       |       | 0 : 00 : 00 : 00 $\frac{8}{12}$ |  |
| 12     | 3       | Obolus |            |                |                |                |        |       |       | 0 : 00 : 00 : 09 $\frac{3}{8}$  | Uncie, or Ounces.  |
| 24     | 6       | 2      | Scriptulum |                |                |                |        |       |       | 0 : 00 : 00 : 18 $\frac{3}{4}$  | 1 As, <i>Libra</i> , &c. contain'd 12                              |
| 72     | 18      | 6      | 3          | Drachma        |                |                |        |       |       | 0 : 00 : 02 : 06 $\frac{2}{4}$  | $\frac{1}{12}$ Deunx 11  |
| 96     | 24      | 8      | 4          | $1\frac{1}{2}$ | Sextula        |                |        |       |       | 0 : 00 : 03 : 00 $\frac{6}{7}$  | $\frac{1}{10}$ Dextans 10  |
| 144    | 36      | 12     | 6          | 2              | $1\frac{1}{2}$ | Sicilicus      |        |       |       | 0 : 00 : 04 : 13 $\frac{2}{7}$  | $\frac{1}{9}$ Dodrans 9  |
| 192    | 48      | 16     | 8          | $2\frac{3}{4}$ | 2              | $1\frac{1}{2}$ | Duella |       |       | 0 : 00 : 06 : 01 $\frac{5}{7}$  | $\frac{1}{8}$ Bes 8  |
| 576    | 144     | 48     | 24         | 8              | 6              | 4              | 3      | Uncia |       | 0 : 00 : 18 : 05 $\frac{2}{7}$  | $\frac{1}{7}$ Septunx 7  |
| 6912   | 1728    | 576    | 288        | 96             | 72             | 48             | 36     | 12    | Libra | 0 : 10 : 18 : 13 $\frac{5}{7}$  | $\frac{1}{6}$ Semis 6  |
|        |         |        |            |                |                |                |        |       |       |                                 | $\frac{1}{5}$ Quincunx 5   |
|        |         |        |            |                |                |                |        |       |       |                                 | $\frac{1}{4}$ Triens 4   |
|        |         |        |            |                |                |                |        |       |       |                                 | $\frac{1}{3}$ Quadrans 3   |
|        |         |        |            |                |                |                |        |       |       |                                 | $\frac{1}{2}$ Sextans 2  |
|        |         |        |            |                |                |                |        |       |       |                                 | $\frac{1}{12}$ Uncia 1   |

The *Roman Ounce* is the *English Averdupoise Ounce*, which they divided into 7 *Denarii*, as well as 8 *Drachms*; and since they reckon'd their *Denarius* equal to the *Attic Drachm*, this will make the *Attic Weights*  $\frac{1}{8}$  heavier than the correspondent *Roman Weights*.

Note, The *Grecians* divided their *Obolus* into *Chalci* and λεπτα. Some, as *Diodorus* and *Suidas*, divided the *Obolus* into 6 *Chalci*, and every *Chalcus* into 7 λεπτα. Others divided the *Obolus* into 8 *Chalci*, and every *Chalcus* into 8 λεπτα, or *Minuta*.

WEIGHT of Air, is equal to the Elasticity thereof. See AIR, and ELASTICITY.

To find the Weight of a Cubic Inch of Air.—Weigh a round glass Vessel full of common Air, very accurately: exhaust the Air out of it: weigh the exhausted Vessel, and subtract the latter Weight from the former; the Remainder is the Weight of the Air exhausted.

Find, then, the Content of the Vessel by the Laws of Measuring, (see SPHERE;) and the Ratio of the remaining Air to the primitive Air. See AIR-PUMP.

This done, the Bulk of the remaining Air is found by the Rule of Three; which being subtracted from the Capacity of the Vessel, the Remainder will be the Bulk of Air extracted.—Or, if the Air-Pump be very tight, and the Exhaustion continu'd as long as any Air is got out; the remaining Air will be so small, that it may be safely neglected, and the Content of the Vessel taken for the Bulk of the exhausted Air.

Having, therefore, the Weight and Bulk of the whole exhausted Air, the Weight of one Cubic Inch is easily had by the Rule of Three.

This Method was first used by *Otto Gueric*, and afterwards by *Burchardus de Volder*; who gives us the following Particulars in his Experiment.—1<sup>o</sup>, That the Weight of the Glass spherical Vessel he made use of, full of common Air, was 7 Pounds 1 Ounce 2 Drams 48 Grains; when exhausted of Air, 7 l. 1 oz. 1 dr. 31 gr. and when full of Water, 16 l. 12 oz. 7 dr. 14 gr. The Weight of the Air, therefore, was 1 dr. 12 gr. or 77 gr. the Weight of the Water 9 l. 11 oz. 5 dr. 43 gr. or 74743 gr. Consequently, the Ratio of the specific Gravity between Water and Air, is 74743 : 77 :: 970  $\frac{1}{2}$  : 1. Now, *Volderius*, having found a Cubic Foot of Water to weigh 64 Pound; by inferring, as 970 is to 1, So is 64 Pounds to a fourth Proportional; which found by the Rule of Three, is the Weight of a Cubic Foot of Air, viz. 1 Ounce, 27 Gr. or 527 Grains. See AIR.

The Weight of Sea Water is different in different Climates. Mr. Boyle having furnish'd a learned Physician, going on a Voyage to America, with a Hydrostatical Balance; and recommended him to observe, from time to time, the difference of Weight he might meet withal; this Account was return'd him: That the Sea Water increas'd, in Weight the nearer he came to the Line, till he arrived at

a certain degree of Latitude, as he remembers, about the 30th; beyond which, it retain'd the same specific Weight, till he came to Barbadoes. *Philosoph. Transact.* N<sup>o</sup> 18.

WEIGHTS of Auncel. See AUNCCEL Weight.

WELDING Heat, a degree of Heat which Smiths give their Iron in the Forge, when there is occasion to double up the Iron, and to weld a Work in the Doublings; so that the Iron shall grow into a Lump thick enough for the Purpose. See IRON, FORGING, &c.

It is also used when two Bars of Iron are to be joined together at the Ends, to make a Length. See HEAT.

WELL, a Hole dug under Ground, below the Level or Surface of the Water collected in the Strata. See STRATA, and WATER.

It is usually of a cylindrical Figure, wall'd with Stone, and lined with Mortar. See SPRING.

M. *Blondel* informs the French Academy of a Device they use in the lower Austria, which is compass'd with the Mountains of *Stiria*, to fill their Wells with Water, viz. That they dig in the Earth to the depth of 20 or 25 Feet, till they come to a clammy Earth, which they bore thro', till the Waters break forcibly out: Which Water, in all probability, comes from the neighbouring Mountains, in subterraneous Channels.—*Cassini* observes, that in many Places of *Moder* and *Boulogne*, they make themselves Wells by the same Artifice.—Mr. *Derham* adds, that the like has been sometimes found in *England*, particularly in *Essex*.

In the *Philosophical Transactions*, we are inform'd by Mr. *Norwood*, that in *Bermudas*, Wells of fresh Water are dug within 20 Yards of the Sea, and even less, which rise and fall with the Tides, as the Sea it self does.—He adds, that in digging Wells in that Island, they dig till they come almost to a Level with the Surface of the Sea; and then they certainly find either Fresh Water or Salt: If it prove Fresh, yet by digging two or three Foot deeper, they always come at Salt Water. If it be sandy Ground, they usually find Fresh Water; but if hard Lime-stone Rock, salt or brackish. See FRESH Water, &c.

In the Diocese of *Paderborn* in *Westphalia*, is a Well which loses it self twice in 24 Hours; returning always after six Hours absence, with great Noise, and so forcibly as to drive three Mills not far off. The Inhabitants call it the *Bolderborn*, q. d. the boisterous Spring.—*See* Well near *Coln*.



*Torbay*, ebbs and flows very often every Hour; tho somewhat oftener in Winter than Summer. Dr. Oliver observes, its Flux and Reflux sometimes return every Minute, tho sometimes not above 26 or 20 times an Hour. *Philosoph. Transact.* N<sup>o</sup> 104.

*Well-Water* is not so wholesom or good for most Uses, as *River-Water*. See *WATER*.

*Well-Hole*, in Building, is the Hole left in a Floor for the Stairs to come up thro'. See *STAIRS*.

*Well*, in the Military Art, is a Depth which the Miner sinks into the Ground, to prepare a Mine, or find out and disappoint the Enemy's Mine. See *MINE*, *SAP*, &c.

*WEN*, a Tumor, or Excrecence growing on divers Parts of the Body; consisting of a Cystis, or Bag, fill'd with some peculiar Matter. See *TUMOR*, and *EXCRESCENCE*.

Of this, Physicians usually reckon three Kinds, according to the Matter it is form'd of, *i. e.* the Humour contain'd therein.—If soft, resembling a Pulp, the *Wen* is call'd *Atheroma*; if Honey, *Meliceris*; and if Suet, *Stearoma*.

M. Littré, in *Mem. de l'Acad. des Sciences*, adds a fourth Kind, which he calls *Lipoma*; by reason, the *Wen* is form'd of soft Fat.

They are all, usually, of the like Colour with the rest of the Body; begin from very little, and grow gradually. They are not dangerous, but frequently last a long while. Sometimes they degenerate into Abscesses.

The Cure is, to cut off the Cystis by the Root, which is always narrow.

In the *Philosophical Transactions*, we have an Account of a very extraordinary *Wen*, on the lower Jaw of one *Alex. Palmer* of *Keith* in *Scotland*.—It was 27 Years a-growing: at length, its enormous Bulk, and the Pain it gave him, together with its emaciating him exceedingly, determin'd him to have it cut off. Dr. *Bowers* assures us, its Basis was five Inches over, which should seem too large for the whole Face, and that with Blood and all, it weigh'd one or two and twenty Pounds. Its form was Spheroidal; and when measur'd, was 34 Inches about, one way, and 28 another. It seem'd to be an *Atheroma*; being a glandulous Substance, with several big Blood-Vessels in it; and Hair growing on it. It was as sensible as any other Part.—The Hemorrhage, after cutting it off, was stop'd by the Vitriolic Pouder, and the ordinary Dressing being us'd, a Cure was compleated in six Weeks time.

*WERE*, or *WERRE*, in our old Law-Books, signifies as much as *Æstimatio Capitis*, or *Pretium hominis*; that is, so much as was antiently paid for killing a Man. When such Crimes were punish'd with pecuniary Mulcts, not Death; the Price was set on every Man's Head, according to his Condition and Quality.—*Were suum*, id est, *pretium sue redemptionis*, his Ransom. See *RANSOM*.

*WERELADA*, from the Saxon *Were* and *ladian*, to purge; was thus: Where a Man was slain, the Price at which he was valu'd was to be paid to his Relations. For in the Time of the *Saxons*, the killing a Man was not punish'd by Death, but by a pecuniary Mulct, call'd *Wera*. See *WERE*.

*WERGILD*, *WERGELD*, in our antient Customs, *pretium seu Vator hominis occisi, homicidii pretium*; which was paid partly to the King for the Loss of his Subject, partly to the Lord whose Vassal he was, and partly to the next of kin.—*Quedam Crimina emendari non possunt; que sunt* Husbrech, Bernet, & Openchef, & Everemord, & Latordfith, & *infraclio pacis Ecclesie, vel per Manus Regis per homicidium*, L. L. Hen. I. c. 13.—Where are likewise enumerated the Crimes that might be redeemed *per Weram*.—*De unoquoque sure per totam scotiam est Wergelt 30 Pence & una Juvenca, siue fuerit liber homo siue servus*.

The *Wergeld* of an Archbishop and of an Earl, was 15000 Thrimla's. See *Selden's Titles of Honour*.

If the Party deny'd the Fact, he was to purge himself by the Oaths of several Persons, according to his Degree and Quality.—If the Guilt amounted to four Pounds, he was to have 18 Jurors on his Father's side, and four on his Mother's: If to 14 Pounds, he was to have sixty Jurors. And this was call'd *Werelada*.—*Homicidium Wera solvatur aut Werelada negetur*.

*WEST*, *Occidens*, *Occasus*, in Cosmography, one of the Cardinal Points of the Horizon; diametrically opposite to the East. See *CARDINAL Point*, *EAST*, &c.

*West* is, strictly defined, the Interfection of the Prime Vertical with the Horizon, on that side the Sun sets in. See *SETTING*.

To draw a true *West-Line*. See *MERIDIAN*.

In Astronomy, *West* is chiefly used for the Places in or towards which, the Sun or Stars sink under the Horizon.—Thus, we say, the *Sun*, *Mars*, &c. are in the *West*.

The Point the Sun sets in, when in the Equator, is particularly call'd the *Equinoctial West*, or *Point of true West*. See *EQUINOCTIAL*.

In Geography, *West* and *Western* are applied to certain Countries, &c. situate towards the Point of Sun-setting, with

respect to certain others.—Thus, the Empire of *Rome*, antiently, and of *Germany*, at present, are called the Empire of the *West*, or *Western Empire*; in opposition to that of *Constantinople*, which is call'd the *Empire of the East*. See *EMPIRE*.

The *Latin* or *Roman Church*, is called the *Western Church*; in opposition to the *Greek Church*.—The *French*, *Spaniards*, *Italians*, &c. are called *Western Nations*, in respect to the *Asiatics*; and *America* the *West-Indies*, in respect of the *East-Indies*.

*WEST-Wind*, is also called *Zephyrus*, and *Favonius*. See *WIND*.

*WEST-Saxontage*, or *WEST-Saxonlaga*, the Law of the *West-Saxons*. See *LAW*, *MERCHENLAGE*, &c.

*WESTPHALIA Ham*. See *HAM*.

*WET-Glover*, a Dresser of the Skins of Sheep, Lambs, Goats, &c. which are slender, thin, and gentle. See *GLOVE*, *SKIN*, &c.

*WHALE*, in Astronomy, one of the Constellations. See *CETUS*.

*WHALE-Bone*, a Commodity got from the *Whale*, used as Stiffening in Stays, Fans, Busks, Skreens, &c.

There are two Kinds of *Whales*; the one retaining that Name, the other called *Cachalot*. Their Difference consists in this, that the *Cachalot* has Teeth, and the *Whale*, properly so call'd, instead of Teeth, has a kind of Whiskers in his Throat, about a Span broad and 15 Foot long, ending in a kind of Fringe, much like Swines Bristles.

They are set in the Palate, and do in some measure the Office of Teeth.—These Whiskers, split and fashion'd, are what we call *Whalebone*.—The Pizzle or Genital Member of the Animal serves likewise for the same Purpose.

*WHALE-Fishery*. See *FISHERY*.

*WHARF*, a Space on the Banks of a Haven, Creek, or Hithe; provided for the convenient loading and unloading of Vessels upon. See *HAVEN*, *HITHE*, &c.

The Fee paid for the Landing of Goods on a *Wharf*, or for Shipping them off, is call'd *Wharfage*.—And the Person who has the Oversight and Direction of the *Wharf*, receives *Wharfage*, &c. is called the *Wharfinger*. See *KEY*.

*WHARLS* of Flowers, among Herbalists, are Rows of lesser Flowers, set at certain Distances about the main Stalk or Spike. See *FLOWER*.

*WHEAT*. See *CORN*.

*WHEEL*, *Rota*, in Mechanicks, a simple Machine, consisting of a round piece of Wood, Metal, or other Matter; turning round on an Axis. See *AXIS*.

The *Wheel* is one of the principal Mechanick Powers.—It has place in most Engines; and, in effect, 'tis of an Assemblage of *Wheels*, that most of our chief Engines are compos'd.—Witness Clocks, Mills, &c. See *CLOCK*, *MILL*, &c.

Its form is various, according to the Motions it is to have; and the Use it is to answer.—By this it is distinguish'd into *Simple* and *Dented*.

*Simple Wheels*, are those whose Circumference and Axis is uniform, and which are used singly, and not combined.—Such are *Wheels* of Carriages; which are to have a double Motion: the one circular, about their Axis; the other rectilinear; by which they advance along the Road, &c. which two Motions they appear to have; tho, in effect, they have but one: It being impossible the same Thing should move or be agitated two different ways at the same time.

This one is a spiral Motion; as is easily seen by fixing a piece of Chalk on the Face of a *Wheel*, so as it may draw a Line on a Wall, as the *Wheel* moves.—The Line it here traces is a just Spiral, and still the more Curve as the Chalk is fix'd nearer the Axis.

For a very nice Phenomenon in the Motion of these *Wheels*, see *Aristotle's WHEEL*.

We shall add, that in *Wheels* of this kind, the Height should always be proportion'd to the Stature of the Animal that draws or moves them.—The Rule is, that the Load and the Axis of the *Wheels*, be of the same Height with the Force that moves them: Otherwise, the Axis being higher than the Beast, part of the Load will lie on him; or, if it be lower, he pulls to disadvantage, and must exert a greater Force. Tho, *Stevinus*, Dr. *Wallis*, &c. shew, that to draw a Vehicle, &c. over waste, uneven Places, it were best to fix the Traces to the *Wheels* lower than the Horse's Breast.

The Power of these *Wheels* results from the Difference of the Radii of the Axis, and Circumference.—The Canon is this: As the Radius of the Axis is to that of the Circumference, So is any Power, to the Weight it can sustain hereby.

This is also the Rule in the Axis in *Peritrochio*; and, in effect, the *Wheel*, and the Axis in *Peritrochio*, are the same thing; only, in Theory it is usually call'd by the former Name, and in Practice by the latter. See *AXIS in Peritrochio*.

*Dented Wheels*, are those whose Circumference, or else Axis, is cut into Teeth, by which they are capable of moving and acting on one another, and of being combined together. See *DENTED*, *TEETH*, &c.

Tho



The use of these is very conspicuous in Clocks, Jacks, &c. See CLOCKWORK, WATCHWORK, &c.

The Power of the *Dented Wheel* depends on the same Principle as that of the *Simple* one.—'Tis only that to the simple Axis in *Peritrochio*, which a compound Lever is to a simple Lever. See LEVER.

Its Doctrine is compriz'd in the following Canon, viz.—*The Ratio of the Power to the Weight*, in order for that to be equivalent to this, *must be a Ratio compounded of the Ratios of the Diameter of the Axis of the last Wheel, to the Diameter of the first; and of the Ratio of the Revolutions of the last Wheel to those of the first, in the same time.*—But this Doctrine will deserve a more particular Explanation.

1°, Then, If the Weight be multiply'd into the Product of the Radii of the Axis, and that Product be divided by the Product of the Radii of the *Wheels*, the Power requir'd to sustain the Weight will be found.—Suppose, e. g. the Weight A, (Tab. *Mechanicks*, Fig. 61.) = 6000 Pounds, BC = 6 Inches, CD = 34 Inches, EF = 5 Inches, EG = 35 Inches, HI = 4 Inches, HK = 27 Inches. Then will BC, EF, HI = 120; and CD, EG, HK = 32130.—Hence the Power requir'd to sustain the Weight, will be the Quotient of 6000—120 divided by 32130, viz. 22½ of a Pound, very nearly; a small Addition to which will raise it.

2°, If the Power be multiply'd into the Product of the Radii of the *Wheels*, and the *Factum* be divided by the Product of the Radii of the Axes; the Quotient will be the Weight which the Power is able to sustain.—Thus, if the Power be 22½ of Pound, the Weight will be 6000 Pound.

3°, A Power and a Weight being given, to find the Number of *Wheels*, and in each Wheel the Ratio of the Radius of the Axis to the Radius of the Wheel: so, as that the Power being applied perpendicularly to the Periphery of the last Wheel, may sustain the given Weight.

Divide the Weight by the Power: Resolve the Quotient into the Factors which produce it.—Then will the Number of Factors be the Number of *Wheels*; and the Radii of the Axis will be to the Radii of the *Wheels*, as Unity to the several *Wheels*.—Suppose, e. g. a Weight of 3000 Pound and a Power of 60, which resolves into these Factors, 4 5 5 5. Four *Wheels* are to be made, in one of which the Radius of the Axis is to the Radius of the *Wheel* as 1 to 4.—In the rest, as 1 to 5:

4°, If a Power move a Weight by means of two *Wheels*, the Revolutions of the slower *Wheel* are to those of the swifter, as the Periphery of the swifter Axis is to the Periphery of the *Wheel* that catches on it.

Hence, 1°, the Revolutions are as the Radius of the Axis FE, to the Radius of the *Wheel* DC.—2°, Since the Number of Teeth in the Axis FD, is to the Number of Teeth in the Circumference of the *Wheel* M as the Circumference of that, to the Circumference of this: The Revolutions of the slower *Wheel* M, are to the Revolutions of the swifter N, as the Number of Teeth in the Axis, to the Number of Teeth in the *Wheel* M it catches into.

5°, If the *Factum* of the Radii of the *Wheels* GD, DC be multiply'd into the Number of Revolutions of the slowest *Wheel* M; and the Product be divided by the *Factum* of the Radii of the Axes which catch into them, GH, DE, &c. The Quotient will be the Number of Revolutions of the swiftest *Wheel* O. E. g. If GE = 8, DC = 12, GH = 4, DE = 3, and the Revolution of the *Wheel* M be one; the Number of Revolutions of the *Wheel* O will be 8.

6°, If a Power move a Weight by means of divers *Wheels*, the Space pass'd over by the Weight is to the Space of the Power, as the Power to the Weight.—Hence, the greater the Power, the faster is the Weight mov'd; and *vice versa*.

7°, The Spaces pass'd over by the Weight and the Power, are in a Ratio compounded of the Revolutions of the slowest *Wheel*, to the Revolutions of the swiftest; and of the Periphery of the Axis of that, to the Periphery of this.—Hence, since the Space of the Weight and the Power are reciprocally as the sustaining Power to the Weight, the Power that sustains a Weight, will be to the Weight, in a Ratio compounded of the Revolutions of the slowest *Wheel* to those of the swiftest, and of the Periphery of the Axis of that, to the Periphery of this.

8°, The Periphery of the Axis of the slowest *Wheel*, with the Periphery of the swiftest *Wheel*, given; as also, the Ratio of the Revolutions of the one, to those of the other: To find the Space which the Power is to pass over, while the Weight goes any given length.

Multiply the Periphery of the Axis of the slowest *Wheel*, into the antecedent Term of the Ratio, and the Periphery of the swiftest *Wheel* into the consequent Term; and to these two Products, and the given Space of the Weight, find a fourth Proportional: This will be the Space of the Power. Suppose, e. g. the Ratio of the Revolutions of the slowest *Wheel* to those of the swiftest to be as 2 to 7; and the Space of the Weight 30 Feet: And let the Periphery of the Axis of the slowest *Wheel* be to that of the swiftest as 3 to 8. The Space of the Power will be found 280.

9°, The Ratio of the Peripheries of the swiftest *Wheel*, and of the Axis of the slowest; together with the Ratio of their Revolutions, and the Weight, being given: to find the Power able to sustain it.

Multiply both the Antecedents and the Consequents of the given Ratio into each other: and to the Product of the Antecedents, the Product of the Consequents, and the given Weight, find a fourth Proportional. That will be the Power requir'd.—Suppose, e. g. the Ratio of the Peripheries 8:13: That of the Revolutions 7:2; and the Weight 2000: The Power will be found 214½.—After the same manner may the Weight be found; the Power and the Ratio of the Peripheries, &c. being given.

10°, The Revolutions the swiftest *Wheel* is to perform while the slowest makes one Revolution, being given; together with the Space the Weight is to be rais'd, and the Periphery of the slowest *Wheel*; to find the Time that will be spent in raising it.

Say, as the Periphery of the Axis of the slowest *Wheel* is to the Space of the Weight given; so is the given Number of Revolutions of the swiftest *Wheel* to a fourth Proportional; which will be the Number of Revolutions perform'd while the Weight reaches the given Height.—Then, by Experiment, determine the Number of Revolutions the swiftest *Wheel* performs in an Hour; and by this divide the fourth Proportional found before.—The Quotient will be the Time spent in raising the Weight.

WHEELS of a Clock, &c. are the *Crown Wheel*, *Contract Wheel*, *Great Wheel*, *Second Wheel*, *Third Wheel*, *Striking-Wheel*, *Detent-Wheel*, &c. See CLOCK, and WATCH.

WHEELS of Coaches, Waggon, &c.—In the *Philosophical Transactions*, we have some Experiments shewing the Advantages of high *Wheels* in Carriages of all Kinds; the Results of the Experiments amount to this:

1°, That, four *Wheels* of 5½ Inches high, viz. one half of the ordinary Height of the *Wheels* of a Waggon, draw a Weight of 50½ L. Averdupoise up an inclined Plane with less Weight by six Ounces, than two of them match'd with two smaller ones of 4½ Inches height.

2°, That any Vehicle might be much more easily drawn in rough ways, if the fore *Wheels* were as high as the hind *Wheels*, and the Thills fix'd under the Axis.

3°, That such a Vehicle would likewise be drawn more easily where the *Wheels* cut in Clay, Sand, &c.

4°, That high *Wheels* would not cut so deep as low *Wheels*.

5°, That low *Wheels* are indeed best for turning in a narrow Compass.

Potter's WHEEL. See POTTERY.

Aristotle's WHEEL. See ROTA Aristotelica.

Measuring WHEEL. See PODEMETER, PERAMBULATOR, WAYWISER, &c.

WHEEL is also a kind of Punishment which great Criminals are put to in divers Countries. See PUNISHMENT.

In France, their Assassins, Parricides, and Robbers on the Highway, are condemn'd to the *Wheel*, i. e. having their Bones first broke with an Iron Bar on a Scaffold, they are expos'd and left to expire on the Circumference of a *Wheel*.—In Germany, they break their Bones on the *Wheel* it self.

This cruel Punishment was unknown to the Antients; as is observ'd by Cujas.—'Tis not certain who was the Inventor.—Its first Introduction was in Germany. 'Twas but rarely practis'd any where else, till the Time of Francis I. of France; who by an Edict of the Year 1534, appointed it to be inflicted on Robbers on the Highway. Richerius dates the Edict of the Year 1538, and quotes Brodeus.

WHEEL, in the Military Art, is the Word of Command when a Battalion is to alter its Front, either one way or the other. See EVOLUTION.

To *Wheel to the right*, the Man in the right Angle is to turn very slowly, and every one to wheel from the left to the right, regarding him as their Centre; and *vice versa*, when they are to wheel to the left.

When a Division of Men are on the March, if the Word be *Wheel to the right*, or to the left, then the right or left-hand Man keeps his Ground, turning only on his Heel, and the rest of the Rank move about quick, till they make an even Line with the said right or left-hand Man.

Squadrons of Horse wheel much after the same manner. WHEEL-FIRE, among Chymists, a Fire used for fusing of Metals; properly called *Ignis Rotæ*. See FUSION, METAL, &c.

It is a Fire which covers or incompasses the Crucible, Coppel, or Melting-Pot quite over; a-top, as well as around the Sides. See FIRE.

WHERLICOTES, a sort of open Chariots, used by Persons of Quality before the Invention of Coaches. See COACH, CHARIOT, &c.

WHERRY. See VESSEL, BOAT, &c.

WHETSTONE, a Stone for the whetting or sharpening Knives, and other Tools upon. See STONE, and HARE.

WHEY, the Serum or watery Part of Milk. See MILK.



**WHIFFLER**, of a Company of London, a young Freeman, who goes before, and waits on the Company on occasions of public Solemnity. See COMPANY.

**WHIGS**, a Party or Faction in England, opposite to the Tories. See TORY.

The Origin of the Names of these two mighty Factions is very obscure.—If some little trivial Circumstance or Adventure, which escapes the Knowledge of Mankind, give the Name to a Party, which afterwards becomes famous; Posterity labours in vain to find the Original of such Names: It searches the Sources, forms Conjectures, invents Reasons, and sometimes meets the Truth, but always without knowing it assuredly.

Thus, in France, the Calvinists are call'd *Huguenots*; yet no body was ever able certainly to assign the Cause of that Appellation. See HUGUENOT.

*Whig* is a Scottish, and some say, too, an Irish Word, literally signifying *Whey*.—*Tory* is another Irish Word, signifying a Robber or Highwayman.

Now, under the Reign of King Charles the Second, while his Brother, then Duke of York, was obliged to retire into Scotland, there were two Parties form'd in that Country—That of the Duke, which was strongest, persecuted the other, and frequently reduced them to fly into the Mountains and Woods, where those unhappy Fugitives had often no other Subsistence for a long time but Cows Milk. Hence their Adversaries they call'd *Tories*, *q. d.* Robbers; and the Tories upbraiding them with their Unhappiness, and from the Milk whereof they liv'd, call'd them *Whigs*.—From Scotland the two Names came over with the Duke into England.

Others give the Origin and Etymology of the two Words thus—During the unhappy War which brought King Charles I. to the Scaffold, the Partizans of that Prince were at first call'd *Cavaliers*, and those of the Parliament *Round-Heads*.—Now, *Tory* was a Name for a kind of *Banditti* in Ireland, who shelter'd themselves in the Mountains and the Islands form'd by the Bogs; as, then, the King's Enemies charged him with favouring the Rebellion in Ireland, which broke out at that time, they changed the Name *Cavalier* into that of *Tory*.—And these last, to be even with their Enemies, who were strictly leagued with the Scots, changed *Round-Heads* for *Whigs*, the Name of a sort of Enthusiasts in Scotland, who living in the open Fields and Woods, fed much on Milk. *Dissert. de Mons. Rapin Thoiras sur les Whigs & les Torsys.* Haye Ann. 1717.

**WHINE**, a hunting Term, used in respect of the Cry of an Otter. See HUNTING.

**WHIP**, or **WHIP-STAFF**, in a Ship, a Piece of Timber in form of a strong Staff, fasten'd into the Helm, for the Steers-Man in small Ships, to hold in his Hand; thereby to move the Helm and direct the Ship. See HELM and STEERING.

**WHIPPING**, a Term used by Anglers, when they fasten a Line to the Hook, or Rod. See ANGLING.

The Word is also taken for the casting in of the Hook, and drawing it gently on the Water.

**WHIRL-POOL**, an Eddy, Vortex, or Gulph, where the Water is continually turning round. See GULPH, EDDY, VORTEX, &c.

**WHIRL-WIND**, a Wind that rises suddenly, is exceedingly rapid and impetuous, when risen, but soon spent. See WIND and HURRICANE.

There are divers sorts of *Whirl Winds*, distinguish'd by their peculiar Names; as the *Prester*, *Typho*, *Turbo*, *Exhydria*, and *Ecnephia*.

The *Prester* is a violent Wind breaking forth with flashes of Lightning.—This is rarely observ'd, scarce ever without the *Ecnephia*.—*Seneca* says 'tis a *Typho*, or *Turbo*, kindled or ignited in the Air. See PRESTER.

The *Ecnephia* is a sudden and impetuous Wind breaking out of some Cloud; frequent in the *Aethiopic* Sea, particularly about the *Cape of Good Hope*.—The Seamen call them *Travados*. See TRAVADOS.

The *Exhydria* is a Wind bursting out of a Cloud with a great quantity of Water.—This only seems to differ in degree from the *Ecnephias*, which is frequently attended with Showers.

A *Typho* is an impetuous Wind, running rapidly every way, and sweeping all round the Place.—It frequently descends from on high. The *Indians* call it *Orancan*, the *Turks*, &c. *Oliphant*. 'Tis frequent in the *Eastern Ocean*, chiefly about *Siam*, *China*, &c. and renders the Navigation of those Parts exceeding dangerous. See VORTEX, SPOUT, &c.

**WHISPERING**; see HEARING, ATTENTION, &c.

**WHISPERING-Places** depend on this Principle, That the Voice being apply'd to one end of an Arch, easily rolls to the other. See SOUND, ARCH, &c.

Accordingly, all the Contrivance in a *Whispering-Place*, is, that near the Person who whispers there be a smooth

Wall, arch'd, either Cylindrically, or Elliptically.—A circular Arch will do, but not so well. See PHONICS.

Places form'd for the Conveyance of *Whispers*, are the Prison of *Dionysius* at *Syracuse*, which increases a soft *Whisper* to a Noise, the Clap of one's Hand to the Sound of a Cannon, &c.—The *Aqueducts* of *Claudius*, which carry a Voice sixteen Miles: And divers others enumerated by *Kircher* in his *Phonurgia*.

The most considerable in England, are; the Dome of *St. Paul's, London*, where the Ticking of a Watch may be heard from Side to Side; and a very easy *Whisper* be sent all round the Dome.—This, Mr. *Derham* found to hold not only in the Gallery below, but above upon the Scaffold, where a *Whisper* would be carried over one's Head round the Top of the Arch, tho' there be a large Opening in the Middle of it into the upper Part of the Dome.

The famous *Whispering-Place* in *Gloucester Cathedral*, is no other than a Gallery above the East End of the Choir, leading from one Side thereof to the other.—It consists of five Angles and six Sides, the Middlemost of which is a naked Window; yet two *Whisperers* hear each other at the distance of twenty-five Yards.

**WHITE**, one of the Colours of natural Bodies. See COLOUR and BODY.

*White* is not so properly said to be any one Colour, as a Composition of all the Colours.

It is demonstrated by Sir *Isaac Newton*, that those Bodies only appear *White*, which reflect all the kinds of colour'd Rays alike. See WHITENESS.

*Hervelius* affirms it as a thing most certain, that in the Northern Countries, Animals, as Hares, Foxes, Bears, &c. become *White* in the Winter-time; and in Summer resume their natural Colours. See HAIR.

Black Bodies are found to take heat sooner than *white* ones; by reason the former absorb or imbibe Rays of all Kinds and Colours, and the latter reflect all. See BLACKNESS.

Thus black Paper is sooner put into Flame by a Burning-Glass, than *white*; and black Clothes hung up by the Dyers in the Sun, dry sooner than *white* ones. See BLACK.

**WHITE-Paper** is that intended for Writing, Printing, &c. in contradistinction to brown Paper, marbled Paper, blotting Paper, &c. See PAPER.

**WHITE Pepper** is black Pepper blanch'd or *whiten'd*, by shelling off its upper Skin. See PEPPER.

**WHITE Wine** is that of a clear, bright, transparent Colour, bordering on *white*.—'Tis thus call'd, to distinguish it from the red Wines or Clarets.

The generality of *white Wines* are made from *white* Grapes; tho' there are some from black ones. See WINE.

**WHITE Wax**, is yellow Wax blanch'd, and purify'd by the Sun and Dew. See WAX.

**WHITE Linnen**, is Cloth of Hemp or Flax, bleach'd by divers Lyes and Waterings on the Ground. See BLEACHING.

**WHITE Salt** is Common, or Sea-Salt dried and calcined by the Fire, so as not to leave any Moisture therein.—The Chymists call it *decrepitated Salt*.

There are some Salts naturally *white*; and others that need to be *whiten'd* either by dissolving and purifying 'em in clear Water, which is afterwards evaporated; or by means of Fire; or by the Sun. See SALT.

**Spanish White**, is a kind of Pucus used by the Ladies to *whiten* the Complexion, and hide the defects thereof.—'Tis made of Tin of Glass dissolved in Spirit of Nitre, and precipitated into a very fine Powder, by means of Salt-water. See TIN.

**WHITE Lead**, is a Rust of Lead; or Lead dissolved with Vinegar; much used by the Painters. See LEAD.

'Tis prepared two ways—either by reducing the Lead into thin Lamine, steeping 'em in strong Vinegar, and every ten days scraping off the Rust form'd on the Surface: and repeating this till the Lead be quite consumed.

Or, by rolling the Lamine into Cylinders like Sheets of Paper, only so as that there be a little Space left between the several Folds or Turns.—These Lamine they suspend in the middle of Earthen Pots, at bottom of which is Vinegar.—The Pots being well closed, are buried in a Dunghill for thirty days; after which being open'd, the Lead is found, as it were, calcined and reduced into what they call *white Lead*, to be broke into Pieces, and dried in the Sun.

'Tis used both in painting in Oil and in Water-Colours, and makes a beautiful Colour in each.—But 'tis somewhat dangerous both in the grinding and using it, as being a rank Poison. See COLOUR.

Of this *white Lead* it is that the Paint used by the Ladies, call'd *Cerrus*, is made. See CERRUS.



**WHITE Friars**, a Name common to several Orders of Monks, from their being clothed in a *white Habit*. See **MONK, HABIT, &c.**

Such are the regular Canons of *St. Augustin*, the *Premonstrantes*, and *Bernardins*.

**WHITE of the Eye**, is the first Tunic or Coat of the Eye, call'd *Albuginea*, and *Conjunctiva*, because serving to bind together or inclose the rest. See **CONJUNCTIVA, &c.**

**WHITE hart Silver**, *Candidi Cervi Argentum*, a Tribute or Mulf paid into the Exchequer, out of certain Lands in or near the Forest of *White-hart*; which has continued from *Henry the Third's* Time, who imposed it upon *Thomas de la Linde*, for killing a very beautiful *white Hart*, which that King had purposely spared in hunting. See **HART and HUNTING.**

**WHITE Line**, among Printers, a void Space greater than usual, left between two Lines. See **PRINTING.**

**WHITE Meats**, include Milk, Butter, Cheese, *White-Pots*, Custards, and other Foods coming of Milk. See **MILK, FOOD, &c.**

**WHITE-Pot** denotes Milk or Cream baked with the Yolks of Eggs, fine Bread, Sugar, and Spice, in an Earthen-Pot.

The Cooks furnish us with a Variety of Dishes under this Form and Denomination; *Norfolk White-Pot*, *Westminster White-Pot*, *Rice White-Pot*, &c.

**WHITE Sauce**, in Cookery, a Sauce made of blanched Almonds, and the Breast of a Capon, pounded together with Cloves, Cinnamon, &c. — We also hear of *White Broth*, being a sort of Broth enriched with Sack, and Spices, having blanched Almonds scraped into it, and the whole thicken'd with the Yolks of Eggs, &c.

**WHITE Line**; see **LINEA Alba.**

**WHITE Rent**, is a Rent or Duty of 8 *d.* payable yearly, by every Tanner in the County of *Devon*, to the Duke of *Cornwall*.

**WHITE Spurs**; see **ESQUIRE.**

**WHITENESS**, *Albedo*, the Quality which denominates a Body *white*. See **WHITE and COLOUR.**

*Sir Isaac Newton* shews, that *Whiteness* consists in a Mixture of all the Colours; and that the Light of the Sun is *white*, because consisting of Rays of all Colours. See **RAY.**

From the multitude of Rings of Colours, which appear upon Compressing two Prisms, or Object-Glasses of Telescopes together, it is manifest, that these do so interfere and mingle with one another at last, as after eight or nine Reflexions to dilute one another wholly, and constitute an even, and uniform *Whiteness*: Whence, as well as from other Experiments, it appears, that *Whiteness* is certainly a Mixture of all Colours, and that the Light which conveys it to the Eye is a Mixture of Rays indued with all those Colours. See **LIGHT.**

The same Author shews, that *Whiteness*, if it be most strong and luminous, is to be reckon'd of the first Order of Colours; but if less, as a Mixture of the Colours of several Orders: Of the former sort he reckons white Metals; and of the latter, the *Whiteness* of Froth, Paper, Linnen, and most other white Substances — And as the White of the first Order is the strongest that can be made by Plates of transparent Substances, so it ought to be stronger in the denser Substances of Metals, than in the rarer ones of Air, Water, and Glass.

Gold or Copper mixed either by Fusion, or Amalgamation with a very little Mercury, with Silver, Tin, or Regulus of Antimony, becomes white; which shews, both that the Particles of white Metals have much more Surface, and therefore are smaller than those of Gold or Copper; and also that they are so opaque, as not to suffer the Particles of Gold or Copper to shine through them. — And as that Author doubts not, but that the Colours of Gold and Copper are of the second or third Order, therefore the Particles of *white Metals* cannot be much bigger than is requisite to make them reflect the *white* of the first Order. See **PARTICLE.**

**WHITENING**; see **BLEACHING.**

**WHITENING of Wax.** } See { **WAX.**

**WHITENING of Hair.** } See { **HAIR.**

**WHITES**, in Medicine; see **FLUOR Albus.**

**WHITLOW**, in Medicine, a Tumor, by Physicians commonly call'd *Paronychia*, See **PARONYCHIA.**

**WHITSON Farthings**; see **PENTECOSTALIA.**

**WHITSONTIDE** — The Season properly call'd *Pentecost*, is popularly call'd *Whitsontide*; some say, because in the Primitive Church, those who were newly baptized came to Church between *Easter* and *Pentecost* in *white Garments*. — *Whitsunday* always falls between the 9th of *May*, and the 14th of *June*, exclusive. See **PENTECOST.**

**WHOLE**, in Arithmetic, &c. See **TOTUM**; see also **PART, DIVISION, PARTITION, &c.**

**WHOLESON**; see **FOOD, POISON, HEALTH, &c.**

**WHOODINGS**, *q. d.* **HOODINGS**, a Sea-Term, used for Planks joined and fastned along the Ship's Sides to the Stern.

**WHORE**; see **MERETRIX, HARLOT, &c.**

**WHORLBAT**, of the *Saxon*, *Batt* and *Whirl*; a kind of Gauntlet, with Straps and leaden Plummetts, used by the ancient Romans in their solemn Games and Exercises. See **GAUNTLET, &c.**

This *Whoribat* is the same with what they call'd *Cestus*. See **CESTUS.**

**WHUR**, in Falconry, is the Fluttering of Partridges or Pheasants, as they rise. See **HAWK and HAWKING.**

**WIC**, denotes a Place on the Sea-Shore, or on the Bank of a River; tho', in the *Saxon*, it more properly signifies a Street, a Village, or Dwelling-Place, also a Cattle. See **WYKE.**

We often meet with it in the *Saxon* Language as a Termination of the Name of a Town which had a compleat Name without it, as *Lunden-wic*, that is, *London Town*, which signifies no more than *London*; as in the *Saxon* Annals it is mentioned, that King *Aethelbert* made *Mellitus* Bishop of *Lunden-wic* — So *Ipswich* is written in some old Charters *Villa de Gippo*, and sometimes *Villa de Gippo Wico*, which is no variance, but the same thing; for *Gipps* is the compleat Name, and *Gipp-wic* is *Gipps Town*.

**WICKER**, of the *Danish* *Wiger*, or the *Teutonic* *Wicken*; a Twig of the Osier-Shrub. See **VINE, BASKET, &c.**

**WICKET**, of the *French* *Guichet*, a little Door within a Gate; or a Hole in a Door, through which to view what passes without. See **DOOR.**

**WICKLIFFISTS**, or **WICKLIFFITES**, a Religious Sect who had their Rise in *England*, and their Name from their Leader *John Wickliff*, a Professor of Divinity in the University of *Oxford*.

To that immortal Author it is we owe the first Hint of the great Reformation effected 200 Years after him. See **REFORMATION.**

*Wickliff* maintained, that the Substance of the Sacramental Bread and Wine still remained such after Consecration. — He also opposed the Doctrine of Purgatory, Indulgences, the Invocation of Saints, and the Worship of Images. See **TRANSUBSTANTIATION, PURGATORY, &c.**

He made an *English* Version of the Bible; and composed two large Volumes call'd *Aletheia*, that is, *Truth*; which was the Source whence *John Hus* first learn'd most of his Doctrines. See **HUSSITES.**

The Archbishop of *Canterbury* call'd a Council against *Wickliff*, and he was condemn'd therein; but the good Reformer set the Condemnation at nought. — After this, King *Richard* banish'd him out of *England*, but he was afterwards recall'd, and died in his own Country in the Year 1384.

Forty Years afterwards, his Doctrine and the Adherers thereto were condemn'd by the Council of *Constance*; in consequence of which, his Bones were dug up, and the Council condemn'd him of forty Errors.

**WIDOW**, *Vidua*, a Woman that has lost her Husband. See **WOMAN, WIFE, HUSBAND, &c.**

Some also use the Term *Widower* for a Man who has lost his Wife. — Marriage with a *Widow*, is a kind of Bigamy in the Eye of the Canon-Law. See **BIAMY.**

**WIDOW of the King**, was she who, after her Husband's death, being the King's Tenant *in Capite*, was driven to recover her Dower by the Writ *de Dote Assignanda*; and could not marry again without the King's Consent. See **VIDUITY.**

**WIDOW Bench**, in the County of *Suffex*, is that Share which a Widow is allow'd of her Husband's Estate besides her Jointure. See **BENCH.**

**WIDOWHOOD**; see **VIDUITY.**

**WIFE**, *Uxor*, a married Woman; or one join'd with, and under the Protection of, a Husband. See **WOMAN, MARRIAGE, and HUSBAND.** See also **MATRON, &c.**

A *Wife*, in our *English* Law, is termed *Feme Covert*; and in the Judgment of the Law is reputed to have no Will, as being supposed entirely under, and subject to that of her Husband: *Uxor fulget radiis Mariti*. See **FEM and COVERTURE.**

If any Goods or Chattels be given her, they all immediately become her Husband's. — She cannot let, sell give away, or alienate any thing without her Husband's Consent. — Her very necessary Apparel is not hers in Property. — All her personal Chattels which she held at her Marriage, are so much her Husband's, that after his Death they shall not return to her, but go to the Executor or Administrator of her Husband; except only her *Paraphernalia*, or *Præter-dotalia*, being her necessary Apparel, which, with the Consent of her Husband, she may demise by Will. See **PARAPHERNALIA.**

The *Wife* can make no Contract without her Husband's Consent, and in all Law-Matters, *sine Viro respondere non potest*.



The Law supposes in the Husband, the full Power over his *Wife*, as over his Child or Servant; and therefore he must answer for all her Faults, and Trespasses.

If a *Wife* bring forth a Child during her Husband's Absence, tho' of many Years; yet if he lived all the time *inter quatuor Maria*, within the Island, he must father the Child; and the Child, if first born, shall inherit.

If a *Wife* bring forth a Child begot by a former Husband, or any other Person, before Marriage, but born after Marriage with another Man; this latter must own the Child; and that Child shall be his Heir at Law.

The *Wife*, after her Husband's Death, having no Jointure settled before Marriage, may challenge the third part of his yearly Rents of Land during her Life; and within the City of *London*, a third part of all her Husband's Moveables for ever.

The *Wife* partakes of the Honours, and Condition of her Husband; but none of the *Wife's* Dignities come by Marriage to her Husband.

Yet, the Husband, for getting his *Wife* with Child, which must appear by its being born alive, shall have all his *Wife's* Lands for Life.

The *English* Laws are generally esteem'd by Foreigners, as very hard in respect of the Women; and yet *Chamberlain* is of a very different Sentiment, asserting that the Condition of *Wives* in *England* is better than in any other Country.

*Tertullian* has two Books on the Ornaments and Attire of *Wives*——In the second he labours to prove, that a Christian *Wife* cannot in conscience endeavour to please by her Beauty, which she knows to be naturally liable to raise loose Desires; and that she ought not only to avoid all affected Beauty, but even to conceal and cover her natural Beauty.

*Mid-WIFE*, *Obstetrix*. See DELIVERY, FOETUS, &c. See also VIRGINITY.

WILDERNESS, see DESART, GROVE, WOOD, &c.

WILD-Fire, *Ignis Gregalis*, or *Græcus*. See FIRE.

WILD-Fire Arrows, such as are trimmed with *Wild-Fire*, and shot burning, to stick in the Sails or Rigging of Ships in a Fight.

WILD-Fire, is also a Disease in Cattel; which is infectious, deadly, and even reputed incurable. See MURRAIN.

WILL, *Voluntas*, is usually defined a Faculty of the Mind, whereby it embraces or rejects any thing represented to it as Good or Evil by the Judgment. See FACULTY, GOOD, EVIL, &c.

Others will have it to be the Mind itself, consider'd as embracing or refusing; adding, that as the Understanding is nothing else but the Soul, consider'd as *perceiving*; so the *Will* is nothing else but the Soul consider'd as *Willing*, &c. See UNDERSTANDING.

Mr. *Locke* more intelligibly defines the *Will* a Faculty, which the Soul has of beginning, or forbearing, continuing, or ending several Actions of the Mind, and Motions of the Body, barely by a Thought or Preference of the Mind, ordering, or, as it were, commanding the doing, or not doing such and such a particular Action——This Power the Mind has, to order the Consideration of any Idea, or the forbearing to consider it; or to prefer the Motion of any part of the Body to its Rest, and *vice versa*, is what we call the *Will*. See POWER.

The actual Exercise of that Power, is what we call *Volition*, or *Willing*; and the doing or forbearing any Action consequent on such Order of the Mind, is call'd *Voluntary*. See VOLITION, VOLUNTARY, &c.

Father *Mallebranch* lays it down, that the *Will* is that to the Soul, which Motion is to the Body; and argues, That as the Author of Nature is the universal Cause of all the Motions in Matter, so he is of all the Inclinations in the Mind: and that as all Motions are direct, unless their Course be diverted and chang'd by some foreign Cause; so all *Inclinations* are right, and could have no other End, but the Enjoyment of Truth and Goodness, were there not some foreign Cause to determine the natural Impression to evil Ends.

Accordingly, he defines *Will* to be the Impression, or natural Motion, which carries us towards Good indeterminate-ly, and in the general; and the Power the Mind has to direct this general Impression towards any particular Object that pleases it, is what he calls *Liberty*. See LIBERTY and NECESSITY.

*Aristotle* distinguishes two kinds of Acts of the *Will*; viz. *Buñny*, *Willing*, *Volition*; and *æpæpny*, *Election*——The first, that employ'd about the ultimate End; the latter, about the Means.

The Schoolmen also distinguish the Actions of the *Will* into *Elicit* and *Commanded*——*Elicit* Acts, *Actiones Elicite*, are those immediately produc'd by the *Will*, as really inherent therein; such are *Willing* and *Nilling*——*Commanded* Acts, *Actiones Imperate*, are Effects produc'd by

other Powers, v. gr. the Sensitive, Intellectual, or Locomotive Powers, at the Command or Instigation of the *Will*——As to *follow*, *stay*, *fight*, *fly*, &c. See ACTION.

But others will have the former kind properly to belong to the Understanding; and only the latter, to the *Will*.

The Word *Will* is taken in three Senses: 1°. For the Power, or Faculty of *Willing*; in which sense it is, we have consider'd it above——2°. For the Act, or Exercise of the Power; as, when we say, No Man *wills* his own Destruction——3°. For a Habit, or a constant Disposition and Inclination to do any thing——In which sense, Justice is defined a constant *Will* to give every one what belongs to him: *Justitia est constans & perpetua Voluntas jus suum unicuique tribuendi*. Instit. Justin.

Free-WILL. See LIBERTY.

WILL, or Last WILL, in Law, &c. a solemn Act, or Instrument, whereby a Person directs and orders the Disposal of his Goods, Effects, &c. after his Death.

*Wills* are of two kinds: A *Will in Writing*, properly call'd also a *Testament*. See TESTAMENT.

And a *Will by word of mouth* only, call'd a *Nuncupative Will*; which being proved by three or more Witnesses, may be of as good force as that in Writing; except for Lands, which are only devisable by Testament in Writing during the Life of the Testator. See NUNCUPATIVE.

WILL with a *Whisp*, a Meteor known among the People under this Name; but more usually among Authors under that of *Ignis Fatuus*. See IGNIS FATUUS.

WIMPLE, of the *Dutch Wimpel*, a Musket, or plaited Linnen Cloth, which Nuns wear about their Neck.

The Word is also used for a Streamer or Flag. See FLAG, &c.

WIN, in the Beginning or End of the Names of Places, signifies that some great Battel was fought, or a Victory gain'd there.

The Word is form'd from the *Saxon Winge*, *Prelum*, Battel.

WIND, *Ventus*, a sensible Agitation of the Air, whereby a large quantity thereof flows out of one Place or Region into another. See AIR.

The *Winds* are divided into *perennial*, *stated*, and *variable*——They are also divided into *general*, and *particular*.

*Perennial*, or *constant* WINDS, are such as always blow the same way.——Of these we have a very notable one, between the two Tropicks, blowing constantly from East to West; call'd the *general Trade-Wind*. See TRADE-WIND.

*Stated*, or *periodical* WINDS, are such as constantly return at certain Times——Such are the Sea and Land-Breezes, blowing from Sea to Land in the Evening; and from Land to Sea in the Morning. See BREEZE.

Such also are the *shifting*, or *particular Trade-Winds*, which for certain Months of the Year blow one way, and the rest of the Year the contrary way. See MONSOON.

*Variable*, or *erratic* WINDS, are such as blow now this, now that way; are now up, now hush'd, without any Rule or Regularity, either as to Time or Place.

Such are all the *Winds* observ'd in the Inland Parts of *England*, &c. Tho' several of these claim their certain Times of the Day——Thus the *West-Wind* is most frequent about Noon; the *South-Wind* in the Night; the *North* in the Morning, &c. See WEATHER.

*General* WIND is such a one, as at the same time blows the same way over a very large Tract of Ground, almost all the Year——Such only is the *general Trade Wind*.

But even this has its Interruptions: For, 1°. At Land it is scarce sensible at all, as being broke by the Interposition of Mountains, Valleys, &c. 2°. At Sea, near the Shore, it is disturb'd by Vapours, Exhalations, and particular *Winds*, blowing from Landward; so that it is chiefly consider'd as *general*, only at Mid-Sea: Where, 3°. It is liable to be disturb'd by *Clouds* driven from other Quarters.

*Particular* WINDS——Excepting the general *Trade-Winds*, all others are *particular*.

Those particular to one little Canton, or Part, are call'd *Topical*, or *Provincial Winds*——Such is the *North Wind* on the Western Side of the *Alps*, which does not blow above one or two Leagues lengthwise, and much less in breadth: Such also is the *Pontias* in *France*. See PONTIAS.

#### Physical Cause of WINDS.

Some Philosophers, as *Des Cartes*, *Robault*, &c. account for the general *Wind* from the diurnal Rotation of the Earth; and from this general *Wind* derive all the particular ones——The Atmosphere, say they, investing the Earth, and moving round it; that part will perform its Circuit soonest, which has the smallest Circle to describe: The Air, therefore, near the Equator, will require a somewhat longer time to perform its Course in from West to East



East, than that nearer the Poles—Thus, as the Earth turns Eastward, the Particles of the Air near the Equinoctial being exceeding light, are left behind, so that in respect of the Earth's Surface, they move Westwards, and become a constant *Easterly Wind*.

This Opinion seems confirmed by this, that these *Winds* are found only between the Tropicks, in those Parallels of Latitude where the diurnal Motion is swiftest—But the constant Calms in the *Atlantick* Sea, near the Equator, the westerly *Winds* near the Coast of *Guinea*, and the periodical westerly Monsoons under the Equator in the *Indian* Seas, declare the Insufficiency of this Hypothesis.

Besides, the Air being kept close to the Earth by the Principle of Gravity, would in time acquire the same degree of Velocity, that the Earth's Surface moves with, as well in respect of the diurnal Rotation, as of the annual about the Sun, which is about thirty times swifter.

Dr. *Halley*, therefore, substitutes another Cause, capable of producing a like constant Effect, not liable to the same Objections, but agreeable to the known Properties of the Elements of Water and Air, and the Laws of the Motion of fluid Bodies.—Such a one is the Action of the Sun's Beams upon the Air and Water, as he passes every day over the Ocean, consider'd together with the Quality of the Soil, and the Situation of the adjoining Continents.

According to the Laws of Statics, the Air which is less rarefied or expanded by Heat, and consequently more ponderous, must have a Motion towards those Parts thereof which are more rarefied and less ponderous, to bring it to an Equilibrium; also the presence of the Sun continually shifting to the Westward, that part towards which the Air tends by reason of the Rarefaction made by his greatest Meridian Heat, is with him carried Westward, and consequently the tendency of the whole Body of the lower Air is that way.

Thus a general *Easterly Wind* is formed, which being impress'd upon all the Air of a vast Ocean, the parts impel one the other, and so keep moving till the next return of the Sun, whereby so much of the Motion, as was lost, is again restored; and thus the *Easterly Wind* is made perpetual.

From the same Principle it follows, that this *Easterly Wind* should on the North Side of the Equator be to the Northwards of the East, and in South Latitudes to the Southwards thereof; for near the Line, the Air is much more rarefied, than at a greater distance from it; because the Sun is twice in a Year vertical there; and at no time distant above  $23\frac{1}{2}$  Degrees: At which distance, the Heat being as the Sine of the Angle of Incidence, is but little short of that of the perpendicular Ray; whereas under the Tropicks, tho' the Sun stay long Vertical, yet he is a long time 47 Degrees off; which is a kind of Winter, wherein the Air so cools, as that the Summer Heat cannot warm it to the same degree with that under the Equator. Wherefore the Air towards the Northward and Southward being less rarefied, than that in the middle, it follows, that from both Sides, it ought to tend towards the Equator. See *HEAT*.

This Motion compounded with the formerly *Easterly Wind*, accounts for all the Phenomena of the general *Trade-Winds*; which, if the whole Surface of the Globe were Sea, would undoubtedly blow quite round the World, as they are found to do in the *Atlantick*, and the *Ethiopic* Ocean.—But seeing so great Continents do interpose, and break the Continuity of the Oceans, regard must be had to the Nature of the Soil, and the Position of the high Mountains, which are the two principal Causes of the Variation of the *Wind* from the former general Rule; for if a Country lying near the Sun prove to be flat, sandy, and low Land; such as the Deserts of *Libya* are usually reported to be; the Heat occasion'd by the Reflections of the Sun's Beams, and the retention thereof in the Sand, is incredible to those who have not felt it; whereby the Air being exceedingly rarefied, it is necessary, that this cooler, and more dense Air, should run thitherwards to restore the Equilibrium.

This is supposed to be the Cause, why near the Coast of *Guinea*, the *Wind* always sets in upon the Land, blowing Westerly instead of Easterly; there being sufficient reason to believe, that the inland Parts of *Africa* are prodigiously hot, since the Northern Borders thereof were so intemperate as to give the Antients cause to conclude, That all beyond the Tropicks was uninhabitable by excess of Heat.

From the same Cause it happens, that there are so constant Calms in that part of the Ocean call'd the *Rains*; for this Tract being placed in the Middle, between the Westerly *Winds* blowing on the Coast of *Guinea*, and the Easterly *Trade-Winds* blowing to the Westwards thereof; the tendency of the Air here, is indifferent to either, and so stands in Equilibrium between both; and the weight of the incumbent Atmosphere being diminished by the continual contrary *Winds* blowing from hence, is the reason that the Air here holds not the copious Vapour it receives, but lets it fall in so frequent Rains.

But, as the cool and dense Air, by reason of its greater Gravity, presses upon the hot and rarefied, it is demonstrable, that this latter must descend in a continued Stream, as fast as it rarefies; and that being ascended, it must disperse itself to preserve the Equilibrium; that is, by a contrary Current the upper Air must move from those Parts where the greatest Heat is: so by a kind of Circulation, the North-East *Trade-Wind* below, will be attended with a South-Westerly above; and the South-East with a North-West *Wind* above. See *CURRENT, UNDER-CURRENT, &c.*

That this is more than a bare Conjecture, the almost instantaneous Change of the *Wind* to the opposite Point, which is frequently found in passing the Limits of the *Trade-Winds*, seems to assure us; but that which above all confirms this Hypothesis, is the Phenomenon of the Monsoons, by this means, most easily solved, and without it hardly explicable. See *MONSOON*.

Supposing therefore such a Circulation as above; it is to be consider'd, that to the Northward of the *Indian* Ocean, there is every where Land, within the usual Limits of the Latitude of 30, viz *Arabia, Persia, India, &c.* which, for the same reason as the *Mediterranean* Parts of *Africa*, are subject to unsufferable Heats, when the Sun is to the North, passing nearly Vertical; but yet are temperate enough, when the Sun is remov'd towards the other Tropick, because of a Ridge of Mountains at some distance within the Land, said to be frequently in Winter cover'd with Snow, over which the Air, as it passes, must needs be much chill'd—Hence it happens, that the Air coming, according to the general Rule, out of the North-East, in the *Indian* Sea, is sometimes hotter, sometimes colder, than that which, by this Circulation, is return'd out of the South-West; and by consequence, sometimes the Under-Current, or *Wind*, is from the North-East, sometimes from the South-West.

That this has no other Cause, is clear from the Times, wherein these *Winds* set, viz. in *April*; when the Sun begins to warm those Countries to the North, the South-West Monsoons begin, and blow during the Heats till *October*, when the Sun being retir'd, and all things growing cooler Northward, and the Heat increasing to the South, the North-East enter, and blow all the Winter, till *April* again. And it is undoubtedly from the same Principle, that to the Southward of the Equator, in part of the *Indian* Ocean, the North-West *Winds* succeed the South-East, when the Sun draws near the Tropic of *Capricorn*. See *TIDE*.

But, the Industry of some late Writers having brought the Theory of the Production and Motion of *Winds* to somewhat of a Mathematical Demonstration; we shall here give it the Reader in that form.

#### *Laws of the Production, &c. of WINDS.*

If the Spring of the Air be weaken'd in any place, more than in the adjoining places; a *Wind* will blow thro' the place where the Diminution is. See *ELASTICITY*.

For, since the Air endeavours, by its elastic Force, to expand itself every way; if that Force be less in one place than another; the *Nisus* of the more, against the less elastic, will be greater than the *Nisus* of the latter against the former—The less elastic Air, therefore, will resist with less force than it is urg'd, by the more elastic: Consequently, the less elastic will be driven out of its place, and the more elastic will succeed.

If, now, the Excess of the Spring of the more elastic, above that of the less elastic, be such as to occasion a little alteration in the Baroscope; the Motion both of the Air expell'd, and that which succeeds it, will become sensible. *Q. E. D.*

2. Hence, since the Spring of the Air increases, as the compressing Weight increases; and compress'd Air is denser than Air less compress'd: All *Winds* blow into rarer Air out of a place fill'd with a denser.

3. Wherefore, since a denser Air is specifically heavier than a rarer; an extraordinary Lightness of the Air in any place, must be attended with extraordinary *Winds* or Storms.

Now, an extraordinary Fall of the Mercury in the Barometer, shewing an extraordinary Lightness of the Atmosphere; 'tis no wonder, if th it foretels Storms.

4. If the Air be suddenly condens'd in any place, its Spring will be suddenly diminish'd: Hence, if this Diminution be great enough to affect the Barometer, there will a *Wind* blow thro' the condens'd Air.

5. But since it cannot be suddenly condens'd, unless it have before been much rarefy'd; there will a *Wind* blow thro' the Air, as it cools, after having been violently heated.

6. In like manner, if Air be suddenly rarefy'd, its Spring is suddenly increas'd; wherefore, it will flow thro' the contiguous Air, not acted on by the rarefying Force—



A *Wind*, therefore, will blow out of a place, in which the Air is suddenly rarefy'd: And on this Principle, in all probability, it is, that,

7. Most Caves are found to emit *Wind*, either more or less—Since the Sun's Power in rarefying the Air, is notorious; it must necessarily have a great influence on the Generation of *Winds*.

The rising and changing of the *Wind* is determin'd experimentally, by means of Weather-cocks, placed a-top of Houses, &c.—But these only indicate what passes about their own Height, or near the Surface of the Earth: *Wolffius* assuring us, from Observations of several Years, that the higher *Winds* which drive the Clouds, are different from the lower ones, which move the Weather-cocks—Mr. *Derham* observes something not unlike this; *Phys. Theol.* l. i. c. 2.

The Author last mention'd observes, upon comparing several Series of Observations made of the *Winds* in divers Countries, viz. *England, Ireland, Switzerland, Italy, France, New England, &c.* That the *Winds* in those several places seldom agree; but when they do, it is commonly when they are strong, and of long continuance in the same Quarter; and more, he thinks, in the Northerly and Easterly, than in other Points—Also, that a strong *Wind* in one place, is oftentimes a weak one in another; or moderate, according as the places are nearer, or more remote. *Philosoph. Transact.* N<sup>o</sup> 297, and 321.

#### Laws of the Force, and Velocity of WIND.

*Wind* being only Air in Motion, and Air being a Fluid, subject to the Laws of other Fluids; its Force may be brought to a precise Computation: Thus—*The Ratio of the specific Gravity of any other Fluid, to that of Air, together with the Space that Fluid impell'd by the Pressure of the Air, moves in any given Time, being given; we can determine the Space which the Air itself, acted on by the same Force, will move in the same time:* By this Rule,

1. As the specific Gravity of Air, is to that of any other Fluid; so, reciprocally, is the Square of the Space which that Fluid, impell'd by any Force, moves in any given time, to the Square of the Space which the Air, by the same Impulse, will move in the same time.

Supposing, therefore, the Ratio of the specific Gravity of that other Fluid to that of Air, to be  $= b : c$ ; the Space describ'd by the Fluid to be call'd  $f$ ; and that which the Air will describe by the same Impulse,  $x$ . The Rule gives us  $x = \sqrt{(bs : c)}$ .

Hence, if we suppose Water impell'd by the given Force, to move two Feet in a Second of Time; then will  $f = 2$ ; and since the specific Gravity of Water to the Air, is as 970 to 1; we shall have  $b = 970$ , and  $c = 1$ ; consequently  $x = \sqrt{970}$ .  $4 = \sqrt{3880} = 623$  Feet. The Velocity of the *Wind*, therefore, to that of Water moved by the same Power, will be as 623 to 2; i. e. if Water move two Feet in a Second, the *Wind* will fly 623 Feet.

2. Add, that  $f = \sqrt{(cx^2 : b)}$  and therefore the Space any Fluid, impell'd by any Impression, moves in any time, is determin'd, by finding a fourth Proportional to the two Numbers that express the Ratio of the specific Gravity, and the Square of the Space the *Wind* moves in, in the given time—The square Root of that fourth Proportional is the Space requir'd.

Mr. *Mariotte*, e. gr. found, by various Experiments, that a pretty strong *Wind* moves 24 Feet in a Second of Time; wherefore, if the Space which the Water, acted on by the same Force as the Air, will describe in the same time, be requir'd; then will  $c = 1$ ,  $x = 24$ ,  $b = 970$ ; and we shall find  $f = \sqrt{(576 : 970)} = \frac{24}{11}$ .

3. The Velocity of *Wind* being given, to determine the Pressure requir'd to produce that Velocity; we have this Rule:—The Space the *Wind* moves in one Second of Time, is to the height a Fluid is to be rais'd in an empty Tube in order to have a Pressure capable of producing that Velocity; in a Ratio compounded of the specific Gravity of the Fluid to that of the Air, and of quadruple the Altitude a body descends in the first Second of Time, to the foresaid Space of the Air.

Suppose, e. gr. the Space the Air moves in a Second,  $a = 24$  Feet, or 288 Inches; call the Altitude of the third  $x$ , and the Ratio of Mercury to Air  $b : c = 13580 : 1$ ,  $d = 181$  Inches;  $x$  will be less than that Number by one Line, or  $\frac{1}{16}$  of an Inch. And hence we see why a small, but sudden Change in the Barometer, should be follow'd with violent *Winds*. See BAROMETER.

The Force of the *Wind* is determin'd experimentally by a peculiar Machine, call'd an *Anemometer*. *Wind Measurer*; which being moved by means of Sails, like those of a *Wind-Mill*, raises a Weight, that, till the higher it is rais'd, receding further from the Centre of Motion, by sliding along an hollow Arm fitted on to the Axis of the

Sails, becomes heavier and heavier, and presses on the Arm, till being a Counter-poise to the Force of the *Wind* on the Sails, it stops the Motion thereof. An Index, then, fitted upon the same Axis at right Angles with the Arm, by its rising or falling, points out the Strength of the *Wind*, on a Plane divided like a Dial-Plate into Degrees. See ANEMOMETER.

#### Qualities of WINDS.

1. A *Wind* blowing from the Sea, is always moist: In Summer, 'tis cold; and in Winter, warm: unless the Sea be froze up—This is well demonstrated thus: There is Vapour continually rising out of all Water, (as appears even hence, that a Quantity of Water being left a little while in an open Vessel, is found sensibly diminish'd) but especially if it be expos'd to the Sun's Rays; in which Case, the Evaporation is beyond all expectation. See VAPOUR.)—By this means, the Air incumbent on the Sea, becomes impregnated with a deal of Vapour. But the *Winds* blowing from off the Sea, sweep these Vapours along with them; and consequently are always moist.

Again, Water in Summer, &c. conceives less Heat than terrestrial Bodies expos'd to the same Rays of the Sun; but in Winter, Sea-Water is warmer than the Earth cover'd with Frost and Snow, &c. Wherefore, as the Air contiguous to any Body, is found to partake of its Heat and Cold, the Air contiguous to Sea-Water will be warmer in Winter, and colder in Summer, than that contiguous to the Earth—Or thus: Vapours rais'd from Water by the Sun's Warmth in Winter, is warmer than the Air it rises in; (as appears from the Vapours condensing and becoming visible almost as soon as they are got out into Air.) Fresh Quantities of Vapour, therefore, continually warming the Atmosphere over the Sea, will raise its Heat beyond that of the Air over the Land—Again, the Sun's Rays reflected from the Earth into the Air, in Summer, are much more than those from the Water into Air: The Air therefore over the Earth, warm'd by the Reflection of more Rays than that over Water, is warmer—Hence Sea-Winds make thick, cloudy, hazy Weather.

2. *Winds* blowing from the Continent, are always dry; in Summer, warm; and cold in Winter—For there is much less Vapour arising from the Earth, than from Water. And therefore the Air over the Continent will be impregnated with much fewer Vapours. Add, that the Vapours or Exhalations rais'd by a great degree of Heat out of the Earth, are much finer, and less sensible, than those from Water—The *Wind*, therefore, blowing over the Continent, carries but little Vapour with it; and is therefore dry.

Further, the Earth in Summer is warmer than Water expos'd to the same Rays of the Sun—Hence, as the Air partakes of the Heat of contiguous Bodies; that over the Earth in Summer will be warmer than that over the Water: Therefore the *Wind*, &c.

After the like manner it is shewn, that the Land-Winds are cold in Winter—Hence we see why Land-Winds make clear, cold Weather. See WEATHER.

Our Northerly and Southerly *Winds*, however, which are commonly esteem'd the Causes of cold and warm Weather, Mr. *Derham* observes, are really the Effect of the Cold, or Warmth of the Atmosphere.—Hence it is, that we frequently see a warm southerly *Wind* on a sudden changed to the North, by the fall of Snow or Hail; and that in a cold, frosty Morning, we see the *Wind* North, which afterwards wheels about towards the Southerly Quarters, when the Sun has well warm'd the Air, and again in the cold Evening turns Northerly or Easterly.

For the manner wherein North-Easterly Winds contribute to Blights; see BLIGHT.

For the Effect of Winds on the Barometer, and Thermometer; see BAROMETER and THERMOMETER.

WIND, in Navigation, is the same Agitation of the Air, consider'd as serving for the Motion of Vessels on the Water. See SAILING.

The *Winds* are divided with respect to the Points of the Horizon from which they blow, into Cardinal and Collateral.

Cardinal Winds, are those blowing from the four Cardinal Points, East, West, North, and South. See CARDINAL.

Collateral Winds, are the intermediate Winds between two Cardinal Winds—The Number of these is infinite, as the Points from which they blow are; but only a few of them are consider'd in Practice: i. e. only a few of them have their distinguishing Names. See COLLATERAL.

The ancient Greeks at first only used the four Cardinal ones; at length, they took in four more.—*Pitruvius* gives us a Table of twenty, besides the Cardinals, in use among the Romans.



The Moderns, as their Navigation is much more perfect than the ancient, have given Names to twenty-eight Collateral ones; which they range into *primary* and *secondary*—and the *secondary* they subdivide into those of the *first* and *second Order*. See POINT.

The *English* Names of the primary Collateral Winds and Points are compounded of the Names of the Cardinal ones, *North* and *South* being still prefix'd.

The Names of the secondary Collateral Winds of the first Order, are compounded of the Names of the Cardinals, and the adjacent primary one—Those of the second Order are compounded of the Names of the Cardinal, or the next adjacent primary; and the next Cardinal, with the addition of the Word (*by*).—The *Latins* have distinct Names for each; all which are express'd in the following Table.

|                                     | Names of the Winds,<br>and Points of the<br>Compass.               | Distance of the<br>Parts, &c.<br>From North. |
|-------------------------------------|--|--|
| <i>English.</i>                     | <i>Latin and Greek.</i>  |  |
| 1. <i>North.</i>                    | <i>Septentrio, or Boreas.</i>                                      | 0° 0'  |
| 2. <i>North by East.</i>            | <i>Hyperboreas.</i><br><i>Hypaquilo.</i>                           | 11 15  |
| 3. <i>North-North-<br/>East.</i>    | <i>Gallicus.</i><br><i>Aquilo.</i>                                 | 22 30  |
| 4. <i>North-East by<br/>North.</i>  | <i>Mesoboreas</i><br><i>Mesaquilo.</i><br><i>Supernas.</i>         | 33 45  |
| 5. <i>North-East.</i>               | <i>Arctapeliotes.</i><br><i>Borapeliotes.</i><br><i>Græcus.</i>    | 45   |
| 6. <i>North-East by E.</i>          | <i>Hypocæcias.</i>   | 56 15  |
| 7. <i>East-North-<br/>East.</i>     | <i>Cæcias Hellefpontius.</i><br><i>Mesocæcias.</i>                 | 67 30  |
| 8. <i>East by North.</i>            | <i>Carbas.</i>   | 78 45  |
|                                     |  | from the East.                               |
| 9. <i>East.</i>                     | <i>Solanus, Subsolanus,</i><br><i>Apeliotes.</i>                   | 0° 0'  |
| 10. <i>East by South.</i>           | <i>Hypeurus, or Hyper-<br/>eurus.</i>                              | 11 15  |
| 11. <i>East-South-<br/>East.</i>    | <i>Eurus, or Volturnus.</i>  | 22 30  |
| 12. <i>South-East by<br/>East.</i>  | <i>Meseurus.</i>   | 33 45  |
| 13. <i>South-East.</i>              | <i>Notapeliotes Euro-<br/>auster.</i>                              | 45   |
| 14. <i>South-East by<br/>South.</i> | <i>Hypophœnix.</i>   | 56 15  |
| 15. <i>South-South-<br/>East.</i>   | <i>Phœnix, Phœnicias,</i><br><i>Leuco-notus, Gange-<br/>ticus.</i> | 67 30  |
| 16. <i>South by East.</i>           | <i>Mesophœnix.</i>   | 78 45  |
|                                     |  | from the South.                              |
| 17. <i>South.</i>                   | <i>Auster, Notus, Me-<br/>ridies.</i>                              | 0° 0'  |
| 18. <i>South by West.</i>           | <i>Hypolibononotus, Al-<br/>fanus.</i>                             | 11 15  |
| 19. <i>South-South-<br/>West.</i>   | <i>Libonotus, Notoly-<br/>bicus Austro-africus.</i>                | 22 30  |
| 20. <i>South-West by<br/>South.</i> | <i>Mesolibonotus.</i>  | 33 45  |
| 21. <i>South West.</i>              | <i>Noto-Zephyrus.</i><br><i>Noto-Lybius.</i><br><i>Africus.</i>    | 45   |
| 22. <i>South-West by<br/>West.</i>  | <i>Hypolibis.</i><br><i>Hypafricus.</i><br><i>Subvesperus.</i>     | 56 15  |
| 23. <i>West-South-W.</i>            | <i>Libis.</i>  | 67 30  |
| 24. <i>West by South.</i>           | <i>Mesolibis.</i><br><i>Mesozephyrus.</i>                          | 78 45  |
|                                     |  | from the West.                               |
| 25. <i>West.</i>                    | <i>Zephyrus, Favonius,</i><br><i>Occidens.</i>                     | 0° 0'  |
| 26. <i>West by North.</i>           | <i>Hypargettes.</i><br><i>Hypocorus.</i>                           | 11 15  |
| 27. <i>West-North-<br/>West.</i>    | <i>Argettes.</i><br><i>Caurus, Corus,</i><br><i>Japyx.</i>         | 22 30  |
| 28. <i>North-West by<br/>West.</i>  | <i>Mesargettes.</i><br><i>Mesocorus.</i>                           | 33 45  |
| 29. <i>North West.</i>              | <i>Zephyro boreas, Bo-<br/>rolybius, Olympias.</i>                 | 45   |
| 30. <i>North-West by<br/>North.</i> | <i>Hypocircius.</i><br><i>Hypothrafcias.</i><br><i>Scirem.</i>     | 56 15  |
| 31. <i>North-North-<br/>West.</i>   | <i>Circius, Thrafcias.</i>   | 67 30  |
| 32. <i>North by West.</i>           | <i>Mesocircius.</i>  | 78 45  |

Note, The ancient Names are here, after *Ricciolus*, adapted to the modern ones; not as the *Winds* formerly denoted by those were precisely the same with these, (for the ancient Number and Division being different from the Modern, the Points they refer to will be somewhat different) but as these are what come the nearest.—Thus, *Vitruvius* only reckoning twenty-four *Winds*, disposes the Points they refer to in a different Order; as in the following Table.

| Names of the<br>Winds. | Distance from<br>North. | Names of the<br>Winds. | Distance from<br>East. |
|------------------------|-------------------------|------------------------|------------------------|
| 1 Septentrio.          | 0° 0'                   | 7 Solanus.             | 0° 0'                  |
| 2 Gallicus.            | 15                      | 8 Ornithias.           | 15                     |
| 3 Supernas.            | 30                      | 9 Cæcias.              | 30                     |
| 4 Aquilo.              | 45                      | 10 Eurus.              | 45                     |
| 5 Boreas.              | 60                      | 11 Volturnus.          | 60                     |
| 6 Carbas.              | 75                      | 12 Europotius.         | 75                     |
| Names of the<br>Winds. | Distance from<br>South. | Names of the<br>Winds. | Distance from<br>West. |
| 13 Auster.             | 0° 0'                   | 19 Favonius.           | 0° 0'                  |
| 14 Alfanus.            | 15                      | 20 Etesia.             | 15                     |
| 15 Libonot.            | 30                      | 21 Circius.            | 0                      |
| 16 Africus.            | 45                      | 22 Caurus.             | 35                     |
| 17 Subvesper.          | 60                      | 23 Corus.              | 40                     |
| 18 Argestes.           | 75                      | 24 Thrafcias.          | 75                     |

For the Use of the Winds in Navigation, &c. See RUMBLE, COMPASS, &c.

WIND-GUN, a Machine, serving to explode Bullets, and other Shot, with great Violence; by the force of the Air. See GUN.

This Arm charged with Air, has an Effect scarce inferior to that of a common Fire-Arm charged with Gun-Powder; but it discharges itself with a much less Report: And 'tis this, which, in all probability, gave occasion to the Fable of white Gun-Powder. See GUN-Powder.

There are *Wind-Guns* of divers Contrivances; the most easy and portable one, and the most in use is represented, (Tab. PNEUMATICS, Fig. 14.) It consists of a round Metalline Tube 3, 3, open at the end *c c*, and exactly stopp'd at the other end *a*, like the Barrels of other Guns; 1, 1, 1, 1, is another larger Metal Tube, wherein the former is disposed so as to leave a Space between 'em 4, 4, wherein Air may be inclosed. The two Tubes are joined together at the common Aperture *c c* by a circular Plate exactly solder'd to both, so as to prevent the Air from escaping out of the Space 4, 4, &c. At 8 is a spring Valve, which opening inwardly, lets the Air pass through from 2 into the Space 1, but prevents its return from 1 to 2. Near the close end of the inner Tube are two Holes 6 and 5; by the first the Space 1 and the inner Tube communicate, so that the Air would pass out of that into this, but that the Passage is stop'd by a Valve opening outwardly; by the latter there is a communication between the open Air, the Space 4, and the inner Barrel: only the Air pent up in the Space can't escape at this Hole by reason of a little Tube exactly solder'd to both Barrels, which stops the communication: nor can Air escape out of the inner Barrel through this little Tube, by reason of a little moveable Pin which exactly fills the Cavity of the Tube.

Lastly, the Part 2, 2, 2, 2, represents the Body of a Syringe or Sucking-Pump; by which, as much Air as possible, is to be intruded into the Space 4, 4, &c.—After which, a Bullet being put into the Cavity of the inner Barrel, as high as the little Tube 5, the Gun is charged. See SYRINGE.

Now, to discharge it, the little Valve 6 is push'd up by means of the Pin that plays in the little Tube 5. Upon this, the compress'd Air in the Cavity of the outer Barrel 4, rushing through the Hole 6 into the Cavity of the inner Barrel; expels the Bullet with a vast force, sufficient to penetrate a thick Board.

Note, To give the Machine the greater resemblance of a Fire-Arm, the Part 2, 2, 2, 2, is usually fashion'd like the Butt-end of a Musquet, and on the Part 28, 28 is fitted a Lock; by turning the Trigger of which, the Pin 5 is made to push back the Valve, and so discharge the Piece.—By the Lock too, it is contrived that either the whole Charge of Air may be spent at one Explosion, or only part of it, and the rest reserved for fresh Bullets. By this piece of Mechanism, we can have half a dozen good, effective Shoots, with one Charge of Air.

WIND-Egg, an addle Egg, or Egg that has taken Wind. See EGG.

WIND-Fall, denotes Fruit blown off the Tree by the Wind.

WIND-Gall, in Horses, a soft, flatulent Tumour or Bladder, arising on the fetlock Joint, and causing great Pain, especially in hot Weather and hard Ways. See GALL.

It is usually owing to a violent Strain, extreme Labour, and Heat, a Horse's standing on a sloping Floor, a Blow from another, or the like.



**WIND-Mill**, a kind of Mill which receives its Motion from the Impulse of the *Wind*. See **MILL**.

The *Windmill*, tho' a Machine common enough, has yet somewhat in it more ingenious than is usually imagined.—Add, that it is usually granted to have a degree of Perfection which few of the popular Engines have attained to, and which the Makers are but little aware of.—Tho' the new Geometry, &c. has furnished ample Matter for its Improvement.

#### *Structure of the WIND-Mill.*

The internal Structure of the *Windmill* is much the same with that of *Water-Mills*—The difference between 'em lies chiefly in an external Apparatus for the Application of the Power.

This Apparatus consists of an Axis *LF* (Tab. **PNEUMATICS**, Fig. 15.) thro' which pass two Rods or Yards, *AB* and *CD*, intersecting each other at right Angles in *E*, whose length is usually about 32 Feet : On these Rods are form'd a kind of Sails, Vanes, or Flights, in the Figure of Trapeziums, with parallel Bases, the greater whereof *HI* is about six Feet, and the less *FG* determined by Radii drawn from the Centre *E*, to *C* and *H*.

These Sails are to be capable of being always turn'd to the Wind, that they may receive its Impression : In order to which, there are two different Contrivances, which constitute the two different kinds of *Wind-Mills* in use.

In the one, the whole Machine is sustain'd upon a moveable Arbor or Axis perpendicular to the Horizon, on a Strand or Foot ; and turn'd occasionally this way or that, by means of a Lever.

In the other, only the Cover, or Roof of the Machine, with the Axis and Sails turn round—In order to which,

The Cover is built Turret-wise, and the Turret encompasses'd with a Wooden-Ring, wherein is a Groove, at the bottom whereof are placed at certain distances, a number of Brass Truckles, and within the Groove is another Ring upon which the whole Turret stands. To the moveable Ring are connected Beams *ab* and *fc* ; and to the Beam *ab*, in *b* is fasten'd a Rope, which at the other extreme thereof is fitted to a Windlass or Axis in Peritrochio : This Rope being drawn through the Iron Hook *G*, and the Windlass turn'd, the Sails will be moved round, and put in the direction requir'd.

#### *Theory of the Motion of a WIND-Mill, with the Position of the Sails or Vanes thereof.*

The Angle the Sails are to make with their common Axis, so as the *Wind* may have the greatest Effect, is a Matter of nice Enquiry, and has employ'd the Thoughts of the Mathematicians.

To conceive why a *Wind-Mill* moves at all, the Theory of compound Motions must be suppos'd—A Body moving perpendicularly against any Surface, strikes it with all its force.—If it move parallel to the Surface, it does not strike it at all : And if it move obliquely, its Motion being compounded of the perpendicular and parallel Motion, only acts on the Surface consider'd as it is perpendicular, and only drives it in the direction of the Perpendicular. So that every oblique Direction of a Motion is the Diagonal of a Parallelogram, whose perpendicular and parallel Directions are the two Sides. Add, That if a Surface, which being struck obliquely has only received the perpendicular Direction, be fasten'd to some other Body, so as that it cannot pursue its perpendicular Direction, but must change it for some other ; in that Case, the Perpendicular itself becomes the Diagonal of a new Parallelogram, one of whose Sides is the Direction the Surface may follow, and the other, that it cannot.

Thus, a Rudder fasten'd obliquely to the Keel of a Vessel, being struck by the Current of Water parallel to the Keel, and of consequence obliquely with regard to itself ; it will appear, by drawing the Line of perpendicular Impulse, that it tends to tear the Rudder from the Keel, and to carry it away : And that this Direction perpendicular to the Rudder, is oblique to the Keel.—The Rudder, then, would be carried off in an oblique Direction : But, as, in effect, it is so secur'd, that it cannot be torn or carried off ; we are only to consider, in this compound Motion, that of the two Directions wherewith it can move without being torn from the Keel ; and leave the other which would tear it off, as useless.

Now, the Direction in which it can move without parting from the Keel, is that which carries it circularly about its Extremity as a Centre. So that the effect of the oblique Impulse of the Water on the Rudder, is reduced, first to a perpendicular Impression, which is again reduced to the mere turning the Rudder round ; or, if the Rudder be immoveable, to the turning of the Vessel.

Now, in an oblique and compound Motion, where only one of the Directions is of service ; the greater Ratio the

other has thereto, the less effect will the Motion have ; and *vice versa*.—In examining the compound Motions of the Rudder, we find that the more oblique it is to the Keel, the Ratio of the Direction that serves to turn it to the other, is the greater. But, on the other hand, the more oblique it is to the Keel, and of consequence to the Course of the Water which is supposed parallel thereto, the more weakly it strikes. The obliquity of the Rudder, therefore, has at the same time both an Advantage and a Disadvantage ; but as those are not equal, and as each of 'em are still varying with every different Position of the Rudder, they become complicated variously, so that sometimes the one prevails, and sometimes the other.

It has been a Point of Enquiry to find the Position of the Rudder wherein the Advantage should be the greatest. *M. Renau*, in his famous Theory of the Working of Ships, has found that the best situation of the Rudder is when it makes an Angle of 55 Degrees with the Keel. See **SAILING, STEERING, &c.**

If, now, a *Wind-Mill* expos'd directly to the Wind, should have its four Sails perpendicular to the common Axis wherein they are fitted, they would receive the Wind perpendicularly ; and it is visible that Impulse would only tend to over-turn 'em—There is a necessity, therefore, to have 'em oblique to the common Axis, that they may receive the Wind obliquely.

For the greater ease ; let us only consider one Vertical Sail—The oblique Impulse of the Wind on this Sail is reducible to a perpendicular Impulse : And that Direction, as the Sail cannot absolutely keep to it, is compounded of two ; one whereof tends to make it turn on its Axis, and the other to fall backwards. But it is only the first of these Directions can be obey'd. Of consequence the whole Impulse of the Wind on the Sail has no other effect but to make it turn from right to left, or from left to right, as its acute Angle turns this way or that. And the Structure of the Machine is so happy, that the three other Sails are determined, from the same reasons, to move the same way.

The Obliquity of the Sails with regard to their Axis, has precisely the same Advantage, and Disadvantage, with the Obliquity of the Rudder to the Keel.—And *M. Parent*, seeking, by the new Analysis, the most advantageous Situation of the Sails on the Axis, finds it precisely the same Angle of 55 Degrees. Yet, in practice this Rule is very little observed ; as, indeed, being little known. They are usually about 60 Degrees, which is very much out of the way.

#### *Elliptical WIND-Mill.*

*M. Parent* considers further, what Figure the Sails of a *Wind-Mill* shall have, to receive the greatest Impulse from the *Wind* ; and he determines it to be a Sector of an Ellipsis whose Centre is that of the Axis or Arbor of the Mill ; and the little Semi-Axis, the height of thirty-two Feet. As for the greater, it follows necessarily from the Rule that directs the Sail to be inclined to the Axis 55 Degrees.

On this foot, he assumes four such Sails, each whereof is one-fourth of an Ellipsis ; which, he shews, will receive all the Wind, and lose none, as the common ones do.—These four Surfaces multiply'd by the Lever with which the Wind acts on one of 'em, express the whole force the Wind has to move the Machine, or the whole force the Machine has when in Motion.

The same manner of Reasoning apply'd to a common *Wind-Mill* whose Sails are Rectangular, and their Height about five times their Breadth ; shews that the *Elliptic Wind-Mill* has above seven times the force of the common one. A prodigious Advantage ! And worthy, sure, to have the common Practice set aside for, could so common a Practice be easily changed.

A *Wind-Mill* with six Elliptic Sails, he shews, would still have more force than one with four—It would only have the same Surface with the four ; since the four contain the whole Space of the Ellipsis as well as the six. But the force of the six would be greater than that of the four in the Ratio of 245 to 251. If it were desir'd to have only two Sails, each being a Semi-Ellipsis, the Surface would be still the same, but the force would be diminished by near one-third of that with six Sails ; by reason the greatness of the Sectors would much shorten the Lever with which the Wind acts.

#### *The best Form and Proportion of Rectangular WIND-Mills.*

But, as Elliptical Sails would be something so new, that there is little room to expect they will come into common Use ; the same Author has consider'd which Form, among the rectangular ones, will be the most advantageous, *i. e.* which, the Product of whose Surface by the Lever of the Wind will be the greatest. And by the Method *de Max-*



*imis & Minimis*, he finds them very different from the common ones.

The Result of his Enquiry is, that the Width of the rectangular Sail should be nearly double its Height or Length; whereas the Height or Length are usually made almost five times their Width.—Add, that as the Height, or Length, is the Dimension taken from the Centre of the Axis; the greatest Dimension of the new rectangular Sail will be turn'd towards the Axis, and the smallest from it: Quite contrary to the Position of the common Sails.

The Force of a *Windmill* with four of these new rectangular Sails, *M. Parent* shews, will be to the Force of 4 Elliptic Sails, nearly as 13 to 23; which leaves a considerable advantage on the side of the Elliptic ones: yet will the Force of the new rectangular Sails be nearly four times as great as those of the common ones.

*M. Parent* likewise considers what Number of the new Sails will be most advantageous, and finds that the fewer Sails, the more Surface there will be, but the less Force.—The Ratio of the Force of a *Windmill* with 6 Sails, will be to another with 4, nearly as 14 to 13. And the Force of another with 2, will be to that with 4, nearly as 13 to 9.

As to the common *Windmill*, its force still diminishes as the Breadth of the Sails is smaller in proportion to the Height. The usual Proportion, therefore, of 5 to 1, is exceedingly disadvantageous.

The Uses of this new Theory of *Windmills* are very obvious.—The more Force a *Windmill* has, the swifter it turns; the more it dispatches, and the less Wind it needs. Add, that on this Theory, one may have a *Windmill*, whose Sail shall be a deal less, and yet the Force a deal greater, than in the common one.

*Wind-Instruments*, in Music, are Instruments play'd by the *Wind*, chiefly the Breath; in contradistinction to String-Instruments, and Instruments of the pulsatile Sound. See MUSIC.

The *Wind-Instruments* known to the Antients, were the *Tibia*, *Fistula*, *Syringa* of *Pan*, consisting of seven Reeds join'd side-wise; *Organs*, *Tuba*, *Cornua*, and *Lituus*: See *TIBIA*, *FISTULA*, &c. each under the proper Article.

Those of the Moderns, are the *Flute*, *Bagpipe*, *Hautboy*, *Trumpet*, &c. See *FLUTE*, *BAGPIPE*, &c.

*WIND Dropsy*,

*WIND Colic*,

*WIND Tumors*, &c.

} See } *TYMPANITES*.  
} *COLIC*.  
} *TUMOR*.

*WINDASS*, *WANDASS*, and *WANLASS*, corruptly *WINDLASS*; a Term in Hunting.—Thus, to drive the *Windlass*, signifies the chasing a Deer to a Stand, where one is ready with a Bow or Gun to shoot. See HUNTING.

—*Omnes illi qui tenuerunt in Bondagii tenura solebant vocari Custumarii: Et quotiescunque Dominus ad venandum venerit, illi Custumarii solebant fugare Windassum, ad stabulum in Venatione ferarum Bestiarum secundum quantitatem Tenuræ sue.* MS. de Consuetud. Manerii de Sutton Colfield, An. 3. Ed. 2.

*WINDLASS*, or *WINDLESS*, a Machine used to raise huge Weights withal, as Guns, Stones, Anchors, &c. See MACHINE.

It is very simple, consisting only of three Pieces of Wood; a Roll or Axle-Tree, and a Pulley.—The Pieces of Wood meet a-top; being plac'd diagonally, so as to prop each other.—The Axis or Roller goes thro' two of the Pieces, and turns in them.—The Pulley is fasten'd a-top, where the three Pieces join.

Lastly, there are two Levers go thro' the Roll, whereby it is turn'd, and the Rope, which comes over the Pulley, is wound off, and on the same.

*WINDLASS in a Ship*, is a Piece of Timber, having six or eight Squares, and fix'd abaft the Stern aloft, where the Cables come in from one side of the Ship to the other; used in Meal-Ships, and in the *Flemish* Ships, which are lightly mann'd.

This *Windlass* will purchase more by much than any Capstan in the weighing of an Anchor, and without any danger to those that heave; because they heave here with Hand-Spikes, put into the Hole at either End of the *Windlass*. See CAPSTAN.

*WIND-Tackle-Blocks*, in a Ship, are the main double Blocks or Pulleys; which being made fast to the end of a small Cable, serve for the hoisting of Goods into the Ship, &c. See BLOCK, TACKLE, &c.

To *wind* or *wend* a Ship, signifies to bring her Head about.

How *winds* or *wends* the Ship? is a Question ask'd by Mariners concerning a Ship under Sail, signifying as much as, upon what Point of the Compass does she lie with her Head?

*Wind-ward Tide*, in the Sea-Language, a Tide which runs against the *Wind*. See TIDE.

*WINDOW*, *q. d.* *Wind-Door*, an Aperture or open Place in the side of an House, to let in the Air and Light. See BUILDING, APERTION, LIGHT.

We have various Kinds and Forms of *Windows*; as *Glass Windows*, *Wire Windows*, *Horn Windows*, &c.—*Arch'd Windows*, *Circular Windows*, *Elliptical Windows*, *Square and Flat Windows*; *Round Windows*, *Oval Windows*, *Gothic Windows*, *Regular Windows*, *Rustic Windows*, &c. *Sky-Lights*. See GLASS, GLAZIERY, LEAD, PLUMBERY, VICE, &c.

*Dormer Windows*, or *Lanterns*. See DORMER and LUTHERN.

*Transom Windows*. See TRANSOM.

The chief Rules with regard to *Windows* are—1. That they be as few in Number, and as moderate in Dimensions, as may consist with other Respects; inasmuch as all Openings are Weakenings.—2. That they be plac'd at a convenient Distance from the Angles, or Corners of the Building; because that part ought not to be open and infeedled, whose Office is to support and fasten all the rest of the Building.—3. That Care be taken the *Windows* be all equal one with another in their Rank and Order; so that those on the right hand may answer to those on the left, and those above be right over those below; for this Situation of *Windows* will not only be handsome and uniform; but also the Void being upon the Void, and the Full upon the Full, it will be a strengthening to the whole Fabrick.

As to their Dimensions, Care is to be used neither to give them more, nor less Light than is needful; therefore regard is to be had to the Bigness of the Rooms which are to receive the Light. 'Tis evident that a great Room needs more Light, and consequently a greater *Window* than a little Room; and *à contra*.

The Apertures of *Windows* in middle-sized Houses, may be four and a half, or five Feet between the Jambs; and in the greater Buildings, six and a half, or seven Feet; and their Height may be double the Length at the least.—But in high Rooms, or larger Buildings, their Height may be a third, a fourth, or half their Breadth, more than double their Length.

Such are the Proportions for *Windows* of the first Story; and according to these must those in the upper Stories be for Breadth; but as to Height, they must diminish: the second Story may be one third part lower than the first, and the third Story one fourth part lower than the second. See STORY.

*WINDOW*, in Anatomy, &c. See FENESTRA.

*WIND-taught*, a Sea-Term, implying as much as, stiff in the *Wind*.

Thus they say, a thing is *taught*, when it is stiff.—So, too much Rigging, high Ropes, or any thing catching or holding *Wind* aloft, is said to hold a Ship *Wind-taught*; by which they mean, that she stoops too much in her Sailing, in a stiff Gale of *Wind*. Again, when a Ship rides in a main stress of *Wind* and Weather, they strike down her Top-masts, and bring her Yards down, which else would hold too much *Wind*, or be too much distended.

*WINE*, *Vinum*, a brisk, agreeable, and spirituous Juice, drawn from vegetable Bodies, and fermented. See VEGETABLE and FERMENTATION.

The Character of a *Wine*, according to *Boerhaave*, is, that the first thing it affords by Distillation, be a thin, fatty, inflammable, &c. Fluid; call'd a *Spirit*. See SPIRIT.

This distinguishes *Wines* from another Class of fermented vegetable Juices, *viz.* *Vinegars*; which, instead of such Spirit, yield, for the first thing, an acid, uninflamable Matter. See VINEGAR.

All sorts of Vegetables, Fruits, Seeds, Roots, &c. afford *Wine*; as Grapes, Currants, Mulberries, Elder, Cherries, Apples, Pulse, Beans, Pease, Turnips, Radishes, and even Grass itself. See VINOUS LIQUOR.

Hence, under the Class of *Wines*, or Vinous Liquors, come *Wine*, absolutely so call'd, Ale, Cyder, &c. See MALT LIQUOR, ALE, CYDER, &c.

*WINE*, is in a more particular manner appropriated to that drawn from the Fruit of the *Vine*, by stamping its Grapes in a Vat, or crushing and expressing the Juice out of them in a Press, and then fermenting, &c. See VINE, and VINEYARD.

The Goodness of *Wine* consists in its being net, dry, clear, fine, brisk, without any Taste of the Soil, of a clean, reddish Colour; in its having a Strength, without being heady; a Body, without being sour; and its keeping, without growing hard.

*Wine* being a Liquor mostly of foreign Produce; the divers Names, Forms, Kinds, Distinctions, &c. thereof are borrow'd from the Countries where 'tis produc'd: the principal whereof, at this day, is *France*: To *Wines* of which



of which Country, a good part of what we have to say of this noble Liquor, will more immediately belong.

*Wine* is distinguish'd from the several Degrees and Steps of its Preparation, into, 1. The *Mere-goutte*, Mother-drop; which is the *Virgin Wine*, or that which runs of itself out at the Tap of the Vat wherein the Grapes are laid, before the Vintager enters to tread or stamp the Grapes—The *Must*, *Surmoust*, or *Stum*; which is the *Wine*, or Liquor, in the Vat, after the Grapes have been trod or stamp'd—The *press'd Wine*, *Vin de Pressurage*, which is that squeez'd with a Press, out of the Grapes half bruised by the treading—The Husks left of the Grapes, are call'd Rape or Marc; by throwing Water upon which, and pressing them a-fresh, they make a Liquor for Servants Use, answerable to our Water-Cyder, and call'd *Boisson*, *Draught*; which is of some use in Medicine in the Cure of Disorders occasion'd by viscid Humours.

*Sweet Wine*, *Vin Poux*, is that which has not yet work'd nor boil'd—*Bourru*, that which has been prevented working, by casting it in cold Water—*Cuve*, *work'd Wine*, or that which has been let work in the Vat, to give it a Colour—*Cuit*, *boiled Wine*, that which has had a boiling e'er it work'd; and which, by that means, still retains its native Sweetness—*Passé*, or *strain'd Wine*, that made by steeping dry Grapes in Water, and letting it ferment of itself.

WINES are also distinguish'd with regard to their Colour, into *White Wine*, *Red Wine*, *Claret Wine*, *Pale Wine*, *Rose* or *Black Wine*—And with regard to their Country, or the Soil that produces them, into *French Wines*, *Spanish Wines*, *Rhenish Wines*, *Hungary Wines*, *Greek Wines*, *Canary Wines*, &c.—And more particularly into *Port Wine*, *Madera Wine*, *Burgundy Wine*, *Champaigne Wine*, *Falernian Wine*, *Tokai Wine*, *Schiras Wine*, &c.

*Wines*, again, are distinguish'd with regard to their Quality, into *sweet Wines*, *rough* or *dry Wines*, and *rich* or *luscious Wines*, *Vins de liqueur*; of which last, some are exceedingly sweet, others sweet and poignant: all chiefly used by way of Dram after Meals, &c.

Such are the *French Frontigniac*, *Madera*, the *Canary*, the *Hungary*, *Tokai*, the *Italian Montesiascone*, the *Persian Schiras*, the *Malmsey Wines* of *Candia*, *Chio*, *Lesbos*, *Tenedos*, and other Islands of the *Archipelago*, which antiently belonging to the *Greeks*, but now to the *Turks*: these *Wines* are sometimes call'd *Greek Wines*, and sometimes *Turkey Wines*.

#### Method of Making and Fining WINE.

In the Southern Parts of *France* their way is, for *Red Wines*, to tread or squeeze the Grapes between the Hands, and to let the whole stand, Juice and Husks; till the Tincture be to their liking: after which they press it.—But for *White Wines*, they press the Grapes immediately.

When press'd, they tun the Must, and stop up the Vessel; only leaving the depth of half a Foot or more empty, to give room for it to work—At ten days end, they fill this Space with some other proper *Wine*, that will not provoke it to work again—This they repeat from time to time; new *Wine* spending itself a little, e'er it be perfect.

About *Paris*, and in the Northern Parts of *France*, they let the Must and Must stand two Days and Nights for *White Wines*, and at least a Week for *Claret Wines*; e'er they tun it—While it continues working, 'tis kept as warm as possible.

Some, upon stopping it up for good and all, roll the Cask about the Cellar, to mix it with the Lees; and after settling a few days, rack it off with great Improvement.

To fine it down, they put Shavings of green Beech into the Vessel; having first taken off all the Rind, and boil'd them an hour in Water, to extract their Rankness; and afterwards dry'd them in the Sun, or an Oven: a Bushel of these serve for a Tun of *Wine*. They put it in a gentle Working, and purify it in twenty-four hours. They also give it an agreeable Flavour—The same Chips being wash'd, serve again and again, till almost quite consumed.

Some sweeten their *Wines* with Raisins of the Sun, trod in the Vat with the Grapes, having been first plump'd by boiling: Others, by boiling half the Must, scumming it, and running it up hot with the other.

For *English Wine*, the Method recommended by Mr. *Mortimer*, is, first to gather the Grapes when very dry, to pick them from the Stalks, then to press them, and let the Juice stand twenty-four hours in the Vat cover'd. Afterwards, to draw it off from the gross Lees, and then put it up in a Cask, and to add a Pint or Quart of strong Red or White Port to every Gallon of Juice; and let the whole work: bunging it up close, and letting it stand till January; then bottle it in dry Weather.

By this Method he assures us, he has made *English Wine* as good as any the best and purest *French Wine*, drank either in *Paris* or *Champaigne*.

Mr. *Bradley* chuses to have the Liquor when press'd, to stand with the Husks, Stalks, and all, in the Vat to ferment for fifteen days.

He adds, that according as the Vines have been manag'd, the *Wine* will be stronger or weaker—Those, *e. gr.* which run at liberty up high Trees, and are never pruned, make the *smallest Wines*: Those kept tied to Stakes about four Foot high, and which have their Branches kept pruned, make *stronger Wines*: And those nearest the Ground, the *strongest*.

The Force of the fermenting *Wine* is very great; being able, if close stop'd up, to burst thro' the strongest Cask—The readiest and only way to stop or abate the Fermentation, is by the Fume of burning Sulphur.

Add, that when *Wine* already made is upon the Fret, or, by any Alteration in the Air, begins to ferment again; the way used by the Vintners and Wine-Coopers to save it, is by the flame of common Sulphur, or a lighted Match dip'd in it; which held under the Cask just ready to burst its Hoops, calms its Fury, and makes it immediately subside. See SULPHUR.

WINE is variously denominated, according to its State, Circumstances, Qualities, &c.

*Natural WINE*, is such as it comes from the Grape, without further Mixture or Sophistication.

*Brew'd or Adulterated WINE*, is that wherein some Drug is added to give it a Strength, Fineness, Flavour, Briskness, Sweetness, or some other Quality which it wanted.

*Prick'd, or Eager WINE*, is that turn'd sourish.

*Flat WINE*, is that fallen weak and vappous for want of being drank in time.

*Sulphur'd WINE*, is that put in Casks wherein Sulphur has been burnt; in order to fit it for keeping, or for Carriage by Sea.

*Colour WINE*, is some thick *Wine*, of a very deep Colour, serving to dye the *Wines* that are too pale, &c. As the *Black Wine* in use among our Vintners.

*Chip WINE*, is that pour'd on Chips of Beech-wood, to fine or soften it.

*Rape WINE*, is that put in a Cask half full of fresh Grapes pick'd for the purpose, to recover the Strength, Briskness, &c. it had lost by keeping, &c.

*Burnt WINE*, is that boil'd up with Sugar; and sometimes with a little Spice.

There is also a sort of *Malmsey WINE*, made by boiling of Muscadine. See MALMSEY.

The Uses of WINE are very great; not only as a Drink, but as a Medicine. See DRINK, &c.

Several Physicians recommend it as an excellent Cordial, and particularly serviceable in Fevers, the *Lues Venerea*, &c.

*Pliny* mentions *Staphilus* as the first who mixed *Wine* with Water; but *Athenæus* gives the Credit thereof to *Amphitryon* King of *Athens*—On this Occasion a Fable was invented; viz. That *Bacchus* having been struck with a Thunderbolt, and being all inflam'd, was presently cast into the Nymph's Bath, to be extinguish'd.

The Age of *Wine* is properly reckoned by Leaves—Thus they say *Wine* of two, four, six Leaves, to signify a *Wine* of six, four, or two Years old; taking each new Leaf put forth by the Vine since the *Wine* was made, for a Year.

Among the *Romans*, the Age of *Wines* was, as it were, the Criterion of their Goodness.—*Horace*, in his *Odes*, which one may call *Bacchic Songs*, boasts of his drinking *Falernian Wine*, born, as it were, with him, or which reckon'd its Age from the same Consuls.

*Pliny* mentions *Wines* kept above a hundred Years, and yet potable—Others he speaks of kept two hundred Years, which by this time were reduced to the Consistence of Honey.

But the Moderns keep no *Wines* to any such Age. Where they are kept the longest, as in *Italy* and *Germany*, there are scarce any to be found above fifteen Leaves. In *France*, the *Wines* that keep best, as those of *Dijon*, *Nants*, and *Orleans*, are reckon'd superannuated at five or six Leaves old.

Lees of WINE, are the Impurities thereof, or the thick Sediment remaining at the bottom of the Casks, when the *Wine* is drawn out. See LEES and VINEGAR.

WINE is also a Name used in Medicine and Pharmacy, for divers Mixtures or Compositions, wherein the Juice of the Grape is a principal Ingredient. See VINUM.

These Medicated *Wines* make a considerable Article in our Dispensatories, in quality of Diet Drinks; some being denominated from the Ingredients used in 'em; some from the Intentions wherewith they are prescribed; and some from their Qualities, &c.

*Bitter WINE*, *Vinum Amarum*, is an Infusion of several bitter Stomachic Herbs, as *Gerardin Root*, *Juniper Berry*, *Tops of Centaury*, *Orange and Lemon Peel*, in white Port, or other white *Wine*; taken by a Spoonful three or four times a Day, to restore the pall'd Stomach after a Debility, and bring the Fibres to their due Tension.



**Chalybeate**, or **Steel WINE**, is prepared of Filings of Steel, and Saffron infused, and filter'd. It is good for removing Obstructions in the Viscera, as in the Chlorosis, &c.

**Vinum Benedictum**, the blessed WINE, is made of *Crocus Metallorum* and Mace infused in Wine. It was formerly a celebrated Emetic, but now almost out of use for its roughness.

**Elecampane WINE**, *Vinum Emulatum*, is an Infusion of the Root of that Plant with Sugar and Currants, in white Port.——It cleanses the Viscera, prevents Disorders and Obstructions of the Lungs; and is good in Asthmatic Cases, Cachexies, &c.

**Hog-lice WINE**, *Vinum Millepedum*, is prepared of Hog-lice put alive in white Port; and after some infusion, press'd and strain'd out: To the Liquor is added Saffron, Salt of Steel, &c.——It is recommended against the Jaundice, Dropsy, Cachectic Habits, &c. See **MILLEPEDES**.

**Pectoral WINE**, *Vinum Pectorale*, is prepared of Liquorice, Saffron, Coriander-Seeds, Carraway, Anise, Salt of Tartar, Penny-royal, and Hyssop-Waters, digested with Canary Wine, and strain'd. It is a good Expectorant; helping to deterge and cleanse the Lungs, &c.

**Emetic WINE**, *Vinum Emeticum*. See **EMETIC**.

**Hippocrates's WINE**, *Vinum Hippocraticum*, or *Hippocras*. See **HIPPOCRAS**.

**Viper WINE**, *Vinum Viperinum*, is a Preparation of female Vipers, infused six Months in Canary Wine.——It is a great Restorative, and provokes to Venery; good against Cutaneous Eruptions, &c. See **VIPER**.

**Vinum Scilliticum**, WINE of Squills, is an Infusion of those Unions in white Wine for forty days, and then the Squills strain'd out, and the Liquor preserv'd for use. It is a gentle Emetic, good against inundations of Rheum, &c. See **SQUILLÆ**.

**WINE-Measure**; see **MEASURE**.

**WING**; see **FEATHER** and **FLYING**.

**WINGS**, in Heraldry, are bore sometimes single, sometimes in pairs, in which case they are call'd *Conjoin'd*; when the Points are downward, they are said to be *Inverted*; when up, *Elevated*. See **VOL**.

**WING**, *Ala*, in Botany, the Angle which the Leaves of a Plant, or the Pedicles of the Leaves, form with the Stem, or a Branch of the Plant. See **LEAF**.

This Angle is commonly acute, and always stands upward.——It has its Name from its resembling the Angle which the Wings of a Bird form with the Body; or rather from the Angle which a Man's Arms makes with his Trunk, which is also call'd *Ala*, *Wing*.

**WINGS**, in Gardening, &c. are such Branches of Trees, or other Plants, as grow up a-side of each other. See **BRANCH**.

*La Quintiny* says, the Term is particularly apply'd to Artichokes, whose Wings or *Alæ*, are the lesser Heads or Fruits that grow up with the principal one, on the same Stalk.

**WINGS**, *Alæ*, in the Military-Art, are the two Extremes of an Army, ranged in form of Battel; being the Right and Left Parts thereof, and including the Main Body. See **ARMY** and **BATTEL**.

The Cavalry are always posted in the Wings; i. e. on the Flanks, or the Right and Left Sides of each Line; to cover the Foot in the Middle. See **LINE** and **FLANK**.

*Pan*, one of *Bacchus's* Captains, is said to have been the first Inventor of this Method of ranging an Army; whence, say they, it is that the Antients painted him with Horns on his Head; what we call Wings being by them call'd *Cornua*, Horns. See **PANIC**.

This at least is certain, that the Method of Arranging in Wings is very antient. The Romans, we know, used the Term *Alæ*, or Wings, for two Bodies of Men in their Army; one on the Right, the other on the Left, consisting each of 400 Horse, and 4200 Foot usually, and wholly made up of Confederate Troops.——These were design'd to cover the Roman Army, as the Wings of a Bird cover its Body.

The Troops in these Wings they call'd *Alares*, and *Alares Copie*; and we at this day distinguish our Armies into the Main Body, the Right and Left Wings.

**WING** is also used for the two Files that terminate each Battalion, or Squadron, on the Right and Left.——The Pikes are ranged in the Middle, and the Musqueteers in the Wings.

**WINGS**, in Fortification, are the larger Sides of Horn-works, Crown-works, Tenailles, and the like Out-works; including the Ramparts, and Parapets, with which they are bounded on the Right and Left, from their Gorge to their Front.

These Wings or Sides are capable of being flank'd either with the Body of the Place, if they stand not too far distant; or with certain Redoubts; or with a Traverse made in their Ditch.

**St. Michael's WING**, is a Military Order in Portugal, instituted, according to the Jesuit *Alendo*, in 1163; or, according

to *di Michieli* in his *Tesoro Militar de Cavalleria*, in 1171.

Its Institutor was *Alphonfus Henry I.* King of Portugal; and the Occasion was a Victory gain'd by him over the King of Sevil and his Sarazens; for which he thought himself beholden to *St. Michael*, whom he had chose for his Patron in the War against the Infidels.

The Banner they bore was a *Wing*, resembling that of the Arch-Angel, of a purple Colour encompass'd with Rays of Gold.——Their Rule was that of *St. Benedict*; the Vow they made was to defend the Christian Religion, and the Borders of the Kingdom, and to protect Orphans. Their Word, *Quis ut Deus*.

**WINGED**, in Botany, a Term apply'd to such Stems of Plants, as are furnish'd, all their length, with a sort of membranous Leaves. See **STEM**.

Several kinds of *Thistles* have winged Stalks, and Branches.

They also use the Term *winged Leaves* for such as consist of divers little Leaves rang'd in the same direction, so as to appear no more than one and the same Leaf. See **LEAF**.

Such are the Leaves of Agrimony, Acacia, Ash, &c.

**Winged Seeds**, are such as have Down or Hairs on 'em, whereby the Wind taking hold, blows 'em to a distance. See **SEED** and **SEMINATION**.

**WINGED**, in Heraldry, is apply'd to a Bird, when its Wings are of a different Colour or Metal, from the Body.

**Winged** is also apply'd to any thing represented with Wings, tho' contrary to its Nature; as a *winged* or *flying Hart*, &c. See **FLYING**.

**WINNOW**, signifies to fan, or separate Corn from the Chaff by Wind.

**WINTER**, one of the four Seasons, or Quarters of the Year. See **SEASON**, &c.

**Winter** commences on the Day when the Sun's distance from the Zenith of the Place is the greatest, and ends on the Day when its distance is at a Mean between the greatest and least. See **SUN**.

Notwithstanding the Coldness of this Season, it is proved in Astronomy, that the Sun is really nearer to the Earth in Winter than in Summer. See **EARTH**.

The reason of the decay of Heat, &c. see under the Articles **HEAT**, **LIGHT**, &c.

Under the Equator the Winter, as well as the other Seasons, return twice every Year; but all other Places have only one Winter in the Year; which, in the Northern Hemisphere, begins when the Sun is in the Tropic of *Capricorn*; and in the Southern Hemisphere, when in the Tropic of *Cancer*: So that all Places in the same Hemisphere have their Winter at the same time.

**WINTER Solstice**; see **SOLSTICE**.

**WINTER's Bark**, *Cortex Winteri*, or *Winteranus*; see **CORTEX** and **CINNAMON**.

**WINTER**, among Printers, a part of the Printing-Press. See **PRINTING-Press**.

**WINTER Rig**, among Husbandmen, signifies to fallow, or till the Land in Winter. See **FALLOW**, &c.

**WIRE**, wrote also *Wyre*, and *Wiar*, is a piece of Metal, drawn thro' the Hole of an Iron, into a Thread, of a Fineness answerable to the Hole it is pass'd through.

Wires are frequently drawn so fine, as to be wrought along with other Threads of Silk, Wool, or Hemp: And thus they become a considerable Article in the Manufactures.

The Metals most commonly drawn into Wire are Gold, Silver, Copper, and Iron.——And hence we have *Gold Wire*, *Silver Wire*, *Iron-Wire*, &c. as in the following Articles.

**Gold and Silver WIRE**.——What we call *Gold Wire* is made of cylindric Ingots of Silver cover'd over with a Skin of Gold, and thus drawn successively thro' a vast Number of Holes, each smaller, and smaller; till at last it be brought to a Fineness exceeding that of a Hair.

That prodigious Ductility which makes one of the distinguishing Characters of Gold, is no where more conspicuous than in this gilt Wire.——A Cylinder of 48 Ounces of Gold cover'd with a Coat of Gold only weighing one Ounce, Dr. Halley informs us, is commonly drawn into a Wire, 2 Yards of which only weigh one Grain: Whence 98 Yards of the Wire only weigh 49 Grains; and one single Grain of Gold covers the said 98 Yards. So that the ten thousandth part of a Grain is above  $\frac{1}{2}$  of an Inch long.

The same Author computing the thickness of the Skin of Gold, found it to be only  $\frac{1}{174,750}$  Part of an Inch.——yet so perfectly does it cover the Silver, that even a Microscope does not discover any appearance of the Silver underneath.

M. *Robault* observes, that a like Cylinder of Silver cover'd with Gold, 2 Feet 8 Inches long, and 2 Inches 9 Lines in Circumference, is drawn into a Wire 307200 long, i. e. into 115200, its former length.

Mr. *Boyle* relates, that 8 Grains of Gold covering a Cylinder of Silver, is commonly drawn into a Wire thirteen thousand Feet long. See **GOLD**.



*The Method of drawing it, see further illustrated under the Article DUCTILITY.*

**Silver WIRE** is the same with **Gold Wire**, except that the latter is gilt, or cover'd with Gold, and the other is not. See **SILVER**.

There are also counterfeit **Gold and Silver Wires**: The first made of a Cylinder of Copper, silver'd over, then cover'd with Gold; and the second of a like Cylinder of Copper silver'd over, and drawn thro' the Iron after the same manner as **Gold and Silver Wire**.

**Brass WIRE** is drawn after the same manner as the former.—Of this, there are divers Sizes suited to the divers Kinds of Works. The finest is used for the Strings of Musical-Instruments, as Spinets, Harpsichords, Manichords, &c. See **CHORD**.

The Pinmakers likewise use vast Quantities of **Wire** of several Sizes, to make their Pins of. See **PIN**.

**Iron WIRE**, is call'd by the *French* *Fil d'Archal*; the Reason of which, their Authors are not agreed about—That celebrated Etymologist, *M. Menage*, derives it from *filum & aurichalcum*; but others, more conversant in the Commerce thereof, deduce it from one *Richard Archal* the first Inventor thereof.

There are various Sizes of this **Wire**, from  $\frac{1}{2}$  of an Inch to  $\frac{1}{10}$  of an Inch Diameter. The smallest Sizes are used to string Musical Instruments withall, particularly Harpsichords, Psalteries, &c.—Vast Quantities of **Iron-Wire** are brought yearly from the *Baltick*; partly spent at home, and part exported to *France*, &c.

**WIRE-drawing**—For the several Manners of drawing **Gold and Silver**; see **DRAWING**, **GOLD**, **SILVER**, **DUCTILITY**, &c.

The first Iron that runs from the Stone, when melting, being the softest, and toughest, is preserv'd to make **Wire** of. See **IRON**.

**WISDOM**, *Sapientia*, usually denotes a higher and more refined Knowledge of things, immediately presented to the Mind, as it were by Intuition, without the assistance of Discoursing. See **KNOWLEDGE**, **DISCOURSE**, **SCIENCE**, &c.

In this Sense, *Wisdom* may be said to be a Faculty of the Mind, or at least a Modification and Habit thereof. See **FACULTY**, **MODIFICATION**, **HABIT**, &c.

Sometimes the Word is more immediately used in a Moral Sense for what we call *Prudence*, or *Discretion*; which consists in the Soundness of the Judgment, and a Conduct answerable thereto. See **JUDGMENT**.

The School-Divines sometimes restrain it to the Knowledge of the more sublime and remote Objects; as that of God, &c. In which sense, Theology is properly said to be *Wisdom*.

The Word in *Latin*, is *Sapientia*, which literally expresses the Sense of Tasting; to which *Wisdom* is supposed to have some Conformity.—The Sight, and other Senses only represent to us the Surface of things: Taste goes deeper, penetrates into the Substances; so that what, e. gr. to the Feeling seem'd cold, to the Taste shall be found hot: So *Wisdom* arising from a deep Attention to our Ideas, goes further, and frequently judges otherwise than the common Apprehensions of Men would reach to. See **UNDERSTANDING**, **REASON**, &c.

**WISTA**, a Quantity, or Measure of Land among our *Saxon* Ancestors.

It was different in different Places.—In the *Monasticon*, it is said to be half a Hide, or sixty Acres: In an old Chronicle of the Monastery of *Battle*, it is said to be forty-eight Acres. See **HIDE**, &c.

**WIT**, a Faculty of the Mind, consisting, according to *Mr. Locke*, in the assembling, and putting together of those Ideas with Quickness and Variety, wherein can be found any Resemblance or Congruity; thereby to make up pleasant Pictures and agreeable Visions to the Phantasy. See **FACULTY** and **IMAGINATION**.

This Faculty, the same great Author observes, is just the contrary of Judgment, which consists in the separating, carefully, from one another, such Ideas wherein can be found the least difference, thereby to avoid being misled by Similitude, and by Affinity to take one thing for another. See **JUDGMENT**.

'Tis the Metaphor, and Allusion, wherein, for the most part, lies the Entertainment and Pleasantry of *Wit*; which strikes so lively on the Fancy, and is therefore so acceptable to all People, because its Beauty appears at first Sight, and there is required no Labour of Thought to examine what Truth or Reason there is in it.—The Mind, without looking any further, rests satisfied with the Agreeableness of the Picture, and the Gaiety of the Imagination; and it is a kind of Affront to go about to examine it by the severe Rules of Truth, or Reason.—Whence it should seem, that *Wit* consists in something that is not perfectly conformable to 'em. *Essay on Hum. Underst.* L. I. c. 11.

**WIT** is also an Appellation given to Persons possess'd of the Faculty call'd *Wit*, *Esprit*.

A *French* Author, who, in 1695 published a *Treatise of Wit, du bel Esprit*, lays down four Characteristicks thereof.

1. A Man, who, with an open Air, and easy Motions, affects those he converses withal agreeably; and on any Subject that presents itself, advances new Thoughts, and adorns them with a sprightly Turn; is, all the World over, a *Wit*.

2. Another, who less solicitous about the Choice and Delicacy of his Sentiments, knows how to make himself valued by I know not what Elevation of Discourse; who draws a deal of Attention, and shews a deal of Vivacity in his Speaking, and Readiness in his Answers; is likewise acknowledged a *Wit*.

3. A third, who takes less Care about thinking, than about speaking well; who affects fine Words, tho' perhaps low and poor in Matter; who pleases by an easy Pronunciation, and a certain Tone of Voice, is placed in the same Rank.

4. Another, whose chief Aim is not to make himself esteem'd, so much as to raise Mirth and Laughter: who jokes pertinently, rallies pleasantly, and finds something to amuse himself withall in every petty Subject; is likewise allow'd a *Wit*.

Yet, it may be observ'd, that in all these Cases, there is nothing of real *Wit*, as above defin'd; but the whole is Imagination, or Memory at most: The whole is no more than Temperament may give.

A true *Wit* must have a just Faculty of Discernment; must have, at the same time, both a deal of Energy and of Delicacy in his Sentiments; his Imagination must be noble, and withal happy and agreeable; his Expressions polire and well turn'd: without any thing of Pardoe or Vanity in his Discourse, or his Carriage. 'Tis not at all essential to a *Wit* to be ever hunting after the *Brillant*; still studying fine Thoughts, and affecting to say nothing but what may strike and surprize.

This is a Fault very frequent in Dramatic Persons: The Duke of *Buckingham* rallies it very justly.

*What is that thing which we sheer Wit do call?*

*'Tis when the Wit of some great Writer shall*

*So overflow; that is, be none at all:*

*That even his Fools speak Sense—*

}

*Humour*, say our Critics, is the genuine *Wit* of Comedies. See **HUMOUR**.

**WITCHCRAFT**; see **SORCERY** and **MAGIC**.

There may, perhaps, be some Foundation for what we call *Witchcraft*—We have infinite Instances and Histories to this purpose; which it were not fair to set aside, merely because they are not reconcileable to our Philosophy: But, as it happens, there seems to be something in Philosophy to countenance them.

All living things, we know, emit *Effluvia*, both by the Breath and the Pores of the Skin—All Bodies, therefore, within the Sphere of their perspiratory, or expiratory *Effluvia*, will be affected by 'em; and that, in this or that manner, according to the Quality of the *Effluvia*; and in this or that degree, according to the Disposition of the emittent and recipient Parts. See **EFFLUVIA**.

Thus far is incontrollable; nor need we produce Instances of Animals exhaling sweet or stinking Smells; of incontinent Women's infecting a Looking-Glass with a bloody Turnish; or the infectious Diseases convey'd by *Effluvia*, &c. in confirmation thereof.

Now, of all Parts of an Animal Body, the Eye, we know, is the quickest—it moves with the greatest Celerity, and in all the Variety of Directions. Again, Its Coats and Humours are permeable as any other part of the Body, (witness the Rays of Light it so copiously receives.) The Eye, therefore, no doubt emits its *Effluvia* like the other parts. Nay, it must do so. The fine Humours of the Eye must be continually exhaling. The Heat of the pervading Rays must rarefy and attenuate 'em: And that, with the subtile Juice or Spirit of the neighbouring optic Nerve, supply'd in great abundance by the vicinity of the Brain, must make a fund of volatile Matter to be dispens'd, and, as it were, determined by the Eye.

Here, then, we have both the Dart and the Hand to fling it—The one furnish'd with all the Force and Vehemence, and the other with all the Sharpness and Activity, one would require. No wonder their Effects are great!

Do but conceive the Eye as a Sling, capable of the swiftest and intensest Motions and Vibrations: And, again, as communicating with a Source of such Matter as the nervous Juice elaborated in the Brain; a Matter so subtile and penetrating, that it flies instantaneously thro' the solid Capillaments of the Nerves, and so active and forcible, that it distends and convulses the Muscles, and distorts the Limbs, and alters the whole Habitude of the Body, giving Motion and Action to a Mass of inert, inactive Matter. A Projectile of such a nature, flung by such an Engine as the Eye, must have an Effect wherever it strikes: And the Effect will be limited and modified by the Circumstances of Distance, the Impetus of the Eye, the Quality, Subtility, Acrimony, &c.



of the Juices, and the Delicacy, Coarseness, &c. of the Object it falls on.

This Theory, we are of opinion, will account for the general Phænomena of *Witchcraft*—'Tis certain the Eye has always been esteem'd the chief Seat, or rather Organ of *Witchcraft*; tho' without knowing why or wherefore:—The Effect was apparently owing to the Eye; but how, was not dreamt of. Thus, the Phrase, To have an *Evil Eye*, imports as much as to be a *Witch*. And thus *Virgil*,

*Nescio quis teneros oculus mibi fascinat agnos.*

Again, old, sanguine Persons are those most frequently supposed to have the Faculty; the nervous Juice in them being depraved and irritated by a vicious Habitude of Body; and so render'd more penetrating and malignant—And young Persons, chiefly Children and Girls are most affected by it; by reason their Pores are patent, their Juices incoherent, and their Fibres delicate and susceptible. Accordingly, the *Witchcraft* mention'd by *Virgil*, only reaches to the tender Lambs.—Lastly, the Faculty is only exercised when the Person is displeas'd, provoked, irritated, &c. It requiring some extraordinary Stress and Emotion of Mind to dart a Quantity of the proper Effluvia, with a sufficient Impetus to produce the Effect at the distance.

That the Eye has some very considerable Powers, is past dispute. The antient Naturalists assure us, that the Basilisk, and Ophlepa kill other Animals merely by staring at 'em. If this fail of Credit; a late Author assures us to have seen a Mouse running round a large Toad which stood looking earnestly at it, its Mouth open: Still the Mouse made less and less Circles about it; crying all the while, as if compell'd thereto; and, at last, with a deal of seeming Reluctance, ran into the gaping Mouth, and was strait swallowed.

Who has not observ'd a Setting-Dog; and the Effect of its Eye on the Partridge? The poor Bird, when once its Eyes meet those of the Dog, stands as if confounded, regardless of itself, and easily lets the Net be drawn over it. We remember to have read of Squirrels stupefy'd and overcome by a Dog's staring hard at 'em, and thus made to drop out of their Trees into his Mouth.

That Man is not secure from the like Affections, is matter of easy Observation. Few People but have again and again felt the Effects of an angry, a fierce, a commanding, a disdainful, a lascivious, an intreating Eye, &c.—These Effects, no doubt, are owing to the different Ejaculations from the Eye; and are a degree of *Witchcraft*.

WITE, WITA, or WYTE, in antient Customs, a Punishment, Forfeiture, Penalty, Fine or Mulct, antiently of XXX Shillings. See WYTE.

Hence *Wite*, or *Wittree*, one of the Terms of Privilege granted our Portsmen; signifying a Freedom or Immunity from Fines or Amerciaments: Or, as 'tis vulgarly conceiv'd, from being liable to be begg'd for Fools for lack of Wit.

*Wita Plena*, signify'd a Forfeiture of fifty Shillings.—*Si Pundbreche fiat in Curia Regis Plena Wita sit; alibi quinque Marce.*

*Secundum Witam jurare*, was to purge one's self by the Oaths of so many Witnesses, as the Nature of the Crime, and the Punishment, or *Wite*, did require. See PURGATION.

—*Jurat secundum Witam quod nec fuerat furti conscius nec coadjutor in eo.* Leg. Inæ.

Hence *Bloodwita*, *Fintwita*, *Legerwita*, *Ferdwita*, *Childwita*, *Wardwita*, *Heingwita*, &c. See BLOODWITA, FINTWITA, &c.

WITHERNAM—Where Goods are taken by colour of Distress, and driven to an Hold, or out of the County; so that the Sheriff cannot upon the Replevin make deliverance thereof to the Party distrain'd: In this Case the *Writ of Withernam*, or *de weto namio*, is directed to the Sheriff, for the taking as many of the Party's Beasts as he did thus unlawfully distrain; or as much Goods of his, till he has made deliverance of the first Distress. See DISTRESS, REPLEVIN, &c.

The Word is compounded of the Saxon *Wither*, *contra*, against, and *Nam*, *captio*, taking; *q. d.* Reprisals. See NAM.

WITHERS of an Horse, the Juncture of the Shoulder-Bones at the bottom of the Neck and Main, toward the upper part of the Shoulder. See HORSE.

WITNESS, *Testis*, a Person who certifies, or asserts the Truth of any Fact. See EVIDENCE.

Two Eye-Witnesses, or *de Visu*, not suspected, are deem'd a conclusive Proof. See TESTIMONY.

False Witnesses, Suborners of Witnesses, &c. are punish'd with the Pillory; in several other Countries, with Death.

In a Synod at Rome, under Constantine, in the Year 320, it was decreed, that there should be 72 Witnesses heard, to

condemn a Bishop; which was call'd *libra testium*, a Pound of Witnesses. Accordingly there were 72 Witnesses heard against Pope Marcellinus; who, says the Historian, *eram electi libra occidua*.

Antiently there were *Synodal Witnesses*, *Testes Synodales*, in each Parish, chose by the Bishop, to enquire into the Heresies, and other Crimes of the Parishioners; and to make Oath thereof on the Relicks of the Saints. See SIDESMEN.

Among the Romans it was a Custom to pull or pinch the Ears of Witnesses present at any transaction; that they might remember it when they were call'd to give in their Testimony.

WITTENA-Gemote, among our Saxon Ancestors, a Term literally signifying Council, or Assembly of Sages; apply'd to the Great Council of the Land, now call'd the Parliament. See PARLIAMENT.

WOAD, or GOUD, or GAUD, *Guado*, *Guadum*, a Drug used by the Dyers, to give a blue Colour; call'd also *Pastel*. See BLUE.

It arises from a Seed, sown annually in the Spring; which puts forth a Plant call'd *Glastum Sativum*, whose Leaves resemble those of Plantane.—They have usually three, four, or five Crops of Leaves every Year; but only the two or three first are of any Value; whereof the first is best, and the rest in their Order.

When the Leaves are ripe, they gather them; and letting them lie some time, put them under the Wheel to bruise or grind them; after which they are laid eight or ten days in Piles or Heaps; and at last reduced into a kind of Balls which are laid in the Shade on Hurdles to dry.

This done, they grind 'em to Powder; and when ground, spread it on a Floor, and water it, which they call *Couching*.

Here they let it smoke and heat, till by torrifying it every day, it become quite dry, which they call *Silvering*. A week after which, it is in a condition to be used in dying.

The antient Britons used to dye their Bodies herewith; and it was from this Plant that Glass took its Denomination. See GLASS.

A *Woad-blue* is a very deep blue, almost black; and is the Base of so many sorts of Colours, that the Dyers have a Scale whereby they compose the divers Casts or Degrees of *Woad* from the brightest to the deepest. See DYING.

WOLD, signifies a plain Down, or open Champaign-Ground, hilly, and void of Wood—Hence the Names, *Stow in the Wold*, and *Cotswold* in Gloucestershire; whence also that part of Leicestershire, which lies Northward beyond the *Wreken*, is call'd the *Wold of Leicestershire*.

WOLVES Teeth of an Horse, are over-grown Grinders, the Points of which being higher than the rest, prick the Tongue and Gums in feeding, so as to hinder the Chewing of the Meat.

They are seldom met with in young Horses; but if the Teeth be not daily worn by chewing, they will grow up even to pierce the Roof of the Mouth. See TEETH.

WOMAN, FEMINA, *Mulier*, the Female of Man. See FEMALE and MAN.

St. Augustine calls Women the *Devout Sex*: at least this is the common Opinion; tho' others rather think that in the Prayer usually attributed to that Father, and still rehearsed in the Romish Church to the holy Virgin, the Words *intercede pro devoto Famineo sexu*, are to be understood of Women devoted or consecrated to God in Religious Houses, which had been sufficiently express'd by the Words, *Ora pro populo, interveni pro Clero*. See SEX; see also RELIGIOUS, &c.

'Tis a popular Tradition among the Mahometans, which obtains to this day, that Women shall not enter Paradise. See PARADISE.

An Anonymous Author, about the Close of the XVIth Century, published a little Latin Dissertation to prove that Women are not Men; that is, are not reasonable Creatures: *Dissertatio perjuranda qua Anonymus probare nititur Mulieres homines non esse*—He also endeavours to prove, what naturally follows from his Principle, viz. That Women shall not be saved; that there is no future Life or Happiness for them.

His Proofs are all taken from Scripture, or founded on Scripture—Tho', after all, his Aim is not so much to degrade Women to the condition of Brutes; as to shew the Ridicule and Weakness of that Principle or Method of the Anabaptists and some others, who, in Points of Controversy, admit of no Proofs or Considerations but what are taken from Scripture alone. This appears from the Conclusion of the Work. *Probavi, opinor, Invidiosissimis SS. Literarum Testimoniis, Mulierem non esse hominem, nec eam salvam: Quod si non effeci, ostendi tamen universo Mundo quo modo huius temporis Heretici, & presertim Anabaptiste, Sacram solent explicare Scripturam, & qua utantur Methodo ad stabilienda sua execranda Dogmata.*



Yet, *Simon Gediceus*, a *Lutheran Divine*, wrote a serious Confutation of this Piece, in 1595; wherein he restores the *Women* to the Expectation of Heaven on their good Conditions.

The antient *Marcionites* allow'd their *Women* to baptize; as we are assured by *St. Epiphanius*, *Hær. 42. c. 4.*—The *Montanists* admitted *Women* to the Priesthood, and even the Episcopate. *Epiph. Hær. 49. c. 2.*—The modern *Quakers* also permit their *Women* to preach and prophesy on an equal footing with the Men. See *MARCIONITE*, *MONTANIST*, and *QUAKER*.

'Tis a Point much controverted, how far, Learning and Study become the Sex.—*Erasmus* handles the Question at large in one of his Letters to *Budeus*: *Lud. Vives* in his *Institutio Fœminæ Christianæ* has a Chapter exprefs on the same Subject. *Madam Schurman*, a learned German Lady, has gone beyond 'em both, in a Treatise on this Problem; *Num Fœminæ Christianæ conveniat studium Literarum?*

Several of the *Women* remarkable for Learning have been also distinguish'd for their want of Conduct: The Reason, no doubt, lay in this, that their first Studies lying in Books of Gallantry and Intrigue, the Imagination was early turn'd that way, and the Memory fill'd with a sort of Ideas, which a favourable Disposition and Age adopted too easily, and improved too fast—'Tis not that Study in itself, has any natural tendency to produce such Effects; rather the contrary: The close abstracted Researches of Metaphysics, Logics, Mathematics, Physics, Criticism, &c. no doubt, would be one of the surest Means to secure, and establish the Virtue of Continency in a *Woman*.

A *WOMAN* in *England*, as soon as she is married, with all her Moveables, is wholly in *potestate viri*, at the Will and Disposal of her Husband. See *FEME*.

There are divers considerable things relating to *Women*, in the Laws of *England*; which see under the Article *WIFE*.

*WONDER*; see *MIRACLE*.

The *Seven Wonders of the World*, as they are popularly call'd, were, the *Egyptian Pyramids*; the *Mausoleum* erected by *Artemisa*; the Temple of *Diana* at *Ephesus*; the Walls and hanging Gardens of the City of *Babylon*; the Colossus or Brazen Image of the Sun at *Rhodes*; the Statue of *Jupiter Olympius*; and the Pharos or Watch-Tower of *Ptolemy Philadelphus*. See *PYRAMID*, *MAUSOLEUM*, *COLOSSUS*, *PHAROS*, &c.

*WOOD*, *Lignum*, a solid Substance, whereof the Trunks and Branches of Trees are form'd; and deriving its Growth from certain Juices in the Earth. See *TRUNK*, *BRANCH*, &c.

The *Wood* is all that part, in a Tree, included between the Bark and the Pith. See *TREE* and *BARK*.

*Dr. Grew*, in his Anatomy of Plants, has discover'd, by means of the Microscope, that what we call *Wood* in a Vegetable, notwithstanding all its Solidity, is only an assemblage of infinite minute Canals, or hollow Fibres, some of which rise from the Root upwards, and are disposed in form of a Circle; and the others, which he calls *Insertions*, tend horizontally from the Surface to the Centre; so that they cross each other, and are interwove like the Threads of a Weaver's Web. See *VEGETATION*, *SAP*, &c.

*Woods* are distinguish'd into divers Kinds; with regard to their Natures, Properties, Virtues, and Uses.

Of *Wood*, consider'd according to its Qualities, whether Useful, Curious, Medicinal, &c. the Principal is that call'd *Timber*, used in building Houses, laying Floors, Roofs, Machines, &c. See *TIMBER*.

*Woods* valued on account of their Curiosity, are *Cedar*, *Ebony*, *Box*, *Calebouc*, &c. which, by reason of their extraordinary Hardness, agreeable Smell, or beautiful Polish, are made into Tables, Combs, Beads, &c. See *EBONY*, &c.

The Medicinal *Woods* are *Guaiac*, which the *Spaniards* call *Ligno Sancto*; *Aloes* or *Agillochum*, *Sassafras*, *Nephriticum*, *Santal*, *Sarsaparilla*, *Aspalathum*, *Eagle Wood* or *Pao d'Aquilla*, &c. See *ALOES*, *SASSAFRAS*, &c.

*Woods* used in Dying, are the *Indian Wood*, *Brasil*, *Campêche*, &c. See *BRASIL*, &c.

*Cord Wood* is *Wood* for the Fire, generally made of the Branches or Loppings of Trees, piled up in Order.

This is limited to be below seventeen Inches, and above six Inches thick, and at least three Foot and a half long. See *CORD*.

*Fossil*, or *Subterraneous Wood*—There are divers Places where *Wood* is found under ground: Whether overturn'd, and buried there from the time of the Deluge, as many suppose; or whether form'd and produced there, as *Jet* is known to be. See *FOSSIL*, *JET*, &c.

Not long ago, there were found in *England*, at above a hundred Foot depth, several huge Oaks with all their Branches on, and which, by their subterraneous Situation, had contracted a black Colour, nothing inferior to *Jet*, join'd with a Hardness which far surpass'd that of any living Oak.—'Tis hard to conceive how such Trees should come there, unless

by a general Subversion of the whole terrestrial Globe at the Flood. See *DELUGE*.

*Mr. Boyle* mentions a huge Oak dug out of a Salt-Mine in *Transylvania*, so hard as not easily to be wrought on by Iron-Tools; yet being exposed to the Air out of the Mine, became so rotten, that in four days it crumbled between the Fingers. *Dissert. de Admir. Hung.* And *Mr. Derham* observes the same of the Trees lately turn'd up by the Breaches at *Dagenham*, &c. *Philos. Transf. N° 535.* See *MOSS*.

*WOOD*, *Sylva*, in Geography, a Multitude of Trees, extended over a large continued Track of Land, and propagated without Culture. See *FOREST*.

The generality of *Woods* only consist of Trees of one Kind.—At *Cape Verd* in *Africa* are *Woods* of Orange and Lemon Trees; in *Ceylon* are *Woods* of Cinnamon Trees; in the *Molucca Islands* *Woods* of Caraway Trees; in the Islands of *Nero*, *Lontour*, *Lossain*, &c. *Woods* of Nutmeg Trees; in *Brasil*, *Woods* of Brasil Trees, &c. in *Numidia*, *Woods* of Date Trees; in *Madagascar*, *Woods* of Tamarind Trees, &c.

*WOOD* and *WOOD*, in the Sea-Language, is when two Pieces of Timber are so let into each other, that the Wood of the one joins close to the other.

*WOOD-GELD*, *WOODGELDUM*, in our antient Customs, the gathering or cutting of Wood within the Forest—Or it may denote the Money paid for the same, to the Foresters. Sometimes it also seems to signify an Immunity from this Payment by the King's Grant.

*Crompton* says expressly, it signifies to be free from the Payment of Money, for taking of Wood in a Forest. See *GELD*.

*WOOD-Hay*, an antient Custom at *Exeter*; whereby a Log out of every Seam of Wood brought over *Ex Bridge*, is taken towards the Reparation of that Bridge. *Antiq. of Exeter*.

*WOOD-Corn*, is a certain Quantity of Oats, or other Grain, antiently given by customary Tenants to their Lord, for the liberty to pick up dead or broken Wood.

*Wood-Lands*, are Places where there are many Woods—the Word is also more generally taken to signify inclosed Countries.

*Wood-Mote*, the antient Name of that Forest-Court, now call'd the Court of Attachment. See *ATTACHMENT* and *FOREST*.

*Wood-Tlea-Court*, is a Court held twice a Year in the Forest of *Clun* in *Shropshire*, for determining all Matters relating to *Wood*, and the feeding of Cattel there.—Perhaps it was originally the same with *Wood-Mote-Court*.

*WOODWARD*, an Officer of the Forest, whose Function it is to observe any Offences either in Vert, or Venison, committed within his Charge; and to present the same; and in case any Deer are found kill'd or hurt, to inform the Verderer thereof, and present 'em at the next Court of the Forest. See *FOREST*.

*Woodwards* may not walk with Bows and Shafts, but with Forest-Bills. *Arcum & Calamos gestare in Foresta non licet, sed (ut rescripti utar Verbo) Hæbetum tantummodo.* Term. Hil. An. 13 Ed. 3.

*WOOF*, among Manufacturers, the Threads which the Weavers shoot a-cross, with an Instrument call'd the Shuttle, between the Threads of the Warp; to form the Web. See *WARP*, *WEB*, *WEAVING*, &c.

The *Woof* is of different Matter, according to the Piece to be wrought—In *Taffaty* both *Woof* and *Warp* are Silk. See *TAFFATY*.

In Mohairs the *Woof* is usually Wool, and the *Warp* Silk—In *Sattins* the *Warp* is frequently Flax, and the *Woof* Silk. See *CLOTH*, *SERGE*, *SATIN*, *VELVET*, &c.

*WOOL*, the Hair, or Covering of Sheep; which, wash'd, shorn, dress'd, comb'd, spun, wove, &c. makes divers kinds of Stuffs, Cloths, &c. for Apparel, Furniture, &c. See *HAIR* and *MANUFACTURE*.

While the *Wool* remains in the State it was first shorn off the Sheep's Back, and not sorted into its different Kinds, it is call'd *Fleece*. See *FLUEN*.

Each *Fleece* consists of *Wool* of divers Qualities and Degrees of Fineness, which the Dealers therein take care to separate.

The *French* and *English* usually separate each *Fleece* into three Sorts; viz. 1. *Mother-Wool*, which is that of the Back and Neck. 2. The *Wool* of the Tails and Legs. 3. That of the Breast and under the Belly.

The *Spaniards* make the like division into three Sorts, which they call *Prime*, *Second*, and *Third*; and for the greater Ease, denote each Bale or Pack with a Capital Letter denoting the Sort—If the Triage or Separation be well made, in fifteen Bales there will be twelve mark'd R, that is, *Refine* or *Prime*; two mark'd F, for *Fine* or *Second*; and one S, for *Thirds*.

The *Wools* most esteem'd are the *English*, chiefly those about *Leominster*, *Cotswold*, and the Isle of *Wight*; the *Spanish*, principally those about *Segovia*; and the *French* about *Berry*:  
D d d d which



which last are said to have this peculiar Property, that they will knot or bind with any other sort; whereas the rest will only knot with their own kind.

Among the Antients, the *Wools* of *Attica*, *Megara*, *Lao-dicea*, *Apulia*, and especially those of *Tarentum*, *Parma*, and *Altino* were the most valued. *Columella* sets the two last even above that of *Tarentum*, Lib. vii. c. 2. And *Varro* assures us, the People there used to clothe their Sheep with Skins, to secure the *Wool* from being damaged. *De Re Rust.* L. II. c. 2.

*Tavernier* affirms, that the *Wools* in *Asia* are incomparably finer than those of *Europe*; and there is no doubt but that *Wool* was the Golden Fleece sought at *Colchos*. See GOLDEN FLEECE.

The Art of Preparing and Working *Wool* is attributed by the Antients to *Minerva*; who accordingly is made the Genius and Protectress thereof. See WOOLLEN.

*English Wool*——The *Wools* of *England* have always been in the highest repute; and that more abroad than at home.——Some we have, which manufactured by our own Clothiers, *Chamberlain* observes, does both for softness and fineness, vie with the choicest Silks. *Spanish Wools*, we know, bear a great Price among us; but 'tis certain much the greatest part of that, which, when manufactured, our Clothiers, &c. call *Spanish Cloth*, grows in *England*. Add, that the *French* can make no good Cloth of their own *Wool*, without at least one third of *English Wool* mix'd with it.——'Tis allow'd, the goodness of the *Spanish Wools* is owing to a few *English* Sheep sent over into *Spain* as a Present by *Henry II.* of *England*; or, as others will have it, tho' we think mistakenly, by *Edward IV.* in 1465.

The fineness and plenty of our *Wools* is owing, in some measure, to the sweet, short Grass in many of our Pastures and Downs; tho' the advantage of our Sheep feeding on this Grass all the Year, without being obliged to be shut up in Folds during the Winter, or to secure 'em from Wolves at other times; contributes not a little thereto.

The *Scotch* and *Irish Wools* are commonly sold abroad for *English*; and upon the same footing.——But Foreigners, skil'd in those Matters, find they come far short of it in fineness, tho' at some Markets the *Irish* is even said to be prefer'd to the *English*.

The yearly Produce of *Wool* in *England* is calculated by *Dr. Davenant* and *Mr. King* at two Millions Sterling. See WOOLLEN MANUFACTORY.

Antiently, the principal Commerce of the Nation consisted in *Wool* unmanufactured; which Foreigners, especially the *French*, *Dutch*, and *Flemish* bought of us. Inasmuch that the Customs of *English Wool* exported in *Edward* the Third's Reign, amounted, at 50 s. a Pack, to 250000 l. per Annum. An immense Sum in those days. See COMMERCE.

This excessive Custom on the Export of unmanufactured *Wool*, set our People to the making it into Cloth themselves.——In which they succeeded so well, that towards the Close of the sixteenth Century, under the Reign of *Queen Elizabeth*, the Exportation of any *Wool* at all was absolutely prohibited, and this upon pain of having the right Hand struck off. See CONTRABAND.

From that time, *England* has been exceedingly jealous of its *Wool*; to prompt their Vigilance, the Lords in Parliament are seated on *Wool-Packs*.——Accordingly, scarce a Parliament but has renew'd and reinforced the Prohibition; particularly, about the middle of the seventeenth Century, the exporting of *Wool* was made a Capital Crime.

But all these Precautions are ineffectual; the *English* themselves, particularly about the Coasts of *Sussex*, making use of the long Winter-Nights to waft over their *Wools* to *France*: being sure of carrying them to a good Market, they despise the Penalty, with an Intrepidity, that the rest of *Europe* are amaz'd at. See OWLERS.

*M. Colbert*, a Name the *French* Manufactures and Commerce are infinitely indebted to, had entertain'd a Design of procuring some of our *English* Sheep, and propagating them in *France*; hoping, that by chusing them, in the Provinces of that Kingdom, such Pastures, and such a Sky as they had in their own Island, they might there be perpetuated; and *France* be no longer obliged precariously to depend on the clandestine Supplies of *Wool* from the *English* Owl-ers.——But the Count *de Cominges*, then Ambassador of *France* at the *English* Court, laid the Impossibility of having such an Export of Sheep, and the almost equal Impossibility of keeping and making them multiply there, so strongly before him; that he abandon'd the Design.

*Wool* is reckon'd by the Sack, containing two Weighs; the *Weight* six Tod and a half; the *Tod* two Stone; the *Stone* two Cloves; and the *Glove* seven Pounds. Twelve Sacks make a *Tass*, or 4368 Pounds. See LAST, &c.

A Sack of *Wool*, or 564 Pounds, is sufficient for four Standard Cloth, to render them true Breadth, i. e. six Quarters and a half; true Weight, i. e. sixty Pounds; and true Length, i. e. twenty four Yards.

For the divers Preparations of *Wool*, see CARDING, COMBING, SPINNING, WEAVING, SCOWRING, FULLING, DYING, CLOTH, &c.

*Wool-Drivers*, are those who buy *Wool* of the Sheep-Masters in the Country, and carry it on Horse-Back to the Clothiers, or Market-Towns, to sell it again.

*Wool-Staple*, is a City or Town where *Wool* used to be sold. See STAPLE.

*Wool-Winders*, are Persons employ'd in winding up Fleece of *Wool* into Bundles, to be pack'd and sold by Weight.——These are sworn to do it truly between the Owner and the Merchant.

*WOOLLEN Manufactory*, includes the several sorts of Commodities into which *Wool* is wrought; as broad Cloths, long and short Kerseys, Bays, Serges, Flannel, Perpetuanas, Says, Scruffs, Frize, Pennistons, Stockings, Caps, Rugs, &c.——Each whereof see under its respective Article, CLOTH, SERGE, FLANNEL, &c.

The *Woollen Manufacture*, which now makes the principal Article both in our foreign and domestick Trade, being that which furnishes the Cargoes of our Vessels, that employs our People, &c. may be said to have had its Rise in the fifteenth Century.

Till that time, our *Wool* was all sold in the Fleece, to such of our Neighbours as came to fetch it.——Among our Customers, however, the principal were the *Flemings* and *Brabanters*, and particularly the Merchants of *Gant* and *Louvain*, who took off vast Quantities to supply two Manufactories that had flourish'd in those two Cities from the tenth Century, and had furnish'd the greatest part of *Europe*, and even *England* itself with all sorts of *Woollen* Cloths, &c. But the Richness of the Manufactories of *Gant*, and the incredible Number of Hands employ'd therein, having spirited up the Inhabitants to revolt, divers times, against their Sovereigns, on account of certain Taxes which they refused to pay; the Seditious were at length punish'd and dispersed, and part of 'em took refuge in *Holland*, and the rest in *Louvain*.

These last, together with their Art of Manufacturing Cloths, carry'd with 'em their Spirit of Sedition.——And it was not long e'er several of 'em, to avoid the Punishment they had deserved for killing some of the Magistrates, removed into *England*; where they instructed our People how to work their own *Wools*.

This Establishment is refer'd to the Year 1420; from which time no Endeavours have been spar'd to keep our *Wools* to ourselves. See WOOL.

The President *Thuanus* makes this Epoch a hundred Years later; and attributes the Establishment of the *Woollen Manufactures* in *England* to *Queen Elizabeth*, and the Troubles about Religion which the Severity of the Duke of *Alva* and the *Spanish* Inquisition had occasion'd, and kept up to long in the *Low Countries*.——But what that noble Author says, is rather to be understood of their Perfection, than their first Establishment; and of the several great Manufactures then set up at *Norwich*, *Colchester*, *Sandwich*, *Hampton*, &c. For in the *English* and *Flemish* Historians we find mention of the Manufactures of *London* long before any part of the seventeen Provinces had attempted to throw off the *Spanish* Yoke.

As this Manufacture now stands, *Dr. Davenant* and *Mr. King* compute the Produce thereof to be eight Millions per Annum; three fourths whereof are consumed at home, and the rest exported. See REVENUE, POLITICAL ARITHMETIC, &c.

So jealous are we now become of our *Woolens*, that besides the Precautions taken to use all our own *Wools* ourselves; we have added that of selling 'em ourselves, and of carrying 'em to the Places where they are required; not admitting Strangers to come and buy any in *England*. See NAVIGATION.

And hence the establishment of those famous Magazines in *Holland*, the *Levant*, and the *North*, where our *Woolens* are deposited to be vend'd by Factors or Commissioners.——The Magazine in *Holland* has changed place divers times; and it has been successively at *Middlebourg*, *Delft*, *Rottterdam*, and *Dort* where it now remains; and where all the *Germans* come to furnish themselves.——That for the *Levant* is at *Smyrna*; and that for the *North* at *Archangel*.

A Pack, or 240 Pounds Weight of Short *Wool*, 'tis computed, employs sixty-three Persons a Week, to manufacture it into Cloth; viz. three Men to Sort, Dry, Mix, and make it ready for the Stock-Card; five to Scribble, or Stock-Card it; thirty five Women and Girls to Card and Spin; eight Men to Weave it; four Men and Boys to Spool it, and reed Quills; eight Men and Boys to Scower, Burl, Mill or Full it, Rowe, Shear, Pack, and Press it.

A Pack of large long combing *Wool* made into Stuff, Serges, Sagathies, &c. for the *Spanish* Trade, will employ, for one Week 22 Persons; whose Wages amount to 47 l. 10 s. Thus, 7 Combers 3 l. 10 s. Dyers 5 l. 15 s. Spinners 15 l.



20 *Throwers and Doublers* 5 l. 25 *Weavers and Attendants* 12 l.

A Pack of *Wool* made into *Stockings* will employ for one Week 184 Persons, who will earn 56 l.—Thus, 10 *Combers* 5 l. 5 s. the *Dyer* 1 l. 6 s. 102 *Spinners* 15 l. 12 s. *Doublers and Throwers* 4 l. 10 s. 60 *Stocking Weavers* 30 l.

**WORD, Vox, Vocabulum**, in Language, is an articulate Sound designed to represent some Idea. See **SOUND, VOICE, IDEA, &c.**

In writing, a *Word* is an assemblage of several Letters, forming one or more Syllables, and signifying some thing. See **LETTER and SYLLABLE.**

The *Port-Royalists* define *Words* to be distinct articulate Sounds agreed on by Mankind to convey their Thoughts and Sentiments by. See **LANGUAGE.**

Grammarians divide *Words* into eight Classes, call'd *Parts of Speech*; which are the *Noun, Pronoun, Verb, Participle, Adverb, Conjunction, Preposition, and Interjection*; to one or other of which all the *Words* and Terms in all Languages, which have or may be invented to express our Ideas, are reducible. See each under its proper Article, **NOUN, PRONOUN, VERB, &c.**

*Words*, again, are divided into *Primitives* and *Derivatives, Simple and Compound, Synonymous and Equivocal.* See **PRIMITIVE, DERIVATIVE, &c.**

With regard to their Syllables, *Words* are further divided into *Monosyllables*, and *Poly syllables.* See **MONOSYLLABLE, &c.**

The Grammatical Figures of *Words, Tropi Verborum*, which occasion changes in the Form, &c. of *Words*, are *Syncope, Apocope, Apostrophe, Dierefsis, Apherefsis, Prothefis, Epenthesis, Paragoge, Metathesis, &c.* See each in its proper Place, **SYNCOPE, APOCOPE, &c.** see also **TROPE and FIGURE.**

The Use of *Words*, we have observed, is to serve as sensible Signs of our Ideas; and the Ideas they stand for in the Mind of the Person that speaks, are their proper Significations.

*Simple and Primitive Words* have no natural Connexion with the things they signify; whence there is no rationale to be given of them: It is by a mere arbitrary Institution and Agreement of Men that they come to signify any thing. Certain *Words* have no natural Propriety or Aptitude to express certain Thoughts, more than others; were that the case, there could have been but one Language. See **PRIMITIVE.**

But in *Derivative and Compound Words* the Case is somewhat different. In the forming of these, we see, a regard is had to Agreement, Relation, and Analogy: Thus, most *Words* that have the same ending, have one common and general way of denoting or signifying things; and those compounded with the same Prepositions, have a similar Manner of expressing and signifying similar Ideas in all the learned Languages where they occur.

For the Perfection of Language, 'tis not enough, Mr. *Locke* observes, that Sounds can be made Signs of Ideas; unless these can be made use of, so as to comprehend several particular things; for the multiplication of *Words* would have perplexed their use, had every particular thing needed a distinct Name to be signified by.

To remedy this Inconvenience, Language had a farther Improvement in the use of general Terms whereby one *Word* was made to mark a Multitude of particular Existences; which advantageous Use of Sounds was obtained only by the difference of the Ideas they were made signs of; Those Names becoming general, which are made to stand for general Ideas; and those remaining particular, where the Ideas they are used for are particular. See **GENERAL Terms.**

It is observable, that the *Words* which stand for Actions and Notions quite removed from Sense, are borrow'd from sensible Ideas; as, to Imagine, Apprehend, Comprehend, Understand, Adhere, Conceive, Instill, Disgust, Disturbance, Tranquillity, &c. which are all taken from the Operations of things sensible, and apply'd to Modes of Thinking——*Spirit*, in its primary Signification, is no more than Breath; *Angel*, a Messenger. By which we may guess what kind of Notions they were, and whence derived, which filled the Minds of the first beginners of Languages, and how Nature, even in the naming of things, unawares, suggested to Men the Originals of all their Knowledge: whilst, to give Names that might make known to others any Operations they felt in themselves, or any other Ideas, that came not under their Senses, they were forced to borrow *Words* from the ordinary and known Ideas of Sensation. See **SENSATION, PERCEPTION, &c.**

The Ends of Language in our Discourse with others, are chiefly three: First, to make our Thoughts or Ideas known one to another——This we fail in, 1. When we use Names without clear and distinct Ideas in our Minds. 2. When we apply received Names to Ideas, to which the common use

of that Language doth not apply them. 3. When we apply them unsteadily, making them stand now for one, and anon for another Idea.

Secondly, To make known our Thoughts with as much ease, and quickness as is possible——This, Men fail in, when they have complex Ideas, without having distinct Names for them; which may happen either through the defect of a Language, which has none; or the fault of that Man, who has not yet learned them.

Thirdly, To convey the Knowledge of Things——This cannot be done, but when our Ideas agree to the reality of things. He that hath Names without Ideas, wants meaning in his *Words*, and speaks only empty Sounds. He that hath complex Ideas, without Names for them, wants dispatch in his Expression. He that useth his *Words* loosely and unsteadily, will either not be minded, or not understood. He that applies his Names to Ideas, different from their common use, wants Propriety in his Language, and speaks Gibberish; and he that hath Ideas of Substances, disagreeing with the real Existence of things, so far wants the Materials of true Knowledge. See **KNOWLEDGE.**

**WORD**, or *Watch Word*, in an Army, or Garrison, is some peculiar Word, or Sentence, by which the Soldiers know, and distinguish one another in the Night, &c. and by which Spies, and designing Persons are discovered.

It is used also to prevent Surprizes.——The *Word* is given out in an Army every Night by the General, to the Lieutenant, or Major General of the Day, who gives it to the Majors of the Brigades, and they to the Adjutants; who give it first to the Field-Officer, and afterwards to a Serjeant of each Company, who carry it to the Subalterns.

In Garrisons it is given after the Gate is shut, to the Town-Major, who gives it to the Adjutants, and they to the Serjeants. See **ROUNDS.**

**WORD**, in Heraldry, &c. See **MOTTO.**

**WORK-HOUSE**, a Place where indigent, vagrant, and idle People are set to work, and maintain'd with Clothing, Diet, &c.

Such is *Bridewell*, and several other Places about the City and Suburbs; particularly that in *Bishopsgate street* for employing the poor Children of the City and Liberties, who have no Settlement; and that for the Parish of St. *Margaret's Westminster*, call'd the *Grey-Coat Hospital.* See **BRIDEWELL and HOSPITAL.**

At *Amsterdam* they have a famous *Work-House*, or House of Correction, call'd the *Rasphuyse*, which, by a Privilege granted in 1602, has alone the Right of Shaving and Cutting the Dyers Woods, as *Brasil, Santal, Campeche, Saffras, &c.*

Each Person, tolerably strong, kept in the House, is obliged to furnish 250 Pounds of rasp'd Wood per Day; and the weaker, a certain Quantity of Chips. See **RASPHUYSE.**

**WORKS, Opera**, in Fortification, the several Lines, Trenches, Ditches, &c. made round a Place, an Army, &c. to fortify and defend it. See **LINE, TRENCH, &c.**

The principal *Works* in a Fortrets or fortify'd Place, see under the Articles **FORTIFY'D Place, FORTIFICATION, &c.**

*Crown-Work,*  
*Horn-Work,*  
*Out-Work,*  
*Field Work,*

See { *CROWN-Work.*  
*HORN-Work.*  
*OUT-Work.*  
*FIELD-Work.*

**WORLD, Mundus**, the Assemblage of Parts which compose the Universe; call'd by the *Greeks* *τὸ πᾶν*, and by the *Latins*, *Universum.* See **UNIVERSE.**

The *Duration of the World* is a thing has been greatly disputed——*Plato*, after *Ocellus Lucanus*, held it to be eternal; and to have flow'd from God, as Rays flow from the Sun. *Aristotle* was much of the same mind: he asserts, that the *World* was not generated, so as to begin to be a *World*, which before was none; and, in effect, his whole eighth Book of *Phys.* and first Book of *de Caelo*, is spent in proving the Eternity of the *World.* See **ETERNITY.**

He lays down a pre-existing and eternal Matter as a Principle; and thence argues the *World* eternal. His Argument amounts to this, that it is impossible an eternal Agent, having an eternal passive Subject, should continue long without Action. See **ARISTOTELIAN.**

His Opinion was generally follow'd; as seeming to be the fittest to end the Dispute among so many Sects about the first Cause. See **CAUSE.**

*Epicurus*, however, tho' he makes Matter eternal; yet shews the *World* to be but a new thing form'd, out of a fortuitous Concourse of Atoms. See *Lucretius*, lib. V. See **MATTER, ATOM, &c.** See also **EPICUREAN, &c.**

Some of the modern Philosophers refuse the imaginary Eternity of the *World*, by this Argument: That, if it be *ab Eterno*, there must have been a generation of Individuals in a continual Succession from all Eternity; since no Cause can be assign'd why they should not be generated, *viz.* one from another. Therefore, to consider the Origin of Things, and the



The Series of Causes, we must go back *in infinitum*, i. e. there must have been an infinite Number of Men and other Individuals already generated; which subverts the very Notion of Number. And if the Cause which now generates have been produced by an infinite Series of Causes; How shall an infinite Series be finite, to give room for new Generations?

Dr. Halley suggests a new Method of finding the Age of the World, from the degree of Saltness of the Ocean. See SALTNESS, &c.

'Tis another popular Topic of Controversy, Whether the World be finite, or infinite? See the Arguments on both sides under the Article-UNIVERSE.

'Tis likewise disputed, Whether it were possible for several Worlds to exist—Some hold the Affirmative, from an Opinion of the infinite Power of the Deity; it being a setting Bounds to Omnipotency, to say, that he created so many Bodies at first, that he could not create more.

The Cartesians maintain the Negative upon these Principles: That it is a Contradiction to say, there are several Worlds existing at the same time; since this implies several Universes of created Beings, the World being the *τὸ πᾶν*. That if there were several Worlds, they must either be at a distance from one another, or contiguous; but neither can be said: For were they contiguous, they would only constitute one; and were they distant, there must be something between. But what can be between? If it be extended, it is corporeal; and instead of separating the several Worlds, will connect 'em into one.

The World is sometimes divided into Upper, and Lower—The Lower World, or Sublunary, is the Globe of our Earth. See EARTH.

The Upper World includes the Heavens, and heavenly Bodies. See HEAVEN.

System of the WORLD; see SYSTEM.

Soul of the WORLD; see ANIMA MUNDI.

Map of the WORLD; see MAP.

WORMS, in Medicine; see VERMES.

Sir Theodore Mayerne assures us, in the *Philosoph. Trans.* N° 211. That the famed Sugar, or Remedy given by Ponteus, (a celebrated Chymical Empiric) for the Worms in Children, is fifteen Grains of *Mercurius Dulcis* with five Grains of Scammony, or two or three times as much Sugar, made up in Lozenges. He adds, that this Dose, which in France purges grown Persons, is ineffectual in England to Persons of above fifteen Years old, and ought to be augmented.

In the same *Transact.* N° 113. we have Accounts of divers remarkable Operations whereby Worms were taken out of divers unsuspected Parts of the Body; the Operators being chiefly Women. Mrs. Mary Hastings is there recorded as famous for the discovery of Worms hid in the Face, Gums, Tongue, &c. which she managed with such Address, that she took them out of any part affected with a Goose-Quill.

Mr. Dent relates, that he himself was cured of certain odd Tumors on his Tongue by one of those Worm Doctresses, Mrs. French; who, piercing the parts affected with a Lancet, drew out five or six Worms at a time—In less than eight days, he assures us, she took out of his Tongue above a hundred Worms, and thirty out of his Gums. See HYDATIDES.

In Persia, &c. there are very long, slender Worms, six or seven Yards long, bred in the Legs and other Parts of Mens Bodies: When arriv'd at a certain Pitch, they put out their Heads, Necks, &c. and withdraw them (if displeased or hurt) again, causing intolerable Pains, Fevers, &c. See CRINONES.

Aristotle observes, that all Deer have Worms under their Tongues—Sheep's Noses often abound with them.

WORM, in Chymistry, a long, winding Pewter-Pipe, which Distillers and Apothecaries place in a Tub of Water to cool and condense the Vapours in the Distillation of Spirits. See ALEMBIC, DISTILLATION, &c.

Formerly, this Worm, or something like it, was placed above the Head of the Still, with a Refrigeratory at the upper end of it, which is useful enough in the Distilling of Spirit of Wine. See REFRIGERATORY.

This the Chymists call a *Serpentine*. See SERPENTINE.

To WORM a Cable, in the Sea-Phrase, signifies to strengthen it by winding a small Rope all along between the Strands. See CABLE, &c.

To WORM a Dog, is to take out a kind of Worm from under his Tongue; which, if let alone, would make him mad.

WORM-SEED, a kind of Worm-Powder, call'd also *Barbaine*, *Semen contra*, *Semen sanctum*, *Semen santonicum*, and *Abrotonum*, is a kind of Seed proper to destroy Worms generated in a human Body, particularly in Children. See WORM.

This Seed is small, of a brownish Colour, an oblong Figure, a bitter Taste, and a strong Smell.

The Place where it is produced, is Persia, about the Frontiers of Muscovy. It is brought to us from Aleppo, &c. Naturalists are not agreed about the Plant that produces it. J. Bauhin has a large Dissertation on the Subject—Some will have it the Species of *Absynthium*, or Wormwood call'd *Santonicum*, or *Marinum Absynthium*; others will have it the *Tanacetum*, others the *Abrotonum*.

Monf. Tournesort gives us the following Account of this notable Drug, in the second Volume of his Travels—The Sementine or Worm-Powder, is not gather'd like other Seeds.

The Plant grows in the Meadows, and must be let ripen; and the mischief is, that as it grows near to Maturity, the Wind scatters a good part of it among the Grass, where it is lost; and this it makes it so dear.

As they dare not touch it with the Hand for fear of making it spoil the sooner; when they would gather what is left in the Ear, they have recourse to this Expedient—They take two Hand-Baskets, and walking along the Meadows, sweep the Baskets the one from right to left, the other from left to right, as if they were mowing; by this means the Seed is shook out into the Baskets.

It must be chosen new, greenish, of a sharp, bitter, aromatic Taste, yet disagreeable.

WORMWOOD, a Medicinal Herb, among Physicians, &c. call'd *Absynthium*. See ABSYNTHIUM.

WORMWOOD-WINE, *Vinum Absynthites*; see VINUM.

WORSHIP of God, *Cultus Dei*, is what we usually call Religion. See RELIGION.

This Worship consists in paying a due Respect, Veneration, and Homage to the Deity, under a certain Expectation of Reward. See GOD.

And this internal Respect, &c. to be shewn and testified by external Acts; as Prayers, Sacrifices, Thanksgivings, &c. See PRAYER, SACRIFICE, &c.

The Quietists, and some other mystic Divines, set aside not only all use of external Worship; but the Consideration of Rewards and Punishments. See QUIETISM.

Yet, even the Heathens had a Notion, that God did not require us to serve him for nought:—*Dii quamobrem Colendi sunt*, says Cicero, *non intelligo, nullo nec accepto ab illis nec sperato bono*.

The School-Divines divide Worship into divers Kinds, viz. *Latria*, that render'd to God; and *Idolatria*, that render'd to Idols or Images. To which the Romanists add, *Dulia*, that render'd to Saints; and *Hyperdulia*, that to the Virgin. See IDOLATRY, IMAGE, DULIA, HYPERDULIA, &c.

WORSTED, or WOOLSTED, in Matters of Commerce and Manufacture, is a kind of Woollen-Thread. See WOOL.

Worsted is properly a Thread spun of Wool that has been combed; and which in the Spinning is twisted harder than ordinary. See COMBING.

It is chiefly used either to be knit or wove into Stockings, Caps, Gloves, or the like. See STOCKING, &c.

The name Worsted is supposed to be borrow'd from a Town thus call'd in Norfolk, noted for fine Spinning—They who write it *woolsted*, do it on supposition of the Word's being form'd from *Wool*, the Matter of this Thread.

WOULDING, a Sea-Term, for the winding of Ropes hard round about a Yard or Mast of a Ship, after it has been strengthened by some Piece of Timber nailed thereto.

WOUND, *Vulnus*, in Medicine and Chirurgery, a recent Separation made in the soft or fleshy Parts of the Body, from an external Cause, and particularly the Action of some hard and sharp Instrument. See SOLUTION.

Or, it is a Solution of the Continuity of a fleshy Part, made by some penetrating Body; while it yet remains fresh, bloody, and without Putrefaction: By which Circumstances it is distinguish'd from an Ulcer. See ULCER.

A like Separation happening in a bony Part, is call'd a Fracture. See FRACTURE. See also FLESH, BONE, &c.

All Wounds proceed either from Puncture, Incision, or Contusion, according to the Nature and Make of the Instrument they were caus'd by. See PUNCTURE, INCISION, and CONTUSION.

Wounds are usually divided, with respect to their Cause, Circumstances, Cure, &c. into Simple and Compound.—Simple Wounds are those made by Puncture, Incision, or Contusion separately; those of the outer Skin, without any considerable loss of Substance, or hurting any remarkable Vessel; and those not complicated with any dangerous Symptoms.

Compound Ulcers are those made both by Puncture and Incision at the same time, to which is sometimes also added Contusion; those attended with great loss of Flesh, or the hurt of some considerable Vessel; and those made by envenom'd Instruments, or attended with violent Symptoms.

The History of a Wound is thus delivered by Boerhaave—Immediately upon the Solution, the wounded Parts recede further



further and further from each other. The Blood gushes out, at first, with some violence; but stops of itself: then a bloody Scab is form'd in the Cavity of the *Wound*, and a thin ruddy Humour oozes out; the Lips of the *Wound* begin to redden, heat, ache, swell, and turn black; and (in great *Wounds*) a Fever and Thirstiness succeed. On the third or fourth day, there is found a white, viscid Pus; upon which, the heat, redness, tumor, &c. abate, and the Cavity gradually fills up from the bottom upwards, and from the Circumference to the Centre with growing Flesh. Lastly, the *Wound* dries, and cicatrises.

But note, these Symptoms vary according to the Nature and Cause of the *Wound*—Thus, if it be by Incision, and a large Blood-Vessel be cut, the Hæmorrhage is more violent; especially if it be an Artery; in which case, florid Blood flies out impetuously and by starts: If only a Vein be cut, the Flux is more moderate and equable, and the Blood of a darker Colour—If the *Wound* be attended with Contusion, the Hæmorrhage is small.

In *Wounds*, where any large Artery is quite cut in two, the Flux usually proves mortal. A lesser Artery cut transversely, flies back against the solid Parts, and will have its Mouths stop'd: If an Artery be not quite cut off, there arises a perpetual Flux; or if that be stop'd, an Aneurisma.—A Nerve being cut off, flies back, produces a Pain, and Obstruction about the *Wound*; and below it, a Numbness, and wasting Immobility: The case is much the same in wounded Tendons and Membranes.—*Wounds* of the temporal Muscle are rarely cured; but generally bring on horrible Convulsions.

The following *Wounds* are commonly reputed mortal; viz. those of the *Cerebellum*, and of the *Cerebrum*, if they be deep enough to hurt the *Medulla oblongata*; deep *Wounds* in the spinal Marrow, especially the upper part thereof; those of the Heart, Lungs, Liver, Spleen, Kidneys, Pancreas, Mesentery, Stomach, Intestines, &c. Those of the *Cava*, *Aorta*, *Carotides*, pulmonary, and other large Veins and Arteries. Those of the *Bronchia*, *Thorax*, *Diaphragm*; large *Wounds* of the *Oesophagus*, *Trachea*, and the Bladder, and all invenom'd *Wounds*.

In young Children and aged Persons, *Wounds* frequently prove mortal which seem'd but slight. Those *Wounds* generally prove troublesome which happen in an ill state of Body, and especially a low or hardy Diet. All *Wounds* are reputed more dangerous and difficult of Cure in Winter than Summer; in *August* than in *Spring*.

The Cure of *Wounds* consists in the Uniting of the divided Parts; which is the Work of Nature alone, and which the Chirurgion can only contribute to by removing external Impediments, and applying Medicines familiar to the Part, call'd *Vulneraries* and *Balsamicks*. See *VULNERARY*, &c.

The first Step, then, to be taken in a simple *Wound*, is to cleanse it, and extract any heterogeneous Body that may chance to be lodged therein. Next, The Cavity to be gently wiped with Dossils dipt in warm red Wine. The Lips, now to be brought together by the Bandages or Sutures; and the *Wound* to be covered with a Pledget dipt in Balm of *Peru*, or Oil of sweet Almonds—The Pain thus eased, and the Symptoms removed, the *Wound* is to be suppurated, deterged, incarned, and cicatrized after the manner of Tumors and Ulcers. See *SUPPURATION*, *DETERGENT*, *INCARNATIVE*, *CICATRISIVE*, &c.

If the *Wound* be dangerous, the Symptoms violent, and the Body Cacochymic, more powerful Means are had recourse to; as, first, Phlebotomy, then gentle Cathartics or Clysters; then vulnerary Drinks, Apozems, and Pisans, with Cardiacs and Paragorics interposed.

In internal *Wounds*, *Vulneraries* and *Alcalies* do well, particularly *Album Græcum*, River Lobsters, Mercurials, &c.

Fresh *Wounds* are cured ordinarily in three or four days, without any other Means than applying a few Drops of Balm of *Peru*—Sometimes, however, Digestives are required.

Gun shot *Wounds* are usually the worst of all, by reason of the violent Contusion and Secretion of the Parts; which prevent their coming to Digestion for the Space of three or four days.

In the Cure of large *Wounds*, Bandages and Sutures are required, to fit and dispose 'em for healing. See *SUTURE* and *BANDAGE*.

WREATH, in Heraldry, a Roll of fine Linnen, or Silk, (like that of a *Turkish* Turbant) consisting of the Colours born in the Escutcheon; placed in an Achievement between the Helmet and the Crest, and immediately supporting the Crest. See *CREST*, &c.

WRECK, or *Sea-Wrack*, in Natural History, a kind of Herb, growing in the Sea, upon Rocks, and which the Waves tearing off, cast upon Shore.

In some Places it is used to manure the Ground—In *Normandy* and other Parts they burn it, and of the Ashes make a kind of Soude or Salt-wort, which they use in the

making of common green Glass, to promote the Fusion or Virification of the Matter. See *GLASS*.

WRECK, or *Ship-Wreck*, in Law, &c. is when a Ship perishes in the Sea, and no Man escapes alive out of it.

The Civilians term it *Naufragium*—The Goods in the Ship, which are brought to Land by the Waves, belong to the King, or him to whom he assigns the Right thereof.

If a Man, a Dog, or even a Cat escape alive; the Party to whom the Goods belong coming within a Year and a Day, and proving the Goods to be his, shall have them again.

In divers Charters and old Writings, it appears that *Wreck* antiently not only comprehended Goods which came from a perishing Ship, but whatever else the Sea cast upon Land; whether it were precious Stones, Fishes, Sea-weed, or the like.

Thus in the *Stat. Prærog. Reg. c. 11.*—*Rex habebit Wreckum Maris per totum regnum, Balenas & Sturgeones captas in Mari vel alibi infra Regnum, exceptis quibuslibet Privilegiatis locis, &c.*

This *Wreck* in the grand Customary of *Normandy*, c. 17. is call'd *Varech*, and latined *Veriscum*; and in some of our antient Charters, *Wreche*, *Wrec*, *Wrenche*, and *Seufwerp*, q. d. *Sea-up-werp* and *up-werpen*.

WRESTLING, a kind of Combat, or Engagement between two Persons, unarm'd; Body to Body; to prove their Strength and Dexterity, and try which can throw his Opponent to the Ground. See *EXERCISE*, *GAME*, &c.

*Wrestling*, *Palestra*, is an Exercise of very great Antiquity and Fame—'Twas in use in the Heroic Age; witness *Hercules*, who wrestled with *Anteus*. See *PALESTRA*.

It continued a long time in the highest Repute; and had very considerable Rewards and Honours assign'd it at the *Olympic Games*—'Twas the Custom for the *Athletæ*, to anoint their Bodies with Oil to give the less hold to their Antagonist. See *ATHLETA*, &c.

*Abiancourt* observes, that *Icyurgus* ordain'd the *Spartan* Maids to wrestle in public, quite naked; to break them of their too much Delicacy and Niceness, to make 'em appear more robust, and to familiarize the People, &c. to such Nudities. See *GYMNASIUM*, &c.

WRIST; see *CARPUS*.

WRIT, *Brevé*, in Law, a Precept of the King, whereby any thing is commanded to be done, touching a Suit, Action, or Process for Justice.

Such are the Summoning the Defendant, taking a Distress, redressing a Distress, &c.

*Writs* are variously divided, and in various respects—Some, with regard to their Order, or manner of Granting, are term'd *Original*; and others *Judicial*.

*Original Writs* are those sent out of the High Court of Chancery to summon the Defendant in a Personal, or Tenant in a real Action, either before the Suit begins, or to begin the Suit thereby. See *PROCESS*, &c.

*Judicial Writs* are those sent out by Order of the Court where the Cause depends, upon emergent Occasions, after the Suit begins.

*Judicial Writs* are distinguish'd from *Original*, in that their *Yste* bears the Name of the Chief Justice of that Court whence they come; whereas the *Original* say, *Tste me ipso*, in the Name, or relating to, the King.

*Writs* are also distinguish'd, according to the nature of the Action, into *Real* and *Personal*.—*Real* are either touching the Possession, call'd *Writs of Entry*, or the Property, call'd *Writs of Right*. See *ENTRY* and *RIGHT*.

Some *Writs*, again, are at the Suit of the Party; some of Office; some Ordinary; some of Privilege—A *Writ of Privilege* is that which a privileged Person brings to the Court for his Exemption, by reason of some Privilege. See *BRIEF*, &c.

The word *Writ* is form'd from the *Saxon Writan*, to write.

*Writ of Rebellion*; see *COMMISSION of Rebellion*.

*Writs Vicountiel*, are such as are triable in the Sheriff's or County-Court. See *VICOUNTIEL*.

*Writ of Assistance* issues out of the Exchequer to authorize any Person to take a Constable, or other publick Officer to seize Goods or Merchandize prohibited and uncustomed, &c. *Stat. 14. 2 Car. 1.* There is also a *Writ* of this Name issuing out of the Chancery to give a Possession.

*WRITER of the Tallies*, an Officer of the Exchequer, being Clerk to the Auditor of the Receipts who writes upon the Tallies the whole Letters of the Tellers Bills. See *TALLY*, *EXCHEQUER*, &c.

*WRITING*, *Scriptura*, *Scriptura*, the Art or Act of signifying and conveying our Ideas to others, by Letters, or Characters visible to the Eye. See *CHARACTER*, *WORD*, &c.

*Writing* is now chiefly practis'd among us by means of Pen, Ink, and Paper. See *PAPER*, *INK*, &c.—The Antients had other Methods. See *BOOK*, *BARK*, *STYLE*, &c.



The Invention of the Art of *Writing* is refer'd to *Cadmus*. See LETTER and GREEK.

In Law, we say, Deeds, Conveyances, &c. are to be in *Writing*.—A Will may either be in *Writing* or by Word of Mouth. See DEED, CONVEYANCE, WILL, &c.

We also say, the *written* Law, *Lex scripta*, in opposition to common Law, which is call'd *Lex non scripta*. See LAW, STATUTE, COMMON LAW, &c.—We have also *written* and *unwritten* Traditions, &c. See TRADITION.

Authentic *Writings* of any Contract, sealed and delivered, make the Evidence thereof. See EVIDENCE, TESTIMONY, &c.

*J. Ravenau* has a Treatise entitled *des Inscriptions en Faux*, wherein he shews how to revive and restore old *Writings* almost effaced, by means of Galls ground in white Wine, and distill'd; and thus rubb'd over the *Writing*.

*La Vayer* has a curious Dissertation on the Proof of Facts by comparison of Hand *Writings*, wherein he endeavours to shew this Method of Proof to be very suspicious and fallacious. See PROOF, &c.

'Tis a Point controverted among the School-Philosophers, what it is that *Writing* properly signifies, or represents; whether Ideas, or Things, or Words; *i. e.* whether it expresses Things themselves, or our Ideas of Things, or the articulate Sounds by which, on other Occasions, we express those Ideas.

The common Opinion is, that *Writing* only represents Words, that its proper Object is the Voice, and that it only signifies Ideas mediately, or secondarily; and by means of those, Things themselves.

Others, on the contrary, will have Ideas, Speech, and *Writing*, all equally and immediately representatives of Things. See IDEA, NOTION, &c.

But the Controversy is impertinent enough.—No doubt our Ideas of Things are the Things themselves; there being no foundation for any distinction between them. See EXTERNAL.

And as to *Writing*, some may be said to be real, or significant of Things and Ideas.—As the *Egyptian* Hieroglyphics; the Characters of Chymists, Astronomers, &c. which are a kind of Images, or bear some natural Resemblance or Analogy with the Things they are intended to express. See SYMBOL, HIEROGLYPHIC, Real CHARACTER, &c.

But the common *Writing* only represents Sounds, which is the first and most natural Language; and accordingly our Orthography is apparently form'd on, or adapted to the

Pronunciation. See ORTHOGRAPHY and PRONUNCIATION.

Hence, the End of *Writing* is to excite, as it were, certain Sounds, which have been made the arbitrary Signs of certain Ideas—This they do by virtue of a Combination or Association between such and such Figures made with the Pen, and such and such Inflections of the Voice.

In effect, we have a great many *written* Words which have no Ideas belonging to 'em; as *Scindapsus*, *Bladri*, &c. which tend no further than to produce Sounds.—Add, that People when they begin to learn to read *Writing*, take it from Sounds which they hear produced by the Person who teaches 'em: An abundant Argument, that *Writing* does not immediately signify Ideas and Things, but first Sounds, and then Things.

*Short* WRITING; see BRACHYGRAPHY.

*Secret* WRITING; see CRYPTOGRAPHY, CYPHER, &c.

*Hand* WRITING; see HAND.

WRONG, in a Logical Sense; see ERROR, FALLACY, FALSHOOD, TRUTH, &c.

WRONG, in a Legal Sense, *Injury*, *Tort*. See INJURY, JUSTICE, TORT, RIGHT, &c.

WULVESHEVED, or WULVESHEAD, from the Saxon, *Wulfe*, *Lupus*, and *Heofod*, *Caput*, *q. d.* *Caput Lupinum*, was the Condition of those Out-law'd for Criminal Matters in the Saxons time, for not yielding themselves to Justice. For if they could have been taken alive, they must have been brought to the King; and if they for fear of being apprehended, did defend themselves, they might be slain, and their Heads brought to the King; for their Head was no more to be accounted of than a Wolf's Head. *LL. Edw. in Lamb. fol. 127. and Bract. lib. 3. tract. 2. cap. 11.* See UTLAWRY.—*Wolfehead* and *Wulferford*, are all one. *Coke on Littl. fol. 28.*

WYCH-House, a House in which the Salt is boiled. See SALT.

WYDRAUGHT, a Water-Course, or Water-Passage; properly, a Sink, or Common-Shore. See CLOACA.

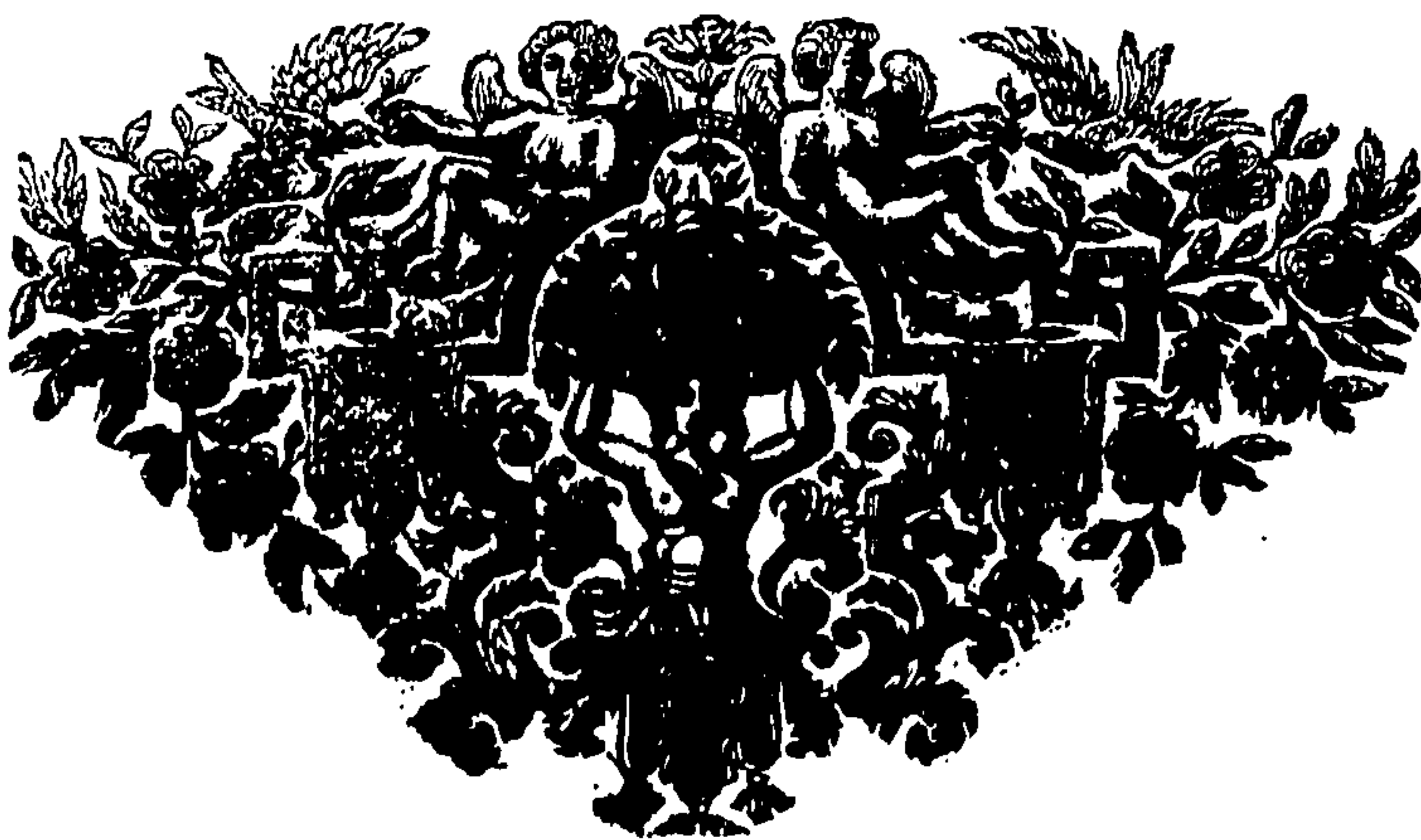
WYKE, antiently denoted a Farm, Hamlet, or little Village. See FARM, HAMLET and VILLAGE.

WYTE or WYTA, WITE or WITA, in our antient Customs, a pecuniary Penalty or Mulct. See WITE.

The Saxons had two kinds of Punishments, *Were*, and *Wyte*; the first for the more grievous Offences. See WERE.

The *Wyte* was for the less heinous ones.—'t was not fixed to any certain Sum; but left at liberty, to be varied according to the Case.

WYTHE, in Law, the same as *Waif*. See WAIF.





## X.

X,

A double Consonant, and the twenty-second Letter in the *English* Alphabet. See LETTER, CONSONANT, ALPHABET, &c.

The *x* of the *Latins*, and *ξ* of the *Greeks* are compounded of *c s*, and *x o*; whence, to this day, the Letter *x* in the *English* and *French* has the same Sound with *c s* or *k s*.—Thus we pronounce *Alexander*, as if wrote *Alecander* or *Aleksander*. See C, K, S, &c.

The *Italians* have no *x* at all in their Language; but, both speak and write *Alessandro*—The *Spaniards* pronounce the *x* like our *c* before *a*; viz. *Alexandro*, as if it were *Alecandro*. The *Portuguese* pronounce it like our *sh*.

In foreign Words used in *English* we sometimes soften the *x* into a double *s*; as *Brussels* for *Bruxelles*, &c.

The Letter is not known in the *Hebrew*, or other Oriental Languages; but in lieu of it they write the two simple Letters whereof it is compounded—And the like do the modern *Germans*.

X is also a numeral Letter, and signifies *ten*; as representing two V's placed one a-top of the other. See V.

X *Supra denos numero tibi dat retinendos.*

When a Dash is added over it, *X̄*, it signifies *ten thousand*.

XENIA, in ancient Customs, were Gifts or Presents made to the Governours of Provinces by the Inhabitants thereof.

The Word occurs pretty frequently in Charters of Privileges; where, *Quictos esse à Xeniiis*, denotes an Exemption from making such Presents to Kings and Queens upon their travelling through such Precincts. See MUNUS, &c.

XENODOCHUS, an Ecclesiastical Officer in the *Greek* Church; the same with *Hospitaller*, or a Person who takes care of the Reception and Entertainment of Strangers. See HOSPITALLER.

St. *Isidore*, a Priest and Solitary, surnamed the *Xenodochus*, liv'd in the IVth Century—He was thus call'd, because entrusted with that Office in the Church of *Alexandria*.

XEROPHTHALMIA, a kind of *Ophthalmia*, wherein the Eyes itch, and are red, but without swelling or watering. See OPIHTHALMIA.

The Word is compounded of *ξηρος*, dry, and *ὀφθαλμος*, Eye.

XEROPHAGIA, XEROPHAGY, in Church-History, the use of dried Foods. See FOOD.

In the first Ages, some not contented with simple Fasting, added the *Xerophagy* thereto; abstaining not only from Flesh and Wine, but also from all fresh, succulent, and vinous Fruits—And some even brought themselves to bare Bread and Water. See FASTING and ABSTINENCE.

*Tertullian* in his Book *de Abstinencia*, c. 9. speaks of the *Xerophagia* as a thing commendable in time of Persecution.

The Word is form'd from *ξηρds*, *siccus*, dry, and *φαγω*, I eat.

XESTA, *Ξίστος*, an *Attic* Measure of Capacity. See MEASURE.

XIPHIAS, a fiery Meteor, in form of a Sword. See METEOR.

It differs from the *Acontias*, in that this latter is longer, and more like a Dart; and the former shorter and broader in the middle. See ACONTIAS.

XV.VIR, *Quindecimvir*; see QUINDECIMVIR.

Authors, and especially the Antiquaries, make use of such Abbreviations, which they borrow from Medals, and other Monuments of Antiquity, where those Names are so express'd.

XYLO-ALOES, in Medicine, &c. the *Lignum Aloes*: call'd also *Agillochum*. See ALOES and AGILLOCHUM.

The Word is compounded of *ξύλον*, *Lignum*, Wood, and *αλος*, *Alocs*.

XYLO-Balsamum, a Name which Naturalists, &c. give to the Wood of the Tree which yields that precious Gum known to the *Latins* by the Name of *Opo-Balsamum*, and among us by the Name of *Balm of Gilead*. See BALM.

We have Branches of this Tree brought us from *Cairo*. They are very streight, brittle, unequal, and full of Knots; their Bark reddish without, and greenish within. The Wood is whitish, and full of Pith, and when broke, yields an agreeable smell resembling that of the Balm.

The *Xylo-balsamum* is reputed good to strengthen the Brain, and Stomach, and to expel Poison.

The Word is compounded of *ξύλον*, Wood, and *βάλσαμον*, Balm, Balm.

XYNOECIA, a Feast among the ancient *Athenians*, instituted on occasion of *Theseus's* uniting all the petty Communities of *Attica* into one Common-wealth; the Assemblies whereof were to be held at *Athens*, in the *Prytanæum*. See FEAST.

The Word is form'd of the *Greek* *ξύν* or *σύν* with, and *οικω*, I inhabit.

XYPHOIDES, in Anatomy, a Cartilage at the bottom of the Sternum; call'd also *Ensiformis*. See CARTILAGE and ENSIFORMIS.

It is about an Inch long, and shaped like the Point of a Sword; whence its Appellation, from *ξίφος*, Sword, and *ειδος*, Figure. See STERNUM.

XYSTARCHA, in Antiquity, the Master or Director of the *Xystus*. See XYSTUS.

In the *Greek Gymnasium*, the *Xystarcha* was the second Officer—The first was the *Gymnastarcha*.

The *Xystarcha* was his Lieutenant, and presided over the two *Xysti*, and all Exercises of the *Athletæ* therein. See GYMNASIUM and GYMNASIARCH.

XYSTUS, in the ancient Architecture—A *Xystus*, among the *Greeks*, was a long Portico, either open, or cover'd over; wherein the *Athletæ* practis'd Wrestling, and Running. See ATHLETA, WRESTLING, &c.

The Gladiators who practis'd therein, were call'd *Xystici*. See GLADIATOR.

Among the *Romans*, the *Xystus* was only an Alley, or double Row of Trees, meeting Arbor-wise a-top, and forming a Shade to walk under.

The Word is *Greek*, *ξύσος*, form'd of *ξύειν*, to polish, shave, rub.





## Y.

**Y.** The twenty-third Letter in the *English* Alphabet, borrow'd originally from the *Greek*  $\upsilon$ . See **LETTER** and **ALPHABET**.

It is occasionally both Vowel, and Consonant—As a Vowel, some Authors have judged it unnecessary in our Language, in regard its Sound is precisely the same with that of the *i*. Accordingly, it is but little used except in Words borrow'd from the *Greek*, to denote their Origin, by representing their  $\upsilon\phi\alpha\lambda\omicron\nu$ .

The Vowel *y*, however, has a place even in some Words purely *English*; and that both in the middle thereof, as in *dying*, *frying*, &c. and at the end, as in *lay*, &c.

Some ascribe the use of the *y* in pure *English* and *French* Words, and those that have no *y* in *Latin* or *Greek*, to this, that antiently those Words were pronounced with a double *ii*; which having something awkward in it, the *y* was substituted in lieu thereof. See **I**.

Others say, that those Words being antiently wrote, as well as pronounced with a double *ii*, which they still are in the *Walloon*, as *païing*, *païisan*, &c. to avoid their being mistaken for an *u* with two Dots over it, they made the second *i* longer than the first, and so form'd the *y*.—Some give a particular Reason why Words ending in *i*, came to be wrote with *y*; viz. that the Copists found the Tail of the *y* very commodious or adorn the Margins and Bottoms of Pages withal.

When the *y* follows a Consonant, it is a Vowel; and when it precedes a Vowel, it is a Consonant, and should be call'd *ye*, and not *ey*.

The *Romans* used the *y* for the Vowel *u*, which they had not; their way being to pronounce the common *u* as we do the Diphthong *ou*; and the *Greek*  $\upsilon\phi\alpha\lambda\omicron\nu$  as the *English* and *French* *u*.

In our own, and some other modern Tongues, Authors begin to dispense more and more with the precise Orthography, which requires all Words that have an *Upsilon* in the *Greek* to be wrote with a *y*. And with reason; since our *Greek* *y* has lost the Sound it had in the Language whence we borrow it. But 'tis certainly ridiculous to use it, as many do, in Words which indeed have a *Greek* Origin, but have no *u* in the *Greek*; as in *Eclipse*. See **ECLIPSE**, **ECLIPSE**, &c.

*Y* is also a numeral Letter, signifying 150, or, according to *Baronius*, 152; as in the Verse:

*Y dat Centenos & quinquaginta Novenos.*

When a Dash was added a-top,  $\bar{Y}$ , it signified 150 thousand. *Pythagoras* used the *Y* as a Symbol of human Life; the Foot representing Infancy, and the forked Top, the two Paths of Vice and Virtue, one or t'other of which, People are to enter upon after attaining to the Age of Discretion.

**YACHT**, a kind of Vessel, used by the *English*, furnish'd with Masts and Sails; fit to go by Sea; and commodiously contriv'd and adorn'd, both withinside and without, to suit it for State-Passengers, &c.

The *Dutch* have also *Yachts*, but not so well prepared to live at Sea—they are seldom used but to sail on Rivers and Canals.

The Word seems derived from the *Dutch* *Iacht*, hunting, by reason of the lightness of these Vessels.

**YARD**, *Virga*, a long Measure used in *England*, and *Spain*; chiefly to measure Cloth, Stuffs, &c. See **MEASURE**.

The *English* Yard contains three Foot. See **FOOT**.

It was first settled by *Henry I.* from the length of his own Arm. See **VIRGA**.

The *English* Yard is just seven Ninths of the *Paris* Ell; so that nine Yards make seven Ells.—To reduce Ells, therefore into Yards, say, If seven Ells give nine Yards, how many Yards will the given Number of Ells give?

Yards are converted into Ells *Flemish*, by adding a third part; into Ells *English*, by subtracting a fifth part; or multiplying by 8, and calling off the right-hand Figure.—Ells *English* are converted into Yards, by adding a fourth. To turn Ells *Flemish* into Yards, subtract one Quarter. See **ELL**.

The *Spanish* Yard chiefly used at *Sevil*, is, in some Places, call'd *Barra*—It contains  $\frac{1}{2}$  of the *Paris* Ell; so that 17 Ells make 24 *Spanish* Yards.

**YARD**, in Anatomy, the *Penis*, or Virile Member; serving for the evacuating of the Urine, and Seed. See **PENIS**; see also **URINE** and **SEED**.

**YARD-Land**, *Virgata Terre*, or *Virga Terre*, is a certain Quantity of Land, various according to the Place—At *Wimbleton* in *Surrey*, it is only 15 Acres; but in most other Counties it contains 20, in some 24, in some 30, and in others 40 Acres. See **ACRE**.

*Virgata Terre* continet 24 Acres; & 4 *Virgate* constituent unam Hidam, & quinque Hidae constituent Feodum Militare. MS. Abbot Malmes. See **HIDE**, **KNIGHT'S FEE**, **CARRUCATE**, &c.

**YARDS**, or *Sail-Yards*, of a Ship, are long pieces of Timber, tapering at each end, fitted a-crofs the several Masts to carry the Sails. See **MAST**.

The Sails are fasten'd to the Yards at the Heads; so as to be hoisted up, and let down together with them, by Ropes call'd Halliards. See **SAIL** and **HALLIARD**.

The Main Yard is that of the Main-Mast—the Mizzen Yard, Bolt-sprit Yard, &c. are those of the Mizzen, &c. See **MIZZEN**, **BOLT-SPRIT**, &c.

They have several Phrases and Words of Command relating to the Management of the Yards; as—*Brace the Yard*, which signifies to traverse aft the Yard-Arm whose Brace is haled; so that to traverse the Yard, is the same as to say, Brace it aft.—*Square the Yard*, is as much as to say, see that it hang right a-crofs the Ship, and one Yard-Arm not traversed more than the other.—*Top the Yards*, *q. d.* make them hang even.

**YARD'S-ARM**, is that half of the Yard which is on either side the Mast, when it lies athwart the Ship.

**YARDS** are also Places belonging to the Navy, where the Ships of War, &c. are laid up in Harbour. See **NAVY**, **HARBOUR**, **SHIP**, &c.

The King's Yards, are *Chatham*, *Deptford*, *Woolwich*, *Portsmouth*, *Sherburn*, *Plimouth*, and *Harwich*; each of which is provided with several Docks, Wharfs, Lanches, and Graving Places for the Building, Repairing, and Cleaning his Majesty's Ships. See **DOCK**, **WHARF**, &c.

In these Yards are also lodged great quantities of Timber, Masts, Planks, Anchors, &c. There are also Store-Houses belonging to each Yard, wherein are reserv'd vast quantities of Cables, Rigging, Sails, Blocks, &c.

In the several Yards are great Rope-Yards, wherein Cables and all sorts of Cordage are made. See **CORDAGE**, **CABLE**, &c.

**YARE**, among Sailors, implies as much as, nimble, ready, quick, expeditious.

Hence, to *Be Yare at the Helm*, signifies to set a fresh Man at the Helm.

**YARN**, Spun Wool. See **WOOL**, **SPINNING**, **CLOTH**, &c.

**YARRINGLES**, or *YARRINGLE Blades*, a kind of Reel, or Instrument with which Hanks of Yarn are wound in Clews, or Balls. See **REEL**.

**YATCHES**, Vessels with one Deck, carrying from 1 to 12 Guns, with from 20 to 40 Men; being of Burden from 30 to 160 Ton. See **VESSSEL**.

They draw little Water, and are used for running, and making short Trips, &c.—Their Makes and Forms are various.

**YAWES**, in the Sea-Language,—A Ship is said to make Yawes, when through the fault of him at the Helm, she is not kept steady in her Course; but makes Angles in and out. See **HELM**.

To prevent this, the *Comer* cries to him at Helm, Steady, Steady. See **CONNER**.

**YAWNING**, *Oscitatio*, an involuntary opening of the Mouth, occasion'd by a Vapour or Venosity, endeavouring to escape; and generally witnessing an inkesome Weariness, or an Inclination to Sleep.

The Remedy *Hippocrates* prescribes against continual Yawnings, is to make long Breathings, or Respirations—The same he recommends against the Hiccough. See **HICCUGH**.

The nervous Membrane of the *Oesophagus* is the Seat of Yawning, which is certain to be produced whenever any irritation determines the Spirits to flow thither in too great abundance.—The Cause of the Irritation is supposed to be some troublesome Humour wetting the inner Membrane of the *Oesophagus*; which Humour proceeds either from the Glands spread throughout that Membrane, or from acid Vapours arising from the Stomach, as from a Boiling-Pot, and which condense on the Sides of the *Oesophagus* as on a Pot-Lid.

On such occasions, the nervous Fibres of the Membrane of the Gullet being irritated, dilate the Gullet; and the Mouth



Mouth is constrain'd to follow the same Motion, as being lined with the same Membrane.

**YCONOMUS**: see **OECONOMUS**.

**YDRARGYROS**, *Hydrargyros*, or *Quicksilver*; see **MERCURY**.

**YEAR**, *Annus*, in the full extent of the Word, is a System or Cycle of several Months; usually twelve. See **CYCLE** and **MONTH**.

Others define *Year*, in the general, a Period, or Space of Time, measured by the Revolution of some Cœlestial Body in its Orbit. See **TIME** and **PERIOD**.

Thus, the Time wherein the fixed Stars make a Revolution, is call'd the *great Year*. And the Times wherein *Jupiter*, *Saturn*, the *Sun*, *Moon*, &c. finish their Revolutions, and return to the same Point of the Zodiac, are respectively call'd the *Years of Jupiter*, and *Saturn*, the *Solar*, and the *Lunar Years*. See **SUN**, **MOON**, **PLANET**, &c. **Solar YEAR**, **Lunar YEAR**, &c.

**YEAR**, properly, and by way of eminence so call'd, is the *Solar Year*; or the Space of Time wherein the Sun moves thro' the *Ecliptic*. See **ECLIPTIC**.

This, by the Observations of *Cassini*, *Bianchini*, and *de la Hire*, contains 365 Days, 5 Hours, and 49 Minutes; which is the Quantity of the *Year* assumed by the Authors of the *Gregorian Calendar*. See **Solar YEAR**.

But, in the Civil, or popular Account, this *Year* only contains 365 Days; except every fourth, which contains 366. See **Civil YEAR**.

The Vicissitude of Seasons seems to have given occasion to the first Institution of the *Year*.—Man, naturally curious to know the Cause of that Diversity, soon found it was the proximity and distance of the Sun; and upon this, gave the Name *Year* to the Space of Time wherein that Luminary performing his whole Course, return'd to the same Point of his Orbit. See **SEASON**.

And hence, as it was on account of the Seasons, in a great measure, that the *Year* was instituted; their chief Regard and Attention, was, that the same parts of the *Year* should always correspond to the same Seasons; i. e. that the beginning of the *Year* should always be when the Sun was in the same Point of his Orbit; and that they should keep pace, come round, and end together.

This, different Nations aim'd to attain by different ways; making the *Year* to commence from different Points of the Zodiac; and even the time of his Progress different. So that some of their *Years* were much more perfect than others, but none of them quite just; i. e. none of them but whose Parts shifted with regard to the Parts of the Sun's Course.

'Twas the *Egyptians*, if we may credit *Herodotus*, that first form'd the *Year*, making it to contain 360 Days, which they subdivided into 12 Months.

*Mercury Trismegistus* added 5 Days more to the Account—And on this footing, *Thales* is said to have instituted the *Year* among the *Greeks*. Tho' that Form of the *Year* did not hold throughout all *Greece*—Add, t'at the *Jewish*, *Syrian*, *Roman*, *Persian*, *Ethiopic*, *Arabic*, &c. *Years*, were all different.

In effect, considering the poor State of Astronomy in those Ages, 'tis no wonder different People should disagree in the Calculus of the *Sun's* Course—We are even assured by *Diod. Siculus*, Lib. I. *Plutarch* in *Numa*, and *Pliny*, Lib. VII. c. 48. that the *Egyptian Year* itself was at first very different from that now represented. See **Egyptian YEAR**, **Roman YEAR**, **Jewish YEAR**, &c.

#### Various Forms of Solar and Lunar YEARS.

**Solar YEAR** is the Interval of Time wherein the Sun finishes his Course through the Zodiac; or, wherein he returns to the same Point thereof whence he had departed. See **SUN**.

This, according to our Account, is 365 Days, 5 Hours, 49 Minutes; tho' some Astronomers make it a few Seconds, and some a whole Minute less; as *Kepler*, for instance, who makes it 365 Days, 5 Hours, 48 Minutes, 57 Seconds, 39 Thirds: *Ricciolus*, 365 Days, 5 Hours, 48 Minutes; and *Tycho Brahe* 365 Days, 5 Hours, 48 Minutes.

The *Solar Year* is either *Astronomical*, or *Civil*.

The *Solar Astronomical YEAR* is that determined precisely by the Observations of Astronomy; and is of two kinds, *Tropical*, and *Sidereal* or *Astral*.

The *Tropical*, or *Natural YEAR*, is the Time which the Sun employs in passing through the Zodiac; which, as before observed, is 365 Days, 5 Hours, 49 Minutes.

The *Sidereal* or *Astral YEAR*, is the Space of Time wherein the Sun going from any fixed Star, returns to the same—This consists of 365 Days, 6 Hours, 10 Minutes. See **SIDEREAL**.

**Civil YEAR** is that Form of *Year* which each Nation has contrived to compute Time by; or, the Civil, is the *Tropical Year* consider'd as only consisting of a certain Number of whole Days; the odd Hours and Minutes being set aside,

to render the Computation of Time, in the common occasions of Life, more easy. See **CIVIL**.

Hence, as the *Tropical Year* is 365 Days, 5 Hours, 49 Minutes, the *Civil Year* is 365 Days. And hence, also, as 'tis necessary to keep pace with the Heavens, it is required that every fourth *Year* consist of 366 Days.

Hence, lastly, the *Civil Year* is either *Common* or *Bis-sextile*.

The **COMMON Civil YEAR** is that consisting of 365 Days. This, therefore, has seven Months of 30 Days each, and five of 31 Days.

*Bis-sextile* or *Leap YEAR* is that consisting of 366 Days; or has one Day extraordinary, which Day is call'd the *Inter-calary* or *Bis-sextile Day*. See **INTERCALARY**.

This *Intercalary*, or additional Day to every fourth *Year*, was first appointed by *Julius Cæsar*, who, to make the *Civil Years* keep pace with the *Tropical* ones, contrived, that the 6 Hours which the former came short of the latter, should, in four Years, make a whole Day, and be added after the 23d of *February*, which was their sixth of the Calends of *March*.

Hence, as, in that *Year*, they reckon'd this Day twice over, or had *bis sexto Calendas*; the *Year* itself came to be call'd *Bis Sextus* and *Bis-sextile*.

The *Intercalary Day*, however, among us, is not got in by telling the 24th of *February* twice over; but by adding a Day after the 28th of *February*; which by this means, that *Year*, comes to contain 29 Days. See **BISSEXTILE**.

A further Reformation in this *Year* was made by *Pope Gregory*. See **Gregorian YEAR**.

**Lunar YEAR** is a System of 12 Lunar Months. See **LUNAR**.

Hence, from the two kinds of Synodical Lunar Months, there arise two kinds of *Lunar Years*, the one *Astronomical*, the other *Civil*.

*Lunar Astronomical YEAR* consists of twelve Lunar Synodical Months; and therefore contains 354 Days, 8 Hours, 48 Minutes, 38 Seconds, 12 Thirds. See **SYNODICAL**.

*Lunar Civil YEAR*, is either *Common*, or *Embolimic*.

The **COMMON Lunar YEAR** consists of twelve Lunar Civil Months; and therefore contains 354 Days.

The **EMBOLIMIC** or *Intercalary YEAR* consists of 13 Lunar Civil Months; and therefore contains 384 Days. See **EMBOLIMIC**.

Note, as the difference between the common Lunar Civil *Year* and the *Tropical Year*, is 11 Days, 5 Hours, and 49 Minutes; to have the former keep pace with the latter, there are 34 Months of 30 Days, and 4 Months of 31 Days each, to be inserted in every 100 Lunar *Years*; which still leave behind 'em an Appendix of 4 Hours, 21 Minutes, which in six Centuries make nearly a day more.

Thus far we have consider'd *Years* and Months with a view to the Principles of Astronomy, whereon the division is founded. By this, the various Forms of *Civil Years* that have antiently obtain'd, or still do obtain, in divers Nations, are to be examined.

#### Various Forms of Civil YEARS.

*Ancient Roman YEAR*, was the *Lunar Year*, which, as first settled by *Romulus*, only consisted of ten Months; viz. 1. *March*, containing 31 Days. 2. *April*, 30. 3. *May*, 31. 4. *June*, 30. 5. *Quintilis*, 31. 6. *Sextilis*, 30. 7. *September*, 30. 8. *October*, 31. 9. *November*, 30. 10. *December*, 30; in all 304 Days, which came short of the true Lunar *Year* by 50 Days, and of the Solar by 61 Days.

Hence, the beginning of *Romulus's Year* was vague, and unfix'd to any precise Season; which Inconvenience to remove, that Prince order'd so many days to be added yearly as would make the State of the Heavens correspond to the first Month, without incorporating these additional Days, or calling them by the Name of any Month.

*Numa Pompilius* corrected this irregular Constitution of the *Year*, and compos'd two new Months, *January* and *February*, of the days that were used to be added to the former *Year*—Thus, *Numa's Year* consisted of twelve Months, viz. 1. *January*, containing 29 Days; 2. *February*, 28; 3. *March*, 31; 4. *April*, 29; 5. *May*, 31. 6. *June*, 29; 7. *Quintilis*, 31; 8. *Sextilis*, 29; 9. *September*, 29; 10. *October*, 31; 11. *November*, 29; 12. *December*, 29; in all 355 Days, which exceeds the quantity of a Lunar Civil *Year* by one day; and that of a Lunar Astronomical *Year* by 15 Hours, 11 Minutes, 24 Seconds; but came short of the common Solar *Year* by ten Days; so that its beginning was vague, and unfix'd.

*Numa*, however, desiring to have it fixed to the Winter-Solstice, order'd 22 Days to be Intercalated in *February* every second *Year*, 23 every fourth, 22 every sixth, and 23 every eighth *Year*.

But this Rule failing to keep Matters even, recourse was had to a new way of Intercalating; and instead of 22 Days every eighth *Year*, only 15 were added; and the Care of the whole committed to the *Pontifex Maximus*; who, I fitt neg-



neglecting the Trust, let things run to the utmost Confusion. And thus the *Roman Year* stood till *Julius Caesar* made a Reformation. See *Julian Year*.

For the manner of reckoning the Days of the Roman Months; see *CALENDAR*, *NONES*, and *IDES*.

*Julian Year* is a Solar Year containing, commonly, 365 Days; tho' every fourth Year, call'd *Bissexile*, contains 366.

The Months, &c. of the *Julian Year* stand thus; 1. *January*, 31 Days; 2. *February*, 28; 3. *March*, 31; 4. *April*, 30; 5. *May*, 31; 6. *June*, 30; 7. *July*, 31; 8. *August*, 31; 9. *September*, 30; 10. *October*, 31; 11. *November*, 30; 12. *December*, 31. — But every *Bissexile Year* a day is added after the 28th of *February*, which Month, then, contains 29 Days.

The Astronomical Quantity, therefore, of the *Julian Year* is 365 Days, 6 Hours, which exceeds the true Solar Year by 11 Minutes; which excess, in 131 Years amounts to a whole Day — And thus the *Roman Year* stood till the Reformation made therein by *Pope Gregory*. See *Gregorian Year*.

For this Form of the Year we are indebted to *Julius Caesar*; who, in the Contrivance thereof, was assisted by *Soligenes*, a famous Mathematician, call'd over from *Egypt* for this very purpose; who, to supply the defect of 67 Days which had been lost through the fault of the Pontifices, and to fix the beginning of the Year to the Winter-Solstice, made that Year to consist of 15 Months, or 445 Days; which, for that reason, is used to be call'd the Year of Confusion.

This Form of the Year was used in all Christian Nations till the middle of the 16th Century; and still continues to be so not only by several Nations (and among the rest by the *English*, *Swedes*, *Danes*, &c.) but also by the modern Astronomers and Chronologers — For, since the Error is known, there is no danger from it.

*Gregorian Year* is the *Julian Year* corrected by this Rule, that, whereas on the common footing every secular or hundredth Year is *Bissexile*; on the new footing, three of 'em are common Years, and only the fourth *Bissexile*.

The Error of 11 Minutes in the *Julian Year*, little as it was, yer, by being repeated over and over, at length became considerable; and from the time when *Caesar* had made his Correction, was grown into 13 Days, by which means the Equinoxes were greatly disturb'd. — To remedy this Irregularity, which was still a-growing, *Pope Gregory XIII.* call'd together the chief Astronomers of his Time, and concerted this Correction; and to restore the Equinoxes to their Place, threw out the ten days that had been got from the time of the Council of *Nice*, and which had shifted the 5th of *October* to the 15th.

In the Year 1700, the Error of 10 days was grown to 11; upon which the Protestant States of *Germany*, to prevent further Confusion, accepted the *Gregorian Correction*. See *CALENDAR*, *STYLE*, &c.

Yet is the *Gregorian Year* far from being perfect; for we have shewn that in four Centuries the *Julian Year* gains 5 Days, 1 Hour, 20 Minutes: But 'tis only the three Days are kept out in the *Gregorian Year*; so that here is still an excess of 1 Hour, 20 Minutes, in 4 Centuries; which, in 72 Centuries amounts to a whole Day. See *EASTER*.

*Egyptian Year*, call'd also the Year of *Nabonassar*, is the Solar Year of 365 Days, divided into twelve Months of 30 Days each, beside 5 Intercalary Days added at the end.

The Names, &c. of the Months are as follows: 1. *Thot*, 2. *Paophi*, 3. *Athyr*, 4. *Chojac*, 5. *Tybi*, 6. *Mecheir*, 7. *Phamenoth*, 8. *Pharmuthi*, 9. *Pachon*, 10. *Pauusi*, 11. *Epiphi*, 12. *Mefori*; beside the *ἡμέραι ἐπιπλέοντα*.

Hence, as the *Egyptian Year*, in every four Years loses a whole Day of the *Julian Year*; its beginning, in the Space of 460 Years, runs thro' every part of the *Julian Year*; which Space elapsed, they meet again.

This Year is used by *Ptolemy* in his *Almagest*; so that the Knowledge thereof, is of use in Astronomy for comparing the antient Observations with the modern.

The antient *Egyptians*, we are told by *Diodorus Siculus*, Lib. I. *Plutarch*, in the Life of *Numa*, and *Pliny*, Lib. VII. c. 48. measured their Years by the Course of the Moon — At first, they were only one Month; then three; then four, like that of the *Arcadians*; and then six, like that of the People of *Acarnania*. Those Authors add, that 'tis on this account, they reckon such a vast Number of Years from the beginning of the World; and that in the History of their Kings, we meet with some who liv'd 1000 or 1200 Years.

But *Herodotus* is silent on this Point: He only says, that the *Egyptian Year* consisted of 12 Months, as we have above represented it. Besides, we learn from Scripture, that from the time of the Flood the Year was composed of 12 Months: *Cham*, consequently, and his Son *Misraim*, the Founder of the *Egyptian Monarchy*, must have had that Custom; and

it is no way probable his Descendants should alter it — Add, that *Plutarch* speaks of it, with a deal of Uncertainty; and as no more than a Report: And *Diod. Siculus* as only a Conjecture of I know not what Authors, whom he does not name; and who, in all probability, might have framed this Hypothesis to reconcile the *Egyptian Chronology* with that of some other Nations — His Words are, *Ἀπὸ δ' ὁμοῖς τῇ πλῆθει τῶν ἐτῶν ἐπιχαρῶσι πλεονάζειν ἢ τοῖς ἡμέραις*. This Number of Years being incredible, some undertake to say, &c.

*F. Kircher*, however, maintains, that besides the Solar Year, there were some of the *Nomæ*, or Cantons of *Egypt*, who used a Lunar one; and that in the remotest Ages there were some who took a Revolution of the Moon, that is, a Month, for a Year; and others, who finding the Year too short, made it two Months, others three, and others four, &c. *Oedip. Egypt. Tom. II. p. 252.*

A late Author observes, that *Varro* has affirm'd of all Nations, what we have here quoted of the *Egyptians*; and adds, that *Lactantius* takes him to task on that Subject — We don't know in what Places of *Varro* or *Lactantius* he has seen this: All we can say, is, that *Lactantius*, *Divin. Inst. Lib. II. c. 13.* where he gives *Varro's* Opinion, only represents him as speaking of the *Egyptians*. — However, *St. Augustin, de Civit. Dei, c. 14.* shews, that the Years of the Patriarchs mention'd in Scripture, are like ours, and not one of ours equal to ten of theirs; as, it appears, had been the Opinion of some People.

Upon the *Egyptians* being subdued by the *Romans*, they received the *Julian Year*; tho' with some Alteration: For they still retain'd their antient Months, with the five *ἡμέραι ἐπιπλέοντα*, and every fourth Year intercalated another Day between the 28th and 29th of *August* — Add, that the beginning of their Year answer'd to the 29th of *August* of the *Julian Year*.

This Year thus reform'd was call'd the *Annus Abiaticus*, as being instituted soon after the Battel of *Abium*. See *ACTIAN*.

*Antient Greek Year*, was Lunar; consisting of twelve Months, which, at first were 30 Days a-piece, then alternately 30, and 29 Days, computed from the first Appearance of the new Moon; with the addition of an *Embolimic* Month of 30 Days, every 3d, 5th, 8th, 11th, 14th, 16th, and 19th Years of a Cycle of nineteen Years; in order to keep the New and Full Moons to the same Terms or Seasons of the Year. See *EMBOLIMIC*.

Their Year commenced at the Full Moon next after the Summer Solstice — The Order &c. of their Months was thus: 1. *Ἐκατομβαιών*, containing 29 Days; 2. *Μεταγεστιάων*, 30; 3. *Βονοργιαίων*, 29; 4. *Μαιμακτηριών*, 30; 5. *Πυανεψιών*, 29; 6. *Ποσειδεών*, 30; 7. *Γαμηλιών*, 29; 8. *Ανθιστεριών*, 30; 9. *Ελαφβολιών*, 29; 10. *Μυυχιών*, 30; 11. *Θαργηλιών*, 29; 12. *Σκερφηλιών*, 30.

The *Macedonians* had other Names for their Months: so had the *Syro-Macedonians*, *Smyrneans*, *Tyrians*; so also the *Cypriots*, *Paphians*; and so the *Bithynians*. See *Macedonic Year*.

*Antient Macedonian Year*, is a Lunar Year, only differing from the *Attic* in the Names and Order of the Months; the first *Macedonian Year* agreeing with the *Attic Metacterion*. The Months stand thus: 1. *Διότις*, 30 Days; 2. *Απελλαις*, 29; 3. *Ανδρειαίς*, 30; 4. *Πεκτις*, 29; 5. *Δύσις*, 30; 6. *Ξανθικίς*, 29; 7. *Αρτιμεις*, 30; 8. *Δαίσις*, 29; 9. *Πανεμεις*, 30; 10. *Λωίς*, 29; 11. *Γορταίς*, 30; 12. *Υπερβερεταιίς*, 29.

*Modern Macedonian Year*, is a Solar Year whose beginning is fixed to the first of *January* of the *Julian Year*, with which it perfectly agrees.

This Year was particularly call'd the *Attic Year*; and the intercalary Month, after *Posideon*, was call'd *πρωτεσιών*, or latter *Posideon*.

*Antient Jewish Year* is a Lunar Year, consisting, commonly, of eleven Months, which alternately contain 30 and 29 Days.

It was made to agree with the Solar Year either by the adding of 11, and sometimes 12 Days at the End of the Year, or by an *Embolimic* Month.

The Names and Quantities of the Months stand thus: 1. *Nisan*, or *Abib*, 30 Days; 2. *Ijar*, or *Zius*, 29; 3. *Sivan*, or *Sivan*, 30; 4. *Thamus*, or *Tamuz*, 29; 5. *Ab*, 30; 6. *Elul*, 29; 7. *Thisri*, or *Ethanim*, 30; 8. *Marchesvan*, or *Bul*, 29; 9. *Casseu*, 30; 10. *Tebeth*, 29; 11. *Sabat*, or *Schebat*, 30; 12. *Adar*, in the *Embolimic Year*, 30. *Adar* in the common Year was but 29.

Note, in the defective Year, *Casseu* was only 29 Days; and in the redundant Year, *Marchesvan* was 30.

*Modern Jewish Year* is likewise Lunar, consisting, in common Years, of 12 Months, but of 13 in *Embolimic Years*, which in a Cycle of 19 Years are the 3d, 6th, 8th, 11th, 14th, 17th, and 19th — Its beginning is fixed to the new Moon next the Autumnal Equinox.

The Names, &c. of the Months are, 1. *Thisri*, containing 30 Days; 2. *Marchesvan*, 29; 3. *Casseu*, 30; 4. *Tebeth*, 29; 5. *Sabat*, 30; 6. *Adar*, 29; 7. *Nisan*, 30; 8. *Ijar*, 29; 9. *Sivan*, 30; 10. *Thamus*, 29; 11. *Ab*, 30; 12. *Elul*, 29.



29; 5. *Shebat*, 30; 6. *Adar*, 29; 7. *Veadar*, in the *Embolimic Year*, 30; 8. *Nisan*, 30; 9. *Ijar*, 29; 10. *Sivan*, 30; 11. *Tamuz*, 29; 12. *Ab*, 30; 13. *Elul*, 29.

*Syrian Year* is a *Solar Year*, having its beginning fixed to the beginning of *October* in the *Julian Year*; from which it only differs in the Names of the Months, the Quantities being the same; as follows:

1. *Tiforin*, answering to our *October*, and containing 31 Days; 2. *Latter Tiforin*, containing, like our *November*, 30; 3. *Canun*, 31; 4. *Latter Canun*, 31; 5. *Shabat*, 28; 6. *Adar*, 31; 7. *Nisan*, 30; 8. *Aiyar*, 31; 9. *Haziram*, 30; 10. *Tamuz*, 31; 11. *Ab*, 31; 12. *Elul*, 30.

*Persian Year*, is a *Solar Year* of 365 Days, consisting of twelve Months of 30 Days each, with 5 *Musteraka*, or Intercalary Days added at the end.

The Months are as follow: 1. *Afrudia meh*; 2. *Ardibascht meh*; 3. *Cardi meh*; 4. *Thir meh*; 5. *Merded meh*; 6. *Schabarir meh*; 7. *Mehar meh*; 8. *Aben meh*; 9. *Adar meh*; 10. *Di meh*; 11. *Behen meh*; 12. *Affirer meh*.

This Year is call'd the *Yezdegerdic Year*, to distinguish it from the fixed *Solar Year*, call'd the *Gelalean Year*, which the *Persians* began to use in the Year 1079; and which was form'd by an Intercalation made six or seven times in four Years, and then once every fifth Year.

The *Yezdegerdic Year*, it may be observed, is the same with *Nabonassar's Year*—As to the *Gelalean Year*, 'tis absolutely the best and justest of all the Civil Years yet invented, as being found by Calculation to keep the Solstices and Equinoxes precisely to the same days, and answering very accurately to the Solar Motions; which no other Civil Year does, not even the *Gregorian*, for want of so commodious an Intercalation.

*Arabic and Turkish Year*, is a *Lunar Year*, consisting of twelve Months, which contain alternately, 30 and 29 Days.

Tho', sometimes it contains thirteen Months; the Names, &c. whereof are as follow: 1. *Muharram*, containing 30 Days; 2. *Saphar*, 29; 3. *Rabia*, 30; 4. *Latter Rabia*, 29; 5. *Jomada*, 30; 6. *Latter Jomada*, 29; 7. *Rajab*, 30; 8. *Shasban*, 29; 9. *Samadan*, 30; 10. *Shawal*, 29; 11. *Dulkaadah*, 30; 12. *Dulhoggia*, 29; and in the *Embolimic Year*, 30.—An Intercalary Day is added every 2d, 5th, 7th, 10th, 13th, 15th, 18th, 21st, 24th, 26th, 29th, in a Cycle of 29 Years.

*Ethiopic Year*, is a *Solar Year* perfectly agreeing with the *Astiac*, except in this, that the Names of the Months are different.—It commences with the *Egyptian Year*, on the 29th of *August* of the *Julian Year*.

Its Months are, 1. *Mascaram*; 2. *Tykymt*; 3. *Hydar*; 4. *Tysbas*; 5. *Tyr*; 6. *Jacatit*; 7. *Magabit*; 8. *Mijazia*; 9. *Ginbat*; 10. *Syne*; 11. *Hamle*; 12. *Habafet*. Intercalary Days 5.

*Metonic Year*,

*Astiac Year*,

*Attic Year*,

*Yezdegerdic Year*,

*Gelalean Year*,

*Nabonassar's Year*,

*Sabbatic Year*, *Annus Sabbaticus*, among the

Antients, was every seventh Year; during which, the Jews let their Land lie at rest. See *Sabbath*.

Every seventh *Sabbatic Year*, i. e. every 49th Year was call'd the Year of *Jubilee*; and held with Solemnity extraordinary. See *Jubilee*.

*Climacteric Year*,

*Platonic*, or *great Year*,

*Year of the Hegira*,

*Metonic Year*,

*Greek Year*.

*Greek Year*.

*Persian Year*.

*Persian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

*Egyptian Year*.

The Civil or Legal Year, in England, commences on the Day of the Annunciation, i. e. on the 25th day of *March*; tho' the Historical Year begins on the Day of the Circumcision, i. e. the first of *January*, on which day the *German* and *Italian Year* also begins.—*Stow* observes, that *William the Conqueror*, having been crown'd on the first of *January*, that thenceforth became the first of the Year for Historians, &c. Tho' in all Civil Affairs they retain'd the ancient manner of accounting, which began with the 25th of *March*. See *CIRCUMCISION*, *NATIVITY*, &c.

The part of the Year between those Terms is usually expressed both ways, as  $172\frac{4}{5}$  or  $172\frac{1}{5}$ .—Since the Conqueror, the King's Patents, Charters, Proclamations, &c. are usually dated by the Year of the King's Reign.

The Church, as to her solemn Service, begins the Year on the first Sunday in Advent, which is always that next St. Andrew's Day, or the 30th of *November*. See *ADVENT*.

The Jews, as most other Nations of the East, had a Civil Year which commenced with the new Moon in *September*; and an Ecclesiastic Year, which commenced from the new Moon in *March*.

The French Year, during the Reigns of the *Merovingian* Race, began on the Day wherein the Troops were review'd; which was the first day of *March*.—Under the *Carlovingians* it began on Christmas-day; and under the *Capetians* on Easter-day; which, therefore, varied between the 22d of *March* and the 25th of *April*.

And this is still the beginning of their Ecclesiastic Year.—But for the Civil, *Charles IX.* appointed in 1564, that for the future it should commence on the first of *January*.

The Mahometans begin their Year the Minute the Sun enters *Aries*.—The Persians in the Month answering to our *June*.—The Chinese, and most of the Indians, begin it with the first Moon in *March*.—The Brachmans begin it with the new Moon in *April*; on which day they hold a Feast call'd *Samwat Saradi Pauduga*, q. d. Feast of New-Year's Day.—The Mexicans, according to *d'Acosta*, begin the Year on our 23d of *February*, when the Leaves begin to grow green. Their Year consists of 18 Months of 20 Days each: which making 360 Days, the remaining five days are spent in Mirth, and no Business suffer'd to be done, nor even any Service at the Temples.—*Alvarez* relates much the same of the *Abyssinians*; who begin their Year on the 26th of *August*, and have five idle Days at the end, which they call *Pagomen*.—At Rome there are two ways of computing the Year; the one beginning at the Nativity of our Lord: This the Notaries use, dating à *Nativitate*. The other in *March*, on occasion of the Incarnation: And 'tis by this the Bulls are dated, *Anno Incarnationis*.—The Greeks begin their Year of the World from the first of *September*.

YEARS are also distinguish'd with regard to the Epoch's whence they are number'd: Thus, Years of our Lord, are those reckon'd from the Birth of Jesus Christ, which are now 1727. Years of the World are those elapsed since the Creation, which *Scaliger* makes to be 5676.—Years of Rome, of the Hegira of Nabonassar, &c. See the difference between these Years under the Article *EPOCH*.

YEAR and Day, in Law, &c. is a Time that determines a Right in many Cases, and is in some an Usucaption, and in others a Prescription. See *PRESCRIPTION*, &c.

Thus in the Case of an Estray, if the Owner, Proclamation being made, challenge it not within that time, it is forfeit.

In like manner is the Year and Day given in Cases of Appeal, of Descent, after Entry or Claim, of Non-claim upon a Fine, or Writ of Right, of the death of a Man so bruised or wounded; of Protections, Effoins, in respect of the King's Service; of a Wreck, &c.

YEAR-day and Waste, is a part of the King's Prerogative, whereby he challenges the Profits of the Lands and Tenements of Persons attainted for Petit-Treason, or Felony for the Space of a Year and a Day.

Not only this, but at the end thereof he may waste the Tenements, destroy the Houses, root up the Woods, Gardens, Pasture, and plough up the Meadows, unless the Lord of the Fee agree with him for the Redemption of such Waste.

YEARN, in Hunting, signifies to bark, as Beagles properly do, at their Prey. See *HUNTING*.

YELLOW, a bright Colour, reflecting the most Light of any, after White. See *COLOUR* and *LIGHT*.

There are divers yellow Substances that become white upon wetting and drying them again several times at the Sun: As Wax, Linnen-Cloth, &c. See *BLEACHING*; see also *HAIR*, *WHITENING*, &c.

The same Bodies, if they be already white, and continue a long time in the Air without being wetted; turn yellow.

Paper

*Postera lux oritur linguisque animisque favete  
Nunc dicenda bono, sunt bona verba die.*

And *Pliny*, more expressly, *Lib. XXVIII. cap. 1. Primum anni incipientis diem letis precationibus invicem laetum ovinantur.*



Paper and Ivory apply'd near the Fire, become successively *yellow*, red, and black—Silk, when turn'd *yellow*, is whiten'd with the Fumes of Sulphur. See *WHITE*, *WHITENESS*, &c.

*YELLOW*, in Dying, is one of the five simple and mother Colours. See *DYING*.

For the finest *Yellows*, they first boil the Cloth, or Stuff in Allum and Pot-Ashes; then, give the Colour with Goud. See *GOUD*.

Turmeric likewise gives a good *Yellow*, tho' not the best—There is also an *Indian* Wood that gives a *yellow* Colour bordering on Gold. A fourth sort of *Yellow* is made with Savoury, but this is inferior to themall.

Greens are usually made of *Yellow* and Blue mixed. See *GREEN*.

With *Yellow*, red of Madder, and that of Goats-Hair prepared with Madder, are made the gold *Yellow*, *Aurora*, *Thought* colour, *Nacarate*, *Isabella*, and *Chamois-colour*; which are all Casts or Shades of *Yellow*.

Painters and Enamellers make their *Yellow* of *Mafficot*, which is Cerufs rais'd by the Fire; or with Oker. See *ENAMEL* and *ENAMELING*.

Limners and Colourers make it with Saffron, and *French* Berries, *Orcanette*, &c.

*Bramton* observes, it was antiently the Custom to paint a Man's Door *yellow*, and strew his House with Salt; to declare him Traytor to his King.

The Word is form'd from the *Italian giallo*, or the *German geel*, or the *Latin galbanus*.

*YELLOW*, or *French Berries*; see *BERRIES*.

*YELLOW Jaundice*; see *JAUNDICE*.

*YELLOW*S, a Disease in a Horse, the same with that call'd *Jaundice* in Man. See *JAUNDICE*.

There are two kinds of it, the *yellow* and the black.

The *Yellows* is a very frequent Disorder, say the Farriers, arising from Obstructions in the Gall-pipe, or the little Ducts opening into the same, occasion'd by viscid or gritty Matters lodged therein, or a Plenitude and Compression of the neighbouring Blood-vessels; by means whereof, the Matter that should be turn'd into Gall, is taken up by the Vein, and carried back into the Mass of Blood; which it tinctures *yellow*: So that the Eyes, inside of the Lips, and other parts of the Mouth capable of shewing the Colour, appear *yellow*.

The Effect whereof is, that a Horse will be dull, heavy, and low-spirited; easily jaded by the least Labour or Exercise, &c.

*YEOMEN*, *YEMEN*, *YOMEN*, the first or highest Degree of the Commons or Plebeians of *England*; and those next in order to the Gentry. See *COMMONS* and *GENTLEMAN*.

The *Yeomen* are properly the Freeholders, who have Land of their own; so call'd from the *German Gemen*, or *Gemain*, that is, common.

According to Sir *Thomas Smith*, a *Yeoman* is a free-born *Englishman*, who may lay out of his own free Land in yearly Revenue, to the Sum of forty Shillings *Sterling*.

The *Yeomanry* of *England* are capable of holding Lands of their own to a good value; are adjudged capable of certain Offices, as Constables, Church-Wardens, Jury-men, to vote in Elections to Parliament, and to serve in the Army.

The *Yeomen* were famous in antient times for Military-Valour, being particularly expert at the Management of the Bow; whence the Infantry was compos'd chiefly of them. See *ARCHER*.

In many Cases, the Law conceives a better Opinion of the *Yeomanry* that occupy Lands, than of Tradesmen, Artificers, &c. See *FREEHOLDER*.

By a Statute 2 *Hen. 4.* it is enacted, that no *Yeoman* shall take or wear a Livery of any Lord upon pain of Imprisonment, and a Fine at the King's Pleasure.

The Word *Tongman* is used for *Yeoman* in the Statute 3: *Hen. 8.* and in old Deeds it is sometimes written *Yeman*.

*YEOMAN* is also a Title of Office in the King's Household, of a middle Place or Rank between an Usher and a Groom. See *USHER* and *GROOM*.

Such are the—*Yeomen* of the Chandry; *Yeomen* of the Scullery; *Yeomen* of the Stirrop, &c. See *HOUSEHOLD*.

*YEOMEN Warders*; see *WARDERS of the Tower*.

*YEOMEN of the Guard*, properly call'd *Yeomen of the Guard of the King's Body*, were antiently 250 Men of the best Rank under Gentry, and of larger Stature than ordinary; everyone being required to be six Foot high. See *GUARD*.

At present there are but one hundred *Yeomen* in constant Duty; and seventy more not in Duty; and as any of the hundred die, his Place is supply'd out of the seventy.

They go clad after the manner of King *Henry* the Eighth's time—They had Diet as well as Wages, when in Waiting; but this was taken off in the Reign of *Q. Anne*.

Their Attendance is on the Sovereign's Person, both at home and abroad; and they have a Room allotted for them only, call'd the *Guard Chamber*.

The Officers and *Yeomen* are at the disposal of the Captain, but the Captain at the Appointment of the King.

*YERKING*, in the Manage, is when a Horse strikes with his hind Legs, or flings and kicks back with his whole hind Quarters; stretching out the two Legs nearly together and even. See *AIR*, *SAULT*, &c.

*YEST*, or *Barm*, a Head, or Scum rising upon Beer, or Ale, while working or fermenting in the Vat. See *BREWING*, *MALT-Liquor*, &c.

It is used for a Leaven or Ferment in the baking of Bread; as serving to swell or puff it up very considerably in a little Time, and to make it much lighter, softer, and more delicate—When there is too much of it, it renders the Bread bitter. See *BREAD* and *BAKING*.

The use of *Yest* in Bread is but of late standing among us: 'Tis not above eighty Years since the Avarice of the Bakers first introduced it; and then it was only done by stealth—Tho' *Pliny* witnesses it to have been used by the antient Gauls.

The Faculty of Medicine of *Paris*, by a Decree of the 24th of *March* 1688, solemnly maintain'd it noxious to the Health of the People; yet could not that prevent its Progress. See *BEER*.

*YEZDEGERDIC Year*, an Epocha thus call'd. See *YEAR* and *EPOCHA*.

*YGROMETER*; see *HYGROMETER*.

*YIELDING* and *paying*, a Law-Phrase, form'd by corruption from the *Saxon Geldan*, and *Gildan*, to pay—Hence in *Domesday*, *Gildare* is frequently used for *Solvere*, *Reddere*, the *Saxon G* being often mistaken for a *Y*. See *GELD* and *GILD*.

*YQUETAYA*, in Natural History, a Plant in *Brasil*, long used as a Medicine in that Country; and lately discovered to the *Europeans* by a *French* Surgeon.

It has been since found in *France*, where being cultivated and examined by *M. Marchant*, it appears to be a kind of Scrophulary or Blood-Nettle.

It has this remarkable Property, that it takes away from *Senna* all its ill taste and smell, which Property of correcting the Infusion of *Senna* was unknown in the Scrophulary. See *SENNA*.

To use this Plant, it must be dried ten or twelve days in the Shade, and afterwards expos'd to the Sun till quite dry.

*YNCA*, *YNCAN*, or *INCA*, a Name antiently given to the Kings of *Peru*, and the Princes of their Blood: The Word signifying literally *Lord*, *King*, *Emperor*, and *Royal Blood*.

The King himself was particularly call'd *Capac Inca*, i. e. Great Lord—His Wife *Pallas*, and the Princes simply *Incas*.

These *Inca's*, before the arrival of the *Spaniards*, were exceedingly powerful—Their People rever'd 'em to excess, as believing them to be Sons of the Sun, and never to have committed any fault.

If any Person offended the Royal Majesty in the smallest Matter, the City he belong'd to was totally demolished.

When they travelled, whatever Chamber they lay in on the Road, was wall'd up as soon as they departed, that no body might ever enter it, after them.—The like was done to the Room wherein the King died; in which, likewise, all the Gold, Silver, and precious Furniture were immured, and a new Apartment built for his Successor.

Their beloved Wives, Domesticks, &c. likewise sacrificed themselves, and were buried alive in the same Tomb along with him. See the *History of the Incas* by *Garcilasso de la Vega*.

*YOAK*, or *YOKE*, in Agriculture, a Frame of Wood, fitted over the Necks of Oxen; whereby they are coupled together, and harness'd to the Plough, &c. See *PLOUGH*.

It consists of several Parts; as, the *Yoke* properly so call'd, which is a thick piece of Wood lying over the Neck; the *Bow*, which compasses the Neck about; the *Stitchings* and *Wreathings*, which hold the Bow fast in the *Yoke*; and the *Yoke-Ring* and *Ox-Chain*.

The *Romans* made the Enemies they subdued, pass under the *Yoke*, which they call'd *sub jugum mittere*: That is, they made them pass under a sort of *Furca Patibulares*, or Gallows, consisting of a Pike, or other Weapon laid across two others planted upright in the Ground—This done, they treated 'em with Humanity enough, and sent 'em home again. See *FURCA*.

The same Measure was sometimes dealt 'em by their Enemies, upon the same Occasion—Thus *Cesar*, Lib. 2. observes, that the Consul *L. Cassius* had been kill'd by the *Swiss*, his Army defeated, and made pass under the *Yoke*.

*YOAK of Land*, *Jugata Terra*, in our antient Customs, was the Space which a *Yoke* of Oxen, that is, two Oxen, may plough in one day. See *JUGATA*, *HIDE*, *YARD-LAND*, &c.

*YOIDES*, or *HYOIDES*, in Anatomy, a Bone situate at the Root of the Tongue, and compos'd of divers little Bones united by Cartilages which sometimes ossify. See *TONGUE*.



It has its Name *Υανδης*, and sometimes *Υψιλοειδης* *Υψιλοειδης*, from its resembling a Greek *υ*, or *Upsilon*—Some call it *Lambdoides*, as resembling a *Lambda* inverted.

It is not contiguous to the Extremity of any other Bone, nor has any Articulation with 'em : on which account it is not shewn in the Skeletons.

Its Use is to fortify the Base or Root of the Tongue, and facilitate the Passage of the Air into the *Trachea*, and the Food into the Gullet.

It has five Pair of Muscles, which move it together with the Tongue. See *LINGUA*.

*YPSILOIDES*, or *YLYPSILOIDES*, in Anatomy, the third genuine Suture of the *Cranium* ; thus call'd from its resembling a Greek *υ*, or *Upsilon*. See *SUTURE*.

Some also call it *λambdoidης*, *Lamdoeides*.

There is also a Bone at the Root of the Tongue call'd *Υψιλοειδης*, and sometimes *Υοιδης*. See *YOIDES*.

*YOLK*, or *YELK*, in Natural History, the yellow part in the middle of an Egg. See *EGG*.

The Chicken is form'd out of, and nourish'd by, the *White* alone ; till it be grown to some bulk : After which, the *Tolk* serves it for Nourishment, which it likewise does, in

part, after it is hatched—For a good part of the *Tolk* remains after exclusion ; being received into the Chicken's Belly ; and being there reserved, as in a Store-house, is by the *Ductus Intestinalis*, as by a Funnel, convey'd into the Guts, and serves instead of Milk. *Willoughb. Ornithol. L. I. c. 3.*

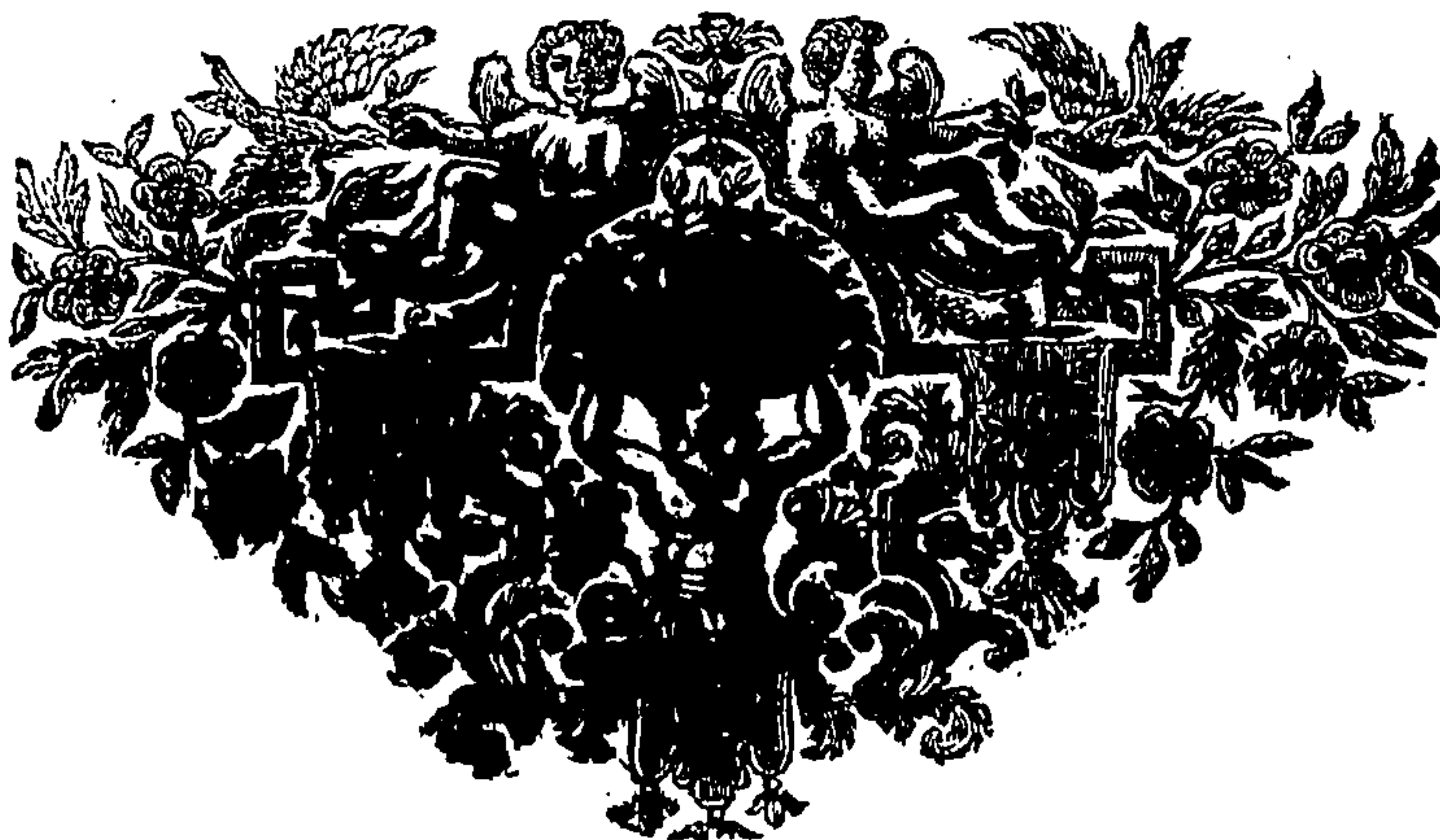
This was even known to *Pliny* : *Ipsum Animal ex albo liquore Ovi corporetur : Cibus ejus in Luteo est.* Lib. 10. c. 53.

*YOUNG* ; see *GENERATION*, *CONCEPTION*, *GESTATION*, *EMBRYO*, *FOETUS*, *DELIVERY*, *CHILD*, &c. See also *STORGE*, &c.

In the Army, That Regiment, or Officer, is said to be the *Younger* which was last raised, or whose Commission is of latest Date, whatever be the Age of the Man, or however long he may have served in other Capacities.

*YOUNKERS*, among Sailors, are the *young* Men, otherwise call'd *Foremast-men* ; whose Business is to take in the Top-Sails, or Top and Yard, for Furling the Sails, Slings the Yards, &c. and to take their turns at the Helm.

*YOUTH*, *Adolescence* ; see *AGE* and *ADOLESCENCE*.





## Z.

**Z** The last Letter in the Alphabet, and one of the double Consonants, both among the *Latins* and *Greeks*. See LETTER and CONSONANT.

Its Pronunciation is much more soft and obtuse than the *X*, which makes *Quintilian* call it *Mollissimum*, and *Suavissimum*—Nevertheless, the Sound was not always the same as it is now; which is but, as it were, half that of an *S*.

It had something also in it of the *D*; but only what sounded very smoothly: Thus, *Mezentius* was pronounced as if it had been *Medsentius*, &c. See *D*.

The *Z* had also an affinity with the *G*: Thus, *Capella*; *Z*, says he, à *Græcis venit, licet etiam ipsi primo G Græcæ utebantur*. See *G*.

*Z* was also a Numeral Letter, signifying 2000; according to the Verse:

*Ultima Z tenens finem bis mille tenebit.*

When a Dash was added a-top, *Z̄*, it signified two thousand times two thousand.

*ZAİM*, a Portion of Land, allotted for the Subsistence of a Horse-man in the *Turkish* Militia; call'd also *Timar*. See *TIMAR* and *TIMARIOT*.

*ZAIRAGIA*, or *ZAIRAGIAH*, a kind of Divination, in use among the *Arabs*. See *DIVINATION*.

It is perform'd by means of divers Wheels, or Circles placed Concentric to one another, and noted with several Letters, which are brought to answer to each other by moving the Circles according to certain Rules.

'Tis also call'd *Zaraiab*, by reason the Circles of this Machine, which are *Mutaraziat*, *Zeflak*, &c. correspond to the Orbs of the Planets, and the Atmospheres of each Element.

*ZEAL*, *ZELUS*, ζήλος, the Exercise of a warm, vehement, animated Affection, or Passion for any thing. See *PASSION*, *INCLINATION*, &c.

Some will have *Zeal* to be properly a mix'd, or compound Sensation, where one Affection is rais'd or inflam'd by another—On these Principles, it may be defined an Affection arising from Love and Indignation, which cannot bear a thing to be given to another that a Person desires for himself, or one whom he loves and favours—Others make it consist in an eager Study or Desire to keep any thing inviolate; or a Fervour of Mind arising from an Indignation against those who abuse or do evil to a Person beloved.

The *Greek* Philosophers make three Species of *Zeal*—The first, of Envy: The second, of Emulation, or Imitation: The third, of Piety, or Devotion; which makes what the Divines call *Religious Zeal*. See *EMULATION*, &c.

*Josephus* speaks much of a Party or Faction call'd the *Zealous*, or *Zealots*; which arose among the *Jews* during the War with *Vespasian* and *Titus*. Lib. XIV. c. 6. *Antiq.* & Lib. IV. c. 12. *de Bello Judaico*.

*ZEDOARIA*, *ZEDOARY*, a Medicinal Root belonging to a Plant growing in the *East-Indies*, whose Leaves are like those of *Ginger*, only longer and broader. See *ROOT*.

*Zedoary* is of an Ash-colour, has an Aromatic, bitterish Taste; and comes into the Class of *Cephalics*: But it is also reckon'd by many amongst the *Alexipharmics*, whereupon it comes to have a Place in the *Capitals*; and is even said to prevent Infections by holding it only in the Mouth. See *ALEXIPHARMIC*, &c.

On account of its agreeable Bitter, it also is prescribed among *Stomachics*; and for its spicy Warmth is commended in *Cholics*, and *Hysterical Affections*, for promoting the *Menses*, &c. See *AROMATICS*.

*ZENITH*, in *Astronomy*, the Vertical Point; or a Point in the Heavens directly over our Head. See *VERTEX* and *VERTICAL*.

Or the *Zenith* is a Point, as *Z* (*Tab. ASTRONOMY, Fig. 52*) in the Surface of the Sphere, from which a right Line drawn through the Spectator's Head, passes through the Centre of the Earth. See *VERTEX* and *VERTICAL*.

Hence, there are as many *Zeniths* as there are different Places on the Earth where the Heavens may be seen; and upon the changing our Place, we also change our *Zenith*.

The *Zenith* is also call'd the *Pole of the Horizon*, because 90 Degrees distant from each Point thereof. See *HORIZON*.

It is also the Pole of all the *Almicantars*, or *Parallels of the Horizon*, whereby the Altitude of the Stars is estimated. See *ALMICANTAR*.

Through the *Zenith* passeth the *Vertical-Circles*, or *Azimuth*. See *VERTICAL Circle*.

The Point diametrically opposite to the *Zenith*, is call'd the *Nadir*; which is the Point directly under our Feet. See *NADIR*.

The *Nadir* is the *Zenith* to our *Antipodes*; as our *Zenith* is the *Nadir* to them. See *ANTIPODES*.

*ZENITH distance*, is the Complement of the Sun, or Stars Meridian Altitude; or what the Meridian Altitude wants of 90 Degrees. See *COMPLEMENT* and *ALTITUDE*.

*ZENSUS*, in *Arithmetic*, a Name which some Authors give to a Square Number; or the second Power. See *SQUARE Number* and *POWER*.

The higher Powers they call *Zensizensus*, *Zensicubus*, *Zensizenensus*, *Zensurdefolidus*, &c. See *POWER*.

*ZEPHYRUS*, or *ZEPHYR*, the West-wind; or a Wind blowing from that Cardinal Point of the Horizon opposite to the East. See *WEST*, *WIND*, and *CARDINAL Point*.

It is also call'd *Favonius*, and *Occidens*; and by many confounded with *Africus*.

The Word is *Greek* ζέφυρος.—The Poets personify it.

*ZETETICE*, *ZETETIC Method*, in *Mathematics*, the Method made use of to investigate or find the Solution of a Problem. See *RESOLUTION*, *INVESTIGATION*, &c.

The Word is form'd from the *Greek* ζητέω, I seek.

The antient *Pyrrhonians* were sometimes call'd *Zetetici*, q. d. Seekers. See *PYRRHONIANS*.

*ZEST*, the woody, thick Skin, quartering the Kernel of a Walnut.

The Word is also used for a Chip of Orange or Lemmon-Peel; such as is usually squeezed into Ale, Wine, &c. to give it a Flavour.

Hence, to *Zest an Orange* or *Lemmon*, among Confectioners, is to cut the Peel from Top to Bottom into small Slips, as thin as possible.

*ZETA*, or *ZETECULA*, a little withdrawing Chamber, with Pipes running along the Walls to receive from below either the cool Air or the Heat of warm Water. See *CALEDUCT*, &c.

The Word is form'd either of τῆ ζῆν, to be warm; or of τῆ ζῆν, vivere, to live.

*ZEUGMA*, a Figure in Grammar, whereby an Adjective or Verb which agrees with a nearer Word, is also, by way of Supplement, referr'd to another more remote. See *FIGURE*.

Thus, *Terence*—*Utinam aut hic surdus, aut hec muta facta sit*.—So *Virgil*—*Hic illius Arma hic curvus fuit*. In which Cases, the Words *facta sit* agreeing primarily with *hec muta*, are also made to agree or extend to *hic surdus*: And the Verb *fuit* is not only refer'd to *hic curvus*, which it properly respects, but further to *hic illius arma*.

The *Latins*, it may be here observed, take a liberty in Construction, which some of the rarer Critics among the Moderns, particularly the *French*, will not allow in the modern Tongues. See *CONSTRUCTION*.

The word *Zeugma* is *Greek*, ζεύγμα, which literally denotes a joining together.

*ZIBETHUM*, ζάιβητον, in *Natural History*, *Civet*: a Perfume like Musk, contain'd in a kernelly Bladder in the Groin of a *Civet Cat*. See *CIVET*.

*ZINDIKITES*, a Sect among the *Mahometans*, denominated from their Leader *Zindik*, whom *Grotius* makes to be one of the *Magi*, and a Follower of *Zoroaster*. See *MAGI*.

The *Zindikites* believe no Providence nor Resurrection. They own no other God but the four Elements; and in this sense assert, that a Man being a Mixture of those simple Bodies, returns to God when he dies.

*ZINK*, or *ZAİM*, a kind of Mineral, or Semi-metal, which some confound with *Bismuth*, and others with *Spelter*. See *BISMUTH*, *SPLTER*, &c.

Others call it *Female Antimony*. See *ANTIMONY*.

*Zink* is a kind of Mineral-Lead, very hard, white, and brilliant; and which, tho' not ductile enough to denote



nate it a Metal, yet stretches a little under the Hammer. See METAL, DUCTILITY, &c.

'Tis found in great Quantities in the Mines of *Goffelaar* in Saxony—That commonly sold is in large, thick, square Cakes; which would make one suspect it had been melted when taken out of the Mine, and cast in Moulds of that Form.

*Zink* is used to purge and purify Tin; much as Lead is to purify Gold, Silver, and Copper. See LEAD.

Founders, Toy-men, &c. also use it with Turmeric to tinge Copper, &c. It gives a fine Gold Colour, tho' not a very lasting one. See COPPER, BRASS, &c.

M. *Homborg* conjectures, with a good deal of Probability, that *Zink* is no other than a natural Mixture of two real Metals, viz. Tin and Iron—What led him to the Opinion was, that *Zink* yields precisely the same Fumes by the Burning-glass, as such a Mixture does. Accordingly, he assures us, he often substituted the one for the other; and this always with the very same Effect.

ZINZIBER; see GINGER.

ZIZYPHUM, a Name sometimes given to a kind of Fruit usually call'd *Jajubes*. See Jujubes.

ZOCCO, ZOCCOLO, ZOCCLE, or SOCLE, in Architecture, a small kind of Stand or Pedestal; being a low, square Piece or Member, serving to support a Bust, Statue, or the like thing that needs to be rais'd. See SOCLE.

The Word is *Italian*, form'd from *Soccus*, a Sandal, or high Shoe. See SOCCUS.

*Zocco*, or *Zocle*, is also used for a low, square Member serving to support a Column, or other part of a Building, instead of a Pedestal, Base, or Plinth. See PEDESTAL, PLINTH, &c.

A continued *Zocle* is a kind of continued Pedestal whereon a Structure is rais'd; but having no Base or Cornice. See PEDESTAL.

ZODIAC, ZODIACUS, in Astronomy, a Fascia, Belt, or broad Circle, whose Middle is the Ecliptic, and its Extremes, two Circles parallel thereto at such distance from it as to bound, or comprehend the Excursions of the Sun and Planets. See SUN and PLANET.

The Sun never deviates from the Middle of the *Zodiac*; i.e. from the Ecliptic; the Planets all do, more or less. See ECLIPTIC.

Their greatest Deviations, call'd Latitudes, are the Measure of the Breadth of the *Zodiac*: which is broader or narrower as the greatest Latitude of the Planets is made more or less—Accordingly, some make it 16, some 18, and some 20 Degrees broad. See LATITUDE.

The *Zodiac* cutting the Equator obliquely, makes an Angle therewith of 23 Degrees and an half; or more precisely of 23°, 29', which is what we call the *Obliquity of the Zodiac*, and is the Sun's greatest Declination. See OBLIQUITY and DECLINATION.

The *Zodiac* is divided into twelve Portions, call'd *Signs*; and these Divisions or Signs are denominated from the Constellations which antiently possess'd each Part. See CONSTELLATION.—But, the *Zodiac* being immovable, and the Stars having a Motion from West to East, those Constellations no longer correspond to their proper Signs; whence arises what we call the *Precession of the Equinoxes*. See PRECESSION.

When a Star, therefore, is said to be in such a *Sign of the Zodiac*, it is not to be understood of the Sign, or Constellation of the Firmament; but only of that twelfth Part of the *Zodiac*, or *Dodecatery* thereof. See SIGN, STAR, and DODECATERY.

The word *Zodiac* is form'd from the Greek *ζῳον*, an Animal; by reason of the Constellations therein: Others derive it from *ζω*, Life; from an Opinion that the Planets have a great Influence on Animal Life.

*Cassini* has also observ'd a Tract in the Heavens, within whose Bounds most of the Comets, tho' not all of them, are observed to keep; which, for this reason, he calls the *Zodiac of the Comets*. See COMET.

This he makes as broad as the other *Zodiac*, and marks it with Signs or Constellations like that; as, *Antinous*, *Pegasus*, *Andromeda*, *Taurus*, *Orion*, the lesser *Dog*, *Hydra*, the *Centaur*, *Scorpion*, and *Sagittary*.

ZONE, ZONA, in Geography and Astronomy, a Division of the Terrestrial Globe with respect to the different Degree of Heat found in the different Parts thereof. See HEAT and HEAT.

A *Zone* is the fifth Part of the Surface of the Earth, contain'd between two Parallels. See PARALLEL.

The Word is Greek *ζώνη*, *q. d.* Belt, Girdle.

The *Zones* are denominated *Torrid*, *Frigid*, and *Temperate*.

The *Torrid Zone* is a Fascia or Band surrounding the Terrestrial Globe, and terminat'd by the two Tropics. See TROPIC.—Its breadth, therefore, is 46°, 58'. The Equator running through the middle of it, divides it into two equal Parts, each containing 23°, 29'.

The Antients imagined the *Torrid Zone* uninhabitable. See TORRID.

The *Temperate Zones* are two Fascia, or Bands environing the Globe, and contain'd between the Tropics and the Antarctic Circles.—The breadth of each is 43°, 2'. See TEMPERATE.

The *Frigid Zones* are Segments of the Surface of the Earth terminat'd, the one by the Antarctic, and the other by the Arctic Circle.—The breadth of each is 46°, 58'. See ARCTIC, ANTARCTIC, &c.

The Difference of *Zone* is attended with a great diversity of Phenomena.—1°. In the torrid *Zone*, the Sun passes through the Zenith twice a Year; and his recess from the Equator toward the Pole which is above the Horizon, is twice a Year equal to the height of the Pole.

2°. In the temperate and frigid *Zones*, the least height of the Pole exceeds the greatest distance of the Sun from the Equator; and therefore to the Inhabitants thereof the Sun never passes thro' the Zenith; yet if on the same day the Sun rises at the same time to a greater height, the height of the Pole is the less, in regard the Inclination of the Circles of diurnal Revolution to the Horizon is less.

3°. In the temperate and torrid *Zones* the Sun rises and sets every natural Day, by reason the distance of the Sun from the Pole always exceeds the height of the Pole; yet every where but under the Equator, the artificial Days are unequal, and the Inequality is the greater, as the Place is less distant from the frigid *Zone*. See DAY.

4°. Where the temperate *Zones* terminate on the frigid, the height of the Pole is equal to the Sun's distance from the Pole, when in the neighbouring Tropic; and, consequently once a Year, the Sun in its diurnal Motion performs an entire Revolution, without going down under the Horizon.

5°. Every where in a frigid *Zone*, the height of the Pole is greater than the least distance of the Sun from the Pole; and therefore during some Revolutions of the Earth, the Sun is at a distance from the Pole less than the Pole's height; and during all that time, does not set, nor so much as touch the Horizon.—Where the distance from the Pole, as the Sun recedes from it, exceeds the height of the Pole, or Latitude of the Place; the Sun rises or sets every natural Day. See DAY, NIGHT, RISING, SETTING, &c.

ZONNAR, a Term corrupted from the vulgar Greek *ζωνος*, of *ζώνη*, a Girdle.

The *Zonnar* is a kind of Belt or Girdle of black Leather, which the Christians and *Jews* of the *Levant*, particularly those in *Asia* and the Territories of the Grand Signor, are obliged to wear; to distinguish themselves from the *Mahometans*.

It was *Motavakkel* Xth Kalif of the House of the *Abassides* that first enjoined the Christians, &c. to wear the *Zonnar*—The Ordinance to this effect was published in the Year of the *Hegira* 273.

Hence, as most of the Christians of *Syria*, *Mesopotamia*, &c. are either *Nestorians*, or *Jacobites*; those Sectaries, are often call'd *Christians of the Girdle*. See GIRDLE.

ZOOLOGIA, ZOOLOGY, a Discourse or Treatise upon Animals or living Creatures. See ANIMAL.

*Zoology* makes a considerable Article in Natural History; comprehending what relates to the Form, Structure, Method of Living, Feeding, Propagating, &c. of the divers Species of Brute Creatures. See NATURAL HISTORY.

The Word is compounded of *ζῷον*, Life, and *λόγος*, Speech, Discourse.

ZOOPHORUS, or ZOPHORUS, in the ancient Architecture, the same thing with the *Triclin* in the Modern. See TRICLIN.

It was thus call'd in Greek, because antiently adorned with the Figures of Animals; from *ζῷον*, Animal, and *φορεῖν*, I bear.

The Greeks sometimes also call the *Zodiac*, *Zoophorus*, because of the Signs or Constellations therein. See ZODIAC.

ZOOPHORIC Column, is a Statuary Column; or a Column that bears or supports the Figure of an Animal. See COLUMN.

ZOOPHYTA, ZOOPHYTES, ZOOPHYTE, in Natural History, *q. d.* Plant-Animal; a kind of intermediate Body, partaking both of the Nature of a Sensitive and a Vegetable.

Such is the *Planta Pudica* commonly supposed to be; tho' with little foundation. See SENSITIVE PLANT.

The Antients also reputed Sponges to be *Zoophytes*. See SPONGE.

The Word is compounded of *ζῷον*, Animal, and *φυτεῖν*, Plant.

The *Fetus* while in the Womb appears to be a real *Zoophyta*; growing to the Mother by the *Funiculus Umbilicalis*, as Plants do to the Earth by their Stem. See FETUS, EMBRYO, &c.

*Olearius* mentions a very extraordinary sort of *Zoophyte* grow-



growing near *Samara* on the *Volga*——'Tis a kind of Melon shaped like a Lamb, all the Parts whereof it has, and grows to the Earth by a Stem which serves it for a Navel-string. As it grows, it changes Place, as much as its Stem will allow of; and it consumes and dries up all the Grass where it grows. When ripe, the Stem withers, and the Body or Fruit becomes cover'd with a downy Skin, which may be dress'd and used as a Fur.

He affirms to have seen of this Skin, and that it was cover'd with a soft curled Wool like that of a young Lamb.

*Scaliger* adds, that this Fruit lives, and grows, till such time as it wants Grass——In some Accounts it is call'd *Agnus Scythicus*, and *Boramez*.

**ZOOTOMY**, the Art or Act of Dissecting Animals or living Creatures. See **DISSECTION**.

*Zootomy* amounts to the same with *Anatomy*. See **ANATOMY**.

The Word is compounded of ζῷον, Animal, and τέμνω, *seco*, I cut.

**ZOPATA**, or *Sapata*, a kind of Feast or Ceremony held in *Italy*, in the Courts of certain Princes, on *St. Nicholas's* Day, wherein People hide Presents in the Shoes or Slippers of those they would do honour to, in such manner as may surprize 'em the Morrow when they come to dress.

It is done in Imitation of the Practice of *St. Nicholas*, who used in the Night-time to throw Purse of Money in at Windows, to marry poor Maids withal.

*F. Menestrier* has described these *Sapates*, their Origin, and different Usages, in his Treatise *des Ballets Anciens & Moderns*.

The Word *Zapata* is originally *Spanish*, and signifies Shoe.

**ZOPISSA**, a kind of Mixture of Pitch and Tar; scraped off Ships that have been a long time at Sea. See **PITCH** and **TAR**.

This Matter by being gradually penetrated by the Salt of the Sea, becomes partaker of its Qualities; and being apply'd to the Body, externally, is found Resolutive and Desiccative.

The Word is form'd from βέβω, *bullire*, to boil, and πίσσα, Pitch; *q. d.* *boil'd Pitch*.

**ZUINGLIANS**, a Branch of antient Reformers, or Protestants; denominated from their Author *Uldric* or *Huldric Zuinglius*. See **REFORMATION**.

This eminent Divine was born at *Wildehausen*, in the County of *Toggenbourg* in *Switzerland*, in 1487.—After having finished his Studies in Theology, and received the Doctor's Cap at *Basil*, in 1505, he apply'd himself to preaching; and with good Success.

Soon after *Luther* had taken up Arms against *Rome*, *Zuinglius*, being then Minister of the chief Church in *Zurich*, fell in with him; preach'd openly against Indulgences, then against the Intercession of the Saints, then against the Mass, the Hierarchy, the Vows, and Celibate of the Clergy, Abstinence from Flesh, &c.

As to the Eucharist, interpreting *hoc est Corpus meum* by *hoc significat Corpus meum*; he maintain'd, that the Bread and Wine were only bare Significations, or Representations of the Body and Blood of Jesus Christ; in which he differ'd from *Luther*, who held a Consubstantiation. See **LUTHERAN**, **EUCCHARIST**, **CONSUBSTANTIATION**, &c.

In a Conference held with the Deputies of the Bishop of *Constans*, in 1523, he procured most of the external Ceremonies of Religion to be abolished——As to Matters of Grace, *Zuinglius* seem'd inclined to *Pelagianism*; giving all to Free-will, consider'd as acting by the mere strength of Nature; in which he differ'd from *Calvin*. See **CALVINISTS**, **GRACE**, **WILL**, **PELAGIAN**, &c.

**ZYGOMA**, in Anatomy, a Bone, by some call'd *Os Jugale*. See **JUGALE**.

The *Zygoma* is a single Bone, but an Union or Assemblage of two Processes or Eminences of Bones; the one from the *Os temporis*, the other from the *Os male*. See **BONE**.

These two Eminences, or *Apophyses*, are joined together by a Suture thence call'd *Zygomaticus*. See **ZYGOMATICUS**.

The Word is form'd from ζευνναι, *I join*; so that *Zygoma*, properly speaking, is the Junction of those two Bones.

**ZYGOMATICUS**, an Epithet given to the Suture that binds the two Processes of the *Zygoma* together. See **ZYGOMA** and **SUTURE**.

**ZYGOMATICUS**, in Anatomy, a Muscle that has its Origin in the *Processus Jugalis*, or *Zygoma*; and passing obliquely, is inserted near the Angle of the Lips——It helps to draw the Lips obliquely upwards. See **LIPS**.

**ZYMOSIMETER**, an Instrument proposed by *Scammerdam*, in his Book *de Respiratione*, wherewith to measure the degree of Fermentation occasion'd by the Mixture of different Matters; and the Degree of Heat which those Matters acquire in fermenting; as also the Heat or Temperament of the Blood of Animals. See **FERMENTATION**, **HEAT**, &c.

The Word is form'd from ζύμων, Fermentation, and μέτρον, Measure.

**ZYTHUM**, or **ZITHUM**, a sort of Malt-Liquor, in use among the antient *Germans*. See **MALT-LIQUOR**.

*Matthiolus* represents the antient *Zythum* and *Curm* as the same with our Beer and Ale. See **BEER** and **ALE**.

FINIS.

